PROCEEDINGS BOOK

3rd INTERNATIONAL AFRICAN CONFERENCE ON CURRENT STUDIES

*Ivory carving, Benin, eighteenth century

27-28 February, 2021
Abomey-Calavi, Benin

Editors

Dr. Franck AMOUSSOU

Samira KHADHRAOUI ONTUNC

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CONFERENCE PROCEEDINGS BOOK

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ORGANIZING INSTITUTIONS

INSTITUTE OF ECONOMICS DEVELOPMENT AND SPCAIL RESEARCHES (IKSAD)

&

UNIVERSITY OF ABOMEY-CALAVI (UAC), REPUBLIC OF BENIN

TOTAL NUMBER OF PAPERS FROM TURKEY

76

TOTAL NUMBER OF INTERNATIONAL PARTICIPANTS

95

PARTICIPANTS COUNTRIES

Benin Republic, Turkey, Nigeria, Azerbaijan, Malaysia, Iraq, Tunisia, Morocco, France, Spain, Pakistan, Saudi Arabia, Philippines, Côte d'Ivoire, Togo, USA, Portugal, Niger, Poland, Union of the Comoros, Algeria, Burkina Faso, Hungary, Bulgaria, Egypt

TOTAL ACCEPTED PAPERS

171

TOTAL REJECTED PAPERS

68

EVALUATION PROCESS

All applications have undergone a double-blind peer review process

PRESENTATION

Oral Presentation

3rd INTERNATIONAL AFRICAN CONFERENCE ON CURRENT STUDIES

CONFERENCE ID

TITLE

3rd INTERNATIONAL AFRICAN CONFERENCE ON CURRENT STUDIES

DATE - PLACE

27-28 February, 2021 Abomey-Calavi, Benin

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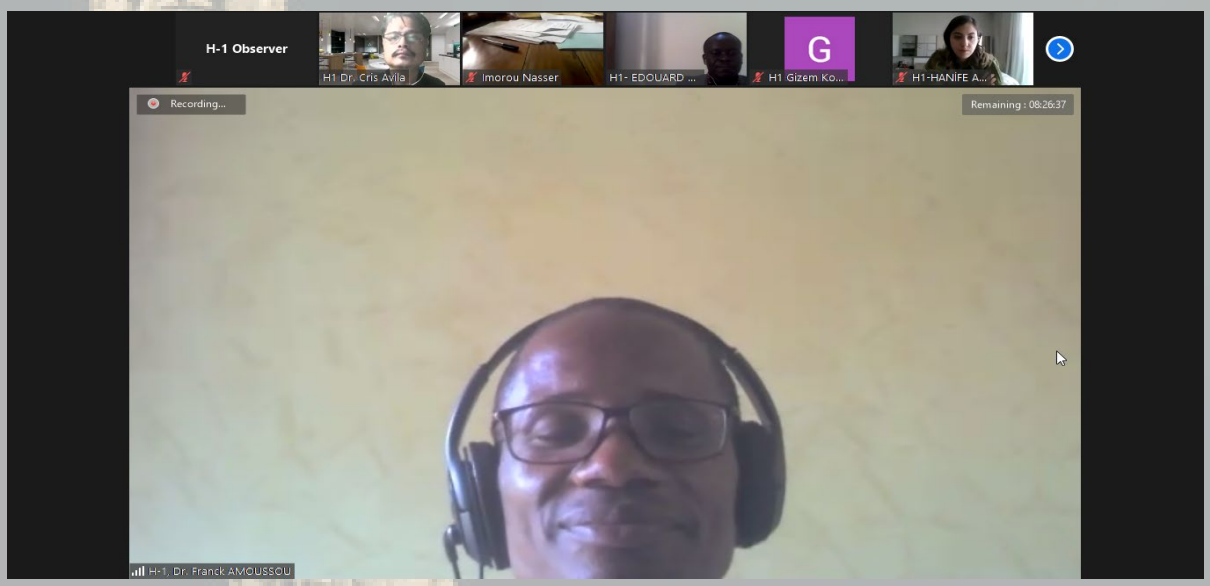

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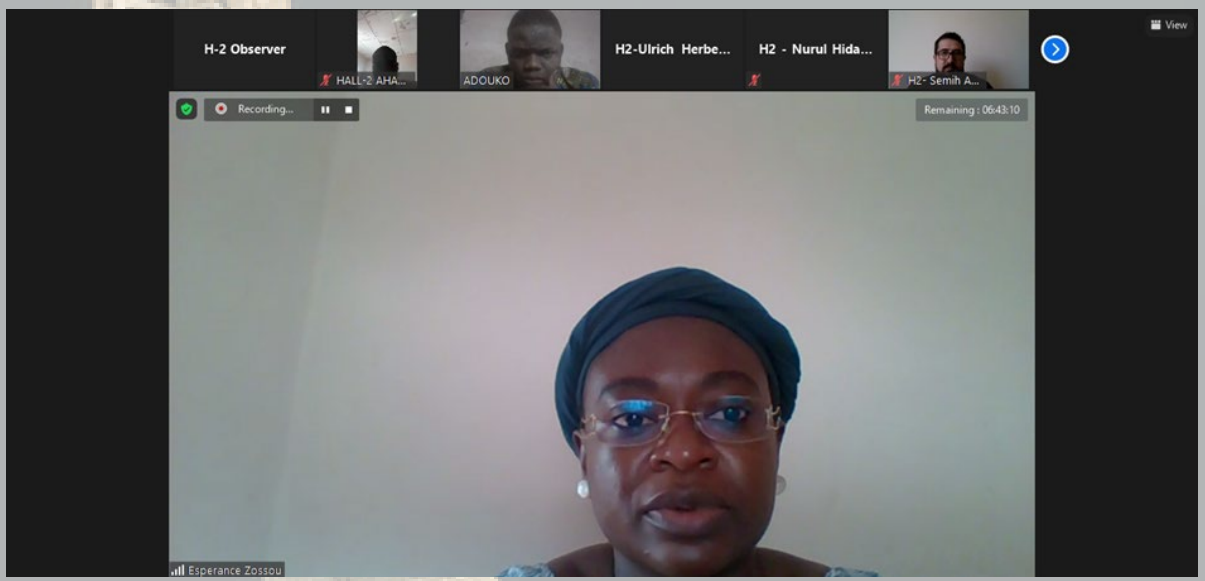

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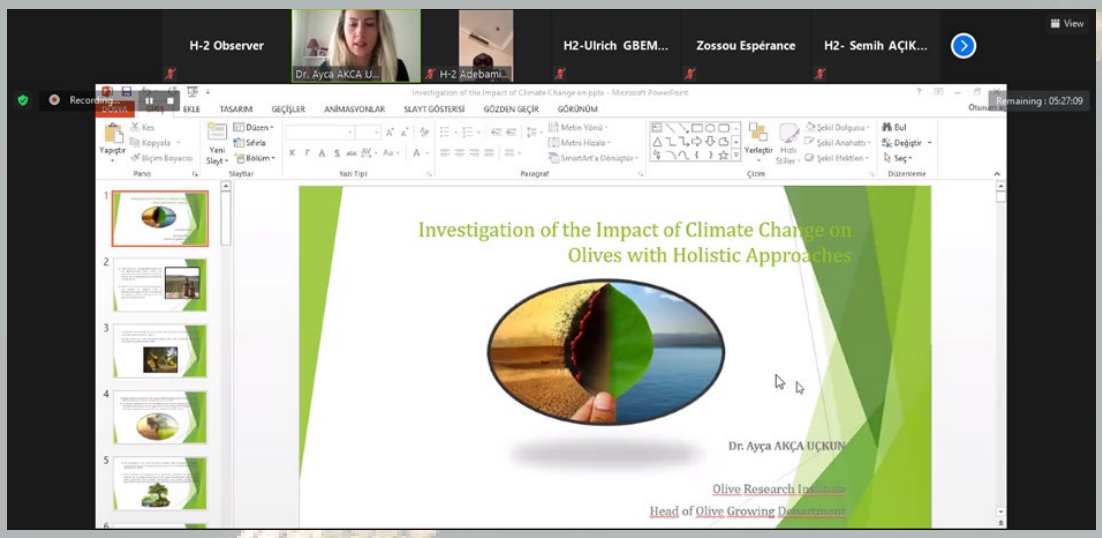

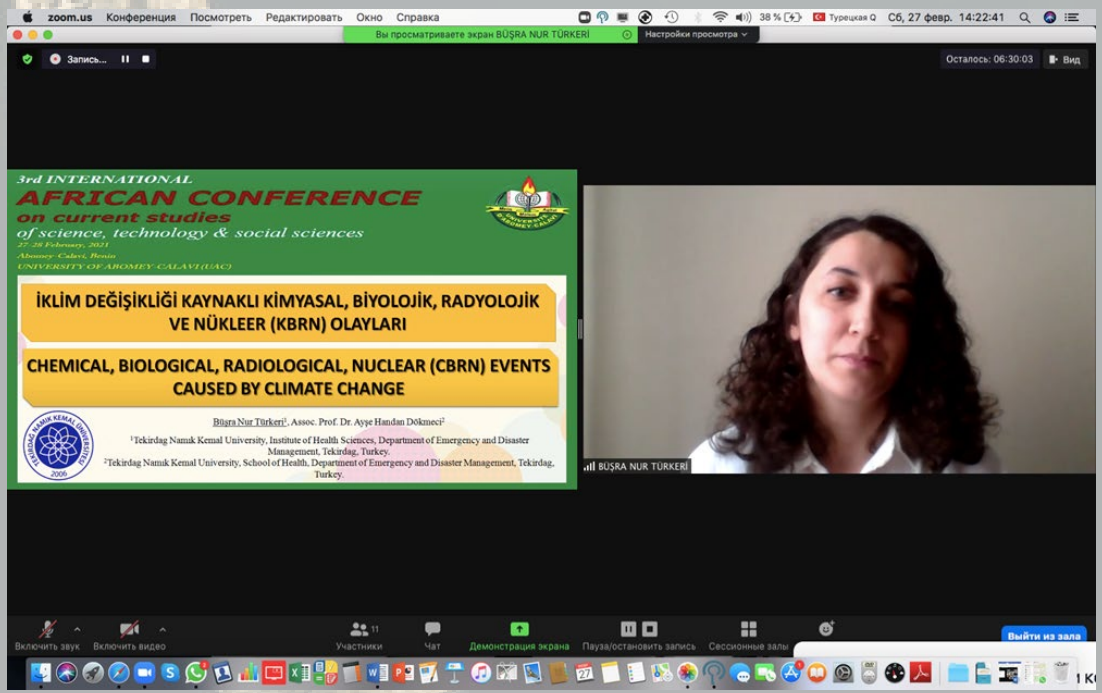

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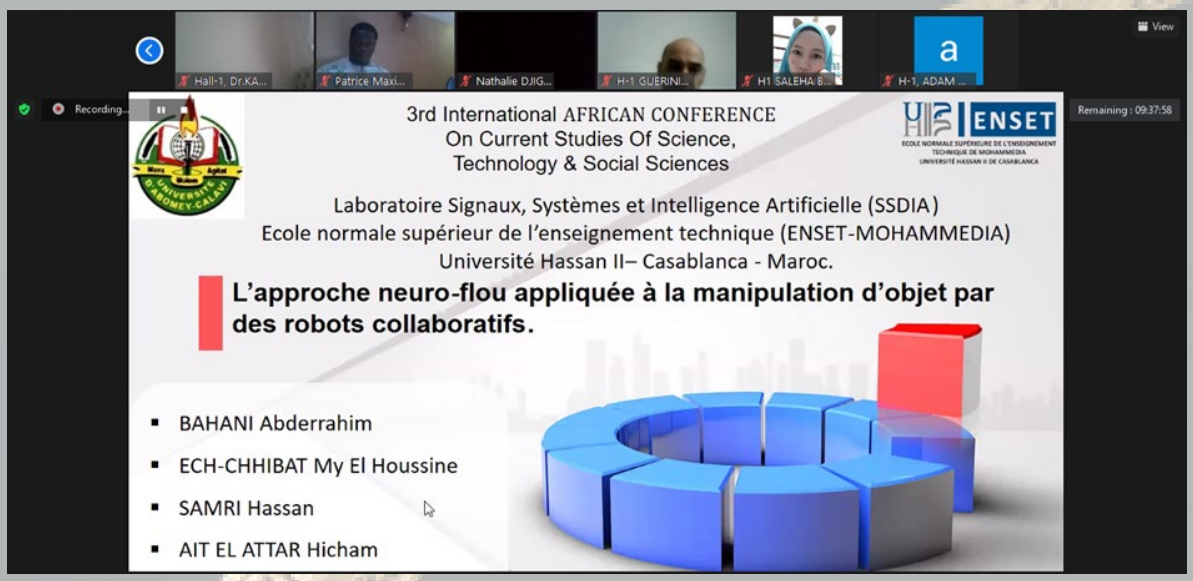

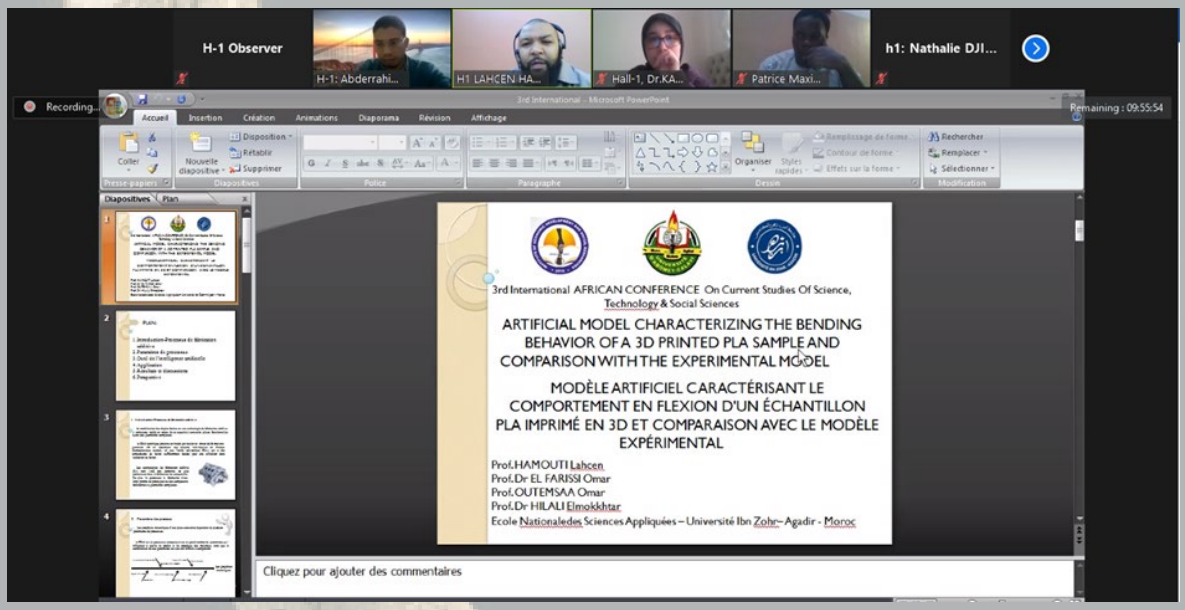

3rd INTERNATIONAL AFRICAN CONFERENCE ON CURRENT STUDIES

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On Current Studies Of Science, Technology & Social Sciences

CONFERENCE PROGRAM

February 27-28, 2021
Abomey-Calavi, Benin
UNIVERSITY OF ABOMEY-CALAVI (UAC)

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OPENING CEREMONY

27.02.2021

Porto-Novo Local Time: 08:30–09:00

Ankara Local Time: 10:30–11:00

Dr. Mustafa LATIF EMEK

President & Founder of the
Institute of Economic Development and Social Researches (IKSAD)

~Welcoming Speech~

Prof. AVLESSI Félicien

Vice Rector in charge of Academic Research
University of Abomey-Calavi, Benin Republic

~Opening Speech~

Dr. Franck AMOUSSOU

Head of conference
University of Abomey-Calavi, Benin Republic

27.02.2021 | SESSION-1 | HALL-1

Porto-Novo Local Time: 09:^{00}–11:^{30}

Ankara Local Time: 11:^{00}–13:^{30}

MODERATOR: Dr. Franck AMOUSSOU / Dr. Crisanto E. Avila

Authors	Affiliation	Presentation title
Dr. Crisanto E. Avila	*University of the Philippines Open University, Philippines*	DIGITAL INEQUITY SURVEY TO THE TEACHERS OF ST. ALOYSIUS ACADEMY OF DASMARIÑAS: A BASIS FOR DIGITAL TRUST AND INTUITION
Assoc. Prof. Dr. Esma Buluş Kırıkkaya **Özlem LAÇİN**	*Kocaeli University, Turkey* *The Ministry Of Education, Turkey*	VIEWS OF TEACHERS, STUDENTS AND PARENTS ABOUT ONLINE EDUCATION DURING COVID 19 OUTBREAK: THE CASE OF KOCAELİ
Enes Abdurrahman BİLGİN	*Van Yuzuncu Yil University, Turkey*	An Offline Drill And Practice Software Template Design that can be Used in The Classroom
Hanife Atlı **Semra Benzer**	*Gazi University*	THE EFFECT OF THE ACTIVITY-BASED TRAINING APPROACH ON STUDENT SCIENCE COURSE ATTITUDES
Dr. Crisanto E. Avila	*University of the Philippines Open University, Philippines*	Language Barrier as a Factor Affecting the Perception of Science Information and the Proposed Solutions
Abdellatif El Aidi	*Sidi Mohamed Ben Abdellah University, Fez, Morocco*	A NEW LOOK AT FRENCH LITERARY REPRESENTATIONS OF MOROCCO
Assist. Prof. Dr. Gizem KÖŞKER	*Anadolu University, Turkey*	SOCIETY AND LANGUAGE IN BALZAC ROMANS
Edouard L. K. Koba	*Abomey-Calavi, Abomey-Calavi, Benin*	A SCRUTINY OF THE NEW NORMAL THROUGH A CRITICAL DISCOURSE ANALYSIS OF PRESIDENT NANA ADDO DANKWA AKUFO-ADDO'S COVID-19 MANAGEMENT ADDRESSES
Franck AMOUSSOU **Nassourou IMOROU**	*Abomey-Calavi, Abomey-Calavi, Benin*	Language as Action: A Discourse-Stylistic Analysis of Mood Features in Michelle Obama's Final Speech
Kombieni Didier **Nathalie J. A. Aguessy** **Comlan Charles Antoine Agbessi**	*Université de Parakou, FLASH, Parakou, Benin* *Abomey-Calavi, Abomey-Calavi, Benin*	RE-READING ALICE WALKER'S COLOR PURPLE FROM TWO PERSPECTIVES: VICTIMIZATION - OBJECTIFICATION OF AFRICAN AMERICAN WOMEN AND SELF-ASSERTION

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

27.02.2021 | SESSION-1 | HALL-2

Porto-Novo Local Time: 09:^{00}–11:^{30}

Ankara Local Time: 11:^{00}–13:^{30}

MODERATOR: Assoc. Prof. Dr. Nilgun ULUTASDEMIR

Authors	Affiliation	Presentation title
MD. Volkan Erdoğu **Prof. Muzaffer Metin**	*Eğitim ve Araştırma Hastanesi Zeytinburnu/İstanbul*	PROGNOSTIC FACTORS IN CHEST WALL TUMORS RETROSPECTIVE EVALUATION OF 96 CASES
Emine Gülçeri GÜLEÇ PEKER	*Giresun University, Turkey*	EFFECT OF N-ACETYLCYSTEINE ON LIPID PROFILE IN STZ-INDUCED DIABETIC RATS
Nilgun ULUTASDEMIR	*Gümüşhane University, Turkey*	PSYCHOLOGICAL TRACES OF THE CORONAVIRUS
Sevda UZUN **Nursen ULAKAC** **Nilgun ULUTASDEMIR**	*Gümüşhane University, Turkey*	VIEWS OF NURSING STUDENTS ON SURGICAL CONSULTATION AND LIEZONE NURSING: A QUALITATIVE STUDY
Lect. Sümeyra Mihrap İLTER **Prof. Dr. Özlem OVAYOLU**	*Kahramanmaraş Sütçü Imam University, Kahramanmaraş/ TURKEY* *Gaziantep University, Gaziantep/Turkey*	AROMATHERAPY AND FATIGUE
Lect. Sümeyra Mihrap İLTER **Prof. Dr. Özlem OVAYOLU**	*Kahramanmaraş Sütçü Imam University, Kahramanmaraş/ TURKEY* *Gaziantep University, Gaziantep/Turkey*	PAIN AND MANAGEMENT IN HEMODIALYSIS PATIENTS
Res. Assist. Meltem Sungur **Prof. Özlem Ovayolu**	*Kilis 7 December University, Turkey* *Gaziantep University, Turkey*	ACUPRESSURE AND NURSING
Res. Assist. Meltem Sungur **Prof. Dr. Nimet OVAYOLU** **Prof. Dr. Özlem Ovayolu** **Nurse Esra DİŞLİ**	*Kilis 7 December University* *Gaziantep University, Turkey* *Çıksorut family health center, Turkey*	SLEEP QUALITY OF NURSES WORKING IN A HOSPITAL DURING THE FIGHT AGAINST CORONAVIRUS
Sülay Atlas Mengü **Doç. Dr. Gülfer Bektaş**	*Acıbadem University, Turkey*	THE REASONS WHY EMPLOYEES LEAVE THEIR JOBS FROM A HUMAN RESOURCE MANAGEMENT POINT OF VIEW: AN EXAMPLE FROM A PRIVATE HEALTH CARE GROUP
Assist. Prof. Hüseyin Fatih SEZER	*Kocaeli University, Turkey*	THE IMPACT OF PARENTAL EDUCATION LEVEL ON THE OCCURRENCE OF CHILDHOOD FOREIGN BODY ASPIRATIONS
Nuran Yavaşgül Kütükçü **Assoc. Prof. Dr. Gülfer Bektaş**	*Acıbadem University*	EVALUATION OF COMPETENCE APPLICATION IN TERMS OF TALENT MANAGEMENT: AN EXAMPLE OF A SPECIAL HEALTH GROUP

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

27.02.2021 | SESSION-1 | HALL-3

Porto-Novo Local Time: 09:^{00}–11:^{30}

Ankara Local Time: 11:^{00}–13:^{30}

MODERATOR: Assoc. Prof. Dr. Mustafa Hatipler

Authors	Affiliation	Presentation title
Basem Mahmud	*University of Granada, Granada, Spain*	Asylum seekers' emotional management
Basem Mahmud	*University of Granada, Granada, Spain*	Refugees' subjective well-being
Murat Kurt	*Kutahya Dumlupinar University, Turkey*	PROTECTION OF PERSONAL DATA UNDER THE LAW ON PERSONAL DATA PROTECTION AND THE TURKISH CRIMINAL LAW NO.5237
Assoc. Prof. Dr. Mustafa Hatipler **Dr. Nilgün Köksalan**	*Trakya University, Turkey*	AN EVALUATION OF CONSUMER BOYCOTTS IN THE CONTEXT OF ANTI-CONSUMPTION
Doç. Dr. Mustafa Hatipler **Zeynep Şengül**	*Trakya University, Turkey*	INCOME DISTRIBUTION INEQUALITY AND SOCIAL EXCLUSION
Assoc. Prof. Seda Topgul	*Akdeniz University, Turkey*	THE RIGHT TO DISCONNECT OF WOMEN WHO WORK IN PERSPECTIVE RESPECT FOR WORK FAMILY LIFE BALANCE
Burak INCE	*Yıldırım Beyazıt University, Turkey*	Globalization as Reverse Colonisation
Ugur Selcuk Aslan **Neslihan Aslan**	*Kocaeli University, Turkey* *Gendarmerie General Command, Financial Services Presidency, Ankara, Turkey*	EUROPEAN UNION and MIGRATION POLICIES
Ass. Prof. Mehmet Hişyar Korkusuz	*İnönü University, Malatya, Turkey*	REVIEWING THE NATIONAL PACT AND TURKEY'S POSITION IN THE MIDDLE EAST IN THE CONTEXT OF ALİ EMİRİ EFENDİ'S APPROACH
Ayşe Şahin Tutak **Ercan Çil**	*Adıyaman University, Adıyaman, Turkey*	INVESTIGATION OF MORTALITY RATES ACCORDING TO LIPID LEVELS OF PATIENTS ADMITTED TO THE INTERNAL INTENSIVE CARE UNIT
Assoc. Prof. Dr. Ali Fuat Gökçe	*Gaziantep University, Gaziantep/Turkey*	THE RELATION OF IMPERIALISM-TERRORISM: MOZAMBIQUE CASE

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27.02.2021 | SESSION-1 | HALL-4

Porto-Novo Local Time: 09:^{00}–11:^{30}

Ankara Local Time: 11:^{00}–13:^{30}

MODERATOR: Res. Assist. Sibel SERÇE

Authors	Affiliation	Presentation title
Alidah ANIAMBOSSOU Victorien DOUGNON Jerrold AGBANKPE Hornel KOUDOKPON Boris LEGBA Esther DEGUENON Kafayath FABIYI Phénix ASSOGBA Edna HOUNSA	*Unversity of Abomey-Calavi, Benin*	EVALUATION OF THE SYNERGISTIC EFFECT OF THE ANTIMICROBIAL ACTIVITIES OF EXTRACTS OF Uvaria chamae (ANNONACEAE) AND LACTOBACILLI ON Salmonella spp.
OHOUKO Okri Fréjus Hans KOUDOUVO Koffi NOUDEKE Nestor SOHA Arnaud ADOUKO Jacques DOUGNON Victorien AGBONON Amegnona GBEASSOR Messanvi	*Unversity of Abomey-Calavi, Benin*	EPIDEMIOLOGY OF AFRICAN SWINE FEVER VIRUS IN BENIN (2014-2018), VIROPREVALENCE, RISK FACTOR OF DISEASE EMERGENCE IN SOUTH OF BENIN AND PERSPECTIVES FOR ITS MANAGEMENT
Serdar Yaşar Ece Yiğit	*Istanbul Medipol University, Turkey*	A RARE CAUSE OF RHABDOMYOLYSIS; EBSTEIN BARR VIRUS INFECTION
Mukadder Mollaoğlu Esra Başer	*Sivas Cumhuriyet University, Turkey*	HUMAN AND ENVIRONMENT INTERACTION IN SUSTAINING HEALTH
Mukadder Mollaoğlu Esra Başer	*Sivas Cumhuriyet University, Turkey*	CARE OF HEMODIALYSIS PATIENTS ACCORDING TO THE NEUMAN SYSTEM MODEL
Kübra Taşkın	*University of Health Sciences, Turkey*	POSTOPERATIVE RESIDUAL CURARIZATION IN POSTANESTHESIA CARE UNIT: CASE REPORT
Selva Ezgi AŞKAR Özlem OVAYOLU	*Mustafa Kemal University, Turkey* *Gaziantep University, Turkey*	NURSING APPROACHES IN PATIENTS WITH HEART FAILURE IN COVID-19 PANDEMIC
Öznur AKDUMAN Ayşe Handan DÖKMECİ	*Tekirdag Namık Kemal University, Turkey*	CASCADE DISASTERS AND THE COVID-19 PANDEMIC PERIOD
Res. Assist. Sibel SERÇE Prof. Dr. Özlem OVAYOLU Prof. Dr. Nimet OVAYOLU	*SANKO University, Turkey* *Gaziantep University, Turkey*	THE CORRELATION BETWEEN THOUGHTS AND ANXIETY LEVELS OF THE NURSING STUDENTS ABOUT COVID-19
Res. Assist. Sibel SERÇE Prof. Dr. Özlem OVAYOLU	*Gaziantep University, Turkey* *SANKO University, Turkey*	THE USE OF WEARABLE TECHNOLOGIES IN CHRONIC DISEASES
Ozlem Gok Seda Beyaz Gozde Parlak Muhammed Ismail Can	*Firat University, Turkey*	THE EFFECT OF ROYAL JELLY ON THE EXPRESSION OF SOME APOPTOTIC PROTEIN MARKERS

Abdullah Aslan		

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27.02.2021 | SESSION-2 | HALL-1

Porto-Novo Local Time: 12:^{00}–14:^{30}

Ankara Local Time: 14:^{00}–16:^{30}

MODERATOR: Prof. Dr. Halil KUMBUR

Authors	Affiliation	Presentation title
Taha Yasin EKEN **Cihan KABOGLU**	*Bursa Technical University, Turkey*	UNDERSTANDING OF EFFECTS OF GEOMETRY ON GLASS FIBER EPOXY COMPOSITE UNDER THREE POINT BENDING LOADING
Habibe Elif GÜLŞEN AKBAY **Prof. Dr. Halil KUMBUR**	*Mersin University, Mersin, Turkey*	ELECTRO-OXIDATION AND FENTON PRE-TREATMENT OF FRUIT WASTE AND SEWAGE SLUDGE MIXTURE BEFORE THE ANAEROBIC FERMENTATION PROCESS TO INCREASE THE SOLUBLE ORGANIC MATTER RATIOS
BLENON Enock Arcadius **Dr. (MC) EZIN Ishola Vincent** **Prof. AHANCHEDE Adam**	*University of Abomey-calavi (UAC)*	Production systems and endogenous knowledges of tiger nuts (Cyperus sculentus L.) in the district of Tanguieta
Arzu Çağlar **Hakan Çağlar** **Adem Ahıskalı**	*Kırşehir Ahi Evran University, Turkey* *Kastamonu University, Turkey*	THE EFFECT OF RICE HUSK ASH ADDITIVE ON THE WATER ABSORPTION AND COMPRESSIVE STRENGTH OF THE BLEND BRICK
Arzu Çağlar **Hakan Çağlar** **Selçuk Çimen**	*Kırşehir Ahi Evran University, Turkey* *Bayburt University, Turkey*	INVESTIGATION OF THE EFFECT ON THE BULK DENSITY AND POROSITY VALUES OF BLEND BRICK OF RICE HUSK ASH
BOKO Nouvêwa Patrice Maximilien	*Abomey-Calavi, Abomey-Calavi, Benin*	PLACE DU CLIMAT DANS LE CHOIX DES TOURISTES EN DESTINATIONS DE LA CITE HISTORIQUE D'ABOMEY AU BENIN
Merve Arman **Emre Burcu Özkaraova**	*Ondokuz Mayis University, Turkey*	COST-EFFECTIVE INTERVENTIONS AT ABANDONED MINING SITES FOR GROUNDWATER PROTECTION
Menşue Erişgin **Emre Burcu Özkaraova**	*Ondokuz Mayis University, Turkey*	REMEDIATION AT POINT SOURCE CONTAMINATED SITES WITH BARRIER SYSTEMS
Yusuf KEPIR **Alper GUNOZ** **Memduh KARA**	*Mersin University, Turkey*	THE EFFECT OF STACKING SEQUENCE ON THE MECHANICAL BEHAVIOR OF HYBRID COMPOSITE PIPES
Yusuf KEPIR **Alper GUNOZ** **Memduh KARA**	*Mersin University, Turkey*	THE EFFECT OF INTERNAL PRESSURE ON THE LOW VELOCITY IMPACT BEHAVIOR OF COMPOSITE PIPES
Mehmet Ümit İRVASA **Mustafa Bahadır ÖZDEMİR**	*Gazi University, Turkey*	USING SOLAR ASSISTED ABSORPTION COOLING SYSTEM IN THE TELECOMUNICATION BASE STATION COOLING ANKARA PROVINCE APPLICATION
Talahatou TABOU **Guy WOKOU** **Soufouyane ZAKARI** **Ibouraïma YABI**	*Abomey-Calavi, Abomey-Calavi, Benin*	MODELISATION DE LA VULNERABILITE DES AIRES DE PATURAGE AUX RISQUES D'INONDATIONS PLUVIALES ET FLUVIALES DANS L'EXTREME-NORD DU BENIN
Assoc. Prof. Sevda KOÇ AKRAN	*Siirt University, Siirt, Turkey*	4C SKILLS IN THE 21st CENTURY ACCORDING TO TEACHER CANDIDATES

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27.02.2021 | SESSION-2 | HALL-2

Porto-Novo Local Time: 12:^{00}–14:^{30}

Ankara Local Time: 14:^{00}–16:^{30}

MODERATOR: Prof. Dr. Ir. Adam AHANCHEDE

Authors	Affiliation	Presentation title
Faiqah Afifah Binti Joannes **Nurul Hidayah Binti Mahirin**	*Keningau Vocational College, Malaysia*	THE POTENTIAL OF CANISTEL, A RARE TROPICAL FRUIT AS THE MAIN INGREDIENT IN ICE-CREAM
Res. Asst. Ulrich H. GBEMENOU **Dr. Vincent Ishola EZIN** **Prof. Dr. Ir. Adam AHANCHEDE**	*University of Abomey-Calavi, Benin Republic*	ETHNOBOTANICAL STUDY OF PUMPKIN (CUCURBITA MOSCHATA DUCHESNE) AND WINTER SQUASH (CUCURBITA MAXIMAL DUCHESNE) LANDRACES IN BENIN
Espérance Zossou **Kazuki Saito** **Alidou Assouma-Imorou** **Kokou Ahouanton** **Bitrus Dawi Tarfa**	*University of Abomey-Calavi, Benin Republic* *Ahmadu Bello University Zaria, Nigeria*	Towards disruptive agricultural innovation process in West Africa: lessons learnt when strengthening multi-stakeholder engagements in the scaling of RiceAdvice in northern Nigeria
Dr. Ayça AKÇA UÇKUN	*Olive Research Institute, İzmir, Turkey*	INVESTIGATION OF THE IMPACT OF CLIMATE CHANGE ON OLIVES WITH HOLISTIC APPROACHES
Dr. Ayça AKÇA UÇKUN	*Olive Research Institute, İzmir, Turkey*	THE USE OF INTERCROPPING SYSTEM AND EXAMINATION OF THE OLIVE INTERCROPPING AGRICULTURE
Wassiou Worou AHANCHEDE **Dr. (MC) Vincent Ishola EZIN** **Prof. Dr. Ir. Adam AHANCHEDE**	*University of Abomey-Calavi, Benin Republic*	Assessment of rice varieties tolerant to heat stress in Benin
Assist. Prof. Dr. Hülya Saygı	*Çukurova University, Turkey*	THE EFFECTS OF SOME ORGANOMINERAL FERTILIZERS WITH COMPOST CONTENT ON VEGETATIVE DEVELOPMENT AND FRUIT QUALITY OF PLANTS IN STRAWBERRY GROWING IN THE GREENHOUSE
Soha Sas **Dotché Ignace** **Achadé Germain** **Youssao Abdou Karim Issaka** **Farougou Souhaïbou** **Kpodékon Marc**	*University of Abomey-Calavi, Abomey-Calavi, Republic of Bénin*	PREVALENCE OF CATTLE TRYPANOSOMOSIS IN SLAUGHTERHOUSES AND FARMS IN BENIN
Ayandiji A. **Afolabi C.O.** **Oluranti D.E**	*Iwo, Osun State, Nigeria*	Assessment of Farmers willingness to Pay for Extension Services on Livestock Production in Lagos State
Jacob Matovu **Ahmet Alçiçek**	*Ege University, Turkey*	EFFECT OF FEEDING CASSAVA ON GROWTH PERFORMANCE OF GOATS IN AFRICA: A SYSTEMATIC REVIEW AND A META-ANALYSIS
Assoc. Prof. Duran Yavuz **Dr. Nurcan Yavuz**	*Selcuk University, Turkey*	CAN AGRICULTURAL DROUGHT BE PREVENTED OR IS IT THE INEVITABLE END?
Semih AÇIKBAŞ **Mehmet Arif ÖZYAZICI**	*Siirt University, Siirt, Turkey*	THE EFFECTS OF SILICON PRIMING APPLICATION ON GERMINATION IN COMMON GRASSPEA (Lathyrus sativus L.)

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

27.02.2021 | SESSION-2 | HALL-3

Porto-Novo Local Time: 12:^{00}–14:^{30}

Ankara Local Time: 14:^{00}–16:^{30}

MODERATOR: Alain I. AGUE

Authors	Affiliation	Presentation title
Mustafa CERITOGLU **Murat ERMAN**	*Siirt University, Siirt, Turkey*	EFFECT OF SILICON PRIMING TREATMENTS ON GERMINATION AND SOME AGRONOMIC TRAITS IN LENTIL
Hatice PARLAKÇI DOĞAN **Mustafa Hakkı AYDOĞDU**	*Harran Universty, Turkey*	EVALUATION OF COTTON PRODUCTION IN TERMS OF ECONOMIC PARAMETERS: GAP-ŞANLIURFA SAMPLING
Büşra Nur Türkeri **Assoc. Prof. Dr. Ayşe Handan Dökmeci**	*Tekirdag Namık Kemal University, Tekirdag, Turkey*	CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR (CBRN) EVENTS CAUSED BY CLIMATE CHANGE
Alain I. AGUE **Cyr Gervais ETENE** **Somiyabalo PILABINA** **Ibouraïma YABI**	*University of Abomey-Calavi, Benin Republic*	CLIMATE CHANGE AND RISKS OF RAINFULL EROSIVITY IN THE AGRICULTURAL DEVELOPMENT POLE OF ALIBORI SUD-BORGOU NORD-2KP (NORTH BENIN / WEST AFRICA)
Salifou Chakirath Folakè Arikè **Boukari Adamou Djamiou** **Konsaka Bernadette Mahikiwè** **Youssao Abdou Karim Issaka**	*University of Abomey-Calavi, Benin Republic*	ETAT DES LIEUX DES INITIATIVES ALIMENTAIRES AXEES SUR LA PROMOTION DES PRODUITS LOCAUX DANS LES DEPARTEMENTS DE L'ATLANTIQUE ET DU LITTORAL AU BENIN
KASSIM BAKAR **T. ÜSTÜNER**	*Selçuk University, Turkey* *Institut National de recherche pour l'Agriculture, Union des Comores*	DIVERSITY AND HOST PLANTS OF TEPHRITIDAE FROM TWO ISLANDS OF THE COMORO ARCHIPELAGO (GRANDE-COMORE AND MOHÉLI)
Yousif Ghulam **Assoc. Prof. Dr. Remziye Aysun Kepekçi**	*Gaziantep University, Turkey*	ANTIOXIDANT ACTIVITIES OF THE EXTRACTS OF WALNUT HULL PREPARED IN DIFFERENT SOLVENTS
Wanignissa Rose KOBTA **Ibouraïma YABI** **Aboubakar KISSIRA**	*Abomey-Calavi, Abomey-Calavi, Benin*	DETERMINANTS DE L'UTILISATION DES INTRANTS CHIMIQUES PAR LES AGRICULTEURS DANS LES COMMUNES DE KEROU ET DE PEHUNCO, NORD-OUEST DU BENIN
André KINDJINOU **Hervé KOUMASSI** **Barnabé HOUNKANRIN** **Ibouraïma YABI**	*Abomey-Calavi, Abomey-Calavi, Benin*	Spatial distribution of rainfall amounts and its impact on food production in the second agricultural development pole in northern Benin
Yabi Olladékpo ADEYANDJOU **Biaou O. Evariste ADEOTI** **Ibouraïma YABI**	*Abomey-Calavi, Abomey-Calavi, Benin*	Environmental and health risks related to the use of chemicals in the EXPLOITATION of the shallows in the municipalities of Save and OUESSE in the Department of hills in BENIN

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27.02.2021 | SESSION-2 | HALL-4

Porto-Novo Local Time: 12:^{00}–14:^{30}

Ankara Local Time: 14:^{00}–16:^{30}

MODERATOR: Özlem Ovayolu

Authors	Affiliation	Presentation title
Aydın Kaleoğlu **Ümit Gençtürk** **Ersan Ay** **Ubeydullah Demir** **Recep Gündoğan**	*Pakten Sağlık Ürünleri A.Ş, Turkey*	INDUSTRY 4.0 APPROACH IN THE DOSING SYSTEM OF WET WIPES MACHINES
Onur Çetinkaya **Özlem Ovayolu**	*Osmaniye Korkut Ata University, Turket* *Gaziantep University, Turkey*	ABDOMINAL MASSAGE IN CONSTIPATION MANAGEMENT IN THE ELDERLY
Zeynep YILMAZ **Mehmet SAĞLAM**	*Inönü University, Turkey*	EXAMINATION OF STUDIES ON FATHER INFANT ATTACHMENT
Zeliha KARACA **A. Handan DÖKMECİ**	*Tekirdağ Namık Kemal University, Turkey*	HEALTH AND ENVIRONMENTAL EFFECTS OF ACCIDENTAL CBRN (CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR) MATERIAL EMISSION
Mukadder Mollaoğlu **Safiye Yanmış**	*Sivas Cumhuriyet University, Turkey* *Erzincan Binali Yıldırım University, Turkey*	THE IMPORTANCE OF HEALTH IMPROVEMENT IN PREVENTING CHRONIC DISEASES
Mukadder Mollaoğlu **Safiye Yanmış**	*Sivas Cumhuriyet University, Turkey* *Erzincan Binali Yıldırım University, Turkey*	THE IMPORTANCE OF YOGA FOR SYMPTOM MANAGEMENT OF CANCER PATIENTS
Hatice GÜZEL **Özlem OVAYOLU**	*SANKO University, Turkey* *Gaziantep University, Turkey*	THE EFFECT OF REFLEXOLOGY ON TORRY IN THE END OF THE KIDNEY FAILURE
Petar Stamov **Sylvia Stamova**	*Medical University-Varna, Bulgaria*	THE USE OF POSTOPERATIVE ANTIBIOTICS AFTER APPENDECTOMY
SANI INUSA MILALA **SADIQ ABBAS** **DR. BALA ISHIYAKU**	*Abubakar Tafawa Balewa University, Nigeria*	The Residential Rent Differentials between Town Centres and Peri-Urban In Bauchi

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27.02.2021 | SESSION-3 | HALL-1

Porto-Novo Local Time: 15:^{00}–17:^{30}

Ankara Local Time: 17:^{00}–19:^{30}

MODERATOR: Assist. Prof. Dr. Seval ELDEN ÜRGÜP

Authors	Affiliation	Presentation title
Dr. Eylem Çakmaz	*Erciyes University, Turkey*	AS PART OF THE EUROPEAN CHARTER OF LOCAL SELF-GOVERNMENT FISCAL EQUALIZATION, POWER OF THE PURSE AND SITUATION IN TURKEY
Assist. Prof. Dr. Seval ELDEN ÜRGÜP	*Sivas Cumhuriyet University, Turkey*	DEVELOPMENT OF AUDIT AND AN APPLICATION SPECIFICALLY CURRENT ASSETS WITHIN THE FRAMEWORK OF THE NEW TURKISH COMMERCIAL LAW
Ümit GÜLLÜOĞLU **Asst. Prof. Murat YORULMAZ**	*Kocaeli University, Turkey*	EXAMINATION OF FIRE PREVENTION AND COMBAT MANAGEMENT AND ORGANIZATION IN SHIPS
Assist. Prof. Dr. İbrahim Halil GÜZEL	*Siirt University, Turkey*	EVALUATION OF PRESIDENTIAL OF GOVERNMENT IN THE CONTEXT OF NEW PUBLIC ADMINISTRATION
Adnan Celik **Beyza Nur Bulburu** **Medine Ciftci**	*Selcuk University, Turkey*	Effective Time Management in Business: A General Evaluation in Terms of Company Scales
Adnan Celik **Omer Faruk Diken** **Esra Uysal**	*Selcuk University, Turkey*	Effects of Thomas Cook's Bankruptcy on Turkish Tourism
Adnan Celik	*Selcuk University, Turkey*	The Place and Importance of Business Model in Institutionalization of Businesses
Adnan Celik	*Selcuk University, Turkey*	How the Small and Medium Sized Enterprises (SMEs) Develop a Country?
Yakup POLAT **Ayşe Handan DÖKMECİ**	*Tekirdağ Namık Kemal Üniversitesi, Tekirdağ, TÜRKİYE*	ENVIRONMENTAL EFFECTS OF CHEMICAL BIOLOGICAL RADIOLOGICAL AND NUCLEAR AGENTS CAUSED BY NATURAL DISASTERS
IBRAHIM ALI MA'AJI **SANI INUSA MILALA**	*Transmission Company of Nigeria* *Abubakar Tafawa Balewa University Bauchi, Bauchi state Nigeria*	COOPERATE SOCIAL RESPONSIBILITY OF WOMEN AS PART OF STRATEGIC BUSINESS MANAGEMENT
Ayodele Adebayo Allagbé **Yacoubou Alou** **Ibrahim Sanusi Chinade**	*Université de Zinder, Niger* *Federal University Dutse, Nigeria*	A Feminist Critical Discourse Analysis of the Tropes of (Sexually) Objectified or/and Oppressed Men in Selected Contemporary African Prose Works
Abdulgaffar Muhammad **Abbas Hamisu** **Umar Hamisu** **Zainab Sani Sambo**	*National Open University of Nigeria. Nigeria* *Federal College of Education Zaria, Nigeria* *Nigerian Institute of Transport Technology*	INFLUENCE OF EMPLOYEES PARTICIPATION ON MANAGERIAL DECISION FOR ORGANIZATIONAL PERFORMANCE

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27.02.2021 | SESSION-3 | HALL-2

Porto-Novo Local Time: 15:^{00}–17:^{30}

Ankara Local Time: 17:^{00}–19:^{30}

MODERATOR: Prof. OUATTARA Nahoua Issa

Authors	Affiliation	Presentation title
Prucelle Elisée ZOHOUN David M. BALOUBI Emilia M. AZALOU-TINGBE Ibouraïma YABI	*Abomey-Calavi, Abomey-Calavi, Benin*	CARACTERISATION DES SERVICES ECOSYSTEMIQUES RENDUS PAR LES ARBRES AUX POPULATIONS DANS LA VILLE DE PARAKOU AU CENTRE-BENIN
Luc Ogousinya BIAOU CHABI Toussaint VIGNINOU	*Abomey-Calavi, Abomey-Calavi, Benin*	ATOUTS ET CONSEQUENCES DE L'OCCUPATION DE L'ESPACE EN MILIEU PERIURBAIN DANS LA COMMUNE D'ABOMEY CALAVI
Valéry Iragi Ntwali Bienvenu Mulindwa	*Université de Szeged/Hongrie*	OHADA CRIMINAL BUSINESS LAW AND ITS EFFECTIVENESS IN DEMOCRATIC REPUBLIC OF CONGO: AN EVALUATION OF THE CRIMINAL ACTION OF THE BUKAVU COMMERCIAL COURT
Prof. OUATTARA Nahoua Issa BERTE Siaka KAMAGATE Bakagnan	*Université Félix HOUPHOUET-BOIGNY, Abidjan, (Côte d'Ivoire)*	CRITÈRES D'OCCUPATION DES BAMBOUS-PIÈGES PAR LES MÂCHOIRONS DU GENRE CHRYSICHTHYS BLEEKER, 1858 POUR LEUR REPRODUCTION DANS LA LAGUNE AGHIEN (CÔTE D'IVOIRE)
Faras ISSIAKO Christian AKOWANOU Macaire AGBOMAHENAN Gérard DEGAN	*Abomey-Calavi, Abomey-Calavi, Benin*	Effets de l'Anisotropie Hydrodynamique et du Champ Magnétique sur la Convection Thermosolutale dans une cavité poreuse
KONAN Yao Aristide MONNEY Attoube Ida KAMELAN Tanoh Marius KONE Inza Koné Tidiani	*Université Félix Houphouët-Boigny, Côte d'Ivoire*	Seasonal variation in fish species diversity of a tropical wetland : The Tanoe-Ehy swamp forest (South-Eastern Côte d'Ivoire)
BADJI Kpatchine Tinimbé	*Université de Szeged, Hongrie*	LA CRISE DU MODELE POLITIQUE DANS L'ETAT EN AFRIQUE OCCIDENTALE FRANCOPHONE
Abdulhadi Masoud Alsanousi Aljadi Mohammed Nusari	*My Lincoln University College*	THE ROLE OF TOTAL QUALITY MANAGEMENT IN IMPROVING THE PERFORMANCE OF HUMAN RESOURCES
Manotar Tampubolon	*Christian University of Indonesia, Universiti Teknologi MARA (UiTM) Malaysia*	HUMAN SLAVERY DURING THE DUTCH COLONIAL PERIOD: INDONESIA AND SOUTH AFRICA EXPERIENCE
Hamza Khaliha Ibrahim M Bendalla Abdulfatah Saed Samira Daw Abdulhadi Masoud Alsanousi Aljadi	*Higher Institute of Medical Technology, Malaysia*	CHLOROQUINE AND HYDROXYCHLOROQUINE: CURRENT EVIDENCE FOR THEIR EFFECTIVENESS IN TREATING COVID-19
Kamelan Tanoh Marius Koné Touplé Sibiri Yao Koffi Marcellin Kouamelan Essetchi Paul	*University Felix Houphouët-Boigny*	IMPACT OF ANTHROPOGENIC ACTIVITIES ON FISH FAUNA OF THE BANDAMA RIVER ESTUARY (CÔTE D'IVOIRE)

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27.02.2021 | SESSION-3 | HALL-3

Porto-Novo Local Time: 15:^{00}–17:^{30}

Ankara Local Time: 17:^{00}–19:^{30}

MODERATOR: KALUMUNA BASIMANE Steeve

Authors	Affiliation	Presentation title
Narjes Aouani **Fatma Al Hadj Ibrahim**	*Taif University, KSA* *Al-Neelain University, KSA*	THE EFFECT OF A DOUBLE SUBSTITUTION ON THE STRUCTURAL PROPERTIES OF THE NiMn 2 O 4 SPINEL
Checkfaith I. Aizebeoje **Dr. Temitope O. Lawal** **Prof. Bolanle A. Adeniyi**	*University of Ibadan, Nigeria*	ANTIBACTERIAL ACTIVITIES OF LACTIC ACID BACTERIA ON POTENTIAL MULTIDRUG- RESISTANT PATHOGENS ISOLATED FROM RABBIT
Marwa Enneffati **Mohammed Rasheed** **Bassem Louati** **Kamel Guidara** **Régis Barillé**	*Taif University, Saudi Arabia* *University of Technology, Baghdad, Iraq* *University of Sfax, Sfax-Tunisia* *Angers University, Angers, France*	NOVEL Sm +3 ACTIVATED NaCdPO4 PHOSPHORS FOR RED EMITTING MATERIAL
Tehmina iqbal **Dr. Assad Farooq** **Zafar iqbal**	*UNIVERSITY OF AGRICULTURE FAISALABAD, PAKISTAN*	Investigating the influence of crease resistant finishing of cotton fabric on its color shades and other physical properties
Mosbah Jemmali **Marwa Saidi** **Siwar Walha** **Lotfi Bessais**	*University of Sfax, Sfax, Tunisia* *Qassim University, Saudi Arabia* *Univ Paris Est Creteil, Thiais, France*	PHASE RELATIONSHIPS IN THE Gd-Fe-Cr TERNARY SYSTEM AT 1073K
Ishola V. Esan **OluwafemiOyeniyi Omilan**	*Bowen University, Iwo, Nigeria* *Oregon State University, USA*	Genetic advance, heterosis and heritability estimation in maize hybrids, Iwo, Nigeria
Redouane Haounati **Hassan Ouachtak** **Diogo M. F. Santos** **Abdelaziz AIT ADDI**	*Ibn Zohr University, Agadir, Morocco* *Universidade de Lisboa, 1049-001 Lisbon, Portugal*	Construction of a novel Z-scheme F/AP@Sep nanocomposite heterojunction with a superb enhanced visible-light photocatalytic activity toward hazardous dye
KALUMUNA BASIMANE Steeve	*l'Université Catholique de Bukavu(UCB) en République Démocratique du Congo*	Le régime congolais de propriété foncière : un mal développement pour le peuple congolais ?
Muhammed Trawally **Maciej Dawidowski**	*Istanbul University, Turkey* *Medical University of Warsaw, Poland*	SYNTHESIS OF NOVEL 2,5-DIKETOPIPERAZINE AND 2,6-DIKETOPIPERAZINE DERIVATIVES DEPLOYING AN INTRAMOLECULAR C-N CYCLIZATION METHOD AND A MULTICOMPONENT UGI FIVE-CENTER, FOUR-COMPONENT REACTION
Muhammed Trawally **Kübra Demir-Yazıcı** **Özlen Güzel-Akdemir** **Atilla Akdemir**	*Istanbul University, Turkey* *Bezmialem Vakif University, Turkey*	NOVEL THIOSEMICARBAZONES-BASED BENZENESULFONAMIDE hCAII INHIBITORS: SYNTHESIS, BIOLOGICAL EVALUATION AND DOCKING STUDIES

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27.02.2021 | SESSION-3 | HALL-4

Porto-Novo Local Time: 15:^{00}–17:^{30}

Ankara Local Time: 17:^{00}–19:^{30}

MODERATOR: Abdulgaffar Muhammad

Authors	Affiliation	Presentation title
SANI INUSA MILALA **DR. BALA ISHIYAKU** **ADAMU ABDULLAHI**	*Abubakar Tafawa Balewa University, Nigeria*	The Problem and the Prospects of Management of Abubakar Tafawa Balewa Teaching Hospital's Staff Quarters
Emmanuel LAMPTEY	*University of Ibadan, Nigeria*	INNOVATIONS MADE IN AFRICA TO COMBAT THE COVID-19 PANDEMIC DURING THE EARLY PERIOD OF OUTBREAK
SANI INUSA MILALA **DR. BALA ISHIYAKU** **Shuaibu H Manga**	*Abubakar Tafawa Balewa University, Nigeria* *Estate Management Department Federal Polytechnic Mubi, Nigeria*	THE INFLUENCE OF TOURISM SERVICEABILITY ON TOURIST SATISFACTION CASE OF YANKARI GAMES RESERVE BAUCHI STATE NIGERIA
Abdulgaffar Muhammad **Abbas Hamisu** **Umar Hamisu** **Zainab Sani Sambo**	*National Open University of Nigeria. Nigeria* *Federal College of Education Zaria, Nigeria* *Nigerian Institute of Transport Technology*	A CROSS SECTIONAL ANALYSIS OF THE IMPACT OF THE ADOPTION OF TREASURY SINGLE ACCOUNT ON THE PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA: A COMPARATIVE
Said Oussou	*University of Moulay Ismail, Meknes, Morocco*	EXAMINING THE RELATIONSHIP BETWEEN EFL LEARNERS' LEVEL OF ICT USE AND THEIR LEVEL OF AUTONOMY
Abel Olusegun OGUNTUNJI **Foluke Abimbola ADEREMI** **LAWAL Tunde Ezekiel** **Olufemi Mobolaji ALABI** **Mathew Oluseyi AYOOLA** **Opeyemi Adetola OLADEJO**	*Bowen University, Iwo, Nigeria*	A PRELIMINARY INVESTIGATION OF 12-MONTH EGG PRODUCTION OF MALLARD DUCKS
Mohamed-Amine Chadi **Hajar Mousannif**	*Cadi Ayyad University, Marrakech, Morocco*	Making Sense of the Current Covid 19 Situation and Suggesting a tailored Release Strategy through Modeling And Simulation Case Study: Casablanca, Morocco
Adamou SIDDO **Yacouba GARBA**	*Université de Zinder, Niger*	Le ˝Ay ne há˝ entre promotion du vivre ensemble et la paix en Afrique
Nathalie DJIGUIMKOUDRE	*Université Joseph KI-ZERBO, Burkina Faso*	INDIRECT SPEECH ACTS IN FRENCH REQUESTS
ORISAREMI, ALPHONSUS SHIREKU	*UNIVERSITY OF IBADAN, NIGERIA*	THE EMERGING TRACKS OF THEATRE DESIGN AND TECHNOLOGY IN NIGERIA

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28.02.2021 | SESSION-1 | HALL-1

Porto-Novo Local Time: 10:^{00}–12:^{30}

Ankara Local Time: 12:^{00}–14:^{30}

MODERATOR: HAMOUTI Lahcen

Authors	Affiliation	Presentation title
HAMOUTI Lahcen **Prof. Dr. EL FARISSI Omar** **Prof. OUTEMSAA Omar** **Prof. Dr. HILALI Elmokkhtar**	*Université Ibn Zohr– Agadir - Moroc*	ARTIFICIAL MODEL CHARACTERIZING THE BENDING BEHAVIOR OF A 3D PRINTED PLA SAMPLE AND COMPARISON WITH THE EXPERIMENTAL MODEL
BAHANI Abderrahim **Prof. Dr ECH-CHHIBAT My El Houssine** **Prof. Dr. SAMRI Hassan** **AIT ELATAR Hicham**	*Université Hassan II– Casablanca - Maroc*	L'utilisation de l'approche neuro-floues pour la coopération des robots manipulateurs dans une application de manipulation d'un objet
Abrouki Younes **Anouzla Abdelkader** **Loukili Hayat**	*Mohammed V University in Rabat, Morocco*	FEUILLE DE ROUTE POUR LA PRODUCTION DES BIOCARBURANTS À PARTIR DES ALGUES DU SAHARA MAROCAINE
A. EL IDRISSI **Y. ESSAMLALI** **M. ZAHOUILY**	*University Hassan II, Casablanca, Morocco*	Carboxylated cellulose nanocrystals reinforced sodium alginate: Novel environmentally friendly superabsorbent hydrogels
Abdelouahed El gharrak **Younes Essamlali** **Mohamed Zahouily**	*Rabat Design, Morocco* *Université Hassan II, Morocco*	Bio-based polyurethane for coating controlled release fertilizers
NID-BELLA **Lahcen BAMMOU** **M'hammed BELKHAOUDA** **Rachid SALGHI**	*Ibn Zohr University, Agadir, Morocco*	Experimental and theoretical study of the corrosion inhibition of 3003 aluminum alloy in alkaline medium
A. Guerinik **F. Tayeboun**	*Djillali Liabes University of Sidi Bel Abbes, Algeria* *Djillali Liabes University of Sidi Bel Abbes, Algeria*	Sensitivity enhancement of a biosensor using surface plasmon resonance
R. Kasmi **M. Bouachrine** **A. Ouammou**	*Sidi Mohamed Ben Abdellah University, Fez, Morocco* *University Moulay Ismail, Meknes, Morocco*	Virtual screening by the establishment of 3D-QSAR models and molecular docking: Case of novel anti-cancer heterocyclic drugs, targeted for CDK2
Vincent EZIN **Gazali B. SANNI**	*University of Abomey-Calavi, Benin Republic*	ETHNOBOTANY AND VARIETAL DIVERSITY OF SESAMUM INDICUM L. IN NORTH-WEST BENIN

(All speakers required to be connected to the session 10 min before the session starts)

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28.02.2021 | SESSION-1 | HALL-2

Porto-Novo Local Time: 10:^{00}–12:^{30}

Ankara Local Time: 12:^{00}–14:^{30}

MODERATOR: Aziana Reine ZINSOU

Authors	Affiliation	Presentation title
Fadwa Largo Redouane Haounati Hassan Ouachtak Naima Hafid Abdelaziz Ait Addi	*Ibn Zohr University, Agadir, Morocco Centre Régional des Métiers de l'Education et de la Formation Souss Massa, Morocco*	Comparative study on the adsorption of cationic and anionic dyes on diatomite in single dye system
Esther Deguenon Victorien Dougnon Lamine Baba-Moussa Jacques Dougnon	*Abomey-Calavi, Abomey-Calavi, Benin*	Knowledge Status and Potential Impact of Socio-Economic Factors on the Spreading of COVID-19 in West African Countries
Dougnon Victorien Hounsa Edna Agbodjento Eric Fabiyi Kafayath	*Abomey-Calavi, Abomey-Calavi, Benin*	Toxicological and phhithchemical Characterization of ten Plants of the Beninese Flora Used in the Treatment of Diarreal Diseases in Traditional Medicine Beninese (West Africa)
Aziana Reine ZINSOU Fidéle Paul TCHOBO Adriano Jospin DJOSSOU Mazou MOAÏMINE	*Abomey-Calavi, Abomey-Calavi, Benin*	ETUDE SOCIO-ECONOMIQUE DE PRODUCTION DU «KOM » : PATE TRADICTIONNELLE FERMENTEE FABRIQUEE A BASE DE MAÏS AU BENIN
J.S. ADOUKO S. SYLLA ALADJI-BONI V.T. DOUGNON YOUSSAO ABDOU KARIM	*Abomey-Calavi, Abomey-Calavi, Benin*	Effect of Moringa oleifera root decoction in controlling Newcastle disease in ISA Brown cockerel
Fabiyi K. Dougnon T.V. Déguenon E. Koudokpon H.	*Abomey-Calavi, Abomey-Calavi, Benin*	Evaluation of the infectious risk in the Maternity Ward of the Besthesa Hospital in Cotonou: Molecular characterization of the Gram-negative bacilli involved
Brice Boris Lègba Victorien Dougnon Honoré Bankolé Lamine Baba-Moussa	*Abomey-Calavi, Abomey-Calavi, Benin*	IN VITRO AND IN VIVO EFFICACY OF AQUEOUS EXTRACTS OF UVARIA CHAMAE AGAINST MULTI-RESISTANT STRAINS OF SALMONELLA SPP. ISOLATED IN BENIN
Assogba Phénix Dougnon Victorien Deguenon Esther Koudokpon Hornel	*Abomey-Calavi, Abomey-Calavi, Benin*	URINARY TRACT INFECTIONS IN BENIN: EXPLORING THE VIRULENCE FACTORS AND ANTIBIOTIC RESISTANCE GENES AND VIRULENCE GENES AMONG BACTERIA ISOLATES
Agbodjento Eric Klotoé Jean Robert Dougnon Tamègnon Victorie Atègbo Jean-Marc	*Abomey-Calavi, Abomey-Calavi, Benin*	FORMULATION OF AN IMPROVED TRADITIONAL DRUG BASED ON THE LEAVES OF ROUREA COCCINEA TO CORRECT MALE FERTILITY DISORDERS
Faras ISSIAKO Christian AKOWANOU Macaire AGBOMAHENAN Gérard DEGAN	*Abomey-Calavi, Abomey-Calavi, Benin*	Effets de l'Anisotropie Hydrodynamique et du Champ Magnétique sur la Convection Thermosolutale dans une cavité poreuse

(All speakers required to be connected to the session 10 min before the session starts)

Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

28.02.2021 | SESSION-1 | HALL-3

Porto-Novo Local Time: 10:^{00}–12:^{30}

Ankara Local Time: 12:^{00}–14:^{30}

MODERATOR: Prof. Moha AROUCH

Authors	Affiliation	Presentation title
Adelakun Kehinde Moruff **Abdul-Azeez Folorunsho Ishaq** **Ibrahim Azeez Olalekan** **Joshua, Deji Abiodun** **Sulyman Abdul-Wahhab** **Ojo Samson Babatunde**	*Federal College of Wildlife Management of Forestry Research Institute of Nigeria* *Forestry Research Institute of Nigeria*	METALLIC COMPOSITION OF LABEO COUBIE FROM RIVER OLI, KAINJI LAKE NATIONAL PARK, NIGERIA
Ibrahim A.K **Haruna A** **Sambo B.U** **Sadiq A.I**	*Bayero University Kano Nigeria*	Synthesis Characterization and Antioxidant Activity of Mn(II) and Cu(II) Complexes with Schiff base N-naphthalidene-p-methoxyaniline
Amine Idboufrade **Brahim Bouargane** **Said Mançour Billah** **Ali Atbir**	*Ibn Zohr University, Agadir, Morocco*	VALORIZATION OF MOROCCAN PHOSPHOGYPSUM INTO VALUE PRODUCTS
Omar Ait Layachi **Sara Azmi** **Asmae Moujib** **Mohamed Nohair** **Abdelhak El Brouzi** **El Mati Khoumri**	*University Hassan II, Casablanca, Morocco*	ELECTROCHEMICAL ELABORATION OF THIN FILMS COMPOSITES SEMICONDUCTORS: Cu2CoxZn(1-x)SnS4 and (AgxCu(1-x))2 ZnSnS4 ON TRANSPARENT CONDUCTIVE OXIDES FOR PHOTOVOLTAIC APPLICATION
NOUIOURA Ghizlane **TOURABI Maryem** **LOUASTE Bouchra** **DERWICH El houssine**	*Université sidi Mohammed ben Abdellah, Fès, Morocco*	EXPLOITATION OF ROSEMARY IN MOROCCO: LOSS OF ENERGY AND ORGANIC MATTER
Nisrine Nouj **Mustapha Andam** **Naima Hafid** **Noureddine El Alem**	*Ibn Zohr University, Agadir, Morocco*	A COMBINED METHOD BASED ON BIOCOAGULATION BY MUSA ACUMINATA AND INFILTRATION-PERCOLATION TO TREAT INDUSTRIAL WASTEWATER
NOUIOURA Ghizlane **TOURABI Maryem** **LOUASTE Bouchra** **DERWICH El houssine**	*Université sidi Mohammed ben Abdellah, Fès, Morocco*	SCREENING AND OPTIMIZATION OF THE FACTORS ACTING ON THE MICROWAVE HYDRODISTILLATION OF ROSMARINUS OFFICINALIS
Hamza MALAHAKCH **Dr.Aziz HRAIBA** **Prof. Moha AROUCH**	*University Hassan I, Settat, Morocco*	EFFECT OF MESH TYPE ON FINITE ELEMENT MODELING OF A SPREADER: MESHING QUALITY AND STATIC STRESS
TOURABI Meryem **NOUIOURA Ghizlane** **HAJJAJI Abdelouahed** **HALOTI Said** **DERWICH El houssine**	*Sidi Mohamed Ben Abdellah University, Fez, Morocco*	Study of the combined effect of the essential oil of Thymus satureioides, water activity and temperature on fungal growth of the strain Aspergillus.S2

(All speakers required to be connected to the session 10 min before the session starts)
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

28.02.2021 | SESSION-1 | HALL-4

Porto-Novo Local Time: 10:^{00}–12:^{30}

Ankara Local Time: 12:^{00}–14:^{30}

MODERATOR: Assoc. Prof. Dr. F. Gül Koçsoy

Authors	Affiliation	Presentation title
Yüksek İç Mimar Aysu SARI ÇETİN	*Başkent University, Turkey*	NUCLEAR ENERGY TECHNOLOGY AND TURKEY
Yüksek İç Mimar Aysu SARI ÇETİN	*Başkent University, Turkey*	BUILDING TYPOLOGY IN CORPORATE HOUSING DESIGN
Assoc. Prof. Ferhat KIZILGEÇİ **Prof. Mehmet YILDIRIM**	*Mardin Artuklu University, Turkey* *Dicle University, Turkey*	THE POSSIBILITY TO USE THREE PORTABLE CHLOROPHYLL METERS TO ESTIMATE GRAIN YIELD IN RAIN-FED CONDITIONS
Reda EL-Mernissi **Khalil EL Khatabi** **Ayoub Khaldan** **Larbi ElMchichi**	*Moulay Ismail University, Errachdia, Morocco*	Molecular docking and ADMET studies on flavonoids derivatives as potential inhibitors of Sars-Cov-2
Assoc. Prof. Dr. F. Gül Koçsoy	*Firat University, Turkey*	ANTI-WAR STANCE IN STEPHEN CRANE'S "A MYSTERY OF HEROISM" AND MARK TWAIN'S "WAR PRAYER"
Nildeniz ADMAN **BurçinYALÇIN ÖZKAN**	*Bak Ambalaj, R&D Center, İzmir, Turkey*	Eco-Friendly Solutions for Flexible Packaging
Fehim Findik	*Sakarya Applied Sciences University, Sakarya, Turkey*	SELECTION OF MATERIALS AND APPLICATION IN THREE AREA
Ayoub Khaldan **Soukaina Bouamrane** **Reda El-mernissi** **Tahar Lakhlifi** **Abdelouahid Sbai** **Mohammed Bouachrine**	*Moulay Ismail University, Errachdia, Morocco*	3D-QSAR MODELING AND MOLECULAR DOCKING STUDIES OF NOVEL TRIAZOLES-QUININE DERIVATIVES AS ANTIMALARIAL AGENTS
Shahriyar Guliyev	*Ganja State University, Ganja/Azerbaijan*	METALLURGY AND GLASS PROCESSING IN THE EARLY MIDDLE AGES IN AZERBAIJAN
Assoc. Prof. Yaşar KÖSE **Dr. Sakar ALI**	*University of Turkish Aeronautical Association, Turkey*	The Effects of Monetary Policy on the Economic Growth

(All speakers required to be connected to the session 10 min before the session starts)
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.

3. INTERNATIONAL AFRICAN CONFERENCE ON CURRENT STUDIES

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DIGITAL INEQUALITY SURVEY TO THE TEACHERS OF ST. ALOYSIUS OF ACADEMY OF DASMARIÑAS: A BASIS FOR DIGITAL TRUST AND INTUITION

Dr. **Crisanto E. Avila**
University of the Philippines Open University

Abstract
In the field of education, teachers must be technologically abreast especially in time of the COVID-19 Pandemic addressing the demand of the New Normal. To build confidence and capacity in digital teaching-learning, teachers must consider developing their skills in using digital technologies in education and they must also embed the use of digital devices in the teaching-learning practice.
In this premise, this research article explains the digital inequality that the teachers are experiencing and its effect on their teaching profession and on establishing among themselves the digital trust and intuition. This study also aimed to answer, "What are the digital equalities do teachers encounter?" The teachers' decision for digital trust and intuition is affected by the digital inequalities they are experiencing.

This study draws insights from a one-page survey questionnaire 20 selected teachers of St. Aloysius Academy of Dasmariñas representing the faculty from the 3 departments such as preschool, grade school and high school. The results of this study indicate that teachers of St. Aloysius Academy of Dasmariñas are digitally inclined as manifested by their subscriptions to various digital devices and services. The impact of the digital technology to them in terms of social, economic, political and cultural affects their decision in digital trust and intuition.

Overcoming issues on digital inequality among teachers will lead to digital trust and intuition. The school, from where the teachers are employed must address the digital inequality by ensuring that all teachers have equal chances in accessing the technology based teaching devices and by providing them capacity building trainings which are imperative for the demand of the new normal. Teachers must embrace the digital technology in the community and in their workplace and imbibe the digital trust and intuition in education.

Keywords
Digital Inequalities, Digital Learning Tools, Digital Trust, Digital Intuition, Digitalization

Language Barrier as a Factor Affecting the Perception of Science Information and the Proposed Solutions

Dr. Crisanto E. Avila
University of the Philippines Open University

Abstract
Feliú-Mójer (2014) emphasized that when scientists are able to communicate effectively beyond their peers to broader, non-scientist audiences, it builds support for science, promotes understanding of its wider relevance to society, and encourages more informed decision-making at all levels, from the government to communities to individuals. With this viewpoint, Communication of Science to the General Public is a significant concern of the scientists and the government to make this world a better place to live in as the people intelligently interact with the behavior of the environment and other elements that affect their being.

In this principle, this research identified the factors affecting the perception of science information and in finding a best solution to the problem. This research was done with the selected homeowners of Phase 2 Extension, Mabuhay City, Paliparan 3, Dasmariñas City, Cavite. With the 10 identified possible solutions in the conducted solution scanning activity, this proponent was convinced that "beating the language barrier" is the best solution that was adopted in this study and was piloted in the selected community.

It was concluded that effective communication by scientists and science communicators themselves must be employed so they may be understood by the common people- the end-user of the science information. This solution is one effective move to removing the barriers of understanding science information because understanding is facilitated by effective communication, its primary objective is to transfer the knowledge.

VIEWS OF TEACHERS, STUDENTS AND PARENTS ABOUT ONLINE EDUCATION DURING COVID 19 OUTBREAK: THE CASE OF KOCAELI

Doç. Dr. Esma Buluş Kırıkkaya
Kocaeli University, Turkey
https://orcid.org/0000-0002-5637-2829
Özlem LAÇİN
The Ministry Of Education, Turkey
https://orcid.org/0000-0002-4387-4571

Abstract
Based upon Covid19 which started as an epidemic in China and turned into a pandemic in a short time, Turkey as in all countries of the World is also affected by this crisis in many areas. Due to Covid19, education has been stopped in 195 countries, including Turkey, and distance education has been provided by the opportunities of the countries. In this study, it was tried to determine the opinions of teachers, students, and parents in public schools in Kocaeli province of Turkey about online education in this process. The phenomenology design which is one of the qualitative research designs has been used in the research. The data of the study were collected by online open-ended questions prepared by the researchers with expert opinions. The data obtained were analyzed using the content analysis method. In this context, the study group consists of 113 secondary school students, 124 parents, and 65 teachers from various branches living in different districts, villages, and towns of Kocaeli province. Considering the research, it was found that student-teacher-parent communication is mainly provided through Education Information Network (EBA) which is socially qualified educational electronic content established by the Republic of Turkey Ministry of National Education, also WhatsApp and some social media applications. Besides, it was understood that the lessons were conducted through EBA and Zoom. On the benefits of online education, the common view of students, teachers, and parents is that the continuity of education, comfort, and interactive communication. Students and parents believe that online education has negative sides because it is inefficient, there are too many technical difficulties and motivation cannot be fully provided. According to teachers, the negative sides are that it is not as effective as face-to-face communication, participation is low and control is difficult. The common problem faced by students, teachers, and parents is technical problems. Also, parents and teachers have similar problems with the reluctance of students. 82% of students, 81% of teachers, and 92% of parents are against the fact that education is completely online. Some teachers stated that they support hybrid education of combines online education with face-to-face education.

Keywords: Online Education, EBA, Covid 19, Questionare

1. INTRODUCTION

Due to that COVID 19 started as an pandemic in Wuhan, the capital of the Hubei region of China, and the number of cases, deaths and affected countries increased in a short time, and

the WHO (World Health Organization) declared it as pandemic on March 11, 2020 and the countries were recommended to take the necessary measures. This situation, which caused a red alert around the world, has deeply affected also education as well as health, economy, politics, sociology, culture and lifestyle. The reflections of these effects continue and it is not known when these will end. According to UNESCO (2020); 1.5 billion students were affected by the interruption to education as a result of the closing of schools in 195 countries due to the pandemic that reached its peak as of April 2020. According to data updated in February 2021, at the moment the schools are closed in 28 countries and 13% of the learners' population was affected by this situation. After the first cases seen in Turkey on March 11, 2020, education was interrupted after March 16. While the pandemic continued, distance learning tools were urgently put into operation to ensure the continuity of learning and to minimize learning losses. Distance education process in Turkey was structured to be carried out through 2 channels. The first of these is Education Information Network-EIN (EBA in Turkish), which is a social educational electronic content network established by Turkish Republic Ministry of National Education and the infrastructure of which has been created earlier. On the other hand, the other one is the TRT EBA TV Primary School, TRT EBA TV Secondary School and TRT EBA TV High School channels which started test broadcasting on March 19-20, 2020 with the cooperation of Turkish Radio and Television Corporation (TRT) and the Ministry of National Education and then switched to normal broadcasting on March 23, 2020 in order to provide equality in opportunity for all students. From March 23, the time when distance education started, to December 25, EBA became number 1, the most visited, website in the education category in the world. A total of 103,744,668 live lessons were carried out in levels from kindergarten to university. A total of 3847 hours of broadcasting has been made for EBA TV Primary School, EBA TV Secondary School and EBA TV High School with the shootings made in 13 separate studios in Ankara and Istanbul (MNE-Ministry of National Education, 2020).

When the literature is examined, many studies on Covid 19 and distance education have been done serially. The opinions of classroom teachers on distance education were examined by Ertan Kantos (2020). According to the research, it was stated that EBA has been used to send homework and activities in the distance education process, although enough feedback could not received from students and that the distance education is a tool to keep the connection of students with their teachers and other friends, as well as its negative aspects have been considered as the lack of motivation for students and the difficulty to control for teachers. In the parent questionnaire conducted by Yılmaz, Mutlu, and Doğanay, (2020), it was found that primary school students mainly prefer EBA TV, high school students prefer live distance education applications, on the other hand, secondary school students prefer both of these; and that the parents think that face-to-face education is more valuable; and that connection problems were experienced at the beginning and during the lesson at the rate of 68%, and low income families were more likely to experience this problem than high income families. On the other hand, in the questionnaire conducted by Bozkurt (2020) related to the opinions of students in the pandemic process, the themes of facilitator, lifelong learning, educational presence, structured learning, feeling of community, self-government, internal motivation and accessibility came to the forefront in positive sense, while the themes of the feeling of loneliness, artificiality, socialization, external motivation, isolation, lack of communication, psychological distance, quality, inequality, instantness and affective closeness came to the forefront in negative sense.

While making a literature review, large-scale student-teacher-parent questionnaires, which were conducted by TEDMEM (A non-governmental organization aiming to produce evidence-based research data, ideas, publications and projects for the education system and

publicize the results) and Bahçeşehir University, were found. However, local studies will become much more important for the changes to be made in education since the practice of "Decision on Place" will be implemented as of March 1, 2021. On the other hand, this study aims to ascertain the opinions of teachers-students-parents about online education in Kocaeli province. For this purpose, answers were sought for the following questions:

1. Through which channel did Secondary school students, their parents and branch teachers working at this level communicate and how did they conduct online courses during the pandemic process?

2. What are the positive aspects of online education according to the secondary school students, their parents and branch teachers working at this level?

3. What are the negative aspects of online education according to secondary school students, their parents and branch teachers working at this level?4. What are the problems faced by secondary school students, their parents and the branch teachers working at this level during online classes?

5. What are the opinions of secondary school students, their parents and the branch teachers working at this level about the education's being completely online?

2. METHOD

Research Design

This research is a qualitative study aimed to ascertain the opinions of teachers, students and their parents from various branches living in Kocaeli and working in the state secondary school on the distance education studies carried out during the Covid 19 process. Since the distance learning process was very new for all of these groups and could not be fully perceived or its effects could not be considered deeply, the research was carried out in a phenomenological design. Phenomenology (phenomenology) can be defined as revealing the experiences of individuals regarding a specific phenomenon (Van Manen, 1990). According to Yıldırım and Şimşek (2018), we confront with the events, experiences, concepts, orientations, that we are aware of but do not think deeply about them in daily life, as phenomena. Phenomenology is not only a description of the phenomenon but also a process that includes individual's comment for his/her experience (Creswell, 2015).

Study group

The study group of the research consists of 65 teachers, 113 students and 124 parents from different branches of secondary school from different districts associated to Kocaeli Directorate of National Education. The demographic characteristics of the participants are given in Table 1, Table 2 and Table 3.

Table 1. Demographic information of students

Factors		N	%
Gender	Girl	66	58,4
	Boy	47	41.6
Grade	5th grade	18	15,9
	6th grade	39	34,5
	7th grade	19	16,8
	8th grade	37	32,7
Living place	Rural area	51	35,4
	District	40	45,1
	City center	**22**	**19,5**

Table 2. Demographic information of teachers

Factors		N	%
Gender	Female	48	73,8
	Male	17	26,2
Branch	Sciences	17	21,5
	English	12	18,5
	Turkish	12	18,3
	Social Studies	10	15,4
	Maths	9	13,8
	Religion	2	3,0
	Physical Education	1	1,5
	Visual Arts	1	1,5
	Tech.Design	1	1,5
Working place	Rural area	19	29,3
	District	37	56,9
	City Center	**9**	**13,8**

Table 3. Demographic information of parents

Factors		N	%
Gender	Female	105	84,7
	Male	19	15,3
Educational level	Primary School	49	39,5
	Secondary School	35	28,2
	High School	27	21,8
	University	13	10,5
Living place	Rural area	26	15,3
	District	50	54,9
	City center	**37**	**29,8**

Data collection tool

The research data were collected by using the questionnaire technique which is frequently used in qualitative research and is frequently used in phenomenological design. Questionnaire; is a measurement tool that consists of many questions and is used to collect data from a large sample within a short period of time (Balcı, 2002; Büyüköztürk, 2005).

It is important to try to process the data in detail without adding any comments in order not to affect the validity and reliability of the obtained data (Creswell, 1998; Merriam, 1998; Miles & Huberman, 1994). Also in this study, this principle was considered while creating the themes, and participant comments were coded and sampled under the relevant themes.

While designing the data collection tool, the body of literature was reviewed and a draft was created by considering also the research questions and delivered to the experts to examine it. As a result of the feedbacks coming from the experts, the necessary corrections were made and it was decided to be suitable for the research and then it was converted into an online form due to Covid 19 process and the studies were started. The questions put to the participants in the online questionnaire form are as follows:

1. Through which channels have you communicated with your teacher/students/parents from the time when the pandemic started?
2. Through which channel did the online courses continue?
3. What are the positive aspects of online education according to you?
4. What are the negative aspects of online education?
5. What problems do you confront during online lessons? Could you share with us?
6. Would you like the education to be completely online? Could you explain the reason?

Analysis of data

The data obtained from the questionnaire results from teachers, students and parents were analyzed by using the content analysis method in order to make us to understand the facts and to think deeply about them. Content analysis conceptualizes and organizes the data within a certain logic and make it easier for the resulting themes to reveal the hidden facts contained in the data and make them more understandable (Yıldırım ve Şimşek, 2018).

3. FINDINGS

The findings of the research were organized as a separate table for each question asked to students, parents and teachers. Since the answers given by the participants to a question are more than one, we would like to state that the percentage and frequencies are more than the number of participants.

The question "Through which channels have you communicated with your teacher/students/parents from the time when the pandemic started?" was put to all participants and the received answers were presented in Table 4.

Table 4. Communication channels used by the participants in the online education process

Research Groups	N	Communication tools	f
Students	113	EBA	77
		Whatsapp	64
		Social Media (Facebook, Instagram..)	15
		Phone calls	13
		Zoom	10
		There was no communication.	2
Teachers	65	Whatsapp	59
		EBA	49
		Phone calls	37
		Social Media (Facebook, Instagram..)	14
		Zoom	8
Parents	124	Whatsapp	86
		EBA	51
		Phone calls	14
		Social Media (Facebook, Instagram..)	6
		There was no communication.	**8**

When the frequency values of the channels where student-teacher-parent communication was established during the pandemic process, was examined in Table 4, it was seen that teacher-parent communication was mostly made through Whatsapp, whereas teacher-student communication was mostly carried out through EBA. On the other hand, the other frequently used communication channels were social media platforms (Facebook, Instagram…), phone calls and Zoom. In this process, the number of parents, who could not communicate with their teachers, was 8, whereas the number of students was 2.

The question "Through which channel did the online courses continue?" was put to all participants and the received answers were presented in Table 5.

Table 5. Platforms where participants conduct online courses

Research Groups	**N**	**Online Cours Platforms**	**f**
Students	113	EBA	93
		Zoom	50
		Whatsapp	12
		Instagram	11
		Skype	2
Teachers	65	EBA	52
		Whatsapp	35
		Zoom	27
		Instagram	2
		Youtube	1
		Skype	1
		Google Hangouts	**1**

Table 5. Continued

Research Groups	N	Online Cours Platforms	f
Parents	124	EBA	104
		Zoom	49
		Whatsapp	19
		Instagram	9
		Skype	**1**

When Table 5 is examined, it was seen that online education was mostly carried out on EBA. The other most commonly used online training platform is Zoom and Whatsapp. And the lessons continued on Instagram, Skype, Youtube and Google Hangouts in addition to these.

The question "What are the positive aspects of online education according to you?" was put to all participants and the received answers were presented in Table 6.

Table 6. Views of students, teachers and parents about the positive aspects of Online Education

Study Group	N	Themes	f	Views
Students	113	Continuation of lessons	38	Continuation of the lessons during quarantine
		Comfort	29	Not wearing school clothes and attending classes at home
				Don't have to get up early
				Home comfort
				Do not leave the house – protection from the epidemic
		None	14	There is no positive side
		Remindful	11	Help to remember subjects
		Helpful	6	Review
		Communication	5	My teacher helped me with issues/questions that I don't understand
				I meet with my friends and teachers
		Less distracting element	4	There was a lot of noise in the classroom and not much attention was paid to the lesson. But that doesn't happen anymore in online lessons.
		Everything is fine	1	
Teachers	65	Practical	22	To be able to explain the subject in a short time
				Saving on time
				No space and time restrictions
				Rich content
				Ability to reach many people at the same time
				Easier classroom management
				Easier evaluation
				Increasing parents' involvement in education
		Communication	14	Stay in touch with students in an interactive way
		Continuation of lessons	12	The students did not take a break from the lesson.
				It's better than having no education.
				Continuity was ensured in the lessons.
		Comfort	4	It's more comfortable to teach in a home environment.
				Students participate more comfortably

Table 6. Continued

Study Group	N	Themes	f	Views
Teachers	65	Motivation	3	It attracts more students' attention.
				The student who only wants to access the information is participating in the lesson.
		None	3	
		Contribution to professional development	2	My use of technology has improved, my course content has increased.
Parents	124	Continuation of lessons	63	They can continue their education from where they left off.
				Continuation of seriousness at school at home.
				Closing the gaps for students who want to study
				No dropout from school
				Children stray and didn't forget they were students
		Comfort	20	The student can easily follow all courses from one place.
				It's only safe to avoid transmission.
				Explaining the lecture in less time.
				The student is with us in the time frame.
				Our time to spend time with my son has increased.
		None	20	I think it is not enough.
				There is no positive side
		Communication	6	Psychologically, it was motivated by children to constantly see their friends and teachers.
				Our children think that they are not alone and that their teachers are interested in them.
				One-on-one communication with the teacher.

When the opinions of the participants were examined in Tablo 6, it was stood out that they found the online education positive in terms of maintaining the continuity of the lessons, their being comfortable and making communication easier. However, each group has a different perspective regarding these benefits. For example, student comments are as follows:

Student 60:

'In these virus days, we do not fall short of our lesson though'

Student 11

'I feel more comfortable because of being at home.'

Student 23

'It is great that we got enough sleep and we are fresh as a daisy'

Student 25

It helps us for any questions on which we get stuck in this process.

Student 57

I am talking to my friends and teachers

Student 69

There was a lot of noise in the classroom and not much attention was paid to the lesson. But it is not that way anymore in online lessons.

Student 40

I can concentrate much better.

On the other hand, when we see the comments of the participating teachers, the practicability, communication and continuity of the lessons are the positive aspects of online education. Opinions of some teachers are as follows:

Teacher 10

Classroom management is much easier. Students can be controlled easily. While it takes time to make preparations on the smart board in the classrooms, the preparation made on the PC before the online education makes the lesson become more effective.

Teacher 31

You make the parents more involved in education.

Teacher 38

I taught a lesson without wasting time by dealing with student problems

Teacher 48

Everyone has the opportunity to access it without a time limitation.

Teacher 53

'I can say that the positive aspect of it is that there is an alternative system in a period when there is no face-to-face training. We can instantly access information and share it with the student. It is a great advantage that we can provide different sources to the student while teaching a subject. Having platforms that make it easier for us to evaluate the reports of the studies, exams, etc. that we send, and see the shortcomings of the students more easily provides contributions'

Teacher 44

Students see that they are in contact with their teachers. They do not feel that they are forgotten. Noticing that they are being tracked.

Teacher 50

Although it does not have much contribution academically, I think it helps to prevent students from being completely disconnected from school and lessons.

Teacher 35

My usage of technology has been improved and I learnt programs such as algodoo. My lesson content materials increased.

On the other hand, the parents who participated in our questionnaire specified the positive aspects of online education as follows: continuity of lessons, comfort and communication. Answers of some parents are as follows:

Parent 63

'My child does not lag behind the lessons and the seriousness in school continues at home, in short, he/she continues his/her homework and study without interruption, he/she repeats the lessons. We thank our teachers for being sensitive and showing the necessary devotion.'

Parent 34

'The time that I spend with my son has increased.'

Parent 84

The children continued to get education at home in a healthy way

Parent 58

The children did not get disconnected from the lessons, an the more parents supported them, the more they realized that this period was not a holiday. And the children was psychologically motivated by constantly seeing their friends and teachers.

Parent 120

Our children think that they are not alone and that their teachers care about them.

The question 'What are the negative aspects of online education?' was put to all participants and the received answers were presented in Table 7.

Table 7. Views of students, teachers and parents about the negative aspects of Online Education

Study Grup	N	Themes	f	Views
Students	113	Inefficient	34	It's not as efficient as face-to-face training.
		Lack of communication	28	We can't come face to face with teachers
				It undermines the ties between teachers and students.
		Technical problems	14	
		Motivation	5	The density of EBA.
				There is no discipline
				I'm not motivated.
		Health	4	Eye problems
				Posture disorders
		None	**27**	

Table 7. Continued

Study Grup	N	Themes	f	Views
Teachers	65	Lack of communication	19	Only the teacher is active, the student is passive.
				No feedback from the student
				Cannot evaluate.
				Causing distraction
		Access problem	18	Not every student is on equal terms
				Technical problems
				Inadequate infrastructure
		Insufficient attendance	17	Student participation is minimal
		Discipline	10	Problems of classroom dominance caused by teachers ' lack of use of technology.
Parents	*124*	Inefficient	33	Children don't understand/can't ask questions
				Lesson time is short.
				Children are very comfortable
				One-way lecture / passive students
		Motivation	28	Focus problem
				Students are reluctant because participation is low
				Not feeling obliged because there is no attendance
		Technical problems	19	Internet access
				The density of EBA.
		Health	5	Eye problems
				Stress
		None	**33**	

When the data in Tablo 7 are examined, it was seen that most of the students and parents think that online education is inefficient. Due to the frequently experienced technical problems, a complete motivation cannot be achieved. Failure to conduct a healthy communication is considered negatively by teachers and students. The fact that the insufficient student participation and difficult lesson control are the factors that are challenging for the teachers. Eye disorders and posture disorders that increase due to looking at the screen for a long time are other points that participants complain about. In addition to these, parents think that the online education environment is undisciplined.

Inclusive examples from each group's answers are given as follows:

Student 104:
I cannot ask questions to my teacher whenever I want.
Student 10:
There is no attention or discipline. The function to turn off the view and sound makes it difficult for the teacher to command the students. Everyone behaves very comfortably and carelessly. Internet access can make communication become difficult.

Student 69:
The internet freezes and we are thrown out when everyone is taking EBA, on and half of the lesson is missed. The attention is lost.
Student 37:
It is a bit harmful for our eye health, for example, we are having problems when solving problems because the screen is small.
Student 2:
Planning is difficult for students who do not have the habit of self-study.
Student 54:
I participated under the pressure of my family.

Teacher 53:
I think that not every student can get education under equal conditions. Because many students have difficulties in accessing the internet due to lack of infrastructure. Since there are 3-4 students at school age in every family, the internet that they use on the phone remains insufficient. Students do not know how to use the Eba platform in a way that they can get efficiency. Since students often disconnected from the live lessons that they attend, their attention slips into different directions, and they cannot get enough efficiency from lessons.
Teacher 54:
The individuals who lack communication tools cannot receive education. Impossibility to get any gain in terms of emotional and spiritual development due to the lack of getting one-to-one interaction with the student. They remain distant from their peers. They disconnect from reality due to being exposed to the virtual environment for a long time.

Parent 99:
Not every student can use it. It is difficult to make connections. The lesson times are insufficient. It is harmful to health for those who wear glasses. There is not sufficient lesson content. The children do not participate in online education voluntarily. They lose their desire even in a very small connection problem. They cannot be motivated. It is partially better if it is one-to-one and as a group. Children are individual and alone.
Parent 110:
It destroys our very important facts in social life such as speaking, understanding, decision, acting together and sharing due to that it encloses both children and parents within a digital virtual environment. Besides, according to me, the virtual environment is a huge inconvenient environment for children, it is not a controlled environment unfortunately.
Parent 58:
The fact that the teacher does not follow the student gives the student a non-positive freedom. In addition to this, it became much more difficult now to take the children, who were on the computer due to the constant lessons, away from the computer.
Parent 66:
Connection problems, lack of time and efficiency, conflict with the other child's lessons in the family.

The question ‘What problems do you confront during online lessons? Could you share with us? was put to all participants and the received answers were presented in Table 8.

Table 8. Views of students, teachers and parents about the problems experienced in Online Education

Study Group	N	Themes	f	Views
Students	113	Technical problems	60	Connection problems-density
				Audio-video problems
		Inefficient	23	Insufficient course hours
				Failure to participate actively in the lesson
		None	23	
		Miscommunication	2	Communication failure.
Teachers	64	Technical problems	46	Connection problems-density
		Lack of motivation	24	Low attendance
				Failure to feedback
		None	2	
Parents	124	Technical problems	75	Connection problems-density
		Lesson time	9	Restricted-insufficient time
		Lack of motivation	8	Student's attention gets distracted too quickly
				We tried to convince him it was mandatory
		None	**29**	

According to Table 8, the biggest difficulty for all the participants of the research in the online process is technical problems. In addition to this, trying to keep students' motivation high is also seen as a problem for parents and teachers. There are also student and parent participants who think that the lesson durations are short and that this is also a problem.
The inclusive examples from answers of each group are as follows:

Student 10:
The teacher's voice may go silent in a moment. The view also disappears in a moment. When my internet is gone, the teacher cannot hear me.

Student 16:
At school, our teachers knew what we did not understand, but this situation is less because here they do not see us.

Student 108:
It is not possible to instantly ask something you do not understand, also the time is limited for the question asked.

Student 23:
I have difficulty in focusing and adapting myself.

Teacher 10:
Students have problems using technology time to time. Disconnections of the internet and the interruptions of the lessons. The applications which are used fail time to time. Students do things that will sabotage the lesson in order to discover the application; such as typing on the screen and turning on sound and camera. In order to prevent this, we use some time of the lesson for such application settings.

Teacher 17:
Since my lesson is a practice lesson, correcting drawing and painting errors and students' failure to upload the works to the system required the posts to be sent through WhatsApp application.

Teacher 31:
Not being able to get feedback, not being able to apply teaching methods and techniques

Parent 110:
Internet networks do not have reception no matter which operatör it is. It is not possibleto enter Eba, Zoom, etc. or it is entered too late, which negatively affects children's order such as sleep, eating, etc.. Our teachers were very interested in their lessons, studying, health, etc. through WhatsApp application because they were extraordinarily interested. Without our teachers, I think I, as a parent, could not have been able to go through this process alone.
Parent 58:
In some courses, we could not get connection for reasons beyond our control, and some courses did not have make up. Therefore, the student had to learn on his/her own.
Parent 124:
I experienced difficulties due to some infrastructure problems in the system (frequent updates, disconnections and etc.).
Parent 117:
All children are distracted by external factors during online lesson.
Parent 113:
Lack of adaptation due to that the time is short.

The question "Would you like the education to be completely online? Could you explain the reason?" was put to all participants as the last question of questionnaire and the received answers were presented in Table 9.

Table 9. Teacher, student and parent opinions on whether the education continues online or not

Participants	Yes (%)	No(%)
Students	18	82
Teachers	19	81
Parents	8	92
Total	**14**	**86**

The most of the participants are against the education's being completely online according to Tablo 9. On the other hand, some of the teachers support hybrid learning. Hybrid learning; is the learning model in which online and face-to-face education are carried out together. All of the 3 participant groups think that the problems they experienced in the distance learning process overweigh more than its positive aspects, and they think that face-to-face education should be continued as soon as possible as long as the circumstances allow.

4. DISCUSSION AND CONCLUSIONS

It was switched to distance learning with a rapid crisis management in order not to interrupt education due to the closing the schools due to the Covid 19 Pandemic. Many teachers, students and parents have closely followed these applications, which were new to them, and adapted themselves to these. In this study, the opinions of the three most important components of this process were tried to be ascertained. Within this context, 113 students, 65 teachers, 124 parents participated in our questionnaire. Answers were sought to the problems confronted related to communication channels used during the pandemic process, platforms through which the online courses were carried out, the positive/negative aspects of online education.

When the findings related to the first question were examined, the communication between teacher-student-parents was mostly provided through Whatsapp and EBA. According to the research conducted by Rosenberg and Asterhan (2018), Whatsapp is used as a central communication channel for schools as well as as a tool through which the teachers share actual data and manage learning activities, and the students can easily access these developments.

The second question is to determine the channels through which online courses are carried out. Participants stated that online courses mostly continue through EBA and Zoom. As a result of the research conducted by Karbeyaz and Kurt (2020), it is stated that during the Covid 19 process, teachers frequently prefer EBA due to its positive aspects such as continuity in education, permanent learning, subject repetition, giving feedback to students and assigning homeworks. In parallel with this research made, teachers think that the usage of EBA benefit the students (Elçiçek, 2019; Kaya, 2019; Gökdemir; 2020). The news of Ulukan (2020) supports the findings in our research. Usage of Zoom has increased 139-fold in Turkish market in April compared to January. While it had an average of ten million meeting participants per day in December 2019, this number has reached 300 million daily participants in April 2020.

In the third question of the study, the opinions of teachers, students and parents about the positive aspects of online education were tried to be ascertained. According to the findings, the positive aspects of online education are ensuring the continuity of education, its comfort and the communication of students with their teachers and friends even from a distance. In the study of Pınar and Dönel Akgül (2020) conducted with secondary school students and the conclusion including that the secondary school students found online education useful so that they did not fall short of the lessons, they prepared better for exams, they had access to many resources, the lessons were fun, and the results were similar to our findings. The finding that the distance education is comfortable is supported by studies made by Yang ve Cornelious, 2004; Vonderwell, 2003; Hilton, 2012. In addition, in the study made by Karaca et al. (2021), the teachers emphasized that the positive aspects of online education are saving time, developing independent learning skills, providing versatile learning opportunities, saving time for the teacher and providing effective learning. Some teachers describe the development they had in this process as positive because of the increase in the usage of technology and the diversification of the materials used. With the preparation of rich learning materials and making the lesson contents suitable for distance education, individual learning differences will disappear. (Başaran et al., 2020)

On the other hand, in the fourth question of the research, it is aimed to examine the opinions of the participants about the negative aspects of online education. There are also aspects found negative by the participants due to that online education does not provide motivation, student participation is low, lesson supervision is difficult, and there is lack of communication. The studies of Pınar and Dönel Akgül (2020), Başaran et al. (2020) also match up with these findings. Similarly, Nambiar (2020) stated in his study that online education is not effective compared to face-to-face education of teachers due to teacher-student disconnection, lack of interaction, inability to interact with the group, and technical problems. Also in the TEDMEM (2020) report, it was stated that access to the internet and technical inadequacies experienced affected online education negatively. According to the participants, it was stated that the computers, telephones and television with which they spent more time in this process negatively affected their health, which is another negative aspect of online education. This situation has caused eye and orthopedic problems in children and teenagers. According to

Alvez and Louzada (2020), one of the most important consequences of staying at home on eye health is that myopia develops and/or becomes worse, and the "Quarantine myopia" may put eyight of these children at risk in the future. Sheikh et al. (2020) recommend yogic eye exercises in order to prevent visual fatigue. Doctors state that non-ergonomic tables and chairs and the uncomfortable sitting situation causes waist, back, shoulder, neck and leg pain in children (Sert Karaaslan, 2020)

In the fifth question of the research, we tried to determine the problems that our participants experienced during the online education process. The biggest problem confronted by all three groups of participants is technical problems. This finding matches up with the facts that Fidan (2020) stated that teachers' access problem in distance education was the most negative aspect; in Arslan and Şumuer's (2020) study, teachers stated that they had problems on noise, internet connection, access to the lesson, lack of digital content, lack of interaction, short lesson time, voice transmission, privacy and security and improper use of the software; Yılmaz et al. (2020) emphasizes that more than two-thirds of the students experience connection problems in logging into distance education lessons or during the lesson.

In the last question of the study, the participants were asked about their thoughts on whether the lessons should continue completely online or not. A very large percentage of the participants wanted that they do not want the lessons to be online, and they wanted to switch to face-to-face education as soon as possible. The fact that it was the emphasized in the distance education report of TEDMEM (2020) that face-to-face education is necessary for K12 students; in the study conducted by Bahçeşehir University (2020) it was stated that primary school students prefer face-to-face education; the data of Yılmaz, Mutlu, and Doğanay (2020) related to the questionnaire that they conducted throughout Turkey stated that 92.40% of the parents think that face-to face education is more efficient; the study of Olcay and Döş (2016) concluded that all lessons should not be conducted remotely; matched up with our findings. Dias, Lopez (2020) stated that as a result of their research, they found evidence that virtual classrooms will not replace classroom teaching after the Covid-19 pandemic ends. Pınar, Akgül (2020) stated in their study that students preferred face-to-face education because of the idea that face-to-face education and experiments contribute a lot to understanding the subjects, also for the reasons such as the lessons being more fun and the socialization.

Many suggestions can be offered based on the opinions of the students, teachers and parents who participated in our study. Some of the suggestions that are considered important are as follows:

- Students should be encouraged to participate more in the lesson with the cooperation of parents.
- Using the methods such as question and answer, case study, brainstorming and Web 2.0 tools that will attract the attention of students apart from lessons will make the participation of students active in the course.
- Learning losses and learning deficiencies should be ascertained and compensated.
- The curriculums should be formed by considering that students and teachers do not stay on the screen for long hours.
- Gains should be reduced.
- Teachers and students should try to design environments where there is no noise during the lesson and where they will not be disturbed by someone.

- Uninterrupted internet access with sufficient bandwidth should be provided for teachers and students.
- The session should be extended for some live lessons for which 30 minutes is not sufficient.
- Training should be given to teachers on creating e-learning resources through in-service trainings.
- It should be switched to hybrid education with the measures taken.

REFERENCES

Arslan, Y, Şumuer, E. (2020). Covıd-19 döneminde sanal sınıflarda öğretmenlerin karşılaştıkları sınıf yönetimi sorunları. *Milli Eğitim Dergisi, Salgın Sürecinde Türkiye'de ve Dünyada Eğitim,* 201-230. DOI: 10.37669/milliegitim.791453

Bahçeşehir Universitesi (2020). BAU Uzaktan Eğitim Raporu, https://bau.edu.tr/haber/15707-bauzaktan-egitim-raporu. Erişim tarihi:28.02.2021.

Balcı, A. (2012). *Sosyal Bilimlerde Araştırma* (9.baskı). Ankara: Pegem A Yayıncılık

Başaran, M., Dogan, E., Karaoglu, E. ve Şahin, E. (2020). Koronavirus (Covid-19) Pandemi sürecinin getirisi olan uzaktan eğitimin etkililiği üzerine bir çalışma. *Academia Eğitim Araştırmaları Dergisi*, 5 (2) , 368-39

Bozkurt, A. (2020). Koronavirüs (Covid-19) Pandemisi Sırasında İlköğretim öğrencilerinin uzaktan eğitime yönelik imge ve algıları: bir metafor analizi. *Uşak Üniversitesi Eğitim Araştırmaları Dergisi,* 6 (2), 1-23. DOI: 10.29065/usakead.777652

Büyüköztürk, Ş. (2005). Anket geliştirme. *Türk Eğitim Bilimleri Dergisi*, 3(2), 133-151.

Creswell, J. (1998). *Qualitative inquiry and research design: Choosing among five traditions*, 2.

Creswell, J. (2015). *Nitel Araştırma Yöntemleri: Beş Yaklaşıma Göre Nitel Araştırma ve Araştırma Deseni* (4. baskı). Ankara: Siyasal Kitapevi.

Dias, M., Lopes, R. (2020). Will the COVID-19 Pandemic reshape our society? *EAS Journal of Humanities and Cultural Studies*, 2(2), 93-97.

Dünya Sağlık Örgütü [DSÖ] (2020). *WHO director-general's opening remarks at the media briefing on COVID-19.* https://www.who.int/dg/speeches/detail/who-director-general-sopening-remarks-at-the-media-briefing-on-COVID-19---11-march-2020

Elçiçek, A. (2019). *Eğitim bilişim ağı (EBA) web sitesinin öğretmenler tarafından kullanım sıklığının incelenmesi: Mardin ili Kızıltepe ilçesi örneği*. Yüksek lisans tezi, Üniversitesi Eğitim Bilimleri Enstitüsü, Sakarya.

Ertan Kantos, Z. (2020, Agustos). Sınıf Öğretmenlerinin Uzaktan Eğitim İle İlgili Düşünceleri.*Uluslararası Bilimsel Araştırmalar Kongresi'nde sunulan bildiri*, Çorum

Gökdemir, A. (2020). *Sosyal bilgiler öğretmenlerinin EBA'ya ilişkin görüşlerinin değerlendirilmesi.* Yüksek lisans tezi, Aksaray Üniversitesi Sosyal Bilimler Enstitüsü, Aksaray.

Hilton, E. L. (2012). *Distance Learning Applied To Public Education History Requirement for South Carolina Teacher Recertification,* Submitted in Partial Fulfillment of the Requirements for IT 540. http://www.siue.edu/~ehilton/jury1/Distance.

Karaca, İ., Karaca, N., Karamustafaoğlu, N., & Özcan, M. Öğretmenlerin uzaktan eğitimin yararına ilişkin algılarının incelenmesi. *Humanistic Perspective, 3*(1), 209-224.

Kaya, O. (2019). *Meslek lisesi öğretmen ve öğrencilerinin eğitim bilişim ağına ilişkin görüşleri.* Yüksek lisans tezi, Gazi Üniversitesi Eğitim Bilimleri Enstitüsü, Ankara.

König, J., Jäger-Biela, D. J., & Glutsch, N. (2020). Adapting to online teaching during COVID-19 school closure: teacher education and teacher competence effects among early career teachers in Germany. *European Journal of Teacher Education, 43*(4), 608-622.

MEB, (2020). Sayılarla uzaktan öğretim. http://yegitek.meb.gov.tr/www/sayilarla-uzaktan-egitim/icerik/3132#:~:text=EBA%2C%202020%20y%C4%B1l%C4%B1nda%20d%C3%BCnyan%C4%B1n%20en%20%C3%A7ok%20ziyaret%20edilen%20e%C4%9Fitim%20sitesi%20oldu.&text=Uzaktan%20e%C4%9Fitimin%20ba%C5%9Flad%C4%B1%C4%9F%C4%B1%2023%20Mart,edilen%201.%20web%20sitesi%20oldu.

Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Educa-tion. Revised and Expanded from" Case Study Research in Education."* Jos-sey-Bass Publishers, 350 Sansome St, San Francisco, CA 94104.

Miles, M, B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook. (2nd ed)*. Thousand Oaks, CA: Sage.

OLCAY, A. ve DÖŞ, B. (2016). Turizm Eğitimi Alan Öğrencilerin İnternete Dayalı Uzaktan Eğitim Yöntemine Yönelik Görüşlerinin Belirlenmesi. *Çankırı Karatekin Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 7(1), 727-750.

Pınar, M. A., & Dönel Akgül, G., (2020). The Opinions of Secondary School Students About Giving Science Courses with Distance Education During the Covid-19 Pandemic. *Journal of Current Research on Social Sciences*, vol.10, no.2, 461-486.

Rosenberg, H., & Asterhan, C. S. C. (2018). "WhatsApp, Teacher?" - Student perspectives on teacher-student WhatsApp interactions in secondary schools. *Journal of Information Technology Education: Research,* 17, 205- 226. https://doi.org/10.28945/4081

Sheikh, M. K., Malavde, R., & Daigavane, S. (2020). Yogic eye exercises followed by the ergonomic advice on eye fatigue in children attending online classes in COVID-19. *International Journal of Current Research and Review, 12*, 132-36.

Sert Karaslan, Y. (2020, 14 Eylül). *Online eğitim sürecinde çocuk ve ergenlerde göz ve ortopedi sorunlarına dikkat* https://www.aa.com.tr/tr/saglik/online-egitim-surecinde-cocuk-ve-ergenlerde-goz-ve-ortopedi-sorunlarina-dikkat-/1972658 28.02.2021 tarihinde alındı

Şimşek, H., & Yıldırım, A. (2011). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri.* İstanbul: Seçkin Yayınları

TEDMEM. (2020). *COVID-19 sürecinde eğitim: Uzaktan öğrenme, sorunlar ve çözüm önerileri(TEDMEM Analiz Dizisi 7).* Ankara: Türk Eğitim Derneği Yayınları.

Ulukan, G. (2020, 22 Temmuz). *Zoom'un Türkiye'deki Kullanıcı sayısı pandemiden sonra 139 kat arttı* https://webrazzi.com/2020/07/22/zoom-un-turkiye-deki-ucretsiz-kullanici-sayisi-pandemiden-sonra-139-kat-artti/ 28.02.2021 tarihinde alındı

UNESCO. (2020). *School closures caused by coronavirus* (COVID-19). [Erişim Adresi: https://en.unesco.org/covid19/educationresponse] Erişim Tarihi: 15.01.2021

Van Manen, M. (1990). *Researching Lived Experience*. New York: SUNY Press.

Vonderwell, S. (2003). An examination of asynchronous communication experiences and perspectives of students in an online course: A case study. *Internet and Higher Education*, 6(1), 77-90.

Yang, Y. & Cornelious, L. (2004) *Students' Perceptions towards the Quality of Online Education: A Qualitative Approach*. https://files.eric.ed.gov/fulltext/ED485012.pdf

Yıldırım, A. & Şimşek, H. (2018). *Sosyal Bilimlerde Nitel Araştırma Yöntemleri*, Ankara: Seçkin Yayınlıclık

Yılmaz, E., Güner, B., Mutlu, H., Doğanay, G. ve Yılmaz, D. (2020). *Veli algısına göre pandemi dönemi uzaktan eğitim sürecinin niteliği.* Konya: Palet Yayınları

An Offline Drill And Practice Software Template Design that can be Used in The Classroom

Enes Abdurrahman BİLGİN
Van Yuzuncu Yil University, Turkey
Orcid: 0000-0003-3003-9259

Abstract
Today, with the widespread use of interactive boards, the need for teaching software to be used in the classroom is increasing. Unlike online materials and applications that require internet infrastructure, membership, user login, etc. It seems that there is a need for offline applications that do not require transactions. However, due to the difficulty and high cost of the development processes of these materials, they are quite rare in the literature. In this context, it is clear that such applications are needed. Therefore, in this study, it was aimed to create a teaching software template in the type of Drill and practice, independent of subject and content, in order to eliminate this deficiency in the literature. In this study, which was prepared according to the design and development research method, which is one of the quantitative research methods, an application infrastructure that provides the opportunity to practice and repeat any lesson, subject or achievement in the classroom environment was developed. During the development process, algorithms were developed in the C # language in the Unity program and a project template was created where teachers can prepare their own applications using their own content. The applications that can be prepared with the project obtained will be able to be an drill and practice type of teaching software that can be integrated with the names of the people in the class, get points with the correct answers given by each individual. Its also does not require internet access, and can present pre-prepared multiple-choice questions randomly. In addition, a sample application prepared using the template obtained as a result of the research is presented.

Keywords: Design and development research, offline, drill and practice software

Sınıf ortamında kullanılabilecek bir çevrimdışı alıştırma ve tekrar yazılımı şablonu tasarımı

Özet
Günümüzde etkileşimli tahtaların yaygınlaşması ile sınıf ortamında kullanılacak öğretim yazılımlarına olan ihtiyaç giderek artmaktadır. Özellikle internet altyapısı gerektiren çevrim içi materyal ve uygulamaların aksine, üyelik, kullanıcı girişi vb. işlemlere ihtiyaç duymayan çevrimdışı uygulamalara ihtiyaç olduğu görülmektedir. Fakat bu materyallerin geliştirilme süreçlerinin zorluğu ve maliyetinin yüksek olmasından dolayı literatürde oldukça az

rastlanmaktadır. Bu bağlamda bu tarz uygulamalara ihtiyaç olduğu açıktır. Dolayısı ile bu çalışmada literatürdeki bu eksikliği gidermek amacıyla konu ve içerikten bağımsız Alıştırma ve Tekrar türünde bir öğretim yazlımı şablonu oluşturulması amaçlanmıştır. Nicel araştırma yöntemlerinden olan tasarım ve geliştirme araştırma yöntemine göre hazırlanan bu çalışmada, sınıf ortamında herhangi bir ders, konu veya kazanıma yönelik alıştırma ve tekrar yapma imkânı sağlayan bir uygulama altyapısı geliştirilmiştir. Geliştirme sürecinde Unity programında c# dilinde algoritmalar geliştirilerek, öğretmenlerin kendi içeriklerini kullanarak, kendi uygulamalarını hazırlayabilecekleri bir proje şablonu oluşturulmuştur. Elde edilen proje ile hazırlanabilecek uygulamalar, sınıftaki kişilerin sisteme isimleri ile entegre edilebildiği, her bireyin verdiği doğru yanıtlar ile puanlar aldıkları, internet erişimi gerektirmeyen, önceden hazırlanan çoktan seçmeli soruları rastgele biçimde sunabilen bir Alıştırma ve Tekrar türünde öğretim yazılımı özelliğini taşıyabilecektir. Ayrıca araştırma sonucunda elde edilen şablon kullanılarak hazırlanan örnek bir uygulama sunulmuştur.

Anahtar Kelimeler: Alıştırma ve Tekrar yazılımı, Çevrimdışı, Tasarım ve geliştirme

THE EFFECT OF THE ACTIVITY-BASED TRAINING APPROACH ON STUDENT SCIENCE COURSE ATTITUDES

Hanife Atlı
https://orcid.org/0000-0003-2997-0978
Semra Benzer
Gazi University, Ankara, Turkey
https://orcid.org/0000-0002-8548-8994

Abstract
The aim of the study is to examine the effect of activity-based learning approach in science training on 5th grade students' attitude towards science lesson. Both meaningful learning is achieved and the student is more included in the learning process with the activities. In the last approach adopted, it is aimed to raise science literate individuals who put the student in the center, make them more active and transfer their learning to their daily lives. Science educators have used many approaches and various activities from past to present while trying to add these characteristics to individuals. The working group of the research consists of 5th grade students of a secondary school affiliated to the Ministry of National Education in the South-eastern Anatolia region in the 2020-2021 academic year. The scope of the study consists of applications based on the activity-based approach selected on Measuring Force and Friction Force. The study was carried out by the researchers within 5 weeks. During the study, the lesson plans prepared in accordance with the activity-based approach were applied to the study group. In the quantitative part of the study, data were collected with the attitude scale to science lesson applied to the students. Considering the pre-test and post-test scores obtained in the study, it was determined whether there was a statistically significant difference between the students' attitudes towards science lesson. In the study, it was examined in detail whether the students 'science attitude scores differ depending on gender, report card grade, education status of parents and parents' profession. At the end of the study, it was concluded that the activity-based training had a positive effect on the group to which it was applied.

Keywords: Activity based learning, science lesson attitude, secondary school

ETKİNLİK TEMELLİ EĞİTİM YAKLAŞIMININ ÖĞRENCİ FEN BİLGİSİ DERSİ TUTUMLARINA ETKİSİ

Özet
Çalışmanın amacı, fen bilgisi eğitiminde etkinlik temelli öğrenme yaklaşımının ortaokul 5. Sınıf öğrencilerinin fen bilgisi dersi tutumu üzerine etkisini incelemektir. Etkinlikler ile hem anlamlı öğrenmeler gerçekleştirilir hem de öğrenci öğrenme sürecinin içine daha fazla dâhil edilmiş olur. Benimsenen son yaklaşımda öğrenciyi merkeze alan, daha aktif hale getiren ve öğrenmelerini günlük yaşantılarına aktarabilen fen okuryazarı bireyler yetiştirmek amaçlanmaktadır. Bu özellikleri bireylere katmaya çalışırken fen eğitimcileri geçmişten günümüze birçok yaklaşım ve çeşitli etkinlikler kullanmışlardır. Araştırmanın çalışma grubunu, 2020-2021 Eğitim-Öğretim yılında Güneydoğu Anadolu bölgesinde Millî Eğitim Bakanlığına bağlı bir ortaokulun 5. Sınıf öğrencileri oluşturmaktadır. Çalışma kapsamını

Kuvvetin Ölçülmesi ve Sürtünme Kuvveti konusunda seçilen etkinlik temelli yaklaşıma dayalı uygulamalar oluşturmaktadır. Çalışma, araştırmacılar tarafından 5 hafta süre içerisinde gerçekleştirilmiştir. Araştırma sırasında çalışma grubuna etkinlik temelli yaklaşıma uygun hazırlanan ders planları uygulanmıştır. Araştırmanın nicel kısmında öğrencilere uygulanan fen bilgisi dersine tutum ölçeği ile veriler toplanmıştır. Araştırmada elde edilen ön test ve son test puanlarına bakılarak öğrencilerin fen dersine karşı tutumları arasında istatistiksel olarak anlamlı bir fark bulunup bulunmadığı belirlenmiştir. Çalışmada öğrencilerin fen dersi tutum puanlarının cinsiyet, karne notu, anne baba eğitim durumu ve anne baba mesleğine bağlı olarak farklılık gösterip göstermediği detaylı olarak incelenmiştir. Araştırma sonunda etkinlik temelli eğitimin uygulandığı grupta olumlu etki bıraktığı sonucuna ulaşılmıştır.

Anahtar Kelimeler: Etkinlik temelli öğrenme, fen bilgisi dersi tutum, ortaokul

Introduction

Activities that can be applied outside of the classroom that create a rich learning environment to achieve targeted behaviors and also provide permanent learning are called activities (Şahan, 2000). Activity-based teaching is; It is a teaching method that focuses on the goals and behaviors of the curriculum, tries to create problem situations that students may encounter in daily life, starts with the introduction of the planned activities to the classroom under the guidance of the teacher, or progresses individually, and at the same time it uses a chain of activities designed to support teacher and student communication (Mercer & Mercer, 1998; Olkun & Toluk, 2007). It is seen that activity-based education that can be used in natural environments is recommended as an alternative to effective teaching methods in education (Özen & Ergenekon, 2011). The essence of effectiveness-based teaching is to teach the course by applying activities (Felder & Brent, 2003). Activity-based learning approach is one of the constructivist approach strategies. It is a learning approach that enables students to reach results by making use of activities and observations (Çiftçi, 2019). The aim of the science curriculum was updated in 2017 to raise all individuals as science literate (MEB, 2017). In this direction, methods in which students are more active were adopted in the lessons. The science education students receive is aimed to be individuals who make sense of the world they live in, make observations and establish cause and effect relationships (Eltinge & Roberts, 1993). In the study conducted in line with this information, the Measurement of Force and Friction Force Unit were studied on the basis of an activity-based approach. The planned activities and the data and results obtained during the 5-week education period were explained.

In this study, it was aimed to determine the effect of middle school 5th grade students 'learning the subject of Measuring Force and Friction Force with an activity-based approach on students' science attitude. It was investigated whether the science attitudes of middle school students participating in the study differ according to the parameters of gender, mother's education level, father's education level, mother's occupation and father's occupation.

Method

This research was carried out with 30 middle school students in the 5th grade in the 2020-2021 academic year. In this study, one group pre-test-post-test experimental design, one of the quantitative research approaches, was used. In this section, the research model, study group, data collection tools and data analysis methods are presented.

This research was carried out with 30 middle school students in the 5th grade in the 2020-2021 academic year. 14 females (46.66%) students and 16 boys (53.34 %) participated in the study.

Science Attitude Scale developed by Geban et al. (1994) was used in this study aimed at determining students' attitudes towards science course. There are 5 options in this Likert type scale. These options are graded on a scale of 1 to 5. “I totally agree = 5, Agree = 4, Undecided = 3, Disagree = 2 Never agree = 1. There are 15 items in the Science Attitude Scale used in the study. 11 of these items contain positive and 4 negative statements. The scoring of the negative statements was made as "I completely agree = 1, I agree = 2, I am indecisive = 3, I do not agree = 4, I do not agree at all = 5". In other words, a scoring system working in the opposite direction was used. The reliability coefficient (Cronbach alpha) of this scale was specified as 0.83. Science Attitude Scale was used as a pre-test and a post-test in the research.

The data were analysed using SPSS 26 package program. First of all, it was examined whether the data obtained in the study showed normal distribution or not. The distribution of normality was examined using the Kolomogorov-Simirnov test. The relational sample t-test was used to compare the data obtained before and after the application. T-test was conducted for unrelated samples made to reveal whether the data differ according to gender. One-factor ANOVA test was used for repeated measures to examine the relationship between parents 'educational status and profession and students' science attitudes.

In this research, the Force Measurement and Creep Force unit has been studied based on the efficiency-based approach. The research was carried out in 5 weeks and 8 different activities were carried out.

Discussion

Whether the students' science attitude scores differ depending on their gender, report card grade, parents' education level and parents' profession was examined. The results of the analysis analyzed with the Kolomogrow-Simirnov test whether the data are normally distributed or not are presented in Table 1.

Table 1. Kolmogorov-Smirnov test results

			Kolomogrow-Simirnov			Skewness	Kurtosis
Scale	Group		Statistics	sd	p		
Science Course Attitude Scale	Experimental group	Pre-test	.180	29	.017	-1.306	.970
		Final test	.164	29	.044	-.629	-.725

When Table 1 is examined, the p value is greater than 0.05 for both pre-test and post-test data. This situation reveals that the data show a normal distribution. Parametric tests were used because the data obtained in the study showed normal distribution. The Science Course Attitude Scale of the students participating in the study was examined using the related sample t-test whether there was a significant difference between the average scores obtained

as a result of the pre-test and post-test applications. The results of this investigation are given in Table 2.

Table 2. Sample t-Test Results Related to Pre and Post Test Mean Scores

	Scale	N	$\bar{X}$	S	sd	t	p
Pre-test	FTÖ	30	4.2	.68	29	3.252	**.003***
Final test		30	4.7	.29			

*p<0.05

It is seen that there is a statistically significant difference between the PTS pre-test averages and post-test averages [t (29) = 3.252, p = .003 <.05], when Table 2 is examined. When the average values are compared, it can be said that this difference is in favour of the post-test. Therefore, it can be said that activity-based learning positively affects students' attitudes towards science lesson.

The t-test was conducted for the unrelated samples made to reveal whether the data obtained from the PTÖ applied as a pre-test-post-test of the students differ according to gender. The results obtained are shown in Table 3.

Table 3.T-Test Results of Science Course Attitude Scale Mean Scores According to Gender.

Gender	Scale	N	$\bar{X}$	S	sd	t	P
Female	Pre-test	14	4.27	.62	28	.201	.842
Boy		16	4.32	.76			
Female	Final test	14	4.70	.30	28	.143	.887
Boy		16	4.69	.29			

*p<0.05

Students' attitudes towards science do not differ according to gender, when Table 3 is examined. Pre-test and post-test findings are t (28) =. 201, p> 0.05 and t (28) =.143, p> 0.05, respectively.

At the beginning of the study, the students were asked about their science course year-end scores in their report cards one year ago. According to the answers given, their scores were grouped as 0-44 (poor), 45-69 (moderate), 70-84 (good), 85-100 (very good). The results obtained by one-factor analysis of variance (ANOVA) for repeated measurements made to reveal whether the data obtained from the Science Course Attitude Scale, which was applied to the students as a pre-test and post-test, differed according to the science course report score of the last year, are shown in Table 4-5.

Table 4. Descriptive Statistics of Science Attitude Scale Scores.

		Pre-test		Final test	
Report Card	N	$\bar{X}$	SS	$\bar{X}$	SS
0-44	-	-	-	-	-
45-69	4	3.31	1.238	4.80	.101
70-84	10	4.18	.509	4.63	.098

85-100	15	4.55	.535	4.72	.81

Table 5. Single Factor ANOVA Results for Repeated Measures of the Science Course Attitude Scale Scores of Students' Report Cards

	Varience	Sum of Square	sd	Mean of square	F	p
Report Card	Between subject	1.486	1	1.486		
	Measurement	2.273	3	.758	7.854	0.10
	Error	4.729	25	.189		
	Sum	8.488	29	2.433		

*p<0.05

It is seen that the highest attitude is in students whose report card grade is between 85-100 (Table 4). When the students' report cards are analyzed statistically, it is seen that there is no significant effect on science attitude (Table 5).

Descriptive statistics results of the mother education level and father education level of the students are given in Table 6. The results obtained by the single factor analysis of variance (ANOVA) for the repeated measurements made to reveal whether the data obtained from the Science Course Attitude Scale, which was applied as a pre-test and post-test in the study, differ according to the education level of the mother, are presented in Table 7.

Table 6. Descriptive Statistics of Science Course Attitude Scale Scores

			Pre-test		Final test	
	Education Level	N	$\bar{X}$	SS	$\bar{X}$	SS
Maternal education level	Primary school	7	4.00	.898	4.70	.249
	Middle school	17	4.45	.547	4.69	.333
	High school	1	5.00	-	-	-
	University	4	4.00	.901	4.81	.284
	Graduate	1	4.33	-	4.53	-
Father's education level	Primary school	4	4.40	.736	4.76	.274
	Middle school	20	4.31	.694	4.65	.309
	High school	2	4.33	.000	4.70	.235
	University	4	4.13	1.02	4.85	.300
	Graduate	-	-	-	-	-

Table 7. Single Factor ANOVA Results for Repeated Measures of Science Education Attitude Scale Pre-Test-Post Test Scores According to Parents Education Level

	Varience	Sum of Square	sd	Mean of square	F	p
Maternal education level	Between subject	.406	1	.406		
	Measurement	1.330	4	.333	1.718	.202
	Error	5.672	24	.236		
	Sum	7.408	29	.975		

Father's education level	Between subject Measurement	1.523 .238	1 3	1.523 .079	5.627	.026
	Error	6.765	25	.271		
	Sum	8.525	29	2.584		

*p<0.05

It is seen that the students' science attitude scores averages are generally high (Table 6). The education level of the parents does not show a statistically significant difference on the students' attitudes towards science (Table 7).

In addition to these data, in the data collected to determine whether maternal and paternal occupations have a significant effect on students' science attitudes. All of the students stated the profession of mother as housewife and father profession as worker. The effect of parental professions on science attitude could not be determined statistically, since there was no distribution among occupational groups in the group.

Conclusion

In this study, the effect of activity-based teaching approach on the 5th grade science attitude in teaching the Force Measurement and Friction Force Unit was investigated. As a result of the research, when the pre-test and post-test data were examined, it was concluded that the activity-based approach had a significant effect on students' science attitudes (Table 2). It is seen that students' attitudes towards learning science are high. In this sense, a result supporting other studies has been reached in the literature. Similarly, Küpçü (2008) examined the effect of activity-based problem-solving teaching approach on success in solving proportional problems. In the study conducted with 7^{th} and 8^{th} grade students, it was concluded that activity-based problem-solving teaching was an effective teaching approach in solving proportion problems. In a study by Duvarcı (2010), he stated that many desired behaviors could gain students through playful activities.

In this study, it is seen that there is no significant difference between gender and attitude levels. In different studies conducted for this purpose, gender is independent of science attitude. It is seen that the attitudes of the students who have high science class report scores are also high, when the science report card grades of the students are examined. In the statistical analysis, there was no significant difference between science attitude and report card score variable. Finally, in the study, the data were analysed according to the education level of the parents and the parents' profession. When science attitude and parents' education level and professions were examined, no significant difference was found between these two variables.

This result obtained in the research supports the theoretical knowledge in the literature. When the studies on the attitude of students of the activity-based approach in the literature are examined, it is seen that the activity-based approach positively affects student attitudes.

When examined in different lessons, Razgatoğlu (2020) revealed in study in the Turkish lesson that her activity-based studies significantly increased the experimental group students' attitude scores towards poems. Similarly, in the study conducted in the field of social studies, significant differences were revealed in the attitude level in the group where the activities were applied (Bozkurt, 2018). Coşkun (2017) found that the teaching of activity-based posters differs in favor of the experimental group in affecting the attitude.

References

Bozkurt, S. 2018. The effect of activity based teaching in social studies to students' attitudes against courses and their academic success. Master Thesis. Ömer Halisdemir University. Gradute School of Educational Sciences. Niğde, Turkey.

Coşkun, İ. 2017. The effect of activity based posters on the students' academic achievements, remaining levels in their learning and their attitudes towards the course. Master Thesis. Gradute School of Social Sciences. Bülent Ecevit University. Zonguldak, Turkey.

Çiftçi, F. 2019. The effect of activity based instruction on student achievement in geography 10th grade natural systems unit. Master Thesis, Necmettin Erbakan University, Gradute School of Educational Sciences, Konya, Turkey.

Duvarcı, D. 2010. Activity-Based Chemistry Teaching: A Case Of "Elements And Compounds". Procedia Social And Behavioral Sciences, 2, 2506–2509.

Eltinge, E. M. & Roberts C. W. 1993. Linguistic content analysis: A method to measure science as inquiry in textbooks. Journal of Research in Science Teaching, 30 (1), 65–83.

Felder, R.M. & Brent, R. 2009. Active learning: an introduction.asq. Higher education brief Creative Education, 2, 4-9.

Geban, Ö. Ertepınar, H., Yılmaz, G., Atlan, A. & Şahpaz, Ö. 1994. Bilgisayar Destekli Eğitimin Öğrencilerin Fen Bilgisi Başarılarına ve Fen Bilgisi İlgilerine Etkisi. I. Ulusal Fen Bilimleri Eğitimi Sempozyumu, (15-17 Eylül 1994). Dokuz Eylül Üniversitesi, Buca Eğitim Fakültesi, İzmir.

Küpçü, A.R. 2008. The effect of activity based teaching approach over the proportional reasoning related problem solving achievement. PhD Thesis. Marmara University, Gradute School of Educational Sciences, İstanbul, Turkey.

Mercer, C. D., & Mercer, A. R. 1998. Teaching Students with Learning Problems (5th ed.). Upper Saddle River, NJ: Prentice-Hall.

Milli Eğitim Bakanlığı (MEB) 2017. Fen bilimleri dersi öğretim programı (İlkokul ve ortaokul 3, 4, 5, 6, 7 ve 8. sınıflar). Ankara.

Olkun, S & Toluk Uçar, Z. 2007. İlköğretimde Etkinlik Temelli Matematik Öğretimi (3. Baskı). Ankara: Maya Akademi.

Özen, A., & Ergenekon, Y. 2011. Activity-based intervention practices in special education. Educational Sciences:Theory and Practice, 11(1), 351-362.

Razgatlıoğlu, M. 2020. The impact of activitiy-based poetry studies on fluent reading, creative writing, and attitudes. PhD Thesis. Gazi University. Gazi Gradute School of Educational Sciences, Ankara, Turkey.

Şahan, H.H. 2000. Evaluation of social studies from teachers points of view in terms of getting scientific behaviours gained. Master Thesis, Balıkesir University, Gradute School of Social Sciences, Balıkesir, Turkey.

SOCIETY AND LANGUAGE IN BALZAC ROMANS

Gizem Köşker
Anadolu University, Turkey
ORCID NO: 0000-0002-0115-9756

Abstract
Honoré de Balzac, one of the most important writers of the 19th century, is regarded as the creator of the realism movement in European literature. The novel, which is a literary genre with the works of Balzac, has begun to reach more readers day by day. The works of the author, who prefers a completely natural and realistic style of expression in his novels, are still popular all over the world today, and they are among the classics because they have not lost anything of their value. Although two centuries have passed since the Balzac novels were written, they still hook the attention of many people. One of the most important reasons for this situation is the language used by the author as much as the events he narrate in his works. Balzac conveys the 19th century French society in its entirety to the reader. At the same time, he is a writer who skillfully manages to visualize what he tells with detailed descriptions to create vivid images in the mind of the reader. Observing the society of the period in depth, the author touches on different dimensions of society in his novels. In addition to his detailed descriptions of the physical characteristics of the characters, he also conveys the deep psychological observations of the characters to the reader. Honoré de Balzac successfully classifies the socioeconomic class differences in society and lists the social events of the period through the characters he chooses from different zones of life in his novels. He examines the underlying human behavior through characters and skillfully pinpoints the universal features that exist independently of space / time concepts. While analyzing subjects such as human psychology and human relations, he also mentions the political events of the period, ideological approaches, understanding of morality, traditions, customs, habits, socio-economic conditions, professions, class differences, and class-jumping efforts with universal human characteristics. The natural, realistic and understandable language he uses makes his novels fluent and immersive. This study was carried out to examine the concepts of society and language and the relationship between these two concepts in the novels of the French writer Honoré de Balzac, who is accepted as the founder of the realism movement in 19th century European Literature.

Keywords: Honoré de Balzac, society, language

BALZAC ROMANLARINDA TOPLUM VE DİL

Özet

19. Yüzyılın en önemli yazarlarından biri olan Honoré de Balzac, Avrupa edebiyatında gerçekçilik (realizm) akımının yaratıcısı olarak kabul edilmektedir. Balzac eserleriyle birlikte edebi bir tür olan roman çok daha geniş kitlelere ulaşmaya başlamıştır. Romanlarında tamamen doğal ve gerçekçi bir anlatım tarzını tercih eden yazarın eserleri günümüzde hala tüm dünyada sevilerek okunan ve değerinden hiçbir şey kaybetmemiş klasikler arasında yer almaktadır. Balzac romanlarının yazıldığı zaman üzerinden iki yüzyıl geçmiş olmasına rağmen hala geniş kitlelere hitap etmesinin en önemli nedenlerinden biri, yazarın eserlerinde anlattığı olaylar kadar kullanmış olduğu dildir. Balzac 19. Yüzyıl Fransız toplumunu tüm gerçekliğiyle okuyucuya aktarırken aynı zamanda güçlü ve detaylı tasvirleriyle anlattıklarını okuyucunun zihninde canlandırmayı ustalıkla başarabilen bir yazardır. Dönemin toplumunu derinlemesine gözlemleyen yazar, romanlarında toplumun farklı boyutlarına ve katmanlarına dokunmaktadır. Karakterlerin fiziksel özelliklerine yönelik yaptığı ayrıntılı betimlemelerin yanında, okuyucuya, karakterlere ait son derece derin psikolojik gözlemlerini de aktarır. Honoré de Balzac, romanlarında yaşamın içindeki farklı kesimlerden seçtiği karakterler aracılığı ile toplumdaki sosyoekonomik sınıf farklılıklarını ve dönemin toplumsal olaylarını başarıyla anlatır. Karakterler üzerinden insan davranışlarının altında yatanı irdeler ve yer/zaman kavramlarından bağımsız biçimde var olan evrensel özelliklerin altını ustalıkla çizer. İnsan psikolojisi, insan ilişkileri gibi konuları analiz ederken aynı zamanda dönemin siyasi olaylarını, ideolojik yaklaşımları, ahlak anlayışını, gelenekleri, görenekleri, alışkanlıkları, sosyoekonomik koşulları, meslekleri, sınıf farklılıklarını, sınıf atlama çabalarını evrensel insana ait özelliklerle birlikte kaleme alır. Kullandığı dilin doğal, gerçekçi ve anlaşılır olması romanlarının akıcı ve sürükleyici olmasını sağlar. Bu çalışma 19. Yüzyıl Avrupa Edebiyatı'nda gerçekçilik akımının kurucusu kabul edilen Fransız yazar Honoré de Balzac'ın romanlarında toplum ve dil kavramlarını ve bu iki kavramın birbiriyle olan ilişkisini irdelemek amacıyla gerçekleştirilmiştir.

Anahtar sözcükler: Honoré de Balzac, toplum, dil

A NEW LOOK AT FRENCH LITERARY REPRESENTATIONS OF MOROCCO

Abdellatif El Aidi
Sidi Mohamed Ben Abdellah University, Fez, Morocco

Abstract
The aim of this paper is to examine how Morocco is represented in the works of four French writers: The Tharaud brothers (Jean and Jérome), Henry de Montherlant and Jean-Marie Gustave Le Clézio. More specifically, it attempts to develop a more nuanced vision of how Morocco is viewed in French travel writing than what studies following the Saidian approach suggest. Indeed, since Edward Said's Orientalism came into being in 1978, French literary representations of Morocco have generally been examined in terms of their engagement with the French imperial establishment. This paper focuses on the images of Morocco in the works of the four selected writers to offer a new conceptualization of French Orientalism, one that can be considered as both an application and a criticism of Said's *Orientalism*. The outcome of the analysis shows clearly that while the Tharauds' views and attitudes are marked by the same racism and imperialism Said talks about, Montherlant's and Le Clézio's views seem to subvert traditional clichés and stereotypes, providing two paradigms of a Western portrayal of the Orient that go against Said's study of Orientalism. It is therefore argued that the French literary construction of the Orient (Morocco in this case) is neither completely racist and imperialist as Said and his followers pretend, nor completely objective and innocent as the Orientalists would have us believe. French Orientalism, as conceptualized in this paper, contains a mixture of different views and attitudes. Hence the use of the plural form 'Representations' instead of the singular 'Representation' in the title.

Keywords: Orientalism, discourse, power-knowledge nexus, cultural hegemony, Morocco, French colonialism

A SCRUTINY OF THE NEW NORMAL THROUGH A CRITICAL DISCOURSE ANALYSIS OF PRESIDENT NANA ADDO DANKWA AKUFO-ADDO'S COVID-19 MANAGEMENT ADDRESSES

Edouard L. K. Koba
'Université d'Abomey-Calavi' (Abomey-Calavi, Benin Republic)

Abstract
This paper has leaned on the critical analysis of President Nana Addo's Covid-19 management addresses to explore and reveal the "*New Normal"* brought about by the advent of the fast-spreading and invisible enemy-virus. Drawing on Fairclough's (1989) approach, the descriptive analysis of the thematic structures has proportionally disclosed theme-type (a), (b), (e), (f), (c) and (d). The interpretative analysis has pointed out that themes of the classes (b), (e) and (f) have contributed to interweaving the clauses in the addresses into a cohesive and coherent whole to grant some logical legibility, perspectivization, and definementization to the discourse. The presence of theme type (a) uncloaks that the speaker has fetched some good experience of sanitary crisis management to convey persuasive messages to the confined, quarantined and isolated people. Theme-type (c) discloses that a sympathizing relationship is set up between the speaker and the people during this unprecedented situation. Dealing with the explanatory analysis, the outbreak of Covid-19 caused lots of complications. In the social sector, the major novelties are the use of Personal Protective Equipment, the compliance with social distance, the closure of churches, mosques and schools which led to the promotion of distanced worshipping and online learning as well as the death of hundreds of people. On the economic and financial fronts, there are a decrease of the Gross Domestic Product, a well-managed financial crunch and a slowdown of economic activities. In the political field, the closing of almost all telluric, water borders and airports in the sub-region, except for needful flights, has affected the bilateral and multilateral political relations. Lastly, the technological sector has experienced considerable innovations among which a solar-powered handwashing sink by Jude Osei from Kumasi, and the promotion of technology assisted work.

Keywords: Covid-19, enemy-virus, new normal, perspectivization

INTRODUCTION

Our era is fraught with an unprecedented pandemic which has been killing people for ages. The inability of Chinese to contain the covid-19 due to its fast mobility has contributed a lot to its worldwide spread. From its inception in the last trimester of 2019 in Wuhan, (the epicenter and cradle of the disease), this infectious disease has speedily reached all bits of the world countries and has engendered countless damages of various types (social, economic, political, etc). The outbreak of this probably deadliest threat to humanity in the history of deadly threats (C. J. Hopkins, 2020) has engendered incalculable disasters to the human race in the last two years of the second decade of the third millennium. According to the last update as at today 24th September, 2020 10:07 GMT on www.worldmeters.info, there are 32, 130, 722 coronavirus confirmed cases, 23, 704, 210 recoveries (96%), and 982, 513 deaths

(4%) in the world and the USA ranks first with 7,140,137 coronavirus confirmed cases, 4, 399, 996 recoveries and 206, 598 deaths. Though these statistics are dynamic and volatile, it can be deduced that North America (303, 017) South America (242, 887), Europe (218, 402) and Asia (182, 709) have recorded the highest death tolls whilst Africa (34, 583) holds the penultimate position before Oceania (900) **(**www.worldmeters.info as at today 24th September, 2020 10:07 GMT)**.** It results from these informative statistics that the fight against Covid-19 is a long war broken down into several battles as second waves have broken out in some parts of the world (China) and some countries have decreed a second lockdown (Israel)**.** It is made clear that no country on the earth planet has been spared from the ravages of the invisible enemy. On this ground, in West Africa mainly in Ghana (the first case reported on 13 March 2020), the pandemic has drastically affected the populations resulting in the upsetting and disruption of the traditional socio-economic and political habits, crowd-oriented event calendars, and has given birth to a *New Normal* which is manifested through the social and physical distance, use of sanitizers, nose masks, protective gloves, lockdown with its social, economic and political consequences.

This study aims at exploring the socio-economic, political and technological consequences of Covid-19 and the materialization of the *New Normal* indirectly enforced by Covid-19 and as experienced by the survivors of this long-lasting pandemic. It specifically lays bare the impacts of the pandemic on the Ghanaian's social, economic, political and technological sectors which set up the so-called *New Normal*.

In this vein, the worded research questions are as follows:

(1) What are the thematic structures in the analyzed political discourse and their implications?

(2) What are the impacts of Covid-19 on the social, economic, political and technological sectors in Ghana as mainly exhibited in the selected political discourse?

This study reveals the new habits and novelties imposed by the invisible and non-mastered-yet virus. It points out the various changes in the societal habits and economic practices, and the restrictive political relations in the management of this pandemic with its drastic drawbacks on the human race. It stands as a momentum to raise the awareness of Ghanaians especially, and African by extension, to stay away from psychological depression and to abide by the protective and barrier measures initiated by health and pandemic specialists in order to avoid the fastest spread of this pandemic in order to save lives and stay alive in the expectation that a cure will be found out for the happiness of the global population.

To put across the set objectives, this study describes, interprets and explains some Nana Addo Dankwa Akufo-Addo's Covid-19 management addresses under the banner of Fairclough's (1989) Critical Discourse Analysis pattern. It is worth glancing at the theoretical framework and the methodological perspective of this linguistic expedition.

1. Theoretical Framework and Methodological Perspective

This section pivots on the theoretical framework and the methodological orientation of the study.

1.1. Theoretical Framework

The number of scholars who have been contributing to the advent, evolution and expansion of CDA are numerous and quoting them all will be mind-numbing. Nonetheless, some CDA figures' definitions are unavoidably worth mentioning viz. van. Dijk (1998b), Wodak (1995) and Fairclough (1989). For van Dijk (1998b:352), Critical Discourse Analysis is stripped as "a type of discourse analytical research that primarily studies the way social power abuse, dominance and inequality are enacted, reproduced and resisted by text and talk in the social and political context". As made nude by T. van Dijk (1998b), CDA is perceived as an

innovative perspective which aims to provide a different mode of theorizing and analyzing written and spoken texts in order to expose the discursive sources of unequal power relations, prejudices and bias as established by social agents. As for Wodak (2002 p.71), "CDA is a perspective which highlights the substantively linguistic and discursive nature of social relations of power in contemporary societies. This is partly the matter of how power relations are exercised and negotiated in discourse". Simply put, CDA mainly uncovers inequalities between social actors, whether based on political, social, economic, cultural, religious or gendered grounds, which occur in contemporary societies. CDA strives to explore how "nontransparent relationships are crucial in securing power and hegemony, and it draws attention to domination forms, social inequities, nondemocratic practices, and other injustices so as to encourage people to perform corrective actions" (Fairclough, 1993, p.135). It is crystal clear that CDA sides with populations and stands as the defender of dominated people.
The theme is "the element which serves as the point of departure of the message; it is that which locates and orients the clause within its context**"** (Halliday & Matthiessen, 2004, p. 64). In other words, theme is the element which comes first in the clause and serves as the starting point for the message. Due to some other considerations, there is a nuance to make because Halliday & Matthiessen (2004, p.86) approximate that "the theme of a clause extends from the beginning up to, and including, the first element that has an experiential function — that is participant, circumstance or process". Reflecting the three-dimensional metafunctional structure of the clause, systemicists identify three different types of elements of clause structure that can be themes: topical or experiential elements, interpersonal elements, and textual elements (topical, structural, interpersonal, textual and multiple themes). However, the labels used in this thematic analysis are the ones proposed by Amoussou (2016).

Table 1: Theme classification keys

Theme classes	structure/composition of the Theme
(a)	'only a transitivity-label item or topical Theme'
(b)	'textual element+ topical theme'
(c)	'Interpersonal element+ topical theme'
(d)	'textual element +Interpersonal element+ topical Theme' or 'Interpersonal element+ Textual element + topical theme'
(e)	structural element'
(f)	textual element+ structural element/ 'structural element+ Topical theme'

As advocated by the researcher and adopted herein, "this classification offers a big advantage: it makes Theme-identification within the clause less cumbersome, as it helps to avoid using many theme-labels in the same clause" (Amoussou, 2016, p. 217).

1.2 Methodological Perspective

Fairclough's (1989) three-stage approach is methodically used to carry out this linguistic trek. President Nana Addo Dankwa Akufo-Addo's Covid-19 management addresses have been explored under the banner of a descriptive, interpretative and explanatory approach. A purposive sampling technique is used for the selection of these addresses since specific elements are needed to explore the new normal (Amoussou & Koba 2018; Koba 2019). A quantitative analytical method is used to number and label clauses' specific linguistic features such as themes of the types (a), (b), (c), (d), (e) and (f). This simply infers that sentential elements have been broken down into smallest thematic clausal structures and have been numbered and labelled according to their classes. A qualitative one is used to sort out the discursive and social practices within these written-to-be-read texts (Koba, 2019). These have been of pivotal use in the disclosure of the *New Normal* and its various implications.

2. Descriptive Analysis

This descriptive analysis starts with the display of the tabularized thematic structures' statistics and clauses of occurrence.

Table 2: Statistics and clauses of occurrence of theme types

Theme types	Clauses of occurrence	Rates
(a)	4-7-15-18-19-19.1-22-25-29-30-32-34-35-36-38-39-41-42-43-46-47-48-50-53-55-58-59-60-61-62-67-69-70-71-72-74-76-77-80-81-82-83-84-85-86-89-91-96-97-99-101-102-103-105-107-108-110-111-113-114-115-116-117-118-119-120-122-123-124-125-127-130-131-133-134-136-139-141-146-	79 (38.91%)
(a+)	2-12-14-17.1-21-45-55.1-59.1-66-88-117.1-121-138-142-	14 (06.89%)
(b)	3-5-6-8-10-11-16-20-23-24-26-27-28-31-33-40-44-49-51-52-54-54.1-55-60.1-65-68-73-87-90-92-93-94-95-100-104-106-109-112-126-128-132-135-137-143-	44 (21.67%)
(b+)	57-63-64-75	04 (01.97%)
(c)	1-9-13-79-98-140-144	07 (03.44%)
(c+)	78	01 (00.49%)
(d)	37-129-145-	03 (01.47%)
(e)	9.1-13.1-14.1-17.1-18.1-18.2-18.3-23.1-27.1-28.1-33.1-48.1-55.1-59.1-61.1-68.1-69.1-77.2-79.1-80.1-82.1-83.1-83.2-84.1-87.1-87.2-97.1-98.2-99.1-103.1-117.1-122.1-139.1-143.1-143.2-	35 (17.24%)
(f)	8.1-8.2-13.2-19.2-45.1-77.1-85.1-98.1-101.1-102.1-111.1-115.1-118.1-132.1-135.1-142.1	16 (07.88%)
Total		203

As indicated by the figures in the table overhead, 203 themes are itemized in this address which was delivered on 5th April, 2020 by President Nana Addo. Considering these, the most dominant themes are theme types (a) [79: 38.91%] and (a+) [14: 06.89%] whose compilation gives the following rate: [93/203: 45.81%]. For these theme types to be qualitatively identified and retrieved, clauses [4-7-15-18-19-19.1-22-25-29-30-32] can be firstly looked up for the 'a-type' while clauses [2-12-14-17.1-21-45-] can be secondly turned to dealing with the 'a+type'. This dominant rate translates a topicalization of the speech and the experimentization of the Covid-19 management. In addition, there can be seen a considerable existence of theme types (b) and (b+). By statistical occurrences, the'b-type'has reached [44: 21.67%] while the 'b+type' has amounted to [04: 01.97%]. These 'b-type' and 'b+type' are respectively distinguishable in such clauses as [3-5-6-8-10-11-16-20-23-24-26-27-28] and [57-63-64-75]. The presence of these types of themes reveals the hypotactic and paratactic connectivity of the all-inclusive speech and the persuasibility of the addresser.

Moreover, themes of the classes (c) [07: 03.44%] and (c+) [01: 00.49%] are all together tantamount to [08/203: 03.94%]. They unmask the speaker's resort to interpersonal data, which are qualitatively available in such clauses as [1-9-13-79-98-140-144] for the 'c-type' and in clause [78] only for the 'c+type'. The availability of theme of the type (c) highlights the interpersonality of the speaker and the interpersonalisation of the Covid-19 management. Furthermore, the tiniest proportion of theme of the class (d) [03: 01.47%] uncovers the scarcity of themes of diversified categories before the obligatory topical/experiential element as can be checked in clauses [37-129-145] only. Put mildly, the speaker has not actually summoned multiple themes before expressing his main ideas; and as a result of this, he has not delved into frontal thematic multiplications.

What is more, theme-type (e) has covered a non-negligible proportion [35: 17.24%]. For an accessibility of theme-type (e), such rankshifted clauses as [9.1-13.1-14.1-17.1-18.1-18.2-18.3-23.1-27.1-28.1-33.1-48.1-55.1-59.1-61.1-68.1-69.1-77.2-79.1-80.1-82.1-83.1-83.2-84.1-87.1-87.2-97.] are much more pointed at. Dealing with rankshifted clauses and dependent relations, theme-type (e) lays bare the "definementization" of the management process of Covid-19 through the contents in use. Last of all, theme-type (f) has occurred in an acceptable ratio [16: 07.88%]; such data, which reveal a rankshifted relation between clauses, are more and more perceivable in such clauses as [8.1-8.2-13.2-19.2-45.1-77.1-85.1-98.1-101.1-102.1-111.1-115.1-118.1-132.1]. Not only does it display a larger dependency on a main clause having verbal and mental processes, but the occurrence of theme-type (f) also divulges the projectization/perspectivization of some aspects of the management of Covid-19 in Ghana. On the whole, the speaker has made use of a great deal of themes of various categories to implement his Covid-19 management tactical stratagems.

3. Interpretation and Explanation

Being the third step in a three-dimensional methodology, the explanatory analysis draws on N. Fairclough's (1989) approach, which has to do with the societal, institutional and situational levels in order to uncloak the thematic implications which unmask and uproot the impacts of Covid-19 and the corollaries of the *New Normal* as imposed by the invisible and common enemy-virus. As a matter of fact, our world has been experiencing an avalanche of epidemics and pandemics among which cholera (1817), influenza (the Spanish Flu of 1918-19), Polio Epidemic (1970-1990), Dengue Epidemic (2001), SARS (Severe Acute Respiratory Syndrome) Epidemic (2003), H1N1 Flu Pandemic (2009), (A. E. Swetha, & S. Gopalakrishnan, 2019), and several others such as Ebola virus pandemic (Loukatou et al., 2014). Of these, the Spanish Flu of 1918-19 (influenza) is known to have caused around 20-50 million deaths worldwide and is considered more devastating (R. R. Colwell, 1996). The outbreak of Covid-19 in 2019 means that there was such a virus which has been considerably modified and it is defying all noted scientists. Covid-19, resembling the Spanish flu, has upset all traditional routines and established a *New Normal* whose consequences are social, economic, political and technological.

3.1 Economic Impacts

The imposition of strict restrictions to movements together with the strict lockdown of residents of Greater Kumasi Metropolitan Area and Greater Accra Region, which are the epicenters of Covid-19 in Ghana (Adom, 2020), has highly affected the economic activities of these people**.** On the front line of the most affected economically are "informal workers", who need to have a day out in order to provide for themselves and their families, the poor and the vulnerable" (cf. Speech delivered on 26th April, 2020). The grassroots are accustomed to living on a daily basis as they earn their income on diurnal performances. The imposition of the strict lockdown has not only participated in the battle against Covid-19, but it has also created a downfall in economic revenues of informal workers which dominate the Ghanaian economic sector. The closures of markets in some populous zones have contributed to weakening income-yielding activities and President Nana Addo is fully cognizant of that as acknowledged as follows: "I am fully aware of the sacrifices in reduced revenues that all businesses and enterprises are suffering (cf. Speech delivered on 5th April, 2020). The immediate implications of the new measures are the finding of alternatives to adapt to the *New Normal* as stated in: "Some districts have also embraced the policy of alternate-days-for-alternative-products, in a bid to decongest the markets and ensure social-distancing" (cf.

speech delivered on 5th April, 2020). All these measures create some disruptions in Ghanaians' lives but they are worth for the survival of the whole people.
In addition, local transport fees have increased since taxi-drivers have to limit their passengers and still have to pay the same amount for their fuel and maintenance. They have to adhere to "the admonition to observe social distancing in their vehicles" (cf. speech delivered on 5th April, 2020). And as a result of this, users have to compensate for the financial gaps. In relation to this price rise, there is faultlessly an impact on the cost of life and the purchase power of residents in a context where all productive activities are drastically affected. Apart from informal workers, formal businesses and enterprises have also faced loss in revenue. Due to the closure of borders, international transport companies working in the sub-region have seen their activities stopped and have consequently lost gargantuan sums of money as their cash-flows have become stagnant. As at today September 23, 2020, all telluric borders are still officially closed and external residents are not allowed to move freely from Ghana to join their place of origin except they use the airline ways which were also closed during the strict lockdown (from 15th March to 15th June). The closure of borders is well noted in the 16th speech on Covid-19 as he said: "for the avoidance of doubt, our borders, by land and sea, will continue to remain closed to human traffic until further notice." But, President Addo made his official announcement on the reopening of airline traffic: "I am glad to announce that Kotoka International Airport will reopen and resume operations from Tuesday, 1st September 2020 (cf. 16th Speech)". Economically, airway companies have lost large sums of money during this long period when operations were completely stopped.

3.2 Social Impacts

The advent of Covid-19 has firstly created a general death panic among the populations. The divisive enemy-virus has brought about social distancing (by affecting sisterhood and brotherhood relationships). During the strict lockdown in Ghana, starvation has threatened the most vulnerable populations due the stop of income-generating activities, but the government has provided some assistance through zero payment of water and electricity bills from March to May 2020 and food assistance.
Covid-19 revealed the fragility, deficiency and poor state of the health systems in Africa in general and in Ghana in particular. However, it has left a legacy of massive hygienic measures, precautionary measures against infectious diseases. Dealing with the social and physical distancing issues, the sisterhood and brotherhood relationships have been affected. The family bonds have been weakened since people of the same background family could not call on each other not only because of the restrictions but also because the enemy-virus knows nobody. The issue of isolation and quarantine has affected social relationships as people are unable to see their siblings, relatives, partners and co-workers. Worst of all, quarantined and isolated people are stigmatized and are rejected by their surrounding neighbors. As at today 23th September, 2020, there are 299 deaths, 46 153 confirmed cases, 45 299 recoveries and 555 active cases in Ghana (https://ghanahealthservice.org/covid19/). Though the death toll is not extremely alarming, more carefulness must be observed continually and people must be on standby to limit the spread since the enemy-very is also on alert.
On the social gatherings, the concept of "stay home and save lives" has transformed worshipping habits and has brought about new normalcy in religious places. After the closure of churches and mosques, Ghanaians experienced home worshiping and distanced worshipping through traditional media such radio televisions and modern media via social networks (WhatsApp, Telegram, etc.), YouTube, Zoom, etc., whose fervency cannot equalize that of churches and mosques in a community atmosphere. From the Words of the Holy Scriptures, it can be concurred that: "No, the arm of Yahweh is not too short to save, nor his

ear too dull to hear" (Isaiah 59:1). This Scripture basically means that people may worship Yahweh everywhere and can be granted.

3.3 Political and Technological Impacts

In the political sector, the closure of borders with the sake of saving lives and containing the mobility of the virus, which is exceptionally part of the new normalcy, has tremendously violated the ECOWAS protocol on free movement of persons, the right of residence and establishment and the brotherhood relationships maintained among the neighboring countries having common cultural ties and transnational relationships. The free movement was pointed out in Article 2 of the founding Treaty of 1975 and Article 3 of the Revised Treaty of 1993. On this view, the bilateral and multilateral relationships have been indirectly affected and this has set the ground for clandestine entries and upsurge of checkpoints, routine intimidations, and police harassments. To respond to official bilateral and multilateral relationships within the ECOWAS zone and the continuation of political relation, videoconferencing has been used to break borders' barriers and cut short distances. In short, traditional face-to-face meetings and discussions have been gradually replaced by distanced and technology-assisted political communications, and multilateralism is progressively replaced by unilateralism to preserve lives, which are beyond compare.

In the technological sector, the advent of Covid-19 has revealed the usefulness of Information and Communication Technologies in the political, social and economic sectors. Major transactions are carried out online through the development of more online banking transactions for traders. Major school activities are technology-assisted and many international relations are assisted by technological tools. As necessity is the mother of invention, new materials have been discovered by local Ghanaians as stated by President Nana Addo "I am (…) impressed with the invention of a solar-powered handwashing sink by Jude Osei from Kumasi, and the 'COVID-19 prevention electronic bucket' made by Kelvin Owusu Dapaah and Richard Boateng, both students of Obuasi Senior High and Technical School" (Speech delivered on 5th April, 2020). This timely invention has revealed the Ghanaian sense of creativity and innovation. Moreover, the shortage of personal protective equipment has led the government to the production of local ones as expressed by President Nana Addo: "Domestic production of face masks, head covers, surgical scrubs and gowns will commence from Tuesday." (Speech delivered on 5th April, 2020). On the whole, Covid-19 has largely impacted all the major sectors of life (socio-economic, political and technological) both with its low positives and high negatives.

Conclusion

As a linguistic-oriented research trek, this study has dealt with the exploration of the *New Normal* through a Critical Discourse Analysis of President Nana Addo Covid-19 management addresses in a Ghanaian context. Tapping Fairclough's (1989) three dimensional approach, the descriptive and interpretative analyses of the thematic structures have meticulously and respectively uncloaked the predominance of theme type (a) which consequently translates a topicalization of the speech and the experimentization of the Covid-19 management. Coming statistically second, the identification of theme type (b) has exposed the hypotactic and paratactic clausal connectedness and the persuasibility of the addresser in his strategic and skilful fight against the ravages of Covid-19. Not only is he persuasive, but President Nana Addo is also relational. In fact, the availability of theme of the type (c) highlights the interpersonality of the speaker and the interpersonalisation of the Covid-19 management as he made the fight against Covid-19 a collective combat in which everybody must align to defeat the common enemy, which does not know any ruling party or opposition parties, the poor or

the rich. Theme-type (e) has been able to lay bare the structural "definementization" of Covid-19 management. In the same dynamics, the occurrence of theme-type (f) has disclosed the perspectivization of some aspects of the management of Covid-19 in Ghana as the fight against Covid-19 is a war sequenced in relay battles.

The explanatory analysis has pointed out that Covid-19 has tremendously disrupted the existing sociocultural, politico-economic and technological practices and has brought about a new normalcy in almost all sectors of human activities. Just as the whole world is affected by Covid-19, Ghana has not been spared of and has been facing it with its own dosage of challenges. Thus, the divisive enemy-virus has brought about social distancing, and has left a legacy of massive hygienic measures, precautionary measures against infectious diseases, and has engendered additional investments in the health care system by the Ghanaian's Executive Power. The invisible-but-mobile virus has forced nations to close their telluric and coastal borders and to reduce international trade transactions, precautionary measures that have affected Ghana's Gross Domestic Product. But, it has pushed forward leaders' imagination in that the reliance of foreign products through imports is to be replaced by production and consumption of locally-made goods in order to promote self-sufficiency slowly but surely. Covid-19 has pushed people to think hard and reveal their creativity potentials through the invention of new technologies and the finding of distance solutions to activities/tasks which formerly needed the physical presence of the various actors. The virus is still virulent and Ghanaians have to be on standby by conforming to the mandatory governmental precautionary measures until further notice. Thus, President Nana Addo keeps on saying: "let us remain focused, and adhere to the enhanced hygiene, social distancing and mask-wearing protocols, that have, and must, become part and parcel of our daily lives for the foreseeable future. We can do it, if we work at it" (cf. Speech delivered on 21st June, 2020).

Bibliography

Adom D 2020. Cultural and Educational Implications of the COVID-19 Global Pandemic in Ghana, *International and Multidisciplinary Journal of Social Sciences*, *9*(3). doi: 10.17583/rimcis.2020.5416

Agyekum C K, Haifeng H & Amma A 2015. Review of china's trade on the economic growth of Ghana, *American Journal of Economics*, 5- 315-320.

Amoah C 2020. Sectoral economic impact of COVID-19 on Ghana's economy, https://www.resesearchgate.net/publication/341775820.

Amoussou C Y & Koba L K E 2018. A critical discourse analysis of John Dramani Mahama's Political Addresses. In: *ReSciLaC,* N°8 Snd Semester, 157-172.

Amoussou C Y 2016. Exploring the textual metafunction in a biblical fictional parable in Ngũgĩ wa Thiong'o's *Devil on the Cross*. *International Journal of Applied Linguistics & English Literature*, 5(5), 215-227.

Amuna P 2020, April 29, Ghana: COVID-19 remedies and cures- why we must be guided by facts, sound evidence, and adhere to public health measures. *AllAfrica*, available at https://allaafrica.com.

Ayittey F K, Ayittey M, Chiwero N B, Kamasah J S. & Dzuvor C 2020. Economic Impacts of Wuhan 2019-nCoV on China and the World. *Journal of Medical Virology*, 92, 473-475.

Colwell R 1996. Global climate and infectious disease: the cholera paradigm, *Science* 274.5295, 2025-2031.

Cooperative K I 2020. *2020 Budget Highlights (Ghana)*. November 2019.

Eggins S 1994. *An Introduction to Systemic Functional Linguistics.* London: Pinter Publishers.

Enu P, Havi E D K & Hagan E 2013. The impact of foreign trade on economic growth in Ghana (1980-2012). *International Journal of Academic Research in Economics and Management Sciences*, 2, 174-191.
Fairclough N 1989. *Language and power.* London: Longman.
Fairclough N 1993. Critical discourse analysis and the marketization of public discourse: the universities. *Discourse and Society*, 4(2), 133-68.
Fairclough N & Wodak R 1997. Critical discourse analysis. In: Teun A. van Dijk (Ed.), *Discourse a Social Interaction*, London: Sage.
Halliday M A K 1985. *An Introduction to Functional Grammar*, London, Arnold.
Halliday M A K & Hasan R 1976. *Cohesion in English*, London, Longman.
Halliday M A K & Matthiessen C M I M 2004. *An Introduction to Functional Grammar* (3rd ed). London: Edward Arnold.
Hopkins C. J 2020 18 March. Covid-19 global lockdown. *Centre for research on globalization-UK*. Available at https://www.globalresearch.ca
Kress G 1990. Critical discourse analysis. *Annual Review of Applied Linguistics*, 11, 84-99.
Koba L K E 2019. *A critical discourse analysis of some African Heads of States' political addresses*. Unpublished PhD Dissertation: Université d'Abomey-Calavi.
Loukatou S, Fakourelis P, Papageorgiou, L, Megalooikonomou V, Kossida S, & Vlachakis D, 2014. Ebola virus epidemic: a deliberate accident?. *Journal of Molecular Biochemistry*, *3*(3), 72-76.
New York Times, February 6, 2020, W. H. O. fights a pandemic besides coronavirus: an 'infodemic'. Available at https://www.nytime.com.cdn.ampproject.org.
Ofori-atta Ken (Minister for finance and economic planning, Ghana) 2020. *2020 Fiscal Strategy document (Ghana).*
Swetha G, Eashwar V, Anantha M & Gopalakrishnan Senapathy 2019. Epidemics and Pandemics in India throughout History: A Review Article. *Journal of Public Health Research & Development, 10(8),* 1504-1508. Available at http://doi.org/10.17583/rimcis.2020.5416
UNESCO, March 4, 2020. COVID-19 Educational disruption and response, https://en.unesco.org/themes/education-emergencies/coronavirus-school-closures (Accessed 23th September, 2020).
van DIJK T 1993. Principles of critical discourse analysis. *Discourse & Society*, 4(2), 249-283.
van DIJK T 1995. Discourse analysis as ideology analysis. In: C. Schäffner and A. L. Wenden (eds.), *Language and peace*, pp.17-33, Aldershot: Dartmouth.
van DIJK T 1998. *Ideology: a multidisciplinary approach*. London: Sage.
Wodak R & Meyer M 2001. *Methods of Critical Discourse Analysis*. London: Sage.
Wodak R 2002. Aspects of critical discourse analysis. *ZfAL*, 36, 5-31.
World Bank 2020, (January 19). Rapid response briefing note: remote learning & COVID-19 outbreak (revised draft: 16 March 2020), *World Bank*. Available at https://www.worldbank.org
Yang Y 2020, May 15. Use of herbal drugs to treat covid-19 should be with caution correspondence. *The LANCET*, *395*(10238), 1689-1690.

Language as Action: A Discourse-Stylistic Analysis of Mood Features in Michelle Obama's Final Speech

Franck AMOUSSOU
Université d'Abomey- Calavi (UAC) Bénin
Nassourou IMOROU
Université de Parakou (UP) Bénin

Abstract
This paper aims to examine the stylistic effect of the mood features in Michelle Obama's final address to the Americans. Anchored on Systemic Functional Linguistics and Discourse Stylistics, it basically focuses on the mood structures and the modality types registered in the speech. The findings disclose that the then U.S. first lady relies more on declarative mood and deontic modality to convey her message. The study thus infers that in her final message to her country citizens, Michelle Obama concentrates on action clauses and behaves as advisor towards women and men, as well as young and adults.

Key words: discourse stylistics, interpersonal meaning, modality, mood, Systemic Functional Linguistics

Introduction

According to Halliday (Halliday 1994, Halliday and Matthiessen 2004), language is used to perform two main functions: (i) to set social relations between interactants, i.e., language as action; and (ii) to reproduce our experience, i.e., language as reflection. The present study sets out to demonstrate how language is organized to fulfil the first function. Concretely, it undertakes an inquiry into mood features in/of a (political) discourse, namely that of the U.S. former first lady, Michelle Obama's final speech to the Americans. The research essay majorly seeks to look at how language, as a realization, expresses the way of speaking of participants and their roles, judgements and attitudes in specific discourse contexts. In view to reaching that objective, it is deemed convenient to apply Systemic Functional Linguistics (SFL), and more precisely, the discourse-stylistics aspect of it, to the investigation. Beforehand, it is of utmost importance to touch on the theories referred to in the frame of this study.

1. Theoretical Assumptions

The focal theory the current research work revolves around is, as earlier stated, the discourse stylistics. To showcase how this theoretical framework manifests itself in the speech acts deployed by Michelle Obama, it is assumed suitable to apply the Systemic Functional Linguistics approach to her address.

1.1. The Discourse Stylistics Approach

As can be guessed from the wording of the compound noun Discourse Stylistics, there is a dialectical relationship between Discourse and Stylistics. As a matter of fact, while Discourse indicates communication or speech, Stylistics is viewed as the study of the pattern and style of what is communicated.

Brown and Yule (1983, p.1) argue that "the analysis of **discourse** is, necessarily, the analysis of language in use" (authors' emphasis). As for Paltridge (2012, p.2), he elaborates and maintains that discourse analysis considers the ways that the use of language presents different views of the world and different understandings. Though multifariously defined by scholars, **Stylistics** is commonly likened to the study of style. In that sense, Leech (2008, p.54) explains that stylistics is the study of style; of how language use varies according to varying circumstances. From the foregoing clarifications, it is crystal clear that the close connection earlier stated between discourse and stylistics appears more than obvious. That's why, Opara (2005, as cited in Yeibo, p.198) explains the relationship encoded in the double-barreled model in the following terms:

> *Discourse Analysis and Stylistics are broad-based disciplines which deal with the functional aspects of language. While D.A. analyses what is communicated in Discourse, Stylistics analyses how it is communicated. The two disciplines often interact with each other. Thus Discourse-Stylistics is concerned with the analysis of communication to reveal its function, using various tools of interpretation including textual peculiarities. Such analysis enables us to appreciate style.*

It can be inferred from the foregoing statement that doing Discourse Stylistic Analysis or Linguistics Stylistics [to use Halliday (2002)'s terms] entails applying linguistic theories and models to a language use or discourse in order to exude its meaning or function. And the linguistic approach which best suits the current research enterprise is, in our utmost conviction, the systemic functional linguistics because "functional grammar", Butt and Lukin (2009) sustain, "is a necessary tool for [discourse] stylistics enquiry" (p.195). In the following, we shall be providing a glimpse at the linguistic perspective which underpins this scholarly paper.

1.2. From a Sketchy Background Information on SFL to Interpersonal Meaning

The theoretical model of this study, viz., the SFL, is a general linguistic resource which views language as a potential semiotic system for making meaning. Developed in the 1960s by M.A.K. Halliday and his associates (Hasan, Martin, Matthiessen, Butt, etc.), SFL is a social theory which considers meaning and use as central features of language. "Halliday's approach to grammar", as Halliday and Hasan (1985/1989) put it, "is a semantically driven grammar" (p.ix). Therefore, Suzanne (2004, p.11) states that the overall purpose of language, can be described as a semantic one, and each text we participate in is a record of the meanings that have been made in a particular context.

According to Halliday's (1994, 2004) assertion, language is organized around two main kinds of meaning: an ideational meaning or reflection, and an interpersonal meaning or action. Indeed, in Halliday's view, we use language basically to construe experience and to enact social processes. Note, however, that these two functions are completed by a third one, the textual function (or enabling function) which relates to the construction of text. To each function (also called metafunction) is given a label. Thus, language is diversified functionally into three simultaneous modes of meaning: ideational, interpersonal, and textual. This study is going to concentrate on only one metafunction, viz., the interpersonal metafunction.

The interpersonal metafunction is concerned with the interaction between speaker and listener. Taking account of this fact, Halliday and Matthiessen (2004) argue that the

interpersonal metafunction is "clause as exchange" (p. 61) that enacts social roles and relations. Quoting Yuliati (2013, p.52), Koussouhon et al. (2016, p.157) maintain that the interpersonal meaning is realized in wordings through Mood and modality and is centrally influenced by tenor of discourse.

Apprehended as the organization of a set of functional constituents (Subject, Finite, Predicator, Complement, Adjunct) and their configuration, the Mood structure is classified into four main speech functions (statement, command, offer, and question) correspondingly associated with the typical clause Mood of declarative, imperative, modulated interrogative, and interrogative (Eggins 1994, p.152-3). It should be emphasized here that in the system of Mood a major clause is either indicative or imperative. If indicative, it is either declarative or interrogative; if interrogative, it is either 'yes/no' interrogative or 'WH' interrogative (Halliday and Matthiessen, 2004, p.72; Adejare, 2013, p.25).

As far as Modality is concerned, Fontaine (2013) quoting Halliday & Matthiessen (1999, p.526), writes that it "is a rich resource for speakers to intrude their own views into the discourse: their assessments of what is likely or typical, their judgements of the rights and wrongs of the situation and of where other people stand in this regard" (p.120). Modality is generally expressed on two main axes called epistemic modality and deontic modality. Epistemic modality (also called modalization) has to do with the scales of probability and usuality, while deontic modality (also known as modulation) denotes the scales of obligation and inclination.

2. A Practical Discourse Stylistics Analysis of Michelle Obama's Speech

We shall reasonably embark on the present analysis by the Mood types recorded in the speech, before dealing with the Modality types. Besides, considering the length of the speech, we purposely decide to make the analysis only qualitative.

2.1. Mood Types

2.1.1. Indicative Mood

The two indicative Mood constituents, that is, declarative Mood and Interrogative Mood, are all registered in the discourse.

2.1.1.1. Declarative Mood

Although no specific numerical data are provided, it is obviously discovered in the speech that declarative clauses are typically foregrounded as they are the most predominantly deployed. Instances of declarative clauses are typified below:

DM_1: These are the fine women, and a few good men.

DM_2: And I want to start by thanking Terri for that wonderful introduction…

DM_3: And I want to take a moment to acknowledge a few people who are here.

DM_4: I want to take this time to thank you both publicly for your dedication and your leadership and

friendship.

DM_5: Eric is acting like he's a ham

DM_6: …he tries to pretend like he doesn't exist at all.

DM_7: These individuals, they are brilliant. They are creative.

DM_8: So we decided to flip the script and shine a big, bright spotlight on all things educational.

DM_9: Next, we launched Better Make Room.

DM_{10}: We doubled investments in Pell grants and college tax credits.

DM_{11}: She said, “Mrs. Tchorzynski is my lifesaver”.

DM_{12}: You see the promise in each of your students.

DM_{13}: But with a lot of hard work and a good education, anything is possible-even becoming President.

As is obvious from the list above, all the clauses are full declaratives. This suggests that although it is a spoken text, it has all the same been well elaborated as a written discourse. Another striking observation is that each clause provides information about something, which denotes that Michelle Obama chiefly takes on the role of ‘*information processor and deliverer*’ [to use Feng and Liu (2010, p.828)’s terms]. For instance, while the orator is informing the audience in DM_1 that the women and the few good men who came to listen to her final remarks are ‘fine’, she argues in DM_7 that the people she’s just named (Eric, Stephanie, Greg) are ‘brilliant’ and ‘creative’. Notice in the latter clause the particular foregrounding through the use of the demonstrative adjective ‘these’ + the noun ‘individuals’, the two items replaced by the person deixis ‘they’ after a comma.

DM_8, DM_9, DM_{10} are three clauses about the basic objective the Obamas have set out to achieve, that is winning the war against ignorance through education. Hence, while DM_8 expresses their intention to impact significantly the educational sector, DM_9 and DM_{10} respectively exhibit concrete actions carried out, viz., launching Better Make Room (a social campaign to give young people the support and inspiration to complete higher education), and investing more “to make higher education more affordable”. Notice also here that the logical connector ‘next’ in the beginning of DM_9 proves that although we are dealing with a spoken interaction, the text was previously rehearsed to make it sound like a formal written one.

DM_2, DM_3, DM_4 rather highlight the speaker’s intentions about what she’s going to say. This is signaled in each of them by the mental performative verb ‘want’ preceded by the first personal pronoun ‘I’, anaphorically representing the speech deliverer. Syntactically those declarative clauses are characterized by a salient stylistic feature: parallelism. As a matter of fact, all of them are all built on the structure ‘I want to + BV, with BV standing for an action verb.

A perfunctory look at DM_5 and DM_6 exudes a remarkable rhetorical figure, that is, ***simile***. According to Olusola (2016, p.76), simile is a figurative expression that focuses on direct comparison through the use of ‘as’ and ‘like’. While Eric is equated with ‘a ham’ in DM_6 because of the way he is behaving, Stephanie (anaphorically referred to as ‘he’) is compared in DM_6 to someone who feigns not to exist at all. In both cases, Michelle succeeds in doing the comparison through the use of ‘like’.

DM_7 is a particular clause from the list. It is a statement by someone else, restated by the addressor. It is commonly known as ‘direct speech’, and quotes here the speech or locution by Kyria (referred to by ‘she’) who has witnessed the advantage she gets from education. According to her, Mrs. Tchorzynski, her educator, is perceived as her lifesaver. Needless to underscore the ***metaphoric stylistic device*** deployed in this clause to achieve the comparison, that is, Mrs. Tchorzynski likened to a lifesaver.

At last, DM_{12} indicates one more or less perceptible impact of educational investment on the youth, while DM_{13} is uttered to give the audience hope. In fact, through the use of the mental perceptive verb ‘see’ in DM_{12} Michelle Obama is directing parents’ attention to the way they

realize or picturize, thanks to education, the promising future of their offspring. This ultimately brings her in the last selected clause to assert that "with a lot of hard work and a good education, anything is possible-even becoming President". Besides the use of those various declaratives, the speaker also employs interrogatives in her address.

2.1.1.2. Interrogative Mood

Like declarative clauses, interrogative Mood is also recorded in the speech. Though interrogative clauses are not so numerous as the previous ones, they are not tiny. Incidences of them are exemplified in the table below.

Table 1. Interrogative Mood in Michelle Obama's Speech

WH-Interrogative	Polar Interrogative
IM_1: What's going on? IM_2: "Well, where are you going to be?" IM_3: Where is Eric?	IM_4: You hear me? IM_5: "Can you come? Can you come here? Can you do this? Can you take that? Can you ask for that? Can you come? Can we trap? Can we sing? IM_6: You hear me, Young people?

A cursory look at table 1 above discloses two types of interrogative mood: WH-interrogative and polar interrogative. As argued by Halliday and Matthiessen (2004, p.134), WH-interrogatives function in the speech "to specify the entity that the questioner wishes to have". And that entity in IM_1 is the thing that is going on, while it refers to the place "these folks" are going to be and Eric is in IM_2 and IM_3 correspondingly.

As for polar interrogatives, they give rise to the answer 'yes' or 'no' and are usually of the type F^S^P, with F standing for Finite, S for Subject and P for Predicator. IM_5 lucidly proves this with 'can' referring to F, 'you' to S and 'come'/'do'/'trap'/'sing' to P. It is however of note to underline the intentional ***parallelism*** in the structure of those successive clauses. As far as IM_4 and IM_6 are concerned, they are atypical clauses as they are declarative clauses phonologically realized as interrogatives, that is, they are of the type S^F^P, with F conflated to P. They are, in Adejare (2013, p.30)'s words, called '***echo questions***'. All those interrogative sentences are used concomitantly with imperative ones.

2.1.2. Imperative Mood

The last sub-category of Mood structure, i.e., imperative Mood is also counted in Michelle Obama's address. Contrary to the foregoing Mood type, Imperative Mood are significantly used in the speech. Occurrences of them are epitomized in the table beneath.

Table 2. Imperative Mood in Michelle Obama's Speech

Positive imperative	Negative imperative
Imp M_3: Be focused, be determined, be hopeful, be empowered. Imp M_5: You guys, that's a command-rest yourselves. Imp M_6: Keep it down. Keep it together, ladies. Imp M_7: So let's give them a round of applause. Imp M_8: Because let's be honest Imp M_9: You've got to step out. Imp M_{10}: If you are a person of faith, know that religious diversity is a great American tradition, too. Imp M_{12}: Empower yourselves with a good education, then get out there and use that education to build a country worthy of your boundless promise.	Imp M_1: …don't be afraid. Imp M_2: Young people, don't be afraid. Imp M_4: Do not ever let anyone make you feel like you don't matter. Imp M_5: Lead by example with hope, never fear.

Imperatives in table 2 above are made of two kinds: positive imperative and negative imperative. Positive imperative clauses are of the 'you' type (Imp M_3, M_5, M_6, M_9, M_{10}, M_{12}),

or 'you- and- me' type (Imp M_7 and M_8). They all refer to orders given by the speaker for the performance of specific actions or for keeping a given state of mind. For instance, young people are asked in Imp M_3 to "be focused, be determined, be hopeful, be empowered". This set of orders give an ***aesthetic rhythmic feature*** to the speech. The same artistic meaning is conveyed in Imp M_6 where the orator is inviting the ladies to sit down. Notice here that the use of the vocative 'ladies' at the end of the clause enhances an equal, or better a friendly relationship between the then first lady and her audience. Imp M_{12} is made of three successive orders ("empower yourselves", "get out there" and "use that education") linked by an extension relationship introduced by the coordinators 'then' and 'and'. They all function as advice given to youth about the utility education could be for them. As for Imp M_{10}, it is an order inserted in a hypotactic clause complex (or dependent clauses) to state that 'if' the condition of being "a person of faith" is fulfilled, you have to "know that religious diversity is a great American tradition, too".

Unlike the clauses thus far studied, Imp M_7 and M_8 imply the commitment of both the addressor and the addressees; that is, Michelle is also concerned with "giv[ing] them a round of applause" and "be[ing] honest". Such kinds of order are known as ***suggestions*** or ***jussive inclusives*** in Osisanwo (2003, cited in Yeibo, 2011, p.201)'s terms. It is however important to emphasize at this stage that the use of the continuity and conjunctive adjuncts ('so' and 'because' respectively) in the beginning of those clauses is revelatory of the spoken mode of the text at stake.

In Imp M_5, the directive speech act "rest yourselves" has been foregrounded through the explicit performative clause "that's a command", preceded by the vocative "you guys" (a slangy feature which evokes familiarity or endearment). Last but not least in this category of positive imperatives is Imp M_9, an atypical imperative clause which, on the surface has the configuration of declarative mood type. Indeed, in saying "you've got to step out", the speaker is uttering not a statement, but an order (pragmatically designated under the label 'indirect speech act') to make Eric come to her.

Turning to the last category of imperative mood, i.e., negative imperatives, they are of the type don't + Predicator as disclosed in Imp M_1 & M_2. In fact, telling young people not to be afraid amount to preventing them from letting themselves to fear. Those clauses serve then to express ***prohibition***. Through Imp M_4 youngsters are strictly forbidden to "let anyone make" them believe they "don't matter" at all, while Imp M_5 is designed to telling them that armed with hope, they must "never fear". The next subsection will be devoted to the exploration of Modality patterns encoded in the speech.

2.2. Modality Types

The two categories of Modality types are all deployed by the orator. As has been done with the mood structure, Modality configuration will be studied starting with the first one dealt with at the theoretical stage; that is, Epistemic Modality.

2.2.1. Epistemic Modality

The two scales of epistemic modality put forth by Halliday & Matthiessen (2004, p.147), viz., probability and usuality, manifest themselves in the speech under study. The table beneath itemizes some occurrences.

Table 3. Epistemic Modality in Michelle Obama's Speech

Degree of probability	Degree of usuality
EM1: And, may I say for the last time officially, welcome to the White House. EM2: We couldn't do this without the support of the Department of Education. EM3: "Can you come? Can you come here? Can you do this? Can you take that? Can you ask for that? Can you come? Can we trap? Can we sing? EM4: …they can't believe in themselves. EM5: And when you encounter obstacles- because I guarantee you, you will. EM6: maybe they, too, will be inspired to rise to their best possible selves. EM7: I hope I've made you proud.	EM8: …something better is always possible EM9: his kids…have opportunities he never dreamed of.

It can be deduced from table 3 above that probability is encoded in the speech in three ways: via (a) finite modal operators such as 'can', 'can't', 'could' 'may', 'will'; (b) mood adjunct of probability: 'maybe', and (c) grammatical metaphor (also called metaphor of probability): 'I hope'. Whatever the modalization marker used to express probability, it is clear that it introduces the speaker's attitude or judgement about the likelihood of the proposition referred to. Thus, 'couldn't' in EM2 serves as the means whereby Michelle Obama declares it is not likely that the achievement made be a reality "without the support of the Department of Education". Likewise, 'can't' signals in EM4 the incapacity for young people to "believe in themselves" at times. On the other hand, one is tempted to understand that the orator deploys 'can' in a series of interrogation to seek to know whether her interactants (more explicitly her special guests) are able to perform the actions requested, that is, to 'come', to 'do', to 'take', to 'ask', to 'trap', to 'sing'. In fact, that is, pragmatically speaking, a polite way to invite them to perform those actions. Such succession of indirect speech acts built on a parallel structure not only aims to indulge into action, but also to yield a poetic effect. While the mood adjunct of probability 'maybe' indicates in EM6 an absence of total assurance about the occurrence of the stated proposition, that is, people's inspiration "to rise to their best possible selves", 'may' nonetheless exudes the addressee's permission to "say for the last time officially, welcome to the White House". On the contrary, the first lady has recourse to 'will' in EM5 to frankly warn her audience about the certainty/confidence that they encounter obstacles. This certitude is stylistically enhanced by the clause "I guarantee you". Moreover, another cohesive stylistic device characteristic of this clause is perceptible: ellipsis. In fact, the full statement is "you will encounter obstacles", whereof the Predicator and the complement are left unsaid. This kind of ellipsis is known as verbal ellipsis since it "operate[s] on the verbal group" (Koussouhon et al., 2017, p.90). At last, Michelle resorts to the grammatical metaphor 'I hope' to assert her wish to have "made [her compatriots] proud".

Coming back to usuality, it is noteworthy to argue that it refers to the frequency of propositions. Hence, the American former president's wife to uses 'always' in EM8 to give her listeners the hope that in every case "something better" undoubtedly befalls people who get stuck to their dream and "fight for it". By contrast, 'never' implies in EM9 that a *thorough absence* of dream by "my dad" may nevertheless result in certain opportunities for his kids. This, according to the orator, is made possible by his eager commitment to his job, and his faith in life.

2.2.2. Deontic Modality

Like epistemic modality, both sub-categories of deontic modality, i.e., obligation and inclination, are recorded in the address. Tabulated below are some instances.

Table 4. Deontic Modality in Michelle Obama's Speech

Degree of obligation	Degree of inclination
DM1: that's where the spotlight should be DM_2: …they should finally get some recognition. DM_3: And here's what Kyra had to say. DM_4: Right now, you need to be preparing yourself to add your voice to our national conversation. DM_5: you need to prepare yourself to be informed and engaged as a citizen.	DM_6: I will be with you

From table 4 above, it is crystal clear that obligation is manifested in the speech through *modulated modals* (Eggins 1994/2004) such as 'should', 'had to', and 'need to'. These are what Brown (1980, quoted in Koussouhon and Amoussou 2015, p.280) calls *strengtheners*. In fact, unlike epistemic modality choices earlier explored, those modal operators disclose a high degree of confidence in and commitment to the stated actions or proposals. In that perspective, 'should' is resorted to in DM_1 & M_2 to point, in that order, to the necessity for the American nation to re-define the direction of the spotlight, and for school counselors to "get some recognition".

On the other hand, through the finite verbal operator 'had to', a moral obligation is assigned to Kyra in DM_3 to say all the benefits she gets from her benefactor Tchorzynski. Meanwhile, 'need to' conveys the meaning of the requirement or necessity that everyone gets prepared to have their say in the national affairs, "to be informed and engaged as a citizen". Finally, the modulated modal 'will' be uttered in DM_6 is not an expression of obligation whatsoever, but of inclination from the speaker. Actually, Michelle uses that finite to candidly express her commitment to constantly be at their side, to endlessly share their sorrows, their problems, their distresses, their predicaments.

3. Recapitulation of the Findings, Evaluation and Conclusion

The current study has undertaken a discourse stylistic exploration of Mood features on a public speech, so to speak. It has primarily attempted to probe into Simpson (1993, p.2)'s assertion that "stylistic techniques can be applied to texts other than those included in the established literary canon". In that endeavor, after giving a clearer picture of the theoretical assumptions which inform the research work, we strived to showcase, through textual features of Michelle Obama's final address to the nation, how the mood structures and the modality patterns deployed by the then first lady has been purposely selected to give an aesthetic value to the discourse.

As a matter of fact, the analysis of the speech functions has displayed the presence of both the indicative and the imperative moods. Concerning the former mood type, it is discovered that statements and questions are registered. Declarative mood is the mechanism whereby the speech deliverer has provided her audience with information about (i) her recognition to "special guests" such as John King (Secretary of Education), Arne Duncan (former Education Secretary), Eric Waldo (Executive Director), Greg Darnieder (Senior Advisor), and many others (educators, leaders, friends, etc.); (ii) her achievements in the field of education (making College Signing Day a national event, launching a social media campaign termed Better Make Room, doubling investments in Pell grants and college tax credits, expanding income-based loan repayment options, etc., (iii) the results obtained (testimonies about school counselors), and (iv) her hope giving and exhortation words (everyone, of whatever

background and social condition are part of a proud American tradition, can think critically, can get a good job, can be a positive force, etc.).

As for interrogative mood, it has mainly consisted in maintaining a relationship of superiority over the audience, making her a powerful participant controlling the discourse. Meanwhile, imperative has contributed to creating a face-to-face 'interactive event' whereby orders are received by the audience who just performs actions to comply like sitting down, applauding, laughing, expressing surprise, etc. Nevertheless, the addressee has contrived to keep with her recipients a relation of informal situation (thus of equal status) through the use of everyday words, slangy expressions, terms of endearment, etc.

She has also tempered her attitude and judgement through epistemic modality. However, deontic choices have helped to pinpoint the participants' obligation inherent to the educational field she has focused her final remarks on. Besides, they have been resorted to as grammatical textual features to display the orator's inclination to continue being with the populace, "rooting for [it] and working to support [it] for the rest of [her] life".

It is however important to stress that the aforementioned lexico-grammatical features have helped to lay bare the style of the speaker. In fact, it has been demonstrated in this study that in the course of delivering her message, Michelle Obama has made recourse to a great range of rhetorical and cohesive devices such as foregrounding (notably linguistic parallelism), ellipsis, metaphor, simile, repetition, extension, enhancement, etc. Those stylistic choices have significantly contributed to unravelling the persuasive language of Michelle Obama. In other words, they have made the text a merely creative/artistic product which ultimately discloses the poetic quality of the political elite woman. Moreover, they have helped to reveal how the language has been beautifully and skillfully carved to suit the context of culture and the context of situation in which the message was delivered.

In a nutshell, it can be contended from the stylo-functional analysis carried out so far that both linguistic and literary features have been woven together by Michel Obama to give meaning to her discourse. As such, her message chiefly bears a social function as well as an aesthetic mark. The study has also exuded the ideology in/behind the then first lady's address, namely in terms of education. From that finding, we cogently submit to Ngara (1982, p. 29)'s contention that "the style of a serious writer [or speaker] cannot be divorced from his ideological concerns". And this has clearly been evidenced in the studied discourse!

References

Adejare R A 2013. The Manifestation of Mood and Modality in Texts. International Journal on Studies in English Language and Literature (IJSELL), 1 (3): 24-34.

Bloor T, Bloor M 2004. The Functional Analysis of English: A Hallidayan Approach (2nd ed). London: Arnold, 207 pp.

Brown G, Yule G 1983. Discourse Analysis. Cambridge: Cambridge University Press, 283 pp.

Butt D G, Lukin A 2009. Stylistic Analysis: Construing Aesthetic Organisation. In: Halliday M A K, Webster J J. (eds.), Continuum Companion to Systemic Functional Linguistics. London & New York: Continuum International Publishing Group, pp. 190-215.

Chapman R 1973. Linguistics and Literature: An Introduction to Literary Stylistics. London: Edward Arnold, 120 pp.

Eggins S 2004. An Introduction to Systemic Functional Linguistics 2nd ed. New York-London: Continuum, 384 pp.

Eggins S 1994. An Introduction to Systemic Functional Linguistics. London: Pinter Publishers.
Feng H, Liu Y 2010. Analysis of Interpersonal Meaning in Public Speeches-A Case Study of Obama's Speech. Journal of Language Teaching and Research, 1 (6): 825-829.
Fontaine L 2013. Analysing English Grammar. Cambridge: Cambridge University Press, 284 pp.
Halliday M A K 1994. An Introduction to Functional Grammar 2nd ed. London: Edward Arnold, 439 pp.
Halliday M A K 1971. Linguistic Function and Literary Style: An inquiry into the Language of William Golding's *The Inheritors.* In: *S B* Chatman (ed) Literary Style. London and New York: Oxford University Press.
Halliday M A K, Matthiessen C M I M 2014. Halliday's Introduction to Functional Grammar 4th ed. New York: Routledge, 786 pp.
Halliday M A K, Hasan R 1985/1989. Language, Context, and Text: Aspects of Language in a Social-Semiotic Perspective. Oxford: Oxford University Press, 126 pp.
Halliday M A K, Matthiessen C M I.M 2004. An Introduction to Functional Grammar 3rd ed. New York: Oxford University Press Inc, 689 pp.
Jaafar E A 2014. A Stylistic Analysis of Two Selected Poems. J. Of College Of Education For Women, 25 (1): 235-248.
Koussouhon L, Akogbeto P, Amoussou F 2017. Cohesion in Texts: A Discourse Analysis Approach to Newspaper Article. Revue du CAMES: Littérature, Langues et Linguistique, 6 (2): 86-103.
Koussouhon L A, Amoussou Y C 2015. Charaterisation, Authority and Ideology in Ngũgĩ's Devil on the Coast. Mediterranean Journal of Social Sciences, 6 (4): 279289.
Koussouhon L, Koutchade I S, Amoussou F 2016. The system of Mood, Tenor and Context of Culture in Amma Darko's and Sefi Atta's ¨Prose Fictions: A Contrastive Socio-Semiotic Analysis. Revue Internationale d'Ethnographie, 6, 155-166.
Leech G 2008. Language in Literature: Style and Foregrounding. New York: Taylor & Francis, 222 pp.
Matthiessen C M I M 2009. Ideas and New Directions. In: Halliday M A K, Webster J J. (eds.), Continuum Companion to Systemic Functional Linguistics. London & New York: Continuum International Publishing Group, pp. 12-58.
Nørgaard N, Busse B, Montoro R 2010. Key Terms in Stylistics. London and New York: Continuum International Publishing Group, 269 pp.
Olusola A O 2016. Lexis and Mood as Markers of Feminist Ideology in Tunde Kelani's Arugba and Ma'ami. International Letters of Social and Humanistic Sciences, 71, 71-82.
Paltridge B 2012. Discourse Analysis: An Introduction 2nd ed. London & New York: Bloomsbury Academic, 282 pp.
Thompson G 2014. Introducing Functional Grammar 3rd ed. New York, Routledge.
Yeibo E 2011. A Discourse-Stylistic Analysis of Mood Structures in Selected Poems of J. P. Clark-Bekederemo. International Journal of Humanities and Social Science, 1 (16):197-203.
Zequan L 2003. Register Analysis as a Tool for Translation Quality Assessment. Retrieved from http://translationjournal.net/journal/25register.htm [19.12.13]

RE-READING ALICE WALKER'S *COLOR PURPLE* FROM TWO PERSPECTIVES: VICTIMIZATION - OBJECTIFICATION OF AFRICAN AMERICAN WOMEN AND SELF-ASSERTION

Kombieni Didier
Université de Parakou, FLASH, Parakou, Benin
Nathalie J. A. Aguessy
Comlan Charles Antoine Agbessi
Université d'Abomey-Calavi (UAC), République du Bénin

Abstract

The Color Purple written by Alice walker is a novel which relates the domestic and incestuous relations African American women endured in their community during the 1920's through the 1930's. The present work intends to study Alice Walker's novel *The Color Purple* from two perspectives. Celie, the protagonist is a poor and uneducated little Black girl abused, raped and impregnated by her father Alphonso on the one hand, and ill-treated during a difficult and joyless married life with Mr. _____, on the other hand. Celie has endured economical, sexual, physical, mental and psychological abuses from her presumed father and her husband. She is victimized, objectified and deprived from her personality and identity. This novel shows how sex - offenders oppress little Black girls in a patriarchal society, and how the innocence of their victims is violated. The author, through a series of incidents, has tried to depict the objectification of the female sex on one hand, and the girls' victimization portrayed on the other hand. The victimization of Black girls is characterized by the odious acts committed to violate their innocence. The novel shows not only the submissiveness and passiveness of the African American woman when facing her harsh conditions, but also her progressive efforts to assert herself in view of being self-fulfilled and regaining her identity. This article offers objectification and victimization theory as a framework for understanding the consequences of being female in a culture that sexually denies the female body her self-respect.

Keywords: objectification, victimization, Black girls, African American women, Alice Walker, *The Color Purple*

Introduction

The Color Purple by Alice Walker is an African-American feminist work about an abused and uneducated African American woman's struggle for empowerment. The novel is about the ordeals and gradual accomplishment of Celie, an African American teenager. Celie narrates her life through painfully honest letters to God because her abusive father, Alphonso, warns her not to tell anybody but God after he rapes her and she becomes pregnant for a second time at the age of 14. After she gives birth, Alphonso takes the child away, as he did with her first baby, leaving Celie to believe that both have been killed. Celie is victimized, objectified and deprived from her identity. This novel shows how sex offenders oppress little

Black girls in a patriarchal society and how their innocence is violated. The author, through a series of incidents, has tried to depict the objectification of the female sex on one hand and the girls' victimization portrayed on the other hand. The victimization of Black girls is characterized by the odious acts committed to violate their innocence.

This double perspective could also be illustrated about the same event: from the perspective of the perpetrator, the offender who is perceiving the other as an object to satisfy his wild desires on one hand, and from the perspective of the victim who is suffering the fate. Celie begins to build relationships with other Black women, especially those engaging forcefully with oppression. The novel also shows her progressive efforts to assert herself and be self-fulfilled.

This article offers objectification and victimization theory as a framework for understanding the consequences of being female in a culture that sexually denies the female body her self-respect (Fredrickson & Roberts, 1997). Three parts will structure this paper: the first, the conceptual and methodological approach will be followed by the objectification and victimization of African American women in *The Color Purple* and concluded by the process towards an effective fulfillment of African- American women.

1- Conceptual and Methodological Approach

According to Cambridge International Dictionary, objectification is treating people like tools or toys, as if they had no feeling, opinions or rights of their own. So, women are objectified when they are treated by men like objects or properties. This occurs in a patriarchal society, where men are rulers and impose their will on women.

Martha Nussbaum (1995) suggests the following seven notions are involved in the idea of treating a person as an object.

1. Instrumentality: The objectifier treats the object as a tool of his or her purposes
2. Denial of autonomy: The objectifier treats the object as lacking in autonomy and self-determination
3. Inertness : The objectifier treats the object as lacking in agency, and perhaps also in activity
4. Fungibility: The objectifier treats the object as interchangeable (a) with other objects of the same type, and/or (b) with objects of other types.
5. Violability: The objectifier treats the object as lacking in boundary -integrity, as something that it is permissible to break up, smash, break into.
6. Ownership: The objectifier treats the object as something that is owned by another, can be bought or sold, etc.
7. Denial of subjectivity: The objectifier treats the object as something whose experience and feeling (if any) need not to be taken into account.

Rae Langton (2009) adds to Nussbaum's seven modes of objectifying three more properties

1. Reduction to body
2. Reduction to appearance
3. Silencing

Commenting on Rae Langton's three more properties, one can assert that the person here is treated as body part, or physical appearance or the person is treated as if he or she is lacking the capacity to speak. The Stanford Encyclopedia of Philosophy, in his article "Feminist

Perspectives on Objectification" defines objectification as a notion central to feminist theory. It can be roughly defined as the seeing and/or treating a person, usually a woman, *as an object*. So, the person is treated like an object and Simone de Beauvoir posits that the teenage girl "becomes an object and she sees herself as an object; she discovers this new aspect of her being with surprise: it seems to her that she has been doubled; instead of coinciding exactly with herself, she now begins to exist outside" (Beauvoir, 1961)

Objectification theory (Fredrickson & Roberts, 1997) provides a framework for understanding the experience of being female in a sociocultural context that sexually objectifies the female body and claims that many women are sexually objectified and treated as an object to be valued for its use by others (Fredrickson & Roberts, 1997). Sexual objectification occurs in various ways including visual inspection of the female body by some men, whistles or cat calls, sexual comments about women's body parts, unwanted sexual advances, sexual harassment, sexual assault, and depictions of women as sexual objects in the media. Sexual objectification occurs when a woman's body or body parts are singled out and separated from her as a person and she is viewed primarily as a physical object of male sexual desire (Bartky, 1990). Sexually objectification occurs when a woman's body or body parts are singled out and separated from her as a person and she is viewed primarily as a physical object of male sexual desire (Bartky, 1990). Szymanski, et al., (2010) postulate that many women also experience immersed forms of sexual objectification that occur when women are part of situations, environments, and subcultures where the sexual objectification of women is encouraged and promoted. Objectification theory also speculates that sexual objectification of females is likely to contribute to mental health problems. As Fredrickson & Roberts (1997) posit, "this perspective on self can lead to habitual body monitoring, which, in turn, can increase women's opportunities for shame and anxiety, reduce opportunities for peak motivational states, and diminish awareness of internal bodily states" The statement of Frederick has been supported by Szymanski et al., and illustrated by the figure below

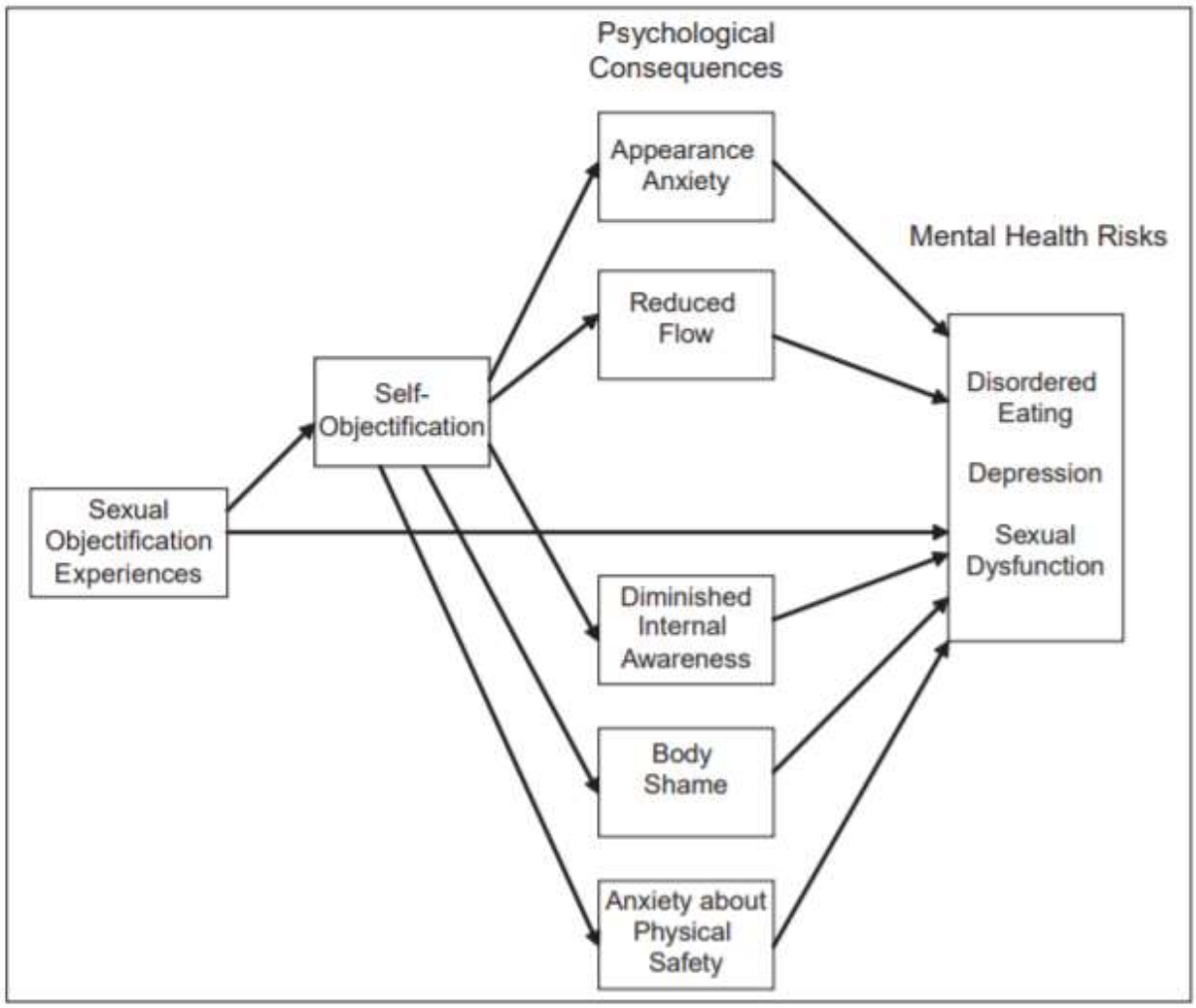

Figure: Model of key objectification theory tenets in Szymanski et al., (2010) "Sexual Objectification of Women: Advances to Theory and Research" p. 9

Victimization can be defined as the act or process of someone being injured or damaged by another person. The shared core psychological issues extending across types of victimization include damage to interpersonal relationships and self. It refers to a person being made into a victim by someone else and can take on psychological as well as physical forms, both of which are damaging to victims.

According to victimization theory, they are four theories of victimization

There are four most common theories in attempting to explain victimization and its causes namely, the victim precipitation theory, the lifestyle theory, the deviant place theory and the routine activities theory (Harper, 2020)

The first of these, the victim precipitation theory, views victimology from the standpoint that the victims themselves may actually initiate, either passively or actively, the criminal act that ultimately leads to injury or death. During passive precipitation, the victim unconsciously exhibits behaviors or characteristics that instigate or encourage the attack. Siegel (2006) lists

job promotions, job status, successes, love interests, and the like as examples of these unconscious behaviors and characteristics. Additionally, political activists, minority groups, those of different sexual orientations, and other individuals pursuing alternate lifestyles may also find themselves as targets of violence due to the inadvertent threat they pose to certain individuals of power. (Harper, 2020)

The next theory is the lifestyle theory. This theory purports that individuals are targeted based on their lifestyle choices, and that these lifestyle choices expose them to criminal offenders, and situations in which crimes may be committed. Examples of some lifestyle choices indicated by this theory include going out at night alone, living in "bad" parts of town, associating with known felons, being promiscuous, excessive alcohol use, and doing drugs. (Harper, 2020)

The deviant place theory, the third one, states that greater exposure to dangerous places makes an individual more likely to become the victim of a crime (Seigel, 2006). Unlike the victim precipitation theory, the victims do not influence the crime by actively or passively encouraging it, but rather are victimized as a result of being in "bad" areas. (Harper, 2020)

Lastly, the routine activity theory explains the rate of victimization through a set of situations that reflect the routines of typical individuals. 1. The availability of suitable targets, 2. The absence of capable guardians, and 3. The presence of motivated offenders. According to this theory, the presence of one or more of these factors creates a higher risk of victimization. For example, leaving one's home during vacation creates a suitable target. (Harper, 2020)

Self-assertion is the act of putting forward one's opinions or of taking actions that express one's needs, rights, or wishes. According to Merriam-Webster dictionary, self-assertion is the act of asserting oneself or one's own rights, claims, or opinions, the act of asserting one's superiority over others. Asserting one’s self is a path toward self-fulfillment and definitely toward happiness.

2- Objectification and Victimization of African American Women in *The Color Purple*.

Through the lens of objectification and victimization theories, the novel shows the perfect image of victimized and objectified girls. Celie, the protagonist of the novel *The Color Purple* and her bright, pretty younger sister, Nettie, learn that a man known only as Mr. _____ wants to marry Nettie. Mr. _____ has a lover named Shug Avery, a singer whose photograph fascinates Celie. Alphonso refuses to let Nettie marry, and instead offers Mr. _____ the “ugly” Celie as a bride. Mr. _____ eventually accepts the offer, and takes Celie into a difficult and joyless married life. As Celie said, “He beat me like he beat the children. Cept he don’t never hardly beat them. He say, Celie, git the belt. The children be outside the room peeking through the cracks. It all I can do not to cry. I make myself wood. I say to myself, Celie, you a tree. That’s how come I know trees fear man.” (*The Color Purple*, 22). Chattering about the status of a wife in a family with his son Harpo, Mr_____ said “Wives is like children. You have to let’em know who got the upper hand. Nothing can do that better than a good sound beating. (*The Color Purple, 35*). Even Sofia said about Harpo her husband. “ I’m gitting tired of Harpo, she say. All he think about since us married is how to make me mind. He don’t want a wife, he want a dog.”

Celie’s husband was using her as an object of pleasure to satisfy his wild desires and by beating her up. Celie was beaten by her husband since she was not her preferred wife of choice. She was emotionally abused. Due to patriarchy, powerless wives are submitted to powerful husbands. The husbands holds the power the power and imposes his will and desire

to his wife. He does not ask for her opinion, neither for her advice. No communication exists between husband, whom she simply called mention this lack of communication between her husband whom she simply calls by Mr _____.

Celie was deprived from her true identity by being manipulated like a puppet: either as an abused daughter or as an abused wife. " I spend my wedding day running from the oldest boy. He twelve. His mama died in his arms and he don't want to hear nothing bout no new one. He pick up a rock and laid my head open. The blood run all down tween my breasts." (*The Color Purple*, 12). She suffered physically and also psychologically as illustrated by Mr ____ when depicting Celie. "She ugly. Don't even look like she kin to Nettie. But she'll make the better wife. She ain't smart either, and I'll just be fair, you have to watch her or she'll give away everything you own. But she can work like a man." (*The Color Purple*, 8)

Even Celie's family-in-law acknowledged the abuse Celie is going through due to her husband's mistreatment. As her sister – in- law say about her brother, "he just brought her here, dropped her, and kept right on running after Shug Avery… Nobody to talk to, nobody to visit." Even if they qualified her as "good housekeeper, good with children, good cook. Brother couldn't have done better if he tried" (*The Color Purple, 20)*

Her presumed father Alphonso and her husband Mr_____ use her as sexual objects. Her presumed father prevented her to know the truth about her true self by creating a psychological confusion: on one hand, presenting himself as the true father and on the other hand behaving as if he was her husband by impregnating her several times: she was used as an object.

Women are obliged to obey and summit. Husbands exploit their wives and make them work hard. Men also impose their will to their wives concerning their sexual needs as seen throughout the novel. Furthermore, Celie remained submissive to Mr____ and was disappointed because she did not receive letters from Nettie. Confiding to Shug about herself, Celie said: Mr _____ come git me to take care his rotten children. He never ast me nothing boit myself. He clam on top of me and fuck and fuck, even when my head bandaged. Nobody ever love me, I say. *(The Color Purple* ,112*).* Talking with Harpo, she also said " Mr_____ marry me to take care of his children. I marry him cause my daddy made me. I don't love Mr_____and he don't love me" (*The Color Purple*, 63) This is an illustration of psychoaffective victimization whereby Celie internalized her perception of not being loved by anyone. Another case of victimization is illustrated by Sofia talking to Celie, about her mama, Sofia said 'She under my daddy numb. Naw, she un my daddy foot. Anything he say, goes. She never say nothing back. She never stand up for herself. Try to make a little half stand sometimes for the children but that always backfire. More she stand up for us, the harder time he give her. He hate children and he hate where they come from. (*The Color Purple*, 41)

Celie is then a perfect objet used by Mr_____ to satisfy his sexual appetites. Mr____ did not care whether Celie enjoys their sexual relation. He just has sex with her when he desires it. Celie told Shug her disgust toward sexual relation as well as Mr_____'s lack of concern to her feelings. Demonstrating what is it like, she said: " He git up on you, heist your neightgown round your waist, plunge in. Most times I pretend I ain't there. He never know the difference. Never ast me how I feel. Nothing. Just do his business, get off, go to sleep". (*The Color Purple*, 77) Mr_____ is indifferent to Celie. His lack of love toward Celie and the way he objectifies her is obvious even through his behavior, gestures or manners.

Mr_____did not meet Celie's needs and she only wore old clothes. One day, Kate, his sister asked Mr ___ to buy to Celie new clothes.

To sum up, African American women feel having no right because they are objectified. So, men learn to objectify and to victimize women from generation to generation. In *The Color Purple*, one can witness, four types of abuse: spiritual manipulation warning the little girl not to tell anybody but God about the rape; the second abuse is a minor abuse of a girl under eighteen-year-old, a third abuse, a sexual one by raping and impregnating her twice, and finally a fourth one is a human right violation by taking away the two babies Celie gives birth to.

3- Towards an Effective Fulfillment of African- American Women: Self-assertion

Despite all the psychological effect of sexual objectification on Celie as depression, shame, anger, anxiety, guilt, low self-esteem, she manages to cope towards her fulfilment. "Depressive episodes are characterized by prolonged depressed mood, loss of pleasure in most activities, or both" (APA, 1994).

African-American's quest for self-fulfillment was achieved through their refusal to remain silence. They found a voice when they were challenging stereotypes that people often used to assert their inferiority. They become conscious of oppression in everyday life. As Celie's sister-in-law tells her, "you got to fight tem. Celie, she say. I can't do it for you. You got to figth them for yourself." But Celie thought what good it do ? I don't fight. I stay where I'm told. But I'm alive." (The *Color Purple,* 21). Celie was so submissive . Sofia , on contrary used to fight. As she say, " all my life I had to fight . I had to fight my daddy. I had to fight my brothers. I had to fight my cousins and my uncles. A girl child ain't safe in a family of men. But I never thought I'd have to fight in my own house……I loves Harpo…But I 'll kill him dead before I let him beat me. Now if you want a dead son-in-law you just keep on advising him like you doing. She put her hand on her hip. I used to hunt game with a bow and arrow, she say." (*The Color Purple,* 40)

The raising of consciousness within the African-American community will help African American women to improve their lives. But to achieve their quest for self- fulfillment and find fulfillment in their lives, African American women also need to struggle against racism and sexism. African-American was achieved through empowerment in the context of everyday life. African-American women through actions, achieve their quest for self-fulfillment. With the help of Shug, searching through Mr. _____'s trunk, Celie and Shug find dozens of letters that Nettie has sent to Celie over the years. Overwhelmed with emotion, Celie reads the letters in order, wondering how to keep herself from killing Mr. _____. This helps Celie to be reconnected to her sister and then found her identity. Mr ____'s real name (Albert) is known to the reader.

She was informed through Nettie's letters that Alphonso was only her step father. So, her presumed father who raped her was not her real father. After Alfonso's death, she became with Nettie the owner of the house and store left by her real father when she was killed by Whites. By discovering her true rich, deceased father, Celie regained her true identity. She reconciled with Albert who became aware that he had mistreated her and apologized. But she refused to remain his wife. She is very happy to know at the end who she is and struggle to achieve fulfilment by reconciling with her sister and children. In fact, Nettie came back from Africa with Adam and Olivia, her children. Celie's joy was then perfect when she met again with her presumed dead children and her beloved sister, Nettie. She also managed with the help of other women to find a way to gain her life and live happily. She regained her financial

autonomy after years of hard work and inherited from her true father. Could all these achievements be inscribed in the large African-American women empowerment movement?

Conclusion

In the light of all this development, I can conclude that objectification of girls as well as their victimization are characterized by four major damaging types of abuse: spiritual manipulation warning the little girl to tell anybody but God about the rape; the second abuse is a minor abuse of a girl under eighteen-year-old, a third abuse, a sexual one by raping and impregnating her twice, and finally, a fourth one is a human right violation by taking away the two babies Celie gives birth to.

In *The Color Purple*, Celie has progressively asserted herself, discovered and regained her true identity. Regaining one's identity can help to assert and affirm oneself and be happy. I believe that Walker, by choosing the epistolary form for her novel, is signifying on the epistolary tradition. The only reason why Celie's story is manifested in a text and not in a blues lyric, or in one of Walker's poems, is the power of the epistolary form and the ability of a letter to engage and include the reader in the communicative process (Næss, 2007).

To conclude, the researchers suggest that women break their silence by hard work, strong will, determination and women bonding are viewed as the best weapon against all kinds of stereotypes imposed by the patriarchal society. We are called to continue the prophetic struggle for the faith that does justice by freeing from ignorance, manipulation and various forms of structures of injustice. Could Alice Walker not be called a foremother of the twenty first movement about child and minor protection and safeguarding?

References

1- American Psychiatric Association. (1994). Diagnostic and Statistical Manual and Mental Disorders (4 th ed.). Washington, DC: American Psychiatric Press.
2- Bartky, S. L. (1990). *Femininity and domination: Studies in the phenomenology of oppression.* New York, NY: Routledge.
3- Cambridge International Dictionary of English, Low Price Edition, 1996.
4- Fredrickson, B. L., & Roberts, T. (1997). Objectification theory: Toward understanding women's lived experiences and mental health risks. Psychology of Women Quarterly, 21, 173-206.
5- Harper, L. (2020) "The Four Theories of Victimization" https://soapboxie.com/government/The-Four-Theories-of-Victimization
6- Langton, R. (2009). *Sexual Solipsism: Philosophical Essays on Pornography and Objectification*, Oxford: Oxford University Press. P.228-229
7- de Beauvoir, Simone, (1961), The Second Sex, New York: Grune and Stratton.
8- Næss, S.L. (2007). "The Life You Save May Be Your Own Re-defining African American Women's Communication, Sexuality and Creativity in Alice Walker's The Color Purple, Octavia E. Butler's Kindred, and Toni Morrison's Sula"A Thesis presented to The Department of Literature, Area Studies and European Languages.

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9- Nussbaum, M. (1995). "Objectification", *Philosophy and Public Affairs*, 24(4): 249–291.

10- Seigel, L., J. (2006). Criminology, 10th Edition. University of Massachusetts, Lowell. Thomson Wadsworth.

11- Szymanski D. M., Moffitt L. B., and Carr E. R. "Sexual Objectification of Women: Advances to Theory and Research" Volume: 39 issue: 1, page(s): 6-38 Article first published online: September 22, 2010; Issue published: January 1, 2011https://doi.org/10.1177/0011000010378402 University of Tennessee, Knoxville, TN, USA

12- Szymanski, D.M., Feltman, C.E. "Experiencing and Coping with Sexually Objectifying Treatment: Internalization and Resilience" Sex Roles 71, 159–170 (2014). https://doi.org/10.1007/s11199-014-0392-6

13- The Stanford Encyclopedia of Philosophy, "Feminist Perspectives on Objectification" First published Wed Mar 10, 2010; substantive revision Mon Dec 16, 2019 https://plato.stanford.edu/entries/feminism-objectification/

14- Walker, A. (2003). *The Color Purple*. New York: Mariner Books Houghton Mifflin Harcourt

PROGNOSTIC FACTORS IN CHEST WALL TUMORS RETROSPECTIVE EVALUATION OF 96 CASES

MD Volkan Erdoğu
Orcid no: 0000-0002-7524-0151
Prof. Muzaffer Metin
Orcid no: 0000-0003-0804-2654
Yedikule Göğüs Hastalıkları ve Göğüs Cerrahisi Eğitim ve Araştırma Hastanesi
Zeytinburnu/İstanbul

Abstract

Objective

Chest wall tumors are rare tumors in thoracic surgery and are examined under two headings as malignant and benign. Although benign chest wall tumors originate directly from the chest wall structures, the primary source of the tumor in malignant chest wall tumors may be spread by neighboring or metastasis of another organ cancer. In this study, we retrospectively examined the distribution, surgical margins, surgical procedures performed and survival of chest wall tumors operated in our clinic.

Patients and Methods

Chest wall tumors that were operated between January 2011 and January 2017 at Yedikule Chest Diseases and Surgery Center Training and Research Hospital were analyzed retrospectively by documenting surgery notes, pathology reports and archive files. The distribution of all malignant and benign chest wall tumors was investigated retrospectively in terms of surgery applied, surgical margins and survival.

Results

In 96 patients, 38 malign chest wall tumors (MCWT), 58 benign chest wall (BCWT) were detected. While chondrosarcoma was the most common with 13 patients (34.2%) in MCWT, it was fibrous dysplasia with 22 (37.9%) patients in BCWT. In MCWT, the most common tissue that tumor originates from was cartilage, while BCWT tumors mostly originated from the fibrous tissue of the bone. Surgical margin remained positive in 7 of 38 MCWT patients (18.4%). Three cases were R2 (macroscopic positive), 4 cases were R1 (microscopic positive). While an average of 1.5 ribs were excised in resection of BCWT, this number was observed as 3 ribs in MCWT ($p < 0.05$). While the mean tumor diameter in MCWT was 7,4 cm, it was observed as 3,8 cm in BCWT ($p < 0.05$). In 38 MCWT tumor cases, 12 deaths were seen in the following years (31.6%). The mean surgical margin in MCWT tumors was 2 cm. While the mean surgical margin was 1.2 cm in the patients who died, the mean surgical margin was 2.3 cm in the patients who were still alive. This rate was found to be statistically significant ($p < 0.05$). The mean follow-up period of MCWT patients was 64 months and 5-year survival was 74.2%.

Conclusion

Malignant chest wall tumors are present in larger sizes than benign chest wall tumors. Therefore, more ribs should be excised in malignant chest wall tumors in the surgery performed. Short surgical margins negatively affect survival in malignant chest wall tumors.

Keywords: Benign chest wall tumors, Malignant chest wall tumors

Introduction

Chest wall tumors can develop in many ways. It may develop primarily from the sternum, rib, scapula, clavicle, or secondarily as local invasion of a tumor that develops in the mediastinum, pleura, lung, breast tissue, or metastasis of a distant organ tumor. The probability of a primary tumor in the chest wall is 5% among all thoracic neoplasms (1). In the largest series, 50% of primary tumors are benign and 50% are malignant (2). The most common benign tumors are osteochondroma, chondroma, fibrous dysplasia, desmoid tumor, eosinophilic granuloma, aneurysmal bone cyst and giant cell tumor, lipoma and fibroma, hemangioma (3-4). The most common malignant tumors are malignant fibrous histiocytoma, chondrosarcoma, rhabdomyosarcoma, liposarcoma, fibrosarcoma, osteosarcoma, ewing sarcoma, solitary plasmacytoma (3-4). When they are classified according to the tissue they originate, 55% originate from bone and cartilage tissue, while 45% originate from soft tissue (5). In general, the average age for benign tumors is 26, while malignant tumors are 40 years old. The probability of occurrence in men is 2 times higher than in women (6-7). The most common complaint is a palpable mass. Benign lesions are often noticed incidentally (6-7). In malignant tumors, the primary target is, ublock resection of the tumor with negative margins. The recommended surgical margin is 4 cm in high-grade malignant tumors and 1-2 cm in lower-grade tumors (8). Although desmoid tumors are known as benign tumors, wide resection (4 cm surgical margin) is also recommended in these tumors due to their high recurrence probability. Neoadjuvant and adjuvant treatments are used in treatment protocols for malignant chest wall tumors (8).

Patients and method

Operated chest wall tumors ın thoracic surgery clinic in January 2011 and January 2017 were retrospectively analyzed from surgery notes and epicrisis. The distribution of all malignant and benign chest wall tumors was examined in terms of surgery, surgical margins and survival. Other organ cancer metastases, mesothelioma, breast and lung cancer direct invasions and metastases were excluded from the study. Direct invasions of tumors originating from the mediastinum were included in the study. According to these criteria, 96 patients were included in the study. There were 38 malignant chest wall tumors (MCWT) and 58 benign chest wall tumors (BCWT).

Results

Malignant chest wall (MCWT) tumors were detected in 38 (39.5%) of 96 patients, while benign chest wall (BCWT) was detected in 58 (60.5%) patients. The mean age in the benign group was 38 ± 4.7 years (14-68 years) and the female-male ratio was 44.5% (Female: 27, male: 31), while the mean age in MCWT was 51 ± 3.8 years (15-83 years) and the ratio of female to male was 39.5% (Female = 15, male = 23). The difference of age between the two groups was statistically significant ($p < 0.05$). The most common type in MCWT patients were

chondrosarcoma (n=13) and the second was solitary plasmacytoma (n=9). In BCWT, the most common was fibrous dysplasia with 22 patients.

The distributions of MCWT and BCWT tumors are shown in Table 1 and Table 2.

Table 1: Malignant Chest Wall Tumors Distributions

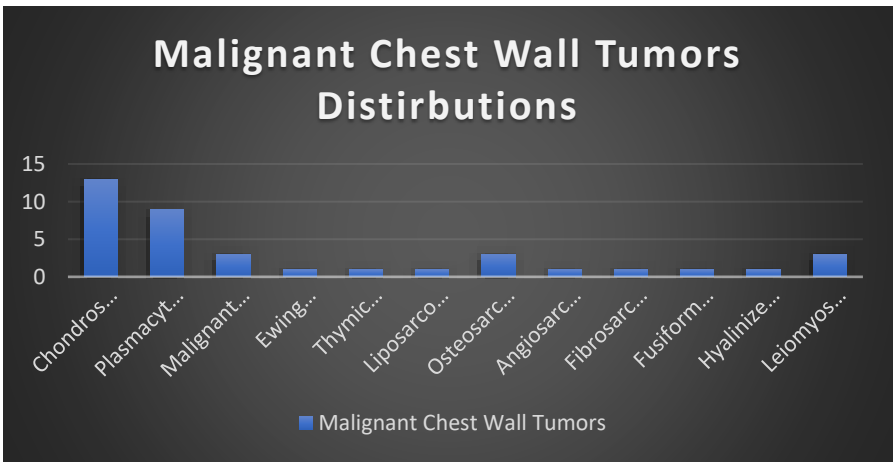
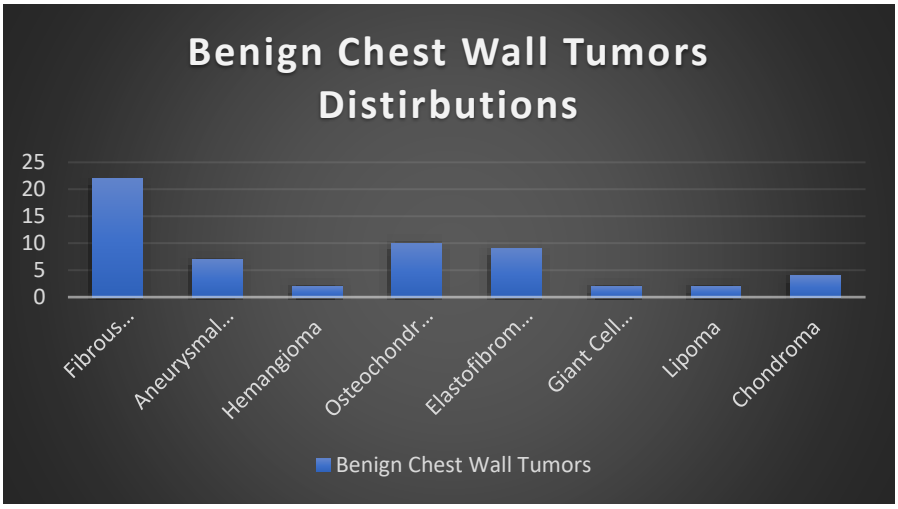


Table 2: Benign Chest Wall Tumors Distributions



In the MCWT group, the tumor mostly originates from the cartilage tissue (n=13, 39.5%), while in the BCWT group, tumors most often originated from the fibrous tissue of the bone (n=23, 40%). Surgical margin was reported to be positive in 7 (18.4%) of 38 MCWT patients. Three cases were R2 (macroscopic positive), 4 cases were R1 (microscopic positive). While an average of 1.5 ribs were excised in BCWT during resection, this number was observed as 3 ribs in MCWT ($p < 0.05$). The mean tumor diameter was 7.4 cm in MCWT and 3.8 cm in BCWT. The difference was significant in regards to tumor diameters ($p < 0.05$).

Prolene mesh was used in 9 patients (15.5%) after resection in BCWT. Prolene mesh was used in 12 patients (31.6%) in MCWT. The use of prolene mesh was statistically higher in MCWT patients ($p < 0.05$). In addition to rib resection in MCWT, 4 patients required partial resection of the sternum, and 1 patient required resection of the sternum and clavicle.

Recurrence occurred in 8 patients (21%) with MCWT tumors in the following periods. Surgical margin was macroscopic positive in 3 patients who developed recurrence and these 3 patients died. Re-resection was performed in other patients. These patients are still alive.

In the following years, 12 deaths (31.6%) occurred in 38 MCWT group. The mean survival time of 12 patients was 25 months.

The mean surgical margin in MCWT was 2 cm. While the mean surgical margin was 1.2 cm in 12 patients who died and the mean surgical margin was 2.3 cm in patients who were still alive. This rate was statistically significant ($p < 0.05$).

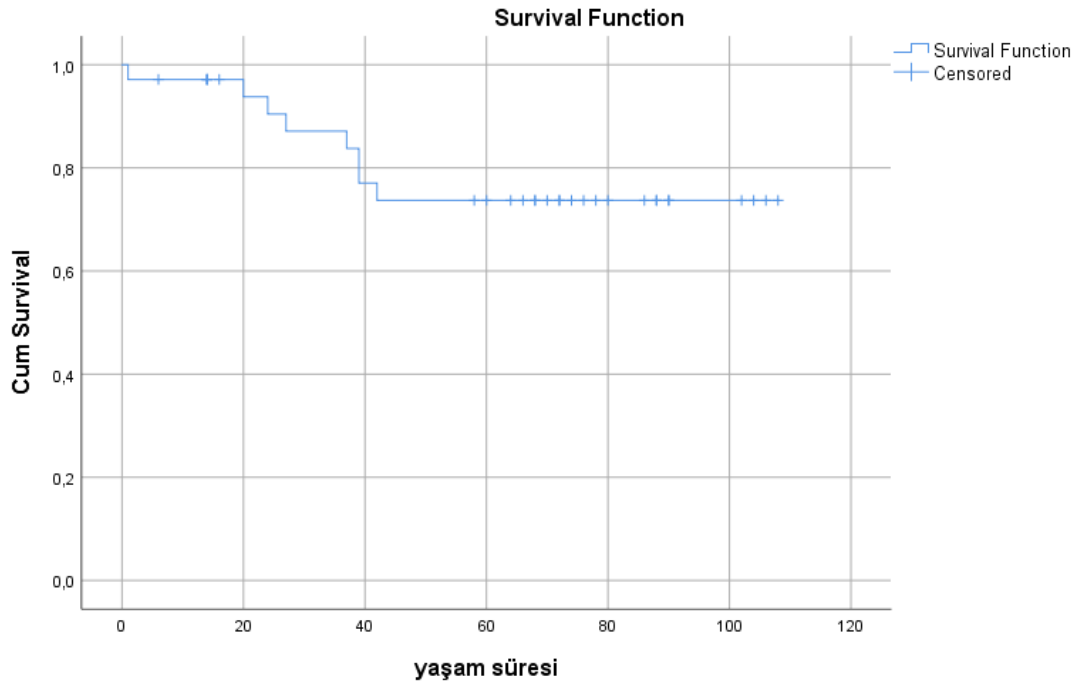
The clinicopathological and demographic characteristics of the patients are listed in Table 3.

Table 3: Distribution and demographic and clinicopathological characteristics of the patients

Variabilities	Chest Wall Tumors	Malignant Chest Wall tumor	Benign Chest Wall Tumors	P Value
Patients n / %	96	38 / 39.5%	58 / 60.5%	
Age±SD	45±4.2	51±3.8	38±4.7	<0.05
Gender · Male · Female	 54 42	 23 15	 31 27	
Most common origin n / %		Cartilage 13 / 9.5%	Bone fibrous tissue 23 / 40%	
Surgical margin is positive n / % · Microscopic (R1) · Macroscopic (R2)		7 / 18.4% 4 / 57.1% 3 / 42.9%		
Average excised rib cm	2	3	1.5	<0.05
Mean tumor diameter cm	5.2	7.4	3.8	<0.05
Usage of prolene mesh n/%	21 / 21.8%	12 / 31.6%	9 / 15.5%	<0.05
Relaps n/%		8 / 21%		
Long term mortality n/ %	12 / 12.5%	12 / 31.6%	0	
Mean surgical margins cm · Death patients · Alive patients		2 1,2 2.3		 <0.05

The mean follow-up period of MCWT patients was 64 months. The 5-year survival rate in these cases was 74.2% (Figure 1).

Figure 1: 5-year survival of malignant chest wall tumors



Discussion

Chest wall tumors are classified under two headings as benign and malignant. The frequencies of benign and malignant tumors are close to each other in the literature. Since we did not exclude metastatic tumors in our study, we think that the number of benign tumors was higher. According to the literature, the age of formation of benign tumors is earlier than malignant tumors. While the most common MCWT tumor was chondrosarcoma, the most common BCWT tumor was fibrous dysplasia. In many studies, it has been observed that the surgical margins are the most important parameter affecting the questionnaire. (7). In our study, a significant relationship was found between surgical margin and surveillance. Because MCWT tumors were seen in larger diameters, larger resection was required (7).

The limitations of the study; due to the small number of patients, life expectancy was not evaluated among homogeneous groups, and the effect of postoperative chemotherapy and / or radiotherapy on life expectancy of the patients was evaluated due to the insufficient number of patients.

Conclusion

Surgical resection is the primary option in the treatment of benign and malignant tumors of the chest wall. With its wide surgical margins, R0 is one of the most important factors affecting the resection survey in malignant chest wall tumors.

References

1. Faber LP, Somers J, Templeton AC. Chest wall tumors. *Curr Probl Surg* 1995;32:661–747.
2. Graeber GM, Snyder RJ, Fleming AW, et al. Initial and long-term results in the management of primary chest wall neoplasms. *Ann Thorac Surg* 1982;34:664–673.
3. Arnold PG, Pairolero PC. Chest-wall reconstruction: an account of 500 consecutive patients. *Plast Reconstr Surg* 1996;98:804–810.
4. King RM, Pairolero PC, Trastek VF, et al. Primary chest wall tumors: factors affecting survival. *Ann Thorac Surg* 1986;41:597–601.
5. Burt M. Primary malignant tumors of the chest wall. The Memorial Sloan–Kettering Cancer Center experience. *Chest Surg Clin North Am* 1994;4:137–154.
6. Hughes EK, James SL, Butt S, et al. Benign primary tumours of the ribs. *Clin Radiol* 2006;61:314–322.
7. Smith SE, Keshavjee S. Primary chest wall tumors. *Thorac Surgery Clin* 2010;20:495–507.
8. Shah AA, D'Amico TA. Primary chest wall tumors. *J Am Coll Surg* 2010;210: 360–366.

EFFECT OF N-ACETYLCYSTEINE ON LIPID PROFILE IN STZ-INDUCED DIABETIC RATS

Emine Gülçeri GÜLEÇ PEKER
Giresun University, Giresun, Türkiye
ORCID ID: https://orcid.org/0000-0001-7244-0281

Abstract
Background: Diabetes mellitus (DM) is a metabolic disorder characterized by hyperglycaemia that occurs as a result of defects in insulin secretion, unresponsiveness to insulin, or both. Antioxidants have been proving a good alternative to diabetes and its complications. N-acetylcysteine (NAC) is a thiol compound and has strong antioxidant effects. The aim of this study was to assess the effect of NAC on the lipid profile in streptozotocin (STZ) - induced diabetic rats.
Method: 24 male Wistar-albino rats weighing approximately 250 g were randomly distributed into four groups (n = 6): Control, NAC: treated with NAC, DM: STZ-induced diabetes, and DM+NAC: diabetic rats treated with NAC. DM was induced using STZ (60 mg/kg, IP; single dose), and NAC (60 mg/kg/day) was administrated by IP injections, for 7 days. After the experimental period (3 weeks), blood samples were collected to analyse the lipid profiles.
Results: NAC decreased ($p < 0.05$) triacylglycerol in diabetic rats (DM+NAC), when compared with DM, while HDL levels were improved ($p < 0.05$) in treated diabetic rats (DM+NAC). Total cholesterol and LDL levels decreased in diabetic rats, but this reduction was not statistically significant.
Conclusion: NAC may improve lipid profile in STZ-induced diabetic rats.

Keywords: Diabetes, N-acetylcysteine, lipid profile

VIEWS OF NURSING STUDENTS ON SURGICAL CONSULTATION AND LIEZONE NURSING: A QUALITATIVE STUDY

Sevda UZUN
ORCID No: https://orcid.org/0000-0002-5954-717X
Nursen ULAKAC
ORCID No: https://orcid.org/0000-0002-5427-1063
Nilgun ULUTASDEMIR
ORCID No: https://orcid.org/000-002-2231-5236
Gümüşhane University, Gümüşhane, TURKEY

Abstract
This study was conducted to determine the nursing students' views on surgical consultation and liezone nursing. In the research, qualitative research approaches, case study design was used. Case study is a research method that examines a phenomenon or a situation in depth. The study group consisted of 15 senior nursing students. Content analysis method was used to evaluate the data collected in the study. When the category obtained at the end of the study was examined, the themes of "Psychiatric conditions seen in patients hospitalized in surgery clinics", "The roles of consultation and liaison nursing in a surgical clinic" and "The reasons why patients in surgery need psychiatric support" were determined. When the theme of "psychiatric conditions seen in patients hospitalized in surgery clinics" is examined, anxiety, fear, and feelings of inadequacy rank first. When the theme of "consultation and liaison nursing roles in the surgery clinic" was examined, the students stated that among the role of the nurse's CLP as education, clinic and consultant roles. When we look at the theme of "The reasons why patients in surgery need psychiatric support", fear of being in the hospital and fear of the operation are at the top. As a result of this study, he stated that the patients hospitalized in the surgical clinics of the students experienced conditions such as anxiety and fear inadequacy and that they needed consultation and help from the liaison nurse for these situations. He also stated that the consultation and liaison nurses of the students will play a role in the care and treatment of the patients by using the counseling, education and clinical role of the patients in surgical clinics. In line with the results, it is recommended to make models and researches specific to our practices and that will guide them in order for CLP nursing to create its own knowledge, to fulfill and develop all these roles and functions systematically and regularly.

Keywords: Surgical consultation and liaison nursing, nursing, student

HEMŞİRELİK ÖĞRENCİLERİNİN CERRAHİ KONSÜLTASYON VE LİYEZON HEMŞİRELİĞİNE İLİŞKİN GÖRÜŞLERİ: NİTEL BİR ÇALIŞMA

Özet

Bu çalışma hemşirelik öğrencilerinin cerrahi konsültasyon ve liyezon hemşireliğine yönelik görüşlerini belirlemek amacıyla yapılmıştır. Araştırmada nitel araştırma yaklaşımlarından durum çalışması deseninden yararlanılmıştır. Durum çalışması, bir olguyu, bir durumu derinlemesine inceleyen bir araştırma yöntemidir. Çalışma grubunu 15 hemşirelik son sınıf öğrencisi oluşturmuştur. Araştırmada toplanan verilerin değerlendirilmesinde içerik analizi yöntemi kullanılmıştır. Araştırma sonunda elde edilen kategori incelendiğinde "Cerrahide kliniklerde yatan hastalarda görülen psikiyatrik durumlar" "Cerrahi kliniğinde konsültasyon ve liyezon hemşireliğinin rolleri" ve "Cerrahide yatan hastaların psikiyatrik destek ihtiyacı olmasının nedenleri" temaları saptanmıştır. "Cerrahide kliniklerde yatan hastalarda görülen psikiyatrik durumlar" teması incelendiğinde anksiyete, korku, yetersizlik duygusu ilk sıralarda yer almaktadır. "Cerrahi kliniğinde konsültasyon ve liyezon hemşireliğinin rolleri" teması incelendiğinde öğrenciler hemşirenin KLP rolleri arasında eğitim, klinik ve danışman rolü olarak ifade etmişlerdir. "Cerrahide yatan hastaların psikiyatrik destek ihtiyacı olmasının nedenleri" temasına baktığımızda hastanede olmaya bağlı korku, geçirilen operasyona bağlı korku ilk sıralarda yer almaktadır. Bu çalışmanın sonucunda öğrencilerin cerrahi kliniklerinde yatan hastaların anksiyete, korku yetersizlik gibi durumlar yaşadığını ve bu durumlar için konsültasyon ve liyezon hemşiresi tarafından verilecek yardıma ihtiyacı olduğunu belirtmiştir. Ayrıca öğrencilerin konsültasyon ve liyezon hemşirelerinin cerrahi kliniklerinde hastalara danışmanlık, eğitim ve klinik rolünü kullanarak hastaların bakım ve tedavisinde rol oynayacağını ifade etmiştir. Sonuçlar doğrultusunda KLP hemşireliğinin kendine özgü bilgi birikimini oluşturabilmesi, bütün bu rolleri ve fonksiyonları sistematik ve düzenli bir biçimde yerine getirebilmesi ve geliştirebilmesi için uygulamalarımıza özgü ve bunlara rehberlik edecek modeller ve araştırmalar yapılması önerilmektedir.

Anahtar Kelimeler: Cerrahi konsültasyon ve liyezon hemşireliği, hemşirelik, öğrenci

GİRİŞ

Lisans eğitiminin birincil amacı her bir öğrencinin mezun olduktan sonra sağlık sektörünün farklı alanlarında profesyonel hemşire olarak çalışmaya hazır duruma gelmesidir. Eğitsel hazırlığın boyutları arasında ruh sağlığı ve hastalıkları hemşireliği yer almaktadır. Sağlığın fiziksel, psikososyal ve emosyonel yönlerinin olması hemşirelik temel eğitiminde bu alanın önemini vurgulamaktadır (Uzun ve Demir, 2020). Ruh sağlığı ve hastalıkları hemşireliği eğitimi; ruh sağlığı ve hastalıkları hemşireliğinin temel ilke, kavram, işlev ve sürecini inceleyerek bunları bireyin ve toplumun ruh sağlığını koruma, geliştirme ve tedavi sürecinde etkin biçimde kullanımını sağlamayı amaçlar (Şahin ve ark., 2019).

Konsültasyon liyezon, biyopsikososyal anlayısı hayata geçirmeye, fiziksel bakım ve tedavi ile ruhsal tedavi ve bakımı bütünleştirmeye dönük olup, genel hastane uygulamasında bireylere psikiyatrik tedavi ve bakım hizmetlerinin sunulmasını sağlar (Ekinci ve Okanlı 2001, Kocaman 2005a). Fiziksel tedavi ve bakım ile ruhsal tedavi ve psikososyal bakımı entegre etmeye çalışan konsültasyon liyezon psikiyatrisi (KLP), genel hastane içinde psikiyatri

hizmetleri sunarak önemli bir gereksinimi gidermektedir (Yıldırım ve ark., 2019). KL'nin temel amacı, psikiyatrik bozuklukların yaygınlığını önlemek; tanımlamak; tedavi etmek; hastalıkların ortaya çıkmasında, seyrinde, tedavisinde ve bakımında psikososyal etkenlerin rolünü inceleyerek, hizmetleri bütüncül kılmaktır (Kocaman, 2005a).

Tıbbi uygulamalar ile mental sağlık uygulamaları birbirinden farklılıklar göstermektedir. Bu farklılıklar sıralanacak olursa; beden sağlığına (tıbbi uygulama) karsı zihin sağlığı (mental sağlık); organ ya da sistemlere karsı bütün olarak çocuk; bireye karsı aile; kısa surece karsı uzun süreç; yasam ya da ölüme karsı yasam kalitesi; aktif tedaviye karsı pasif tedavi ve tedaviye karsı bakım olarak özetlenebilir (Engstrom, 2002).

Konsültasyon liyezonun kullanım alanlarından biri cerrahidir. Cerrahi Hemşireliği, "hastanın sağlık ve esenliğinin yeniden kazandırılması ve devamlılığı için fiziksel, psikolojik ve sosyal ihtiyaçlarının tespitiyle bilimsel bilgi üzerine temellendirilmiş hemşirelik faaliyetlerinin eşgüdümlü olarak özelleştirilmiş bakımın uygulandığı bir hemşirelik dalı" olarak tanımlanmaktadır (Aslan, 2009). Cerrahi birimler teknolojik olarak son derece karmaşıktır. Cerrahi ortam, ekip ile yoğun işbirliği gerektirmesi, sağlığı tehdit eden durumların bulunması ve hızlı karar vermeyi gerektirmesi nedeniyle stresli bir ortamdır. Cerrahi klinikleri hem hasta sayısının fazla olduğu hem de hastaların kişisel gereksinimlerini karşılama anlamında hemşireye bağımlı olması nedeni ile hemşirelik bakımına en çok gereksinim duyulan kliniklerdendir (Karabulut ve Çetinkaya, 2011).

Konsültasyon ve liyezon hemşireliği meme cerrahisi, transplantasyon, hemodiyaliz, onkoloji, algoloji, diyabet, fizik tedavi ve rehabilitasyon, kadın hastalıkları ve doğum klinikleri olmak üzere bir çok klinikte kullanılmaktadır. Cerrahi ünitelerde çalışan hemşireler ile konsültasyon ve liyezon hemşiresi arasındaki düzenli işbirliği sağlanarak hastanın gerekli bakım ve tedavisi planlanmalıdır. Konsültasyon ve liyezon hemşiresi hemşireler ile hasta arasında ortaya çıkan çatışmaların çözümlenmesinde yardım edebilir, hasta-aile-hemşire arasında iletişime katkıda bulunabilir, kontrol edilmesi zor durumlar hakkında hemşirelerin duygularını ifade etmesine imkan verebilir, ekip içi çatışma ortaya çıktığında veya güç durumlarla başa çıkmalarında yardım edebilir. Hastalara ve ailelerine destek ve danışmanlık verebilir (Morriss ve ark., 1994). Bu doğrultuda planlanan bu çalışmada hemşirelik öğrencilerinin cerrahi konsültasyon ve liyezon hemşireliğine ilişkin görüşleri belirlenmeye çalışılmıştır.

GEREÇ VE YÖNTEM

Araştırmanın Amacı ve Tipi

Bu araştırmada nitel araştırma yaklaşımlarından durum çalışması deseni kullanılmıştır. Durum çalışması, bir olguyu, bir durumu ayrıntılı olarak ele alan bir araştırma yöntemidir. Başka bir tanıma göre durum çalışması araştırmacının zaman içerisinde sınırlandırılmış bir veya birkaç durumu çoklu kaynakları içeren veri toplama araçları (gözlemler, görüşmeler, görsel-işitseller, dokümanlar, raporlar) ile derinlemesine incelediği, durumların ve duruma bağlı temaların tanımlandığı nitel bir araştırma yaklaşımıdır. (Cohen ve Manion, 1997; McMillan, 2000; Patton, 1990; Verma ve Mallick, 1999; Yin 2003).

Çalışma Grubu

Araştırmanın çalışma grubunu bir Devlet Üniversitesinin Sağlık Bilimleri Fakültesi Hemşirelik Bölümü dördüncü sınıfta öğrenim gören 15 öğrenci oluşturmuştur. Çalışma grubunun belirlenmesinde amaçlı örnekleme yönteminden yararlanılarak; çalışma konusunda

gönüllü katılım sağlama ve ruh sağlığı ve hastalıkları hemşireliği dersini almış olma şartı aranmaktadır.

Veri Toplama Araçları

Hemşirelik öğrencilerinin cerrahi konsültasyon ve liyezon hemşireliğine ilişkin görüşlerinin belirlenmesi maçıyla planlanan bu çalışmada öğrencilere cerrahi konsültasyon ve liyezon hemşireliği ile ilgili dört tane açık uçlu soru yöneltilmiştir. Hazırlanan soruların inanılırlığı uzman görüşüne başvurularak yapılmıştır. Psikiyatri hemşireliği ve cerrahi hemşireliği alanında uzman üç öğretim elemanından soruların araştırma problemine uygunluğu, açıklığı ve anlaşılırlığı ile ilgili görüş alınmış görüş birliğinin sağlandığı sorular görüşme formuna dahil edilmiştir. Görüşme formunun katılımcılara, anlama ve ifade rahatlığı sağlayacağı düşünülerek, soruların açıklık ve anlaşılırlığı gözden geçirilmiş ve son hali verilmiştir.

Veri Toplama Süreci

Öğrencilere çalışma öncesi bilgilendirme yapılmış ve verilerin katılımcılara ait hiçbir bilgiye yer verilmeden akademik bir yayında kullanılacağı açıklanmıştır. Çalışmaya katılmanın zorunlu olmadığı öğrencilere belirtilmiş olup çalışmanın tamamen gönüllülük esasına dayandığı bildirilmiştir. Çalışmada öğrencilere birer A4 kâğıdı dağıtılarak öğrencilerin sorulara cevap vermesi istenmiştir. Öğrencilerden açık uçlu soruları cevaplandırmaları istenmiştir. Öğrencilerden bilgi verildikten sonra bir hafta süre tanınmış ve daha sonra formlar geri toplanmıştır.

Araştırmanın Etik Boyutu

Araştırmanın yapılabilmesi için Gümüşhane Üniversitesi Bilimsel Araştırma ve Yayın Etiği Kurulu'ndan (2020/3 sayılı) onam alınmıştır. Ayrıca araştırmaya katılan öğrencilere araştırma ile ilgili bilgi verilmiş ve sözlü onamları alınmıştır.

Verilerin Analizi

Araştırmada toplanan verilerin değerlendirilmesinde içerik analizi yöntemi kullanılmıştır. İçerik analizinde temel amaç, birbirine benzeyen verileri belirli kavramlar ve kategoriler çerçevesinde bir araya getirmek ve bunları okuyucunun anlayabileceği biçimde düzenleyerek yorumlamaktır (Kurt ve Ekici., 2014). Bu işlem birtakım aşamalardan oluşmaktadır. Bu çalışmada; kod, kategori ve temaların oluşturulması aşamaları izlenmiştir. Veriler yazılırken bireylerin isimleri kullanılmamış olup analizde kolaylık sağlaması bakımından görüşme yapılan her birey numaralandırılarak kodlanmıştır (Örneğin Katılımcı 1 için K1, Katılımcı 2 için K2 gibi). Analize geçmeden önce veriler dikkatlice tekrar okunmuş, araştırma açısından önemli veriler kodlanmış ve uygun kodlar bir araya getirilerek kategoriler oluşturulmuştur. Uygun kategorilerin bir araya getirilmesiyle araştırmanın temaları oluşturulmuştur (Yıldırım ve Şimşek, 2009; Burns, 2007).

BULGULAR

Araştırmada elde edilen bulgular içerik analiz yöntemiyle analiz edilmiş hemşirelik öğrencilerin cerrahi konsültasyon hemşireliğine yönelik görüşler kategorisi olarak bir kategori belirlenmiştir. Hemşirelik öğrencilerin cerrahi konsültasyon hemşireliğine yönelik görüşler kategorisinde tema ve kodları Tablo 1'de verilmiştir.

Kategori 1. Hemşirelik öğrencilerin cerrahi konsültasyon hemşireliğine yönelik görüşler kategorisi

Tema	Kod	Katılımcılar	F
Cerrahide kliniklerde yatan hastalarda görülen psikiyatrik durumlar	Anksiyete	K1, K2, K3, K5, K6, K9, K13	7
	Korku	K1, K2, K3, K5, K6, K13	6

	Yetersizlik duygusu	K2, K8, K11	3
	İletişimde bozulma	K6, K9, K15	3
	Öz güvende azalma	K8, K11	2
	Deliryum	K14	1
Cerrahi kliniğinde konsültasyon ve liyezon hemşireliğinin rolleri	Eğitim rolü	K2, K9	2
	Klinik rolü	K2	1
	Danışman rolü	K12	1
Cerrahide yatan hastaların psikiyatrik destek ihtiyacı olmasının nedenleri	Hastanede yatışa bağlı anksiyete	K3, K14, K15	3
	Geçirilen operasyona bağlı korku	K3, K14	2
	Ölüm korkusuna bağlı korku	K6	1
	Uzuv/organ kaybına bağlı anksiyete	K4	1
	Operasyon öncesi ameliyathaneye bağlı korku	K12	1

TARTIŞMA

Bu çalışma hemşirelik öğrencilerinin cerrahi konsültasyon hemşireliğine yönelik görüşlerin belirlemek amacıyla yapılmıştır. Araştırma sonunda elde edilen kategori incelendiğinde "Cerrahide kliniklerde yatan hastalarda görülen psikiyatrik durumlar" teması incelendiğinde anksiyete, korku, yetersizlik duygusu ilk sıralarda yer almaktadır. Öğrenciler cerrahi klinikleri yatan hastalarda bireylerin anksiyete, korku ve yetersizlik yaşayabileceğini ve psikiyatrik desteğe ihtiyacı olabileceğini düşünmektedir. Cerrahi ortamlar sağlığı tehdit eden durumların bulunması nedeniyle hasta için stresli ortama dönüşebilirler (Karabulut ve Çetinkaya, 2011).Bu durumun öğrencilerin cerrahi kliniklerinde yatan hastaların anksiyete, korku ve yetersizlik gibi durumlar oluşabileceğini düşündüğünden kaynaklandığı düşünülmektedir.

"Cerrahi kliniğinde konsültasyon ve liyezon hemşireliğinin rolleri" teması incelendiğinde öğrenciler hemşirenin KLP rolleri arasında eğitim, klinik ve danışman rolü olarak ifade etmişlerdir. Konsültasyon liyezon psikiyatrisi hemşiresinin liyezon hemşireleri kontrol edilmesi zor durumlar hakkında hemşirelerin duygularını ifade etmesine imkan verebilir, ekip içi çatışma ortaya çıktığında veya güç durumlarla başa çıkmalarında yardım edebilir. Hastalara ve ailelerine destek ve danışmanlık verebilir (Morriss ve ark., 1994).

"Cerrahide yatan hastaların psikiyatrik destek ihtiyacı olmasının nedenleri" temasına baktığımızda hastanede olmaya bağlı korku, geçirilen operasyona bağlı korku ilk sıralarda yer almaktadır. Bu durumun cerrahi kliniklerinde acil müdahale gerektiren ve yaşamı tehdit eden durumlar olması, durumun belirsizliği, uzuv/organ kaybı gibi durumların oldukça sık rastlanılmasından kaynaklandığı düşünülmektedir.

SONUÇ VE ÖNERİLER

Araştırmamızda öğrencilerin hemşirelik öğrencilerinin cerrahi konsültasyon ve liyezon hemşireliğine ilişkin görüşleri incelenmiştir. Bu çalışmanın sonucunda öğrencilerin cerrahi kliniklerinde yatan hastaların anksiyete, korku yetersizlik gibi durumlar yaşadığını ve bu durumlar için konsültasyon ve liyezon hemşiresi tarafından verilecek yardıma ihtiyacı olduğunu belirtmiştir. Ayrıca öğrencilerin konsültasyon ve liyezon hemşirelerinin cerrahi

kliniklerinde hastalara danışmanlık, eğitim ve klinik rolünü kullanarak hastaların bakım ve tedavisinde rol oynayacağını ifade etmiştir.

Sonuçlar doğrultusunda KLP hemşireliğinin kendine özgü bilgi birikimini oluşturabilmesi, bütün bu rolleri ve fonksiyonları sistematik ve düzenli bir biçimde yerine getirebilmesi ve geliştirebilmesi için uygulamalarımıza özgü ve bunlara rehberlik edecek modeller ve araştırmalar yapılması önerilmektedir.

KAYNAKLAR

Aslan FE. (2020). Cerrahi hemşireliğinin tarihçesi. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 12(1): 104-113.

Burns N, Grove SK. (2007). Understanding nursing research. Building an Evidence-Based Practice, 2(3): 134-163. China: Saunders.

Cohen L, Manıon L. (1997). Research methods in education. London: Routledge.

Ekici G, Kurt H. (2014). Öğretmen adaylarının "Aids" kavramı konusundaki bilişsel yapıları: bağımsız kelime ilişkilendirme testi örneği. Türkiye Sosyal Araştırmalar Dergisi, 183: 267-306.

Ekinci M, Okanlı A (2001) Konsültasyon liyezon hemsireliği. Atatürk Üniversitesi Hemşirelik Yüksek Okulu Dergisi, 4(2): 75-80.

Engstrom I. (2002) Consultation–liaison work in paediatric care. Internationa Congress Series, 1241: 217-220.

Happell B. (1999). When I grow up I want to be a…? Where undergraduate student want to work after graduation. Journal of Advanced Nursing, 29(2): 499-505.

Karabulut N, Çetinkaya F. (2011). Cerrahi kliniklerinde çalışan hemşirelerin hasta bakımında karşılaştıkları güçlükler ve motivasyon düzeyleri. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 14(1): 14-23.

Kocaman N. (2005a). Konsültasyon liyezon hemşireliği ve rolü nedir? Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 8(3): 107-118.

Kocaman N. (2005b). Genel hastane uygulamasında psikososyal bakım ve konsültasyon liyezon psikiyatrisi hemşireliği. C.U. Hemşirelik Yüksekokulu Dergisi, 9(1): 49-54.

Mcmıllan J.H. (2000). Educational research: Fundamentals for the consumer. New York: Longman.

Morris EE, Morriss R, House A (1994). The role of the nurse in consultation-liaison psychiatry. Liaison Psychiatry: Defining Needs and Planning Services. Editor: Benjamin S, House A, Jenkins P, The Royal College of Psychiatrists, London, 34-44.

Patton MQ. (1990). Qualitative evaluation and research methods. USA: Sage.

Şahin G, Koptaş OS, Buzlu S. (2019). Standardize hasta kullanılarak yapılan bir ruh sağlığı ve psikiyatri hemşireliği klinik simülasyon deneyimi. ACU Sağlık Bil Dergisi, 10 (3): 486-492. https://doi.org/10.31067/0.2019.181.4.

Uzun S, Demir S. (2020). Hemşirelik son sınıf öğrencilerinin mezuniyet sonrası psikiyatri kliniğinde çalışmaya ilişkin görüşleri: nitel bir çalışma. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi, 9(2): 172-185.

Verma GK, Mallick K. (1999). Researching education: Perspectives and techniques. London.

Yıldırım A. Şimşek H. (2009). Sosyal Bilimlerde Nitel Araştırma Yöntemleri. Ankara: Seçkin Yayınevi.

Yıldırım S, Şimşek E, Geridönmez K, Basma Ş, Vurak Ü. (2019). Hemşirelerin konsültasyon liyezon psikiyatrisi hemşireliği hakkındaki bilgi ve uygulamalarının incelenmesi. Psikiyatri Hemşireliği Dergisi, 10(2): 96-102.

Yin R. (2003). Case study research: Design and methods. Thousand Oaks: Sage.

PSYCHOLOGICAL TRACES OF THE CORONAVIRUS

Nilgun ULUTASDEMIR
Gümüşhane University, Gümüşhane, TURKEY
ORCID No: https://orcid.org/000-002-2231-5236

Abstract
Pandemics cause health problems in individuals in two ways. The first of these is the physical effects caused by the contamination of the virus, and the other is the mental health problems that are caused by the effects of the epidemic, such as anxiety, stress and depression, which include healthy individuals who are not affected by the virus. The restrictions imposed due to the pandemic and the changing of daily life has started to affect the mental health of individuals. Individuals who experience panic and stress as a result of the increased threat perception created by the pandemic exhibit different behaviors than normal. How the emotional and psychosocial effects that occur in the face of uncertainties and crises during pandemic periods are managed and overcome are important topics for the individual and society. The physical consequences of the virus in the early days of the epidemic attracted more attention, and mental health consequences were not emphasized. However, it has been observed that individuals perceive increased levels of fear, anxiety, and stress, especially during the emergence of the epidemic and the increase in the number of cases. In this study, the psychological traces of the coronavirus on individuals were examined. The psychological reactions that people will show during the pandemic period vary. While some individuals are reluctant to take the necessary precautions without any anxiety, in some individuals this situation manifests itself as excessive anxiety and consequently, adverse professional or academic effects. During the pandemic process, individuals may be particularly prone to anxiety and mood disorders. Mental health-related problems can create situations such as fatigue and insomnia, as well as forgetfulness, nervousness, depression, and pessimism reducing business efficiency. Community participation is very important in health management to combat the epidemic. Therefore, the only way to be successful in combating the epidemic is the active participation of society in this process. Each individual must fulfill their responsibilities. In this difficult process, individuals should receive psychological support. Thus, allowing for the health and psychology of the individual, the family, and society to improve.

Keywords: Coronavirus (COVID-19) outbreak, pandemic, psychological effect

KORONAVİRÜSÜN PSİKOLOJİK İZLERİ

Özet
Pandemiler bireylerde iki şekilde sağlık sorununa neden olmaktadır. Bunlardan ilki bireylere salgının bulaşması sonucu oluşturduğu fiziksel etkiler, diğeri ise salgının oluşturduğu etkiler nedeniyle hasta olmayan bireyleri de kapsayan anksiyete, stres, depresyon gibi oluşturduğu ruh sağlığı sorunlarıdır. Yaşanan pandemi nedeniyle getirilen kısıtlamalar ve değişen günlük yaşam bireylerin ruhsal yaşantısını etkilemeye başlamıştır. Pandeminin oluşturduğu tehdit algısının artması sonucu panik ve stres yaşayan bireyler normalden farklı davranışlar sergilemektedir. Pandemi dönemlerinde ortaya çıkan belirsizlikler ve kriz karşısında oluşan

duygusal ve psikososyal etkilerin nasıl yönetildiği, bunlarla nasıl başa çıkıldığı birey ve toplum açısından önemli bir yer tutmaktadır. Salgının ilk zamanlarında virüsün ortaya çıkardığı fiziksel sonuçlar daha çok dikkat çekmiş ve ruh sağlığı sonuçları üzerinde durulmamıştır. Fakat özellikle salgının ortaya çıkışı ve vaka sayılarının arttığı dönemlerde bireylerin artan düzeyde korku, endişe ve stres algıladığı gözlenmiştir. Bu çalışmada koronavirüsün bireyler üzerindeki psikolojik izleri irdelenmiştir. İnsanların pandemi döneminde verecekleri psikolojik tepkiler çeşitlilik göstermektedir. Kimi bireyler hiç kaygı duymayıp gerekli önlemleri almak konusunda isteksiz davranırken, kimi bireylerde ise bu durum aşırı kaygı ve buna bağlı mesleki ya da akademik olarak olumsuz etkilenme şeklinde kendini göstermektedir. Pandemi sürecinde bireyler özellikle kaygı ve duygu durum bozukluklarına yatkınlık gösterebilmektedir. Ruh sağlığı ile ilgili sorunlar yorgunluk ve uykusuzluk yaratabildiği gibi iş verimliliğini düşürerek unutkanlık, sinir, depresyon ve karamsarlık yaratmaktadır. Salgınla mücadeleye yönelik sağlık yönetiminde toplum katılımı çok önemlidir. Bu nedenle salgınla mücadelede başarılı olmanın tek yolu toplumun bu süreçte rol almasıdır. Her bir birey üzerine düşen sorumluluğu yerine getirmelidir. Bu zor süreçte bireyler psikolojik destek almalıdır. Böylece hem bireyin, hem ailenin hem de toplumun sağlığı ve psikolojisi düzelebilir.

Anahtar Kelimeler: Koronavirus (COVID-19) salgını, pandemi, psikolojik etki

GİRİŞ

COVID-19'un ortaya çıkması, dünyada karışık, sürekli gelişen ve değişen bir durum ortaya çıkarmıştır. Sağlık kurumlarına ulaşamama korkusu, gıda kıtlıklarının yaşanacağı korkusu ve her an enfekte olma korkusu vb. düşünceler önemli psikolojik etkiler ortaya çıkarmıştır (Rubin ve Wessely, 2020). COVID-19 salgını döneminde bireylerin psikoloji ve davranışları hastalığa verilen tepkiyi etkiler ve salgın esnasındaki davranışlar da salgının yayılmasında ve can kaybında rol oynamaktadır. Bu nedenle bireylerin psikolojisini ve davranışlarını bilmek, bunları doğru yönetmek, salgınla mücadele açından büyük önem taşımaktadır (Aslan, 2020).

Taylor (2019) "Pandeminin Psikolojisi" adlı kitabında, küresel ölçekteki salgınların beş önemli psikososyal durumu ortaya çıkardığına dikkat çekmektedir. Bunlardan birincisi, salgının bulaşma ve ölüm riskinin olması nedeniyle insanların panik bir şekilde alış-verişe yönelmesi, gıda ve temizlik malzemesi stoklamaya başlamasıdır. İkinci olarak virüsün kaynağı olarak kabul edilen ve tüm dünyaya yayılmasına neden olduğu varsayılan toplumlara karşı dışlanma ve damgalanmayı içeren ırkçı tutum ve davranışların sergilenmesidir. Üçüncüsü sağlık kaygısı ve bulaşma şüphesi nedeniyle gereksiz bir şekilde sağlık sisteminin meşgul edilmesidir. Dördüncüsü salgının bulaşmaması için uygulanan zorunlu izolasyon, sosyal mesafeyi koruma, evde kalma gibi durumlara tahammül edememe ve yasaklara uymama davranışlarıdır. Beşincisi de salgınla ilgili gerçek ve doğru bilgilerin yanında asılsız iddialarda ve komplo teorilerinde bir artışın olmasıdır (Taylor, 2019).

Pandemiler bireylerde iki şekilde sağlık sorununa neden olmaktadır. Bunlardan ilki bireylere salgının bulaşması sonucu oluşturduğu fiziksel etkiler, diğeri ise salgının oluşturduğu etkiler nedeniyle hasta olmayan bireyleri de kapsayan anksiyete, stres, depresyon gibi oluşturduğu ruh sağlığı sorunlarıdır. Yaşanan pandemi nedeniyle getirilen kısıtlamalar ve değişen günlük yaşam bireylerin ruhsal yaşantısını etkilemeye başlamıştır. Aynı zamanda bu dönemde yaşanan ölümlerde kültürel ve dini ritüellerin gerçekleştirilememesi, yas sürecinin tamamlanamaması gibi trajik sonuçlarda bireylerin ruhsal sağlığını olumsuz yönde etkilemiştir. Pandeminin oluşturduğu tehdit algısının artması sonucu panik ve stres yaşayan

bireyler normalden farklı davranışlar sergilemektedir. Pandemi dönemlerinde ortaya çıkan bu belirsizlikler ve kriz karşısında duygusal ve psikososyal etkilerinin nasıl yönetildiği, bunlarla nasıl başa çıkıldığı birey ve toplum açısından önemli bir yer tutmaktadır. Aynı zamanda pandemi döneminin barındırdığı risklerin potansiyel güçlerinden dolayı günümüzü etkilediği gibi geleceğe dair umut ve güven duygusunu da zedelemektedir (Baltacı ve Coşar, 2020; Bozkurt ve ark., 2020; Karataş, 2020).

Salgın dönemlerinde yeni bir hastalığa yakalanma gibi durumlar toplumun korku ve stres kaynaklarını arttırmaktadır. Stresin artması, fiziksel sağlık problemlerinin yanında, sağlık kurumlarında aşırı birikmelere sebep olmaktadır. Bu noktada medyanın önemi ortaya çıkmaktadır. Bazı toplumlarda hastalık insidansında bir artış olmamasına rağmen acil servislere olan başvuruların arttığı önceki benzer salgın dönemlerinde yapılan çalışmalarla kanıtlanmıştır (Biçer ve ark., 2020). Salgının ilk zamanlarında virüsün ortaya çıkardığı fiziksel sonuçlar daha çok dikkat çekmiş ve ruh sağlığı sonuçları üzerinde durulmamıştır. Fakat özellikle salgının ortaya çıkışı ve vaka sayılarının arttığı dönemlerde bireylerin artan düzeyde korku, endişe ve stres algıladığı gözlenmiştir (Rajkumar, 2020). Bu çalışmada koronavirüsün bireyler üzerindeki psikolojik izleri irdelenmiştir. İnsanların pandemi döneminde verecekleri psikolojik tepkiler çeşitlilik göstermektedir. Kimi bireyler hiç kaygı duymayıp gerekli önlemleri almak konusunda isteksiz davranırken, kimi bireylerde ise bu durum aşırı kaygı ve buna bağlı mesleki ya da akademik olarak olumsuz etkilenme şeklinde kendini göstermektedir. Pandemi sürecinde bireyler özellikle kaygı ve duygu durum bozukluklarına yatkınlık gösterebilmektedir (Elli, 2020).

Salgın zamanlarında meydana gelen ölümler, artan medya enformasyonu ve ortaya çıkan yeni vakalar toplumun kaygısını arttırmaktadır. Bu nedenle, karantina uygulamasının da kaygıyı önemli ölçüde arttırdığı görülmektedir (Rubin ve Wessely, 2020). Karantinanın bir halk sağlığı önlemi olarak başarılı bir şekilde kullanılması ancak bununla ilişkili olumsuz etkilerin azami düzeyde azaltması ile mümkündür (Brooks ve ark., 2020).

SONUÇ

Pandemiden sonra artık dünyanın eskisi gibi bir yer olmayacağı, insanlık aleminde pek çok şeyin değişeceği ve yeni bir döneme girileceği söylemleri artmıştır. Dolayısıyla tüm dünyayı etkisi altına alan bu durumun köklü siyasi, ekonomik ve toplumsal sonuçlarının olması kaçınılmaz olacaktır (Özatay ve Sak, 2020). COVID-19 salgını döneminde bireylerin psikoloji ve davranışları hastalığa verilen tepkiyi etkiler ve salgın esnasındaki davranışlar da salgının yayılmasında ve can kaybında rol oynamaktadır. Bu nedenle bireylerin psikolojisini ve davranışlarını bilmek, bunları doğru yönetmek, salgınla mücadele açısından büyük önem taşımaktadır (Aslan, 2020). Pandemi dönemlerinde bu süreci doğru bir şekilde yönetebilmek için tıbbi müdahalenin yanında toplum ruh sağlığı açısından da planlı ve örgütlü psikososyal destek hizmetlerine ihtiyaç duyulmaktadır (Karataş, 2020).

Koronavirüsün psikolojik izlerini azaltmak için doğru bilgi kaynakları olan T.C. Sağlık Bakanlığı, TTB, HASUDER, KLİMİK, KLİMUD ve KIZILAY'ın web siteleri ziyaret edilmeli Yüksek kaygı yaşanması durumunda profesyonel psikolojik destek alınması sağlanmalıdır.

KAYNAKLAR

Aslan R. (2020). Kovid-19 fizyoloji ve psikolojiyi nasıl etkiliyor?. Ayrıntı Dergisi, 8(88): 47-53.

Baltacı NN, Coşar B. (2020). COVID-19 pandemisi ve ruh beden ilişkisi. Coşar B, editör. Psikiyatri ve COVID-19. 1. Baskı. Ankara: Türkiye Klinikleri, s.1-6.

Biçer İ, Çakmak C, Demir H, Kurt ME. (2020). Koronavirüs anksiyete ölçeği kısa formu: Türkçe geçerlik ve güvenirlik çalışması. Anadolu Kliniği Tıp Bilimleri Dergisi, 25(Özel Sayı 1): 216-225.

Bozkurt Y, Zeybek Z, Aşkın R. (2020). Covid-19 pandemisi: psikolojik etkileri ve terapötik müdahaleler. İstanbul Ticaret Üniversitesi Sosyal Bilimler Dergisi, 19(37): 304-318.

Brooks SK, Webster RK, Smith LE, Woodland L, Wessely S. et al. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. Lancet, 395(102227): 912-920. DOI: https://doi.org/10.1016/S0140-6736(20)30460-8

Elli ÜE. (2020). Pandemi ve Psikolojik Etkileri. http://acikerisim.gelisim.edu.tr/xmlui/bitstream/handle/11363/2202/Pandemi%20ve%20Psikolojik%20Etkileri.pdf?sequence=1&isAllowed=y Erişim Tarihi: 05.09.2020.

Karataş Z. (2020). COVID-19 pandemisinin toplumsal etkileri, değişim ve güçlenme. Türkiye Sosyal Hizmet Araştırmaları Dergisi, 4(1): 3-17.

Özatay F, Sak G. (2020). COVID-19'un ekonomik sonuçlarını yönetebilmek için ne yapılabilir? Türkiye Ekonomi Politikaları Araştırma Vakfı, 1-8. https://tepav.org.tr/upload/files/1585023057-6.Covid_19un_Ekonomik_Sonuclarini_Yonetebilmek_Icin_Ne_Yapilabilir.pd

Rajkumar RP. (2020). COVID-19 and mental health: A review of the existing literature. Asian Journal of Psychiatry, 52, 102066. http://doi.org/10.1016/j.ajp.2020.102066

Rubin GJ, Wessely S. (2020). The psychological effects of quarantining a city. BMJ, 368.

Taylor S. (2019). The psychology of pandemics: Preparing for the next global outbreak of infectious disease. Newcastle upon Tyne: Cambridge Scholars Publishing.

PAIN AND MANAGEMENT IN HEMODIALYSIS PATIENTS

Sümeyra Mihrap İLTER
ORCID: 0000-0002-1544-3918
Kahramanmaraş Sütçü Imam University, Kahramanmaraş/ TURKEY
ÖZLEM OVAYOLU
ORCID: 0000-0002-7335-4032
Gaziantep University, Gaziantep/ Turkey

Abstract
Hemodialysis is the most common renal replacement treatment option for individuals diagnosed with end-stage renal disease. In patients who continue this treatment, while the symptoms and findings due to kidney failure are controlled with hemodialysis treatment, the treatment process and the continuation of life depending on the hemodialysis machine also cause different problems.Pain, which is frequently experienced among these problems, negatively affects the quality of life of individuals. For this reason, effective management of pain especially in patients receiving hemodialysis treatment contributes to the improvement of the quality of life of patients and their relatives. The purpose of this review is to examine the current scientific data on the management of pain experienced in hemodialysis patients.

Key Words: Hemodialysis, pain, nursing, pain management

INTRODUCTION

End-stage renal failure (ESRD) is a clinical picture characterized by irreversible loss of endogenous renal functions, in which continuous renal replacement therapies are applied to the patient to prevent life- threatening uremia. Renal replacement treatments such as continuous ambulatory peritoneal dialysis, hemodialysis (HD) and transplantation are used in ESRD. However, hemodialysis is the treatment method that is frequently preferred all over the world and prolongs the life span (1,2). Hemodialysis is the process of filtering the blood into the dialysis solution by means of a semi-permeable membrane and dialysis solution by filtering the blood back into the body due to the irreversible damage that occurs in the kidneys (3). While many symptoms related to the disease disappear with this treatment method, some physical, mental or social limitations and problems are experienced by the patients as a side effect of the treatment (4-6). Pain, one of these problems, negatively affects the quality of life of hemodialysis patients (6,8-10). Pain that every person experience at some point in her life is a universal phenomenon (11). It is seen as a problem that concerns a large part of the society from the past to the present and reduces the quality of life of individuals (12). At the same time, it is a complex situation that is affected by many emotional and behavioral factors such as the individual's environment, gender, culture, education and experiences, varies from individual to individual, and is subjective and difficult to diagnose (13). International pain research association; It is defined as a sensory, emotional and unpleasant feeling related to the

past experiences of the person, with or without an organic cause that begins anywhere in the body(11-13). Pain is a problem that prevents an individual from doing daily life activities. When it is not eliminated, it causes the individual to experience a loss or change of role in family relations, loss of productivity, self-confidence, irritability, sleep disorders, exhaustion, overworking with the body, decreased libido, psychomotor slowing, social withdrawal, causing the patient to be isolated and help withdrawal. It causes emotional changes by negatively affecting the self-esteem of the individual and to turn over, become passive or aggressive (12-14).

HEMODIALYSIS AND PAIN

Pain, which is a subjective concept, affects the lives of hemodialysis patients in relation to end-stage renal disease and many factors related to the treatment process. In hemodialysis patients, due to renal failure, osteitis fibrosis, amyloidosis, osteomalacia, osteoarthritis, calcific uremic arteriolopathy, peripheral neuropathy, as well as comorbid conditions such as ischemic peripheral artery disease, diabetic neuropathy, and osteoporosis can cause pain (16). However, pain frequently experienced by hemodialysis patients; affects coping mechanism, functional capacity and quality of life negatively with disease and treatment process (6). At the same time, different problems such as pain-related depression, anxiety and sleep disorders also significantly affect the quality of life of hemodialysis patients (6,10,17-19).

In different studies in the literature, it is stated that the prevalence of chronic pain in hemodialysis patients varies between 33% and 82% (17), and the prevalence of acute pain (intradialytic pain lasting for the last 4 weeks) varies from 21% to 92% (17,18). In the study of Fleishman et al., It was found that the average pain score of hemodialysis patients was 7.2 ± 2.2 and they experienced “neuropathic pain” at a rate of 61.5% (20). In the study of Harraqui et al., 70.9% of the patients stated that they experienced pain (21). In the study of Özyiğit et al., 96.0% of hemodialysis patients experienced pain and 62.5% defined that this pain was deep pain (14). In a study conducted by Kafkia et al., It was determined that the pain score was evaluated out of 10 and 30.8% of the patients gave 6 points to the pain they experienced (22). In Davison and Jhangri's study with 591 patients, it was found that 72.4% of the participants experienced pain and 46.5% experienced severe pain, and pain negatively affected the physical and mental health sub-dimension of the quality of life (23). In a different descriptive study, it was stated that 44.1% of the patients experienced intense pain and the pain felt increased the level of depression, worsening the quality of sleep and life quality (17). It is stated in the literature that patients experience pain, especially during and after dialysis (18). Calls et al. stated that 92.5% of the patients experienced pain during hemodialysis and 77.7% of them experienced pain outside of hemodialysis sessions, and there was a positive correlation between parathyroid hormone (PTH) height and pain (24). Prabhakar et al. reported that 26.4% of the patients experienced pain during dialysis sessions (25). Marques et al. reported that 25% of the patients had pain and found that women felt more pain (26). In a study conducted to examine the frequency of headache in hemodialysis patients; It has been reported that 76% (n: 124) of the patients experienced headache, and 76 of these patients experienced headache during hemodialysis treatment (27). In a different study examining the symptoms associated with hemodialysis, it was reported that 74.3% of the patients experienced cramps and 53.6% headaches during hemodialysis (28). In a study examining the problems experienced by patients after hemodialysis, it was found that 63.4% of the patients experienced headache and 62% had muscle cramps (29).

APPROACHES TO PAIN MANAGEMENT IN HEMODIALYSIS PATIENTS

Pain is the most common symptom that causes physical and mental problems, affects the quality of life negatively in hemodialysis patients (30,31), and pain management requires a multidisciplinary approach (32). In the management of the pain experienced by patients receiving hemodialysis treatment, it is recommended that healthcare professionals question the pain systemically, obtaining the opinions of the individual and the family about the pain, choosing the appropriate treatment options on time, performing a programmed intervention, and evaluating the patient and his family in holistic care (30-32). However, studies show that the pain in patients is not properly evaluated and treated (33). In the study conducted by Yeşil et al., It was reported that 58.5% of the patients who experienced pain (75.7%) did not receive any treatment for their pain, and the patients did not tell their pain unless they were asked questions about the pain, so patients who were treated with hemodialysis and who experienced pain clearly and easily. It is recommended to establish and implement a pain assessment system (31,33). As it is known, effective pain management is one of the basic human rights and is among the most important responsibilities of healthcare professionals (12,14). Therefore, the presence, cause, location, nature and severity of pain should be evaluated in detail and pain should be relieved with appropriate interventions (32). In hemodialysis patients, pain management is inadequate due to the changes in the absorption, distribution, metabolism and excretion mechanisms of analgesics (31). In addition, pain treatment in this patient group; It should be planned considering age, concomitant diseases, kidney and liver functions and drugs used (32). In the studies conducted, patients' inability to fully express their pain, fear of addiction or side effects of drugs to be used, inadequate assessment of pain by health professionals, lack of training on pain management, and lack of a guide on pain management for hemodialysis patients as "main obstacles in pain management". listed (29,34). The American Pain Society Primer and the World Health Organization also recommend the pharmacological approach used in pain treatment, namely the analgesic ladder application, to HD patients who experience pain (35,36). The first step of the ladder, which was created by the World Health Organization in 1986 and updated in 2006, includes analgesics containing acetaminophen and non-steroidal anti-inflammatory drugs with mild pain severity of 1--3 grade with Visual Analog Scale (VAS). If the pain persists or is moderate (VAS; grade 4-6) pain treatment, the second line is used as the next step and includes weak opioids, and severe pain with a severity of 7--10 is recommended to be treated with third-line agents or stronger opioids (30,34). In addition, it has been reported that when negative effects are experienced in the application of ladder analgesia by the World Health Organization, drugs on the same step can be interchanged or non-pharmacological treatments can be used (35). It has been reported that ice massage applied to the Hoku point (37) and acupressin reduce the intensity of pain in hemodialysis patients (38). In the research of Çevik and Taşçı, it was determined that acupressure applied to hemodialysis patients within the first two hours of dialysis treatment for six weeks provided a statistically significant change in the reduction of upper extremity pain compared to the control group (39). In a review examining the effect of aromatherapy on the symptoms of hemodialysis patients, it was reported that aromatherapy was effective in reducing headache and pain experienced at fistula needle insertion during hemodialysis (40). In a study by Zins et al., It was stated that reiki applied to hemodialysis patients two days a week for four weeks would be beneficial in reducing pain (41).

CONCLUSION AND RECOMMENDATIONS

Pain is a problem frequently experienced by hemodialysis patients during and after treatment. As is known, hemodialysis patients spend most of their time under the supervision of nurses during the treatment process. This situation highlights the clinical decision-making role of nurses in the management and reduction of pain, like many symptoms experienced in hemodialysis patients. For this reason, the nurse should question the location-severity-type-duration of the pain and the presence of accompanying symptoms for the patient who states that he / she has pain. In the light of scientific data aimed at reducing the patient's pain, it should increase patient comfort by applying pharmacological and non-pharmacological methods during hemodialysis within the scope of holistic nursing philosophy.

RESOURCES

1) Çağlar M, Zedelenmez A, Hemodiyaliz Hastalarında Yeterli Diyaliz En Doğru Nasıl Değerlendirilir? ,Nefroloji Hemşireliği Dergisi 2019: 14 (2) 70-74.

2) Topbaş E. Kronik Böbrek Hastalığının Önemi, Evreleri Ve Evrelere Özgü Bakımı. Nefroloji Hemşireliği Dergisi. 2015; 10(1): 53-59.

3) Ovayolu N. Üriner Sistem Hastalıkları ve Hemşirelik Yönetimi. İçinde: Ovayolu, N, Ovayolu, Ö (editör). Temel İç Hastalıkları Hemşireliği ve Farklı Boyutlarıyla Kronik Hastalıklar, 2. Baskı. Adana, Nobel Tıp Kitabevi, 2017: 215-237.

4) Abdel-Kader K, Unryh ML, Weisbord SD. Symptom burden, depression, and quality of life in chronic and end-stage kidney disease. Clin J Am Soc Nephrol 2009;4:1057-1064

5) Lopes AA, Bragg J, Young E, Goodkin D, Mapes D, Combe C, Piera L, Held P, Gillespie B, Port FK: Depression as a predictor of mortality and hospitalization among hemodialysis patients in the United States and Europe. Kidney Int 2002;62:199-207

6) Cohen SD, Patel SS, Khetpal P, Peterson RA, Kimmel PL: Pain, sleep disturbance, and quality of life in patients with chronic kidney disease. Clin J Am Soc Nephrol 2007;2:919-925

7) Mittal SK, Ahern L, Flaster E, Mittal VS, Maesaka, JK, Fishbane S: Self-assessed quality of life in peritoneal dialysis patients. Am J Nephrol 2001;21:215-220

8) Danquah FV, Wasserman J, Meininger J, Bergstrom N: Quality of life measures for patients on hemodialysis: A review of psychometric properties. Nephrol Nurs J 2010;37:255-269

9) Davison SN: Chronic pain in end-stage renal disease. Adv Chronic Kidney Dis 2005;12:326-334

10) Davison SN: End-of-life care preferences and needs: Perceptions of patients with chronic kidney disease. Clin J Am Soc Nephrol 2010;5:195-204.

11) Çelik S. Batın ameliyatından 24-48 saat sonra hastaların ağrı düzeyleri ve uygulanan hemşirelik girişimleri. Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi 2013;2(3):325-30.

12) Celik S, Bas BK, Korkmaz ZN, Karasahin H, Yildirim S. Determination of knowledge and behaviour of nurses about pain management. Bakırköy Tıp Dergisi 2018;14:17-23. https://doi.org/10.5350/BTDMJB.20160905103604

13) Ay F, Alpar EŞ, Postoperatif ağrı ve hemşirelik uygulamaları, AĞRI 2010;22(1):21-29

14) Özyiğit S,Yıldırım Y, Karaman E ,Hemodiyaliz Hastalarında Ağrı, Turk Neph Dial Transpl 2016; 25 (1): 88-94.

15) Öztunç G, Kılıç M. Ağrı kontrolünde kullanılan yöntemler ve hemşirenin rolü. Fırat Sağlık Hizmetleri Dergisi 2012;7(21):35-51

16) Santoro D, Satta E, Messina S, Costantino G, Savica V, Bellinghieri G. Pain in end-stage renal disease: a frequent and neglected clinical problem. Clin Nephrol. 2013;79(Suppl 1):S2-S11.

17) Harris TJ, Nazir R, Khetpal P, Peterson RA, Chava P, Patel SS, Kimmel PL: Pain, sleep disturbance and survival in hemodialysis patients. Nephrol Dial Transplant 2012;27:758-765

18) Brkovic T., Burilovic E, Puljak L. Prevalence and Severity of Pain in Adult End-Stage Renal Disease Patients on Chronic İntermittent Hemodialysis: A Systemic Review. Patient Preference and Adherence 2016, 10:1131-1150.

19) Masajtis-Zagajewska A, Pietrasik P, Krawczyk J, Krakowska M, Jarzebski T, Pietrasiewicz, B, Zbrog Z, Nowicki, M.Similar Prevalence But Different Characteristics of Pain in Kidney Transplant Recipients and Chronic Hemodialysis Patients. Clinical Transplantation,2011;25(2):144–151.

20) Fleishman TT, Dreiher J, Shvartzman P. Pain in Maintenance Hemodialysis Patients: A Multicenter Study. J Pain Symptom Manage. 2018 Aug;56(2):178-184. doi: 10.1016/j.jpainsymman.2018.05.008. Epub 2018 Jun 20. PMID: 29775691.

21) El Harraqui R, Abda N, Bentata Y, Haddiya I. Évaluation et analyse de la douleur en hémodialyse chronique [Evaluation and analysis of pain in chronic hemodialysis]. Nephrol Ther. 2014 Dec;10(7):500-6. French. doi: 10.1016/j.nephro.2014.06.005. Epub 2014 Oct 29. PMID: 25449761.

22) Kafkia T, Vehviläinen-Julkunen K, Sapountzi-Krepia D: Assessment and management of pain in hemodialysis patients: A pilot study. Prog Health Sci 2014;4:53-60.

23) Davison SN, Jhangri GS, Impact of Pain and Symptom Burden on the Health-Related Quality of Life of Hemodialysis Patients. J Pain Symptom Manage,2010; 39:477-485.

24) Calls J, Rodríguez Calero M, Hernández Sánchez D, Gutiérrez Navarro MJ, Juan Amer F, Tura D, Torrijoset JJ.An Evaluation of Pain in Hemodialysis Patients Using Different Validated Measurement Scales. Nefrologia 2009; 29:236-243.

25) Prabhakar Singh RG, Singh S, Rathore SS, Choudhary TA. Spectrum of Intradialytic Complications During Hemodialysis and Its Management: A SingleCenter Experience. Saudi Journal of Kidney Diseases and Transplantation 2015; 26(1):168-17.

26) Marques VDR, Benetti PE, Benetti ERR, Rosanelli CLSP, Colet CDF, Stumm EMF. Pain Intensity Assessment in Chronic Renal Patients on Hemodialysis. Rev Dor. São Paulo,2016; 17(2):96-100.

27) Jesus A, Oliveira, HA, Paixão MO, Fraga TP, Barreto FJ, Valença MM. Clinical Description of Hemodialysis Headache in End-Stage Renal Disease Patients. Arq Neuropsiquiatr.2009;67 (4):978–981.

28) Caplin B, Kumar S, Davenport A.Patients' Perspective of Haemodialysis Associated Symptoms. Nephrol Dial Transplant. 2011:26(8);2656-2663.

29) Akça NK, Doğan A. Hemodiyaliz Hastalarının Diyaliz Sonrası Yaşadığı Sorunlar ve Evde Bakım Gereksinimleri. Bozok Tıp Dergisi,2011: 1;15-22.

30) Atik D, Karatepe H, Karatepe C., Demir S, Sökmen S. The Effect of Gender on the Complications, Pain Intensity and Pain Management in Hemodialysis Patients. Int J Res Med Sci,2016;4: 1490-1495

31) Yeşil S, Karslı B, Kayacan N, Süleymanlar G, Ersoy F. Hemodiyaliz Uygulanan Kronik Böbrek Yetmezlikli Hastalarda Ağrı Değerlendirmesi. Ağrı,2015; 27(4):197-204.

32) Özer Z, Ateş Z. Hemodiyaliz Hastalarında Ağrı ve Ağrı Yönetimi, Istanbul Sabahattin Zaim University Journal of Institute of Science and Technology

33) İtişgen V, Kara B.Hemodiyaliz Hastalarında Ağrı Yönetimi. Nefroloji Hemşireliği Dergisi,2016: 2(2):18-25.

34) Mathew RO, Bettinger JJ, Wegrzyn EL, Fudin J. Pharmacotherapeutic Considerations for Chronic Pain in Chronic Kidney and End-Stage Renal Disease. J Pain Res.2016: 9;1191–1195.

35) Vargas-Schaffer G, Is the WHO Analgesic Ladder Still Valid? Twenty four Years of Experience. Can Fam Physician,2010: 56;514–517.

36) Koncicki HM., Brennan F, Vinen K., Davison SN. An Approach to Pain Management in End Stage Renal Disease: Considerations for General Management and Intradialytic Symptoms. Semin Dial 28 2015: 384–391.

37) Arab V, Bagheri-Nesami M, Mousavinasab SN., Espahbodi F, Pouresmail Z. Comparison of the Effects of Hegu Point Ice Massage and 2% Lidocaine Gel on Arteriovenous Fistula Punctureрelated Pain in Hemodialysis Patients: A Randomized Controlled Trial. J Caring Sci 2017; 6:141-151.

38) Sakhaei S, Motaarefi H, Sadagheyani HE. Comparing the Effect of Ice Massage and Acupressure on the Intensity of the Venipuncture Pain in Hemodialysis Patients. Int J Pharma Bio Sci 2018; 9(1):164- 170.

39) Çevik B,Taşçı S. The effect of acupressure on upper extremity pain and quality of life in patients hemodialysis treatment: A Randomized Controlled Trial, Complementary Therapies in Clinical Practice 39 (2020) 101128.

40) Bouya S, Ahmadidarehsima S, Badakhsh M, Balouchi A, Koochakzai M. Effect of aromatherapy interventions on hemodialysis complications: A systematic review. Complement Ther Clin Pract. 2018;32:130-138. doi: 10.1016/j.ctcp.2018.06.008. Epub 2018 Jun 13. PMID: 30057040.

41) Zins S, Hooke MC, Gross CR. Reiki for Pain During Hemodialysis: A Feasibility and Instrument Evaluation Study. J Holist Nurs. 2019 Jun;37(2):148-162. doi: 10.1177/0898010118797195. Epub 2018 Aug 31. PMID: 30170509.

AROMATHERAPY AND FATIGUE

Sümeyra Mihrap İLTER
ORCID: 0000-0002-1544-3918
Kahramanmaraş Sütçü Imam University, Kahramanmaraş/ TURKEY
ÖZLEM OVAYOLU
ORCID: 0000-0002-7335-4032
Gaziantep University, Gaziantep/ Turkey

Abstract
Integrative methods continue to be an important part of the healthcare system of the new century. Aromatherapy, which has an important place among these methods and has different application methods, is still up-to-date, although it has a very old history. Aromatherapy is used effectively in various situations such as pain, stress, insomnia, nausea and vomiting in pediatric, immunological, cardiological, psychiatric, oncological or end-of-life care, intensive care and gynecological problems. Becoming a part of the healthcare system in a changing and developing world, aromatherapy is one of the most common tools nurses use to improve patient care. One of the uses of aromatherapy to improve the mental and physical health of nurses during the care process is fatigue management, which is a subjective symptom. Aromatherapy is an easy, non-invasive method in fatigue management experienced due to many diseases and treatments. The purpose of this review is to examine the effectiveness of aromatherapy applications in fatigue management in the light of current data.

Key Words: Aromatherapy, fatugue,symptom management,nursing

INTRODUCTION

Hopelessness, helplessness, social pressures, concerns about side effects of medical treatments, expectation of recovery and interaction between patient and healthcare team in many health problems direct the patient and family to integrative practices (1,2). Nursing practices and integrative approaches are both focused on supporting the individual in the treatment and care holistically, participating in the individual's own care, and promoting health promotion (3). Aromatherapy has a wide range of uses among integrative applications. Today, it is preferred as a part of patient care in many countries and it is known to be noninvasive, cheap and relaxing. In addition, aromatherapy has taken its place in the Nursing Interventions Classification. Aromatherapy is an approach that explores the use of essential oils to protect and treat people's physical and mental health. According to the National Center for Complementary and Integrative Health classification, aromatherapy is among the mind-body applications. It is defined as the therapeutic use of oils obtained from parts of plants such as leaves, flowers, fruits, roots and bark, in a concentrated form (1-4).

When applying aromatherapy, it should be applied in the right way in order to get the right effect. Accordingly, aromatic oils can be applied in four basic ways. These are topical (touch, compress or bath), internal (mouthwash, vaginal or anal suppository), mouth (reconstitution with capsules or in honey, alcohol or diluent), and inhalation (direct or indirect inhalation with or without steam) is the way (1-3). Since aromatic oils can evaporate and produce the fastest effect through breathing, aromatherapy applications are generally performed by respiration. Aromatherapy, which can be applied orally and topically in addition to inhalation, is excreted from the body through respiration, sweat and urine (4).

Aromatic oils can show their effects on all body systems by joining the nervous system or blood circulation. Molecules in the inhaled aromatic oils reach the receptors in the nasal ceiling. Different scents connect to different areas of these receptors, allowing people to distinguish more than 10 thousand odors. Binding of molecules to receptors allows the transmission of an electrochemical message to the limbic system via the olfactory bulb and olfactory pathway (4,5). These received messages trigger sensory responses through memory and the hypothalamus, causing responses to be sent to other parts of the brain and body. These messages lead to the formation of euphoria, relaxation, sedation and stimulating actions, as well as the release of substances such as dopamine, endorphin, adrenaline, and the formation of analgesic properties (3-5). With these mechanisms of action, aromatherapy applications, which are effective in the management of many symptoms, can be safely used in fatigue management, which is a subjective symptom.

FATIGUE AND AROMATHERAPY

Fatigue has often been described as a symptom or symptom of many illnesses. It is the most important factor that seriously affects people's daily life activities and reduces work performance (6). The feeling of tiredness is a highly subjective and non-specific symptom and can be confused with depressive moods, fatigue, and other situations, and has difficulties in identifying (6,7). Fatigue has many negative effects on people psychologically, socio-economically and physically (6,7). Fatigue, which is expressed by the sick individuals with concepts such as burnout, fatigue, fatigue, weakness, pain, lack or lack of energy, weakness, lethargy, slowing in movements, is an indication of people's daily activities along with their treatment processes, sexual lives, family and friendships. negatively affect their communication and professional life (6-9). Therefore, management and effective evaluation of fatigue due to disease and treatment is very important (7,9). . Today, both pharmacological and integrative methods are used in fatigue management (8). In the literature, it is seen that studies on aromatherapy applications in fatigue management are limited.

In the research conducted by Kim et al.; In patients with arthritis, aromatherapy massage with a 1.5% mixture of essential oils of lavender, marjoram, eucalyptus, rosemary and peppermint and almond, apricot and jojoba carrier oils has been found to significantly reduce the pain, fatigue and depression scores of the patients (10). In the study of Metin and Özdemir, it was found that aromatherapy massage applied to patients with rheumatoid arthritis once a week for four weeks for 30 minutes reduces fatigue (11).

There are also studies on aromatherapy in fatigue management, a symptom frequently experienced by patients receiving hemodialysis treatment due to end-stage renal disease. In the study of Ahmady et al., A reduction in the severity of fatigue was found in hemodialysis sessions where orange oil and lavender oil were administered as inhalers (12). Karadag and Baglama suggested that inhaled lavender application can take place in the management of fatigue and anxiety in hemodialysis patients (13). In a study in which young and friends

examined the effect of lavender oil on sleep and fatigue in elderly individuals, it was found that lavender oil, which was inhaled half an hour before sleep, increased sleep quality and reduced fatigue severity (14). In another study conducted with experimental animals, it was determined that mice who were administered eucalyptus oil inhalation for 15 minutes daily swam 46-111 seconds more than the control group and got tired later (15).

However, in the randomized controlled study of Nesamı-Beghari et al., It was stated that lavender oil was not effective in reducing fatigue of hemodialysis patients (16). In the randomized controlled study of Hassanzedeh et al., It was determined that relaxation exercises and inhaled lavender oil application did not have a significant effect on fatigue reduction in hemodialysis patients compared to the control group (17). It was found that inhaler aromatherapy applied to female patients diagnosed with hypothyroidism did not affect the severity of fatigue (18).

RESULTS AND RECOMMENDATIONS

Throughout history, people have believed in herbs and their healing power for thousands of years. Today, it continues to benefit from aromatherapy applications in this direction. In the field of nursing, aromatherapy applications date back to Florence Nightingale, the founder of modern nursing. As it is known, nurses are healthcare professionals who can perform aromatherapy applications in hospitals with adequate training. In aromatherapy, which can be used in the management of fatigue experienced by almost every individual, extreme care should be taken in terms of the choice of oils, the way they are applied, the patient-related characteristics and side effects. In addition, much more research is needed in this area to standardize the clinical use of aromatherapy in fatigue management.

RESOURCES

1) Alkanat, H.Ö. (2015). “Aromaterapi” (Ed. Mürüvvet Başer, Sultan Taşçı), Kanıta Dayalı Rehberleriyle Tamamlayıcı ve Destekleyici Uygulamalar, ss.42-44, Akademisyen Tıp Kitabevi, Ankara.
2) Aslan, F.E. & Olgun, N. (2010) “Onkoloji” (Ed. Ayfer Karadakovan, Fatma Eti Aslan), Dahili ve Cerrahi Hastalıklarda Bakım, ss. 242, Nobel Tıp Kitabevi, Adana
3) Baltacı N,Tülek Deniz H, Tamamlayıcı ve Bütünleşik Bir Bakım Uygulaması: Aromaterapi, International Social Sciences Studies Journal, 2019;5(32): 1802-1809.
4) Bilgiç Ş, Hemşirelikte Holistik Bir Uygulama; Aromaterapi, Namık Kemal Tıp Dergisi 2017; 5(3): 134-141.
5) Özdemir H, Öztunç G. Hemşirelik uygulamalarında aromaterapi. Türkiye Klinikleri Hemşirelik Bilimleri Dergisi. 2013;5(2):98-104.
6) Andreasen AK, Stenager E, Dalgas U. The effect of exercise therapy on fatigue in multiple sclerosis, Multiple Sclerosis Journal, 2011. 1-14
7) Tan M, Dayapoğlu N. Multiple sklerozlu hastalarda yorgunluk ve hemşirelik bakımı. İstanbul Üniversitesi Florence Nightingale Hemşirelik Dergisi. 2011; 19 (2):105-108.
8) Çayakar A,The Clinical Approach of Asthenia and Fatigue, Aegean J Med Sci 2019;3:168-178

9) Erdoğan Z,Atik Özcanlı D, Çınar S, Complementary and Alternative Medicine Methods in Chronic Renal Failure, Archives Medical Review Journal 2014;23(4):773-790.

10) Kim MJ, Nam ES, Paik SI. The effects of aromatherapy on pain, depression, and life satisfaction of arthritis patients. Taehan Kanho Hakhoe Chi 2005;35(1):186-194.
11) Gok Metin Z, Ozdemir L. The effects of aromatherapy massage and reflexology on pain and fatigue in patients with rheumatoid arthritis: a randomized controlled trial. Pain Manag Nurs 2016;17:1409.
12) Ahmady S, Rezaei M, Khatony A. Comparing effects of aromatherapy with lavender essential oil and orange essential oil on fatigue of hemodialysis patients: A randomized trial. Complement Ther Clin Pract. 2019 Aug;36:64-68. doi: 10.1016/j.ctcp.2019.05.005. Epub 2019 May 29. PMID: 31383445.
13) Karadag E, Samancioglu Baglama S. The Effect of Aromatherapy on Fatigue and Anxiety in Patients Undergoing Hemodialysis Treatment: A Randomized Controlled Study. Holist Nurs Pract. 2019 Jul/Aug;33(4):222-229. doi: 10.1097/HNP.0000000000000334. PMID: 31192834.
14) Genç F, Karadağ S, Kılıç Akça N, Tan M, Cerit D. The Effect of Aromatherapy on Sleep Quality and Fatigue Level of the Elderly: A Randomized Controlled Study. Holist Nurs Pract. 2020 May/Jun;34(3):155-162. doi: 10.1097/HNP.0000000000000385. PMID: 32282491
15) Lin TC, Wang SH, Huang CC, Lai YC, Song TY, Tsai MS. Anti-Fatigue, Antioxidation, and Anti-Inflammatory Effects of Eucalyptus Oil Aromatherapy in Swimming-Exercised Rats. Chin J Physiol. 2018 Oct 31;61(5):257-265. doi: 10.4077/CJP.2018.BAG572. PMID: 30384399.
16) Bagheri-Nesami M, Shorofi SA, Nikkhah A, Espahbodi F, Ghaderi Koolaee FS. The effects of aromatherapy with lavender essential oil on fatigue levels in haemodialysis patients: A randomized clinical trial. Complement Ther Clin Pract. 2016 Feb;22:33-7. doi: 10.1016/j.ctcp.2015.12.002. Epub 2015 Dec 10. PMID: 26850803.
17) Hassanzadeh M, Kiani F, Bouya S, Zarei M. Comparing the effects of relaxation technique and inhalation aromatherapy on fatigue in patients undergoing hemodialysis. Complement Ther Clin Pract. 2018 May;31:210-214. doi: 10.1016/j.ctcp.2018.02.019. Epub 2018 Mar 6. PMID: 29705457.
18) Hawkins J, Hires CY, Dunne EW, Keenan LA. Aromatherapy reduces fatigue among women with hypothyroidism: A randomized placebo-controlled clinical trial. J Complement Integr Med. 2019 Aug 22;17(1):/j/jcim.2019.17.issue-1/jcim-2018-0229/jcim-2018-0229.xml. doi: 10.1515/jcim-2018-0229. PMID: 31437124.

ACUPRESSURE AND NURSING

Res. Assist. **Meltem Sungur**
ORCID ID: 0000-0002-2702-5748
Kilis 7 December University, Turkey
ÖZLEM OVAYOLU
ORCID: 0000-0002-7335-4032
Gaziantep University, Turkey

Abstract
Acupressure is a method that has been used in traditional Chinese and Western medicine for many years and it maintains the body's energy balance. Acupressure is reported to have effects on a variety of symptoms in different populations. It has been stated that it provides relaxation in the muscles, relaxation, improvement in posture, increases the energy level of the person, relieves anxiety, restlessness, depression and mental troubles, and provides physical and mental calmness and vitality. In this review; attention is drawn to the usage areas of acupressors and the need for randomized controlled studies with high evidence level.

Key words: Acupressure, nursing, complementary method

Introduction

It has been over 2000 years since the acupressure was introduced in China (Hakverdioğlu et al., 2006). In traditional Chinese medicine to alleviate chronic symptoms, to support the healing process, to provide relaxation and to maximize overall health; the use of acupressure has increased significantly in the West (Wagner, 2015). Today, it is an approach accepted by western medicine in the treatment or alleviation of the symptoms of diseases. Acupressure is a therapy method applied with hand, fingertip, palm, elbow, knee, thumb or relaxation and wrist bands on various points representing certain organs in the body in order to maintain the energy in our body and keep it in balance (Hakverdioğlu et al., 2006; Doğan et al., 2015; Bastani et al., 2015)

Acupressure Application and Effects

The purpose of acupressure application is to balance the energy called "chi" existing in the body, to maximize health and to increase the quality of life. There are 12 energy channels in our body called meridians. These paths start from the fingertips, connect to the brain and pass through certain organs. The points where acupuncture and acupressure are applied are the same, but the biggest difference of acupressure from acupuncture is that it is noninvasive and the application can be done by hand or fingers (Bastani et al., 2015; Ayçeman, 2016)

Energy called chi; balances mental, mental and physical health. Because when the energy flow in the body is blocked, the flow slows down and imbalance occurs. In order to restore this balance, a warning is sent by applying pressure to the points. The person feels relaxed and the blood circulation is relaxed (Ayçeman, 2011). Because of these properties, acupressure is used in pain management rather than therapeutic effect and it is seen as a method that

strengthens the immune system. In addition, acupressure increases blood circulation (Doğan et al., 2015), facilitates the body's purification of harmful substances (Ayçeman, 2016), supports neurochemical release (Doğan et al., 2015), provides relaxation in muscles, general relaxation, improvement in posture, increases the person's energy level, relieves anxiety, restlessness, depression and mental distress, It has been reported to provide physical and mental calmness and vitality (Ayçeman, 2016).

Evidence for the Use of the Acupressure

There are many studies on the use of acupressure in different areas. In the clinical practice guideline for the use of evidence-based integrative practices, an acupressure is recommended for the control of nausea and vomiting (Evidence Level B) caused by chemotherapy (Greenlee et al., 2017). In a systematic review evaluating the effectiveness of acupressure in symptom management; 43 studies were examined, and in 16 of 23 studies, it was stated that the acupressure was effective in the treatment of nausea and vomiting, especially in the treatment of nausea and vomiting in patients during pregnancy and chemotherapy, in patients with dysmenorrhea, in pain management during childbirth and after trauma (Lee et al., 2011). In addition, it has been reported that acupressure is effective in reducing fatigue and insomnia (Lee et al., 2011).).

In a study where the effectiveness of the acupressure was compared with physical therapy in terms of disability, pain scores and functional status; It has been found that acupressure is more effective in relieving low back pain than physical therapy (Hsieh et al., 2006). In patients with end-stage renal disease, it was found that the acupressure had a positive effect on perceived fatigue and there was a significant difference between the post-application intervention and control groups (Tsay, 2004). In a randomized controlled study examining the effect of acupressure on pain in female nurses with chronic low back pain; It was reported that there was a significant difference in pain intensity immediately after the acupressure application, in the second and fourth weeks, and the mean pain intensity score in the intervention group decreased significantly compared to the control group (Movahedi et al., 2017). In the study investigating the effect of acupressure applied to female nurses with chronic back pain on fatigue; It was found that the fatigue intensity of the intervention group decreased immediately, in the second week and one month after the application (Movahedi et al., 2017). In a randomized controlled study examining the effect of acupressure on constipation in hemodialysis patients; It was stated that the number of defecations in the intervention group increased compared to the control group in the fourth week of the application (Abbasi et al., 2019). However, in a study examining the effectiveness of acupressure and vitamin B6 in the treatment of nausea and vomiting in pregnancy; It was found that acupressure was less effective than vitamin B6 in reducing nausea and vomiting in the first trimester of pregnancy (Jamigorn, 2007).

Acupressure Application and Nursing

Acupressure; is a safe, painless, low cost, low side effect, positive results, does not interfere with the privacy of the patient, and is easy to learn and apply (Bastani et al., 2015; Greenlee et al., 2017; Kılıç Akça et al., 2011). In addition, it is an easily teachable application for patients to be included in their treatment by applying them on their own, since it is easy to access without being dependent on any material (Maa, 2005). In this direction, nurses can easily integrate the acupressure application into care services in terms of the holistic approach of the patient and the holistic approach. Because integrative nursing practices include evidence-based practices to support the healing process of patients and draw attention to the

noninvasive nature of the applications to be made. In addition, integrative practices support nurses' use of acupressure alone or in combination with different approaches to treat moderate symptoms (Wagner, 2015). Therefore, it is very important for nurses to develop themselves in this area, to participate in training programs and to include evidence-based study results in care (Lindquist et al., 2003).

Conclusion And Recommendations

Effective use of complementary methods is an important strategy in terms of symptom management at all levels. Among these methods, acupressure attracts considerable attention in terms of being a noninvasive, painless, low cost, low side effect and reflecting to the clinic. Particularly, patient groups with chronic diseases and in need of palliative care can benefit from this method. However, although there are positive opinions about its integration into the maintenance phase, important lack of information about the acupressure application is still up to date (Lee et al., 2011). More well-designed randomized controlled studies are still needed in order to complete the deficiencies in this area, to increase the use of acupressures and to increase the evidence level of the studies.

References

Hakverdioğlu, A., Türk, A., 2006. Akupressur . Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi, 13(2):43-47 . Retrieved from https://dergipark.org.tr/tr/pub/hunhemsire/issue/7848/103323.

Wagner, J., 2015. CE: Incorporating Acupressure into Nursing Practice. Am J Nurs. 15(12):40-5; quiz 46-7. doi: 10.1097/01.NAJ.0000475290.20362.77.

Doğan, N., & Taşcı, S., 2015. Akciğer kanseri hastalarında dispne ve akupres uygulaması. Spatula DD , vol.5, no.4, 199-205.

Bastani, F., Khosravi, M., Borimnejad, L., Arbabi, N., 2015. The effect of acupressure on cancer-related fatigue among school-aged children with acute lymphoblastic leukemia. Iran J Nurs Midwifery Res. 20(5): 545–551.

Ayçeman, N., 2016. Akupresur Kursu Temel Bilgi Notları. 1. Uluslararası ve 3. Ulusal Tamamlayıcı Terapiler ve Destekleyici Bakım Uygulamaları Kongresi “Tüm Boyutları ile Tamamlayıcı Terapiler” Bildiri Kitabı; Antalya 24-26 Kasım. p. 9-15.

Greenlee, H., DuPont-Reyes, MJ., Balneaves, LG., Carlson, LE., Cohen, MR., Deng, G., Johnson, JA., Mumber, M., Seely, D., Zick, SM., Boyce, LM., Tripathy, D., 2017. Clinical practice guidelines on the evidence-based use of integrative therapies during and after breast cancer treatment. CA Cancer J Clin. 6;67(3):194-232. doi: 10.3322/caac.21397.

Lee, EJ., & Frazier, SK., 2011. The efficacy of acupressure for symptom management: a systematic review. Journal of pain and symptom management, 42(4), 589–603. https://doi.org/10.1016/j.jpainsymman.2011.01.007

Hsieh, LL., Kuo, CH., Lee, LH., Yen, AM., Chien, KL., Chen, TH., 2006. Treatment of low back pain by acupressure and physical therapy: randomised controlled trial. BMJ. 25;332(7543):696-700. doi: 10.1136/bmj.38744.672616.

Tsay, SL., 2004. Acupressure and fatigue in patients with end-stage renal disease–a randomized controlled trial. International Journal of Nursing Studies. 41:99–106.

Movahedi, M., Ghafari, S., Nazari, F., & Valiani, M. 2017. The Effects of Acupressure on Pain Severity in Female Nurses with Chronic Low Back Pain. Iranian journal of nursing and midwifery research, 22(5), 339–342. https://doi.org/10.4103/ijnmr.IJNMR_108_16

Movahedi, M., Ghafari, S., Nazari, F., Valiani, M., 2017. The effect of acupressure on fatigue among female nurses with chronic back pain. Appl Nurs Res. 36:111-114. doi: 10.1016/j.apnr.2017.06.006. Epub 2017 Jun 15. PMID: 28720230.

Abbasi, P., Mojalli, M., Kianmehr, M., & Zamani, S., 2019. Effect of acupressure on constipation in patients undergoing hemodialysis: A randomized double-blind controlled clinical trial. Avicenna journal of phytomedicine, 9(1), 84–91.

Jamigorn, M., Phupong, V., 2007. Acupressure and vitamin B6 to relieve nausea and vomiting in pregnancy: a randomized study. Arch Gynecol Obstet. 276(3):245-9. doi: 10.1007/s00404-007-0336-2. Epub 2007 Feb 21. PMID: 17318558.

Kılıç Akça, N., Taşcı, S., 2011. Hemodiyaliz Hastalarında Üremik Kaşıntı ve Akupresör Uygulaması Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi. 4(1):190-196.

Maa, SH., 2005. [Application of acupressure in nursing practice]. Hu Li Za Zhi. 52(4):5-10. Chinese. PMID: 16088775.

Lindquist, R., Tracy, MF., Savik, K., 2003. Personal use of complementary and alternative therapies by critical care nurses. Crit Care Nurs Clin North Am. 15(3):393-9, x. doi: 10.1016/s0899-5885(02)00104-1. PMID: 12943147.

SLEEP QUALITY OF NURSES WORKING IN A HOSPITAL DURING THE FIGHT AGAINST CORONAVIRUS

Res. Assist. Meltem Sungur
Kilis 7 December University,Turkey
ORCID ID: 0000-0002-2702-5748
Prof. Dr. Nimet Ovayolu
ORCID ID: 0000-0002-4505-0349
Kilis 7 December University, Turkey
Prof. Dr. Özlem OVAYOLU
ORCID ID: 0000-0002-7335-4032
Gaziantep University, Turkey
Nurse Esra DİŞLİ
ORCID ID: 0000-0002-9856-3746
Çıksorut family health center, Turkey

Abstract
This study was conducted descriptively with 234 nurses between August-September 2020 to examine the sleep quality of nurses working in a hospital during the fight against coronavirus. Study data were collected using a questionnaire form and the Pittsburgh Sleep Quality Index (PSQI). Data collection tools were administered online due to the COVID-19 pandemic. The study found that a large majority of the nurses experienced sleep problems and had poor sleep quality because of the COVID-19 pandemic. In line with these results, it can be recommended to take necessary measures to evaluate and improve the sleep quality of nurses.

Keywords: COVID-19, pandemic, sleep quality, nurse

Introduction

Viruses, which affect the respiratory tract, are a universal health threat that can lead to global pandemics with serious mortality, morbidity and negative economic consequences (Nemli et al., 2020; Assiri et al., 2013). One of these viruses is the coronavirus (CoV), an enveloped, single-stranded, RNA (ribonucleic acid) virus. It belongs to a large family that causes infections in humans and animals (Assiri et al., 2013; Zumla et al., 2016). Coronavirus disease (COVID-19), which has been responsible for the death of millions of people, first appeared in Wuhan, China's Hubei province on December 30, 2019 and was announced to the world by the National Health Commission of the People's Republic of China and by the Center for Disease Control and Prevention on December 31, 2019 (Görkem Er et al., 2020; Şekeroğlu et al., 2020; WHO Coronavirus Disease (COVID-19) Dashboard., 2020).

According to a report published by the World Health Organization (WHO), 27,417,497 people have been infected with coronavirus, and 894,241 people have died from it on January 16, 2020 (WHO Coronavirus Disease (COVID-19) Dashboard, 2020).

As in most pandemics, nurses are at the forefront in the fight against COVID-19, which has now spread to 216 countries. The amount of people infected with the virus is increasing day by day, and hospitals are reaching full capacities. In this process, nurses, who are the primary day-to-day caretakers of COVID patients, encounter physical, psychological and social problems due to the long and intense working hours, the possibility of being exposed to the virus, and concern over transmitting the virus to others (Kiyat et al., 2020). Under these conditions, the sleep quality of nurses has been shown to be adversely affected, the results of which can lead to undesirable consequences in providing quality care to patients and preventing infection (Xiao et al., 2020; Tu et al., 2020). In addition, along with the increased workload and responsibility, anxiety and tension are also responsible for diminishing the sleep quality of nurses (Çoban et al., 2011; Gillet et al., 2020). The relevant literature reports that healthcare professionals, especially nurses, experience fear and anxiety during the treatment and care of patients infected with this virus (Kim, 2018) and are vulnerable to experiencing major stress and tension on account of intense workload and the role of providing moral support to patients and their relatives. Moreover, the lack of medical equipment, long working hours due to lack of sufficient healthcare personnel, separation from family, and disruption to social life cause high levels of tension and fatigue in nurses (Tu et al., 2020; Kırılmaz et al., 2016). All these negative stimuli adversely affect the sleep quality of nurses (Muşlu et al., 2012). Disruption of sleep (Asi Karakaş et al., 2017), a factor that affects physical health, has a negative impact on job satisfaction and productivity of nurses (Çoban et al., 2011). Accordingly, this study aimed to evaluate sleep quality in nurses working during the fight against COVID-19.

Materials and Method

Design, Place, and Time of the Research

This study applied a cross-sectional and descriptive research design and was conducted in a state hospital in Turkey between August and September of 2020.

Study Sample

The universe of the study consisted of the 350 nurses who were working in all units of a state hospital. From this universe, the sample included 234 nurses who agreed to participate in the study and completely filled out the data collection tools. The data collection tools were administered to the participating nurses online.

Inclusion Criteria:

Only individuals who were employed as nurses, agreed to participate in the study, had an internet connection and were able to answer questions online were included in the study.

Data Collection Tools

Study data were collected using a questionnaire form and the Pittsburgh Sleep Quality Index (PSQI).

The Questionnaire Form

This form, which was developed after reviewing previous studies (Assiri et al., 2013; Tu et al., 2020; Çoban et al., 2011) and obtaining expert opinions, includes questions about the socio-demographic characteristics of the nurses, COVID-19, and prevention methods.

Pittsburgh Sleep Quality Index (PSQI)

This scale was developed by Buysse et al. in 1989 (Buysse et al., 1989), and the Turkish validity and reliability study was conducted by Ağargün et al. (Ağargün et al., 1996). The PSQI, which evaluates sleep quality over the course of the last month, contains 24 questions. Scores on the scale range from 0 to 21, and scores higher than five indicate poor sleep quality.

Implementation of Data Collection Tools

Data collection tools were sent to the participating nurses online by the researcher. Once the nurses completed the data collection tools, they were prompted to confirm the completion by submitting a message stating, "I sent it". Of the participants, there were 10 who were given guidance on how to complete the form after expressing difficulty with it.

Ethical Considerations

Prior to conducting the study, approvals to perform it were obtained from the Ministry of Health, the institution where the study was conducted, and the ethics committee. Verbal consent was received from all the nurses to be included in the study prior to their participation.

Data Analysis

The data were analyzed using descriptive statistics, student's t-test, Mann-Whitney U test, Kruskal-Wallis test, and correlation analysis. A value of $p<0.05$ was accepted as the significance level.

RESULTS

Of the participating nurses, 50% were between the ages of 26-33, 81.2% were female, 58.5% had an income equal to their expenses, 75.6% were undergraduates. The nurses' mean total PSQI score was found to be 10.76 ± 3.23.

DISCUSSION

The crisis precipitated by the COVID-19 pandemic, which started in Wuhan and has since affected the entire world, has had serious impacts on nursing services (Mo et al., 2020). During the epidemic period, nurses have had to take on demanding roles in identifying existing cases, providing quality nursing care to patients, supporting them when they are facing the prospect of death, and taking measures to defend individuals as well as themselves against the unknown features of the virus (Turale et al., 2020). Increasing workload and poor working environments have led to high levels of work-related stress and physical and mental impairments in nurses, and furthermore, the epidemic has been a psychological burden for them (Mo et al., 2020; Zhao et al., 2020). In the face of all these issues, nurses have experienced sleep problems, whose effects include a worsening of their physical and mental health and work impairment (Zhao et al., 2020). As sleep is strongly associated with psychological health, chronic sleep deprivation can worsen health status and cause dysfunction in the workplace (Deng et al., 2020).

This study, conducted to evaluate sleep quality in nurses working during the fight against COVID-19, found that the nurses had a significantly high mean total PSQI score (10.76 ± 3.23), which indicated that their sleep quality was poor. A 2019 study examining the sleep

quality of healthcare workers who screened for COVID-19 infection reported that the mean total PSQI scores before and after the screening were 6.54 ± 0.196 and 8.24 ± 0.326, respectively, suggesting that the sleep quality of the nurses gradually deteriorated (Zhao et al., 2020). A similar study conducted with healthcare professionals found that the mean PSQI total score was 7.22 ± 2.62, which, again, is an indication of poor sleep quality (Wang et al., 2020). In another study, the mean total PSQI score of healthcare professionals was found to be significantly high (Qi et al., 2020). A study conducted using the Insomnia Severity Index (ISI) scale reported that 36.1% of healthcare professionals experienced insomnia, and that the mean total ISI score was 8 and above (Zhang et al., 2020). Another similar study found that most of the participants had poor sleep quality (Khatony et al., 2020). Consistent with the literature, the current study also found that the mean total PSQI score of nurses during the pandemic period increased significantly, and that their sleep quality was negatively affected as a result of the COVID-19 pandemic.

CONCLUSION AND SUGGESTIONS

In this study, it was determined that most of the nurses had sleep problems, and that their sleep quality was poor. Based on these results, additional studies drawing attention to the sleep quality of nurses during the pandemic should be carried out, and the results of these studies should be evaluated to develop practices that help improve sleep quality.

REFERENCES

Nemli, S.A., Demirdal, T., 2016. Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) Kocatepe Medical Journal, 17 (2), 77-83. Retrieved from https://dergipark.org.tr/tr/pub/kocatepetip/issue/17442/182724

Assiri, A., McGeer, A., Perl, T.M., Price, C.S., Al Rabeeah, A.A., Cummings, D.A., Alabdullatif, Z.N., Assad, M., Almulhim, A., Makhdoom, H., Madani, H., Alhakeem, R., Al-Tawfiq, J.A., Cotten, M., Watson, S.J., Kellam, P., Zumla, A.I., Memish, Z.A., & KSA MERS-CoV Investigation Team. 2013. Hospital outbreak of Middle East respiratory syndrome coronavirus. The New England journal of medicine, 369 (5), 407–416. https://doi.org/10.1056/NEJMoa1306742

Zumla, A., Chan, J.F., Azhar, E.I., Hui, D.S., & Yuen, K.Y., 2016. Coronaviruses - Drug Discovery And Therapeutic Options. Nature reviews. Drug discovery, 15 (5), 327–347. https://doi.org/10.1038/nrd.2015.37

Görkem Er, A., Ünal, S., 2020. 2019 Coronavirus Outbreak – Current Situation and First Impressions. Flora, 25 (Fubruary 8).

Şekeroğlu, N., Gezici, S., 2020. Coronavirus Pandemic and Some Turkish Medicinal Plants. Anatolian Clinic Journal of Medical Sciences, 25 (1) 163-182.

WHO Coronavirus Disease (COVID-19) Dashboard. Available from: https://covid19.who.int/. Date of access: 09.09.2020. 14:17.

Kiyat, İ., Karaman, S., Ataşen, G.İ., Kiyat, Z.E., 2020. Nurses in The Fight Against The Novel Coronavirus (COVID-19). Turkish Nurses Association Journal, 1 (1) 81-90).

Xiao, H., Zhang, Y., Kong, D., Li, S., & Yang, N., 2020. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. Medical science monitor : international medical journal of experimental and clinical research, 26, e923549. https://doi.org/10.12659/MSM.923549

Tu, Z.H., He, J.W., & Zhou, N., 2020. Sleep quality and mood symptoms in conscripted frontline nurse in Wuhan, China during COVID-19 outbreak: A cross-sectional study. Medicine, 99 (26), e20769. https://doi.org/10.1097/MD.0000000000020769

Çoban, S., Yılmaz, H., Ok, G., Erbüyün, K., Aydın, D., 2011. Investigation Of Sleep Disorders In Intensive Care Nurses. Journal of the Turkish Society of Intensive care, Doi: 10.4274/tybdd.09.11

Gillet, N., Huyghebaert-Zouaghi, T., Reveillere, C., Colombat, P., Fouquereau, E., 2020. The Effects Of Job Demands On Nurses' Burnout And Presenteeism Through Sleep Quality And Relaxation. J Clin Nurs. 29 583–592.

Kim, Y., 2018. Nurses' experiences of care for patients with Middle East respiratory syndrome-coronavirus in South Korea. American journal of infection control, 46 (7) 781–787. https://doi.org/10.1016/j.ajic.2018.01.012

Kırılmaz, H., Yorgun, S., Atasoy, A., 2016. A Research on Determination of Psychosocial Risk Factors in Health Employee. Int JCSS, 2 (SI 1) 66-82.

Muşlu, C., Baltacı, D., Kutanis, R., Kara, İ.H., 2012. Quality of Life, Anxiety and Depression in Nurses Working at Primary Health Care and Hospitals. Konuralp medical journal, 4 (1) 17-23.

Asi Karakaş, S., Gönültaş, N., Okanlı, A., 2017. The Qualıty Of Sleep Of Nurses Who Works Shıft Workers. erciyes university journal of health sciences, 4 (1) , 17-26 . Retrieved from https://dergipark.org.tr/tr/pub/erusaglik/issue/28766/307885

Buysse, D.J., Reynolds, C.F., Monk, T.H., Berman, S.R., Kupfer, D.J., 1989. The Pittsburgh Sleep Quality Index: a new instrument for psychiatric practice and research. Psychiatry Res. May 28 (2) 193-213. doi: 10.1016/0165-1781(89)90047-4. PMID: 2748771.

Ağargün, M.Y., Kara, H., ve Anlar, O., (1996). The Validity and Reliability of the Pittsburgh Sleep Quality Index. Turkish journal of psychiatry, 7 107-111.

Mo, Y., Deng, L., Zhang, L., Lang, Q., Liao, C., Wang, N., Qin, M., & Huang, H., 2020. Work stress among Chinese nurses to support Wuhan in fighting against COVID-19 epidemic. J Nurs Manag. Jul 28 (5) 1002-1009. doi: 10.1111/jonm.13014. Epub 2020 May 20.

Turale, S., Meechamnan, C., & Kunaviktikul, W., 2020. Challenging times: ethics, nursing and the COVID-19 pandemic. Int Nurs Rev. Jun 67 (2) 164-167. doi: 10.1111/inr.12598.

Zhao, X., Zhang, T., Li, B., Yu, X., Ma, Z., Cao, L., Gu, Q., Dong, C., Jin, Y., Fan, J., & He, G., 2020. Job-Related Factors Associated With Changes İn Sleep Quality Among Healthcare Workers Screening For 2019 Novel Coronavirus İnfection: A Longitudinal Study. Sleep Med. Nov 75 21-26. doi: 10.1016/j.sleep.2020.07.027. Epub 2020 Aug 5.

Deng, X., Liu, X., Fang, R., 2020. Evaluation of the correlation between job stress and sleep quality in community nurses. Medicine, 99 4 (e18822).

Wang, S., Xie, L., Xu, Y., Yu, S., Yao, B., & Xiang, D., 2020. Sleep disturbances among medical workers during the outbreak of COVID-2019. Occupational medicine (Oxford, England), 70 (5) 364–369. https://doi.org/10.1093/occmed/kqaa074

Qi, J., Xu, J., Li, B. Z., Huang, J. S., Yang, Y., Zhang, Z. T., Yao, D. A., Liu, Q. H., Jia, M., Gong, D. K., Ni, X. H., Zhang, Q. M., Shang, F. R., Xiong, N., Zhu, C. L., Wang, T., & Zhang, X., 2020. The evaluation of sleep disturbances for Chinese frontline medical workers under the outbreak of COVID-19. Sleep medicine, 72 1–4. https://doi.org/10.1016/j.sleep.2020.05.023.

Zhang, C., Yang, L., Liu, S., Ma, S., Wang, Y., Cai, Z., Du, H., Li, R., Kang, L., Su, M., Zhang, J., Liu, Z., & Zhang, B. 2020. Survey of Insomnia and Related Social Psychological Factors Among Medical Staff Involved in the 2019 Novel Coronavirus Disease Outbreak. Frontiers in psychiatry, 11 306. https://doi.org/10.3389/fpsyt.2020.00306.

Khatony, A., Zakiei, A., Khazaie, H., Rezaei, M., Janatolmakan, M., 2020. International Nursing: A Study Of Sleep Quality Among Nurses And İts Correlation With Cognitive Factors. Nurs Adm Q. 44 (1) E1–E10. doi: 10.1097/NAQ.0000000000000397.

A Research From The Perspective Of Human Resources Management To Find Out The Reasons Why Employees Leave Their Jobs: An Example From A Private Health Care Group

Sülay Atlas Mengü
https://orcid.org/0000-0001-9387-1531
Doç. Dr. Gülfer Bektaş
https://orcid.org/0000-0001-9387-1531
Acıbadem University, İstanbul, Turkey

Abstract
This study aims to find out the reasons why employees left their jobs in a private health care group and in view of data of this study, develop solution proposals in organizational field in order to help reduce employees leaving the jobs. Human resources management is responsible for all works that ensure the effective management of all activities for acquisition, development and retention of high performing workforce within the organization. As part of service organizations, importance of retaining manpower through good management has increased also in health care institutions for the need to keep up with both the speed of globalization and technology and ever increasing and tougher competitive environment and in this direction, human-centric management approach has gained more importance today. The universe of this study which is planned as retrospective and descriptive consists of 3412 employees data records including the reasons for leaving the jobs, from the Directorate of Human Resource of a private health care group operating in Turkey covering 22 hospitals and 8 medical centers, all employees who left their jobs between January 2019 and June 2020 were included in the research, total 3542 employees data accessed, excluded missing 130 record from the assessment. As a result of the analysis, the distribution of the employees who left their jobs was examined according to gender, marital status, education, profession and duration of work experience in the organization. According to findings of research, %70 of the employees left the jobs are women (n= 2388), according to the education level, the most are university graduates %67.8 (n=2305), looking at the marital status, singles were found to be %78.2 (n=2636), from the angle of duration of work experience in the organization, employees worked 1-5 years left at most %51 (n= 1740) and as per occupation, it was found that employees left are mostly from nursing services %49.6 (n=1691). In conclusion, it was found out that most of the employees leaving the jobs are women, university graduates and single. Family/health/education and personal reasons, public appointment, low salary and allowances are given more among the reasons for leaving the jobs. On the other hand, marriage, heavy work load/long working hours, transportation, retirement among the reasons for leaving the jobs are found to be the least reasons given by employees.

Key Words: Human Resources Management, Health Care Institutions, Leaving the Job, Health Care Workers

İNSAN KAYNAKLARI YÖNETİMİ AÇISINDAN ÇALIŞANLARIN İŞTEN AYRILMA NEDENLERİNİN SAPTANMASINA YÖNELİK BİR ARAŞTIRMA: ÖZEL BİR SAĞLIK GRUBU ÖRNEĞİ

Özet

Bu çalışmada , özel bir sağlık grubu bünyesinde işten ayrılan çalışanların, işten ayrılma nedenlerinin saptanması ve bu çalışmadan elde edilecek verilerin ışığında işten ayrılmaların azaltılabilmesi için kurumsal alanda çözüm önerileri geliştirmek hedeflenmiştir. İnsan kaynakları yönetimi, örgüt içinde yüksek performansa sahip işgücünün kazanılması, geliştirilmesi, motivasyonun sağlanması ve elde tutulması için tüm faaliyetlerin etkin bir şekilde yönetilmesini sağlayan çalışmaların tamamından sorumludur. Hizmet işletmeleri arasında yer alan sağlık işletmelerinde de hem küreselleşme ve teknolojinin hızı, hem de her geçen gün büyüyen ve çetinleşen rekabet ortamına ayak uydurabilmek için insan gücünün iyi yönetilerek elde tutulmasının önemi artmış ve bu doğultuda insan odaklı yönetim anlayışı günümüzde daha da önem kazanmıştır. Retrospektif ve tanımlayıcı olarak planlanan bu çalışmanın evrenini, Türkiye'de faaliyet gösteren ve 22 hastane ve 8 tıp merkezini kapsayan özel bir sağlık grubu İnsan Kaynakları Direktörlüğü'nden , Ocak 2019-Haziran 2020 tarihleri arasında işten ayrılan tüm çalışanlar araştırmaya dahil edilmiş, toplam 3542 kişinin verisine ulaşılmış olup, bunlardan eksik olan 130 kayıt değerlendirme dışı tutularak, 3412 kişinin işten ayrılma nedenlerini içeren kayıtların verileri oluşturmuştur. Yapılan analizler sonucunda işten ayrılan çalışanların cinsiyet, medeni durum, eğitim, meslek ve kurumdaki deneyim sürelerine göre dağılımları incelenmiştir. Araştırma bulgularına göre ayrılanların %70'ni kadınlar oluşturmaktadır (n= 2388). Eğitim durumuna göre en fazla üniversite mezunları %67.8 (n=2305) medeni duruma bakıldığında, bekârlar %78.2 (n=2636) bulunmuştur. Kurumda çalışma süresi açısından, en fazla 1-5 yıl arasında çalışanların ayrıldığı %51 (n= 1740) ve meslek olarak ayrılanların çoğunlukla hemşirelik hizmetlerinden %49.6 (n=1691) olduğu tespit edilmiştir. Sonuç olarak, işten ayrılan çalışanların çoğunun kadın, üniversite mezunu ve bekâr olduğu tespit edilmiştir. İşten ayrılma nedenleri arasında, ailevi/sağlık/eğitim ve özel nedenler, kamu ataması, ücret ve yan hakların azlığı nedenleri gerekçe gösterilerek işten ayrılmların daha fazla olduğu saptanmıştır. İşten ayrılma nedenleri arasında en az gösterilen gerekçelerin ise, evlilik, işyükü ve yoğunluk/çalışma saatleri, ulaşım ve emeklilik olduğu tespit edilmiştir.

Anahtar Sözcükler: İnsan Kaynakları Yönetimi, Sağlık İşletmeleri, İşten Ayrılma, Sağlık Çalışanları

Introduction

Human resources management means the process of utilizing human resources effectively and efficiently in line with the fundamental goals and objectives of enterprises, determining and satisfying the needs of their employees considering the current conditions, and equipping their employees to enhance their technical efficiency (Gürbüz & Baş, 2020). It is also described as all activities performed to provide employees with the desired performance within the organization, increases the number of such employees, manages the activities performed to keep their motivation at the highest level. Also, it aims to manage the employees for the benefit of the organization, themselves, and the environment (Sadullah et al., 2015).

Human resources management is responsible for providing skilled, highly motivated, and qualified employees for achieving the organizational goals by thinking ahead and for helping employees to unearth their talents by increasing their job satisfaction. Furthermore, it is also responsible for the costs of the labor force while performing those activities (Akın & Erdost,

2012). In this context, it requires making a plan to enable employees to behave positively, increase their job satisfaction and performance, and decrease their intention to resign while performing human resources management responsibilities (Akbaba, 2020). Human resources should be considered to be a unit endeavoring to improve the productivity of employees because employees are not only a producing mechanism but also are one of the crucial elements of the business (Filizöz, 2003).

In today's business world, where there is serious competition, the human element, which is the most valuable psychological mechanism that businesses own, is much more beneficial if it can be used by managing most correctly. In other words, the success of a business depends on the ability to lead employees, which is one of the most important resources it has, effectively and efficiently. Businesses that utilize the employee factor effectively are always ahead. Any business cannot hold on to the business world without providing this factor (Çakır & Gözoğlu, 2019). Organizations' need for well-equipped employees increases. Consequently, organizations train and enhance their existing employees while recruiting employees who will facilitate achieving their goals (Gürbüz & Baş, 2020).

Intense competition conditions and technological developments do not decrease the importance of the human factor. Instead, they give it prominence. Institutions that are aware of this are in search of ways to keep the well-trained human capital. An employee who feels peaceful in the institution he/she works for, experiences a positive organizational atmosphere, and feels an organizational commitment with the institution, does not think of leaving the job. Institutions take necessary measures when they realize that high labor turnover reflects as costs and extra labor force (Seyhan, 2020).

Employees' thought of leaving their jobs for certain reasons, their tendency to leave their jobs in a short period, and their search for an alternative job display their intention to resign (Filizöz, 2003). Job satisfaction means employees' individual interpretation of job conditions (the content of the job, treatment of top executives to employees, etc.) or the table regarding the job. Accordingly, one of the most important factors that cause employees to think to leave their job is job satisfaction (Çalışkan & Bekmezci, 2019).

Since employees' commitment to work will disappear day by day when the job fails to satisfy their expectations, their benefits to the workplace will decrease over time. Employees who treat the subject in this manner tend to leave their jobs over time (Çakır & Gözoğlu, 2019). There are various factors affecting the intentions of leaving the job such as organizational culture and values, environmental factors, collegues, career expectations and opportunities, rewarding possibilities, etc. Another factor affecting the intention to leaving the job is considered job stress (Çankaya, 2020). Accordingly, forming some measures to reduce the pressure on employees is inevitable for institutions (Serinikli, 2019).
This study aims to present suggestions to managers, human resources unit and the sector for determining the reasons for employees' leaving their jobs and solving the reasons of employees who leave their jobs within a private healthcare group.

Method

The data of the study were planned descriptively and retrospectively, towards the reasons to be found as a result of the study, by scanning the data of a private healthcare institution between January 2019 and June 2020 and determining the reasons for leaving the job and

classifying them in light of the relevant literature information. The universe of this study is composed of data of employees from 16 hospitals, general directorate, and call center of a private healthcare institution operating in Turkey; also, all the universe is taken in this study. In period of the research, the data of all employees who left their jobs were used regardless of their profession, and these data composed the sample of the study. In total, the data were obtained from 3542 people. Following this, 3412 employees data records including the reasons for leaving the jobs were designed by excluding 130 missing records from the assessment.

Findings

As part of the study, the reasons why employees left their job are represented as received from the institution, and the institution declared the most important reasons for leaving the job as follows: Family/Health/Education and Special Reasons, Public Appointment, Wages and Side Benefits, Marriage, Workload and Intensive Work/Working Hours, Manager's Attitudes and Behaviors, Termination of Business Contract, Military Service, Non-adaptation to the Sector/Job, Transportation Problems, Retirement, Other and Unknown Reasons.

Table 1. The Reasons Why Employees Leave Their Jobs

	%	n
Family/Health/Education and Private Reasons	23%	798
Wage and Side Benefits	12%	401
Marriage	9%	299
Termination of Business Contract	7%	231
Workload and Intensive Work/Working Hours	8%	280
Manager's Attitudes and Behaviors	7%	253
Military Service	6%	190
Non-adaptation to Sector/Job	4%	143
Public Appointment	13%	458
Retirement	1%	33
Transportation Problems	2%	74
Other	4%	143
Empty Ones	3%	109
SUM TOTAL	100%	3412

Table 1 analyzes and presents the reasons why 3412 employees who participated in the study left their jobs. According to the table, the most common reasons for leaving are family/health/education and private reasons (23%). They are followed by public assignments (12%), and wages and side benefits (12%). The number of those who left their jobs due to marriage is 299 (9%). On the other hand, the number of those who left due to workload and intensive work/working hours is 280 (8%). Transportation (2%) and retirement (1%) are the least common reasons for leaving the job.

Table 2. Demographic characteristics of employees left their jobs because of Family/Health/Education and Private Reasons

		n	%	Total
GENDER	W	612	77%	798
	M	186	23%	
AGE	18-25	414	52%	798
	26-35	300	38%	
	36-50	67	8%	
	51-65	17	2%	
	65 and above	0	0%	
EDUCATION	Pre-High School	23	3%	791
	High school	287	36%	
	University	475	60%	
	Postgraduate	6	1%	
MARITAL STATUS	S	576	73%	789
	M	213	27%	
WORKING TIME IN THE INSTITUTION	Less than 1 year	327	41%	798
	1-5 years	374	47%	
	6-10 years	75	9%	
	11 and above	22	3%	
PROFESSION	Nursing Services	411	52%	798
	Patient Services	217	27%	
	Technician	89	11%	
	Administrative Affairs	31	4%	
	Information Technologies	13	2%	
	HR	12	2%	
	Purchasing	8	1%	
	Business Development	8	1%	
	Financial Affairs	6	1%	
	Marketing	3	0%	
	Other	0	0%	

Table 2 indicates that 53% of the employees who left their jobs due to a better offer/wage and side benefits are women, 50% of them are between the ages of 26-35, and 77% of them are university graduates. It is observed that single employees leave their jobs more (80%) due to a better offer/wage and side benefits. It is discovered that employees from nursing services (30%) leave their jobs after working for more than 1-5 years (54%).

Table 3. Demographic Information of Employees Who Leave the Job Due to Public Appointment

		n	%	Total
GENDER	W	368	80%	458
	M	90	20%	

AGE	18-25	339	74%	458
	26-35	114	25%	
	36-50	5	1%	
	51-65	0	0%	
	65 and above	0	0%	
EDUCATION	Pre-High School	0	0%	458
	High school	38	8%	
	University	419	91%	
	Postgraduate	1	0%	
MARITAL STATUS	S	418	92%	453
	M	35	8%	
WORKING TIME IN THE INSTITUTION	Less than 1 year	162	35%	458
	1-5 years	286	62%	
	6-10 years	10	2%	
	11 and above	0	0%	
PROFESSION	Nursing Services	416	91%	458
	Patient Services	17	4%	
	Technician	15	3%	
	Administrative Affairs	5	1%	
	Information Technologies	2	0%	
	HR	1	0%	
	Purchasing	1	0%	
	Business Development	0	0%	
	Financial Affairs	1	0%	
	Marketing	0	0%	
	Other	0	0%	

Table 3 indicates that 80% of the employees who left their jobs due to public appointment are women, 74% of them are between the ages of 18-25, and 91% of them are university graduates It is observed that single employees leave their jobs more (92%) due to public appointment. It is discovered that employees from nursing services (91%) leave their jobs after working for more than 1-5 years (62%).

Table 4. Demographic Information of Employees Who Leave the Job Due to a Better Offer / Wage and Side Benefits

		n	**%**	**Total**
GENDER	W	211	53%	401
	M	190	47%	
AGE	18-25	146	39%	375
	26-35	188	50%	
	36-50	41	11%	
	51-65	0	0%	

	65 and above	0	0%	
EDUCATION	Pre-High School	9	2%	398
	High school	81	20%	
	University	305	77%	
	Postgraduate	3	1%	
MARITAL STATUS	S	319	80%	398
	M	79	20%	
WORKING TIME IN THE INSTITUTION	Less than 1 year	148	37%	401
	1-5 years	217	54%	
	6-10 years	33	8%	
	11 and above	3	1%	
PROFESSION	Nursing Services	120	30%	401
	Patient Services	103	26%	
	Technician	53	13%	
	Administrative Affairs	31	8%	
	Information Technologies	49	12%	
	HR	17	4%	
	Purchasing	9	2%	
	Business Development	9	2%	
	Financial Affairs	2	0%	
	Marketing	6	1%	
	Other	2	0%	

Table 4 presents that 53% of the employees who left their jobs due to a better offer/wage are women, 50% of them are between the ages of 26-35, and 77% of them are university graduates. It is observed that single employees leave their jobs more (92%) due to public appointment. It is observed that single employees leave their jobs more (80%) due to a better offer/wage and side benefits. It is discovered that employees from nursing services (30%) leave their jobs after working for more than 1-5 years (54%).

Discussion, Conclusion and Suggestions

To sum up, 76,69% of those who left their jobs due to family/health/education and private reasons are women, and 51,87 of them are between the age range of 18-25. 60.05% of the employees who left their jobs due to family/health/education and private reasons are university graduates and single (73%). It is discovered that 80.35% of those who left their jobs due to public appointment, which is the second most common reason for resigning, are women, 74.01% of them are between 18-25 years old, and university graduates (91.48%). Furthermore, 92,27% of employees who left their jobs due to public appointments are single. Also, 90,83% of them are nurses and have worked at the institution for 1-5 years (62,45%). 80.15% of those left due to a better offer/wage and side benefits, which are the third most common reasons for leaving the job, are single, 50.13% of them are between the age range of 26-35. Also, they are mostly university graduates (76.63%) and women (52.62%). It has been

discovered that 29.93% of them left while working in nursing services, and 25.69% of them while working in patient services.

As a result, most of the employees left their jobs are women, university graduates and singles. The reasons for family/health/education and private reasons, public appointment, low wages, and side benefits are more common among the reasons for leaving the job. The least mentioned reasons for leaving the job were marriage, workload and intensive work/working hours, transportation, and retirement.

The health sector is accepted as a stressful profession with an intensive workload because of various factors stemming from the working environment in Turkey's conditions.

If the additional payments of the employees increase, sufficient number of employees are provided, and overtime problem is solved, the number of employees leaving the organization could decrease. When these requirements are provided, the number of qualified personnel can be at the desired level, and it can be possible to sustain it. In our country, where qualified personnel is deficient, necessary steps should be taken to increase employees' loyalty to the institution. In this sense, managers need to increase business quality, improve working conditions, and reform their wage policies.

Healthcare institution managers should direct attention to the employee turnover rate problem to prevent employees from leaving their jobs. Also, necessary precautions should be taken to decrease turnover rates and overcome employees' reasons for leaving their jobs. It is required to focus on improving working conditions, working hours, and eliminating workload problems. Moreover, the wages should be improved.

In light of the study results, the leaving of employees will decrease if human affairs are established well, mutual trust exists, employees are granted the right to participate in decisions, work success is praised, and justice is assured in promotions and pricing. Under these conditions, there would be a high level of job satisfaction so, leaving will be reduced.

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References

1. Gürbüz H, Baş Ü. İnsan kaynakları yönetimi uygulamaları ve iş tatmini: Eskişehir'deki özel hastanelerde bir araştırma. Iksad Publications, Turkey: Ankara, 2020. ISBN: 978-625-7897-89-1

2. Sadullah Ö. İnsan kaynakları yönetimine giriş: insan kaynakları yönetiminin tanımı, önemi ve çevresel faktörler, İnsan Kaynakları Yönetimi içinde Ed. Sadullah Ö, Uyargil C, Acar AC, Özçelik AO, Dündar G, Ataay İD, Adal Z, Tüzüner L, 2015; Yenilenmiş 7. Baskı, Beta Basım Yayım Dağıtım A.Ş.

3. Akın Ö, Erdost Çolak E. İnsan kaynakları yönetimi uygulamalarıyla örgütsel performans arasındaki ilişki üzerine bir araştırma, Çankırı Karatekin Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi 2012; 2(2): 85-114.
4. Akbaba M. İnsan kaynakları yönetimi uygulamaları ile iş yaşamında yalnızlık arasındaki ilişki: otel işletmeleri üzerine bir araştırma. TurkishStudies - Social 2020; 15(4): 1701-1716.
5. Filizöz B. İnsan kaynakları yönetiminde uluslararası yaklaşım gerekliliği. C.Ü. İktisadi ve İdari Bilimler Dergisi 2003; 4 (1): 161-180.
6. Çakır A, Gözoğlu ÖF. Algılanan kurumsal itibarın iş performansı ve işten ayrılma niyetine etkisi: Şanlıurfaili konaklama işletmeleri üzerine bir araştırma. Econharran Harran Üniversitesi İİBF Dergisi 2019; 3(4): 46-71.
7. Seyhan F. Sağlık Çalışanlarının Yaşadığı Örgütsel Çatışma, Örgütsel Stres, İş Yaşam Kalitesi, İş Tatmini Ve İşten Ayrılma Niyeti Arasındaki İlişki. A.H.B.V.Ü. Lisansüstü Eğitim Enstitüsü, Yüksek Lisans Tezi, Ankara, 2020 (Danışman: Prof. Dr. S Derya).
8. Çalışkan A, Bekmezci M. Aşırı iş yükünün işten ayrılma niyetine etkisinde iş tatmini ve yaşam tatmininin rolü, sağlık kurumu çalışanları örneği. Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi 2019; 11(31): 381-431.
9. Çankaya M. Sağlık çalışanlarında algılanan örgütsel destek ve psikolojik iyi oluşun işten ayrılma niyeti üzerindeki etkisi. Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi 2020; 7(8): 79-98.
10. Serinikli N. İş stresinin işten ayrılma niyetine etkisinde örgütsel bağlılığın aracılık rolü. Business and Economics Research Journal 2019; 10(4): 915-928.

THE IMPACT OF PARENTAL EDUCATION LEVEL ON THE OCCURRENCE OF CHILDHOOD FOREIGN BODY ASPIRATIONS

Assist. Prof. Hüseyin Fatih SEZER
Kocaeli University, Kocaeli, TURKEY

Abstract
Foreign body aspirations mostly occur in childhood and it is a life-threatening situation (1). In early childhood, parents have a great responsibility for their children not to be exposed to foreign body aspiration where in an environment with lots of stimulants. Mothers are more interested in taking care of children in this age group. It creates an expectation that the high education level of the parents will increase the social-cultural and health level of the children. In our study, we aimed to analyze the relationship between foreign body aspiration observed in childhood and the education level of parents. The education level of the 70 parents that their children were exposed to foreign body aspiration was analyzed retrospectively. The education level of the mothers were examined, 29 (41.43%) were university graduates and 21 (30%) were high school graduates. When the education level of the fathers were examined, 27 (38.57%) were university graduates and 28 (40%) were high school graduates. When the parents of children with foreign body aspirations were analyzed in terms of education level, it was observed that female gender was mostly university graduates and male gender was mostly high school graduates. In our study group, we observed that childhood foreign body aspiration cases are mostly in parents with a high education level. Therefore, it is necessary to increase health literacy and to carry out social responsibility projects that will raise awareness about childhood foreign body aspirations. Studies on these issues should be conducted in regions with low socio-economic level.

Keywords: Childhood, Foreign body aspiration, Education level

INTRODUCTION

Foreign body aspiration often occurs in the first three years of life and is a life-threatening condition (Sezer HF, Çolak B, 2019). Rigid bronchoscopy is use for diagnosis and treatment (Sezer HF, Çolak B, 2019). In early childhood, parents have a great responsibility for their children not to be exposed to foreign body aspiration where in an environment with lots of stimulants. Besides, there are some points that parents should pay attention to while feeding children. It creates an expectation that the high education level of the parents will increase the social-cultural and health level of the children (Esther D, Pascaline D, 2021; Lindeboom M, Nozal AL, 2006). In our study, we aimed to analyze the relationship between foreign body aspiration observed in childhood and the education level of parents.

MATERIAL AND METHODS

The education informations of the 75 parents that their children (6 months-3 years) were underwented rigid bronchoscopy for foreign body aspiration between January 2018 and January 2021 were retrospectively reviewed. The results of 70 parents informations with sufficient data were analyzed. Education levels were examined in 2 groups as mothers and fathers. The frequency of foreign body aspirations were analyzed by statistical methods according to education levels.

RESULTS

The education level of the mothers were examined, 29 (41.43%) were university graduates and 21 (30%) were high school graduates. The education level of the fathers were examined, 27 (38.57%) were university graduates and 28 (40%) were high school graduates. When the parents of children with foreign body aspiration were analyzed in terms of education level, it was observed that in female gender was mostly in university graduates and male gender was mostly in high school graduates. Although there was a numerically significant difference, there was no statistically significant difference between education level and foreign body aspiration in both genders ($p = 0.568$ for the female gender, $p = 0.654$ for male gender).

DISCUSSION

Nutritional habits also vary according to the income level of the family. It is expected that the level of child health will increase with the increase in income (Lindeboom M, Nozal AL, 2006). In general, as the education level increases, the socioeconomic status is expected to rise above the social average. Therefore, food diversity will increase, and naturally, the factors that pose a risk for foreign body aspiration in childhood will increase. Besides, childhood foreign body aspirations continue as a health problem in regions with low socioeconomic level (Sezer HF, Dayanir H, 2020).

Studies have reported parallelism between maternal education level and child health, and positive results in the future life of children (Esther D, Pascaline D, 2021; Dubow E, Boxer P, 2009). Also, it is reported that mother education is more important than father education in terms of child health (Rawlings SB, 2015). Because in the childhood age group in terms of childcare, female gender is more concerned and responsible than male gender. Almost all of the care of the children in our study were done by mothers.

In our study, this health problem was seen more frequently in those with a high education level. The reason for this condition that although the education level increases, health literacy does not increase in parallel. In other words, the effect of true mistakes or beliefs still continues even if the education level increases.

CONCLUSION

As a result, we observed that childhood foreign body aspiration cases are mostly in parents with a high education level. Therefore, it is necessary to increase health literacy and to carry out social responsibility projects that will raise awareness about childhood foreign body aspiration. Studies on these issues should be conducted in regions with low socio-economic level.

REFERENCES

Dubow E, Boxer P, Huesmann RL. Long-term Effects of Parents' Education on Children's Educational and Occupational Success: Mediation by Family Interactions, Child Aggression, and Teenage Aspirations. 2009 July; 55(3): 224–249.

Esther D, Pascaline D, Elizabeth S, Mark W. The Impact of Parental Education on Child Health and Cognitive Development in Ghana. IPA.

Lindeboom M, Nozal AL, Klaauw B. Parental Education and Child Health: Evidence from a Schooling Reform. IZA 2006

Rawlings SB. - Parental education and child health. 2015/11 CINCH SERIES

Sezer HF, Çolak B, Topçu S, Avcı A, Abdullayev G. Çocuklarda Yabancı Cisim Aspirasyonlarına Klinik Yaklaşım ve Hukuki Sonuçları. Tuberk Toraks 2019;67(2):136-41.

Sezer HF, Dayanir H. Regional Variation And Results Of The Nature Of Foreign Body Aspirations In Subtropical Region: Nyala Experiences Turkish Journal of Health Science and Life 2020, Vol.3, No.1, 11-14.

EVALUATION OF COMPETENCE APPLICATION IN TERMS OF TALENT MANAGEMENT: AN EXAMPLE OF A SPECIAL HEALTH GROUP

Nuran Yavaşgül Kütükçü
Doç. Dr. Gülfer Bektaş
Acıbadem University, İstanbul, Turkey

Abstract
The competence management model was investigated by investigating the talent management planning, career and performance management processes of healthcare workers within a private health group, and the relationship between these processes and talent management practices. The requirement for talent management, its contributions, and results, are evaluated within the framework of the competence system. This research was conducted with the aim of examining the participants in terms of evaluating their skills with the examination system and developing solutions. Talent management is responsible for all activities that ensure the effective management of all activities for career and performance management, employee retention and empowerment within the organization. Exams in the competency system cover all patient services in the healthcare facility. Personnel management and the degree of professionalism are of great importance in terms of talent management in organizations as institutions aim to have knowledgeable, talented, and at the same time motivated human resources in order to achieve their goals. In scope of this study, a total of 6541 employees, beginning with the HR Director of a private health group comprised of 16 hospitals and 8 medical centers, entered the competency exam, and from this data the data relating to the records of those who successfully took the exam was formed. The data of the records including success and completion rates were created. According to the findings of the research, the success rate in the competency exam in 2017 was 38%, 37% in 2018, 38% in 2019, and 38% in 2020. As a result, the successful completion of this exam within the framework of the competence system stands out as an important step for it contributes significantly to the company and its employees. The fact that talent management focuses on individuals who add value to the organization, demonstrate behavior associated with leadership, have high level of potential, knowledge and experience, offers a new perspective on manager selection and training policies. As a result of these reasons, it is necessary to effectively implement talent management processes, principles and practices in order to provide the highest level of contribution to talented individuals identified via the exam.

Key Words: Skill Management, Competence, Healt Care Enterprises, Healt Workers

Yetenek Yönetimi ve Yetenek Yönetimi Açısından Kompetanlık Uygulamasının Değerlendirilmesi: Özel Bir Sağlık Grubu Örneği

Özet

Özel bir sağlık grubu insan kaynakları yönetimi süreçlerinin yetenek yönetimi uygulamaları ile ilişkileri araştırılarak, "Kompetanlık" uygulama modeli incelenmiş olup, yetenek yönetimi gerekliliği, sağladığı katkılar ve sonuçları kompetanlık sistemi çerçevesinde değerlendirilmiştir. İşletmelerde insan kaynakları yöneticileri çalışanların işe alım, seçme ve yerleştirme, eğitim ve geliştirme, insangücü planlaması, kariyer planlaması ve performans yönetimi süreçleri ile yetenek yönetimi, çalışanı elde tutma, motivasyon, personeli güçlendirme, örgütsel bağlılık gibi tüm faaliyetlerin etkin bir şekilde yönetilmesini sağlayan çalışmaların tamamından sorumludur. Çalışmanın evrenini, Türkiye'de faaliyet gösteren 16 hastane ve 8 tıp merkezini kapsayan özel bir sağlık grubunun İnsan Kaynakları Direktörlüğü'nden, Ocak 2017-Haziran 2020 tarihleri arasında gerçekleştirilen kompetanlık sınavlarına katılım sağlayan Hasta Hizmetleri Direktörlüğü'ne bağlı çalışanların tümünü kapsayan, sınavı başarı ile tamamlayanların, yıllara ve demografik değişkenlere göre oluşturulan kayıtların verileri (n= 6541) oluşturmaktadır. Araştırma bulgularına göre, 2017 yılı kompetanlık sınavı başarı oranı %38 (n=1486), 2018 yılı başarı oranı %37 (n=1700), 2019 yılı başarı oranı % 38 (n=1680), 2020 yılı başarı oranı ise %38 (n=1675) olarak tespit edilmiştir. Sonuç olarak, sağlık alanında hasta hizmetleri sınıfında çalışanlara yönelik olarak düzenlenen ve yetenek yönetimi uygulamaları arasında değerlendirilen "Kompetanlık" uygulamasının hasta hizmetleri çalışanları tarafından önemli bir kariyer basamağı olarak değerlendirildiği için bu sınavın başarı ile tamamlanması hem çalışanlara hem de yetenek yönetiminin örgüte değer katan, liderlik davranışları gösteren, yüksek düzeyde potansiyele, bilgi birikimi ve deneyime sahip bireylere odaklanmış olması yönetici seçme ve yetiştirme politikalarına ilişkin yeni bir bakış açısı sunması nedeniyle kuruma önemli katkılar sağlayacağı öngörülmektedir. Ayrıca yoğun rekabet ortamında, amaçlarını gerçekleştirebilmek için işletmeler, bilgili, yetenekli ve aynı zamanda kurumun amaçları doğrultusunda motive olmuş insan kaynağına sahip olmayı hedeflemektedirler. Bu nedenle çalışma "kompetanlık" sisteminin yetenek yönetimi uygulaması olarak sağlık sektöründe insan kaynakları yöneticilerine katkı sağlayacak bir model olarak önerilmektedir.

Anahtar Sözcükler: Yetenek Yönetimi, Kompetanlık, Sağlık İşletmeleri, Sağlık Çalışanları

YETENEK YÖNETİMİ AÇISINDAN KOMPETANLIK UYGULAMASININ DEĞERLENDİRİLMESİ: ÖZEL BİR SAĞLIK GRUBU ÖRNEĞİ

Özet

Özel bir sağlık grubu insan kaynakları yönetimi süreçlerinin yetenek yönetimi uygulamaları ile ilişkileri araştırılarak, "Kompetanlık" uygulama modeli incelenmiş olup, yetenek yönetimi gerekliliği, sağladığı katkılar ve sonuçları kompetanlık sistemi çerçevesinde değerlendirilmiştir. İşletmelerde insan kaynakları yöneticileri çalışanların işe alım, seçme ve yerleştirme, eğitim ve geliştirme, insangücü planlaması, kariyer planlaması ve

performans yönetimi süreçleri ile yetenek yönetimi, çalışanı elde tutma, motivasyon, personeli güçlendirme, örgütsel bağlılık gibi tüm faaliyetlerin etkin bir şekilde yönetilmesini sağlayan çalışmaların tamamından sorumludur. Çalışmanın evrenini, Türkiye'de faaliyet gösteren 16 hastane ve 8 tıp merkezini kapsayan özel bir sağlık grubunun İnsan Kaynakları Direktörlüğü'nden, Ocak 2017-Haziran 2020 tarihleri arasında gerçekleştirilen kompetanlık sınavlarına katılım sağlayan Hasta Hizmetleri Direktörlüğü'ne bağlı çalışanların tümünü kapsayan, sınavı başarı ile tamamlayanların, yıllara ve demografik değişkenlere göre oluşturulan kayıtların verileri (n= 6541) oluşturmaktadır. Araştırma bulgularına göre, 2017 yılı kompetanlık sınavı başarı oranı %38 (n=1486), 2018 yılı başarı oranı %37 (n=1700), 2019 yılı başarı oranı % 38 (n=1680), 2020 yılı başarı oranı ise %38 (n=1675) olarak tespit edilmiştir. Sonuç olarak, sağlık alanında hasta hizmetleri sınıfında çalışanlara yönelik olarak düzenlenen ve yetenek yönetimi uygulamaları arasında değerlendirilen "Kompetanlık" uygulamasının hasta hizmetleri çalışanları tarafından önemli bir kariyer basamağı olarak değerlendirildiği için bu sınavın başarı ile tamamlanması hem çalışanlara hem de yetenek yönetiminin örgüte değer katan, liderlik davranışları gösteren, yüksek düzeyde potansiyele, bilgi birikimi ve deneyime sahip bireylere odaklanmış olması yönetici seçme ve yetiştirme politikalarına ilişkin yeni bir bakış açısı sunması nedeniyle kuruma önemli katkılar sağlayacağı öngörülmektedir. Ayrıca yoğun rekabet ortamında, amaçlarını gerçekleştirebilmek için işletmeler, bilgili, yetenekli ve aynı zamanda kurumun amaçları doğrultusunda motive olmuş insan kaynağına sahip olmayı hedeflemektedirler. Bu nedenle çalışma "kompetanlık" sisteminin yetenek yönetimi uygulaması olarak sağlık sektöründe insan kaynakları yöneticilerine katkı sağlayacak bir model olarak önerilmektedir.

Anahtar Sözcükler: Yetenek Yönetimi, Kompetanlık, Sağlık İşletmeleri, Sağlık Çalışanları

Introduction

The only factor that will lead organizations to success in modern business life is manpower (Karcıoğlu, 2019). Every enterprise, whether doing business locally or wanting to have a say in the international arena, primarily shows great care in selecting its employees. Today, recruiting employees only in order to fulfill certain duties in the enterprise is considered insufficient for many departments. At this point, it has become important to identify "talented" employees who can both carry out standard works and take the business to the next level (Kara Kurt Ç. 2019).

In today's business life, there is a conflict among organizations regarding the employment of talented personnel. This situation has led to the emergence of talent wars between organizations. Apart from talent wars, the correct and effective management of talent within the organization has become mandatory. At this point, a new era has been entered in human resources management and a rapid development has started towards the management of talents rather than the management of people (Karcıoğlu, 2019).

While talented employees positively affect the performance of the organization, talent itself has become an important factor affecting business success today. Because having a workforce that is willing to use its talents in the best way and is devoted to work cannot be imitated easily by competitors (Kurşun A, 2019).

Due to these reasons, the concept of "Talent Management" has become the main issue that businesses value and consider both in order to develop a sustainable strategy community and not to lose the level of competitiveness (Aslan Ş & Kurşun A).

Method

In this study, "A Special Health Group Example in Terms of Talent Management: Competency Application" model was examined and the necessity, benefits, contributions and results of talent management were evaluated within the framework of the Competence system.

The research was conducted with the aim of evaluating the abilities of the participants with the exam system and developing solution offers. It has been observed that this application is an important factor in determining the skills of the personnel participating in the exam.

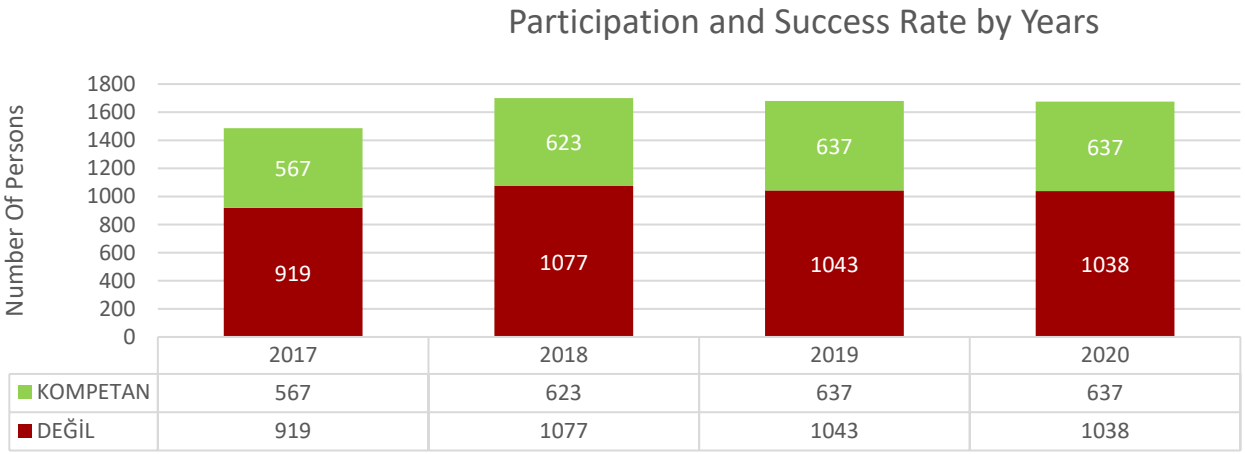
It has been observed that, with this exam sample, which is applied twice a year, the employees refresh their professional knowledge and have the opportunity to present their skills to their managers. The universe of the research consists of the hospitals of a private healthcare group with centers in various provinces of the country. Since the study was conducted in a private group hospital, it may not be valid in other hospitals.

Results

Within the scope of this project, the rates of private health group employees' completion of competency training in the years 2017-2018-2019-2020 were examined.

In 2017, 1486 people took the written exam. Whereas 567 people completed the exam successfully 919 people did not. The completion rate of the Competence Exam in 2017 was 38%. In 2018, 1700 people took the written exam. Whereas 623 people completed the exam successfully 1077 people did not. The completion rate of the Competence Exam in 2018 was 37%. In 2019, 1680 people took the written exam. Whereas 637 people completed the exam successfully 1043 people did not.The completion rate of the Competence Exam in 2019 was 38%. In 2020, 1675 people took the exam online. Whereas 637 people completed the exam successfully 1038 people did not. The completion rate of the Competence Exam in 2020 was 38%.

Figure 1. Participation in the Competence Exam by Years and Success Rates



In the private health group where the model was examined, 16 hospitals and 8 medical center employees were included within the scope of 2017-2018-2019-2020, and the rates of successful completion of the exam vary among branches.

In 2017, 1486 people took the written exam. Whereas 567 people completed the exam successfully 919 people did not. The completion rate of the Competence Exam in 2017 was 38%.

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Considering the years of 2017, 2018, 2019 and 2020, although the number of people who successfully completed the Competence exam varies according to years, the rate of successful completion is found to increase over the years.

Considering this result, it was found that the rewarding system was accepted for the department employees who could take the exam, and concordantly, that the number of people who took the Competence exam increased as time passed.

Discussion, Conclusion, and Suggestions

In hospital organizations, personnel management and professionalization level are of great importance in terms of talent management. In the globalizing world, it is accepted that the most valuable business asset that an organization has in order to be successful and provide competitive advantage is the employees in that organization, and the more efficiently it uses this capital, the easier it will be to survive in the competitive environment. Because

institutions aim to have knowledgeable, talented, skilled human resources who are also motivated in line with the objectives of the institution in order to achieve their goals.

When the results of the research are examined, successful completion of this exam within the framework of the competency system stands out as an important step as it contributes significantly to the company and its employees. Within the scope of talent management, competent candidates who can take this exam make a great and important contribution in terms of career planning and employee motivation.

Employee retention is important in healthcare institutions where severe stress is experienced due to the nature of our industry. Therefore, it will be beneficial for the companies that focus on talent management to adopt Competence and a similar model to provide a competitive advantage in terms of patient satisfaction. In the business world, providing competitive advantage by taking advantage of the new opportunities uncovered by the global world has become the most fundamental occupation. Both the changing competition rules and the alterations in economic, technological, and social fields force businesses to develop new methods to keep up with these changes.

Increasing the quality of human resources, which is considered to be the most important factor in providing competitive advantage, becomes very important. In this context, increasing the education level of human resources, increasing the performance and efficiency in business life is one of the main subjects of almost every business.

Organizations no longer need ordinary employees, but those who are best at their work, have no substitutes, and cannot be imitated. In line with this need, the concept of talent has been brought to the agenda of human resources units. In today's business life, there is a conflict among organizations regarding the employment of talented personnel. This situation has led to the emergence of talent wars between organizations. In addition to talent wars between institutions, the correct and effective management of 87 talents within the organization has become mandatory (Karcıoğlu F, 2019).

In this context, a new era has begun in human resources management, and a rapid transformation has started towards the management of talents rather than the management of people (Bakan Atasever S, 2018).

Due to these reasons, talent management processes, principles and practices should be effectively implemented in order to provide the highest level of contribution of the talented individuals identified with the exam. Employees who are successful in exam practice and demonstrate their skills by showing performance should be supported by career planning, apart from exam system awards.

References

Karcıoğlu F, Bakan Atasever S. Talent Management and Organizational Career Management Relationship: An Application in Different Sectors. Hak-İş International Journal of Labor and Society 2019; 8 (21): 106-124.

Aslan Ş, Kurşun A. The Mediating Role of Emotional Intelligence Leadership and Psychological Contract in the Relationship between Talent Management and Organizational Culture. Hacettepe Journal of Health Administration 2020; 23 (1): 165-190

Kurşun A. The Mediating Role of Emotional Intelligence Leadership and Psychological Contract in the Relationship between Talent Management and Organizational Culture. S.Ü. Institute of Health Sciences, PhD Thesis, Konya, 2019 (Supervisor: Prof. Dr. A Sebnem).

Bakan Atasever S. Talent Management and Organizational Career Management Relationship: An Application in Different Sectors. A.Ü. Institute of Social Sciences, Master Thesis, Erzurum, 2018 (Advisor: Prof. Dr. K Fatih).

Kara Kurt Ç. Talent Management Practices and Evaluations on HR Strategies. Istanbul Gelişim University Journal of Economic, Administrative and Social Sciences 2019; 1-15.

Asylum seekers' emotional management

Basem Mahmud
University of Granada, Faculty of Political Science and Sociology, Granada, Spain

Abstract
This contribution examines asylum seekers' emotional management before obtaining legal recognition in the host country. Emotion management refers to the process of changing the degree or quality of a feeling or emotion. This participation is based on field research conducted in Berlin with 33 refugees and asylum seekers from Syria between 2015-2017 (semi-structured in-depth interviews of approximately two hours each). I have found two main types of emotional and impression management in forced migration where fear plays a critical role: (1) the protective is employed when dealing with family members and friends. Its only goal is to protect the self and/or the other. It is widespread during 'goodbye' and 'harsh' moments. Here they use four main strategies: Avoid the moment or no-show. Self-deception to deny the moment its exceptionality: We will meet soon. Asking permission to avoid feelings of guilt while convincing the other (often family members) that this is the best decision. Manipulate the information that they tell to loved ones or to those who accompany them at this moment in order to protect the latter from stress and worry and the subsequent loss of control. (2) A defensive goal used when dealing with authority. Forcibly immigrants use different behaviors and self-presentations to deal with, and they might be prepared in advance in anticipation, risks or to reach specific goals related to their rights and needs. Sometimes these types of self-presentation are contradictory and can change as needed within short periods.

Keywords: feelings, forced migration, asylum

إدارة طالبي اللجوء للانفعالات

الملخص
تبحث هذه المساهمة في إدارة طالبي اللجوء للانفعالات قبل الحصول على الاعتراف القانوني في البلد المضيف. يقصد بإدارة الانفعالات عملية تغيير درجة أو نوعية الشعور أو الانفعال. تعتمد هذه المشاركة على بحث ميداني تم إجراؤه في برلين مع 33 لاجئًا وطالب لجوء سوري بين 2015-2017 (مقابلات متعمقة شبه منظمة لمدة ساعتين تقريباً). لقد وجدت نوعين رئيسيين من إدارة العواطف والانطباعات في الهجرة القسرية حيث يلعب الخوف دورًا حاسماً: (1) بهدف الحماية عند التعامل مع أفراد الأسرة والأصدقاء، وهدفها الوحيد هو حماية الذات و/ أو الآخر. إنه شائع بشكل خاص خلال لحظات "الوداع" و "والمخاطر". هنا يستخدمون أربع استراتيجيات رئيسية: تجنب هذه اللحظة أو عدم الحضور. خداع الذات لنزع الصفة الاستثنائية عن الحدث: سنلتقي قريباً. طلب الإذن لتفادي الشعور بالذنب مع إقناع الآخر (أفراد العائلة غالباً) بأن هذا هو القرار الأفضل. في المخاطر يتم التلاعب بالمعلومات التي يخبرونها لأحبائهم أو لمن يرافقهم من أجل حماية هؤلاء من التوتر والقلق والتالي فقدان السيطرة. (2) هدف دفاعي يستخدم عند التعامل مع السلطة. يستخدم المهاجرون قسراً سلوكيات وعروض للنفس مختلفة، وقد يتم الاستعداد لها مسبقاً تحسباً لمخاطر معينة أو للوصول إلى أهداف محددة تتعلق بحقوقهم واحتياجاتهم. في بعض الأحيان تكون هذه الأنواع من العرض الذاتي متناقضة ويمكن أن تتغير حسب الحاجة في غضون فترات قصيرة.

الكلمات المفتاحية: المشاعر، الهجرة القسرية، اللجوء

Refugees' subjective well-being

Basem Mahmud
University of Granada, Faculty of Political Science and Sociology, Granada, Spain

Abstract
This contribution aims to answer the following question: How a refugee in his new place feels subjective well-being. By the term "subjective well-being," I refer to the cognitive and emotional assessments of a forced immigrant of his or her life. This participation is based on field research conducted in Berlin with 33 refugees and asylum seekers from Syria between 2015-2017 (semi-structured in-depth interviews of approximately two hours). I found that this feeling includes six aspects: feeling freedom, success-achieving goals, finding an apartment, receiving positive news from the country of origin or family members in the diaspora, and having acquaintances, old friends, or members of the same family in the place. However, subjective well-being is affected by feeling welcome and feeling safe. It also affects and is affected by how the refugee becomes involved in home building strategies. Nevertheless, it all depends on the hope of starting a new life in the place, which is the central concept that I claim is indispensable for understanding the experience of forced migration in general and answering the research question mentioned above. Understanding this issue is essential to support refugees' efforts to integrate and recover from the psychological damage associated with displacement and home loss.

Key words: subjective well-being, emotions, feelings, forced migration

رفاه اللاجئين الذاتي

ملخص
تهدف هذه المساهمة إلى الإجابة على السؤال التالي: كيف يشعر اللاجئ بالرفاه الذاتي في مكانه الجديد؟ بمصطلح "الرفاهية الذاتية"، أشير إلى التقييمات المعرفية والعاطفية للمهاجر قسراً لحياته. تعتمد هذه المشاركة على بحث ميداني تم إجراؤه في برلين مع 33 لاجئًا وطالب لجوء سوري بين 2015-2017 (مقابلات متعمقة شبه منظمة لمدة ساعتين تقريباً). لقد وجدت أن هذا الشعور يتضمن ستة جوانب: الشعور بالحرية، والنجاح في تحقيق الأهداف، والحصول على منزل، وتلقي أخبار إيجابية من البلد الأصل أو الأهل في الشتات، ووجود معارف أو أصدقاء قدامى أو أفراد من نفس العائلة في المكان. لكن الرفاه الذاتي يتأثر بالشعور بالترحيب والأمان كما أنه يؤثر ويتأثر بمدى انخراط اللاجئ باستراتيجيات بناء البيت. لكن كل هذا يتوقف على الأمل ببدء حياة جديدة في المكان وهو المفهوم المركزي الذي أزعم أنه لا غنى عنه لفهم تجربة الهجرة القسرية بشكل عام والإجابة على السؤال البحثي المذكور بشكل خاص. إن فهم هذه المسألة أمر ضروري لدعم مساعي اللاجئين للاندماج والتعافي من الأضرار النفسية المرتبطة بعملية التهجير وفقدان البيت.

الكلمات المفتاحية: رفاهية ذاتية، الانفعالات، المشاعر، الهجرة القسرية

6698 KİŞİSEL VERİLERİN KORUNMASI KANUNU VE 5237 SAYILI TÜRK CEZA KANUNU KAPSAMINDA KİŞİSEL VERİLERİN KORUNMASI

Murat Kurt
Kütahya Dumlupınar Üniversitesi, Kütahya, Türkiye

Özet
Çalışmam kapsamında Türkiye'de uzun yıllardır ihmal edilmiş, bir konu, kişisel verilerin korunması islenmektedir. Kişisel verilerin korunması, 6698 sayılı Kişisel Verilerin Korunması Kanunu'nun ve Avrupa Birliği Genel Veri Koruma Tüzüğü'nün yürürlüğe girmesi ile birlikte ülkemizde son dönemde başta faaliyetleri kapsamında kişisel veri işleyen şirketler olmak üzere pek çok kurum ve kuruluşun gündemine yerleşmiştir. Bu çalışma kapsamında kişisel verilerin korunması konusu ilk olarak kişisel verilerin korunması hakkında yaklaşım ekonomik ve insan hakları bağlamında ele alınmıştır. Devamında ise kişisel verilerin korunmasına ilişkin olarak OECD, Avrupa Konseyi ve Avrupa Birliği tarafından yapılan hukuki düzenlemelerden bahsedilmiş ve hem ülkemizde hem de yabancı ülke hukuklarındaki örneklere yer verilmiştir. 6698 sayılı Kişisel Verileri Koruma Kanunu kapsamında kişisel verilerin korunması konusu incelenmiştir. Ve kişisel verilerin korunmasına ilişkin 5237 sayılı Türk Ceza Kanunu kapsamındaki suç tipleri ele alınmıştır. Son bölümde değerlendirme yapılırken 2016 yılında yürürlüğe giren 6698 sayılı Kişisel Verilerin Korunması Kanunu göz önünde bulundurulmuştur. Bu kanunda, kişisel verilerin korunmasına ilişkin işlenecek suçlarda Türk Ceza Kanunu'nun ilgili maddelerinin uygulanacağına dair atıf bulunmaktadır. Ayrıca bu kanun ile birlikte kişisel verilerin korunmasına ilişkin olarak uzun yıllardır tanımlanmamış pek çok kavram tanımlanmış, belirsizlikten kaynaklı birçok tartışmaya son verilmiş ve hukukumuza pek çok yeni kavram ve kurum dahil edilmiştir. Yerel mahkemelerden, Avrupa İnsan Hakları Mahkemesi ve Adalet Divanı'na kadar pek çok yargı merci bugün kişisel verilerin korunmasına ilişkin kararlar vermektedir. Özellikle Avrupa Birliği Genel Veri Koruma Tüzüğü'nün de yürürlüğe girmesi ile birlikte, başta veri işleyen şirketler olmak üzere pek çok kurum ve kuruluş, cezaların büyüklüğü karşısında bu konuda önlemlerini arttırmak, bütün veri politikalarını değiştirerek eskisinden de büyük bir titizlik göstermek mecburiyetinde bırakılmışlardır.

Anahtar Kelimeler: Kişisel Verilerin Korunması Kanunu, Türk Ceza Kanunu, İnsan Hakları

Abstract
Working a long time been neglected subject in Turkey, the encryption process is encrypted. Personal initiation has been placed on the agenda of many institutions and organizations, including personal data processing companies that want to write in the final version in our country, with the introduction of the Personal Data Protection Law No.6698 and the European Union General Data Protection Regulation. Topics that need to be included in this field should be addressed first. Afterwards, OECD, Council of Europe and European Union-type legal arrangements regarding personal protection are mentioned and examples are given in both our country and foreign countries. The subject of Personal Data Protection Law numbered 6698 has been examined. And his personalized coating has been addressed to his accusations under the Turkish Penal Code No.5237. When examined last, the Protection of 6698 personal data given in 2016 is considered. This law applies to the relevant articles of the Turkish Penal Code to be committed against personal use crimes. In addition, as a child to be taken into personal law with this law, many discussions have been ended due to uncertainty and many new concepts and institutions have been included in our law. Today, many jurisdictions, from local courts to the European Court of Human Rights and Court of Justice, decide on personal protection. With the introduction of the European Union General Data Protection Regulation, many institutions and organizations, including data processing companies, have been obliged to increase their precautions in this regard under penalties, to change all their policies and show great care.

Keywords: Personal Data Protection Law, Turkish Penal Code, Human Right

Giriş

Dijitalleşen çağda en önemli maden olan veriler güvenlik unsurunu da beraberinde getirmektedir. Dünyanın her yerinden pek çok insan, faaliyetleri gereği ellerinde büyük veri tabanları bulunduran pek çok şirkete karşı hak mücadelesi vermektedir. Avrupa Birliği Genel Veri Koruma Tüzüğü'nün de yürürlüğe girmesi ile birlikte, başta veri işleyen şirketler olmak üzere pek çok kurum ve kuruluş, cezaların büyüklüğü karşısında bu konuda önlemlerini arttırmak, bütün veri politikalarını değiştirerek eskisinden de büyük bir titizlik göstermek mecburiyetinde bırakılmışlardır. Bu konudaki yaptırımların arttırılması, düzenlemelerin daha geniş kapsamlı ve bağlayıcı hale getirilmesinde, son yıllarda yaşanan veri güvenliği skandallarının etkisi büyüktür.

Çalışmada Ülkemizde 2016 yılında yürürlüğe giren Kişisel Verilerin Korunması Kanunu ışığında, Türk Ceza Kanunu'ndaki kişisel verilerin korunmasına ilişkin suç tipleri incelenmiştir. Bu iki kanunun birlikte uygulanması neticesinde ortaya çıkabilecek uyuşmazlıklar ve birbirlerini tamamlayan noktalar ele alınmıştır.

KİŞİSEL VERİLERİN KORUNMASI HAKKI

Kişisel verilerin korunması hakkı insan hakları zemininde özel hayatın gizliliği kapsamında korunmalıdır. Ancak kişisel verilerin günümüzde yeni bir değer haline gelmesi sonucunda bu hakkın, özellikle Amerika doktrininde, mülkiyet hakkı ya da fikri mülkiyet hakkı kapsamında korunması gerektiği yönünde de görüşler bulunmakta ve tartışılmaktadır.

Günümüzde özellikle büyük şirketler başta olmak üzere pek çok kurum ve kuruluşun hem en büyük sermayelerinden biri hem de en büyük güçlerinden biri müşterilerinden ya da kullanıcılarından topladıkları verilerdir. Öyle ki artık veri toplama ve işlemenin maliyeti karşısında, halihazırda veri bankası olan kurum ve kuruluşlardan bu veriler satın alınmaya başlanmıştır.

Ulusal hukukumuza baktığımızda da kişisel verilerin korunması hakkının, Anayasa'nın "özel hayatın gizliliği ve korunması" başlıklı 20. Maddesi'ne 2010'da eklenen fıkra ile korunduğu görülecektir. Anayasanın 20.maddesine ek fıkra şu şekildedir. "Herkes, kendisiyle ilgili kişisel verilerin korunmasını isteme hakkına sahiptir. Bu hak; kişinin kendisiyle ilgili kişisel veriler hakkında bilgilendirilme, bu verilere erişme, bunların düzeltilmesini veya silinmesini talep etme ve amaçları doğrultusunda kullanılıp kullanılmadığını öğrenmeyi de kapsar. Kişisel veriler, ancak kanunda öngörülen hallerde veya kişinin açık rızasıyla işlenebilir. Kişisel verilerin korunmasına ilişkin esas ve usuller kanunla düzenlenir. ". Anayasa'ya 2010 yılında eklenen bu fıkradan yedi yıl sonra ise, 6698 sayılı Kişisel Verilerin Korunması Kanunu yürürlüğe girmiş ve bahsi geçen fıkranın gereği yerine getirilmiştir.

KİŞİSEL VERİLERİN KORUNMASI HAKKINA İLİŞKİN HUKUKİ DÜZENLEMELER

Uluslararası hukuka baktığımızda, kişisel verilerin korunmasına konusunda pek çok hukuki düzenleme bulunmaktadır. Hem Avrupa Konseyi ve OECD hem de Avrupa Birliği tarafından yapılan bu hukuki düzenlemeler hem Avrupa Birliği ülkelerinde hem de bu birlik ülkesi olmayan ülkeler üzerinde etkili olmuştur.

OECD Tarafından Kişisel Verilerin Korunmasına İlişkin Hazırlanan Hukuki Düzenlemeler

Kişisel verilerin korunmasına ilişkin uluslararası düzenlemelere baktığımızda, bu konudaki ilk girişimlerin Ekonomik İşbirliği ve Kalkınma Örgütü aracılığı ile ortaya çıktığı görülmektedir. 1980 yılında "Mahremiyetin Korunması ve Kişisel Verilerin Sınır Ötesi Akışına İlişkin Rehber İlkeleri" kabul etmiştir. Toplam 8 ilkeden oluşan bu ilkeler veri toplamanın sınırlı şekilde olması, verinin tam ve güncel olması, veri toplama amacının belirlenmiş olması, kullanımın belirli sınırlar içinde olması, veri güvenliğinin sağlanması, şeffaf olunması ilkesi, bireyin müdahale edebilmesi ve veri sorumlularının veri sahiplerine karşı sorumluluğu ilkesi olarak sıralanabilir.

Birleşmiş Milletler Tarafından Kişisel Verilerin Korunmasına İlişkin Hazırlanan Hukuki Düzenlemeler

Birleşmiş Milletler kişisel verilerin korunması konusunda" Bilgisayarla İşlenen Kişisel Veri Dosyalarına İlişkin Rehber İlkeler" isimli belgeyi 14 Ocak 1990 tarihinde kabul etmiştir. Bu belgede de tıpkı OECD tavsiye niteliğindeki ilkelerinde olduğu gibi, hukuki bir bağlayıcılığı olmayan tavsiye niteliğindeki ilkelerden oluşmaktadır. Söz konusu ilkeler;

- Hukuk ve Adalet Prensibi
- Doğruluk Prensibi
- Amacın Belirli Olması Prensibi
- İlgili Kişi Tarafından Erişim Prensibi
- Ayrımcılık Yapmama Prensibi
- İstisna Düzenleme Yapabilme Prensibi
- Güvenlik Prensibi
- Denetim ve Yaptırım Prensibi
- Sınırötesi Veri Akışı Prensibi

Türk Hukukunda Kişisel Verilerin Korunması

Türkiye Cumhuriyeti, Avrupa Konseyi tarafından düzenlenen Kişisel Verilerin Otomatik İşleme Tabi Tutulması Karşısında Bireylerin Korunması başlıklı 108 sayılı sözleşmeyi 28 Ocak 1981 tarihinde imzalanmış fakat bu sözleşme uzun yıllar boyunca onaylamamıştır. 5982 sayılı Türkiye Cumhuriyeti Anayasasının Bazı Maddelerinde Değişiklik Yapılması Hakkında Kanun kapsamında, 1982 tarihli Anayasası'nın 'Kişinin Hakları ve Ödevleri' başlıklı İkinci Bölümünün 20. maddesine ek bir düzenleme aracılığı ile kişisel verilerin korunmasına ilişkin anayasal bir düzenleme yapılmak istenmiştir. Söz konusu kanuna ilişkin gerekçede işbu ek düzenleme değerlendirilmiş ve mevcut anayasamızda kişisel verilerin korunması hakkını korumaya dayanak olabilecek bazı maddeler bulunmasına rağmen bunların zamanın ihtiyaçlarını karşılamadığı ifade edilmiştir.

6698 sayılı Kişisel Verilerin Korunması Kanunu

108 sayılı Sözleşmenin onaylanması ve yürürlüğe girmesi ile birlikte, Türkiye'nin ulusal mevzuatında kişisel verilerin korunması hakkında bir düzenleme yapması zorunlu hale gelmiştir. 24 Mart 2016 tarihinde TBMM Genel Kurulu tarafından kabul edilmiş ve aynı tasarı 7 Nisan 2016 tarih ve 29677 sayılı Resmî Gazetede yayımlanarak yürürlüğe girmiştir.

Kanunun akabinde ise, yasa koyucu tarafından, kanunun uygulaması bakımından yol gösterici olması için bazı yönetmelikler ve tebliğler de yürürlüğe girmiştir. Buna göre 5 Mayıs 2018 tarihli Kişisel Verileri Koruma Kurumu Personeli Görevde Yükselme ve Unvan Değişikliği Yönetmeliği, 26 Nisan 2018 Kişisel Verileri Koruma Kurumu Teşkilat Yönetmeliği, 9 Şubat 2018 Kişisel Verileri Koruma Uzmanlığı Yönetmeliği, 30 Aralık 2017 Veri Sorumluları Sicili Hakkında Yönetmelik, 16 Kasım 2017, Kişisel Verileri Koruma Kurulu Çalışma Usul ve Esaslarına Dair Yönetmelik 28 Ekim 2017 Kişisel Verilerin Silinmesi, Yok Edilmesi veya Anonim Hale Getirilmesi Hakkında Yönetmelik, bugüne dek çıkarılan yönetmelikler kapsamında sayılabilecektir. Diğer yandan 10 Mart 2018 tarihinde ise Veri Sorumlusuna Başvuru Usul ve Esasları Hakkında Tebliğ ve Aydınlatma Yükümlülüğünün Yerine Getirilmesinde Uyulacak Usul ve Esaslar Hakkında Tebliğ yürürlüğe girmiştir.

Türk Ceza Kanunu

Türk Ceza Hukuku bakımından kişisel verilerin korunmasına ilişkin ilk düzenlemeler 5237 sayılı Türk Ceza Kanunu kapsamında düzenlenmiştir. 765 sayılı Türk Ceza Kanunu'na baktığımızda kişisel verilerin korunmasına ilişkin bir düzenleme bulunmamaktaydı. Uygulamada ise yasa uygulayıcı makamlar kişisel verilerin korunması hakkını 765 sayılı kanunun 'Sırrın Masuniyeti Aleyhinde Cürümler' başlıklı beşinci faslının 195. ve 200. Maddeleri arasında özel yaşam ve haberleşme dokunulmazlığı kapsamında değerlendirmeye çalışmışlardır.

2004 tarihli 5237 sayılı Türk Ceza Kanunda kişisel verilerin korunmasına ilişkin bağımsız suç tipleri düzenlenmiş ve 765 sayılı kanundaki bu eksiklikler, 5237 sayılı kanununda kişisel verilerin korunmasına ilişkin suç tiplerinin, haberleşme hakkının ve özel hayatın gizliliği hakkının ihlali suçlarından ayrı olarak düzenlenmesi ile giderilmeye çalışılmıştır.

5237 sayılı Türk Ceza Kanunu'nun 'Özel Hayata ve Hayatın Gizli Alanına Karşı Suçlar' başlıklı dokuzuncu bölümünün 134. Maddesi ve bunu izleyen maddelerinde kişisel verilerin korunmasına ilişkin özel suç tipleri düzenlenmiştir.

TANIMLAR

Kişisel Veri

108 sayılı sözleşmenin ikinci maddesinin a bendinde kişisel veri bir kişinin kimliğini belirli ya da belirlenebilir kılan her türlü bilgi şeklinde açıklanmıştır. Sözleşme'nin özel nitelikli hassas verileri düzenleyen 6. maddesinde ise ulusal hukuklarda gereken önlemler alınmadıkça bireylerin din, etnik köken, cinsel yaşam, ceza mahkumiyetleri gibi hassas verilerinin otomatik yöntemlerle işlenemeyeceği ifade edilmiştir.

AİHM kararlarında da kişilere ait "görüntü", "fotoğraf", "parmak izi", "DNA194 profili", "hücre örnekleri", "ev adresi" ve "yaş, doğum tarihi ve fiziksel özellikler" kişisel veri kapsamında değerlendirilmektedir.

Yargıtay kararlarında kişisel veri bireyin, bu verilere erişim konusunda yetkisi bulunmayan 3. kişilere açıklamadığı, aleni olmayan ve genel olarak herkes tarafından bilinmesi mümkün olmayan, bireyin kimliğini ortaya koyan ya da bireyin kimliğini tespit edilebilir kılan ve gerçek kişilere ait tüm bilgiler olarak tanımlanmıştır.

Nihayet 6698 sayılı Kişisel Verilerin Korunmasına İlişkin Kanunun 3.maddesinde kişisel verinin tanımı yapılmış ve uzun yıllardır süregelen kişisel verinin tanımına ilişkin tartışmalara bir son verilmiştir. 6698 sayılı kanunun 3. maddesine göre "kişisel veri, kimliği belirli veya belirlenebilir gerçek kişiye ilişkin her türlü bilgi" olarak tanımlanmıştır.

Açık Rıza

Açık rıza bir kişinin belirli bir konuda bilgilendirilmesi üzerine kendi özgür iradesiyle verdiği rıza şeklinde açıklanmıştır. Kanun'un kişisel verilerin işlenmesi başlıklı 5. maddesinde ise bireyin açık rızası bulunmaksızın kişisel verilerinin işlenemeyeceği ifade edilmiştir.

Kişisel Verileri Koruma Kurulu da ilgili kişilerin açık rızaları olmaksızın, eposta adreslerine, SMS veya çağrı ile cep telefonlarına reklam bildirimleri gönderilmesi konusunda vermiş olduğu ilke kararında, ilgili kişilerin açık rızaları bulunmaksızın kişisel verileri kullanan ya da bu verileri işleyenlerin söz konusu veri işleme faaliyetlerini 6698 sayılı Kişisel Verilerin Korunması Kanunu'nda yer alan 15.madde gereğince derhal durdurmaları gerektiğini belirtmiş aksi takdirde veri sorumluları hakkında Cumhuriyet Başsavcılığına bildirimde bulunulacağını ifade etmiştir.

Kişisel Verilerin İşlenmesi

Kişisel verilerin işlenmesi, Kişisel Verilerin Korunması Kanunu kapsamında otomatik veya kısmen otomatik yollarla işlenen kişisel verilerin ya da otomatik yöntemlerle olmasa bile bir veri kayıt sistemine dahil şekilde bulunan kişisel verilerin kaydı, depo edilmesi, muhafazası, değişiklik yapılması, revize edilmesi, aktarılması, açıklanması, devir alınması, elde edilebilecek duruma getirilmesi, kullanılmasının, sınıflandırılması ya da kullanımın engellenmesi gibi her çeşit işlem olarak ifade edilmiştir.

Veri Sorumlusu ve Veri İşleyen

Veri sorumlusu kanunun 3. maddesinde bir kişisel veririnin neden işlendiğini, hangi araçlar ile işleneceğini belirleyen ve veri kayıt sistemi dediğimiz sistemin oluşturulmasından ve idaresinden sorumlu olan gerçek veya tüzel kişi olarak tanımlanmıştır.

KVKK'DA DÜZENLENEN KİŞİSEL VERİLERİN İŞLENMESİNE İLİŞKİN VERİ SAHİBİNİN HAKLARI

Kişisel Verilerin Korunması Kanunu'nda yer alan 11. madde kapsamında veri sahibinin hakları düzenlenmiş olup buna göre veri sahibinin kişisel verilerinin işlenip işlenmediğini öğrenme; eğer kişisel verileri işlenmiş ise işlenen kişisel verileri hakkında bilgi alma; kişisel verilerin hangi amaçla işlendiğini ve bu verilerin işlendikleri amaçlara uygun kullanılıp kullanılmadıklarını öğrenme; eğer bu kişisel veriler aktarılmış ise bu verilerin aktarıldığı üçüncü kişiler hakkında bilgi alma; kişisel verilerin gerekli hallerde düzeltilmesini talep etme, kanunda öngörülen haller mevcutsa kişisel verilerin silinmesini veya yok edilmesini talep etme; maddenin (d) ve (e) bentleri gereğince işlem yapılmışsa kişisel verilerin aktarıldığı üçüncü kişilere de bu işlemlerin bildirilmesini talep etme; işlenen kişisel verilerin sadece otomatik sistemler aracılığı ile analizi halinde, kişinin kendisi aleyhinde bir sonuç ortaya çıkmasına itiraz etme, kişisel verilerin hukuka aykırı şekilde işlenmesi neticesinde kişinin zarara uğraması söz konusu olursa bu zararın giderilmesini talep etme, haklarına sahiptir.

KİŞİSEL VERİLERİN KORUNMASINA İLİŞKİN TÜRK CEZA KANUNUNDA DÜZENLENEN SUÇ TİPLERİ

5237 sayılı Türk Ceza Kanunu'nun "Özel Hayata ve Hayatın Gizli Alanına Karşı Suçlar" başlıklı dokuzuncu bölümünün 135. Maddesinde kişisel verilerin hukuka aykırı olarak kaydedilmesi suçuna yer verilmiştir. Türk Ceza Kanunu'nun 135. Maddesinin 1. fıkrasında kişisel verilerin hukuka aykırı şekilde kaydedilmesi halinde bu eylemi gerçekleştiren kişinin bir yıldan üç yıla kadar hapis cezası ile cezalandırılacağı ifade edilmiştir. Maddenin ikinci fıkrasında ise bireylerin felsefi görüş, siyasi düşünce, dini inanç gibi kişisel verilerinin ya da

ırk, ahlaki eğilim, sağlık bilgisi ya da sendikal bilgisi gibi kişisel verilerinin hukuka aykırı şekilde kaydedilmesi halinde verilecek cezanın yarı oranında artırılacağı ifade edilmiştir.

6698 sayılı Kişisel Verilerin Korunması Kanunu'nun 30.maddesiyle yapılan değişiklik ile 135.maddenin eski ikinci fıkrasına getirilen iki eleştiri de ortadan kaldırılarak, madde metninin eski halinde yer alan "kişilerin siyasi, felsefi veya dini görüşlerine, ırki kökenlerine; hukuka aykırı olarak ahlaki eğilimlerine, cinsel yaşamlarına ilişkin bilgileri kişisel veri olarak kaydeden kimse" ibaresi "Kişisel verinin, kişilerin siyasi, felsefi veya dini görüşlerine, ırki kökenlerine; hukuka aykırı olarak ahlaki eğilimlerine, cinsel yaşamlarına, sağlık durumlarına veya sendikal bağlantılarına ilişkin olması durumunda" şeklinde değiştirilmiş; "bilgileri kişisel veri olarak kaydeden kimse, yukarıdaki fıkra hükmüne göre cezalandırılır" ibaresi ise "olması durumunda birinci fıkra uyarınca verilecek ceza yarı oranında artırılır" şeklinde değiştirilmiştir.

Suçun Nitelikli Halleri

Özel Nitelikli Kişisel Verilerin Kaydedilmesi

Türk Ceza Kanunu 135. maddesinin 2. fıkrasında kişisel verinin, kişilerin siyasi, felsefi veya dini görüşlerine, ırki kökenlerine; hukuka aykırı olarak ahlaki eğilimlerine, cinsel yaşamlarına, sağlık durumlarına veya sendikal bağlantılarına ilişkin olması durumunda birinci fıkra uyarınca verilecek ceza yarı oranında artırılacağı düzenlenmiş olduğundan, bu maddenin suçun nitelikli hallerinden birini oluşturduğunu söyleyebiliriz.

Türk Ceza Kanunu'nun işbu 135. Maddesi üzerinde değişiklik yapılmış ve söz konusu değişiklikten önce "bilgileri kişisel veri olarak kaydeden kimse, yukarıdaki fıkra hükmüne göre cezalandırılır" şeklinde olan madde metni "olması durumunda birinci fıkra uyarınca verilecek ceza yarı oranında artırılır" şeklinde değiştirilmiştir.

Kamu Görevlisi Tarafından ve Görevinin Verdiği Yetki Kötüye Kullanmak Suretiyle Kaydedilmesi

Türk Ceza Kanunu'nun Nitelikli Haller başlıklı 137.maddesinde, kişisel verilerin kaydedilmesi suçunun kamu görevlisi tarafından ve görevinin verdiği yetki kötüye kullanılmak suretiyle işlenmesi halinde öngörülen cezanın yarı oranında artırılacağı belirtilmiştir. Yani kişisel verilerin kaydedilmesi ve kişisel verilerin hukuka aykırı olarak ele geçirilmesi suçlarının kamu görevlisi tarafından ve görevinin verdiği yetki kötüye kullanılmak suretiyle işlenmesi halinde yarı oranında artırılacağı belirtilmiştir.

SONUÇ

Kişisel verilerin korunması konusu, hem kişisel verilerin korunması hakkına yaklaşım açısından, hem bu konuda bugüne kadar yapılan uluslararası düzenlemeler açısından hem de 5237 sayılı Türk Ceza Kanunu ve yakın zamanda yürürlüğe giren 6698 sayılı Kişisel Verilerin Korunması Kanunu Kapsamında değerlendirilmeye çalışılmıştır.

Ülkemizde kişisel verilerin korunması hakkına ilişkin hukuki düzenlemelere baktığımızda, çalışmamızın ikinci bölümünde ayrıntılı olarak açıklanan, OECD rehber ilkeleri, 108 sayılı sayılı Avrupa Konseyi Sözleşmesi, 95 tarihli Veri Koruma Direktifi gibi uluslararası hukuki

metinlerin dikkate alındığını söyleyebiliriz. Konuya ilişkin ulusal hukuki düzenlemelerimizin gerekçelerine de baktığımızda bu sözleşmelere atıf yapıldığını görmek mümkündür. Dolayısıyla ülkemizde bu yaklaşımlardan ikincisinin kabul edildiği ve kişisel verilerin korunması konusuna insan hakları zemininde yaklaşıldığını söylemek mümkündür.

6698 sayılı Kişisel Verilerin Korunması Kanunu'nun yürürlüğe girmesi büyük bir adım olmuştur. Ayrıca bu kanun akabinde yürürlüğe giren yönetmelikler de kişisel verilerin korunması konusunda yol göstermektedir. Veri Koruma Kurulu tarafından ilkesel nitelikteki kararlar verilmeye başlanmıştır. Zaman içerisinde kanun uygulandıkça, bu konuda verilen kurul kararları arttıkça ve toplumda kişisel verilerin korunması yönündeki bilinç yükseldikçe hem KVKK metninde hem de TCK'nın ilgili suç tiplerinde ihtiyaçlara cevap veren değişikliklere gidileceği kaçınılmazdır.

KAYNAKÇA

Ibrahim Korkmaz, Kişisel Verilerin Ceza Hukuku Kapsamında Korunması, Ankara: Seçkin Yayıncılık, Mayıs 2017, s. 78

Elif Küzeci, Kişisel Verilerin Korunması, 2018, s. 66 – 73 – 75 - 110

Murat Volkan Dülger, İnsan Hakları ve Temel Hak ve Özgürlükler Bağlamında Kişisel Verilerin Korunması, s.87

Çiğdem Ayözger, Kişisel Verilerin Korunması Hukuku, s.78 – 80 – 95 – 98

Yargıtay 12. Ceza Dairesi 2012/16872 Esas, 2012/18221.

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GELİR DAĞILIMI EŞİTSİZLİĞİ VE SOSYAL DIŞLANMA

Doç. Dr. Mustafa Hatipler
ORCID: 0000-0002-2090-3042
Zeynep Şengül
ORCID: 0000-0002-0461-6203
Trakya University, Turkey

Özet

Gelir dağılımı eşitsizliği, ülkelerin kronik ekonomik ve sosyal sorunlarının başında gelen bir sorundur. Bu sorun, günümüzde küreselleşmenin yaygınlaşmasıyla birlikte ülke boyutundan küresel bir sorun haline dönüşmüş durumdadır.

Gelir dağılımı eşitsizliği tek başına sosyal bir sorun değildir. Gelir dağılımı eşitsizliği beraberinde; güvensizlik, adaletsizlik ve sosyal dışlanmışlık gibi birçok sorunu da ortaya çıkarmaktadır. Bu sorunlar içinde şartları ağır geçen sorun; toplumsal hayata uyum sağlayamamak, sosyal haklardan yararlanamamak ve üretim sürecine dahil olamamak gibi devasa sorunlarla ortaya çıkan sosyal dışlanmışlıktır.

Tüm dünyanın ortak sorunu olan sosyal dışlanma Türkiye'nin büyük sorunlarındandır. Türkiye İstatistik Kurumu tarafından açıklanan verilerde gelir dağılımının en adaletsiz olduğu il İstanbul iken bölge olarak gelir dağılımının en adaletsiz olduğu yer Güney Doğu Anadolu bölgesi olmaktadır.

Sosyal dışlanma ile gelir dağılımı arasında ters yönde bir ilişki olduğu görülmektedir. Gelir dağılımının eşit olarak sağlandığı, eşitsizliğinin azaldığı (ve bireylerin gelir seviyesi arttığında) ekonomilerde bireylerin sosyal dışlanması da azalmaktadır. Bununla beraber sosyal dışlanmanın tek kaynağının ve sebebinin gelir dağılımı eşitsizliği olmadığı, toplumsal olaylarla, ayırımcılık, cinsiyet ayırımcılığı, eğitim düzeyi, işgücüne katılma gibi birçok farklı değişken ile etkileşimde olduğu da görülmektedir.

Bu küçük çalışmada, dünyada ve Türkiye'de gelir dağılımı eşitsizliği zaviyesinden kavramsal ve saha anlamıyla sosyal dışlanmışlık konusu incelenmiştir. Sosyal dışlanmışlığın bireysel travmalarından daha çok toplumsal boyutu üzerinde durulmuştur. Bu küçük çalışmanın amacı, ülkelerin gelir dağılımı eşitsizliği sonucu yaşadıkları sosyal dışlanmışlık paradoksundan çıkmaları için bir ışık yakmaktır.

Anahtar Kelimeler: Gelir dağılımı eşitsizliği, yoksulluk, sosyal dışlanma

INCOME DISTRIBUTION INEQUALITY AND SOCIAL EXCLUSION

Abstract
Income inequality is one of the leading chronic economic and social problems of countries. This problem has turned into a global problem from the country level with the spread of globalization today.

Inequality in income distribution alone is not a social problem. With income inequality; It also raises many problems such as insecurity, injustice and social exclusion. Among these problems, the conditions are heavy; It is social exclusion that emerges with enormous problems such as not being able to adapt to social life, not being able to benefit from social rights and not being included in the production process.

All the world's a common problem in Turkey is one of the major problems of social exclusion. In Turkey Statistical Institute data released by the unjust distribution of income that is where most inequitable distribution of income as of Istanbul province, while South East ıt is the Anatolian region.

An inverse relationship between social exclusion and income distribution seems to be. Social exclusion of individuals decreases in economies where income distribution is achieved equally, inequality decreases (and income level of individuals increases). However, it is observed that the only source and reason of social exclusion is not the inequality of income distribution, and it interacts with social events, discrimination, gender discrimination, education level, participation in the workforce.

This small study in the world and in Turkey, income inequality, social exclusion literally conceptual issues and the field lodges were examined. The social dimension of social exclusion has been emphasized rather than individual traumas. The purpose of this small study is to shed a light on countries to get out of the social exclusion paradox that they experience as a result of income inequality.

Keywords: Income inequality, poverty, social exclusion

GİRİŞ

Yaşamın her alanında hızla yayılan küreselleşme, neo-liberal politikalarının da etkisiyle; eşitsizlik, adaletsizlik, dışlanmışlık ve sosyal ayrımcılık gibi toplumsal gelişimi zayıflatan sorunlar ortaya çıkarmaktadır. Bu sorunlar, çağımızda insanlara daha derin etkiler bırakmaktadır. Sosya-ekonomik, demografik, kültürel alanda meydana gelen olumsuz yöndeki değişimler, birçok sorunla birlikte en çok sosyal dışlanma olgusunu ortaya çıkartmaktadır.

Kısaca, bireyin, topluma ayak uyduramaması ve üretim sürecine dahil olamaması olarak açıklanan sosyal dışlanma, tüm dünya için toplumun huzurunu bozan ve toplumsal barışı dinamitleyen bir olgudur. Kaldı ki sosyal dışlanma bir sonuç olmaktan öte, başka sorunların da kaynağı konumundadır. Bu anlamda gelir dağılımı eşitsizliği ya da adaletsizliği olarak

adlandırılan ekonomik durum, en fazla sosyal dışlanmayı desteklemekte, sosyal dışlanma da yoksulluk başta olmak üzere birçok sosyo-ekonomik sorunu kaynaklık etmektedir. Öyleyse, sosyal dışlanmayı ortadan kaldırmanın ya da azaltmanın birincil yolu, gelir dağılımı adaletini tesis etmektir. Sivrisinek bataklık örneği içinde, sosyal dışlanma ve onun kaynaklık ettiği sorunların çözümü, gelir dağılımı eşitsizliğinin ortadan kaldırılması ya da azaltılması olduğu söylenebilir. Bir başka ifadeyle, gelişmiş ve gelişmekte olan ülkeler için sosyal politika kapsamında öncelikle çözülmesi gereken sorunların başında sosyal dışlanma gelmektedir.

Türkiye, sosyal dışlanma olgusunun yaşandığı ülkelerden biridir. Türkiye'de sosyal dışlanma; Avrupa Birliği (AB) ve diğer gelişmiş ülkeler ile kıyaslandığında görece daha olumsuz noktadadır.

1.GELİR DAĞILIMI VE GELİR DAĞILIMI EŞİTSİZLİĞİ SORUNU

Gelir dağılımı eşitsizliği, tarih boyunca çözüm aranan sorunların başında gelmektedir. Bunun sebebi, gelir dağılımında eşitliğin, adaletin ve bölüşümün doğru yapılmasının zor olması ve belli sürece bağlı olmasıdır. Gelir dağılımında eşitliğin, adaletin ve bölüşümün doğru yapılmasının zorluğunun nedeni, taraflarının çok olması ve ekonomik olarak uygulamanın güçlüğüdür. Toplumsal refah ve sosyal barışın temeli, gelir dağılımı eşitsizliğinin giderilmesine bağlıdır. Bu eşitsizliğin büyük olması, toplumsal barışın yaşanmasının önünde en büyük engeldir.

Gelir dağılımı, ülkelerdeki milli gelirin farklı gelir grupları arasında dağılma durumudur. Bir başka ifade ile gelir dağılımı, bir ülkede belirlenen dönemler içerisinde elde edilen milli gelirin o ülkede yaşayan kişiler arasında bölünmesidir.

Bir ekonomide, gelir yapısı, kendi başına bir değişkendir ve diğer değişkenleri etkileyebildiği gibi başka değişkenler tarafından da etkilenebilmektedir. Sonuç olarak, delir dağılımı, ekonomik yapıyı büyük ölçüde etkileyen bir unsurdur.

Bir ekonomide ve toplumsal yapıda, gelir dağılımını etkileyen hususlar ve toplumsal yöntemler:

i)Yasal düzenlemeler ile vergi ve parasal işlemlerle sağlanan gelir aktarımları,
ii)Daha fazla refah seviyesinin artmasına sebep olacak yöntemler,
iii) Toplumsal hizmetler, olarak üç grup altında tasnif edilebilir (Koray ve Topçuoğlu, 1987: 133).

1.1.Gelir Dağılımı Türleri

Gelir dağılımı uygulandığı kişi, faktör ya da gruplara göre değişik olarak adlandırılmaktadır. Gelirin çeşitli birimler içerisinde bölünmesi (fert, aile, vb.) kişisel gelir dağılımı olarak adlandırılırken, üretim faktörleri arasındaki dağılımı da fonksiyonel gelir dağılımı adını almaktadır (Yumuşak ve Bilen, 2000: 77-96). Bunun yanında gelir dağılımı; sektör bazında ele alındığında sektörel gelir dağılımı olarak değerlendirilirken bölgesel olarak ele alındığında da bölgesele gelir dağılımı olarak ifade edilmektedir.

Fonksiyonel, sektörel ve bölgesel gelir dağılımları makroekonomik sebeplere dayanırken bireysel gelir dağılımı hem makro ekonomik hem de sosyal sebep ve sonuçlara dayanmasıyla toplumu ilgilendiren sorunlardır.

1.1.1. Bireysel Gelir Dağılımı

Bireysel gelir dağımı, ülkelerde belirli bir dönemde oluşan toplam milli gelirin, toplumu oluşturan fert ve hanehalkı arasında bölünmesidir. Bireysel gelir dağılımda asıl önemli olan, gelirin ne kadar olduğu değil, gelir dağılımının fertler ve hanehalkı arasındaki miktarıdır.

Çelik (2004: 59), bireysel gelir dağılımının hesaplanmasında, eşitsizliklerin göz önüne alındığını, bu sebeple genellikle gelir eşitsizliği kelimesi kullanıldığını ve burada ki amacın gelir dağılımındaki eşitsizlik olduğunu ifade etmektedir.

1.1.2. Fonksiyonel Gelir Dağılımı

Fonksiyonel gelir dağılımı, bir diğer ifade ile işlevsel gelir dağılımı, bir ülkede belirli dönemde, milli gelirin oluşmasında ve artmasında üretim faktörlerinin milli gelirden aldıkları payı ve aynı zamanda üretim faktörleri sahipleri arasındaki gelir dağılımını göstermektedir (Yumuşak ve Bilen, 2000: 77-96). Bu gelir dağılımı, genellikle ülkedeki üretim bölgelerinin farklı sosyal sınıflar arasında gelirin nasıl dağıldığını ortaya koymak, gelişmiş ve azgelişmiş bölgeler arasındaki dağılım farkını vurgulamak için kullanılmaktadır.

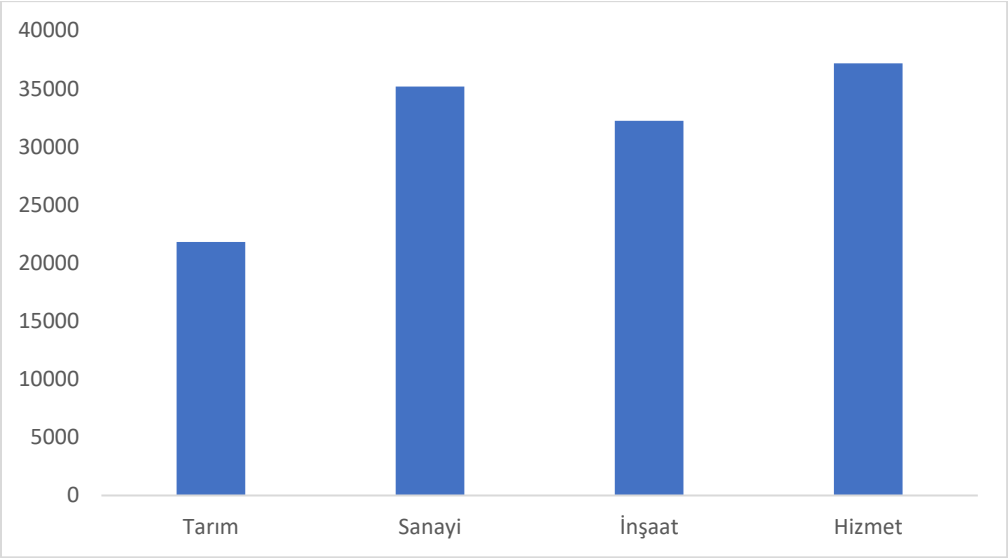
Fonksiyonel gelir dağılımı ile bireylerin milli gelirden aldıkları pay değil, üretim faktörlerinin (girişimci, toprak, sermaye ve emek) aldığı pay esastır. Bu şekilde, fonksiyonel gelir dağılımı, üretim sonucunda elde edilen hasılatın ne kadarının ücrete, ne kadarının maaşa ve ne kadarının faize dağılmasıyla ilgilidir.

Gelirin fonksiyonel dağılımı o ülkenin gelişmişlik seviyesi ile ilgili bilgi vermektedir. Örnek verecek olursak iktisat tarihi incelendiğinde gelişmiş ülkelerde ülkenin kalkınmasını sağlayan sektör tarım sektörüdür. Ülkede tarımla ilgilenen kesim milli gelirden en yüksek payı almaktadır (Yumuşak ve Bilen, 2000: 77-96).

1.1.3. Sektörel Gelir Dağılımı

Sektörel gelir dağılımı, bir ekonomide gelir dağılımın, o ekonomide faaliyet gösteren sektörlerin milli gelirden aldıkları payı ifade etmektedir. Sektörel gelir dağılımı,ekonomide faaliyet gösteren sektörlerin uzun dönemde milli gelir dağılımındaki seyrini göstermektedir. Genellikle sektörlerin gelir dağılımı farklı olmaktadır. Sözgelimi, Türkiye'de, Doğu- Anadolu bölgesinde, tarım sektörünün milli gelirden aldığı pay, diğer sektörlerin milli gelirden aldığı paydan daha fazladır.

Sektörel gelir dağılımı ile ülkedeki sektörlerin çeşitli bölgelerde yoğunlaşması sebebi ile milli gelirden elde edilen gelir bölgelere ve sektörlere göre farklılık göstermesindendir.



Grafik 1.Yıllık Ortalama Esas İş Gelirleri (TL), 2019

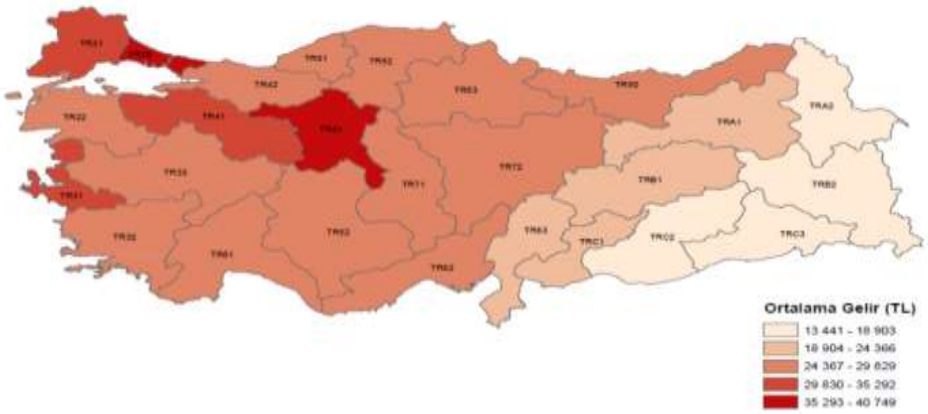
Kaynak: Gelir ve Yaşam Koşulları Araştırması, 2019.

Grafik1.'de Türkiye'de 2019 yılına ait sektörlere göre yıllık ortalama esas iş gelirleri (TL) gösterilmektedir. En fazla iş gelirini hizmet sektörü sağlarken, en az iş geliri tarım sektöründe gerçekleşmektedir.

1.1.4. Bölgesel Gelir Dağılımı

Bölgesel gelir dağılımı, toplam milli gelirin bölgeler arasında dağılmasıdır. Ülkenin farklı bölgelerde ikamet eden bireylerin, ikamet ettikleri bölge bazında, milli gelirden ne kadar pay aldıklarını göstermektedir. Bölgesel gelir dağılımı ülkenin az gelişmiş ve gelişmiş bölgeleri arasındaki farklılıkları göstermektedir. Ülkenin bazı bölgeleri gelişmişlik düzeyi, siyasi nedenleri sebebi ile daha fazla pay alabilmektedir (Türk, 1983: 278**).**

Harita 1.Yıllık Ortalama Eşdeğer Hanehalkı Kullanılabilir Fert Geliri (TL), İBBS 2. Düzey, 2019



Kaynak: Gelir ve Yaşam Koşulları Araştırması Bölgesel Sonuçları, 2019.

Harita 1.'de yıllık ortalama eşdeğer hanehalkı kullanılabilir fert geliri (TL), **İBBS 2. Düzey** gösterilmektedir. Haritaya baktığımızda doğudan batıya gidildikçe ortalama gelirin arttığı görülmektedir. İstanbul ve Ankara en fazla ortalama gelire sahip iller olmaktadır. Bunun sebebi İstanbul'un coğrafi konumu, iş olanağının daha çok olmasından kaynaklanırken, Ankara'nın Türkiye'nin başkenti olarak siyasi konumu nedeni ile ortalama gelir diğer illere göre daha fazla olmaktadır.

Bölgeler arasındaki gelir dağılımı farklarının fazla olması; kalkınma çabalarının yetersiz olduğuna işaret etmektedir. Bölgesel gelir dağılımı farklılıkları, aynı zamanda bölgelerin kaynaklarının seviye ve düzeyini (kıt mı bol mu olup olmadığını) göstermektedir (Uysal, 1999: 9).

Tablo 1.Yıllık Ortalama Eşdeğer Hanehalkı Kullanılabilir Fert Geliri (TL), İBBS 1. Düzey, 2010-2019

Anket yılı	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gelir referans yılı	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TR Türkiye	9 735	10 774	11 859	13 250	14 553	16 515	19 139	21 577	24 199	28 522
TR1 İstanbul	13 382	14 873	16 126	18 248	19 062	22 067	26 041	30 895	34 912	40 749
TR2 Batı Marmara	9 777	10 723	12 050	13 400	15 130	16 245	20 102	22 872	25 786	29 505
TR3 Ege	11 085	12 924	13 947	15 243	15 582	17 532	20 246	22 421	25 229	30 337
TR4 Doğu Marmara	10 147	10 772	12 758	14 098	15 723	18 243	20 268	23 662	25 541	29 249
TR5 Batı Anadolu	11 116	12 455	14 160	16 294	18 460	20 510	23 786	24 159	27 313	32 384
TR6 Akdeniz	9 546	10 276	10 798	11 849	12 933	14 871	17 193	19 390	22 056	24 969
TR7 Orta Anadolu	8 338	9 406	10 786	11 174	13 169	14 398	16 234	17 957	20 008	25 159
TR8 Batı Karadeniz	8 231	9 264	10 511	11 515	12 771	14 464	16 760	19 422	21 277	25 295
TR9 Doğu Karadeniz	8 403	9 374	10 407	12 366	13 974	15 172	17 814	18 760	20 900	26 851
TRA Kuzeydoğu Anadolu	6 429	7 109	7 338	8 521	9 964	11 602	13 604	14 840	16 306	19 055
TRB Ortadoğu Anadolu	6 174	6 492	6 999	7 740	9 086	10 412	12 614	13 314	14 322	17 420
TRC Güneydoğu Anadolu	5 144	5 418	5 870	6 920	8 087	9 089	9 833	11 231	12 921	15 706

Kaynak: Gelir ve Yaşam Koşulları Araştırması Bölgesel Sonuçları, 2019.

Tablo 1.'de, Türkiye'nin 2010'dan 2019 yılına kadar yıllık ortalama eşdeğer hanehalkı kullanılabilir fert geliri yer almaktadır. İl olarak sadece İstanbul'un yıllık ortalama eşdeğer hanehalkı kullanabilir fert gelirinin tüm bölgelere göre daha fazla olduğu görülmektedir. Yıllar içinde Güney Doğu Anadolu bölgesinin yıllık ortalama eşdeğer hanehalkı kullanılabilir fert geliri diğer bölgelere göre en az olmaktadır. Türkiye'de Doğu bölgesinin daha az yıllık ortalama eşdeğer hanehalkı kullanabilir fert gelirine sahip olması o bölgede ikamet eden insanların sektörel olarak daha çok tarımla ilgilenmesinden kaynaklanmaktadır.

1.2. Gelir Dağılımı Hesaplama Yöntemleri

Bir ülkedeki gelir dağılımının eşitsizliğinin derece ve seviyesini ölçmek için kullanılan yöntemleri; Lorenz Eğrisi, Gini Katsayısı, Yüzde Paylar Analizi, Pareto Optimumu ve Ters U Hipotezi olarak ifade etmek mümkündür. Bu yöntemlerin temel amacı, o ülkedeki gelir dağılımının eşitsiz olup olmadığının tespitidir.

1.2.1. Lorenz Eğrisi

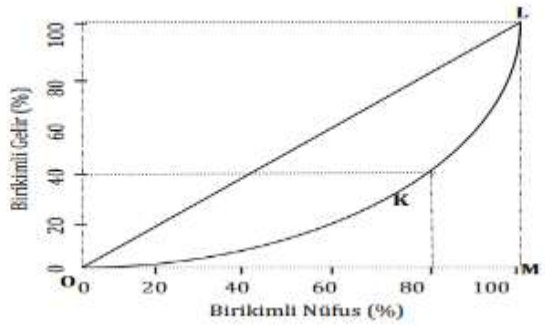
Lorenz Eğrisi,Yoğunlaşma Eğrisi olarak da ifade edilmektedir. Lorenz Eğrisi, 1905 yılında Max Lorenz tarafından ortaya konmuş olan ve gelir dağılımın adaletli olup olmadığına ilişkin sonuçları gösteren bir grafiktir. Dünya üzerinde birçok farklı gelir dağılımı eşitsizlikleri için Lorenz Eğrisi'ne ait grafik kullanılmaktadır.

Temel yaklaşım olarak, bir ekonomide elde edilen gelirin, farklı gelir sınıfları arasındaki dağılımı gelir dağılımının niceliğini ve niteliğini, eşitsiz ya da eşit olup olmadığını, adil olup olmadığını göstermektedir. Genel yaklaşım olarak, ekonomide elde edilen gelirin büyük bir kısmı, nüfusun büyük bir kısmı ile paylaşılıyorsa, o ekonomide gelirin eşit ve adil olduğu düşünülmektedir. Bunu basit bir örnekle şu şekilde ifade etmek mümkündür: 20 kişilik bir ekonomide meydana gelen 200 birimlik bir gelir olsun. Bu gelirin 170 birimlik kısmı 18 kişi tarafından paylaşılıyorsa ve geri kalan 30 birimlik kısım 19. ve 20. kişi tarafından paylaşılıyorsa bu ekonomideki gelir dağılımının eşit ve adaletli olduğu söylenebilir. Tam tersi,bu gelirin 170 birimlik kısmı 6 kişi arasında paylaşılıyor ve geri kalan 30 birimlik kısmı 14 kişi tarafından paylaşılıyorsa, o ekonomide, gelir dağılımı eşitsizliği ve adaletsizliği olduğu ifade edilebilir.

Lorenz Eğrisini, nüfus ve gelir oluşturmaktadır. Kişiler ve aileler gelirin büyüklüğüne göre, en küçük gelirden en büyük gelire doğru sıralanmaktadır. Bu durum aşağıda yer alan Grafik 2.'de görülmektedir.

Lorenz Eğrisinin yatay ekseni kişi ve ya ailelerin nüfusunun birikimli yüzde paylarını ifade etmektedir. Lorenz Eğrisi, nüfusun yüzde kaçının elde edilen gelirin yüzde kaçını aldığını gösteren noktaların birleştirilmesiyle elde edilen eğridir. Eğer Lorenz Eğrisinde 45 derecelik açı oluşursa, gelirin dağılımında eşitlik olduğu ifade edilmektedir. Bu durum, gelirden herkesin eşit pay aldığını göstermektedir.

Lorenz Eğrisi, mutlak eşitlik doğrusuna yaklaştıkça gelir dağılımı eşitsizliğinin az olduğu, mutlak eşitlik doğrusunda uzaklaştıkça gelirin dağılımın fazla olduğunu göstermektedir.



Grafik 2. Lorenz Eğrisi
Kaynak: Deveci ve Değirmen, 2008.

1.2.2. Gini Katsayısı

Gelir dağılımındaki eşitsizliği hesaplamada en çok tercih edilen bir diğer yöntem ise Gini Katsayısıdır. Gini Katsayısı, Lorenz Eğrisinden elde edilmektedir. Gini Katsayısı, Corrado Gini tarafından geliştirilen ve gelir dağılımındaki eşitsizliği ölçmeye yarayan katsayıdır (Türk, 1989: 285).

Gini Katsayısı, Lorenz Eğrisi grafiğinde, Lorenz Eğrisi ile mutlak eşitlik doğrusu alanı ile mutlak eşitlik doğrusunun altında kalan tüm alanın birbirine oranlanmasıyla bulunmaktadır. Gini katsayısı ölçütü 0 ile 1 arasında bir değer almaktadır.

Lorenz Eğrisi grafiğinde, eğrinin mutlak eşitlik doğrusundan uzaklaşması, gelir dağılımı eşitsizliğini artıracağından ve Lorenz Eğrisi ile mutlak eşitlik doğrusu arasındaki alan büyümesinden dolayı Gini Katsayısı da artarak eşitsizliğin fazla olduğunu gösterecektir. Gini Katsayısı, 1'e yakın değer alarak gelir dağılımı eşitsizliğinin arttığını, 0'a yakın değer alarak gelir dağılımı eşitsizliğin azaldığını göstermektedir. Yani 0 ile 1 arasında bir değer alan Gini Katsayısı'nın 0'a yakın olması gelir dağılımı eşitsizliğinin azaldığının işareti olarak kabul edilebilir.

Tablo 2. Eşdeğer Hanehalkı Kullanılabilir Fert Gelirine Göre Gelir Dağılımı Göstergeleri, 2010-2019

Anket yılı	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gelir referans yılı	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
P80/P20 oranı	8,0	8,0	8,0	7,7	7,4	7,6	7,7	7,5	7,8	7,4
P90/P10 oranı	13,9	14,4	14,2	13,6	12,6	13,3	13,6	13,4	13,7	13,0
Gini katsayısı	0,402	0,404	0,402	0,400	0,391	0,397	0,404	0,405	0,408	0,395

Kaynak: Gelir ve Yaşam Koşulları Araştırması, 2019.

Tablo 2'de Eşdeğer hanehalkı kullanılabilir fert gelirine göre gelir dağılımı yer almaktadır. TUİK verilerine göre, Türkiye'de gelir dağılımı eşitsizliği 2010 ve 2019 yılları arasında iyileşme yaşamamaktadır. 2014 yılından 2018 yılına kadar artmakta olan gelir dağılımı eşitsizliği 2019 yılında 0,395 Gini Katsayısı olarak hesaplanmaktadır.

1.2.3. Yüzde Payları Analizi

Yüzde Payları Analizi, bireysel gelir dağılımını ölçmek için kullanılmaktadır. Gelir dağılımı eşitsizlikleri için kullanılmakta olan Yüzde Payları Analizi, Lorenz Eğrisi ve Gini Katsayısına göre en açık analiz biçimidir. Bu analiz yöntemi ile kişisel gelir dağılımını ölçmek için haneler beş gruba ayrılmaktadır. Her grubun milli gelirden ne ölçüde aldığını bulmak için milli gelirden aldıkları paylar karşılaştırılmaktadır.

Hane gelirlerine dair yüzde payların hesaplanabilmesine hanelerin gelirlerine göre en düşükten en yükseğe göre toplam kullanılabilir gelirine göre sıralanmaktadır. Kullanılacak olan Yüzde Payları Analizine göre haneler o kadar sayıdaki gruba ayrılmaktadır. Yüzde

Paylar Analizi, her gruba tekâmül eden kullanılabilir gelir ile toplam kullanılabilir gelire oranlanarak hanelere dair yüzde paylar hesaplanmaktadır (Kubar, 2008).

Bu yöntemdeuluslar arası karşılaştırmalar için gelir ve nüfus beş tane % 20'lik paya ayrılarak en azdan en çoğa doğru olarak sıralanmaktadır. Böylece nüfusun her bir % 20'lik payının gelirin ne kadarını elde ettiği ölçmektedir (Altınışık ve Peker, 2008:101-118).

Tablo 3. Eşdeğer Hanehalkı Kullanılabilir Fert Gelirine Göre P80/P20 Oranı, İBBS 1. Düzey, 2010-2019

Anket yılı	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gelir referans yılı	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
TR Türkiye	7,9	8,0	8,0	7,7	7,4	7,6	7,7	7,5	7,8	7,4
TR1 İstanbul	6,4	6,2	6,4	6,6	6,1	7,1	7,4	8,2	8,6	7,8
TR2 Batı Marmara	6,5	6,3	6,2	5,4	5,4	6,1	6,3	6,5	7,2	6,6
TR3 Ege	6,9	7,1	6,7	6,3	5,9	6,1	6,0	5,8	5,7	5,7
TR4 Doğu Marmara	5,5	5,0	5,6	5,0	5,2	5,4	5,1	5,3	5,2	4,6
TR5 Batı Anadolu	6,6	6,7	6,5	7,1	7,2	6,7	7,0	6,3	6,7	6,0
TR6 Akdeniz	7,1	7,2	7,5	7,1	7,4	7,2	7,5	6,9	6,9	6,7
TR7 Orta Anadolu	6,2	6,3	6,2	5,6	5,9	5,5	6,0	5,1	5,5	5,6
TR8 Batı Karadeniz	6,1	5,7	5,7	5,4	5,5	5,8	5,5	5,4	5,6	5,5
TR9 Doğu Karadeniz	5,3	5,1	4,8	4,7	4,9	5,3	5,5	4,7	5,2	5,9
TRA Kuzeydoğu Anadolu	7,6	7,0	7,2	7,3	7,3	6,7	6,0	5,2	5,7	5,8
TRB Ortadoğu Anadolu	7,6	8,3	7,0	6,4	6,8	6,5	6,9	6,2	6,1	5,6
TRC Güneydoğu Anadolu	7,3	7,5	6,7	6,7	6,4	6,9	6,3	5,9	6,4	6,5

Kaynak: Gelir ve Yaşam Koşulları Araştırması Bölgesel Sonuçları, 2019.

Tablo 3.'de, 2019 yılına ait Eşdeğer hanehalkı kullanılabilir fert gelirine göre P80/P20 oranı yer almaktadır. Tablo'da İBBS 1. Düzey bölgesi 7,8 ile TR1 (İstanbul) bölgesi en fazla gelir eşitsizliği yaşarken, en az gelir adaletsizliği 4,6 ile İBBS 1. Düzey bölgesi TR4 (Doğu Marmara) bölgesi yaşamaktadır.

1.2.4. Pareto Optimumu

İtalyan iktisatçı Vilfredo Pareto tarafından geliştirilen bu yöntem, belirli bir seviyede gelir düzeyine sahip olanlar arasında bir ilişki olduğu savına dayanmaktadır. Pareto Optimumu, kişilerin refah seviyeleri arttıkça bir üst gruba yükselme olasılıklarının da arttığını gösteren katsayı değeridir.

Pareto'ya göre, ulusal gelirin hane halkları arasında ayrılması, hemen her toplumda piramit benzeri bir dağılım gösterdiğini söylemektedir. Piramidin en üst grubunda yani en sivri noktasında, o toplumun en yüksek gelir seviyesine ulaşmış birkaç hane halkı; piramidin aşağıdaki gruplarına doğru inildikçe, yani daha düşük gelir seviyelerine geldikçe genişleyen gruplar ve nihayet en düşük gelir grubunda, yani piramidin tabanında, en yüksek sayıda hane halkı bulunmaktadır (Karakayalı, 2002: 71).

1.2.5. Ters U Hipotezi

Ters U Hipotezi, 1955 yılında, Kuznets tarafından geliştirilen bir gelir dağılımı eşitsizliği ölçme yöntemidir. Yöntem; gelir düzeyinin artmasıyla eşitsizliğin artacağını fakat daha sonra eşitsizliğin azalarak gelir dağılımı dengesizliğinin azalacağını savunan bir hipoteze dayanmaktadır.

Kutnets, tarım dışı gelirin tarımdaki gelire göre daha fazla olduğunu savunmaktadır. Böylelikle tarım dışı istihdam artarak, gelirinde artmasına sebep olmaktadır. Bu istihdam

artışı gelirdeki artışı etkilemesiyle gelir dağılımı dengesizliğini arttırmaktadır. Bu dengesizlik bir süre böyle artmaya devam ederken belli bir düzeye geldikten sonra dengesizlik azalmaya başlayacaktır (Kuznets, 1955: 15-16).

1.2.Gelir Dağılımına Etki Eden Faktörler

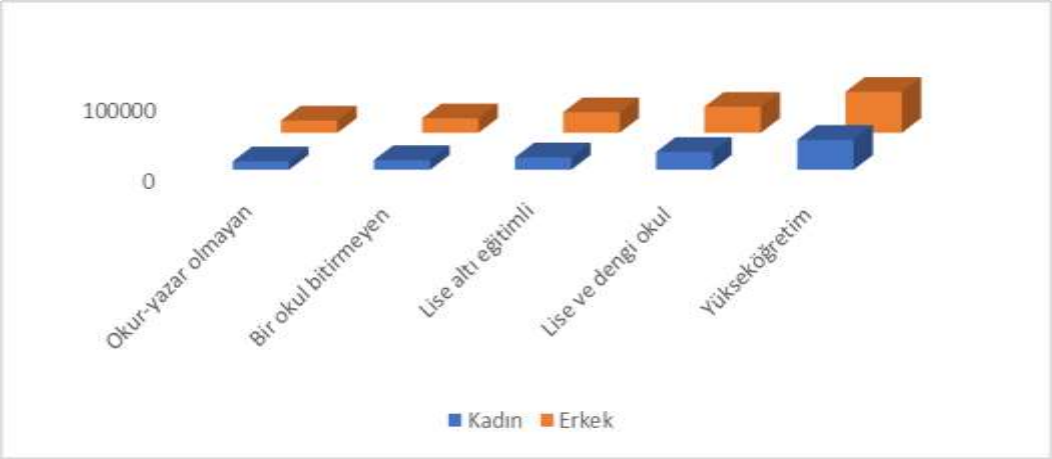
Gelir dağılımını etkileyen birçok farklı değişken bulunmaktadır. Bu değişkenlerin artış ve azalışlarıyla ilişkili olarak gelir dağılımı dengesizliği etkilenmektedir. Genel olarak gelir dağılımına etki eden faktörler; emeğin dağılımı, yaş yapısı, cinsiyet yapısı, demografik faktörler, işgücü yapısı, kayıtdışı ekonomi, enflasyon, servet dağılımı ve eğitim durumu başlıkları altında tasnif edilebilir.

1.2.1. Emeğin Dağılımı

Bireyler arasında emeğin eşit paylaşıldığı zannedilmektedir. Toplumda yaşayan bireylerin sahip olduğu işgücü nitelik bakımından farklılıklar göstermektedir (Türk, 1975: 285). Piyasaya bakıldığında farklı işgüçlerine farklı seviyelerde talepler olduğu görülmektedir. Emek arzını tek etkileyen unsur ücret değildir. İş için sahip olunması gereken bilgi, yeteneklerde büyük ölçüde etkendir (Türk, 2007: 321).

1.2.2. Cinsiyet Yapısı

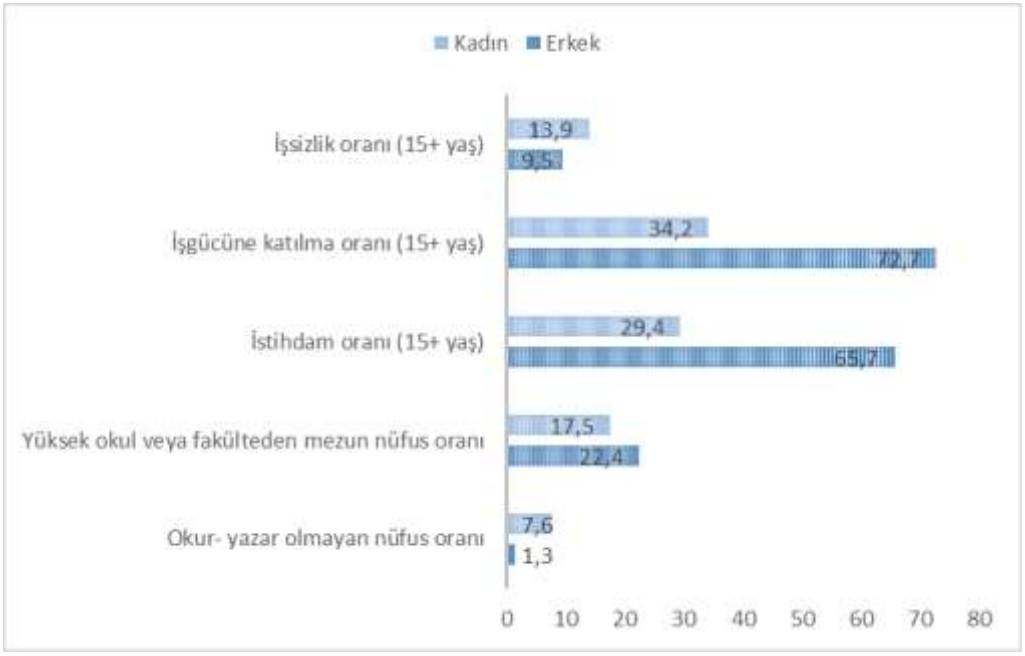
Toplumdaki cinsiyet ayrımı, nüfusun sosyal yapısı ile ilgili olmaktadır. Türkiye gelişmekte olan bir ülke olarak, her ne kadar kadın erkek cinsiyetlerinin eşit olduğunu savunsa da toplumumuzda erkeklerin zorunlu askerlik görevlerinin olması ve kadınların daha çok ev işleri ile ilgilendiği bilinen bir gerçektir.



Grafik 3. Kadın- Erkek Eğitim Durumuna Göre Yıllık Ortalama Esas İş Gelirleri (TL), 2019

Kaynak: Gelir ve Yaşam Koşulları Araştırması, 2019.

Grafik 3.'de, Türkiye'de, kadın ve erkek bireylerin **eğitim durumuna göre yıllık ortalama esas iş gelirleri.** Bu duruma göre ülkemizin henüz gelişmiş bir ülke olmadığı ve her eğitim durumuna göre maalesef cinsiyet ayrımcılığı yapılarak kadınların erkeklerden daha az yıllık ortalama gelire sahip oldukları görülmektedir.



Grafik 4. Kadın- Erkek İşgücü İstatistikleri, 2018

Kaynak: İşgücü İstatistikleri, 2020/9.

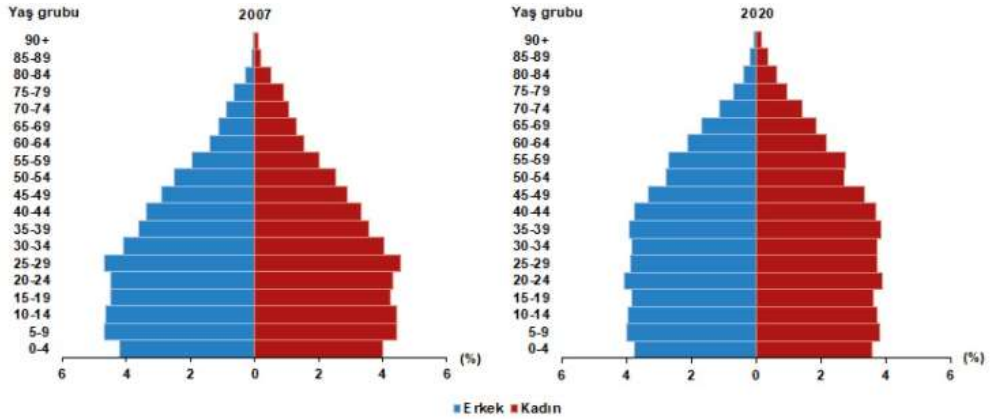
Grafik 4.'de kadın-erkek işgücü istatistikleri gösterilmektedir. İşsizlik oranı ve okur-yazar olmayan nüfus oranı kadınlarda daha fazla olmak ile beraber, işgücüne katılma oranı, istihdam oranı, yüksek okul veya fakülteden mezun oranı kadınlarda erkeklere oranla daha az olduğu görülmektedir.

Ülkemize ait bu verilerin ışığında hala cinsiyet ayrımcılığının önüne geçilemediği, erkeklerin daha fazla işgücüne dahil olduğu, eğitim durumu aynı olsa ve aynı işi yapsalar dahi erkeklerin evi geçindirdiği düşünülerek kadınlardan daha fazla gelire sahip olması ülkenin sosyal yapısı ile alakalı olmaktadır.

1.2.3. Yaş Yapısı

Gelir dağılımı eşitsizliğinde, nüfus içinde yaş dağılımı önem arz etmektedir. Yaş dağılımı, istihdam sağlayacak nüfus miktarını göstermektedir. Açıklanmış olan uluslararası verilere göre, 15 – 65 yaş arasındaki bireyler işgücünü temsil etmektedir. Nüfusun yaş grupları piramit şekliyle gösterilmektedir.

Türkiye'ye ait nüfus piramitleri Grafik 5.'de gösterilmektedir. Piramidin en alt kısmı bebek-çocuk nüfusu oluştururken piramitte en sivri noktaya çıkıldıkça yaş seviyesi yükselmektedir.



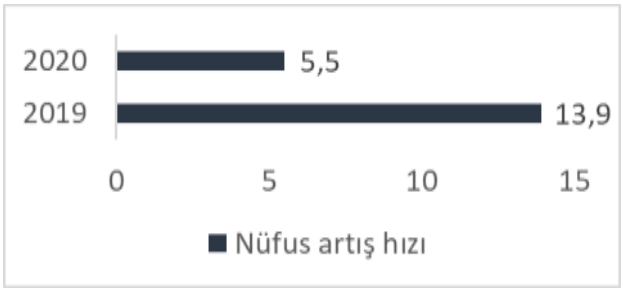
Grafik 5.Türkiye'nin Nüfus Piramidi (2007-2020 Değişim Grafiği)
Kaynak: Adrese Dayalı Nüfus Kayıt Sistemi Sonuçları, 2020.

Grafik 5.'de gösterilen nüfus 2007 ile 2020 yıllarına ait nüfus piramitleri karşılaştırıldığında 2020 yılına ait nüfus piramidi için 2007 yılına göre yaşlı nüfusun arttığı, yeni-doğan ve genç nüfusun azaldığı bu sebeple ortanca yaşın yükseldiği görülmektedir.

1.2.4. Demografik Faktörler

Gelir dağılımına etki eden bir başka faktör, nüfus yapısıdır. Nüfus yapısı, gelir dağılımı üzerinde etkilidir.

Sürekli göç sebebi ile insanların kırsal bölgelerden iş imkânın daha çok olduğu gelişmekte olan şehirlere göç etmesi toplam nüfus içindeki paylarının artmasını sağlamaktadır. Gelir arttığı halde düşük gelire sahip bireylerin fazla pay alamaması nüfus artış hızının fazla olmasından kaynaklanmaktadır (Altınışık ve Peker, 2008: 105). Nüfus artış hızının artmasıyla istihdam azalması gerçekleşerek toplumda çalışmayan nüfusun için eğitim ve sağlık sektörlerinden yararlanmaları zorlaşmaktadır.

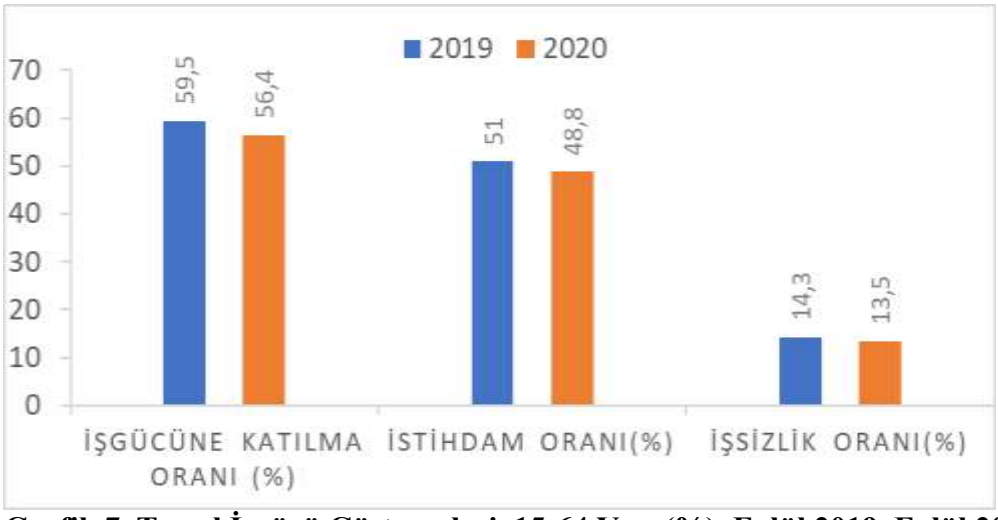


Grafik 6. Nüfus Artış Hızı, 2019-2020
Kaynak: Adrese Dayalı Nüfus Kayıt Sistemi Sonuçları, 2020.

Grafik 6.'de gösterilen nüfus artış hızı, 2019 yılında 13,9 iken 2020 yılına azalarak 5,5 olarak gerçekleşmektedir.

1.2.5. İşgücü Yapısı

Nüfusu oluşturan bireylerin gelirden pay alabilmeleri için her şeyden önce istihdam sağlıyor olması gerekmektedir. İstihdamı sağlamak içinde devletin istihdam arttırıcı ve işsizliği azami noktaya çekecek politikalar oluşturması gerekmektedir.



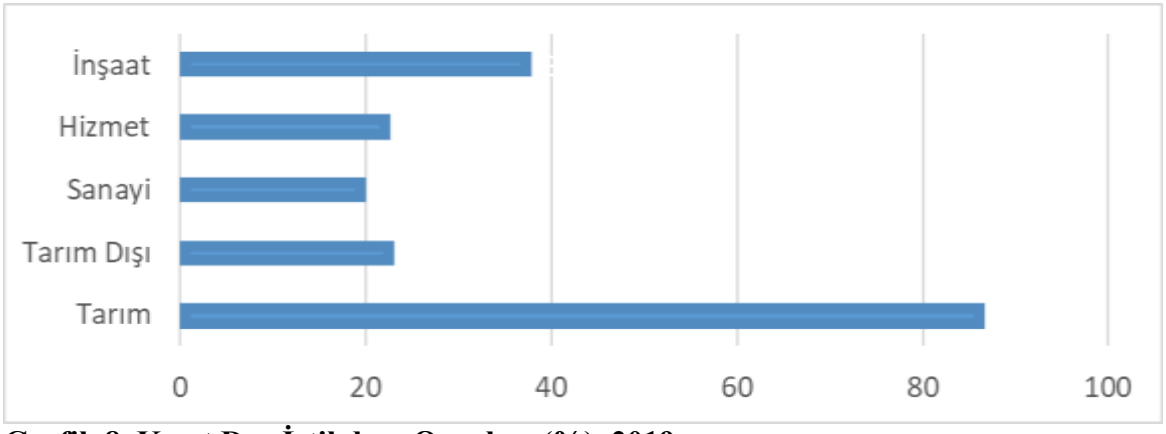
Grafik 7. Temel İşgücü Göstergeleri, 15-64 Yaş, (%), Eylül 2019, Eylül 2020
Kaynak: İşgücü İstatistikleri, 2020/8.

2019 ve 2020 yıllarına ait temel işgücü göstergeleri Grafik 7.'de yer almaktadır. 2019 yılına göre 2020 yılında işsizlik oranı olumlu yönde azalsa dahi işgücüne katılma oranı ile istihdam oranında 2019 yılına göre 2020 yılında olumsuz yönde azalış sergilemektedir.

1.2.6. Kayıt Dışı Ekonomi

Kayıt dışı ekonomi, üretim ve hizmet olduğu halde devletten tamamen veya kısmen gizlenen, kayda geçirilmeyen, gayri resmi ekonomidir (Altuğ, 1999: 257). Bu durum ekonomik verimliliği negatif etkileyerek hem toplumsal sorunları hem de vergilendirilememesinden dolayı devlet gelirlerine katkı sağlayamamaktadır.

Türkiye'nin 2019 yılına ait kayıt dışı istihdam oranları Grafik 8.'de yer almaktadır.



Grafik 8. Kayıt Dışı İstihdam Oranları (%), 2019
Kaynak: Kayıt Dışı İstihdam Oranı, 2019.

Kayıt dışı istihdam oranın en fazla gerçekleştiği sektör tarım sektörü olurken en az kayıt dışı istihdamın yaşandığı sektör sanayi sektörüdür.

Kayıt dışı ekonominin bir diğer negatif etkisi ise mal ve hizmet üretilirken kayıt dışı ve kayıt içi olarak pazarda etkin bir rekabet ortamı oluşmayarak piyasa yapısını olumsuz etkilemektedir. Bu durum gelir dağılımını olumsuz etkileyerek, gelir dağılımının artmasına sebep olmaktadır(Altınışık ve Peker, 2008:105-106).

1.2.7. Enflasyon

Enflasyon, ekonomi yapısını en çok etkileyen değişkenlerden bir tanesi olmaktadır. Enflasyon artması ile ekonomide fiyatlar sürekli artış göstermektedir. Toplumdaki yoksul kesim daha da yoksullaşırken, geliri yükse olan bireyler için çok etki etmemektedir.

Enflasyonun artmasıyla gelir dağılımındaki eşitsizlikte artmaktadır. Enflasyonun azalması ile gelir dağılımı eşitsizliği hemen düzelememekle birlikte gelir dağılımı adaletsizliğini etkileyen diğer faktörlerde de iyileşme olması gerekmektedir.

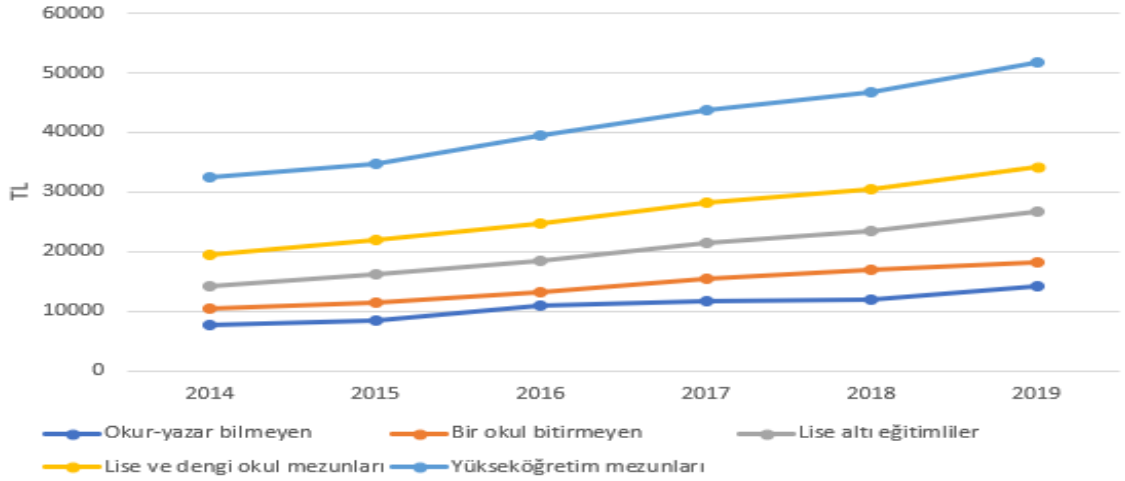
1.2.8. Servet Dağılımı

Sahip olunan servet, gelir dağılımını önemli ölçüde etkilemektedir. Gelir dağılımı eşitsizliğini etkileyen önemli sebeplerinden biri servet dağılımında ki eşitsizliktir. Servet sahibine gelir kaynağı oluştururken, bu kaynak aynı zamanda tekrardan servet oluşumu sağlamaktadır.

Servete bağlı olarak gelir dağılımı adaletsizliğinin önüne geçmek için bina, arazi, servetler üzerinden dolaysız vergiler alınmaktadır (DPT, 2001: 63).

1.2.9. Eğitim Durumu

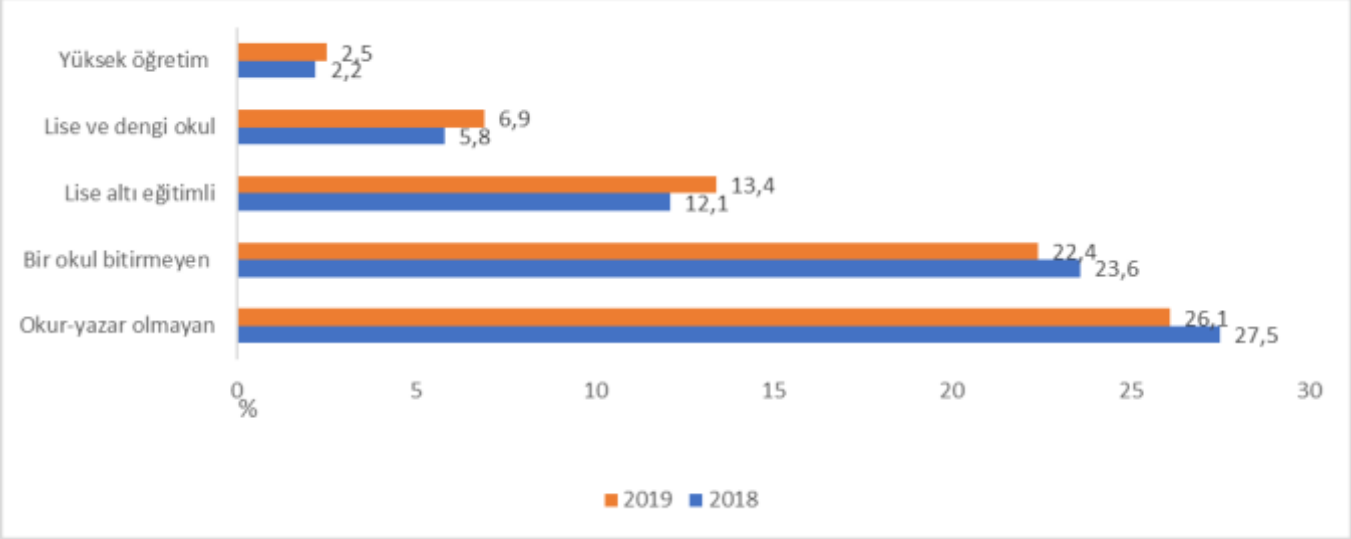
Gelir dağılımının etkilendiği bir diğer faktör kişilerin sahip olduğu eğitim durumudur. İstihdam eden insanların mesleki deneyimi edinmeden önce bilgi ve beceri ile donatılmaları gelirleri etkilemektedir.



Grafik 9. Hanehalkı Fertlerinin Eğitim Durumlarını Göre Yıllık Ortalama Gelirleri (TL), 2018-2019

Kaynak: Gelir ve Yaşam Koşulları Araştırması, 2015; Gelir ve Yaşam Koşulları Araştırması, 2016; Gelir ve Yaşam Koşulları Araştırması, 2017; Gelir ve Yaşam Koşulları Araştırması, 2018; Gelir ve Yaşam Koşulları Araştırması, 2019.

2015 ve 2019 yıllarına ait hanehalkı fertlerinin eğitim durumuna göre yıllık ortalama gelirleri Grafik 9.'da yer almaktadır. Görüldüğü gibi en az geliri okur- yazar bilmeyen ve bir okul bitirmeyen bireyler almaktadır. Eğitim durumu arttıkça bireylerin aldığı gelirpayı da artmaktadır. Yükseköğretim mezunu bireylerin en fazla geliri aldığı ve önceki yıllar ile kıyaslandığında en fazla gelir artışının yaşandığı görülmektedir.



Grafik 10. Eğitim Durumuna Göre Yoksulluk Oranı (%), 2018- 2019

Kaynak: Gelir ve Yaşam Koşulları Araştırması, 2019.

Türkiye'ye ait eğitim durumuna göre yoksulluk oranı Grafik 10.'da yer almaktadır. Grafiğe göre, eşdeğer hanehalkı kullanılabilir fert medyan gelirinin %50'si dikkate alınarak

hesaplanan yoksulluk oranına göre; okur-yazar olmayan fertlerin %26,1'i, bir okul bitirmeyenlerin %22,4'ü yoksul iken, bu oran lise altı eğitimlilerde %13,4, lise ve dengi okul mezunlarında ise %6,9 oldu. Yükseköğretim mezunları ise %2,5 ile en düşük yoksulluk oranının gözlendiği grup olmaktadır. Okur- yazar olmayan ve bir okul bitirmeyen gruplarda yoksullukta 2018 yılına göre azalma olurken, lise altı, lise ve dengi okul, yükseköğretim bitiren fertlerin yoksulluk oranının arttığı bu da belli bir seviyeye gelerek mezun olmuş fakat toplumda iş bulayan bireylerin arttığını göstermektedir.

2. SOSYAL DIŞLANMA

Sosyal dışlanma, bireylerin toplumla birleşmesini sağlayan ekonomik, sosyal, kültürel ve siyasi birçok sistemden tamamen veya kısmen yararlanamayarak haklardan mahrum kalma olarak ifade edilen dinamik bir süreçtir (Walker ve Walker, 1997: 8).

Sosyal dışlanma ilk olarak 1960'lı yıllarda Fransa'da dile getirilmeye başlamaktadır. 1970'li yıllarda petrol kriziile ekonomik kriz olması Avrupa'da sosyal ilişkilere ait yeniden düzenleme yapılmasına neden olmaktadır (Hekimler, 2012: 6). 1974 yılında, Fransa toplumsal işlerinden sorumlu bakanı olan Rene Lenoir, yaptığı bir konuşmada toplumun onda birinin toplumdan dışlanmış olduğunu dile getirerek bu bireylerin; bakıma muhtaç inşalar, ceza evindeki suçlular, engelliler, istismara uğramış çocuklar, intihara eğilimli bireyler, yalnız hayatlarını ikamet ettiren insan olduğunu açıklayarak bu insanları sosyal uyumsuzluk içindeki insanlar olarak atfetmiştir (Silver,1994: 532).

Sosyal dışlanmanın farklı tanımları vardır. Sosyal dışlanma, var olan kaynaklardaki erişim yetersizliği ile toplumsal kurumlarla bütünleşememe durumudur (O'Brien ve Penna 2007:85).

Sosyal dışlanma tek boyutlu bir kavram olmayıp; ekonomik, sosyal ve kamusal alanlarda birbirine bağlı olmaktadır. Dışlanma türleri karşılıklı olarak birbirinden etkilenmektedir. Ekonomik dışlanmanın sebebi sosyal dışlanmadan olabileceği gibi sosyal dışlanmanın nedeni de kamusal dışlanma olabilmektedir (Adaman ve Keyder, 2006: 15).

Tablo 4. Sosyal Dışlanmanın Boyutları

Ekonomik Boyut	Parasal yoksunluk, iktisadi olarak yaşanan dezavantaj
Sosyal Boyut	Sosyal ilişkilerde yaşanan yoksunluk
Kamusal Boyut	Siyasi katılım, vatandaşlık hakları, sivil güçlendirme

Kaynak: Pirani, Andrea ve Vermunt, 2009: 4

Ekonomik boyutta sosyal dışlanma, bireylerin çalışarak karşılığında elde ettikleri gelir ile temel ihtiyaçları karşılamaları gerekli olduğu gibi toplumda sosyal ilişkilerin sağlanması içinde gelir gerekmektedir. Bireylerin çalışarak elde ettikleri gelirden yoksun olmaları ekonomik dışlanmaya sebep olmaktadır. Kişinin işe sahip olması da ekonomik dışlanamamayı sağlamamaktadır. Hayatını geçindirmek için kötü çalışma koşullarında, düşük gelire sahip ve güvence altında olan bireyler ekonomik dışlanmaya maruz kalabilmektedir (Çakır, 2002: 86).

Sosyal boyutta sosyal dışlanma, bireylerin sağlık ve eğitim hizmetlerinden faydalanamaması, işgücü piyasasına erişememesi ve sosyal hayata dahil olamamaları sebebi ile yaşanmaktadır (Bhalla ve Lapeyre, 1997: 419).

Kamusal boyutta sosyal dışlanma, toplumsal birliğin oluşturulması için kimsesi olmayan bireylerim korunması, yoksullara ihtiyacı olan imkânların sağlanması, eğitim ve sağlık ihtiyaçlarının karşılanması, özel ve kamu hizmetlerinden yararlanmayı içermektedir (Çakır, 2002: 88).

3. GELİR DAĞILIMINDA ADALETSİZLİK ve SOSYAL DIŞLANMA

Gelir dağılımı konusu, ekonomik bir yapıdır ve eğitimden, nüfus artışına, işgücünden, cinsiyete, sosyo-kültürel yapıdan ve toplumdaki eşitlik ve adalet kavramlarına kadar birçok hususta etkilenmektedir (Çakır, 2002: 91).

Tablo 5.'de açıklanmış olan ülkelerin gelir dağılımı eşitsizliği ve yoksulluk veya sosyal dışlanma riski oranları gösterilmektedir.

Tablo 5. Seçilmiş Avrupa Ülkelerinde Gelir Dağılımı Eşitsizliği(P80/P20 Oranı) Ve Sosyal Dışlanma Veya Yoksulluk Yaşayan İnsanlar (%), 2019

Ülkeler	Gelir Dağılımı Eşitsizliği-(P80/P20 Oranı)	Ülkeler	Yoksulluk veya Sosyal Dışlanma Riski(%)
Bulgaristan	8.10	Bulgaristan	32.5
Romanya	7.08	Romanya	31.2
Letonya	6.54	Yunanistan	30.0
Litvanya	6.44	Letonya	27.3
İtalya	6.01	Litvanya	26.3
İspanya	5.94	İtalya	25.6
Lüksemburg	5.34	İspanya	25.3
Portekiz	5.16	Estonya	24.3
Yunanistan	5.11	Hırvatistan	23.3
Estonya	5.08	Kıbrıs	22.3
Almanya	4.89	Portekiz	21.6
Hırvatistan	4.76	İrlanda	20.6
Kıbrıs	4.58	Lüksemburg	20.6
Polonya	4.37	Malta	20.1
İsveç	4.33	Belçika	19.5
Fransa	4.27	Macaristan	18.9
Macaristan	4.23	İsveç	18.8
Malta	4.18	Polonya	18.2
Avusturya	4.17	Fransa	17.9
Danimarka	4.09	Almanya	17.4
İrlanda	4.03	Avusturya	16.9
Hollanda	3.94	Hollanda	16.5
Finlandiya	3.69	Slovakya	16.4
Belçika	3.61	Danimarka	16.3
Slovenya	3.39	Finlandiya	15.6
Slovakya	3.34	Slovenya	14.4
Çekya	3.34	Çekya	12.5

Kaynak: Gelir Dağılımındaki Eşitsizlik, 2019; Yoksulluk veya Sosyal Dışlanma Riski Altındaki İnsanlar, 2019.

Tablo 5.'de açıklanan veriler incelendiğinde gelir dağılımı eşitsizliği en fazla olan Avrupa ülkelerinin yoksulluk veya sosyal dışlanma risklerinin de daha fazla olduğu, en az gelir dağılımı eşitsizliği yaşayan ülkelerin en az yoksulluk veya sosyal dışlanma riski yaşadığı görülmektedir. Bulgaristan, 8.10 ile en fazla gelir dağılımı adaletsizliği yaşayan ülke olurken, 32.5 ile sosyal dışlanma veya yoksulluk riski en yüksek ülke olmaktadır. Gelir dağılımı

eşitsizliği 3.34 ile en az olan ülke Çekya ve Slovakya olmaktadır. Yoksulluk veya sosyal dışlanma riski en az ülke 12.5 Çekya olurken, Slovakya 16.4 ile 5. sırada yer almaktadır.

Birleşmiş Milletler Kalkınma Teşkilatı (UNDP), ülkelerin kalkınma düzeylerini ölçmek amacıyla 1990 yılından itibaren İnsani Gelişme Raporu (Human Deveopment Index) yayınlanmaktadır. Bu raporda İnsani Gelişme Endeksi; kabul edilebilir yaşam standardı, eğitim standardı ve sağlık yaşam süresi olmak üzere üç kriter dikkate alınmaktadır (Demir, 2006: 4-10).

2019 yılı İnsani Gelişme Raporuna göre, 2018 yılında en çok insani gelişme yaşayan ülkelerin başında 0.954 insani gelişme endeksi ile Norveç gelmektedir. İsviçre 0.946, İrlanda 0.942, Almanya 0.939, Hong Kong (Çin), 0.939 insani gelişme endeksi ile ilk beşte yer almaktadırlar (UNDP İnsani Gelişme Raporu Gösterge Tablosu, 2019).

Türkiye insani gelişim endeksi ile 2019'da yayımlanan rapora göre 0.806 ile 59. Sırada yer almaktadır. Bu rapora göre Türkiye İnsani Gelişme Endeksi ile yüksek insani gelişme ülkeleri arasında yer almaktadır (UNDP İnsani Gelişme Raporu Gösterge Tablosu, 2019).

İnsani Gelişim Raporunda, 2018 yılında en düşük insani gelişme endeks puanı olan ülke 0.377 ile Nijer yer almaktadır. Orta Afrika Cumhuriyeti 0.381, Çad 0.401, Güney Sudan 0.413, Burundi 0.423 ile raporda son beşte yer almaktadır. Bu rapora göre Çok Boyutlu Yoksulluk Endeksi'nde kişi sayısı yüzde olarak Nijer'de 90.5, Orta Afrika Cumhuriyeti'nde 79.4, Çad'da 85.7, Güney Sudan'da 91.9, Burundi'de 74.3 olarak açıklanmaktadır (UNDP, 2019). Raporda açıklanan veriler ele alındığında İnsani Gelişim Endeksinin düşük olduğu ülkelerde yoksulluğun daha fazla yaşandığı görülmektedir (UNDP İnsani Gelişme Raporu Gösterge Tablosu, 2019).

SONUÇ

Gelir dağılımı adaletsizliği ve sosyal dışlanma geçmişten günümüze ülkemizin ve tüm dünyanın ortak sorunu olmaktadır. Gelir dağılımı adaletsizliği arttıkça zengin olan nüfus daha zenginleşmekteyken yoksul olan nüfus daha da yoksullaşmaktadır. Bu durum sonucu halk arasında barışı korumak zorlaşmaktadır.

Gelir dağılımı eşitsizliğini etkileyen birden fazla değişken bulunmaktadır. Değişkenlerin hepsi birbirleri ile etkileşimde olduğundan tek bir değişkeni düzeltmeye çalışmak gelir dağılımı adaletsizliğini ortadan kaldıramamaktadır. Kayıt dışı istihdamın en fazla olduğu sektör tarım olması, doğudaki insanların gelirden daha az pay almaları, sektörel dağılımda tarımın en az geliri oluşturduğu göz önüne alınarak tek bir yerdeki bozukluk etkilediği yapıyı da bozmaktadır.

Gelir artıkça gelir dağılımı adaletsizliği azalmamaktadır, 2019 yılında İstanbul en fazla gelire sahip olurken aynı zamanda en fazla gelir dağılımı adaletsizliği yaşayan şehir olmaktadır.

Sosyal dışlanmanın yaşanması ile kişilerin üretim süreçlerine dahil olamaması, gelir dağılımı adaletsizliğini arttırmaktadır. Kişilerin sosyal haklarından mahrum kalarak tamamen dışlanmış hissetmeleri sosyo- ekonomik yapıyı negatif etkilemektedir.

Gelir seviyesi ile sosyal dışlanma arasında ters yönlü bir ilişki mevcuttur. Gelir seviyesi arttıkça sosyal dışlanmanın azaldığı, gelir seviyesi azaldıkça sosyal dışlanmanın arttığı bilinen bir gerçektir. Gelir dağılımı adaletsizliği fazla olan ülkelerin daha fazla yoksulluk ve sosyal dışlanma riskine sahip olmaları, gelir dağılımı adaletsizliği az olan ülkelerin yoksulluk ve sosyal dışlanma riskleri doğru orantılı olarak az olmaktadır.

İnsani gelişim endeksi düşük olan ülkelerin; yaşam standartlarının altında hayat sürmesi, bilgiye erişebilirliğin kolay olmaması ve yaşam standartlarının kötü olması sebebi ile sağlıklı yaşam sürelerinin kısa olması çok boyutlu yoksulluk oranları daha fazla olmaktadır.

KAYNAKÇA

Adaman, F. ve Keyder, Ç. 2007. "Türkiye'de Büyük Kentlerin Gecekondu ve Çöküntü Mahallelerinde Yaşanan Yoksulluk ve Sosyal Dışlanma", *TES- İŞ Dergisi,* Haziran/2007.
Altınışık, İ. ve Peker, H. S. 2008. "Eğitim ve Gelir Dağılımı Eşitsizliği", *Karamanoğlu Mehmetbey*
Üniversitesi Sosyal ve Ekonomik Araştırmalar Dergisi, 10 (15), ss. 101-118.
Altuğ, O. (1999). "Kayıtdışı Ekonominin Boyutları (1997)," *Erciyes Üniv. İİBF Dergisi*, 15, s.257.

Bhalla, A. and Lapeyre, F. 1997. "Social Exclusion: Towards an AnalyticalandOperational Framework", *Development and Change,* Volume 28.

Çakır, Ö. 2002. "Sosyal Dışlanma", *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 4(3), 83-104.

Çelik, A. 2004. "AB Ülkeleri ve Türkiye'de Gelir Eşitsizliği: Piyasa Dağılımı–Yeniden Dağılım", *Çalışma ve Toplum,* 2004/3, s. 53–91.

Demir, S. 2006. *Birleşmiş Milletler Kalkınma Programı İnsani Gelişme Endeksi ve Türkiye Açısından Değerlendirme,* Ankara: DPT Sosyal Sektörler ve Koordinasyon Genel Müdürlüğü.

Deveci, T. ve Değirmen, S. 2008. "İkiz Açık İlişkisi Kriz Öncü Göstergelerini Etkiler mi? 2008 Küresel Kriz Işığında ABD ve Türkiye Analizi" *Anadolu Sosyal Bilimler Dergisi,* Cilt / Volume: 13 Sayı / Number: 2, ss.1-14.

DPT (2001). "Gelir Dağılımının iyileştirilmesi ve Yoksullukla Mücadele*", Özel ihtisas Komisyonu Raporu*, Sekizinci Beş Yıllık Kalkınma Planı: Ankara.

Hekimler, O. 2012. "Yoksulluk Mu Yoksunluk Mu? Sosyal Dışlanma Üzerine Bir Değerlendirme", *Tekirdağ S.M.M. M. Odası Sosyal Bilimler Dergisi*, Sayı: 1.

Karakayalı, H. 2002. *Makro Ekonomi*, 4. Baskı, Manisa: Emek Matbaası.
Koray, M. ve Topçuoğlu, A. (1987). *Sosyal Politika*. İzmir: Karınca Matbaacılık.

Kubar, Y. 2008. *Bir İktisat Politikası Amacı Olarak Gelir Dağılımı: Türkiye Örneği (1994-2007) Analizi*, Selçuk Üniversitesi SBE, Yayımlanmamış Yüksek Lisans Tezi.

Kuznets, S. 1955. Economic Growth and Income Inequality. *The American Economic Review,* 45(1), 1-28.

O'Brien, M. ve Penna, S. 2007. "Social Exclusion in Europe: Some Conceptual Issues", *International Journal of Social Welfare*, Sayı: 17.

Pirani, E., Andrea S. ve Vermunt, S. 2009. "Poverty and Social Exclusion in Europe: Differences and Similarities across Regions", *Paper Prepared for The XXVI IUSSP Conference, Marrakech.*

Silver, H. 1994. "Social exclusion and social solidarity: Three paradigns", *International Labour Review,* Vol. 133, N:5-6.

Türk, İ. 1975. *Maliye Politikası ve Çağdaş Bütçe Teorileri*, Ankara: Doğan Yayınevi
Türk, İ. 1983. *Maliye Politikası (Amaçlar-Araçlar ve Çağdaş Bütçe Teorileri),* Ankara: Sevinç Matbaası.
Türk, İ. 1989. *Maliye Politikası*, Ankara: Sevinç Yayınevi.

Türk, İ. 2007. *Maliye Politikası Amaçlar-Araçlar ve Çağdaş Bütçe Teorileri,* Ankara: Turhan Kitabevi, 20. Baskı.

Uysal, Y. 1999. "Bölüşüm İlişkileri ve Bu İlişkilerin Düzenlenmesinde Etkili Olabilecek İktisat Politikalarının Değerlendirilmesi", *Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 1 (2), ss. 1-292.
Walker, A. and Walker, C. 1997. Britain Divided: The Growth of Social Exclusion in The 1980s and 1990s, London: Child Poverty Action Group.

Yumuşak, G. İ. ve Bilen, M. 2000. "Gelir Dağılımı-Beşeri Sermaye İlişkisi ve Türkiye Üzerine Bir Değerlendirme", *K.Ü. Sosyal Bilimler Dergisi*, Yıl:1, Sayı:1.

İnternet Kaynakları

Adrese Dayalı Nüfus Kayıt Sistemi Sonuçları 2020. Türkiye İstatistik Kurumu Haber Bülteni, 37210. Erişim Adresi: https://data.tuik.gov.tr/Bulten/Index?p=Adrese-Dayali-Nufus-Kayit-Sistemi-Sonuclari-2020-37210, Erişim Tarihi: 20.01.2021.

İşgücü İstatistikleri 2020/7. Türkiye İstatistik Kurumu Haber Bülteni, 33793. Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=33793, Erişim Tarihi: 10.01.2021.

İşgücü İstatistikleri 2020/8. Türkiye İstatistik Kurumu Haber Bülteni,33792. Erişim Adresi: https://data.tuik.gov.tr/Bulten/Index?p=Isgucu-Istatistikleri-Agustos-2020-33792, Erişim Tarihi: 10.01.2021.

Gelir ve Yaşam Koşulları Araştırması 2019. Türkiye İstatistik Kurumu Haber Bülteni, 33820. Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=33820, Erişim Tarihi: 10.01.2021.

Gelir ve Yaşam Koşulları Araştırması Bölgesel Sonuçları 2019. Türkiye İstatistik Kurumu Haber Bülteni, 33821, Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=33821, Erişim Tarihi: 10.01.2021.

Gelir ve Yaşam Koşulları Araştırması 2018. Türkiye İstatistik Kurumu Haber Bülteni,30755. Erişim Adresi: https://data.tuik.gov.tr/Bulten/Index?p=Gelir-ve-Yasam-Kosullari-Arastirmasi-2018-30755, Erişim Tarihi:15.01.2021.

Gelir ve Yaşam Koşulları Araştırması 2017. Türkiye İstatistik Kurumu Haber Bülteni, 27823. Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do;jsessionid=dp6qfHwpGlk73nZ2PGHGJJQyk42PDwv2XWQp23QwvJTsLnMmpK6w!1557740634?id=27823, Erişim Tarihi: 10.02.2021.

Gelir ve Yaşam Koşulları Araştırması 2016. Türkiye İstatistik Kurumu Haber Bülteni, 24579. Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do?id=24579, Erişim Tarihi: 10.02.2021.

Gelir ve Yaşam Koşulları Araştırması 2015. Türkiye İstatistik Kurumu Haber Bülteni,21584. Erişim Adresi: https://tuikweb.tuik.gov.tr/PreHaberBultenleri.do;jsessionid=dp6qfHwpGlk73nZ2PGHGJJQyk42PDwv2XWQp23QwvJTsLnMmpK6w!1557740634?id=21584 Erişim Tarihi:10.02.2021.

Yoksulluk veya Sosyal Dışlanma Riski Altındaki İnsanlar 2019. Erişim Adresi: https://ec.europa.eu/eurostat/databrowser/view/tipslc10/default/table?lang=en, Erişim Tarihi:10.02.2021.

Gelir Dağılımındaki Eşitsizlik 2019. Erişim Adresi: https://ec.europa.eu/eurostat/databrowser/view/tespm151/default/table?lang=en, Erişim Tarihi:10.01.2021.

Kayıt Dışı İstihdam Oranı 2019. Erişim Adresi: http://www.sgk.gov.tr/wps/portal/sgk/tr/calisan/kayitdisi_istihdam/kayitdisi_istihdam_oranlari, Erişim Tarihi: 11.01.2021.

UNDP İnsani Gelişme Raporu Gösterge Tablosu 2019. Erişim Adresi: https://www.tr.undp.org/content/turkey/tr/home/library/human_development/hdr2019.html/file:///C:/Users/user/Downloads/UNDP-TR-HDR-2019-OVERVIEW-EN.pdf, Erişim Tarihi:12.01.2021.

TÜKETİM KARŞITLIĞI BAĞLAMINDA TÜKETİCİ BOYKOTLARI ÜZERİNE BİR DEĞERLENDİRME

Doç. Dr. Mustafa Hatipler
ORCID: 0000-0002-2090-3042
Dr. Nilgün Köksalan
ORCID: 0000-0002-2338-8074
Trakya University, Turkey

Özet

Sanayi Devrimi sonrası yaşanan gelişmeler birey ve toplumları giderek tüketimin yaşam tarzı haline geldiği bir dünya düzenine sürüklemiştir. Tüketime dayalı ekonomik sistemler tüketim toplumunun oluşmasında etkili olarak aynı zamanda küresel çapta bir tüketim kültürünün de yayılmasına zemin hazırlamıştır. Tüketimin adeta kimliğin bir ifadesi olarak yaşam felsefesi haline dönüştüğü günümüzde, toplumda yaratılan tüketim baskısının doğurduğu kimi sosyal, psikolojik, çevresel ve ekonomik problemler tüketim karşıtı eylemleri de beraberinde getirmiştir.

Tüketim karşıtlığı, temelinde mevcut tüketim kültürüne gösterilen bir direnç davranışıdır. Tüketimin sıfırlanması, azaltılması ya da tüketimde seçici olunması gibi eylemleri içeren bir kavram olan tüketim karşıtlığı artan sosyal eşitsizlikler ve çevresel problemlere bir karşı duruşun yansımasıdır. Bu anlayışın savunucularında etik ve çevresel kaygıların ön plana çıktığı görülmektedir. Tüketimin azaltılması ve tüketim yapılmayarak üretimin kendi kendine yapılması gibi çeşitli davranışları kapsayan tüketim karşıtlığının bir boyutu da boykot davranışı olarak göze çarpmaktadır.

Boykot davranışı, belli amaçlara ulaşmak için bireysel ve kolektif bazda çeşitli çabaları ifade eden bir kavramdır. Fikir ve eylem bazında boykotlar olabileceği gibi; organize, medya ya da pazar odaklı boykotlar da olabilmektedir. Tüketici boykotları ekonomik, etik ve politik nedenlerle tüketicilerin işletmelere, toplumlara ve ülkelere karşı söz konusu işletmelere ya da ülkelere ait ürünlerin satın alınmaması yönünde geliştirdiği bir hareketlerdir. Tüketici boykotları satın alınan ürünle ilgili ortaya çıkan bir sorundan kaynaklanabildiği gibi herhangi bir ülkenin politikalarını protesto etmek ve herhangi bir konudaki mevcut kararlarını etkilemek adına da gerçekleştirilebilmektedir.

Bu çalışmada tüketim karşıtlığı bağlamında tüketici boykotları hakkında bir değerlendirme yapılması amaçlanmıştır. Bu bağlamda, çalışmada ilk olarak tüketim ve tüketim karşıtlığı kavramlarına yer verilmiş, ardından nedenleri ve etkileriyle tüketici boykotu kavramı detaylı bir şekilde ele alınarak örnek olaylar çerçevesinde tüketici boykotlarının etkinliği tartışılmıştır.

Anahtar Kelimeler: Tüketici Boykotu, Tüketim, Tüketim Karşıtlığı

AN EVALUATION OF CONSUMER BOYCOTTS IN THE CONTEXT OF ANTI-CONSUMPTION

Abstract

Developments after the Industrial Revolution have gradually moved individuals and societies intoa world order where consumption has become a lifestyle. Consumption-based economic systemshave been effective in the formation of a consumption society and have also paved the way for thespread of a global consumption culture. Some social, psychological, environmental and economicproblems caused by the consumption pressure created in the society have brought anti-consumption actions with it, as consumption has turned into a philosophy of life as an expression of identity.

Anti-consumption is basically a behavior of resistance to the current consumption culture.Anticonsumption, a concept that includes actions such as zeroing, reducing or being selective inconsumption, is a reflection of a stance against increasing social inequalities and environmental problems. It is seen that the proponents of this understanding come to the fore with ethical andenvironmental concerns. Boycott behavior stands out as a dimension of anti-consumption, which includes various behaviors such as reducing consumption and self-production without consumption.

Boycott behavior is a concept that expresses various individual and collective efforts to achieve certain goals. As there may be boycotts on the basis of ideas and actions; there may also be organized, media or market oriented boycotts. Consumer boycotts are the actions of consumers gainst businesses, societies and countries for economic, ethical and political reasons, in order notto buy products belonging to these businesses or countries. Consumer boycotts can arise from aproblem related to the purchased product, as well as to protest the policies of any country and to affect existing decisions on any issue.

In this study, it is aimed to make an evaluation about consumer boycotts in the context of consumerism. In this context, first of all, the concepts of consumption and anti-consumption were included in the study, then the concept of consumer boycott with its causes and effects was discussed in detail and the effectiveness of consumer boycotts within the framework of case studies was discussed.

Keywords: Consumer Boycotts, Consumption, Anti-Consumption

GİRİŞ

Tüketim kavramı, ihtiyaç temelinde gelişen geleneksel anlamının yerini günümüzde artık istek ve arzuların yönlendirdiği bir eylem düşüncesine bırakmıştır. Sanayi Devrimi ve kapitalizm ile başlayan süreçten bugüne gelinene değin ortaya çıkan teknolojik gelişmelerle seri üretim imkânlarının genişlemesi, zamanla ürünlerin küresel ölçekte hedef kitlelere ulaştırılabilmesi, tüketim anlayışında yaşanan değişimler, küresel rekabet, kitle iletişim araçlarının kullanımı ve artan boş zaman gibi çeşitli faktörlerle tüketim olgusu birey ve toplum bazında giderek yaygınlaşarak kendini tüketimle ve tükettikçe ifade eden bir toplum profilinin oluşmasına yol açmıştır.

Tüketim bugünün pazar ortamında“insanların kim oldukları ve kim olmak istedikleriyle ilgili duyarlılıklarını yansıtan ve kimlik duygusunu çevreleyen bir değer” olarak ifade edilmektedir

(Bocock, 2009: 10). Tüketimin kendisine yüklenen anlamlarla bireylerin ihtiyacı olmasa da satın alma isteği bir yandan aşırı tüketim olgusunu öne çıkartırken diğer yandan tüketim karşıtı eylemleri de beraberinde getirmiştir. "Tüketim eylemine genel ve seçici olarak bir karşı duruş" olarak ifade edilen tüketim karşıtlığı, ilke olarak tarihin birçok döneminde karşılaşılan bir öğreti şeklinde olsa da bugünkü anlamıyla Sanayi Devrimi sonrası gelişen bir olgu olarak dikkat çekmektedir (Dülek ve Cömert, 2018: 104).

Günümüzde, tüketiciler dünyaya kurtarmak için tüketimi "bir politik hareket" olarak kullanmaktadır (McLaughlin, 2004'den akt. Delacote, 2006: 2). Ekonomik, sosyal, toplumsal, çevresel ve psikolojik çeşitli nedenlerle belli bir amaca ulaşmak için tüketicilerin bilinçli bir şekilde belli ürün ve hizmetleri satın almaktan kaçındığı, satın almayı azalttığı ya da tamamen reddettiği görülmektedir. Bu noktada tüketim karşıtlığının bir boyutu olan tüketici boykotları "tüketicilerin tercihlerini bir ürünü satın almama yönünde kullandığı" bir davranış şekli olarak dikkat çekmektedir (Taşçıoğlu ve Yener, 2017: 54). Boykot davranışında, tüketicilerin çevresel, politik, ekonomik ve toplumsal herhangi bir nedenle ilgili işletmelerin ürünlerini satın almaya bir direnç göstererek toplu hareket etmesi söz konusudur. Tüketici boykotları boykot edilen ürün ve işletmeler açısından bir taraftan ekonomik etkilere neden olurken diğer taraftan imaj ve itibar yönünde kayıplara neden olabilmektedir.

Bu küçük çalışmada, tüketim karşıtlığı bağlamında tüketici boykotları üzerine bir değerlendirme yapılması amaçlanmıştır. Bu noktadan hareketle çalışmada öncelikle tüketim ve tüketim karşıtlığı kavramları ele alınmıştır. Bir sonraki bölümde tüketici boykotu kavramının nedenleri ve etkileriyle değerlendirildiği çalışmadason olarak tüketici boykotlarına ilişkin bazı örnekler yer almaktadır.

1.TÜKETİM VE TÜKETİM KARŞITLIĞI

En genel ifadesiyle insan ihtiyaçlarının karşılanması amacıyla mal ve hizmet kullanımı olarak ifade edilebilecek tüketim, bugün istek ve arzuların körüklendiği günümüz pazarlarında bireyin kimliğiyle özdeşleştirdiği bir olgu haline gelmiştir. Tüketimin değişen ve gelişen dünyada asıl amacından uzaklaşarak bireyin aşırı tüketimine yol açması, tüketime karşı potansiyel duruşun açığa çıkmasında önemli bir etken olmuştur. Bu noktada öncelikle tüketim ve tüketim karşıtlığı kavramlarının neyi ifade ettiğinin anlaşılması önemlidir. Bu bölümde tüketim ve tüketim karşıtlığı kavramları ile ilgili açıklamalara yer verilmiştir.

1.1.Tüketim Kavramı

Geçmişten günümüze tüketim kavramı birçok dinamik kavram gibi zamanla değişikliğe uğramıştır. Williams (1976), tüketme teriminin en erken kullanımlarını "tahrip etmek, harcamak, israf etmek, bitirmek" olarak açıklamaktadır (Williams, 1976'dan aktaran akt.: Dal, 2017: 4).Bir başka tanımda tüketim; "gerçek bir ihtiyaç olsun ya da olmasın, ihtiyaçların giderilmesi için harcanan veya harcanması göze alınan maddi ve manevi değerlerin seferber olması" olarak ifade edilmektedir (Torlak, 2016: 21). Odabaşı (1999), tüketimi, belirli bir ihtiyacın tatmin edilmesi için bir ürünü ya da hizmeti edinme, sahiplenme, kullanma ya da yok etme olarak tanımlarken bu eylemi yapan bireyin de tüketici olarak adlandırılabileceğini belirtmektedir (Odabaşı, 1999:4).

Sosyoloji, psikoloji, ekonomi ve pazarlama gibi birçok alandan araştırmacının ilgisini çeken tüketim olgusunun ardında yatan itici güçler insan ihtiyaçları, istekleri ve arzuları olarak ifade edilmektedir (İslamoğlu ve Altunışık, 2013:3). Günümüzde tüketim; ekonomik bir süreçten

öte, aynı zamanda gösterge ve sembollerin de içinde bulunduğu, geniş katılımlı kültürel bir süreç olarak göze çarpmaktadır (Bocock, 2009: 13).

1.2.Tüketim Karşıtlığı Tanımı ve Türleri

Tüketim karşıtlığı en genel ifadesiyle tüketime ilişkin direnç gösterme, hoşnutsuzluk ya da kızgınlık halidir (Zavestoski, 2002: 121).Bir başka ifadede, "tüketim kültürüne ve kitlesel olarak üretilen anlamların pazarlanmasına bir direniş" olarak tanımlanmaktadır (Penaloza ve Price (1993: 123). Lee, Roux, Cherrier ve Cova (2011: 1681), çalışmalarında tüketim karşıtlığının tüketime karşı olma anlamını taşıdığını, ancak söz konusu tüketim kavramının tüm canlıların oksijen, su gibi tüketimlerinin değil, iş söylemine özgü tüketim süreçlerine ilişkin olduğunu belirtmektedir.

Tüketim karşıtlığına ilişkin literatürde yapılan çalışmalar incelendiğinde; tüketim karşıtlığının birçok araştırmacı tarafından ilgi gördüğünü ifade etmek mümkündür. Tüketim karşıtlığı araştırmalarında; "tüketici isyanları (Dobscha, 1998); tüketici direnci (Fischer, 2001; Zavetoski, 2002; Lee, vd., 2011); boykot davranışı (Kozinets ve Hendelman, 2004) ve tüketmeme (Stammerjohan ve Webster, 2002)" gibi konulara ilişkin çalışmalar yapıldığı görülmektedir.

Tüketim karşıtlığı kavramına ilişkin "seçmeme (non-choice) ve seçim karşıtlığı ya da karşıt seçim (anti-choice) kavramlarının arasındaki ayrımın anlaşılması önem taşımaktadır. Seçmeme eyleminde, "satın alabilirlik, erişilebilirlik ve ürünün bulunabilirliği" mümkünken, seçim karşıtlığı ya da karşıt seçimde bireyin bir ürünü "özellikle seçmediği" bir durum söz konusu olmaktadır (Kırmızı ve Babaoğul, 2012: 3).

Tüketim karşıtlığının ortaya çıkışına bakıldığında, tüketim karşıtlığının "Sanayi Devrimi ile başladığı" düşünülmekte ancak tüketim karşıtlığına yönelik "hümanizm, adalet ve sorumluluk" gibi ilkelerin tarih öncesine uzandığı görülmektedir. Söz konusu dönemde kurulan medeniyetlerde yaşayan "filozofların, kurumsal dinlerin ve doğu felsefelerinin" tüketim karşıtlığı düşüncesinin oluşmasında etkili olduğunu ifade etmek mümkündür (Başçı, 2015: 47).

Tüketim karşıtlığına neden olan birçok faktör bulunmaktadır. Kırmızı ve Babaoğul (2012: 2) çalışmasında, tüketim karşıtlığına neden olanfaktörlerden bazılarını özetle şu şekilde sıralamaktadır:

- Post-modern bireyin, bir yandan T. W. Adorno'nun öne sürdüğü "kültür endüstrisine yönlendirilirken diğer taraftan bu ortamda kendi olma çabası (Silier, 2010'dan akt. Kırmızı ve Babaoğul, 2012: 2).
- Küreselleşmeye yönelik tepkiler; bireyler kürselleşmenin çevre vb. üzerindeki olumsuz etkilerine karşı çıkmanın bir yolu olarak marka egemenliklerini (kurumsal küreselleşmenin) reddi.
- Teknolojik gelişmeler ve internetin sağladığı hız, kolaylık ve anonimlik,

Tüketim karşıtlığı bağlamında tüketici davranışları üç grupta toplanmaktadır: reddetme, kısıtlama ve geri kullanım. Reddetme eyleminde, bireylerin belli ürünleri çeşitli nedenlerle (fonksiyonel, etik vs.) tüketimlerinden çıkarmaları söz konusudur. Kısıtlama eylemi, tüketimin tamamen önüne geçilemediği durumlarda azaltılmasını ifade etmektedir. Buna örnek olarak suyun, elektriğin, vs. kısıtlı kullanımı verilebilir. Reddetme eylemi ise, belli ürünlerin tüketiminden kaçınarak geri kazanım, satın alma, kullanma ve elden çıkarma işlemlerinde ideolojik bir yaklaşımın geçerli olduğu bir anlayıştır. Buna örnek olarak da

gönüllü sadelerin çeşitli sebzeleri marketten almak yerine kendilerinin yetiştirmesi verilebilir (Lee, vd. 2011: 1681).

Tüketim karşıtlığı olgusuna ilişkin çeşitli sınıflandırmalar mevcuttur. Bu sınıflandırmalardan birisi, tüketim karşıtlığının amacına ve nesnesine yönelik yapılan sınıflandırmadır. Amacı açısından toplumsal ya da kişisel kaygılar; nesnesine göre ise genel tüketim ya da belirli markalar sınıflandırmayı oluşturmaktadır. Bu sınıflandırmada yer alan dört kategori:

- Küresel etki tüketicileri (toplumsal-genel tüketim), sosyal problemleri önemseyen kesim.
- Basitleştiriciler (kişisel-belirli marka), kişisel nedenlerden dolayı sadeleşme yaşayan kesim.
- Pazar eylemcileri (toplumsal-belirli marka), dünyanın geleceğine ilişkin endişeleri olan bu nedenler belirli markaları kullanmaktan kaçınan kesim.
- Bağlılık karşıtı tüketiciler (kişisel-belirli marka); belli bir markanın egemenliğini kabul etmeyen kesim şeklindedir (Iyer ve Muncy, 2009: 161).

2.TÜKETİCİ BOYKOTLARI

Dinamik bir süreç olarak tüketim anlayışı her geçen dönemde farklı nedenlerle değişime uğramış ve uğramaya devam etmektedir. Geçmiş dönemlerden bu yana tüketimin karşısında hem düşünce hem eylem planında bazen bir tepki bazen bir öğreti şeklinde ortaya konan tüketim karşıtlığı anlayışı günümüzde de çeşitli nedenlerle ve farklı şekillerde varlığını sürdürmektedir. Bu bölümde, tüketim karşıtlığının bir boyutu olarak boykot kavramı, boykot türleri, tüketici boykotu kavramı ve nedenleri, tüketici boykotlarının etkileri ve örnek olaylar çerçevesinde etkinliği incelenmiştir.

2.1.Boykot Kavramı Tanımı ve Boykot Türleri

Boykot en genel ifadesiyle belli bir amacı gerçekleştirmeye yönelik birey ve grupların sergilediği bir karşı duruştur. Türk Dil Kurumu (TDK), boykotu, "bir işi, bir davranışı yapmama kararı alma" ve bir kimse, bir topluluk veya bir ülkeyle amaca ulaşmak için her türlü ilişkiyi kesme" olarak tanımlamıştır (TDK, 2021). Kavramın ilk kullanımı, "O'Malley tarafından 1880 itibariyle İrlandalı çiftçilerin Lord Erne'nin arazi sorumlusu olan C. C. Boycott'a karşı başlattıkları ve Boycott'un işçilerini ikna ettikleri bir iş bırakma eylemi" ile gerçekleşmiştir (Friedman, 1999: 6'dan akt. Bayuk ve Ofluoğlu, 2013: 142).

Boykot görünüşte güçsüz görünen bir grup tarafından bir değişim biçimini veya diğerini teşvik etmek için bölgedeki güçlülere karşı kullanılan bir araç olarak ifade edilmektedir (Etzioni, 1969'dan akt. Koku, 2011: 83).

Boykotların çeşitli sınıflandırmalarımevcuttur. Friedman (1991), boykotların etkililiğini değerlendirmek amacıyla boykotları medya odaklı boykotlar (kamuoyunu etkileme amaçlı boykotlar), pazara yönelik boykotlar (hedefe maddi zarar vermeyi amaçlayan boykotlar),araçsal boykotlar (politika, prosedür vb. bir değişikliğe neden olmayı amaçlayan boykotlar) ve anlamlı boykotlar (memnuniyetsizliği iletmeyi amaçlayan boykotlar) şeklinde kavramsal bir çerçeveye oturtmuştur. Friedman (1999), bir başka çalışmasında iseboykot türlerini:

- Düşünce düzeyinde kalan boykotlar (Fikir Aksiyonlu)
- Eylem talepli boykotlar (Hareket Talepli)
- Organize boykotlar (Örgütlü Hareketli)

- Eylemsel boykotlar (Harekete Geçilen)
- Medya yönelimli boykotlar (Medyanın kullanıldığı)
- Pazar yönelimli boykotlar (İşletme faaliyetlerine yönelik gösteri protesto vs.) şeklinde altı grup şeklinde sıralamaktadır (Friedman, 1999: 10-11'den akt. Bayuk ve Ofluoğlu, 2013: 143).

2.2.Tüketici Boykotu Kavramı ve Tüketici Boykotlarının Nedenleri

Friedman (1985: 97), boykotu, bireysel tüketicileri pazarda seçilmiş alımlar yapmaktan kaçınmaya teşvik ederek belirli hedeflere ulaşmak için bir veya daha fazla tarafın teşebbüsü" olarak ifade etmektedir. Tüketici boykotları, tatmin olmamış tüketiciler için hükümetlerin eylemsizliğini telafi etmenin bir yoludur ve kamu politikalarının önüne geçerek adil uygulamaların benimsenmesi konusunda hedefe yeterli baskının uygulanmasını amaçlamaktadır (Delacote, 2006: 2).

Özellikle, günümüzde "ekonomik tüketici boykotları" yani bir ürünü satın almamanın bireysel veya toplu tercihi, haksız pazarlama, sosyal veya çevresel uygulamalara karşı çıkmak için STK'lar veya lobi grupları tarafından artık sıklıkla kullanılan bir araçtır (Friedman, 1999'dan akt. Delacote, 2006: 2). Tüketici boykotları, tüketicilerin kamu politikası kadar şirketler üzerinde de sosyal kontrol nüfuz kazanması ve kullanması için fırsatlar olarak değerlendirilmektedir (Klein, Smith, John 2004: 92).

Tüketici boykotlarının çok çeşitli nedenleri bulunmaktadır. Bu nedenler özetle şu şekildedir (Bayuk ve Ofluoğlu, 2013: 145-147):

- Ekonomik nedenler, tüketici boykotlarının en yaygın nedenlerinden birisidir ve belli bir ürünün fiyatının yükselmesi veya kalitesinin düşmesine bağlı olarak gelişmektedir (Friedman, 1995: 57).
- Politik nedenler ise, belli nedenlerle belli bir ülkenin ürünlerinin satın alınmaması şeklinde gerçekleşmektedir ve uluslararası bir nitelik taşıyabilmektedir.
- Menşe ülke bir markanın ait olduğu yer, bölge ya da ülke anlamına gelmektedir. Menşe ülkeye ilişkin tüketicilerin algıladığı olumlu/olumsuz imaj ürünlerin satın alınmasını/alınmamasını etkilemektedir.
- Etik nedenlere bakıldığında ise işletme ürünlerinin çevreye ve topluma bir zararı olup olmadığı değerlendirilmektedir. Satın alma kararları buna uygun olarak alınabilmektedir.
- Sosyo-kültürel nedenler ise, tüketicilerin etik, politik ya da ekonomik nedenlerden farklı olarak dini vb. nedenleri kapsamaktadır.

2.3.Tüketici Boykotlarının Etkileri

Tüketici boykotlarının birçok açıdan etkileri bulunmaktadır. Bu etkileri temel olarak işletme/ülke üzerindeki etkiler ve tüketici üzerindeki etkiler şeklinde incelemek mümkündür (İşlek, 2017: 8). İşletme/ülke üzerindeki etkilere bakıldığında; boykotların neden olduğu maddi kayıpların hedef alınan ülke ya da işletme açısından oldukça yüksek olabileceği göz önünde tutulmalıdır. Bu nedenle işletmelerin boykotlardan etkilenmemeleri için halka ilişkiler vb. araçları devreye sokarak sürece müdahale etmeleri uygun olacaktır. Diğer taraftan tüketici üzerindeki etkiler açısından ise, fiyatlarda ani yükselmeler, bağımlılık geliştirilen ürünlere yönelik boykotlar vs. gibi etkilere neden olabilmektedir (Bayuk ve Ofluoğlu, 2013: 149-150).

Tüketici boykotlarının rekabete yönelik etkilerini araştırdığı çalışmasında Haan (2007: 1); işletmelerin artan bir şekilde "sorumlu davranma baskısı" altına girdiğini belirtmektedir. Özellikle "Sivil Toplum Kuruluşu (STK)'ların etki gücü ve tüketicilerin çevresel, istihdam, politik, etik ve kurumsal sorumluluklarına yönelik ilgilerinin artması" bu durumu tetikleyen önemli faktörler arasında sayılmaktadır. Standartların tüketici isteklerini karşılamaması durumu beraberinde "sıklıkla bir veya daha çok STK tarafından orkestra edilen bir tüketici boykotunu" getirmektedir. İşletmeler düşük maliyetlerle STK baskısı arasında karlılığını korumaya çalışmaktadır. Örneğin, bir işletmenin düşük ücretli işçi istihdamı marjinal maliyetlerini düşürmektedir. Ancak bununla birlikte düşük ücretlere yönelik STK'lar tarafından yönelitilen baskılarla bir tüketici boykotunun başlatılması da işletmenin ürünlerine pazarda talebin azalmasına ve dolayısıyla karlılığın düşmesine yol açacaktır (Haan, 2007: 1).

2.4.Tüketici Boykotlarının Etkinliği: Örnek Olaylar

Tüketici boykotları kişisel kararlardan farklı olarak bir ürünün tüketimine yönelik "organize, kolektif ama zorunlu olmayan" bir davranış şeklidir (Sen, Gürhan Canli ve Morwitz, 2001: 400). Geçmişten günümüzde tüketici boykotlarına bakıldığında, çevresel argümanlar üzerinde gerçekleşen boykotların, birçok çevreci STK tarafından yaygın olarak kullanıldığı görülmektedir. Buna örnek olarak, Procter&Gamble ya da Colgate-Palmolive gibi kozmetik firmalarının hayvanlar üzerinde uyguladıkları testler nedeniyle boykot edilmesi verilebilir. Diğer taraftan, Total, ESSO ve Shell gibi büyük petrol şirketlerinin çevresel zararları ve iklim değişikliği politikalarını caydırmak için kullandıkları varsayılan lobi faaliyetleri nedeniyle boykot edilmiştir. Bir diğer örnek olarak, McDonalds gibi fast-food şirketlerinin çevre dostu olmayan et üretme biçimlerinden dolayı boykot edildiği bilinmektedir (Delacote, 2006: 2).Boykot davranışına ilişkin tüketici motivasyonlarını incelediği çalışmasında Granström (2014: 1) de tüketici boykotlarının bir örneği olarak doğa dostu olmayan ürünlere karşı geliştirilen boykotları vermektedir. Granström (2014)'e göre, bir tüketicinin yeşil (doğa dostu) ürünleri tercih etmesi bir anda yeşil olmayan olarak algıladığı ürünleri boykot etmesine yol açmaktadır.

Günümüzde boykotlar aynı zamanda "hem insan haklarıyla mücadele hem hayvan haklarının korunması bağlamında büyük firmaların uygulamalarını değiştirmesi konusunda ekonomik bir baskı unsuru" oluşturmaktadır. Güncel olarak devam eden boykotlara örnek vermek gerekirse; Örneğin, Air France deney için laboratuarlara maymun göndermeye devam eden tek büyük havayolu şirketidir. Air France tarafından taşınan primatlar sık sık vahşi ortamlardan alınarak ve 30 saatten fazla sürebilecek yolculuklarla taşınırlar. Bu nedenle Air France 2012 yılından bugüne boykot edilmektedir. Diğer bir şirket olarak Amazon, vergi kaçakçılığı nedeniyle 2015 yılından bu yana boykot edilmektedir. Ancak bugüne değin değişen bir şey görülmemiştir. Diğer taraftan insan haklarıyla mücadele bağlamında 2022 Beijing Winter Olympics (Pekin Kış Olimpiyatları) 180 insan hakları grubu tarafından boykot edilmektedir. Çin devletinin Uygur vatandaşlarına yaptığı baskı bu boykotta rol oynamaktadır. 2021 yılı itibariyle hala sonuç alınamamıştır (ethicalconsumer.org). Örnekler çoğaltılabilir ancak bu örneklerden hareketle tüketici boykotlarının etkinliği konusunun tartışmalı olduğunu ifade etmek mümkündür.

Tarihsel süreçte elbette başarılı boykotlar da bulunmaktadır. Özellikle yakın dönemde, 2018 yılı Aralık ayında; HSBC, İsrail ordusuna Filistinli sivillere yönelik saldırılarda kullanılan silahları satmasıyla tanınan İsrailli insansız hava aracı üreticisi Elbit Systems'den tamamen vazgeçtiğini duyurmuştur. Yine 2018 yılı Eylül ayında, Burberry, hayvan hakları grubu

PETA'nın uzun süredir devam eden boykot kampanyasından sonra kürkü yasaklamada Armani, Versace, Gucci, Vivienne Westwood, Stella McCartney ve diğerlerine katılacağını duyurmuştur. 2012 yılında, Johnson & Johnson, formaldehit salan koruyucuyu çıkarmak için tüm bebek ürünlerini yeniden formüle etmek durumunda kalmıştır. Bu hareket, şirketin bebek şampuanında zararlı kimyasallar kullanmasıyla ilgili ABD Güvenli Kozmetik Kampanyası'nın (CSC) bir raporuna ve boykot çağrısına yanıt olarak gerçekleşmiştir (ethicalconsumer.org)

Tüketici boykotlarına ilişkin Türkiye'de ise, sendikaların bu konuda öne çıktığı görülmektedir. Tüketici boykotlarından en kapsamlı ve ses getiren boykot Petrol-İş Sendikası tarafından 18 Temmuz 1996 günü Shell, Mobil ve BP'ye karşı uygulanan boykot olarak ifade edilmektedir. Bir diğer boykot ise Türk Metal Sendikası Manisa Şubesi de 2000 yılında Nisan ayında Vestel Şirketi'nde sendikalaşma karşıtı tavır nedeniyle Vestel ürünlerini boykot kampanyası başlatmasıdır. Yine Tez Koop-İş Sendikası da Tansaş işvereninin sendikalı işçileri işten çıkarmasını protesto etmek amacıyla 2001 yılı Şubat ayında Tansaş'tan alışveriş yapılmaması için bir kampanya başlatmıştır (Aydınlık Gazetesi'nden akt. petrol-is.org.tr).

Tüketici boykotlarının Dünya'da olduğu gibi Türkiye'de de etkinliği tartışmalıdır. Bir işletmeye yönelik boykotun etkin olabilmesi için çalışanlar arasında birlik, kararlılık, boykotu gerçekleştiren kitlenin hacmi, yazılı ve görsel basının desteği vb. faktörlerin bir araya gelmesi önem taşımaktadır. Dünya genelinde başarılı olan tüketici boykotları genel olarak çevre, hayvan hakları gibi global ölçekte uygulanan boykotlar olarak dikkat çekmektedir. Ülkemizdeise başarılı olan tüketici boykotlarının tüketici dernekleri çatısı altında gerçekleştiğini ifade etmek mümkündür. Örneğin; 2003 yılında, Tüketiciyi Koruma Derneği (TükoDer), Irak işgalini protesto etmek için Irak'a askeri müdahalede bulunan ABD ve İngiliz ürünlerine karşı boykot kampanyası başlatmıştır. Bir diğer örnek de 2020 yılında dini hassasiyetlerle Fransız mallarına yapılan boykot çağrısıdır (Vargı, 2020).

SONUÇ

İnsanlığın varoluşundan bu yana tüketim kadar tüketimin sosyal, toplumsal, psikolojik, ekonomik ve çevresel anlamda çeşitli yıkıcı etkilerini bertaraf etmek adına tüketim karşıtı anlayışlar da var olmuştur. Tarihsel süreçte, gerek dini gerek felsefi düşünce ve öğretiler tüketimin birey ve topluma zarar verme boyutunda olası etkilerini azaltmaya çalışmışlardır. Ancak, özellikle Sanayi Devrimi sonrası ortaya çıkan yeni üretim modeli beraberinde tüketim olgusunu da belirgin bir şekilde dönüştürerektüketimin bir yaşam tarzı formuna evrilmesine yol açmıştır. O günden bugüne yaşanan teknolojik gelişmeler, bir yandan ürün çeşitliliği ve arzını artırırken ürünlere yönelik talep yaratılması bağlamında şirketler ve devletler bazında uygulanan politikalar global düzeyde aşırı tüketimin önünü açmıştır. Aşırı tüketimin yol açtığı çevresel ve sosyal yıkımın tepkiyle karşılanması da tepkileri, direnişleri ve karşı duruş eylemlerini beraberinde getirmiştir.

Günümüzde düşünce ve eylem anlamında farklı uygulamaları olan tüketim karşıtlığının bir boyutu olarak tüketici boykotları dikkat çekmektedir. Tüketici boykotları, kimi zaman politik, kimi zaman çevresel, kimi zaman da insan hakları ve hayvan hakları konularında yapılan uygulamalara bir muhalefet özelliği taşımaktadır. Tüketiciler, boykot aracılığıyla işletmelerin ya da devletlerin hem kendi anlayışlarına ve hem çeşitli evrensel değerlere göre doğru bulmadıkları uygulamaları nedeniyle ürünlerini satın almayarak ekonomik açıdan bir baskı unsuru oluşturmayı, kolektif bir tepki ortaya koymayı ve mevcut durumun bu tepki neticesinde değiştirilmesini amaçlamaktadır. Dünden bugüne birçok örneği olan tüketici

boykotu uygulamalarının başarılı olabilmesi içinse, desteğin büyüklüğü ve sürekliliğinin etkili olduğunu ifade etmek mümkündür.

Sonuç olarak, aşırı tüketimin neden olduğu çevresel, ekonomik, sosyal ve toplumsal problemlere yönelik bir tepki olarak belirginleşen tüketim karşıtlığı anlayışı özellikle gelecek nesillere yönelik sürdürülebilirlik kaygılarının da en aza indirilmesi açısından önem taşımaktadır. Tüketim karşıtlığının bir boyutu olarak tüketici boykotları ise söz konusu problemlere ilişkin hem bireysel ve toplumsal farkındalığın sağlanması ve hem uygulamalarda çevresel ve sosyal sorumluluk ilkelerine uygun hareket edilmesi bağlamında günümüzün tüketicileri tarafından tercih edilen çözüm yollarından birisi olarak öne çıkmaktadır.

KAYNAKÇA

Başçı, E. 2015. Pazarlama ve Tüketim Toplumuna Eleştirel Bir Bakış: Tüketim Karşıtlığına İlişkin Nitel Bir Model. *Yayınlanmamış Doktora Tezi.* Anadolu Üniversitesi Sosyal Bilimler Enstitüsü. https://www.academia.edu/38125827/Pazarlama_ve_T%C3%BCketim_Toplumuna_Ele%C5%9Ftirel_Bir_Bak%C4%B1%C5%9F_T%C3%BCketim_Kar%C5%9F%C4%B1tl%C4%B1%C4%9F%C4%B1na_%C4%B0li%C5%9Fkin_Nitel_Bir_Model (Erişim Tarihi: 18.02.2021).

Bayuk, M. N. ve Ofluoğlu, M. 2013. Tüketici Boykotu ve İşletme Faaliyetlerine Etkileri. *Kamu-İş,* 13(1), 141-155.

Bocock, R. 2009. *Tüketim* (Çeviren (Çev.): İ. Kutluk,), Ankara: Dost Kitapevi Yayınları.

Dal, N. E. 2017. Tüketim Toplumu Ve Tüketim Toplumuna Yöneltilen Eleştiriler Üzerine Bir Tartışma. *Mehmet Akif Ersoy Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* 9(19), 1-21.

Delacote, P. 2006. Are Consumer Boycotts Effective?,The 6th Meeting on Game Theory And Practice, Zaragoza, Spain. https://www.researchgate.net/publication/228930946_Are_consumer_boycotts_effective (Erişim Tarihi: 15.02.2021).

Dobscha S. 1998. The live dexperience of consumer rebellion against marketing. *Advances in Consumer Research,* Provo. UT. https://www.academia.edu/5076259/The_Lived_Experience_of_Consumer_Rebellion_Against_Marketing. (Erişim Tarihi: 15.02.2021).

Dülek, B. ve Cömert, Y. 2018. Tüketim Karşıtı Eylemlerin Pazarlama Faaliyetleri Açısından Değerlendirilmesi. *Van Yüzüncü Yıl Üniversitesi İktisadi ve İdari Bilimler Dergisi*, 3(6), 104-121.

Fischer E. 2001. Rhetorics of resistance, discourses of discontent. *Advances in Consumer Research,* 28(1), 123-24.

Friedman, M. 1985. Consumer Boycotts in the United Sates, 1970-1980: Contemporary Events in Historical Perspective. *Journal of Consumer Affairs,* 19, (1), 96-117.

Friedman, M. 1991. Consumer Boycotts: A Conceptual Framework and Research Agenda. *Journal of Social Issues,* 47, (1), 149-168.

Friedman, M. 1995. American consumer boycotts in responsetorising food prices: Housewives' protests at the grass roots level. *Journal of Consumer Policy*, 18, 55-72.

Granström, J. 2014. Consumer Motıvatıons To Boycott: Focus On Non-Green Products. Yayınlanmamış Yüksek Lisans Tezi, Aalborg University, https://projekter.aau.dk/projekter/files/198419019/Master_s_Thesis_IBE_Juho_Granstr_m.pdf (Erişim Tarihi: 18.02.2021).

Haan, M. 2007. The Competitive Effects of Consumer Boycotts. https://www.researchgate.net/publication/228582241_The_Competitive_Effects_of_Consumer_Boycotts (Erişim Tarihi: 15.02.2021).

İslamoğlu, A. H. ve Altunışık, R. 2013. *Tüketici Davranışları*, İstanbul: Beta.

İşlek, K. (2017). Tüketici Boykotları. https://www.academia.edu/33127895/T%C3%BCketici_D%C3%BC%C5%9Fmanl%C4%B1klar%C4%B1_ve_T%C3%BCketici_Boykotlar%C4%B1_Consumer_Animosities_and_Consumer_Boycotts_ (Erişim Tarihi: 17.02.2021).

Iyer, R. ve Muncy, J.A. 2009. Purpose and object of anti-consumption, *Journal of Business Research,* 62, 160-168.

Kırmızı, M. ve Babaoğul, M. 2012. Tüketim Karşıtlığının Kuramsal Çerçevesi ve Örnek Olay İncelemesi: Boğaziçi Starbucks'ta Şenlik Var! http://www.sdergi.hacettepe.edu.tr/makaleler/TUKETIM-KARSITLIGI-MC.pdf (Erişim Tarihi: 17.02.2021).

Klein, J. G., Smith, N. C., ve John, A. 2004. Why we boycott: consumer motivations for boycott participation. *Journal of Marketing,* 68(3), 92-109.

Koku, P. S. 2011. On Boycotts Organized Through the Internet, *Journal of Marketing Development and Competitiveness* 5(6), 83-93.

Kozinets, R.V. ve Handelman, J.M. 2004. Adversaries of consumption: Consumer movements, activism, andideology.*Journal of Consumer Research,* 31(3). 691-704.

Lee, M., Roux, D., Cherrier, H. ve Cova, B. 2011. Anti-consumption and Consumer Resistance: Concepts, concerns, conflicts, andconvergence. *EuropeanJournal of Marketing*, 45 (11/12). 1680-1687.

Odabaşı, Y. 1999. *Tüketim Kültürü: Yetinen Toplumun Tüketen Topluma Dönüşümü*, İstanbul: Sistem.

Penaloza, L. ve Price, L.L. 1993. Consumer resistance: a conceptual overview, in NA - Advances in Consumer Research Volume 20, eds. Leigh Mc Alisterand Michael L. Rothschild, Provo, UT : *Associationfor Consumer Research,* 123-128.

Sen, S., Gürhan-Canli, Z., ve Morwitz, V. 2001. With holding consumption: a social dilemma perspective on consumerboycotts. *Journal of Consumer research,* 28(3), 399-417.

Stammerjohan, C. ve Webster, C. 2002. Traitand Situational Antecedents to Non-Consumption. *Advances in Consumer Research,* 29(1): 126-32.

Taşçıoğlu, M. ve Yener, D. 2017. Tüketicilerin Boykotlara Karşı Tutumlarına Yönelik Bir Araştırma: Menşei Ülke ve Sürdürülebilirliğin Etkileri. *Akademik Sosyal Araştırmalar Dergisi,* 61, 54-67.

TDK (2021). Türk Dil Kurumu Sözlüğü https://sozluk.gov.tr/ (Erişim Tarihi: 14.02.2021).

Torlak, Ö. 2016. *Tüketim: Bireysel Eylemin Toplumsal Dönüşüm.* İstanbul: İnkılab Yayınevi.

Vargı, S. 2020. Tüketici Boykotları Nereye Kadar. http://www.zafergazetesi.org/yazar/Tuketici-Boykotlari-Nereye-Kadar/2327 (Erişim Tarihi: 20.02.2021).

Zavestoski, S. 2002. Guest Editorial: Anticonsumption Attitudes, *Psyhology& Marketing,* 121-126.

https://www.ethicalconsumer.org/ethicalcampaigns/boycotts (Erişim Tarihi: 20.02.2021).

https://www.petrol-is.org.tr/haber/tarihimizde-tuketici-boykotlari-7779 (Erişim Tarihi: 20.02.2021).

THE RIGHT TO DISCONNECT OF WOMEN WHO WORK IN PERSPECTIVE RESPECT FOR WORK FAMİLY LİFE BALANCE

Assoc. Prof. Seda Topgul
Akdeniz University, Antalya/TURKEY
ORCID: 0000-0003-1649-1732

Abstract
With the acronym for SARS-CoV-2 disease, COVID-19 is an infectious respiratory disease that affects humans and is caused by the severe acute respiratory syndrome Coronavirus 2 (SARS-CoV-2). The disease was first detected in Wuhan, China on December 1, 2019, and has spread worldwide since then, causing a pandemic. Work from home has increased due to the pandemic, and this has created a unique problem. The boundaries between working from home and private life and work have blurred. This situation causes health problems such as depression, anxiety and burnout, especially for women who work from home. It is more important for working women to balance their working life and family life better for women who undertake home and care work. Replying to e-mails, transmitting reports, and being permanently accessible due to work groups in phone applications such as WhatssApp, outside of working hours, has brought along being "unable to break off from work". Even responding to workgroup messages and e-mails on weekends violates employees' right to rest. This situation makes it difficult to balance, especially for female employees. For this reason, it has brought to the agenda the discussions on the “The Right to Disconnect” that have been held recently. In this study, the general framework of the “The Right to Disconnect” will be evaluated and the subject will be discussed in terms of female employees.

Anahtar Kelimeler: COVID-19, Pandemic, The Right to Disconnect, Work Life Balance

İŞ AİLE YAŞAM DENGESİNE SAYGI ÇERÇEVESİNDE ÇALIŞAN KADINLARIN ULAŞILAMAMA HAKKI

Özet
SARS-CoV-2 hastalığı kısaltmasıyla COVID-19 insanları etkileyen ve şiddetli akut solunum yolu sendromu Koronavirüs 2' nin (SARS-CoV-2) neden olduğu bulaşıcı bir solunum yolu hastalığıdır. Hastalık ilk olarak 1 Aralık 2019 tarihinde Çin'in Vuhan şehrinde saptanmış ve o günden bu yana dünya çapında yayılarak pandemiye yol açmıştır. Pandemi nedeni ile evden çalışmalar artmış, bu durum kendine özgü problem meydana getirmiştir. Evden çalışma ile özel yaşam ve iş yaşamı arasında sınırlar bulanıklaşmıştır. Bu durum evden çalışan özellikle kadınlarda, depresyon, kaygı ve tükenmişlik gibi sağlık sorunlarına yol açmaktadır. Çalışan kadınların çalışma yaşamı ve aile yaşamını daha iyi dengeleyebilmeleri, ev ve bakım işi yüklenen kadınlar için daha fazla önem taşımaktadır. Mesai saatleri haricinde e-posta cevaplamak, rapor iletmek, Whats App gibi telefon uygulamalarında iş grupları nedeni ile sürekli ulaşılır olmak “işten kopamaz” olmayı beraberinde getirmiştir. Hatta hafta sonları gelen iş grubu mesajlarına cevap vermek ve e-postaları cevaplamak da çalışanların dinlenme hakkını ihlal etmektedir. Bu durum özellikle kadın çalışanlar açısından dengeyi kurmayı zorlaşmaktadır. Bu nedenle son dönemlerde yapılan “Ulaşılamama Hakkı” tartışmalarını

gündeme getirmiştir. Bu çalışmada "Ulaşılamama Hakkı" nın genel çerçevesi değerlendirilerek, kadın çalışanlar açısından konu tartışılacaktır.

Anahtar Kelimeler: COVID-19, Pandemi, Ulaşılamama Hakkı, İş Yaşam dengesi

Introduction

Women's not being able to balance their roles and duties in workplace and family life or their inability to balance work-family life leads to psychological problems such as stress, lack of self-confidence, ineffectiveness, dissatisfaction, unhappiness and depression. This conflict reduces the quality of life for women as well as causing both mental fatigue and problems, and economic insufficiency. The women's not being able to strike this balance means raising unhappy, unsatisfactory and unproductive individuals and an unhealthy society to be shaped in the future (Harcar, 2008). Therefore, it is of great importance for especially women to strike work and family life balance in order for the continuation of a healthy society.

Literature Review

Work and Family Life Balance

Work and family life balance can be described as enabling the effective participation of both work and family environments, and meeting the requirements of both environments (Voydanoff, 2005 and Agosti et al., 2015). Clark (2000) developed a theory titled "Work-Family Border Theory" to describe the work and family life balance. According to the theory, people have two worlds including work environment and family environment. The border between these worlds is temporary. People pass these borders on a daily basis. People shape the environments in which they are present as well as they are shaped by these environments. The theory tries to explain striking a balance through the transition between these two worlds of working people. Because the border is temporary and the individuals have to shape and adapt themselves for each world to which they pass (Clark, 2000).

The environments within the border theory mainly describe the work and family environment. These environments which can be identified as two different worlds can conflict sometimes instead of being in harmony. At this point, work and family life conflict arises. Conflict may also arise from the main purpose unconformity between the two environments. In the work environment, the workers are expected to be responsible and talented while they are expected to be loving and affectionate. At this point, the basic point required to achieve balance is to realize the division instead of integrating. Therefore, separating the business and home environments will create a synergy and balance will be achieved between them. There are borders between these two environments. There are three types of borders. These are physical border, temporal border, and psychological borders. Borders are permeable and they tend to spread. For example, negative emotions and behaviors can spread from home to work or vice versa. The borders are also flexible. It is possible for borders to become blurred and merge when there is permeability and flexibility between borders.

Entry to Era of Working from Home

SARS-CoV-2 disease, abbreviated as COVID-19, is an infectious respiratory illness that affects humans and is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease was first detected on December 1, 2019 in Wuhan, China, and has spread worldwide since then, causing a pandemic. As of February 28, the number of people who got sick has reached 114 million worldwide. The number of people who died from COVID-19 has exceeded 2.5 million and this number continues to increase day by day (WHO, 2021). Most white-collar workers have started working from home with the global pandemic. Furthermore, this situation demonstrates that there is no problem in terms of planning and conducting the works along with revealing the effect of mobility in suitable sectors. Therefore, it has become more important for employers if the task is completed or not rather than where and how it is completed. However, homes turned into workplaces with the work life intertwining with home life and it has become an obligation to evaluate the worker's privacy and right to disconnect.

The Right to Disconnect

Working from home has certain benefits for employers such as the decrease in the cost of stationery, electric, water, heating that are exploit in the office and as for the employees, conducting tasks anywhere including the house eliminates the problem of transportation. However, the border between the private life of the employees at home and the business life has also disappeared with these advantages of working from home. The working hours which were definite when working from the office have become indefinite in "homes" which are the new offices. Returning to e-mails, submitting reports outside of working hours have become part of the daily work routine for some employees. Being constantly available through the work groups in some phone applications such as WhatsApp causes living the daily life "unconnected" from the work in a sense. Before the global pandemic, the employee would not do anything related to work, would rest and deal with their private life outside of working hours, on the weekends, on holidays or the times when they do not work. Contacting the employee through electronic communication tools such as e-mail and phone due to "work", giving tasks through e-mail, calling them via phone would be avoided. The people working like this would not answer the e-mails or work for the tasks given through WhatsApp groups on the weekends. At this point, they could fully exercise her "right to rest" if they wanted.

The “Right to Disconnect” has come to the fore against the uncertainty created by the removal of borders with the pandemic and working from home. Although we can observe its importance more with the global epidemic, the discussions on "The Right to Disconnect" started to be discussed by the authorities in Europe after 2010. The pandemic enabled these discussions to be realized quickly (Erdem, 2021).

Legal Regulations of The Right to Disconnect

In European Parliament (EP) Plenary Session held in Brussels, the report issued for "the right to disconnect" regarding not reaching to the employees outside of working hours was accepted with 472 "yes", 126 "no" and 83 "abstention" votes. Report recorded that digitalization and various technological devices provide economic and social advantages for the employees and employers, increase flexibility and autonomy in work, decrease the commute durations as well as having disadvantages such as increasing workload, extension of working hours, overstepping the borders between work and private life, various ethical and legal problems on employment. In the report which reminded that the use of digital tools and technological devices for business purposes has increased a lot recently, it is stated that this has resulted in a culture of being constantly connected, always online and ready for duty. The

report reminded that working from home has increased significantly due to the new type of coronavirus (Covid-19) pandemic and stated that this situation increased the existing problems and created new problems of its own. In the report which highlights that the borders between private life and work life has become blurred with working from home, it is pointed that employers expect workers to be available all the time, and reminded that this situation puts pressure on the employee, the people working from home cannot turn communication channels off after hours, long working hours and increasing demands from the employees cause various health problems such as anxiety, depression, burnout. Stating that the employees have the right not to answer e-mails, messages and calls about their jobs during annual leaves and outside of working hours, the report underlines the necessity to prepare EU-wide regulation rapidly regarding this issue (Şeker, 2021).

At the national level, France is recognized as a pioneer in legal recognition of this new right. In 2013, a cross-sectoral national agreement on the quality of life in the workplace encouraged businesses to avoid any interference with employees' private lives by identifying periods during which devices should be turned off. This right was later enacted on August 8, 2016 and regulated by Article L.2242-17 of the French Labor Law. According to this provision, it is required to conduct obligatory negotiations on gender equality and quality of life in work and to make an agreement regarding the usage of digital tools and the regulation of worker's right to disconnect as a result of these negotiations in order to make sure that employers respect both working and resting hours of the worker, and their personal and family life. As a result of this legal amendment in the French Labor Law, the French Supreme Court decided that Rentokil Initial, a British company, would pay € 60,000 to its former France-based employee who should be constantly available in July 2018. With the verdict, the French Courts show that employers seeking permanent access to their employees violate the right of employees to disconnect and need to compensate.

On the other hand, Spain adopted the Data Protection and Digital Rights Act in November 2018. In addition to other digital rights, employees are also entitled to “the right to disconnect” with this law. These countries are followed by many countries both in Europe and in the world.

The right to disconnect has not been openly adopted in Turkey yet; however, the worker's right to rest was adopted with the Article 50 of the Constitution. Furthermore, working and resting hours have been accepted with Labor Law no. 4857 and other related legal regulations. In the regulation on working hours, it has been accepted that resting period is continuous 12 hours within 24 hours. Although there are decisions in which the work done outside the working hours regulated in accordance with the legally determined working hours is evaluated under overtime by the Court of Cassation, the focus has been the problem of financial correspondence and proof. However, what is important within the scope of the right to disconnect, the essence of the right, is that “the worker does not work outside of working hours during the resting period, and the private life of the worker is respected” (Eren and Yalçın, 2021).

Conclusion

Although there is no clear regulation in Turkish Law as in the French practice, the Right to Disconnect is a right arising from the Constitution. The right to disconnect should be respected within the system of working from home where the work and family life are intertwined, no meetings should be scheduled after the working hours and the managers should not place their employees under the pressure of answering by sending them e-mails. Furthermore, employees should not be necessarily included in work groups within phone

applications such as WhatsApp, and employees should not be expected to work outside of working hours with such applications.

References

Agosti, M. T., Andersson, I. , Ejlertsson, G. ve Janlöv, A. (2015). "Shift Work The Balance Everyday Life- A Salutogenic Nursing Perspective In Home Help Service In Sweden", **BMC Nursing**, 14(1), 55-77.

Clark, S. C. (2000). "Work/family border theory: A new theory of work/family balance", **Human Relations**, 53(6), 747–770.

Erdem, A. K. (2021). "Uzaktan Çalışmada Mesai Dışında Gelen İş Talepleri Özel Hayat Bırakmadı. Batıda Yaygınlaşan İş Dışında İrtibatı Kesme Hakkı Türkiye'de de isteniyor!", **Independent Türkçe Gazetesi.**

Eren, E. ve Yalçın, M. (2021). **"Evden çalışma ve Çalışanın Ulaşılamama Hakkı",** https://okyayevren.com/yayinlar/evden-calisma-ve-calisanin-ulasilamama-hakki/

Harcar, T. (2008). "Strategic Role of Managers For The Utilization of Family-Friendly Workplace Policies: A Social Responsibility Perspective", **Journal of Global Strategic Management,** 4, 79-87.

Şeker, A. U. (2021). **"Avrupa Parlamentosundan işverene mesai dışında 'çalışanı rahatsız etme' mesajı"**, https://www.aa.com.tr/tr/dunya/avrupa-parlamentosundan-isverene-mesai-disinda-calisani-rahatsiz-etme-mesaji/2118668.

Topgül, S. (2016). "İş ve Aile Yaşamı Dengesi (zliği)nin Kadın Çalışanlar Üzerindeki Etkileri", **Yönetim ve Ekonomi,** 23(1), 217-231.

Voydanoff, P. (2005). "Toward a conceptualization of perceived work-family fit and balance: a demands and resources approach", **J Marriage Fam**., 67, 822–36.

WHO (2021). **"WHO Coronavirus Disease (COVID-19) Dashboard",** https://covid19.who.int/

Globalization as Reverse Colonisation

Burak INCE
Yıldırım Beyazıt University, Ankara, Turkey

Abstract
As a social science and social field, International Relations is affected by the social changes. In this study globalization, colonisation and reverse colonisation are discussed. The term "reverse colonisation" is first seen in literary studies and first used in a global sense by Anthony Giddens in 1999. Giddens was Director of the London School of Economics between 1996 and 2003 and today he is known around the world for his writings in the areas of sociology, politics, and social theory. According to Giddens globalization is dominant feature of this age and it is becoming increasingly de-centred. He defines the term reverse colonization as follows: "Reverse Colonisation means that non-western countries influence developments in the west." The term has a grand potential that can change the social structure of the world. It is a well-known fact that the world is just builded on western values today. It can be said that de-centering of the globalization in one sense means the weaken of western world and hence, the term needs to be taken into consideration by the International Relations discipline. The study presents some examples from Africa and aims to find meaningful answers to the following questions: How and why globalization is driven by reverse colonisation?

Keywords: Colonialism, Reverse Colonisation, Globalization

EUROPEAN UNION and MIGRATION POLICIES

Ugur Selcuk Aslan
Kocaeli University, Kocaeli, Turkey
Orcid No: 0000-0002-5409-2452
Neslihan Aslan
Gendarmerie General Command, Ankara, Turkey
Orcid No: 0000-0002-5686-7442

Abstract
The phenomenon of immigration, which has always occupied a significant place in the course of human history, is one of the most important issue that occupy the agenda of countries. As much as the factors causing migration are important for countries of origin, transit and destination, the consequences arising from migration are also very important. Therefore, the phenomenon of immigration is an international issue in terms of both its causes and consequences. The aim of this study is to examine effects of European Union countries' migration/immigration policies on Turkey within the framework of securitization. When considered together with its causes and consequences, migration appears as a phenomenon that threatens society. This situation reveals that immigration is actually a security problem. Thus, as the field of threats faced by societies expands, the phenomenon of immigration is discussed in terms of new security approaches in the national and international arena and plays an important role in determining the policies of countries. The phenomenon of immigration, which continues to increase day by day, opens an economic door for migrant smugglers, and terrorist groups trying to cross the border with migrants pose a threat to countries. Turkey, due to its geographical location in addition to being the destination country as well as springboard location for people, neighbouring European Union countries that apply security approach model to migration / immigration policies has been resulted Turkey hosting the most migrants. Number of migrants accumulated in Turkey is increasing every day, due to the policies implemented by European Union which has made it more difficult to enter EU countries even by legal means. However, it should not be forgotten that the solution to the problem is not to close the borders, but to produce common solutions with common policies.

Key Words: Migration, Immigrant, EU, Turkey, Migration Policy

REVIEWING THE NATIONAL PACT AND TURKEY'S POSITION IN THE MIDDLE EAST IN THE CONTEXT OF ALI EMIRI EFENDI'S APPROACH

Mehmet Hişyar Korkusuz
İnönü University, Malatya, Turkey
https://orcid.org/0000-0003-1894-3771

Abstract
The National Pact continues its impact for existence and continuation of Turkey as a vision document and brings out a road map and conceptual framework. Along with reserving vested rights of Turkey and highlighting Middle East, it draws attention to historical, humanitarian and cultural unity beyond divisions and separations. It is a manifesto of freedom and sovereignty aiming to establish a righteous union on the axis of mutual trust and will for a common future. "… to ensure fair and permanent peace for the independence of the state and future of the nation" expression in the text has key importance. This contract, loaded with meaning, contains the knowledge, cultural depth and conscience of our nation. Traditional line of effective, reasonable and legitimate knowledge and education play a key role in these processes. In this article, the inclusion of Ali Emiri Efendi, can be associated with a particular importance and value in terms of reflections of common mind as objective basis of national unity and solidarity. This relationship and interaction are seen in his work, 'Osmanlı Vilâyât-ı Şarkiyyesi', which promotes geographical integrity with association of ideas, beliefs, ideals, actions and emotions. He brought to light the original manuscript of Divan-ı Lugat'it Türk, one of the most fundamental references in Turkish, by bought it from a foreign traveler and bequeathed his library to his people. In his work, 'Osmanlı Vilâyât-ı Şarkiyyesi', he critically approaches people, events-facts and situations from past to future with a perspective that includes East and West comparison as well as humanitarian and Islamic sensitivity. In this work, the original, pluralist, historical, natural and spiritual structure of the Middle East is being weaved knot by knot, by being intensified in and around the city of Diyarbekir. On the way to the foundation of the Republic of Turkey, the successor of Ottoman Empire, knowledge and cultural heritage which constituted the infrastructure found its soul and existence with solid will and works of this scholar-enlightened line. This character of Middle East geography, which has been processed with knowledge and cultural heritage within history and society, continues to bloom and flourish again. Turkey as state and society, a century after founding the Republic, aims an overall development with its nearby geography by strong and reinforced ties in accompaniment with knowledge and experience with interaction via the language of the heart. Humanitarian diplomacy and studies are in focal point in these processes.

Keywords: National Pact, Turkey, Middle East, Knowledge and Cultural Heritage, Ali Emiri Efendi's Approaches

MİSAK-I MİLLİ VE TÜRKİYE'NİN ORTADOĞU'DAKİ KONUMUNA ALİ EMİRİ EFENDİ'NİN YAKLAŞIMLARI BAĞLAMINDA YENİDEN BAKMAK

Özet

Misak-ı Milli Türkiye'nin varoluşu ve bekası için bir vizyon belgesi olarak etkisini sürdürmekte ve bir yol haritası ve kavramsal çerçeve sunmaktadır. Türkiye'nin kazanılmış müktesep haklarıyla birlikte, Ortadoğu'ya da ışık tutarak bölünmeler ve ayrılıkların ötesindeki tarihsel, insani ve kültürel birlikteliğe dikkatleri çekmektedir. Ortak bir gelecek için karşılıklı güven ve irade buluşması ekseninde haklı birlikteliği tesis etmeyi gaye edinen bir hürriyet ve egemenlik manifestosudur. Metindeki "istiklali devlet ve istikbali millet için haklı ve sürekli bir barışa nailiyet" ifadesi kilit önemdedir. Anlamca yüklü bu sözleşme, milletimizin bilgi, kültür derinliği ve vicdanını içermektedir. Etkin, makul ve meşru ilim ve maarif çizgisi tüm bu süreçlerde anahtar role sahiptir. Bu makalede Ali Emiri Efendi'ye yer verilmesi milli birlik ve beraberliğin nesnel temeli olarak ortak aklın yansımaları bakımından ayrı bir önem ve değerle ilişkilendirilebilir. Bu ilişki ve etkileşim O'nun coğrafi bütünlüğü fikir, inanç, ideal, aksiyon ve duygu birlikteliğiyle destekleyen Osmanlı Vilâyât-ı Şarkiyyesi eserinde görülmektedir. O, Türkçe'nin en temel referanslarından olan Divan-ı Lugat'it Türk adlı eserin el yazması orijinalini bir yabancı seyyahtan satın alarak gün yüzüne çıkarmış ve kendi kütüphanesini Milleti'ne miras bırakmıştır. Ali Emiri Efendi Osmanlı Vilâyât-ı Şarkiyyesi çalışmasında geçmişten geleceğe bir kritik yaklaşımla Doğu ve Batı karşılaştırmalarını da içeren bir perspektifle kişi, olay-olgu ve durumlara insani ve İslami duyarlılığı dahil ederek yaklaşmaktadır. Bu eserde Ortadoğu'nun özgün, çoğulcu, tarihsel, doğal ve manevi yapısı Diyarbekir şehri ve etrafında yoğunlaştırılarak ilmek ilmek dokunmaktadır. Osmanlı bakiyesi Türkiye Cumhuriyet'inin kuruluşuna giden yolda altyapıyı teşkil eden bir ilim ve kültür mirası bu alim-aydın çizgisinin sağlam irade ve çalışmalarıyla ruh ve vücud bulmuştur. Ortadoğu coğrafyasının tarih ve toplum içinde bilgi ve kültür mirasıyla işlenmiş bu karakteri yeniden filizlenip yeşermeye devam etmektedir. Türkiye devlet ve toplum olarak Cumhuriyet'in kuruluşundan bir asır sonra bölge coğrafyasıyla yeniden kuvvetli ve pekiştirilmiş bağlarla bilgi ve deneyim zenginliğinin eşliğinde gönül dili üzerinden etkileşimle topyekün kalkınmayı hedeflemektedir. İnsani diplomasi ve çalışmalar bu süreçlerde odak noktasını teşkil etmektedir.

Anahtar Kelimeler: Misak-ı Milli, Türkiye, Ortadoğu, Bilgi ve Kültür Mirası, Ali Emiri Efendi'nin Yaklaşımları

Giriş

Osmanlı Devleti'nin iç ve dış pek çok sebepten dolayı yıkılışının ardından kendi küllerinden yeniden doğan bir Anka Kuşu gibi görülebilecek Türkiye Cumhuriyeti'ne giden süreçte Misak-ı Milli anahtar role sahiptir. Nitekim Gazi Mustafa Kemal Paşa'nın Lozan'a yolladığı baş delege İsmet Paşa da Misak-ı Milli'nin Türkiye'nin olmazsa olmazı yani kırmızı çizgisi olduğunu vurgulamaktaydı.

Bu çalışmanın amacı bin yılı aşkın bir süredir Ortadoğu'da yerleşik bir devlet ve medeniyet realitesi olarak Türkiye'nin konumuna Misak-ı Milli'ye odaklanmaktadır; aynı zamanda bu geçiş süreci ve dönüşümü bütün bir Ortadoğu coğrafyasında kendi özelinde bizzat tecrübe edip yaşamış bir Osmanlı – Türkiye aydını ve devlet adamı olarak Ali Emiri Efendi'nin yaklaşımlarını değerlendirerek günümüze ve geleceğe dair bir projeksiyon tutmayı hedeflemektedir.

I. Misak-ı Milli'nin Türkiye İçin Önemi ve Ortadoğu'ya Derin Etkisi

Misak-ı Milli Türkiye'nin varoluşu ve bekası için bir vizyon belgesi olarak etkisini sürdürmekte ve bir yol haritası ve kavramsal çerçeve sunmaktadır. Türkiye'nin kazanılmış müktesep haklarıyla birlikte, Ortadoğu'ya da ışık tutarak bölünmeler ve ayrılıkların ötesindeki tarihsel, insani ve kültürel birlikteliğe dikkatleri çekmektedir. Ortak bir gelecek için karşılıklı güven ve irade buluşması ekseninde haklı birlikteliği tesis etmeyi gaye edinen bir hürriyet ve egemenlik manifestosudur. Misak-ı Milli, esas olarak yeni Türkiye Cumhuriyeti Devleti'ne giden bir perspektifi sunmakla beraber özü itibariyle Osmanlı bakiyesi coğrafyadaki tüm toplulukların özgürlük ve bağımsızlığını da zımnen hedeflemektedir. Metindeki "istiklali devlet ve istikbali millet için haklı ve sürekli bir barışa nailiyet" ifadesi kilit önemdedir. Anlamca yüklü bu sözleşme, milletimizin bilgi, kültür derinliği ve vicdanını içermektedir.

Misak-ı Milli (Ahd-i Millî Beyannamesi / Peymân-ı Millî) adlı 6 maddelik bu mühim belgenin metni şöyledir (Uçarol, 2015: s.733-735; Gönlübol ve Sar, 2014: s.12-13; Sakin, 2003: s.108-109):

Zîrde vaziülimza Osmanlı Meclisi Meb'usan azaları istiklâl-i devlet ve istikbal-i milletin, haklı ve devamlı bir sulhe nailiyet için ihtiyar edebileceği fedakârlığın hadd-i azamisini mutazammın olan esasat-ı atiyyeye tamami-i riayetle mümkün-ü temin olduğunu ve esasat-ı mezkûre haricinde payidar bir Osmanlı saltanat ve cemiyetinin devam-ı vücudu gayr-ı mümkün bulunduğunu kabul ve tasdik eylemişlerdir (Osmanlı Meclis-i Mebusan üyeleri, devletin bağımsızlığı ve milletin geleceğinin, haklı ve sürekli bir barışa kavuşması için göstereceği fedakârlığın en son sınırı olan aşağıdaki esasların hepsinin uygulanabileceğine emin bulunduğunu ve sözü geçen esaslar dışında bir Osmanlı saltanat ve toplumunun varlığının devamının imkânsız olduğunu kabul etmiş ve onaylamıştır):

Madde 1 – Devlet-i Osmaniye'nin münhasıran Arap ekseriyetiyle meskûn olup, 30 Teşrin-i evvel 1918 tarihli mütarekenin hîn-i aktinde muhasım orduların işgali altında kalan aksamın mukadderatı, ahalinin serbestçe beyan edecekleri ârâya tevfikan tayin edilmek lazım geleceğinden, mezkûr hatt-ı mütareke dahil ve haricinde dînen, örfen ve emelen müttehit, yekdiğerlerine karşı hürmet-i mütekabile ve fedakârlık hissiyatıyla meşhun ve hukuku ırkiyye ve içtimaiyeleri ile şerait-i muhitiyelerine tamamıyla riayetkar Osmanlı-İslâm ekseriyetiyle meskûn bulunan aksamın heyet-i mecmuası hakikaten veya hükmen hiçbir, sebeple tefrik kabul etmez bir küldür (Osmanlı Devleti'nin özellikle Arap çoğunluğunun yerleşmiş olduğu, 30 Ekim 1918 tarihli mütarekenin – Mondros Mütarekesi'nin – yapıldığı sırada, düşman ordularının işgali altında kalan bölgelerinin geleceği, halkının serbestçe açıklayacakları oylara göre belirlenmesi gerekeceğinden; sözü geçen mütarekenin çizdiği sınırlar içinde ve dışında din, anlayış ve amaç bakımından birlik olan ve birbirlerine karşı saygı ve fedakârlık duyguları besleyen, soy ve toplum ilişkileri ile muhitin şartlarına elverişli bir tarzda bütünüyle uyan Osmanlı-İslâm çoğunluğunun yerleşmiş bulunduğu bölgelerin tamamı gerçekten ya da hükmen hiçbir nedenle ayrılmaz bir bütündür).

Madde 2 – Ahalisi ilk serbest kaldıkları zamanda âray-ı âmmeleriyle Anavatana iltihak etmiş olan Elviye-i Selâse için ledel-icap tekrar serbestçe âray-ı âmmeye müracat edilmesini kabul ederiz (Halkı ilk serbest kaldığı anda kendi oylarıyla anavatana katılan Elviye-i Selâse – Üç Sancak: Kars, Ardahan, Batum – için gerekirse tekrar halkoyuna başvurulmasını kabul ederiz).

Madde 3 – Türkiye sulhuna talik edilen Garbi Trakya vaziyet-i hukukiyesinin tespiti de sekenesinin kemal-i hürriyetle beyan edecekleri ârâya tebaan vaki olmalıdır (Türkiye ile yapılacak barışa bırakılan Batı Trakya'nın hukuki durumu da özgürce yapılacak halkoyu sonucuna göre belirlenmelidir).

Madde 4 – Makarr-ı Hilâfet-i İslâmiye ve Payitahtı Saltanat-ı Seniye ve Merkez-i Hükümet-i Osmaniye olan İstanbul şehriyle Marmara denizinin emniyeti her türlü halelden masun olmalıdır. Bu esas mahfuz kalmak şartıyla Akdeniz ve Karadeniz Boğazlarının ticaret ve münakalât-ı âleme küşadı hakkında bizimle sair bilumum alakadar devletlerin muttefikan verecekleri karar muteberdir (İslâm halifeliğinin merkezi ve Osmanlı Saltanatı'nın başkenti İstanbul şehri ile Marmara Denizi'nin güvenliği her türlü tehlikeden korunmalıdır. Bu esas saklı kalmak koşuluyla Akdeniz ve Karadeniz

Boğazları'nın dünya ticaretine ve ulaşımına açılması hakkında bizimle diğer bütün ilgili devletlerin oybirliği ile verecekleri karar geçerlidir).

Madde 5 – Düvel-i İtilâfiye ile muhasımları ve bazı müşarikleri arasında takarrür eden esasat-ı ahdiye dairesinde ekalliyetlerin hukuku, memalik-i mütecaviredeki Müslüman ahalinin de aynı hukuktan istifadeleri ümniyesiyle tarafımızdan teyit ve temin edilecektir (İtilâf Devletleri ile düşmanları ve bazı ortakları arasında yapılan andlaşmalardaki esaslara göre azınlıkların hakları, civar ülkelerdeki Müslüman halkın da aynı haklardan yararlanmaları koşulu ile tarafımızdan garanti edilecektir).

Madde 6 – Millî ve iktisadî inkişafımız daire-i imkâna girmek ve dahi asrî bir daire-i muntazama şeklinde tedvir-i umura muvaffak olabilmek için, her devlet gibi bizim de temin-i esbab-ı inkişafatımızda istiklâl ve serbest-i tâmme mazhar olmamız ussül esas-ı hayat ve bekamızdır. Bu sebeple siyasî, adlî, malî inkişafımıza mâni kuyûda muhalifiz. Tahakkuk edecek düyunatımızın şerait-i tesviyesi de bu esasata mugayir olmayacaktır (Ulusal ve ekonomik gelişmelerimizi sağlamak ve daha çağdaş bir düzenli yönetimle işleri yürütebilmek için her devlet gibi bizim de tam bir bağımsızlığa ve özgürlüğe ihtiyacımız vardır. Bu yaşamımızın ve geleceğimizin esasıdır. Bu nedenle siyasi, adli, mali ve diğer gelişmelerimize engel olacak sınırlamalara karşıyız. Borçlarımızın ödenme şekli de bu esaslara aykırı olmayacaktır).

Bu kısa, özlü ve derin metin tam bir yüzyıldır etkisini ve gücünü sürdürmeye devam ediyor. Geçmişten geleceğe bir gerilim ve süreklilik harmonisinin izlerini bu metinde öz olarak görmek mümkündür. Özellikle Misak-ı Milli kapsamında olan Musul ve civarı o dönemde olduğu gibi şimdi de tartışmaların odak noktasında yer almayı sürdürmektedir.

Misak-ı Milli aradan bunca zaman geçmesine rağmen Bu Ülke'nin insanlarına hala bir inanç, ümit ve moral aşısı olmayı sürdürüyor. Son Osmanlı Mebusan Meclisinde Felah-ı Vatan grubunun öncülüğünde ortaya çıkarılan evrensel yönelimli Milli nitelikte bir manifesto gibi görülebilmektedir. Evrensellikten kasıt bütün bir dünyaya hitab edebilen bir dille vicdan ve akıl terkibine sahip olmasıdır. Millilikle hedeflenen ise toplumun kendi gerçek ihtiyaçlarını ve çıkarlarını temsil ederek ülkenin ahval ve vaziyetine dair net bir irade beyanı ve sağlam duruşu içermesidir. Arkasından gelen tüm çabalar bu hedefle ortaya konan çıtayı aşamadı. Misak-ı Milli Ortadoğu'da yaşayan mazlumları gönül coğrafyası kapsama alanına alan bir ideal amaç olarak okunabilir. Türkler, Kürtler ve Araplar başta olmak üzere tüm Müslüman unsurlar ve ahali ile beraber ortak yaşam potasında bir ve beraber olmuş diğer tüm kültürel unsurlar da bu ortak varoluşun cisimleşmesi gayesine matuftu. Dönemin koşulları içinde herkese heyecan veren, anlamlı ve değerli bir çıkıştır. Kongreler ve diğer milli mücadele aşamalarının ilk nüvesi ve yüksek standardı olarak parlaklığını koruyacaktı. Erzurum ve Sivas Kongrelerinin aynı zamanda İstanbul'daki Meclis tarafından da paylaşıldığını ve bu bağlamda Anadolu ve Rumeli Müdafaa-i Hukuk iradesinin bir bütün olarak her yerden güç ve destek aldığını gösterir önemli bir tarihi metindir. Arapların kendi kaderlerini kendilerinin belirleyeceği ve bunun dışındaki bütün Müslüman Halk'ın kaderinin ve hudutlarının milli ahid içinde yer aldığı vurgusu da çok çarpıcıdır. Arap vurgusu hem yükselen milliyetçilik akımına karşı tamponlayıcı bir ön alma çabası hem de bu hareketlere verilen dolaylı destekle beraber milletler arası meşruluk açısından dayanışmacı bir karakteristiğe işaret etmektedir. Yani Son Osmanlı Meclisi bütün Müslümanların ve İnsanların derdi ile o olumsuz ve yetersiz siyasal ve askeri şartlara rağmen ustaca alaka ve teveccüh göstermektedir denilebilir. İstanbul'un o dönemde İngiliz İşgali altında olduğu hatıra getirilince bir kahramanlık örneği olduğu da kabul edilebilir.

İşin ilginç yanı şu anki bütün problem alanlarını net olarak görebilen bir vizyon ve misyon'un ışıltısı Misak-ı Milli'de saklıydı. Coğrafya hatları ve çizgilere bakılınca hiç te hayali ve romantik olmayan gerçekçi kerterizlerin alındığı net görülebilir. Bu konunun mutlaka bilimsel açıdan her yönden sansürsüz ve sınırsız bir şekilde tartışmaya açılmasında yarar vardır. Aynı zamanda yeni bir birlik mimarisinin bir asır önceki meşru ve haklı argümantasyonu ile ortaya koyduğu yolda ve uğurda canlanma da gerekiyor. Ülkemizde aydın, siyasetçi ve akademisyenlerin geçmişten tevarüsle devreden jakoben askeri-sivil memur refleksini aşıp olgun ve yetkin bir tutum takınmaları gerekir. Karşıtlık ve yandaşlık ekseninde değil hakikatler ve gerçeklerin perspektifi ile meseleye bakabilmek gerekir.

Misak-ı Milli'de açıkça dillendirilmese bile Kutsal Beldeler'e mümkün olan en kısa zamanda erişilebilecek bir esneklik mesafesi korunmuştur. Düvel-i Muazzama (Büyük Devletler ve Güçler) ile mücadele'de en hassas olunan dinamiklerden birisi de bu olacaktır. Sağlam tutulacak Kuzey-Güney Hattıyla beraber Doğu-Batı Kavis'i zaten olası risk ve tehlikeleri süreç içerisinde savuşturarak İslam Dünyası'nın geleceği ve güvenliği tüm İslam Milletleri ve Halkları ile eş anlı olarak süreç içerisinde aşama aşama tamamlanmış olacaktı. Zaten Arap Milliyetçiliğinin yükselişi ve Hicaz'daki kuvvetli muhalif damar sıkıntıların yeniden ele alınmasını ancak zaman içerisinde mümkün kılacak bir vaziyeti açığa çıkarıyordu. Kuvvetle muhtemel müstevlilerin Arap'lara dönük politik propagandalarını boşa çıkarmayı hedefleyen bir ön alma hedefi gözetilmişti. Arapların dışında özellikle Türklük vurgusunun yapılmaması ve Kürtlere dair ayrı bir ifadenin yer almaması Türk ve Kürt kardeşliğinin ayrılmazlığına zımnen özenli bir atıf olarak değerlendirilebilir. Türkiye ifadesinin yer alması da nötral bir biçimde geleceğe dönük projeksiyon olarak nitelendirilebilir. Batı Trakya, adalar ve elviyei selase (Kars, Ardahan ve Batum) vurgusuyla mümkün olanı hedefleyen ve asgari Vatan Sathının hudutlarını belirleyen bir temel varoluşsal senet pozisyonundadır. İngilizlerin bu metne aşırı tepki vermesi ve Rauf Orbay başta olmak üzere kimi etkin zevatı Malta'ya sürmeleri de boşuna değildir. Özellikle İslami/Milli içerikli vurgular bu tepkilerine zemin hazırlamış görünmektedir. Boğazların Statüsü o dönemdeki Siyasetin Merkezi olan İstanbul'un güvenliği (Makarrı Hilafet ve Saltanat) kapsamında Uluslararası Ticaret'in akışı bağlamında ele alınmıştır. En mühim başlıklardan birisi de Kapitülasyonların reddedilmesi ile beraber azınlıklar için öngörülen mütekabiliyet esasıdır. Metne girişteki 'İstiklali Devlet ve İstikbali Millet' ifadesi çok çarpıcıdır.

O dönemin şartları içerisinde fevkalade tutarlı ve bütüncül bir yaklaşımdan bahsedilmektedir. Mazi Dün'de kalarak değil Yarın'lara bakarak okunursa enerji heder edilmemiş olur. Bazı ihtilaf doğurması muhtemel ifadelerin söylenmeden özlerinin korunabileceğini ve böylelikle tesirini icra edeceğini de yeniden görmüş oluyoruz. Ancak bununla birlikte problemli hale gelmiş meselelerin de diplomasinin nezaretinde açıkça ve çok yönlü olarak dillendirilmesi geleneği de böylelikle tekrar hafızalara yerleştirilmek istenmektedir. 28 Ocak 1920'de İngiliz Silahlarının Namlusuna rağmen gizli bir celsede akdedilip yazılan bu metin herkese çok şey öğretmeye devam ediyor. Bölgede hala etkisini güçlü bir şekilde sürdüren adil, makul ve meşru ulema çizgisi bu süreçlerde anahtar role sahiptir. Bu makalede Ali Emiri Efendi'ye yer verilmesi toplumsal bütünleşik aklın yansımaları bakımında ayrı bir önem ve değere sahip olmayı sürdürmektedir. İsmet Paşa Lozan Konferans yolunda İstanbul'a yaklaşırken gazetecilerin görüşmelerde savunulacak esaslarla ilgili sorusuna da şu cevabı vermiştir: "Bizim barış şartlarımız dünyaca malumdur. Bu şartları birçok defa, birçok vesilelerle ilan etmekten geri kalmadığımız için onları herkes bilir. Bizim, uğrunda yıllardan beri her türlü fedakârlığa katlandığımız gayelerimiz çok mütevazı ve çok haklıdır. Bu gayeler, iki kelime içindedir: 'Misak-ı Milli'…" (Karacan, 2017: s. 48).

Türkiye Cumhuriyet'in kuruluşundan itibaren kendisine karşı yerel, bölgesel ve küresel ölçekli meydan okumalara ve hatta tehditlere karşı cevap verebilecek bir kudret, potansiyel ve iradeye sahip olduğunu her açıdan göstermek istemektedir. Geçen yüzyılın Misak-ı Milli kapsamındaki müktesebatları olarak kabul edilebilecek Hatay'ın Anavatan'a katılması ve 1974 Kıbrıs Barış Harekâtı dışında kalıcı bir siyasi-hukuki kazanım söz konusu değildir. Ancak yakın coğrafyasındaki istikrarsızlık ve güvensizliklere karşı tarihsel, toplumsal, kültürel ve insani kaynakları ve ortak hafızayı sürece dahil etmeye çalışmaktadır. Gönül coğrafyası olarak Misak-ı Milli hem bir vizyon belgesi olarak etkisini sürdürmekte hem de motivasyon unsuru olarak tesirli olmaktadır.

Türk siyasal hayatında Misak-ı Milli vurgusu hiç eksik olmadı. Ancak özellikle 8. Cumhurbaşkanı T.Özal döneminde bu vurgunun çok daha ön plana çıktığı gözlenmektedir. Ancak Misak-ı Milli konusu, ilk kez halkın oylarıyla doğrudan seçilmiş bir siyasi lider olarak, Cumhurbaşkanı Recep Tayyip Erdoğan tarafından sıklıkla işlenerek iç ve dış politika yapım süreçlerinde gündeme gelmesi sağlanmıştır denilebilir. Cumhurbaşkanı Erdoğan, Musul ile mevcut olan tarihi bağlara dikkat çektiği bir konuşmasında Musul'da yerleşik Arap, Türkmen ve Kürtlerin Türkiye ile kardeş olduğunu, sınırın iki yanında akrabalık bağlarının bulunduğunu, bu nedenle bu coğrafyaya duyarsız olunamayacağını ifade etmiştir (aktaran Kutluk, 2018: s. 318). Daha sonra yaptığı bir konuşmada ise "…geçmişte Kerkük bizimdi, Musul bizimdi" diyen Erdoğan Misakı Milli'den bahsettiği için bir kesimin rahatsız

olduğunu belirterek Mustafa Kemal Paşa'nın da Misak-ı Milli'yi istikamet olarak gösterdiğini anımsatmıştır (aktaran Kutluk, 2018: s. 318). Cumhurbaşkanı Erdoğan'ın Misak-ı Milli söylemiyle Yeni Türkiye idealini buluşturma noktasında bir arayış içinde olduğu düşünülebilir. Bir bütün olarak düşünüldüğünde ve büyük resme bakıldığında Cumhurbaşkanı Erdoğan'ın unsur ve dinamikleri açıkça tanımlanmamış olsa da öz olarak yeni bir milli güvenlik doktrini ile düşünüp hareket ettiği söylenilebilir. Bunda gelenekten geleceğe yol almak isteyen uzun vadeli bir yürüyüşün teorik ve pratik izlerini gözlemlemek mümkündür.

II. Türkiye ve Ortadoğu: İnsani ve Kültürel Ortak Zeminin Yeniden İnşa Süreci

Türkiye Cumhuriyeti Devleti ve toplumu tüm coğrafya unsurlarıyla bilgi ve ortak deneyim ekseninde sevgi dili üzerinden yeniden buluşabilmelidir. Niyet ve hedefler aktüel durum ve geleceğin birlikte ortak irade ile inşası ekseninde herkesin kabul edip benimseyebileceği meşru bir kamusal algı ve algoritma ile biçimlendirilmek durumundadır. Türkler ve Kürtler ile başlayan Araplar ile genişleyen insani, sosyal, ticari ve kültürel etkileşimler güvenlik ve özgürlüğe dair en esaslı umut olacaktır. Bu süreçlerdeki anahtar rolün, insani ve kültürel zemin etütleri ile geliştirilip tahkim edilecek bir stratejik vizyonun ekonomi politik imkanlarla zenginleştirilmesi sayesinde adım adım gerçekleştirilebileceğini hep akılda tutmak gerekir. Dil ve söylemin anaforuna takılmadan gerçekliğin yeniden olduğu gibi görülmesi ve tarihsel ve toplumsal bağlamına kavuşması her açıdan çok önemlidir. Algılar, imajlar, olgular ve bulguların özenli, sağlam ve düzgün bir şekilde revize edilmesiyle uzun zaman saklı kalmış tablonun yeniden günyüzüne çıkabileceği hatırdan çıkarılmamalıdır. Kendinize ve dış dünyaya baktığınız prizmanızın yanıltıcı sonuçlara yol açabileceğini hesap ederek herkesin birbirine ayna olabileceği hakikati yakın ve uzak hafızada yer almalıdır.

Türkiye'nin Ortadoğu'ya bakışı uzun dönem belli başlı birçok sebepten dolayı mesafeli ve soğuk durma biçiminde olmuştur. Osmanlı Devleti'nin yıkılması ve Anka'nın külleri içinden yeniden Türkiye Cumhuriyeti Devleti'nin doğuşu ve bu devletin gelişim ve yükselme süreci elbette ki zaman alacaktı. Bir de dönemin büyük ve egemen devletleri petrol ve diğer enerji kaynakları dolayısıyla -bu durumu Türkiye'ye ve Dünya'ya karşı açıkça ifade etmeseler bile- Türkiye'yi mümkün mertebe sahanın dışında tutmaya çalışıyorlardı. Bu süreçte Türkiye özellikle SSCB ile ilişkiler üzerinden meşruluğunu sağlamaya çalışarak Lozan'ın alt yapısını hazırlamış ve ideolojik yönden Batılılaşma ile de Milletler Cemiyeti sistemindeki yerini almaya çalışmıştı. Ayrıca yeni güç dengesi ve reelpolitik arasında sarkaç hareketi yapan ve yeniden düzenlenen uluslararası politik atmosferi içinde başat aktörler olan İngiltere ve Fransa ile oynadığı satrançta kaybetmemeyi, kazanmayı esas almıştı. Bu süreçte ABD çok ön plana çıkmasa bile sürece müdahil ve müzahirdi. Bu süreçte temel hedef olarak mümkün olduğu nisbette 'Misak-ı Milli' gerçekleştirilmeye çalışılacaktı. Çözümsüz kalan konular zamanın, uluslararası konjonktürün elverişliliğine ve şartların olgunlaşmasına bırakılacaktı. Başta Musul (Yani Petrol) olmak üzere sonuçsuz kalan mevzular o dönemden bugüne devam eden eleştirilerin jeo-politik açıdan ağırlık merkezini teşkil edecekti. Yeni Türkiye Cumhuriyeti'nin varlık ve beka meselesi Batı Hegemonyasına tam anlamıyla itiraz edebilecek imkân ve kabiliyete erişmeyi tehir edecekti (Korkusuz, 2019: s.1-79). Aradan bir yüzyıl geçtikten sonra Türkiye'nin yeniden Ortadoğu'da bölgesel bir aktör olarak boy göstermesi insani ve kültürel bağlardan, irtibatlardan dolayı son derece doğaldır. Bu aynı zamanda bölgesel barış ve işbirliği için bir imkan ve potansiyeli de her seviye ve platformda sunabilecek bir gelişme olarak okunabilir.

1.Dünya Savaşı öncesi ve sonrasını dosdoğru anlayabilmek ve taşları yerli yerine oturtabilmek için Osmanlı Devleti'nin parçalanması sürecini petrolün keşfi ve enerji havzalarını ve kaynaklarını dikkate alarak yapmak gerekir (Korkusuz, 2020: s.83). Yirminci Yüzyıl'ın Ortadoğu'daki en temel hadisesi ve gelişimi Osmanlı Devleti'nin yıkılışının ardından ortaya çıkan siyaset boşluğu ve belirsizliği ile başta petrol olmak üzere bölgenin enerji ve zenginlik kaynaklarının neredeyse yüzyıl boyunca tamamına yakınının bölge dışı başat aktörlerin nüfuz, kontrol ve egemenlik alanı halinde kalması olmuştur (Korkusuz, 2020: s.80).

Ortadoğu'daki en temel çelişki ekonomi politik faktörler ile ideolojik parametrelerin ve siyasal aktörlerin uyumsuzluğu ve hatta elverişsizliğidir. Bunda temel sebep bölgedeki sömürgecilikten kalma atomizasyon mirası ve hala devam eden emperyalizmin artçı şokları ve yüküdür. Siyaset, din, ideoloji,

kültür ve ekonomi gibi etkinlik alanları bağlamından ve kavramsal çerçevelerinden koparılarak modernizmin dikey hiyerarşik dayatmaları ile geleneksel toplumsal yapının buyurganlıkları arasında sarkaç hareketi yapmaktadır. Her iki gerilim ekseninde benzersiz deneyime sahip Türkiye bölgede ideolojik olmayan insani ve kültürel yönelimle ticaret ve ekonomi eksenli network'lerle nüfuzunu arttırabilir (Korkusuz, 2020: s.96).

Türkiye ve Ortadoğu, Dünya ile birlikte tüm durumların ve statülerin farkında olarak geçmişten geleceğe ve gelenekten moderniteye yol alan değişim ve dönüşüm süreciyle kültür, ekonomi ve siyaset bileşenlerini bir araya getirebilecek kapasite ve kudrete sahip olduğunu tedrici bir şekilde gösteren bir esnekliğe ve çok yönlülüğe ulaşma arayışını sürdürmektedir. Odak noktasını insanın yeniden keşfinin teşkil ettiği bir algısal dönüşüm ve olgusal gerçeklik Ortadoğu'nun ve Dünya'nın gelecek inşasında kilit öneme sahiptir (Korkusuz, 2020: s.99).

III. Ali Emirî Efendi ve 'Osmanlı Vilayâtı Şarkiyyesi' Eseri'ni[1] Yeniden Okumak

Tarih, şimdi üzerinde kurulan köprü ile insanlığın fikir ve çalışmalarını gözler önüne getirir ve geleceğe taşır. Burada en yararlı kaynak yazılan güzel ve yararlı kitaplardır. Belki devrinde eleştirel niteliği dolayısıyla çok önem ve değer atfedilmeyen bazı eserlerin bir zaman sonra yıldızları parlamaya başlar. Burada fikir kadar etkili olan diğer unsur ise samimiyet, doğruluk ve gerçeklik boyutlarının mevcut olup olmadığı ile ilgili algı boyutudur. Yani yaşanan çağa ve insanlık durumuna psikolojik iklim ve sosyolojik realite ne ölçüde uyuyor ve bu iş olduğu gibi tasvir edilip resmediliyor mu? Etkin, makul ve meşru ilim ve maarif çizgisi tüm bu süreçlerde anahtar role sahiptir. Bu çalışmada Ali Emiri Efendi'ye yer verilmesi milli birlik ve beraberliğin nesnel temeli olarak ortak aklın yansımaları bakımından ayrı bir önem ve değerle ilişkilendirilebilir. Bu ilişki ve etkileşim O'nun coğrafi bütünlüğü fikir, inanç, ideal, aksiyon ve duygu birlikteliğiyle destekleyen Osmanlı Vilâyât-ı Şarkiyyesi eserinde görülmektedir. O, Türkçe'nin en temel referanslarından olan Divan-ı Lugat'it Türk adlı eserin el yazması orijinalini İstanbul'daki bir sahaftan uzun bir emek mahsulünün neticesinde araştırarak bulmuş ve yüksek bir meblağ ile satın alarak gün yüzüne çıkarmıştır. Daha sonra Sadrazam Talat Paşa'nın kendisine teklif ettiği çok büyük bir maddi ödeneği de kabul etmemiş ve bunun hayır amaçlı olarak kullanılmasını talep etmiştir (Bilge, 1971: s.156-165). Ayrıca ilk milli kütüphane kabul edilebilecek kütüphanesini kurmuş ve 'Millet Kütüphanesi' olarak Milleti'ne miras bırakmıştır (Timurtaş, 1979: s.115-117). Ali Emiri Efendi Diyarbakır'ın köklü ailelerinden gelen ve çok farklı vazifeler üstlenmiş Osmanlı Memurin zümresine ait idealist bir insandır. Hayatının en anlamlı faaliyeti ilim, kitap ve araştırma üzerine kurulu bir kültür ve medeniyet sevdalısı olarak oluşturduğu muazzam kitaplığıdır. Kitapları için Fransızların Paris'te bir kütüphane açtığı takdirde teklif ettikleri ciddi meblağı kabul etmemiş ve bunun kendisi tarafından Millet'in hizmetine sunulmak üzere tahsis edildiğini vurgulamıştır (Tevfikoğlu, 1971: s.147-155). Bilimsel gelişmelerde ve eğitim-öğretim faaliyetlerinde milli ve akademik kütüphanelerin rolü ve etkisi çok büyüktür (McCarthy, 1971: s.173-174). Ali Emiri Efendi kendi kitaplarının tümünü bugün İstanbul Fatih'te bulunan Millet Kitaplığı'na bağışlamıştır. Orada birbirinden değerli yazma eserler ve orijinal kitaplar ve koleksiyonlar mevcuttur. Bu eserler arasında Mollier'in el yazma eseri de bulunmaktadır.

Son dönem Osmanlı kültür çevresinde daha çok kitap toplayıcısı olarak tanınan Ali Emiri Efendi, aslında kendisine biçilen yüzeysel kimliğin sınırlarını aşmış, 19.yüzyıl insanı için bir hayli aykırı sayılabilecek, dönemi kapanmaya yüz tutmuş kültür gelenekleriyle beslenerek kendi kişisel dünyasını inşa etmiştir. Bu dünya, dağılmakta olan bir imparatorluğun hazinelerine sahip çıkma tutkusuyla yüceltilmiş bireysel idealizmin yörüngesi etrafında döner. Karşımızdaki portre, Diyarbakır'dan Rumeli'ye, İstanbul'dan Yemen'e doğru genişleyen bürokratik görev ağının sınırları içinde hayatını idealleri doğrultusunda kurgulayan bir taşralıya aittir (Işın, 2010: s.17-18).

[1] Ali Emiri Efendi üzerine değerli bilim ve kültür insanlarının yaptığı pek çok çalışma bulunmaktadır. Biz bu çalışmamızda onun el yazması orijinal Osmanlıca basılmış asıl metnini temel almış bulunmaktayız. Biraz zaman alsa da bu tutumun dönemin atmosferi ve dili ile yaklaşımları açısından daha faydalı olacağını düşündük.

Ali Emiri Efendi Osmanlı Vilâyât-ı Şarkiyyesi çalışmasında geçmişten geleceğe bir kritik yaklaşımla Doğu ve Batı karşılaştırmalarını da içeren bir perspektifle kişi, olay, olgu ve durumlara insani ve İslami duyarlılığı dahil ederek yaklaşmaktadır. Bu eserde Ortadoğu'nun özgün, çoğulcu, tarihsel, doğal ve manevi yapısı Diyarbekir şehri ve etrafında yoğunlaştırılarak ilmek ilmek dokunmaktadır. Osmanlı Doğu Vilayetleri eserini Gazi Mustafa Kemal Paşa, milli İstiklal davası için önemli bir çalışma olarak kabul etmişti (Yuvalı ve Halaçoğlu, 2008: s.9).

Diyarbakır'dan başlayan ve halka halka yurdun dört bir yanına yayılan Vatan sevgisi, Ali Emiri Efendi'de çok güçlü idi. İslam inancı ile birlikte geleneksel değerleri ve çağın ilim ve medeniyet birikimini çok önemseyen Ali Emiri Efendi 'Osmanlılık' bilinci en yüksek seviyede olan ve bunu şuurlu olarak memleketin iyiliği, imarı ve barış ve birliği için yegâne yol olarak gören bir tarzda gerçekleştirmektedir. Kırşehir'de görev yaparken Hacı Bektaş-ı Veli'nin türbesinin onarımına katkıda bulunacak derecede duyarlı bir insandır. Tarih, coğrafya ve nüfus hareketleri ve siyaset başta olmak üzere birçok konunun temelinde eğitim eksikliği ve yöneticilerin yetersizliğini ve dış güçlerin yıkıcı ve bölücü faaliyetlerini görmektedir. Ancak Batı Medeniyeti hakkında fazlaca iyimser olduğu söylenebilir. İyi aydınlatıldığı takdirde Batı'lı gelişmiş ülkelerin Osmanlı ve sonrasında ortaya çıkan gelişmeler karşısında Türkiye'nin yanında yer alabileceklerini de düşünmektedir. İttihat Terakkiye karşı çok kızgındır. Onların acemi, hırslı ve çeteci tabiatları dolayısıyla memleketi harap ettiklerini tasvir etmektedir. İttihat ve Terakki konusundaki bu eleştirileri, İ.T.'nin Devleti harbi umumiye sokarak felakete sürüklemeleriyle sonuçlanan başarısızlıklarıyla beraber O'nun idealist perspektifine bağlanabilir. Bir de geçiş sürecindedir Ülke tabii eser yazılırken. Kimi tesbitler Ülke'nin iç ve dış şartlarına tam vakıf olunmadan belli bir ortalama üzerinden yapılmış olabilir. Buna Devlet'in parçalanmasının yol açtığı öfke ve hüzün hali de dahil edilebilir. Bir de uluslararası ilişkiler sistematiği içinde yeni bir denge noktasının Türkiye'nin lehine olarak kurgulanması çabası da etkili olmuş olabilir. Savaşı kaybetmiş bir iktidarın yüklerinden ve bıraktıklarından uzak bir yeniden varoluş ve ayağa kalkış için iç ve dış politik ve sosyal yapı ve ilişkiler önem arz etmektedir.

Kitabının ifadei mahsusa başlığı altında ilk sayfasında eserinin klasik anlamda bir coğrafya, tarih, iktisat, madenler, nehirler, mensucat ve diğer alanlara dair bir çalışma olmadığını vurgulayan Ali Emiri Efendi bu nacizane çalışmasının asıl olarak Wilson cenablarının prensipleri ışığında tertip edilecek kongre için Millet'in lehine sonuç alınabilmesi noktasında geleceğe dönük olmak üzere hukuki, ahlaki, vicdani, hissi ve tecrübi (deneysel) bir zemin teşkilini hedeflemekte olduğunu vurgulamaktadır (Ali Emiri Efendi, 1918: s.2). Yine mukaddime kısmında Osmanlı Devleti ile İngiltere, İtalya, Fransa ve Amerika arasında maziden istikbale uzanan tarihlerine bakıldığında iyi ilişkilerin söz konusu olduğunu ama bu durumun Rusya ve Avusturya için geçerli olmadığını ifade etmektedir (Ali Emiri Efendi, 1918: s.3-4). Aslında Ali Emiri Efendi bu tesbitleri ile 1.Dünya Savaşı'ndan galip çıkan devletler başta olmak üzere düveli muazzama'ya Osmanlı Devleti'nin ve milletin geleceği noktasında pozitif bir imaj ve etki oluşturmaya çalışmaktadır. Neticede bu kitap yaşanılan konjonktür ve şartlar bakımından, iç ve dış politik ve sosyal hedefleri gözeten bir kamu diplomasisi çalışması olarak görülebilir. Bu bağlamda daha sonraki aşamalarda özellikle Wilson'un self-determinasyon ilkesi (kendi kaderini tayin hakkı) milli mücadelede dünya kamuoyunu etkilemede sıklıkla dillendirilmiştir. Ali Emiri Efendi'nin bu çalışması bölgeyle ilgili kırılganlıklara aklı selim temelinde vazedilen bir rapor olarak da görülebilir. Özellikle o dönem için zincirin zayıf halkası olarak masaya getirilen Ermeni Meselesi'nde içeriden özgün bir bakışla ikna ve telkin gayreti dikkati çekmektedir.

O kitabında hemen her konudan temsillerle misaller getirir. Kitabını yazdığı tarihte 61 yaşında olduğunu belirten yazar, çocukluk zamanından beri cihan haritasına baktıkça Memaliki Devleti Osmaniye'yi müstesna bir mevkide görerek iftihar ettiğini paylaşmaktadır. Hududun garbi canibi Adriyatik'ten başlamakta şarki canibi ise Basra Körfez'inde sonlanmaktadır (Ali Emiri Efendi, 1918: s.6). Yine Meşrutiyet'in ilanı esnasındaki gözlemlerine de yer vermektedir. Nur'u Osmaniye civarında Hürriyet için yürüyen gençlerin "yaşasın hürriyet, yaşasın müsavat ve yaşasın adalet" naraları atarak çarşıya girdiklerindeki tabloyu insanların o andaki masumiyetlerini adeta bir cennet iklimi zannederek teneffüs ettiklerini ancak liyakatsiz ve tecrübesiz yöneticilerin süreç içinde bu hürriyeti nasıl yok edip boğduğunu üzülerek aktarır (Ali Emiri Efendi, 1918: s.11-12).

Ali Emiri Efendi kendi memuriyet hayatı kapsamında pek çok bilgiyi siyasi ve idari şahsiyetleri de dahil ederek detaylıca paylaşır. Trablusşam dönüşü yeniden geldiği Diyarbekir'deki kayıplara ve vefatlara çok üzülür. Özellikle Alparslan'ın ellerini dokundurduktan sonra teberrüken yüzüne sürdüğünü tasvir ettiği Diyarbakır surlarının haline iç geçirir. Ermeni komitacıların Avrupalıların da desteğini alarak toplumun içine nifak sokmaya başladıklarını ve bu durumun 1300 seneden fazla süren vatan kardeşliğine zarar verdiğini ve bazı hadiselere zemin hazırladığını ayrıntılı bir tarzda işler (Ali Emiri Efendi, 1918: s.21-29).

Osmanlı Doğu Vilayetlerinden hiçbirinde Ermeniler çoğunluk değildir. Hicri 1330 yılındaki nüfus kayıtlarına göre (Ermenilerin tehcirinden evvel ber mucebi tahrir) Diyarbakır vilayetinin İslam nüfusu %80 raddesindedir. Nüfus toplam sayısı, 619.825'tir ve bunun 492.101'i Müslümandır. Buna 100.000'den fazla olan göçerler dahil değildir (Ali Emiri Efendi, 1918: s.30-31). Taşnakyan ve Hınçakyan mensuplarına ve bunlara tabi olarak hareket edenlere kendince nasihat eden Emiri Efendi tarihsel süreç içinde Müslümanların Hristiyanları kardeş gibi görerek Katolikler ile Protestanlar arasında hakem olarak arabuluculuk yaptığını ve barıştırdığını örneklerle anlatmaktadır. Daha 12 yaşında büyük amcası Şaban Kami Efendi ile Amerika'dan gelen komşuları Mardiros Efendi'ye 'gözün aydın olsun'a gittiklerini detaylıca anlatır. Mardiros Efendi kendince oradaki Adalet'e dair örnekler anlatınca büyük amcasının Hz. Ömer'in örnekleri ile konuyu güzelce ve hasretle naklettiğini paylaşır (Ali Emiri Efendi, 1918: s.41-42). Kitabında özel bir resim de paylaşan Ali Emiri Efendi Ermeni milletinden bir terzi olan Mardik Usta ve Beyrut'lu Kandala Efendi dahil olmak üzere eşrafı tek tek zikrederek birlikte bir arada yaşama deneyimine somut kanıt olarak takdim eder (Ali Emiri Efendi, 1918: s.45-47).

Ağırlığı son zamanlara verse bile Diyarbakır'ın 639'da Hz. Ömer devrinde İyaz Bin Ğanem komutasında fethinden sonraki safahatı özlü ve çarpıcı örneklerle anlatır. Tarih içerisinde ortaya çıkan pek çok siyasi ve idari hadiseye Diyarbakır'a etkileri ve sonuçları bağlamında kısa kısa temas eder. Abbasiler'den Mervaniler'e uzanan süreci özetler. Şehrin sakinlerinin tarım, ziraat, ticaret ve kültürel faaliyetlerine dair açıklamalar yapar. Halk'ın dayanışmasının ve paylaşımcı karakteristiğinin dini kaynaklarına işaret eder. Buralarda yetişen alimler ve irfan sahiplerine yer verir. Diyarbakır'daki gündelik yaşamda ve sosyal hayatta Müslümanlar ile Hristiyanlar'ın ve diğer unsurların ilişkisi son derece iyi olduğu halde, zaman içinde Ermeni örgütlerin Hristiyan halkı propaganda ile baskı altına alması ve bazı basiretsiz idarecilerin kimi yanlışları dolayısıyla durumun hassas hale geldiğini anlatır. Tüm anlatımları ile Diyarbakır'dan Dersaadet'e (İstanbul'a) adeta bir köprü kurar. Duygusal ve içten, samimi bir anlatım tarzına ve renkli üsluba sahiptir. Melikşah'tan Sultan Alparslan'a uzanan ve Eyyubiler'den Yavuz Sultan Selim'e varıncaya kadar çok geniş yelpazede Diyarbakır ve çevresine ilişkin çok özel bilgiler verir. Yusuf Selahattin Eyyubi'nin Diyarbakır'ı aldığında içinde 1.040.000 kitap olan Kütüphane'nin de bulunduğunu anlatır (Ali Emiri Efendi, 1918: s.49-55). Özellikle Yavuz Selim Han zamanındaki Umerai Ekrad'ın Osmanlı'nın safında yer tutmasında Mevlana İdris'in çok büyük payının olduğunu tafsilatlı olarak anlatır (Ali Emiri Efendi, 1918: s.59-66). Doğu Vilayetlerinin Osmanlı Devleti'ne dahil oluşu kahır ve cebir suretiyle olmayıp ahalisinin kemali meyil ve muhabbetlerinden dolayı kendi hüsnü rızalarıyla gerçekleşmiştir ve bu durum tarihten şimdiye kadar devam etmiştir (Ali Emiri Efendi, 1918: s.72).

Kitab'ın son iki bölümüne 'vatan sevgisi, ilim ve çalışma' (Ali Emiri Efendi, 1918: s.73-84) ile 'medenileşme eğilimi ve yeteneği'ni (Ali Emiri Efendi, 1918: s.84-92) koyması da oldukça anlamlıdır. Bu bölümlerde nüfusun Müslüman olanlarının en büyük eksikliğinin eğitim ve tembellik olduğunu belirtir. Ancak bu İslam'dan kaynaklanmamaktadır. Ermeniler'in Avrupa'da yaptıkları propagandaların doğru olmadığını bölgedeki İslam ahalisinin medeni olduğunu hassaten ortaya koymaktadır.

Sonuç kısmında günümüze de bakan çok anlamlı ve önemli değerlendirmeleri vardır. Şark vilayetleri Devleti Aliye'nin yedi zabtına geçtikten sonraki asır içinde pek çok terakki etmiştir. Bunun bariz delilleri Melek Ahmet Paşa, Hüsrev Paşa, Behram Paşa, İskender Paşa, Ali Paşa ve Fatih Paşa gibi valilerin öncülüğünde hayır erbabının desteğiyle ortaya çıkarılan başta Camii'ler olmak üzere vesair irili ufaklı eserlerin (mebaniyi hayriye ve ebniyei aliye) inşa edilmeleridir (Ali Emiri Efendi, 1918:

s.101). Ali Emiri Efendi, Mr.Wilson'ın prensibini kemali takdirle alkışlıyor ve bu vesile ile ilerlememize (esbabı terakkiyatımızın) yol açacağını düşünüyoruz demektedir (Ali Emiri Efendi, 1918: s.103). Yine "Cemiyet insanlık ile akıl tacını müzeyyen hale getirdiğinde artık onun her ferdi eşittir (müsavidir)" vecizesi de çarpıcıdır (Ali Emiri Efendi, 1918: s.103). Ali Emiri Efendi, Ermeniler'den yüz kat fazla olan kavimlerin devlet talebi yokken bunu sayısal azlıklarına rağmen kendileri için istemeleri akla, vicdana sığmadığını düşünmekte ve geçmişteki ortak yaşam pratikleriyle ortak geleceğin inşasına katkı sağlamayacağı kanaatindedir (Ali Emiri Efendi, 1918: s.109). Vilayeti Şarkiye'nin (Diyarbakır'ın) 1514'te Osmanlı Devlet'ine gönüllü katılımı ile Amerika'nın 1492'deki keşfi arasındaki tarihsel yakınlığa dikkat çeker (Ali Emiri Efendi, 1918: s.111). Ali Emiri Efendi bu tesbitiyle Amerika'nın özgürlük ve eşitlik idealleriyle paralellik kurarak Osmanlı-Amerikan hükümetleri arasında bir ortak imaj ve algı çağrışımı ile sonuç odaklı bir telkin ve iknayı hedeflediği düşünülebilir. Ali Emiri Efendi bu 112 sayfalık devlet adamlarına ve millete yol gösterici bir Osmanlı minyatürü olarak özetlenebilecek raporunda iyi yönetim, adalet, vicdan, bilgi, irfan ve deneyimin altını çizmektedir.

O hakikat çiçekleri kitabında, "İnsanlara zulmedenler insan olduklarını düşünmeyenlerdir" (Ali Emiri Efendi, 2017a: s.10) ve "Merhamet, insanlık madeninin en değerli mücevheridir" (Ali Emiri Efendi, 2017a: s.67) vurgularıyla adalet ve merhametin önemini ortaya koymaktadır.

Osmanlı bakiyesi Türkiye Cumhuriyet'inin kuruluşuna giden yolda altyapıyı teşkil eden bir ilim ve kültür mirası, bu alim-aydın çizgisinin sağlam irade ve çalışmalarıyla ruh ve vücud bulmuştur. Ortadoğu coğrafyasının tarih ve toplum içinde bilgi ve kültür mirasıyla işlenmiş bu karakteri yeniden filizlenip yeşermeye devam etmektedir. Misak-ı Milli ve Milli Mücadele bu ilmi, manevi atmosfer içinde güç ve cesaret toplayarak yol alabilmiştir. Ali Emiri Efendi'nin neredeyse her yerinde vazife yaptığı Ortadoğu coğrafyası bu insani büyük davanın arka planındaki nakış ve bağlantıların hüzün ve hatıralarla yüklü esin kaynağı olarak dikkati çekmektedir.

Büyük Türk Şairi Yahya Kemal Beyatlı, Ali Emiri Efendi ile ilgili yazdığı şiiriyle (Ali Emiri'ye Gazel) onun konumunun biricikliğini adeta ebediyete taşımıştır (Beyatlı, 2009: s.73):

> Muhtac isen füyuzuna eslaf Pendinin
> Diz çök önünde şimdi Emiri Efendi'nin
> Amid o şehr-i nur öğünsün ile'l-ebed
> Fazl-u faziletiyle bu neel-i Bülent'inin
> ...
> Ecdad-ı pakimiz gibi vakfetti millete
> Hayranı oldu halk eser-i bi-menendinin
> Ya Fahri Kâinat sen iyfa et ecrini
> Divan-ı Kibriya'da bu şark ercümendinin

Sonuç

Türkiye devlet ve toplum olarak Cumhuriyet'in kuruluşundan bir asır sonra bölge coğrafyasıyla yeniden kuvvetli ve pekiştirilmiş bağlarla bilgi ve deneyim zenginliğinin eşliğinde gönül dili üzerinden etkileşimle topyekûn kalkınmayı hedeflemektedir. İnsani diplomasi ve kültürel çalışmalar bu süreçlerde odak noktasını teşkil etmektedir.

Medeniyet, kültür ve coğrafya bağıyla birleşmiş insanların ve toplumların doğal yaşayışının konjonktürel siyasal çıkarların ürettiği sun'i sorunlarla kopuşunun nelere sebep olduğu Osmanlı'nın son döneminde ve takip eden tarihsel süreçte görülmüştür. Ali Emiri'nin ve geçmişten geleceğe bu çizgide ilerleyen gerçek alimlerin düşünceleri ve mücadeleleri hem bu süreçlerin daha az zararla atlatılmasına hem de geleceğin yeni formlarda, umut ve aksiyonla inşasına zemin oluşturmuştur. Bilgi ve erdemin bu sessiz fakat derin etkisi Ali Emiri gibi şahsiyetlerin daha da iyi anlaşılmasıyla sürmeye devam edecektir.

Ali Emiri Efendi gibi hem kuramsal yaklaşıma hem de pratik deneyim zenginliğine sahip vatansever öncü kişilikler Misak-ı Milli ve sonrasına dair gelişmelerde de kilit konumda olmuşlar ve hiç unutulmayacak hizmetlere imza atmışlardır. Türkiye'nin Ortadoğu'daki konumunda belirleyici olan faktörler dizisinde başat faktör bilgi birikimi ile kültür ve hayata dair ortak tecrübe zemini dikkati çekmektedir. Bu ortamın inanç, güven ve aklı selimle genişleyen ilişki ve etkileşimleri doğal ve vicdani duruşu da içeren köprü şahsiyetlerle geçmişten geleceğe bir süreklilik ve değişimin ahengiyle imkân dairesinde vücud bulabiliyor. Şimdi birçok sayfasını atlayarak okuduğumuz kitabın (kitapların) yeniden okunarak üretim, eğitim ve yönetim bağlamında ete kemiğe büründürülme zamanı gelmiş gibi duruyor. Her türlü politik ve sosyal başarı ve iyileşme ancak böyle bir bilgi, gerçeklere dayalı akademik üretim ve verimli kültür ikliminde söz konusu olabilir.

Kaynaklar

Ali Emiri Efendi 1918. Osmanlı Vilayât-ı Şarkiyyesi (Osmanlı Türkçesi). Evkâf-ı İslâmiyye Matbaası, 1334. Türkiye Yazma Eserler Kurumu / Millet Genel Kütüphanesi A. E. Tarih 1247.

Ali Emiri Efendi 1915. Mardin Mülük-i Artukiye Tarihi ve Kitabeleri ve Sair Vesaik-i Mühimme (Osmanlı Türkçesi). Dersaadet: Kader Matbaası, 1331. Türk Tarih Kurumu Kütüphanesi A029198 - A.II/1691.

Ali Emiri Efendi 2003. Esâmî-i Şu'arâ-yı Âmid. Güner G, Güner N (Hzl.). Ankara: Anıl Matbaa ve Ciltevi, 63 ss.

Ali Emiri Efendi 2008. Osmanlı Doğu Vilâyetleri (Osmanlı Vilâyât-ı Şarkiyyesi). Yuvalı A, Halaçoğlu A (Hzl.). İstanbul: Babıali Kültür Yayıncılığı, 246 ss.

Ali Emiri Efendi 2017a. Hakikat Çiçekleri (Ezhâr-ı Hakîkat). Coşkun İ (Hzl.). İstanbul: Beyan Yayınları, 74 ss.

Ali Emiri Efendi 2017b. Levâmiü'l Hamîdiyye (Sultan Abdülhamid Parıltıları). Doğan H (Hzl.). İstanbul: Buhara Yayınları, 206 ss.

Beyatlı YK 2009. Yahya Kemal Bütün Şiirleri. İstanbul: İstanbul Fetih Cemiyeti, 567 ss.

Bilge KR 1971. Divanü Lûgat it-Türk ve Ali Emirî Efendi. Türk Kütüphaneciler Derneği Bülteni, XX (Cilt), 3 (Sayı): 156-172.

Gönlübol M, Sar C 2014. 1919-1938 Yılları Arasında Türk Dış Politikası. İçerisinde: Gönlübol M vd. (Hzl.) Olaylarla Türk Dış Politikası (1919-1995). 10.Baskı. Ankara: Siyasal Kitabevi, ss. 1-134.

Işın E 2010. Osmanlı Modernleşme Çağında Bir Muhafazakârın Portresi: Ali Emîrî Efendi. İçerisinde: Işın E (ed.), Millet Yazma Eser Kütüphanesi'nden Bir Seçme Ali Emiri Efendi ve Dünyası Fermanlar, Beratlar, Hatlar, Kitaplar. 2.Baskı. İstanbul: Pera Müzesi Yayını, ss. 17-33.

Karacan AN 2017. Lozan. 5.Basım. Turgut H. (Hzl.). İstanbul: Türkiye İş Bankası Kültür Yayınları, 600 ss.

Korkusuz MH 2019. Revisiting Lausanne After 100 Years in the Context of the National Pact Goal. Malatya: İnönü University Press, 97 ss.

Korkusuz MH 2020. Ortadoğu'da Osmanlı Sonrası Süreçte Siyaset Labirenti ve Petrol Stratejileri. İçerisinde: Özsan M, Ontunç SK (ed.), El Ruha 6th International Conference On Social Sciences January 23-26 2020, Marrakech, Morocco, Proceedings Book. Türkiye: IKSAD Publications, ss. 80-103.

Kutluk E 2018. Actual Perspectives On Lausanne: Some Predominantly Discussions In Turkish Political Atmosphere And Media On Current International Relations Course. The Journal of International Social Research, 11 (Volume), 61 (Issue): 315-323.

McCarthy SA 1971. Bilimsel Gelişmede ve Eğitimde Millî ve Akademik Kütüphanelerin Rolü. Sefercioğlu N (çev.). Türk Kütüphaneciler Derneği Bülteni, XX (Cilt), 3 (Sayı): 173-184.

Sakin S 2003. Misak-ı Milli'nin Hazırlanışı, Kapsamı ve Tarihsel Değeri. Erciyes Üniversitesi S.B.E. Tarih Anabilim Dalı. Yayınlanmamış Yüksek Lisans Tezi (Unpublished Master's Thesis), 218 ss.

Timurtaş FK 1979. Millet Kütüphanesinin Kurucusu Ali Emiri Efendi. Türk Kütüphaneciler Derneği Bülteni, XXVIII (Cilt), 3 (Sayı): 115-117.

Tevfikoğlu M 1971. Millet Kütüphanesi Kurucusu Ali Emiri Efendi. Türk Kütüphaneciler Derneği Bülteni, XX (Cilt), 3 (Sayı): 147-155.

Uçarol R 2015. Siyasi Tarih 1789-2014. 10.Basım. İstanbul: Der Yayınları, 1560 ss.

Yuvalı A, Halaçoğlu A 2008. Önsöz. İçerisinde: Osmanlı Doğu Vilâyetleri (Osmanlı Vilâyât-ı Şarkiyyesi). Yuvalı A, Halaçoğlu A (Hzl.). İstanbul: Babıali Kültür Yayıncılığı, ss.7-9.

Ek: Görseller

DAHİLİ YOĞUN BAKIM ÜNİTESİNE KABUL EDİLEN HASTALARIN LİPİD DÜZEYLERİNE GÖRE MORTALİTE ORANLARININ İNCELENMESİ

Ayşe Şahin Tutak
Orcid no: 0000-0001-5911
Ercan Çil
Orcid no: 0000-0002-8981-4232
Adıyaman University, Adıyaman, Turkey.

Amaç: Dahili Yoğun Bakım Ünitelerine (YBÜ) yatan hasta profili genelikle yaşlı, eşlik eden kronik hastalığı mevcut olan, beslenmesi kötü hastalardan oluşmaktadır. Literatürde Total Kolestrol (TK) ve Trigliserid (TG) düzeylerinin mortalite ile ilişkisini destekleyen yayınların yanısıra aksi yayınlarda mevcuttur. Biz bu çalışmada YBÜ sine yatan hastalarda lipid düzeyleri, yaş , yatış süresi ve mortalite oranları arasındaki ilişkiyi gözden geçirmeyi amaçladık.
İstatistik ve Metod: Çalışmaya 2014-2017 yılları arasında YBÜ kabul edilen 2549 hastanın yaş, cinsiyet, hastanede yatış süreleri, TK, TG düzeyleri elektronik kayıt sisteminden incelenerek kaydedildi. Hastalar ex olan ve olmayan şeklinde iki gruba ayrıldı.
Bulgular: Toplamda 2549 hastanın %48.3 kadın idi. Toplamda 677 hasta ex olmuş ex olanların ise %52.7'sini erkekler oluşturmaktaydı. Hastaların genel yaş ortalaması 70±28; ex olanların yaş ortalaması 76±16, ex olmayanların ise 66±36 idi ($p < 0,001$). Ex olanları yatış süresi 6±12 iken ex olmayanların 3±5($p < 0,001$). TK değeri ex olanlarda 157,5±69; ex olmayanlarda ise 162±64 (p değeri 0,007). Tg değeri ex olan grupta 119±97; ex olmayan grupta 116±84 (p değeri 0,118).
Sonuç: YBÜ mizde takip mortalite üzerinde hastaların YBÜ kabul düşük TK, ileri yaş ve yatış sürelerinin uzun olmasının etkin olduğunu düşünmekteyiz.

Anahtar Kelimeler: Total kolesterol, Trigliserid, yoğun bakım yatış süresi, mortalite

INVESTIGATION OF MORTALITY RATES ACCORDING TO LIPID LEVELS OF PATIENTS ADMITTED TO THE INTERNAL INTENSIVE CARE UNIT

Aim: The profile of the patients hospitalized in the Internal Intensive Care Units (ICU) is generally composed of elderly patients with concomitant chronic diseases and poor nutrition. In the literature, there are publications supporting the relationship between Total Cholesterol (TC) and Triglyceride (TG) levels with mortality, as well as other publications. In this study, we aimed to review the relationship between lipid levels, age, length of stay, and mortality rates in patients hospitalized in the ICU.

Statistics and Method: The age, gender, length of hospital stay, TC, TG levels of 2549 patients who applied to the ICU between 2014-2017 were examined and recorded in the electronic registry system. The patients were divided into two groups according to their discharge from the hospital, living and non-living.

Results: In total, 48.3% of 2549 patients were women. In total, 677 patients died and 52.7% of those who died were men. The average age of the patients was 70 ± 28; The mean age of those who died was 76 ± 16, and those who did not die were 66 ± 36 (p <0.001). While the duration of hospital stay of those who died was 6 ± 12, it was 3 ± 5 (p <0.001) for those who did not. The TC value in the deceased was 157.5 ± 69; In the group that did not die, it was 162 ± 64 (p value 0.007). The Tg value was 119 ± 97 died in the deceased group; In the group that did not die, it was 116 ± 84 (p value 0.118).
Conclusions: We think that patients with low TC value and high TG value during ICU hospitalization, patients with advanced age and long hospital stay are effective on the high mortality rates in our ICU.

Key Words: Total cholesterol, Triglyceride, intensive care stay, mortality

Giriş

Yoğun bakım üniteleri(YBÜ) hayatı tehdit eden sağlık problemlerini tedavi etmek ve yaşam fonksiyonlarını desteklemek için yoğun donanıma sahip ekipmanlar ile ağır hastaların takip ve tedavi edildikleri birimlerdir.

Dünya çapında nüfus arttıkça komorbiditesi olan yaşlıların sayısı artmakta ve YBÜ ihtiyacı olan hasta sayısı artmaktadır.Hastanelerde YBÜ ölüm oranlarının en yüksek olduğu bölümler olduğu bilinmektedir (Ceylan et al., 2001; Gürkan et al., 2001;Uçgun et al., 2003). Literatürdeki çalışmalara bakıldığında YBÜ hastalarının ölüm oranları% 20,5 ile% 43 arasında değişmektedir (Ceylan et al., 2001). Mortalite oranlarındaki bu geniş yelpaze, YBÜ lerinekabul edilen hastaların farklı tanı gruplarına sahip olması, farklı hastalık şiddet skorları, yeterli veya yetersiz beslenme(malnütrisyon) düzeyine, farklı laboratuar değerleri gibi birçok sebebe bağlı değişmektedir.

Çalışmamızda DYBÜ kabul edilen hastaların YBÜ kabul Trigliserid(TG) , Total kolesterol (TK), yaş ve hastanede yatış süresi ile mortalite arasındaki ilişkiyi inceledik. DYBÜ kabul edilen hasta profili genellikle yaşlı, beslenme durumu yetersiz, bir yada daha çok sayıda komorbid hastalıkların eşlik ettiği hasta profili oluşturmaktadır (Altintaş et al.,2012). Amacımız daha önceden yapılmış YBÜ mortalitesini etkileyen bu parametrelerin bizim DYBÜ deki hasta mortalitesi üzerindeki etkilerinin literatür ile uyumlu olup olmadığını incelemek.

İstatistik ve Metod

Çalışmaya 2014-2017 yılları arasında DYBÜ kabul edilen 2549 hastanın yaş, cinsiyet, hastanede yatış süreleri, TK, TG düzeyleri elektronik kayıt sisteminden incelenerek kaydedildi. Hastalar ex olan ve olmayan şeklinde iki gruba ayrıldı.

Değişkenlerin analizinde SPSS 25.0(IBM Corporation, Armonk, New York, United States)programı kullanıldı. Verilerin normal dağılıma uygunluğu Lillie fors düzeltmeli Kolmogorov-Smirnov testi ile değerlendirildi. Bağımsız iki grubun nicel verilere göre birbiri ile karşılaştırılmasında Mann-Whitney U testi Monte Carlo simülasyon tekniği ile kullanıldı. Faktörlerin mortalite ile yaşam sürelerine etkilerini incelemek için Mortalite ile yaşam süresi üzerindeki prognostik değişkenlerin etkilerini ölçebilmek için Cox Regression analizi Enter Methodu sonuçları kullanıldı. Nicel değişkenler tablolarda Median ± IQR(InterquartileRange)

şeklinde gösterilirken, kategorik değişkenler isen(%) olarak gösterildi. Değişkenler %95 güven düzeyinde incelenmiş olup p değeri 0,05 ten küçük anlamlı kabul edildi.

Bulgular

Çalışmamıza alınan toplam 2549 hastanın %48.3(n=1231) ile ex olan hastaların %47.3(n=320) kadın idi. Cinsiyet farkı gözetmeksizin ex olan grupta yaş ortalaması (76±16 yıl) ile yaşayan grupta yaş ortalamsı (66±36 yıl) arasındaki istatiksel fark anlamlı idi(p <0,001).(Tablo 1, şekil 2) Hastanede yatış süresi olarak ex olan(6±12 gün) ve yaşayan grup arasında(3±5 gün)istatiksel fark anlamlı idi(p <0,001)(tablo 1, şekil 3).TK değeri ex olanlarda 157,5±69; ex olmayanlarda ise 162±64 (p değeri 0,007)(Tablo 1ve 2, şekil 1). TG değeri ex olan grupta 119±97; ex olmayan grupta 116±84 (p değeri 0,118)(tablo 1).

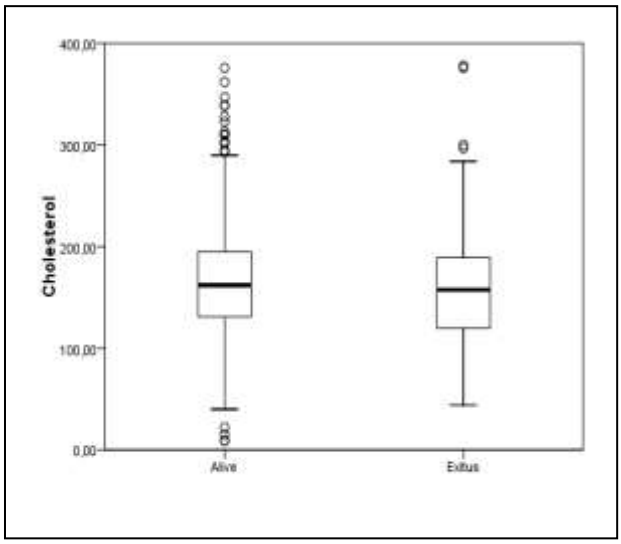
Tablo 1:Lipid, yaş ve TK-TG düzeyleri ile mortalite arasındaki ilişki

Total (n=2549) n (%)	Alive (n=1872) n (%)	Exitus (n=677) n (%)	P	
Female	1231 (48,3)	911 (48,7)	320 (47,3)	**0,560** [p]
Male	1318 (51,7)	961 (51,3)	357 (52,7)	
	n (Median±IQR)	**n (Median±IQR)**	**n (Median±IQR)**	
2549 (70±28)	1872 (66±36)	677 (76±16)	**<0,001** [u]	
2549 (3±6)	1872 (3±5)	677 (6±12)	**<0,001** [u]	
1681 (160±64)	1233 (162±64)	448 (157,5±69)	**0,007** [u]	
1700 (117±87)	1261 (116±84)	439 (119±97)	**0,118** [u]	

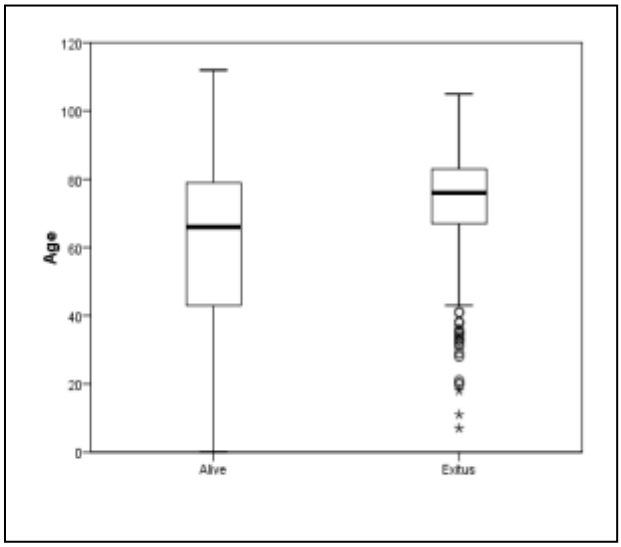
Tablo 2: TK ve coxregresyon analizi

	B	SE	P	OdssRatio	95,0% CI forOdssRatio	
					Lower	Upper
Cholesterol	-0,001	0,001	0,147	0,999	0,997	1,000

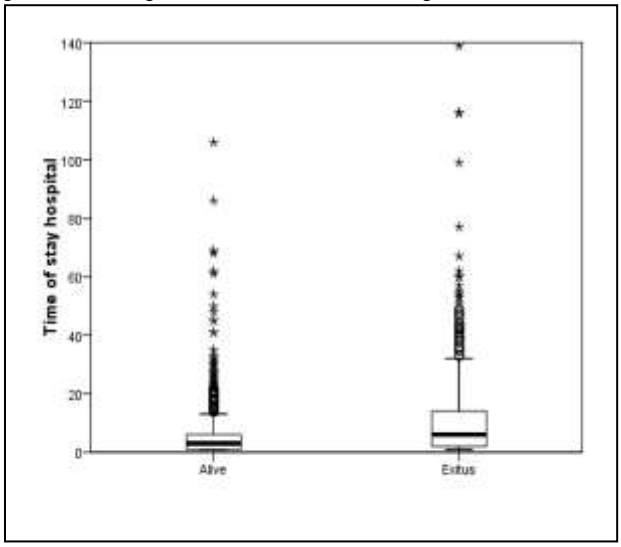
CoxRegression-Enter Model, C.I. :Confidenceinterval B: regressioncoefficients SE: Standarderror



Şekil 1: TK ve mortalite ilişkisi



Şekil 2: Yaş ve mortalite olan ilişkisi



Şekil 3: Hastanede yatış süresi ve mortalite ile ilişkisi

Tartışma

YBÜ bir hastanenin diğer bölümlerine kıyasla en yüksek ölüm oranına sahip birimlerdir. YBÜ, aşırı derecede hasta olan ve çok sayıda karmaşık müdahaleden geçen bir hasta popülasyonuna hizmet eder(Molina et al., 2014). Genel popülasyondaki yaşlı oranı arttıkça YBÜ kabul edilen yaşlı hasta sayısı da artmaktadır(Bagshaw et al.,2009).YBÜ yaşlı mortalitesi gençlere göre daha yüksektir, yaşlının fonksiyonel durumu, primer tanısı ve eşlik eden hastalıkları mortalitenin artışına neden olabilmektedir(Akın et al.,2014). Hastanın yaşı, ölüm oranını etkileyen bir faktör olarak kabul edilir. Yapılan çalışmalardaileri yaşın ölüm oranının arttığı ve mortaliteyi belirlemede bağımsız bir risk faktörü olduğu öne sürülmüş ve 75 yaşın üzerinde mortalitenin arttığı gösterilmiştir (Knaus et al.,1985;Scanella et al. ,2009;Fuchs et al.,2012). Bizim çalışmamızdadaex olan grubun yaş ortalaması 76±16veliteratür ile uyumlu olarak tespit edildi.

YBÜ lerinde TK ve TG düzeyleri ve mortalite üzerindeki etkilerini inceleyen birçok yayın bulunmaktadır. YBÜ kabul edilen sepsisli hastalarda yapılan bir çalışmada ex olan grupta TG ve TK düzeyleri anlamlı düzeyde düşük saptanırken(Lee et al.,2015), aksine başka bir çalışmada ise düşükTKve TG düzeyinin mortaliteyi düşürdüğü gösterilmiş(Nabavi et al.,2020).Farklı bir çalışmada ise yüksek TG'nin tüm nedenlere bağlı mortalitenin bağımsız bir risk faktörü (Huang et al.,2020),başka bir çalışmada ise TG'nin 135 mg / dL'den büyük olduğu değerlerde, tüm nedenlere bağlı ölüm riskinin arttığını gösterilmiştir(Liu et al.,2013;Pikhart et al.,2015). Bizim çalışma grubumuzda ise ex olan grupta TK düzeyi 157,5±69 iken ex olmayan grupta bu değer istatiksel olarak anlamlı yüksek saptandı. TG düzeyi ise ex olan grupta 119±97saptanmış olup ex olmayan gruptan hafif yüksek tespit edilmişti. Bulgulardaki farklılıklara çalışma popülasyonundaki farklılıklardan kaynaklandığı düşünülebilir. Bu farklılıklar hastaların yaşı, komorbid hastalıkları ve beslenme durumu ile ilişkilidir. Bizim çalışma grubumuz yaşlı hasta grubunu içermekteydi.Yaşlılardahipokolesterolemiprevalansı, incelenen yaş aralığına ve özgül sınır değerlerine bağlı olarak% 2 ile% 36 arasında değişebilmektedir (Tsabar et al.,2018). Yapılan bir çalışmada düşük TK düzeyinin yaşlı hasta grubundamortalitenin güçlü bir prediktörü olduğu ve en düşük TK seviyelerine sahip yaşlı yetişkinlerin en yüksek seviyelerde olanlara göre mortalite oranlarının iki kat daha fazla olduğu bulunmuş (Schupf et al.,2005). 2012'de yapılan 800 yaşlı hastanın izlendiği 12 yıllık kohort çalışmasında düşük TK sahib bireylerde daha yüksekmortaliteoranları tespit edilirken yüksek TK tüm nedenlere bağlı mortalite arasında pozitif bir ilişki bulamadıkları sonucuna varılmıştır(Cabrera et al.,2012).

Erişkin yaşlı popülasyonda YBÜ yatışlarda genellikle kronik bir komorbid hastalığa akut hastalığın süperpoze olmasıyla gerçekleşmektedir. Akut hastalığın hipokolesterolemisi, triasilgliserid düzeylerinde orta derecede bir artışla ilişkili olduğu tespit edilmiş (Esteve et al.,2005). Bu ilişki akut hastalıklarda hasar görmüş hücre zarlarının eski haline getirmek için lipidlerin kullanılması, plazma lipidlerinin sentezi ve kullanımı arasındaki dengesizliğe yol açması ile açıklanabilir(Kreeftenberg et al.,2015). Bizim hasta grubumuzda da TK düşük , TG yüksek saptanmıştır.

YBÜ yatış süresinin uzun olmasının mortalitemorbiditeyi artırdığı yapılan çalışmalar ile gösterilmiştir(Rimachi et al.,2007;Hein et al.,2006). Bizim çalışma grubumuzdada YBÜ yatış süersi6±12 olan grup ile 3±5 gün olan grup arasında mortalite oranı yatış üresi olan grupda yüksek idi($p< 0.05$) ve literatür ile uyumlu bulundu.

Sonuç olarak, DYBÜ yatan hastalarda mortaliteyi diğer YBÜ olduğu gibi ileri yaş ve uzamış YBÜ yatış süreleri artırmaktadır. TK ve TG değerlerinin YBÜ mortalite oranlarını hangi

değerlerde artırıp artırmayacağına yönelik hastaların tanı, komorbid hastalıkları, malnütrisyon düzeyi, hastalık şiddet skorlarının ayrı ayrı değerlendirldiği ve standardizasyonun net olduğu ,hasta sayısının yüksek çok merkezli bir çalışma ile daha net sonuçlar elde edilebileceği kanaatindeyiz.

Kaynaklar

Akın, S., Gündoğan, K., Coşkun, R., Yüksel, R. C. , Topaloğlu, U. S. , Öztürk, F., ... Güven, M.(2014). Yoğun Bakımda Yaşlı Hasta Mortalitesi: Yaş Risk Faktörü Mü?. Yoğun Bakım Derg , no.5, 26-29.

Altıntaş, N. D.,İzdeş, S., Şen, P., Öcal, H., & But, A. (2012). Karma Yoğun Bakımda Yatan Cerrahi ve Dahili Hastaların Retrospektif Olarak Değerlendirilmesi. Turkish Journal of Medical&Surgical Intensive Care Medicine/Dahili ve Cerrahi Bilimler Yogun Bakim Dergisi, (1).

Bagshaw, S. M.,Webb, S. A., Delaney, A., George, C., Pilcher, D., Hart, G. K., &Bellomo, R. (2009). Very old patients admitted to intensive care in Australia and New Zealand: a multi-centre cohort analysis. Critical care (London, England), 13(2), R45. https://doi.org/10.1186/cc7768

Ceylan, E., İtil, O., Arı, G., Ellidokuz, H., Uçan, E. S., &Akkoçlu, A. (2001). İç hastalıkları yoğun bakım ünitesinde izlenmiş hastalarda mortalite ve morbiditeyi etkileyen faktörler. Toraks Dergisi, 2(1), 6-12

Cabrera MA, de Andrade SM, Dip RM. Lipids and all-cause mortality among older adults: a 12-year follow-upstudy. The scientific world journal. 2012 ;2012:930139. DOI: 10.1100/2012/930139

Esteve, E.,Ricart, W., &Fernández-Real, J. M. (2005). Dyslipidemia and inflammation: an evolutionary conserved mechanism. Clinical nutrition (Edinburgh, Scotland), 24(1), 16–31. https://doi.org/10.1016/j.clnu.2004.08.004

Fuchs, L.,Chronaki, C. E., Park, S., Novack, V., Baumfeld, Y., Scott, D., McLennan, S., Talmor, D., & Celi, L. (2012). ICU admission characteristics and mortality rates among elderly and very elderly patients. Intensive care medicine, 38(10), 1654–1661. https://doi.org/10.1007/s00134-012-2629-6

Gürkan, Ö. U., Berk, Ö., Kaya, A., Çelik, G., Kumbasar, Ö., &Acıcan, T. (2001). Evaluation of a respiratory intermediate care unit in Ankara: Two year analysis. Turkish Respiratory Journal, 2(2), 20-5.

Hein, O. V.,Birnbaum, J., Wernecke, K., England, M., Konertz, W., &Spies, C. (2006). Prolonged intensive care unit stay in cardiac surgery: risk factors and long-term-survival. The Annals of thoracic surgery, 81(3), 880–885.

Huang, Y. Q.,Liu, X. C., Lo, K., Feng, Y. Q., &Zhang, B. (2020). A dose-independent association of triglyceride levels with all-cause mortality among adults population. Lipids in health and disease, 19(1), 225. https://doi.org/10.1186/s12944-020-01400-w

Knaus, W. A.,Draper, E. A., Wagner, D. P., &Zimmerman, J. E. (1985). APACHE II: a severity of disease classification system. Critical care medicine, 13(10), 818–829

Kreeftenberg, H. G.,Roos, A. N., Bindels, A. J. G. H., &Scharnhorst, V. (2015). Cholesterol in the ICU: A cheap and reliable marker for illness severity? *Netherlands Journal of Critical Care*, *20*(2), 17-20.

Lee, S. H., Park, M. S., Park, B. H., Jung, W. J., Lee, I. S., Kim, S. Y., Kim, E. Y., Jung, J. Y., Kang, Y. A., Kim, Y. S., Kim, S. K., Chang, J., &Chung, K. S. (2015). Prognostic Implications of Serum Lipid Metabolism over Time during Sepsis. BioMed research international, 2015, 789298. https://doi.org/10.1155/2015/789298

Liu, J.,Zeng, F. F., Liu, Z. M., Zhang, C. X., Ling, W. H., &Chen, Y. M. (2013). Effects of blood triglycerides on cardiovascular and all-cause mortality: a systematic review and meta-analysis of 61 prospective studies. Lipids in health and disease, 12, 159. https://doi.org/10.1186/1476-511X-12-159

Molina, J. A.,Seow, E., Heng, B. H., Chong, W. F., &Ho, B. (2014). Outcomes of direct and indirect medical intensive care unit admissions from the emergency department of an acute care hospital: a retrospective cohort study. BMJ open, 4(11), e005553. https://doi.org/10.1136/bmjopen-2014-005553

Nabavi, A.,Allami, A., &QasemiBarqi, R. (2020). Changes in plasma lipid and in-hospital deaths in patients with sepsis. Medical journal of the Islamic Republic of Iran, 34, 45. https://doi.org/10.34171/mjiri.34.45

Pikhart, H.,Hubáček, J. A., Peasey, A., Kubínová, R., &Bobák, M. (2015). Association between fasting plasma triglycerides, all-cause and cardiovascular mortality in Czech population. Results from the HAPIEE study. Physiological research, 64(Suppl 3), S355–S361. https://doi.org/10.33549/physiolres.933179

Rimachi, R., Vincent, J. L., &Brimioulle, S. (2007). Survival and quality of life after prolonged intensive care unit stay. Anaesthesia and intensive care, 35(1), 62–67. https://doi.org/10.1177/0310057X0703500108

Sacanella, E.,Pérez-Castejón, J. M., Nicolás, J. M., Masanés, F., Navarro, M., Castro, P., &López-Soto, A. (2009). Mortality in healthy elderly patients after ICU admission. Intensive care medicine, 35(3), 550–555. https://doi.org/10.1007/s00134-008-1345-8

Schupf, N.,Costa, R., Luchsinger, J., Tang, M. X., Lee, J. H., &Mayeux, R. (2005). Relationship between plasma lipids and all-cause mortality in nondemented elderly. Journal of the American Geriatrics Society, 53(2), 219–226. https://doi.org/10.1111/j.1532-5415.2005.53106.x

Uçgun, İ.,Metintaş, M., Moral, H., Alataş, F., Bektaş, Y., YILDIRIM, H., ... & Bal, C. (2003). Malign patolojisi olmayan solunum yoğun bakım hastalarında mortalite hızı ve yüksek riskli hastanın belirlenmesi. Toraks Dergisi, 4(2), 151-160.

Tsabar, N.,Press, Y., Rotman, J. et al. The low indexes of metabolism intervention trial (LIMIT): design and baseline data of a randomized controlled clinical trial to evaluate how alerting primary care teams to low metabolic values, could affect the health of patients aged 75 or older. BMC Health Serv Res 18, 4 (2018). https://doi.org/10.1186/s12913-017-2812-0

THE RELATION OF IMPERIALISM-TERRORISM: MOZAMBİQUE CASE

Doç. Dr. Ali Fuat Gökçe
Gaziantep University, Gaziantep, Turkey

Abstract
The imperialism is the hegemony / domination that established by developed countries over less developed countries. Imperialism can be stated as the highest stage of capitalism. The colonial policies of the earlier stages of capitalism could be traced back to Roman times. The Roman Empire, founded on slavery, pursued a colonial policy. There is the dominance of monopoly associations formed by big entrepreneurs in the newest stage of capitalism. For classical Marxists, imperialism is a competition between major imperialist powers that manifests itself in territorial conflicts, which may take political, military and economic forms and inevitably lead to war between these states.
While the strongest among the capitalist states was determined in the wars with the armies in the 19th and 20th centuries, In the 21st century, the strongest country was determined by the violent incidents of separatist movements created by using the differences in the target country. Another point to be emphasized is that the imperialist states use terrorism as a political tool in order to bring the country under domination / hegemony after the success of anti-colonial movements.
Terrorism is a violent movement that has will and political purpose. Nowadays, terrorist organizations are the violence mechanisms that has established, directed and financed by imperialist states.
The African Continent is the area of the struggle for sharing between imperialist states, whose resources have been exploited, and which has been the target of the imperialist states in the last two centuries. The countries of the African continent with their rich natural resources and large lands had been created a field of struggle for the imperialist states who want to meet their raw material needs.
In this study, it is aimed to explain the struggle against imperialism in Mozambique, which is an example of this struggle in the African continent, and the relationship between imperialism and terrorism in this country. To do this, the descriptive and historical research method will be applied in the study and document-based analysis will be done. First of all, the concepts of imperialism and terrorism will be explained theoretically and the events taking place in Mozambique will be explained in terms of the relationship between imperialism and terrorism. The hypothesis of the study is that imperialist states use terrorism to bring target countries under economic and political domination / hegemony.

Key Words: Imperialism, Terrorism, Mozambique

EMPERYALİZM- TERÖRİZM İLİŞKİSİ: MOZAMBİK ÖRNEĞİ

Özet

Emperyalizm kelimesi, gelişmiş ülkelerin daha az gelişmiş ülkeler üzerinde kurduğu hegemonya/tahakkümdür. Emperyalizmi kapitalizmin en üst aşaması olarak belirtmek mümkündür. Kapitalizmin önceki aşamalarındaki sömürge politikalarını Roma dönemine kadar geriye götürmek mümkündür. Kölecilik üzerine kurulmuş olan Roma İmparatorluğu sömürgeci bir siyaset izliyordu. Kapitalizmin en yeni aşamasında büyük girişimcilerin oluşturduğu tekelci birliklerin egemenliği söz konusudur. Klasik Marksistler için emperyalizm, başlıca kapitalist ülkeler arasında kendini toprak anlaşmazlıkları ile gösteren, siyasi, askeri ve ekonomik biçimler alabilen ve en sonunda bu devletler arasında savaşa yol açan rekabettir.

Kapitalist devletler arasındaki rekabetin güçlüyü belirleme aracı 19. yüzyıl ve 20. yüzyılda, ülkelerin kendi orduları ile yaptıkları savaşlar olurken, 21. yüzyılda bu seçenek yerini hedef ülkedeki farklılıkları kullanarak oluşturulan ayrılıkçı hareketlerin şiddet olaylarına bırakmıştır. Burada üzerinde durulması gereken diğer bir husus ise emperyalist devletlerin, sömürge karşıtı hareketlerin başarılı olmasının ardından ülkeyi tekrar tahakküm/hegemonya altına alabilmek için terörizmi bir araç olarak kullanmasıdır.

Terörizm, iradesi ve siyasi amacı olan bir şiddet hareketidir. Terör örgütleri günümüzde emperyalist devletler tarafından kurulan, yönlendirilen, finanse edilen birer şiddet mekanizmalarıdır.

Afrika kıtası son iki yüzyıl içinde emperyalist devletlerin hedefinde olan, kaynakları sömürülen ve emperyalist devletler arasındaki paylaşım mücadelesinin alanıdır. Zengin doğal kaynakları, geniş toprakları Afrika kıtası ülkelerini hammadde ihtiyacını gidermek isteyen emperyalist devletlerin mücadele sahasını oluşturmuştur.

Bu çalışmada, Afrika kıtasındaki bu mücadelenin bir örneğini oluşturan Mozambik'teki emperyalizm ile yapılan mücadele ve bu ülkedeki emperyalizm-terörizm ilişkisinin açıklanması amaçlanmıştır. Bu doğrultuda betimsel ve tarihsel araştırma yöntemi uygulanarak, belgeye dayalı analiz yapılacaktır. Öncelikle emperyalizm terörizm kavramları kuramsal olarak açıklandıktan sonra Mozambik'te gerçekleşen olaylar, emperyalizm-terörizm ilişkisi açısından açıklanacaktır. Çalışmanın hipotezi, emperyalist devletler hedef ülkeleri ekonomik, siyasi tahakküm/hegemonya altına alabilmek amacıyla terörizmi kullanmaktadır.

Anahtar Kelimeler: Emperyalizm, Terörizm, Mozambik

INTRODUCTION

It is possible to state that imperialism is the highest stage of capitalism. The classical concept of imperialism, theorized by Lenin, is more specific than broad definitions and more general than narrow definitions. Imperialism is a special stage in the development of capitalism. It is possible to find the economic dimension of imperialism in Lenin's statements. However, in the origin and historical development of the word imperialism, it is seen that there are not only economic dimensions but also political, cultural and social dimensions. In the economic sense, imperialism is the combination of industrial capital and bank capital to form financial capital and the emerging giant monopolies to reach a decisive dominant role first in the source country and then on the economies of the target countries. The imperialist states that have

been the source country of imperialism used various methods to achieve their goals. These methods include using military force, making economic agreements, and cultural and social interactions. While cultural and social interactions manifest as assimilation in the territories dominated using military power, the creation of new markets by making economic agreements is the way of first exporting capital and goods to the other country and then obtaining the resources of that country. On the other hand, the use of military force appears as a method in the form of empires that has seen since the early ages and includes expansionist policies.

In the historical process, the states that regrouped in the form of the nation-state that emerged with the disintegration of empires and gained an imperialist character by making the industrial revolution, had a role that dominated world politics for many years. However, the multi-polar world order that emerged after the two world wars caused by these imperialist policies, while trying to direct the colonial countries in line with their own policies, caused gains and losses for both sides. While many states, which are the colonies of imperialist states, gained their independence, many of them were under the control of another imperialist state in an ideological sense. With the developments in technology and information systems, individuals and societies that can access information faster become open to the influence of imperialist countries in cultural and social terms. This point emerges as the new tactic of the imperialist countries. The difficulty of using military force on the target country, the pressure of the public opinion of its own country and its high cost have led the imperialist states to the need to develop another tactic that is cheap and will not attract the reaction of the public opinion. This tactic is the use of terrorist organizations.

Terrorism is a violent form of politics. It is the method that preferred by the imperialist states to be effective on target countries and territories without using their own military power. It manifests itself in the way of spreading to ethnic, religious and cultural differences in the target country and society, keeping it under control and using it when the time comes. The main purpose of imperialist states is to search for raw materials for their own economies and to provide these raw materials by controlling the target countries economically, culturally and socially. If these tactics are applied in various ways, using violence is the most valid tactic. The extent of the violence has changed in the historical process and has passed from the use of military power to the use of terrorist organizations.

In this study, the relationship between imperialism and terrorism is tried to be explained from the example of the African continent, which is a struggle and sharing area of imperialist states, where colonial activities are most intense. In this context, Mozambique's struggle against imperialism, which is accepted as one of the most obvious examples in the continent, has been discussed and examined. In the study, by applying descriptive and historical research methods, document-based analysis was made. In the study, after the concepts of imperialism and terrorism are explained theoretically, the events that took place in Mozambique will be explained in terms of the relationship between imperialism and terrorism. The hypothesis of the study is that imperialist states use terrorism in order to bring target countries under economic and political domination / hegemony.

1. IMPERIALISM

Imperialism is a concept that is widely used both academically, politically and among the public today. In order to see the point of understand the concept of imperialism, the concepts of "colonialism" and "capitalism" must be known. The concepts of imperialism, colonialism and capitalism are interrelated concepts. It is possible to state different definitions of capitalism, which is one of these concepts. However, all these definitions are complementary

explanations. Capitalism is a system of commodity production. It is a system in which the stocks of tools, tools, structures and goods in commodity production are privately or individually owned. It is a system in which the ownership of all inputs included in production belongs to private persons, and the surplus-values obtained from its output belong to private persons. People who are involved in the input-output process and add value to the output product are included in the system in return for their efforts. There is no ownership of these persons. Marx uses the expression for capitalism a mode of production, in which the means of production are owned by the capitalists, who are a separate class in society.[1]

Capitalism refers to the monopolization of economic production. Owners of capital, capitalists, who hold the means of production, want to fully dominate and control the market. Max Weber also explains capitalism as a rational economic production system and a rational organization of free labour. He says that for the formation of capitalism, production must be done by private enterprises.[2]

It is quite difficult to explain colonialism by making a generalization like the concept of imperialism. Colonialism is a absolutely economic activity. Colonialism is a set of activities which aimed at establishing a living space and extracting wealth in a region. It is the management and monopoly of the economic resources belonging to other countries or states. An extraordinarily strong "immigration" phenomenon lies within the concept of colonialism. Individuals, groups or societies migrate to other places in order to have a better life in economic, religious and political aspects without breaking their ties with their own culture. Unused and unused resources are operated and produced in settlement, thus creating an impact on the residents. This effect goes as far as to rule over the region over time.[3]

There is an imposition in the concept of imperialism. In the early periods of imperialism, military power and the application of force took place, and in the next stages, there were the control of economic and financial markets. Imperialism is the acquisition of land by a nation or state by using authority and power, and the establishment of economic and political superiority over the other nation or state. These definitions, which evoke issues such as use of force, expansion, imposition, land acquisition, do not completely meet the current concept of imperialism. Imperialism derives from the Latin “imperium” origin. The meaning of the Word is to rule and to impose.[4] Imperialism has been used as a word to denote the mighty, the sovereign, the highest authority. Its first use in English was in the second half of the 19th century. While in English previously used to describe a political system based on actual conquest and occupation, From the beginning of the 20th century, it has been used to denote a general system of economic domination in which political domination, which is the explanations of Marxist theory, can also be involved, but is not necessary. Imperialism is the domination of power by direct conquest or by using political and economic influence.[5] It is necessary to consider imperial policies that involve domination established by direct conquest as pre-capitalist. In pre-capitalist imperialism, political forces with powerful armies and navies seized by force the surplus created by the peoples in antiquity and medieval societies. The biggest surplus value of this period is the goods produced by the peasants. These surplus values are obtained through methods such as tax and extortion, or by using methods such as

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[1] Maurice Dobb, *Kapitalizm, Sosyalizm, Azgelişmiş Ülkeler ve İktisadi Kalkınma*, (Çev. M. Selik), (Ankara: Ankara Üniversitesi Siyasal Bilgiler Fakültesi Yayınları, 1981), pp. 2,3

2 Max Weber, *Protestan Ahlakı ve Kapitalizmin Ruhu*, (Çev. Z. Gürata), (İstanbul: Ayraç Yayınları, 1999).

3 Robert J. Young, *Postkolonyalizm,* (Çev. B.T. Köprülü), (İstanbul: Matbu Kitap, 2016), pp.27

4 Cüneyt Akalın, *Emperyalizm ve Siyaset*, In, Emperyalizm ve Türkiye (Ed. Barış Doster), (İstanbul: Kaynak Yayınları, 2014), pp. 22

5 Robert J. Young, *Postkolonyalizm*, pp. 35

slavery and drudgery for the people without land. Empires such as the Chinese Empire, the Roman Empire, the Ottoman Empire and the Byzantine Empire dominated the peoples in their vast lands based on force and power. these empires are the most prominent examples of pre-capitalist imperialism.[6]

Capitalism has shattered and destroyed the authority of feudal powers and empires. While the new class of capital (bourgeoisie) put an end to the feudal structure and reaction of the middle ages, it began to build labour exploitation in place of exploitation based on drudgery and slavery. The "imperium" representative of the imposing model, which reflects the medieval land-based mode of production, had been abandoned. The bourgeois developed economic, social and cultural institutions that consolidated their political domination with new forms of production, new superstructure institutions, new cultures, new political social organizations. The newly emerging capitalist system has created a great dynamism. There have been breakthroughs and developments in freedom of thought, science and technology and created new models of economic organization, causing changes in trade and leaps in production.[7]

The development of industry, the increasing competition among industrial powers, has led to rivalry and conflict between capitalist powers that hold capital. The competition between capitalist powers and the need for cheaper raw materials and the desire to earn more have turned into imperial politics. Lenin explains this point as the principle of "free competition". Examining the theoretical analysis and historical process of capitalism, Marx explained that production is concentrated in certain individuals in free competitive capitalism, and this has reached monopoly at a certain stage.

Lenin states that the rapid growth of industry and the rapid concentration of production in growing enterprises are the most characteristic features of capitalism. Lenin states that there are no big companies in every industry and this does not pose a problem and fluctuations in the market are prevented by the "combination" of the capitalists, that is, by combining various branches of industry in a single enterprise and the combined company has advanced technically and making more profit, and strengthening its position compared to simple companies [8]

Free capitalist organization has brought with its monopolization. Capital owners have united to have resources of raw materials and control the markets where they can sell what they produce. Lenin states that monopoly emerged in 1860/1870 and monopolies became more pronounced with the 1903 crisis. The period between 1860-1870 was the highest stage in the development of free competition, and the period when monopolies were barely visible. There was a long period in the development of cartels until the 1890s after the 1873 crisis. With the crisis of 1900-1903, it is seen that monopolies were formed thoroughly.[9]

Monopolization necessitated the dominance of financial capital after a while. On the other hand, financial capital has created a state and management style that seeks the market for the products it produces and seeks everything to master the raw material resources required for the industry, instead of conquering with the sword. Therefore, the domination of finance capital has manifested itself as imperialism.[10]The export of financial capital and the search for markets are not aimed at raising the living standards of a particular country or society. The aim of capitalist countries is to make more profits in backward countries by exporting capital.

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6 Cüneyt Akalın, *Emperyalizm ve Siyaset*, pp. 24

7 op.cit, pp. 26

[8] Vlademir İlyiç Lenin, *Kapitalizmin En Üst Aşaması Emperyalizm*, (Çev. Levent Özübek), (İstanbul: Yazılama Yayınevi, 2019), pp. 21

[9] Vlademir İlyiç Lenin*, Kapitalizmin En Üst Aşaması Emperyalizm*, pp. 25

[10] Cüneyt Akalın, *Emperyalizm ve Siyaset*, pp. 27

Cheap labour and raw materials and low wages in underdeveloped countries increase profit rates.

Capitalism passed into "new imperialism" in the second half of the 19th century. The new imperialism is a stage of capitalist development stemming from the greater concentration and centralization of capital and the domination of finance capital accordingly. Callinicos divided the history of imperialism into three phases: Classical imperialism, (1870-1945), Superpower imperialism (1945-1991) and post-Cold War imperialism (post-1991 to the present).[11]

2. TERRORISM

Terrorism is not an ideology or a system of thinking. It is not possible to explain terrorism with a specific ideology. Terrorist activities can be adopted and implemented by right-wing groups, left-wing groups or other radical groups. Therefore, terrorism is a form of politics that includes violence and is based on war and conflict environment with its own tactics and strategy.[12] Terrorist organizations want to rely on certain structures in the country of origin to recruit militants and gain popular support.[13]

The concepts of terrorism and terror complement each other, but there are differences between them in terms of determining the purpose and will. There are uncontrolled masses in terrorist activities. Therefore, it is difficult to talk about willpower in terrorist activities. Movements initiated for any purpose become uncontrollable and excessive violence is used against the public. The purpose of terrorist activities is not political. Terrorism, on the other hand, resorts to terrorist activities for political purposes. Terrorism is willpower and has a political purpose.[14],[15]

There are different approaches to the concept of terrorism. Countries or states fill the concept of terrorism according to their own understanding of security and political goals and define terrorist organizations or organizations that use violence as terrorist organizations.[16]

The generally accepted view on terrorism; It is the deliberate use of violence by a group or state to achieve illegal goals and political goals.[17],[18]

Terrorism has gone through different stages in the historical process. It is possible to divide terrorism, which can be traced back to the years 66-73 AD, into various sections in the period up to the present day.[19]

These include ethnic terrorism, religiously motivated terrorism, state terrorism, international terrorism, global terrorism, and postmodern terrorism. There are different approaches in making and defining these distinctions, both in the academic field, as well as in the political and international field. However, despite all these differences, global powers and imperialist states do not hesitate to use and legitimize terrorist organizations to achieve their own goals.

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[11] Alex Callinicos, *Emperyalizm ve Küresel Ekonomik Politik*, (Çev. İlkay Ata), (Ankara: Phoenix Yayınları, 2014), pp. 259

[12] A. F. Gökçe, *Dijital Çağın Küreselleşen Terörü: Post Modern Terörizm*, In, Dijital Çağın Etkisinde Yönetim – Siyaset – Kent, (Ed. E. Akman, N. Negiz, Ç. Akman, H. M. Kiriş), (Ankara: Detay Yayıncılık, 2018)

[13] A. F. Gökçe, Adalet Kavramı Kapsamında Geçmişle Hesaplaşma ve Uzlaşma: Türkiye. *(Bilge Strateji, 2016),* pp. 113-146.

[14] A.F. Gökçe, *Terör Örgütleriyle Mücadele Mi? Müzakere Mi? Farklı Uygulamalar ve Sonuçlar*, 13. Uluslararası Kamu Yönetimi Sempozyumu Tam Metin Kitabı, Gaziantep, (2019), pp. 736

[15] P. Wilkinson, *Terrorism and the Liberal State*, (Macmillan/New York University Press ,1986). s. 56

[16] A.F. Gökçe, *Terörizmle Mücadele Politikaları*, In, Kamu Politikası Analizi Türkiye Uygulamaları, (Ed. C. Babaoğlu, E. Akman) (Ankara: Gazi Kitabevi, 2018), pp. 369

[17] Robert H Kupperman, Darell M Trent, *Terrorism Threat- Reality- Response*. (California: Hoover Institution. 1980). pp. 39

[18] Thomas Perry Thornton. *Terror as aWeapon of Political Agitation*. In, Internal War: Problems and Approaches (Ed.H. Eckstein) (New York: The Free Press, 1964). pp. 79.

[19] A. F. Gökçe, *Dijital Çağın Küreselleşen Terörü: Post Modern Terörizm*, pp. 258

Ethnic terrorism is more common in countries with different ethnic groups. It occurs because domestic resources are not distributed equally and fairly to ethnic groups and that this is exploited by other countries or groups that have targets on the country.[20]
Religious motive terrorism is acts of violence that emerge because of the exaltation and blessing of aggression by radical groups within any religious tradition. Religious motif terrorism does not originate from religion. [21]
State terrorism, on the other hand, is a type of terror applied by the government in France during the Convention period for the first time after the French Revolution to suppress the anti-revolutionary events.[22] It is the use of politically motivated violence by the state through its public power within the country and the use of violence in that country by manipulating ethnic and religious differences within the target country and society outside the country.
It is possible to define international terrorism as "terrorist activities that target international law that concern more than one state in terms of its objectives, actions and resources, and have international consequences".[23]
Global terrorism is related with space. It means that a terrorist organization has reached the ability and ability to act anywhere in the world, and that terrorist organizations threaten the whole world with this opportunity and capability.[24]
Postmodern terrorism is tactical. It includes the change and transformation in the tactics and methods used by organizations in their actions.[25]

3. THE RELATION OF IMPERIALISM-TERRORISM AND MOSAMBICS

The increasing need for raw materials and the search for new markets of the imperialist states lead them to seek new areas of domination in the overseas territories beyond their borders. Imperialism is the thought of taking control or annexing the lands it targets, regardless of which nation lives on it. This approach, which defines the pre-capitalist period more, does not go beyond land annexation. This approach, which defines the pre-capitalist period more, does not go beyond land annexation. However, the new imperialism, apart from agricultural areas, wants to annex even the regions with the most developed industry by means of financial capital, the new imperialism differs from the old imperialism in that the ambitions of a growing empire are replaced by political expansion and commercial gain. It is also the prominence of financial or investment interests beyond commercial interests.[26]
These demands of the imperialist states have been the scene of wars between each other. These wars, which will be described as colonial wars, resulted in the sharing of Asia and Africa between Britain and France in the second half of the 19th century. With the participation of Germany, which completed its unity, to the colonial war in 1870, the colonial struggle has become multi-actor. After Britain and France, imperial states such as the USA

[20] A. F. Gökçe, *Siyasal Şiddet ve Mağduriyet İlişkisinin Reçetesi: Dünya Sevgisi ve Politik Dostluk*, 13. Uluslararası Kamu Yönetimi Sempozyumu Tam Metin Kitabı, Gaziantep, (2019), pp. 700
[21] A.F. Gökçe, A. C. Chirindza, *One Country, Two Organizations: Mozambique Rescue Front and Mozambique National Resistance Movement*, In Handbook of Research on Global Challenges for Improving Public Services and Government Operations, (Ed. C. Babaoğlu, E. Akman, O. Kulaç), (Hershey PA, USA, IGI Global, 2020), pp. 338
[22] I. Primoratz, State *Terrorism and Counterterrorism. Centre for Applied Philosophy and Public Ethics* (CAPPE), Working Paper, (2002). pp.3, 9.
[23] A.F. Gökçe, *Terörizmle Mücadele Politikaları*, pp. 369
[24] D. W. Simon, *Violent Conflict in the International System of the 1990s.* In, New Thinking and Developments in International Politics, (Ed. N. Riemer) (New York: The Miller Center. 1991). pp. 95
[25] A. F. Gökçe, *Dijital Çağın Küreselleşen Terörü: Post Modern Terörizm*, pp. 263
[26] Vlademir İlyiç Lenin, *Kapitalizmin En Üst Aşaması Emperyalizm*, pp. 97

started to dominate the earth by breaking the resistance of the peoples by using their armies, spreading their capital, activating intelligence organizations.[27]

The global economic relations network started to emerge in parallel with the technological developments in the period between 1870 and 1945, which Callinicos called "classical imperialism" While the imperialist states followed policies towards the export of financial capital, on the other hand, they started to take military measures to protect their financial capital or to protect their earnings in the country where they exported capital. In this context, there have been developments in the war industry with the use of railways and steamships in connection with technological developments. Mass production of weapons such as machine guns and similar developments have led to the industrialization of the war. The imperialist states have tried to take up arms and to protect and expand their sovereignty. [28] During this period, the world has become the scene of two world wars due to the sharing problem of the imperialist states.

In the period of "superpower imperialism" covering the period 1945-1991, the idea of capital accumulation overcoming political-territorial borders and transnational expansion has been began to take shape. The idea of economic expansion separated from this territorial growth has become more in line with the national interests of the United States. The US has been separated economic expansion in the international arena from direct political and military control over new markets. Thus, the USA gained the opportunity to establish global hegemony without establishing a formal territorial domination. However, two important forces in the creation and continuation of this global hegemony have gained a structure that can interfere with the policies of the USA. The presence of the Soviet Union on one side, on the other hand, the competition of the European great powers with the USA after the war, has been caused the USA to form a great military power to protect this hegemony. The USA had to constantly intervene in geographies such as Eurasia where imperialism is effective.[29]

During this period, anti-colonial independence movements in many countries in South America, Africa and Asia left the imperialist states in a difficult situation. While those who did not have enough financial capital stepped back, the US was able to maintain its global dominance through US-controlled transnational corporations such as the World Bank and the IMF, which controlled financial capital. After the war, the places where two important actors of the multipower world became a place of contention and sharing, have become the fields where strategies between the states were tried as much as their economic values. While the USA wanted to dominate with its financial capital, the Soviet Union wanted to balance the USA by adopting extreme ideological approaches and by selling arms to the mentioned countries. Thus, the geopolitical struggle began between the US and the Soviet Union. While this struggle revealed regional wars such as Korea, Vietnam, Iraq-Iran war, it revealed military coups in South America.[30]

"Oil" in the status of a "strategic commodity" has started to occupy an important place among imperialist states. The USA tries to keep the Middle East oil under control in order to guarantee its global hegemony. Although the USA uses its own energy resources, it did not want the oil of the region to be under the control of other imperialist countries such as Europe,

[27] Op.cit, pp. 96
[28] Alex Callinicos, *Emperyalizm ve Küresel Ekonomik Politik*, s. 274
[29] Op.cit. pp. 314-317
[30] Op.cit. pp. 332-334

Japan and the Soviet Union. It is very unfavourable for the USA for any foreign force to control the Persian Gulf.[31]

During this period, US President Reagan continued to support the right-wing guerrilla movements initiated during President Carter's term as a means of neutralizing Third World countries. Thus, it supported the right-wing guerrillas in Afghanistan, Nicaragua and Angola.[32]

During the post-Cold War imperialism period (from 1991 to the present), imperialist states began to use terrorist organizations or military companies formed by mercenaries created by them in place of their own armed forces in the areas where they wanted to dominate. With the collapse of the Soviet Union, the USA, which is the sovereign of a unipolar world, has started to carry out various operations in the Middle East in order to control underground resources such as oil and natural gas and to maintain its hegemony. However, during this period, terrorist organizations, that benefiting from the developments in technology and information systems, have also become a global actor. The period of "Post Modern Terrorism" started with the change in tactics and techniques used by the terrorist organizations in the Twin Towers attack on 11 September 2001. During this period, the imperialist states, especially the USA, changed their struggle strategies against terrorist organizations. Imperialist states have started to implement their new strategies to ensure their own interests and security of their countries. In addition, they have started to support terrorist organizations that exist or were established by them in areas where they wanted to dominate beyond their own borders.

Mozambique, as an African state, has become an area of conflict and interest of imperialist states. Rich in natural resources (hydroelectric power, coal, natural gas, titanium ore, tantalum, graphite and iron ore), Mozambique is the gateway to the South East Africa region. Mozambique reinforces its strategic position with its geopolitical position and the process of bringing natural resources to the economy. The Mozambique canal, which is one of the world's petroleum transportation main lines as the main transit point for the transportation of Middle Eastern petroleum to America and Europe, increases the strategic importance of the country. Mozambique, which is of such importance, remained in Portuguese colony for a long time.

the Mozambique Liberation Front (Frelimo) that established in 1962, started the struggle for independence in 1964 against the Portuguese colonial rule. Frelimo was declared as a terrorist organization by the Portuguese colonial administration during the struggle for independence. Despite having a Marxist-Leninist ideology, Frelimo managed to gather people from every ethnic and religious group in the country in his struggle.[33]

The immigration policy implemented by the Salazar government, which came to power in Portugal, in the colonies had caused unrest among indigenous, hybrid and second-generation whites of Mozambique society. These policies formed the basis of Frelimo's struggle against Portuguese colonial rule. Frelimo was founded by the Mozambique people in Tanzania in 1962 and, as in the case of other terrorist organizations, received shelter and hiding support from the neighbouring country. Frelimo leader Eduardo Mondlane gathered several thousand guerrillas in North Mozambique with the support of western European communist countries and started the struggle. Samora Machel continued to fight with Mondlane as the pragmatic military leader of Frelimo. He assumed the leadership of Frelimo in 1970, after Mondlane was

[31]Op.cit. pp. 355

[32] Op.cit. pp. 362

[33] J. Sumich, & J. Honwana. *Strong Party, Weak State? Frelimo and State Survival, Through the Mozambican Civil War:An analytical narrative on state-making* . (Crisis States Research Centre, 2007) pp. 5

assassinated in 1969. As a result of the left-wing military coup in Portugal in 1974, the new administration announced the end of its colonies in Africa and Mozambique declared its independence the following year. Frelimo leader Machel takes office as first head of state.[34]
Mozambique had subjected to the sanctions of the white minority regime in the neighbouring country Rhodesia in 1976 after the independence and the establishment of the government by Frelimo and came into conflict with Rhodesia. Mozambique requested assistance from the eastern European countries and the Soviet Union on these developments. The Rhodesians provided weapons and training to the opponents of Mozambique, and later the organization called the Mozambique National Resistance Movement (RENAMO) was established. Renamo was founded by the Rhodesian Central Intelligence Agency in retaliation for the Zimbabwe Nationalist Guerrillas supported by Mozambique. Portugal supported this new organization.[35]
Andre´ Matsangaissa was Renamo's first leader and led the organization until his death in 1979 in an action. Renamo has been used against the African National Congress (ANC), which supports Mozambique with the aim of destabilizing Mozambique. The main purpose is to destabilize Mozambique and. bring Frelimo to the peace table.[36]
The relationship and interaction between Frelimo and Renamo show the struggle between an organization struggling for independence and another organization that be founded and trained in a neighbouring country by the imperialist Portugal after that organization's success. We see the struggle of the colonial administration to regain the dominance by starting a counter-revolutionary movement after losing the struggle and domination in Mozambique. In the relationship between Frelimo, one of the actors of the Mozambique independence struggle, and the Portuguese-backed colonial administration, Frelimo was declared as a terrorist organization by the legitimate government and all activities of Frelimo were described as terrorism. After Frelimo won the struggle, it seized legitimate power in Mozambique and became a legal party that won the struggle for independence. The colonial administration, which lost power, started its struggle to regain power by establishing Renamo, an organization based on an anti-Frelimo ideology. In this new process, Renamo was described as a terrorist organization by Frelimo, who held the legitimate power.[37]

4. CONCLUSION

Terrorism is a violent and, with this feature, the most terrible method of politics. Terrorism has caused suffering, disasters and tears in human history in terms of its planning, implementation and consequences. Despite all these negative consequences, terrorism is actively used by imperialist states today as a form of politics. Imperialist powers that want to establish regional and global hegemony use and support terrorism in an open or covert way. This method is applied in any geography in transcontinental countries, as it may be between two neighbouring countries regionally. Imperialist states have used various methods to obtain new lands to meet their raw material needs, to find new markets to sell their products, to

[34] J, Penvenne, *The Unmaking of an African Petite Bourgeoisie: Lourenço Marques, Mozambique*. (Boston: Boston University, African Studies Center: Working Papers. 1982).
[35] K.Flower, Serving Secretly: *An Intelligence Chief on the Record, Rhodesia into Zimbabwe, 1964–1981,*. (London: John Murray. 1987).
[36] A.Vines, *Renamo's Rise and Decline: The Politics of Reintegration in Mozambique. International Peacekeeping*, (2013). 20:3, 375-393, DOI: 10.1080/13533312.2013.840087.
[37] A.F. Gökçe, A. C. Chirindza, *One Country, Two Organizations: Mozambique Rescue Front and Mozambique National Resistance Movement*, In Handbook of Research on Global Challenges for Improving Public Services and Government Operations, (Ed. C. Babaoğlu, E. Akman, O. Kulaç), (Hershey PA, USA, IGI Global, 2020), pp. 338

export their outdated technologies and to find cheap labour. Imperialist states have used military power in case of insufficient imperialist policies carried out with expansionist policies, financial capital export, economic relations. However, during the Cold War, the people of the imperialist states reacted to the military's loss of military power in regional conflicts. Moreover, the financial cost of the use of military force caused the imperialist states to seek other methods. However, the change in the tactics and techniques of terrorist organizations based on technology has led the imperialist states to keep terrorist organizations away from their own lands, while at the same time using them to realize their imperialist policies.

As stated in the example of Mozambique, imperialist states implement their imperialist policies by using their ethnic and religious differences, through the terrorist organizations they have established. Frelimo, which fought for independence against the imperialist states in Mozambique, has been described as a terrorist organization. After Frelimo seized power, the imperialist states fought against Frelimo by establishing the Renamo terrorist organization.

These policies of the imperialist states are not limited to Mozambique. As in many examples in the Middle East, Asia and South America continents today, imperialist states are implementing their imperial policies by using terrorist organizations and terrorism. The hypothesis of the study that "Imperialist states use terrorism in order to bring target countries under economic and political domination / hegemony" is confirmed in the example of Mozambique.

REFERENCES

Akalın, Cüneyt, *Emperyalizm ve Siyaset,* In, Emperyalizm ve Türkiye (Ed. Barış Doster), (İstanbul: Kaynak Yayınları, 2014), pp. 22

Callinicos, Alex *Politik Emperyalizm ve Küresel Ekonomik,* (Çev. İlkay Ata), (Ankara: Phoenix Yayınları, 2014), pp. 259.

Dobb, Maurice, *Kapitalizm, Sosyalizm, Azgelişmiş Ülkeler ve İktisadi Kalkınma*, (Çev. M. Selik), (Ankara: Ankara Üniversitesi Siyasal Bilgiler Fakültesi Yayınları, 1981), pp. 2,3

Flower, K. *Serving Secretly: An Intelligence Chief on the Record, Rhodesia into Zimbabwe, 1964–1981,* (London: John Murray. 1987).

Gökçe, A. F. *Adalet Kavramı Kapsamında Geçmişle Hesaplaşma ve Uzlaşma: Türkiye.* (Bilge Strateji, 2016), pp. 113-146.

Gökçe, A. F., *Dijital Çağın Küreselleşen Terörü: Post Modern Terörizm*, In, Dijital Çağın Etkisinde Yönetim – Siyaset – Kent, (Ed. E. Akman, N. Negiz, Ç. Akman, H. M. Kiriş), (Ankara: Detay Yayıncılık, 2018)

Gökçe, A. F. *Terörizmle Mücadele Politikaları,* In, Kamu Politikası Analizi Türkiye Uygulamaları, (Ed. C. Babaoğlu, E. Akman) (Ankara: Gazi Kitabevi, 2018), pp. 369.

Gökçe, A. F. *Siyasal Şiddet ve Mağduriyet İlişkisinin Reçetesi: Dünya Sevgisi ve Politik Dostluk,* 13. Uluslararası Kamu Yönetimi Sempozyumu Tam Metin Kitabı, Gaziantep, (2019), pp. 700

Gökçe, A. F. *Terör Örgütleriyle Mücadele Mi? Müzakere Mi? Farklı Uygulamalar ve Sonuçlar,* 13. Uluslararası Kamu Yönetimi Sempozyumu Tam Metin Kitabı, Gaziantep, (2019), pp. 736.

Gökçe, A. F. & Chirindza, A. C. *One Country, Two Organizations: Mozambique Rescue Front and Mozambique National Resistance Movement,* In Handbook of Research on Global Challenges for Improving Public Services and Government Operations, (Ed. C. Babaoğlu, E. Akman, O. Kulaç), (Hershey PA, USA, IGI Global, 2020), pp. 338.

Lenin, Vlademir İlyiç, *Kapitalizmin En Üst Aşaması Emperyalizm*, (Çev. Levent Özübek), (İstanbul: Yazılama Yayınevi, 2019), pp. 21.

Kupperman, Robert H, & Darell M Trent, *Terrorism Threat- Reality- Response*. (California: Hoover Institution. 1980). pp. 39

Penvenne, J, *The Unmaking of an African Petite Bourgeoisie: Lourenço Marques, Mozambique*. (Boston: Boston University, African Studies Center: Working Papers. 1982).

Primoratz, I, *State Terrorism and Counterterrorism. Centre for Applied Philosophy and Public Ethics* (CAPPE), Working Paper, (2002). pp.3, 9.

Simon,D. W., *Violent Conflict in the International System of the 1990s*. In, New Thinking and Developments in International Politics, (Ed. N. Riemer) (New York: The Miller Center. 1991). pp. 95

Sumich,J. & Honwana.J. *Strong Party, Weak State? Frelimo and State Survival, Through the Mozambican Civil War:An analytical narrative on state-making* . (Crisis States Research Centre, 2007) pp. 5

Thornton, Thomas Perry. *Terror as aWeapon of Political Agitation. In, Internal War: Problems and Approaches* (Ed.H. Eckstein) (New York: The Free Press, 1964). pp. 79.

Vines, A. *Renamo's Rise and Decline: The Politics of Reintegration in Mozambique. International Peacekeeping*, (2013). 20:3, 375-393, DOI: 10.1080/13533312.2013.840087.

Weber, Max, *Protestan Ahlakı ve Kapitalizmin Ruhu,* (Çev. Z. Gürata), (İstanbul: Ayraç Yayınları, 1999).

Wilkinson, P. *Terrorism and the Liberal State*, (Macmillan/New York University Press, 1986). s. 56

Young, Robert J. *Postkolonyalizm*, (Çev. B.T. Köprülü), (İstanbul: Matbu Kitap, 2016), pp.27

EVALUATION OF THE SYNERGISTIC EFFECT OF THE ANTIMICROBIAL ACTIVITIES OF EXTRACTS OF *Uvaria chamae* (ANNONACEAE) AND LACTOBACILLI ON *Salmonella spp.*

Alidah ANIAMBOSSOU
Victorien DOUGNON
Jerrold AGBANKPE
Hornel KOUDOKPON
Boris LEGBA
Esther DEGUENON
Kafayath FABIYI
Phénix ASSOGBA
Edna HOUNSA
Unversity of Abomey-Calavi, Benin

Abstract
Salmonellosis is a major public health problem in Africa and is one of the 4 main causes of diarrheal disease in the world. Faced with treatment failures resulting from the multiple resistance noted, it is urgent to identify new alternatives to effectively fight against these diseases. The objective of this study was therefore to demonstrate the synergistic effect of isolates of Lactobacillus spp and extracts of U. chamae on multidrug-resistant strains of Salmonella spp.
To do this, strains of Salmonella isolated from Roussetus aegypticus and stored at the Applied Microbiology and Pharmacology of Natural Substances Research Unit were used. The characterization and resistance profile of these strains were carried out according to standard microbiology techniques and the recommendations of the French Society of Microbiology. The ability of U. chamae extracts and lactobacilli strains to inhibit the growth of Salmonella was evaluated by the agar overlay method.
The results of our work have shown that extracts of U. chamae and isolates of Lactobacillus spp separately had an interesting antibacterial activity in vitro on multiresistant strains of Salmonella. The mean inhibition diameters obtained with the aqueous extract of U. chamae (100 mg/ml) were 8,429 ± 5,244 mm and 7,357 ± 4,861 mm with its ethanolic extract (100 mg/ml). The mean inhibition diameters obtained with the different strains of lactobacilli (10 µl/spot) were: 33.69 ± 12.45; 29.77 ± 12.92; 26.46 ± 12.10; 23.85 ± 13.05; 24.62 ± 11.18 for L. casei, L. delbrueckii, L. salivarius, L. acidophilus, and L. plantarum respectively. Regarding the combination of lactobacilli and the ethanolic extract of U. chamae, synergistic activity was noted on sensitive strains. Thus, lactobacilli, probiotic germs and U. chamae extracts constitute a real alternative to the use of antibiotics in the face of resistance.

Keywords: Synergistic activity, *U. chamae, Lactobacillus spp, Salmonella spp*

EPIDEMIOLOGY OF AFRICAN SWINE FEVER IN BENIN (2014-2018), VIROPREVALENCE, RISK FACTOR OF DISEASE EMERGENCE IN SOUTH OF BENIN AND PERSPECTIVES FOR ITS MANAGEMENT

OHOUKO Okri Fréjus Hans
KOUDOUVO Koffi
NOUDEKE Nestor
SOHA Arnaud
ADOUKO Jacques
DOUGNON Victorien
AGBONON Amegnona
GBEASSOR Messanvi
University of Abomey Calavi, Bénin
University of Lome, 01 BP 1515 Lome, Togo

Abstract
African swine fever (ASF) is a highly contagious disease affecting pig farms in Benin. This disease remain without vaccine and lack of information on its epidemiological description do not allow to a formal preventive and control method. This study aim to assess the epidemiological situation ASF in Benin. Thus, a retrospective study was conducted using data available from the Direction of Animal Production (DAP) on the manifestations of the disease in Benin from 2014 to 2018. In addition, a viral prevalence of the disease was assessed in the south of the country with the identification of risk factors linked to the emergence of the disease. The field study was carried out in Atlantique and Oueme Departments and consisted of an interview of 70 farmers following a questionnaire. In addition, 106 nasal swabs from apparently healthy domestic pigs and 15 organ samples from dead ASF-suspected pigs were collected. ASF virus detection analyzes were carried out at the Veterinary Diagnostic and Serosurveillance Laboratory (LADISERO) in Parakou by PCR. The method of Kulldorff was used for the spacetime analysis. It appears that ASF is an endemic disease in Benin with the Municipality of Dangbo, Akpro-Missérété, Sô-Ava, Aguégués and Adjohoun as the high-risk zone of dissemination of the virus in the country. From 2014 to 2018, 90 foci were recorded. The losses related to pigs mortality due to ASF recorded during this period are evaluated to 884,850,000 FCFA. A viral prevalence of 1.89% (CI at 95%, 0.71-3.49) was recorded for live animals and 100% for the organs tested. Breeding practices related to the sharing of breeding males, free ranging and non-compliance with biosecurity measures constituted risk factors for ASF. It would be interesting for the Beninese State to redouble its efforts through the competent services to raise farmers' awareness of the risks involved in non-compliance with biosecurity measures. Also, sensitization about the fraud of not reporting animals suspected to manifest ASF. To the scientific community, research should focus on finding an endogenous alternative in the treatment of the disease given the lack of vaccine and treatment to eradicate the disease.

Key words: African swine fever, incidence, viro prevalence, Benin

A RARE CAUSE OF RHABDOMYOLYSIS; EBSTEIN BARR VIRUS INFECTION

Serdar Yaşar
Ece Yiğit
Istanbul Medipol University, Istanbul, Turkey

Abstract
Rhabdomyolysis is a clinical and biochemical syndrome characterized by acute necrosis of striated muscle fibers and mixing of cellular elements with toxic potential to the circulation. The clinical triad of the disease is weakness, muscle pain, and dark urine. The only 100% sensitive marker in diagnosis is creatine kinase (CK) elevation. Treatment of the underlying cause and prevention of complications are essential in treatment.
31-year-old female patient was admitted to our emergency department with complaints of weakness, high fever and severe calf pain. TA110/80mmhg, pulse:122/min, fever was 39.3 degrees. Examination was remarkable, except right cervical lymphadenopathy. Pathologically elevated parameters in blood tests were as follows; ALT: 74U/L, AST: 46U/L, CK: 1014U/L, sedimentation: 44mm/hr, CRP: 134mg L and D-Dimer: 644 ng/ml. Other blood tests were within normal limits. Factors that frequently cause rhabdomyolysis, such as trauma, heavy exercise, exposure to potentially toxic substances, poisonous animal bites, were questioned and ruled out. Viral markers were requested and EBV IgM was found positive. High volume hydration and antipyretic therapy was given. On the 7th day of treatment, ALT:44 U/L, AST:18U/L, CK:62 U/L, ESR 29mm/h and CRP:12,8mg/L were detected.
Ebstein Barr Virus is a virus belonging to the Human Herpes Virus family, which frequently infects adolescents and young adults. EBV infection is also known in public ‘’kissing disease’’. Because the virus is present in body fluids, especially saliva, and the major route of transmission is kissing and sexual intercourse. Clinical presentation is characterized by weakness, fever, sore throat, cervical lymphadenopathy, hepatosplenomegaly. In addition to increase in infection markers such as ESR and CRP, it also causes increase in liver enzymes in 80-90% of cases. In our case, high fever, cervical lymphadenopathy, elevated CRP and ESR levels suggested an infection, muscle pain and elevated CK levels suggested rhabdomyolysis. Although liver enzyme elevation can be seen in viral infections, it is also one of the early complications of rhabdomyolysis.
Rhabdomyolysis should be considered in the preliminary diagnosis in patients presenting with nonspecific symptoms such as weakness and muscle pain, and blood creatine kinase levels should be checked. Viral infections, which are a rare cause of rhabdomyolysis, should be considered, especially if conditions suggestive of infection such as fever, elavated ESR and CRP levels are present in the clinical condition.

Keywords: Rhabdomyolysis, EBV Infection, Calf Pain, Elevated Liver Enzymes

Özet

Rabdomiyoliz; çizgili kas liflerinin akut nekrozu ve toksik potansiyeli olan hücresel elemanların dolaşıma karışması ile seyreden klinik ve biyokimyasal bir sendromdur. Rabdomiyoliz 3 ana başlık altında incelenir; Travmaya ve kompresyona bağlı rabdomiyoliz, nontravmatik egzersiz ile ilişkili rabdomiyoliz ve nontravmatik egzersiz ile ilişkili olmayan rabdomiyoliz. Klinik triad; kas ağrısı, güçsüzlük ve koyu renkli idrardır. Ciddi rabdomiyoliz durumunda ateş, taşikardi, bulantı ve kusma, karın ağrısı tabloya eşlik edebilir. Tanıda %100 sensitif tek belirteç kreatin kinaz (CK) yükselmesidir. Tedavide altta yatan nedenin tedavisi ve komplikasyonların önlenmesi esastır.

31 yaşında kadın hasta acil servisimize halsizlik, yüksek ateş, şiddetli bacak ağrısı şikayetleri ile başvurdu. TA 110/80mmhg, nabız:122/dk, ateş 39.3 dereceydi. Muayenede sağ servikal bölgede tespit edilen lenfadenopati dışında özellik saptanmadı. Tetkiklerinde ALT:74U/L, AST:46U/L, CK:1014U/L, sedimentasyon:44mm/st, CRP:134mg/L ve D-Dimer:644 ng/ml olarak artmıştı. Bunlar dışındaki kan tahlilleri normal sınırlardaydı. Hasta ileri tetkik ve tedavi için interne edildi. Travma, ağır egzersiz, toksik olabilecek madde maruziyeti, zehirli hayvan ısırması gibi rabdomiyolize sıklıkla sebep olan faktörler sorgulanarak ekarte edildi. Viral markerlar istendi ve EBV IgM pozitif tespit edildi. Yüksek volümlü hidrasyon ve antipiretik tedavi başlandı. Tedavinin 7. gününde ALT:44U/L, AST:18U/L, CK:62 U/L, sedimentasyon 29 mm/st ve CRP 12,8 mg/L saptandı.

Ebstein Barr Virüs, Human Herpes Virüs ailesine ait, sıklıkla ergenlerde ve genç erişkinlerde enfeksiyona yol açan bir virüstür. EBV enfeksiyonu öpücük hastalığı olarak isimlendirilir. Bunun sebebi virüsün başta tükürük olmak üzere vücut sıvılarında bulunması ve majör bulaş yolunun öpüşme ve cinsel ilişki olmasıdır. Klinik prezentasyon halsizlik, ateş, boğaz ağrısı, servikal lenfadenopati, hepatosplenomegali şeklindedir. Sedimentasyon, CRP gibi enfeksiyon markerlarında artışın yanısıra %80-90 vakada karaciğer enzimlerinde de artışa neden olur. Vakamızda yüksek ateş ve servikal lenfadenopati, CRP ve sedimentasyon yüksekliği bir enfeksiyon tablosu olduğunu, kas ağrısı ve CK yüksekliği rabdomiyolizi düşündürmekteydi. Karaciğer enzim yüksekliği, viral enfeksiyonlarda görülebilmekle birlikte aynı zamanda rabdomiyolizin erken dönem komplikasyonlarından birisidir. Vakaya EBV enfeksiyonuna sekonder rabdomiyoliz tanısı konulmuş ve tedavi edilmiştir.

Halsizlik, kas ağrısı gibi nonspesifik semptomlar ile başvuran hastalarda rabdomiyoliz tanısı akla getirilmeli ve kreatin kinaz istenmelidir. Özellikle ateş, sedimentasyon, CRP yüksekliği gibi enfeksiyon düşündüren bir tablo eşlik ediyorsa rabdomiyolizin nadir bir nedeni olan viral enfeksiyonlar göz önünde bulundurulmalıdır.

Anahtar kelimeler: Radomiyoliz, EBV İnfeksiyonu, Bacak ağrısı, Yükselmiş Karaciğer Enzimleri

HUMAN AND ENVIRONMENT INTERACTION IN SUSTAINING HEALTH

Mukadder Mollaoğlu
Esra Başer
Sivas Cumhuriyet University, Turkey

Abstract
Human beings are integrated with their biological, psychological, cultural and social dimensions. Environment is defined as all factors affecting the physical, biological, social-psychological, social-economic and cultural life of the individual and society. Although the concept of environment has different meanings in the literature; environment is defined as the environment or conditions in which an organism lives and interacts with different organisms. The relationship between human and environment has been continuing since the very beginning of human existence. Human beings have the necessary factors for their existence from the environment and they need the environment for the continuation of their existence. People who consciously / unconsciously interact with the environment at all stages of their life can be affected positively or negatively from the environment. In connection with the advancement of technology and industry, waste products, chemicals, radiation, etc. There has been a complex relationship between health and environment due to factors. The World Health Organization (WHO) also declared that the environment has a decisive role on human health and that the degradation / transformations / changes in the environment cause serious health problems. On the other hand, it is argued that the health sector also has negative effects on the environment and poses a threat. Medical wastes, disinfection materials and sterilants are the main threats to the environment in healthcare provision. Eliminating these factors and minimizing their impact will positively affect environmental health and indirectly human health. Therefore, healthcare personnel have important duties in providing services to healthy and sick individuals. The environmental conditions of health professionals for the health of individuals also have an important place in reducing the damage to the environment as a result of health care. As a result, the environment is an open system in relation to the physical and non-bodily existence of human beings with the living and non-living things it contains. We can say that taking all kinds of initiatives and taking measures to protect the genetic structure and environmental conditions that form the basis of human life are indispensable preconditions of life.

Key Words: Human, enviroment, sustaining health

INTRODUCTION

The basic concept that healthcare is concerned with is human. Health is based on all health levels, from human embryo formation to the end of life (Siqueira et al., 2018). Human recognition and identification is an important requirement in order to identify and resolve the health-related problems of the individual and / or family and society in need in healthcare

(Ünsal, 2017). In addition to the existence of a wide variety of dimensions and aspects of man, its scientific definition also differs.

Human and Dimensions

Bio-Physiological Dimension of Human

Human beings, as a bio-physiological entity, consist of cells, tissues, organs and systems (Kohl ve Noble, 2009). A balance is established between these systems through the nervous system and endocrine systems. Balance is achieved with negative feedback. (Guyton and Hall, 2011).

On the other hand, it is necessary to meet basic human needs such as nutrition, excretion and movement in order to maintain human physiological functions. Since it is integrated with human biopsychosocial aspects, while physiological needs are met, psychological and social needs should also be met (Irigaray, 2017).

Psychological Dimension of Human

Every human being has an inner aspect as well as a biological aspect. Psychological variables in humans; personality and temperament, motivation, emotional state, reactions, intelligence, behaviors, communication, memory systems, coping methods, perception-understanding, values, consciousness, memory, thinking process and individual characteristics (Kaya, 2013). It is a being that perceives internal and external stimuli from birth and creates an instinctive response to stimuli. According to the theorists, they examined and explained different aspects of human psychological characteristics (Onur, 2018).

Social Dimension of Human

It is a social entity that has relationships with beings and other people in the human environment. Socialization is considered as the process of acting in accordance with the norms and values valid in the adult environment. The constant interaction of man with the society has an important place in the formation of his unique personality and self-consciousness (Uzun, 2020). Thanks to socialization, people learn the characteristics, structure and way of thinking of society and integrate them with social culture (Kaya, 2013).

Health as a social institution includes methods, ways, beliefs, values and norms created to meet the health needs of individuals who make up the society. Since the health of the society is particularly related to human health, the main purpose of the health system is to ensure that individuals are in a state of complete well-being (Aytaç and Kurtdaş, 2016).

Cultural Dimension of Human

In addition to being a social being, human beings are also a cultural entity. The individual behaves in a way necessary to adapt to the culture and plays an important role in carrying the culture to future generations. (Demirci, 2010). Culture has a static structure that changes over time. People's knowledge, attitudes and beliefs can also be affected according to the characteristics of the culture they live in (Bolsoy and Sevil, 2006).

Cultural characteristics can be a driving factor in the health-disease relationship. The main purpose in the field of health is to be able to take appropriate approaches according to the cultural characteristics of the person served. The main purpose in the field of health is to be able to take appropriate approaches according to the cultural characteristics of the person served (Bolsoy ve Sevil, 2006).

Human, defined in all dimensions, continues to develop and exist in a biological, physical and social environment. Environment and human are in constant interaction. In the next section, "environmental concept" is discussed.

ENVIROMENT

Environment is defined as all factors affecting the physical, biological, social-psychological, social-economic and cultural life of the individual and society (Velioğlu, 2012). The concept of environment includes all internal and external events and situations that affect the individual and cause changes (Ünsal, 2017).

Although the concept of environment has different meanings in the literature; environment is defined as the environment or conditions in which an organism lives and interacts with different organisms (Kaya, 2013). The environment, which is expressed as an integrity / unit in a certain place / time, in which people live, work and develop, can be accepted as an ecosystem of which it is one of its elements (Siqueira et al., 2018).

The relationship between human and environment has been continuing since the very beginning of human existence. Human beings have the necessary factors for their existence from the environment and they need the environment for the continuation of their existence. Human needs have evolved from basic needs to secondary cultural needs, and in this process, people have managed to shape the opportunities offered by the environment according to their own need (Çopuroğlu, 2003).

People who consciously / unconsciously interact with the environment at all stages of their life can be affected positively or negatively from the environment. In connection with the advancement of technology and industry, waste products, chemicals, radiation, etc. There has been a complex relationship between health and environment due to factors. Harmful environmental factors result in health deterioration (Bahar and Aydoğdu, 2015). The World Health Organization (WHO) has also declared that the environment has a decisive role on human health and that the degradation / transformations / changes in the environment cause serious health problems (Karahan- Okuroğlu, 2012).

On the other hand, it is argued that the health sector also has negative effects on the environment and poses a threat. Medical wastes, disinfection materials and sterilants are the main threats to the environment in healthcare provision. (Karahan- Okuroğlu, 2012; Borowy, 2020). Eliminating these factors and minimizing their impact will positively affect environmental health and indirectly human health. Therefore, healthcare personnel have important duties in providing services to healthy and sick individuals. The environmental conditions of health professionals for the health of individuals also have an important place in reducing the damage to the environment as a result of health care. The stated goals can be achieved by informing the healthcare personnel about the subject, finding sustainable health care goals, environmental-centered understanding and training on these issues (Kahveci et al., 2020; Kaya, 2013; Karahan- Okuroğlu, 2012).

Environmental Impact on Human Health

While people shape the environment, on the other hand, the environment affects human healthAll kinds of positive and negative factors in the environment in which a person lives have an effect on the growth, development and continuity of human health (Kutlu, 2018).

With the advancement of technology and industry, environmental pollution basically occurs in nature in the form of air, soil and water pollution. Pollution of air, soil and water can cause diseases directly, as well as a basis for the spread of some diseases (İbadullayeva et al., 2019).

Air pollution has various adverse effects on the cardiovascular system. It causes ischemic effects such as increase in inflammation, oxidative stress, coagulation system, and endothelial dysfunction. Systemically, it has been shown to cause an increase in myocardial infarction rates due to increased blood pressure, heart rhythm disturbances, cardiac hypertrophy and atherosclerosis (Kardeşoğlu et al., 2011). It causes epithelial cell damage on the respiratory system and exacerbation of chronic obstructive pulmonary disease (COPD) by accelerating the inflammatory process (Cavkaytar et al., 2013). Air pollution causes central nervous system diseases by activating inflammatory pathways in the nervous system. Studies have shown that air pollution is associated with diseases such as multiple sclerosis, Parkinson's and stroke (Cavkaytar et al., 2013).

Tarımda kullanılan atıklar, katı ve sıvı atıkların iyi imha edilememesi, radyoaktif atıklar vb. toprak kirliliğine neden olmaktadır. Also, pesticides used in agriculture have serious side effects on respiratory, cardiovascular and neurological systems. It also causes problems such as cancer, congenital anomalies and infertility (Güler and Çobanoğlu, 1997).

The other source of life that is mostly polluted by industrial, domestic, agricultural and heating reasons is water. It causes many diseases by taking it directly in the body with the contamination of water. Poisoning, infectious diseases and diseases affecting systems occur due to water pollution.

Environmental pollution not only has direct effects on health, but also causes the emergence of biological factors affecting health. In human life, diseases such as ebola and HIV have passed from animal primates to humans. The drugs used and the chemical agents mixed with the soil increase the antimicrobial resistance and cause diseases in humans by the microorganisms found in animals. Plague, leprosy and rabies are examples of these diseases (Galvani et al., 2016). There are opinions that the Covid-19 epidemic, which affects the whole world, is caused by environmental pollution. Studies have determined that there is a significant correlation between the Covid-19 pandemic and NO_2, O_3, temperature and humidity in the air. (Bilal et al., 2020).

CONCLUSION

As a result, the environment is an open system that is in relation with the physical and non-bodily existence of human beings with the living and non-living beings it contains. The environment in which human lives; It is classified as biological, physical, social and cultural. As a bio-psycho-socio-cultural creature, human beings live in interaction in a biological, physical and social environment (Ünsal, 2017). In order to maintain health, the biological, physical and social environment of a person must also be in harmony.

Environment is a physical, chemical, biological, social, economic and cultural environment where people and other living creatures live together. A healthy environment is essential for a healthy life. Therefore, various measures should be taken to protect the environment. Education on environment should be continued, starting from primary school levels, including universities, and environmental awareness should be gained. Individuals, governments, national and international organizations have a responsibility to continue healthy interaction with the environment. Policies for environmental protection should be developed and implemented. The crest of the world population, the decrease and pollution of natural

resources, technological and industrial developments reveal the necessity of environmental regulations.

REFERENCES

Aytaç, Ö., ve Kurtdaş, M.Ç. (2016). Sağlık-Hastalığın Toplumsal Kökenleri Ve Sağlık Sosyolojisi. *Fırat Üniversitesi Sosyal Bilimler Dergisi*, *25*(1), s.231-250.

Bahar, Z., ve Aydoğdu, N. G. (2015). Çevre, sağlık, araştırma ve hemşirelik. *Dokuz Eylül Üniversitesi Hemşirelik Fakültesi Elektronik Dergisi*, *8*(2), s.119-122.

Bilal, M. F. B., Benghoul, M., Numan, U., Awais Shakoor, B. K., Bashir, M. A., Bashir, M., & Tan, D. (2020). Environmental pollution and COVID-19 outbreak: insights from Germany. *Air Quality, Atmosphere, & Health*, 3: 1-10.

Bolsoy, N., ve Sevil, Ü. (2006). Sağlık-Hastalık Ve Kültür Etkileşimi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, *9*(3), 78-87.

Borowy, I. (2020). Medical waste: the dark side of healthcare. *História, Ciências, Saúde-Manguinhos*, *27*, s.231-251.

Cavkaytar, Ö., Soyer Ö.Ü., Şekerel B.E. (2013). Türkiye'de Hava Kirliliğinden Kaynaklanan Sağlık Sorunları. *Hava Kirliliği Araştırmaları Dergisi*, 2: 105 – 111

Çopuroğlu, C. (2003). İnsan-Çevre-Kültür İlişkisi Çerçevesine Fırat Havzasında Halk Hekimliği. *İstanbul Üniversitesi Sosyoloji Konferansları Dergisi*, 27.

de Siqueira, H. C. H., Thurow, M. R. B., de Paula, S. F., Zamberlan, C., de Medeiros, A. C., Cecagno, D., ... & Perim, L. F. (2018). Health of human being in the ecosystem perspective. *Journal of Nursing UFPE on line*, 12(2), s.559-564.

Demirci, F.S. (2010). Kurum kültürünün halkla ilişkiler çalışmalarına etkisi halkla ilişkiler ve kurum kültürü arasındaki etkileşim. *Verimlilik Dergisi*, (3), s.65-103.

Galvani, A. P., Bauch, C. T., Anand, M., Singer, B. H., & Levin, S. A. (2016). Human–environment interactions in population and ecosystem health. *Proceedings of the National Academy of Sciences*, *113*(51), 14502-14506.

Guyton, A. C., Hall, J. E., Çavuşoğlu, H., Yeğen, B. Ç., Aydın, Z., & Alican, İ. (2011). *Tıbbi fizyoloji*. Nobel Tıp Kitabevleri.

Güler Ç., Çobanoğlu Z. Pestisitler. T.C. Sağlık Bakanlığı Yayınları. Çevre Sağlığı Temel Kaynak Dizisi No: 52; 1997. 1. Baskı Ankara. ISBN 975- 8088-69-6

Irigaray, L. (2017). *To be born: Genesis of a new human being*. Springer.

İbadullayeva, J., Jumaniyazova, K., Azimzadeh, S., Canıgür, S., & Ferhan, E. (2019). Çevre Kirliliğinin İnsan Sağlığı Üzerindeki Etkileri. *Türk Tıp Öğrencileri Araştırma Dergisi*, *1*(3), 52-58.

Kahveci, M.M., Ceylan B., Tatlıoğlu G. (2020). Hastanelerde Tesis Güvenliği ve Önemi. *Bandırma Onyedi Eylül Üniversitesi Sağlık Bilimleri ve Araştırmaları Dergisi*, *2*(2), 80-102.

Karahan-Okuroğlu, G. (2012). Hemşirelik Eğitiminin Öğrencilerin Çevreye Yönelik Tutumlarına Etkisi. *Turkish Journal of Research & Development in Nursing*, *14*(3), s.27-38.

Kardeşoğlu, E., Yalçın M., Işılak Z. (2011). Hava Kirliliği ve Kardiyovasküler Sistem, *TAF Prev Med Bull* 2011; 10(1): 97-106

Kaya, N. (2013). Hemşireliğin Temel Kavramları, İçinde, ed. Z. Durna, *İç Hastalıkları Hemşireliği*, İstanbul, Akademi Basın ve Yayıncılık, s.14-15.

Kohl, P. and Noble, D. (2009). Systems biology and the virtual physiological human. *Molecular Systems Biology*, *5*(1), s.292.

Kutlu, R. (2018). Çevresel Faktörlerin Mekan Kalitesi Ve İnsan Sağlığına Etkileri. *The Turkish Online Journal of Design Art and Communication*, *8*(1), 67-78.

Onur, D. (2018). Psikoloji Kuramları Ve Yaratıcılık. İlişkisi. *Kırıkkale Üniversitesi Sosyal Bilimler Dergisi*, *8*(1), s.145-156.

Uzun, S. (2020). Yaşlılarda, Kadınlarda ve Adölasanlarda Kişilik Algısı Değişimi ve Nedenleri. *İnsan ve Sosyal Bilimler Dergisi*, *3*(1), s.431-449.

Ünsal, A. (2017). Hemşireliğin Dört Temel Kavramı: İnsan, Çevre, Sağlık&Hastalık, Hemşirelik. *Ahi Evran Üniversitesi Sağlık Bilimleri Dergisi*, 1(1), s. 11-25.

Velioğlu, P. (2012). Hemşirelikte kavram ve kuramlar. İstanbul: Alaş Ofset, :93–118.

CARE OF HEMODIALYSIS PATIENTS ACCORDING TO THE NEUMAN SYSTEM MODEL

Mukadder Mollaoğlu
Esra Başer
Sivas Cumhuriyet University, Sivas, Turkey

Abstract
Hemodialysis is one of the commonly used renal replacement therapy in chronic renal disease. Hemodialysis patients experience physical and psychological symptoms related to side effects of the treatment process, accompanying diseases, and lifestyle changes. The basic point of health services is the care provided to people. In order to provide an effective care, health professionals must have a good education, the formation of value systems, and the ability to use the scientific problem solving process in the decision-making process. Nurses should use scientific models to provide qualified care to patients. The Neuman Systems Model (NSM), one of these models, provides a holistic (physiological, psychological, sociocultural, spiritual) approach. The focus of this model is the patient's response to stressors and the nurse's use of primary, secondary, and tertiary protection methods for this response. There are also personal, interpersonal and environmental stressors in patients receiving hemodialysis treatment. These stressors affect the flexible, normal lines and lines of resistance on hemodialysis patients, respectively; disease symptoms constitute the basic response to stressors in the individual. The symptoms experienced by the patients negatively affect their quality of life, daily life activities, physical, psychological and social aspects. Patients have to cope with symptoms, adapt to diet and medication, and changes in body image. Nurses who care for hemodialysis patients should ensure that patients use their coping mechanism. NSM improves the coping and social support mechanisms of patients and strengthens the resistance lines. As a result, using NSM while providing care to hemodialysis patients enables patients to be evaluated with all dimensions. At the same time, NSM provides holistic care in accordance with the data obtained. Thus, by preserving the resistance lines of the patient, the continuity of the system and health can be maintained.

Key words: Hemodialysis, care, Neuman systems model, nursing

INTRODUCTION

Hemodialysis treatment is one of the frequently used renal replacement therapies in chronic kidney disease (CKD). According to the reports of the Turkish Nephrology Association for 2019, 73.21% of patients receive hemodialysis treatment according to the type of RRT (Seyahi et al., 2020). With hemodialysis treatment, waste products and excess fluid accumulated in the blood of patients are removed and the quality of life of patients is tried to be increased (Tuna et al. 2018).

Hemodialysis patients experience many psychological, social and physical problems. Patients experience many problems such as fatigue, pain, insomnia, nausea-vomiting, muscle cramps and uremic itching during the treatment process. These symptoms negatively affect the patients' quality of life, self-care activities and indirectly their compliance with treatment (Akça and Doğan, 2011). It is necessary to provide qualified care in order to increase the compliance of the patients to the treatment. When the concept of care is examined, it is an action that can be carried out not only for the individual, but also for another living creature in need. Since a person is a cultural entity, he / she must have interpersonal relationships. Human behaves according to cultural, social values, moral and belief characteristics in interpersonal relations. People meet each other's needs according to the moral principles they take care of. Meeting and undertaking one's needs such as feeding, clothing, and cleaning includes practices that require mutual labor. (Dinç, 2010). The basic point of health services is the care provided to people. The concept of care does not only mean looking, but also means taking care. Giving care and taking care is considered as the physical, spiritual and mental communication of two people. In this open communication, one person is defined as health professionals (nurse, doctor, physiotherapist, dietician, social worker, etc.) who provide care, and the other person who takes care (patient, healthy individual, etc.). (Lavoie, De Koninck, and Blondeau, 2006).

There are some factors affecting the quality and effectiveness of care in the field of health. In order to provide an effective care, first of all, health professionals need to have a good education, the formation of value systems and the ability to use the scientific problem solving process in the decision-making process (Greiner, and Knebel, 2003). In this context, the main purpose of providing care should be to address the needs of individuals in a holistic approach, the therapeutic processes based on the principle of protecting and improving the health of the individual, treatment and rehabilitation of diseases. Planning this care according to the patient's personal characteristics, culture and beliefs emphasizes the moral dimension of care. (Gül, 2019; Berghout et al., 2015).

It is important to use an evidence-based model for nurses to provide qualified care. (Baykara et al., 2019). One of the models used for this purpose is the Neuman System Model (NSM).

Neuman System Model

According to Neuman, it is an open system that interacts with the human environment, it constantly interacts with the inner and outer environment in order to achieve harmony and balance (Fawcett, 2005; Gigliotti, 2008). Health refers to a dynamic stable state with a normal defense mechanism. (Neuman and Fawcett, 2002). The environment includes both internal and external stressors and resistance factors. Stressors are neutral, the individual interprets them as beneficial or harmful. According to Neuman, the concept of stressor has three dimensions: intrapersonal, interpersonal and non-personal (Fawcett, 2005). Stressors related to illness, infection or trauma, reactions to life events such as sadness are intrapersonal stressors that occur within the individual. Situations that arise between more than one individual, such as family conflict, role change, and dependency, are interpersonal stressors. Stressors that occur outside the person, such as poverty, education systems or financial situation, are non-personal stressors (extrapersonal) (Fawcett, 2005; Neuman and Fawcett, 2002). Each line of defense tries to prevent damage to the basic structure by protecting what comes next. These are flexible lines of defense, normal lines of defense and lines of resistance. The flexible line of defense is the outer broken line, surrounding the normal line of defense, can change rapidly in a short time. If the flexible line of defense is not strong or the stressors are too strong, the normal line of defense is entered (Fawcett, 2005; Neuman and

Fawcett, 2002). The normal line of defense is the general well-being of the individual and is activated when the flexible line of defense is broken. The coping methods normally used by an individual are a result of variables and behaviors such as lifestyle. Lines of resistance, on the other hand, are the lines that protect the basic structure of the individual and are activated when the normal line of defense is broken. The line of resistance is the coping source that the individual has learned over time, if these coping strategies are effective, the development of the basic response can be prevented (Fawcett, 2005; Neuman and Fawcett, 1989). Neuman (2002) states that the basic response consists of innate genetic characteristics and survival factors.

The nurse performs attempts at three levels of protection to stabilize the system (Black, Deeny and Mckenna, 1997; Fawcett, 2005; Neuman and Fawcett, 1989). Primary protection is fulfilled when a stressor is suspected or its presence identified. Primary prevention aimed to educate the individual, to protect the patient from potential and current stressors with general information. Secondary prevention includes treatment or interventions initiated after symptoms appear. Secondary prevention includes monitoring the condition of the sick individual, taking necessary precautions to prevent complications, and treating symptoms that occur as a result of reactions to stressors. Tertiary protection focuses on re-adaptation, restructuring. Purpose; It is to increase the individual's resistance to stressors by training in order to prevent the reappearance of the reaction or disorder (Black et al., 1997; Fawcett, 2005; Neuman ve Fawcett, 1989; Switek, 2002;).

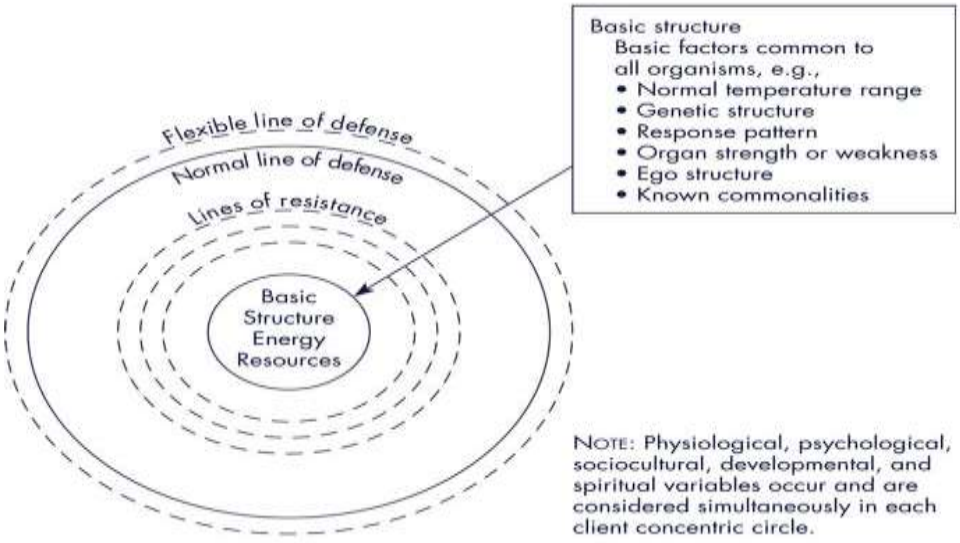

Figure- 1: The Neuman Systems Model. (From Neuman, B., & Fawcett, J. [2011]. *The Neuman Systems Model* [5th ed., p. 15]. Boston: Pearson.)

Neuman System Model and Its Use in Hemodialysis Patients

Patients who receive hemodialysis are exposed to many physical and psychological stresses due to the symptoms related to the treatment process and dependence on the machine.

Personal Stressors: They are the stressors that an individual experiences within themselves, their personal characteristics and diseases.

Interpersonal stressors: Lack of social support, loss of role function and dependence of patients receiving hemodialysis treatment constitute interpersonal stressors.

Environmental stressors: Factors such as job loss due to functional losses, financial insufficiency, hospitalization, dependency on dialysis unit, noise in hemodialysis patients constitute environmental stressors (Özer and Gökçe, 2015; Hacıhasanoğlu and Yıldırım, 2009; Mert and Barutçu, 2013).

It is a system that is open to change that is in constant interaction with the human environment. Neuman states that the individual's system consists of a flexible line of defense surrounded by a basic structure, a normal line of defense and lines of resistance, and that each line of defense protects the basic structure by protecting the next line.

Basic Structure: It is the innermost link of the model and is intended to preserve the integrity of the basic structure. Feelings of anxiety, depression and inadequacy affect the basic structure of patients with CKD.

Flexible Line of Defense: It prevents stressors from reaching the basic structure. Hemodialysis patients are exposed to many stressors such as dependence on the dialysis unit, change in the family process, economic problems, and the effects of symptoms. In most patients, these stressors cross the flexible line of defense to reach the normal line of defense.

Normal Line of Defense: Located between the flexible line of defense and the resistance line, this line protects the integrity of the basic structure and system. This line provides how the individual copes with the stressors they have experienced before and the development of the coping mechanism. The stressors experienced by hemodialysis patients can cross this line and affect their well-being.

Resistance Line: When the normal line of defense is entered, the resistance line is activated to protect the basic structure. Crossing the resistance line can lead to death. In hemodialysis patients, it can be prevented from developing coping mechanisms with the stressors they experience, strengthening social support systems, and responding to depression and burnout (Atik et al., 2015; Özer and Gökçe, 2015; Graham, 2006).

With nursing interventions, the effects of stressors experienced by patients are reduced and defense lines are preserved or restored. The nurse helps to reduce stressors and symptoms with primary, secondary and tertiary prevention interventions in order to maintain and maintain the level of well-being.

Primary prevention: Identifying potential stressors before they occur and strengthening the line of defense. Immunization against diseases, training in stress management, teaching relaxation techniques are among the nursing interventions within the scope of primary protection.
Secondary protection: It aims to protect the individual and reduce the level of reaction after stress occurs. Continuous follow-up of the patient and the management of the symptoms caused by stress are among the nursing interventions.

Tertiary protection: It covers the stages of correcting the damage in defense lines, monitoring the patient's condition and providing the necessary remedial care. Discharge education is one of the tertiary protection initiatives.

Nursing diagnosis section according to Neuman; database and diagnosis consists of the steps of real or potential change in well-being, while the nursing purposes section; expected results and planned interventions, nursing results section; real initiatives consist of evaluation and reorganization of purpose (Özer and Gökçe, 2015; Fawcett, 2005; Uysal, 2009).

CONCLUSION

The Neuman system model can be used in all areas of nursing due to its comprehensive, holistic perspective and its complementary feature to other nursing models. NSM is an ideal model for hemodialysis patients, as it is among important nursing interventions to evaluate holistically, identify stressors they experience and take precautions. It is thought that the nursing process developed using NSM will provide nurses to collect detailed data about the patient, to take a holistic view of the patient's problems and to make appropriate nursing diagnoses. It is very important to identify the individual in the model and to ensure the continuity of the system by supporting the determined resistance lines. With the nursing interventions applied in the model, the continuity of the lines of defense can be achieved by improving the coping mechanisms of the patients.

REFERENCES

Akça, N. K., & Doğan, A. (2011). Hemodiyaliz hastalarının diyaliz sonrası yaşadığı sorunlar ve evde bakım gereksinimleri. *Bozok Tıp Dergisi*, *1*(1).

Atik, D., Atik, C., Asaf, R., Cinar, S. (2015). Hemodiyaliz hastalarında algılanan sosyal desteğin sosyal görünüş kaygısına etkisi. *Medicine Science*, 4 :2210-23.

Baykara, Z.G., Çalışkan, N., Öztürk, D., & Karadağ, A. (2019). Hemşirelikte teori ve model kullanımı: nitel bir çalışma. *Cukurova Medical Journal*, *44*, 281-289.

Berghout, M., van Exel, J., Leensvaart, L., & Cramm, J. M. (2015). Healthcare professionals' views on patient-centered care in hospitals. *BMC health services research*, *15*(1), s.385.

Black, P., Deeny, P., Mckenna, H. (1997). An exploration of nursing interventions in the context of the neuman systems theory. *Intensive and Critical Care Nursing*, 13(5), 249-258.

Dağ H, Kavlak O, Şirin A. (2014). Neuman sistemler modeli ve infertilite stresörleri. *Türkiye Klinikleri Hemşirelik Bilimleri Dergisi,* 6: 121-8.

Dinç L. (2010). Bakım kavramı ve ahlaki boyutu. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi*, *17*(2), s. 74-82.

Fawcett, J. (2005). Contemporary nursing knowledge: analysis and evaluation of nursing models and theories. FA Davis. (2th ed., pp.223-319).

Gigliotti, E. (2008). The value of nursing models in practice. *Dokuz Eylül Üniversitesi Hemşirelik Yüksekokulu Elektronik Dergisi*, 1(1), 42-50.

Graham, J. (2006). Nursing theory and clinical practice: how three nursing models can be incorporated into the care of patients with end stage kidney disease. *CANNT journal= Journal ACITN*, *16*(4), 28-31.

Greiner, A., Knebel, E., Institute of Medicine (U.S.)., (2003). *Health professions education: A bridge to quality*. Washington, D.C: National Academies Press.

Gül, Ş. (2019). Bakım Kavramı Işığında Hemşirelik Bakımı ve Etkileyen Faktörler. *ACU Sağlık Bil Derg*, *10*(2), 129-134.

Hacıhasanoğlu, R., Yıldırım, A. (2009). Hemodiyaliz hastalarında yaşam kalitesi ve öz bakım gücü arasındaki ilişki. *Ege Üniversitesi Hemşirelik Yüksekokulu Dergisi*, 25:87-100.

Lavoie, M., De Koninck, T., ve Blondeau, D. (2006). The nature of care in light of Emmanuel Levinas. *Nursing philosophy*, *7*(4), 225-234.

Mert, H., Barutcu, C.D. (2013). Neuman sistemler modelinin kalp yetersizliğinde kullanımı. *Cumhuriyet Hemşirelik Dergisi*, 2: 64-70.

Neuman, B. M., & Fawcett, J. (1989). *The Neuman systems model* (2nd ed.). Norwalk, CT: Appleton & Lange.

Özer, S., Gökçe, S. (2015). Neuman Sistem'ler Modeli'nin Hemodiyaliz Tedavisi Gören Bir Olguda Uygulanması. *Hemşirelikte Eğitim ve Araştırma Dergis*, 12: 69-77.

Seyahi N, Altıparmak MR, Ateş K, Trabulus S, Süleymanlar G. (2020). Türkiye'de Nefroloji, Diyaliz Ve Transplantasyon Registry 2020. Türk Nefroloji Derneği Yayınları

Switek, J.A. (2002). The effect of supportive education, as a tertiary nursing intervention, on the quality of life of patients with heart failure. Master of Science in Nursing, Kirkhof School of Nursing. USA.

Tuna, D., Ovayolu, N., & Duygu, K.E.S. (2018). Hemodiyaliz hastalarında sık karşılaşılan problemler ve çözüm önerileri. *Nefroloji Hemşireliği Dergisi*, *13*(1), 17-25.

Uysal, N., Khorshid, L., Eşer, İ. (2009). Neuman sistemler modeli üzerine bir vaka çalışması. Atatürk Üniversitesi Hemşirelik Yüksekokulu Dergisi, 12:74-81.

POSTOPERATIVE RESIDUAL CURARIZATION IN POSTANESTHESIA CARE UNIT: CASE REPORT

Kübra Taşkın
University of Health Sciences, Zeynep Kamil Women and Children Diseases Training and Research Hospital, İstanbul, Turkey

Abstract
Respiratory failure that develops in the postoperative period may have many causes. The residual effects of neuromuscular blockers may also extend to the early postoperative period and may be one of the causes of respiratory failure.

A healthy 47-year-old woman was scheduled for radical hysterectomy under general anesthesia for cervical cancer. The patient's initial blood pressure was 125/85 mmHg, heart rate was 70 beats/min, and SpO_2 level was 99%. General anesthesia was induced with 1% propofol (150 mg) with lidocaine (40 mg) pretreatment and continuous infusion of remifentanil (0.1–0.5 µg/kg/min) and rocuronium (40 mg). Next, anesthesia was maintained with sevoflurane, and vital signs, including blood pressure, heart rate, and SpO_2, were maintained stably during the operation. The operation was finished within 320 min without complication. At the end of surgery, we administered sugammadex (2 mg/kg) to antagonize neuromuscular blockade intravenously. The patient whose spontaneous breathing was sufficient was extubated and taken to the recovery room. After half an hour, as the patient's breathing became superficial and her response to painful stimuli was reduced, an emergency arterial blood gas was sent. The patient with blood gas pH:7.26, PCO_2: 60 mmHg PO_2: 70 mmHg was reintubated. The patient was followed for half an hour with a mechanical ventilator, her oxygenation improved and her vital values were stable, but 2 mg / kg sugammadex was administered again due to the absence of spontaneous breathing. Two minutes after sugammadex application, the patient, whose eyes were open and breathed spontaneously, was extubated without any complications.
Postoperative residual curarization is a rare but important problem in postoperative care units. The clinical condition of the patient may not always be sufficient to make a diagnosis.
Neuromuscular monitoring should be used to prevent complications and improve patient outcomes.

Keywords: postoperative residual curarization, sugammadex, rocuronium, respiratory failure

NURSING APPROACHES IN PATIENTS WITH HEART FAILURE IN COVID-19 PANDEMIC

Selva Ezgi AŞKAR
Mustafa Kemal University, Hatay, TURKEY
Orcid ID: 0000-0001-6509-6988
Özlem OVAYOLU
Gaziantep University, Gaziantep, TURKEY
Orcid ID: 0000-0002-7335-4032

Abstract
Coronavirus disease 2019 (COVID-19), which affects the whole world, is a serious health problem that causes many symptoms from mild to severe in people. It has been reported that COVID-19 has a severe prognosis, especially in heart failure (HF) patients, and may even result in death. It has been reported that these complications seen in patients are caused by Angiotensin Converting Enzyme-2 receptors. However, the literature on the care of HF patients with COVID-19 is very limited. But patients with HF should be protected from COVID-19, in the case of contracting COVID-19, they should be closely monitored and attention should be paid for complications. For this reason, in this review, the nursing approaches of heart failure patients who are followed at home or in the hospital in the COVID-19 pandemic and some situations that nurses working in the clinic should pay attention to during the care of HF patients with COVID-19 are mentioned. As a result; Nurses play a key role in the COVID-19 pandemic, as in the previous period, in meeting the care needs of the society. For this reason, it is recommended that nurses keep their knowledge about COVID-19 up-to-date and reflect it on nursing care.

Keywords: Coronavirus; heart failure; nursing; pandemic

Introduction

Coronavirus Disease 2019 (COVID-19) is a highly infectious disease, which is caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) (Lai et al., 2020). It first appeared in Wuhan, China in December 2019; and was declared as a pandemic by the World Health Organization (WHO) in March last year (WHO, 2020; Ministry of Health, 2020). SARS-CoV-2 is a single-chain, positive-polarity, enveloped, and Ribonucleic Acid (RNA) virus. SARS-CoV is sensitive to ultraviolet rays and heat, just like Middle East Respiratory Syndrome (MERS) MERS-CoV, and can be inactivated effectively with lipid solvents, such as ethyl ether and chloroform (Akbıyık & Avşar, 2020).

SARS-CoV-2, which is infected with droplets, enters cells by attaching to the Angiotensin Converter Enzyme-2 (ACE2) receptor (Avcı & Eriş Güdül, 2020; Gülbahar & Gök Metin, 2020). ACE2 receptors are found in the heart, digestive system, and urinary system cells, especially in lung cells (Ekmekci & Özdogan, 2020; Gülbahar & Gök Metin, 2020). It was

observed that the virus triggers an excessive immune reaction in the host after it enters the body, and cause the release of cytokines and chemokines (Akbıyık & Avşar, 2020). COVID-19 also causes many symptoms from mild to severe, such as fever, dry cough, fatigue, runny nose, sneezing, sore throat, phlegm, headache, hemoptysis, respiratory difficulties, lymphopenia, Acute Respiratory Distress Syndrome (ARDS), and acute cardiac damage (Akbıyık & Avşar, 2020; Ekmekci & Özdoğan, 2020; Gülbahar & Gök Metin, 2020; Hill et al., 2020). Also, although the society has focused on the acute situation nowadays, it is very important to plan the approaches to avoid cardiovascular morbidity and mortality, which can also increase because of limited physical activity and social life caused by social isolation (Neubeck et al., 2020). As is already known, nurses have very important roles in protection from the disease and the care of patients during the pandemic period, which is the case in every period. In this context, the purpose was to determine the nursing approaches for patients with Heart Failure (HF) in COVID-19 pandemic, and to provide recommendations to nurses working in the clinic in this review.

Heart Failure and COVID-19 Relation

Heart failure appears before us as a part of the clinical course of COVID-19 or due to a previously existing disease (Bader et al., 2021). Although, it is not yet clear whether COVID-19 causes HF (Aktoz et al., 2020; Gülbahar & Gök Metin, 2020), it has been reported that COVID-19 has a severe and fatal course in the presence of HF (Avcı & Eriş Güdül, 2020; Ekmekci & Özdogan, 2020; Gülbahar & Gök Metin, 2020; Inglis et al., 2020; Zhang et al., 2020; Bader et al., 2021). In a retrospective conducted by Zhou et al., it was found that HF caused the death of 52% patients who died from COVID-19 (Zhou et al., 2020). It was considered that many HF complications were associated with COVID-19 (Ekmekci & Özdogan, 2020), and were caused by ACE2 receptors (Avcı & Eriş Güdül, 2020). This consideration stems from the theory that patients who use ACE Inhibitor/Angiotensin Receptor Blocker (ARB) are probably more prone to increases in ACE2 receptors, viral involvement in case they have COVID-19, or worse consequences (Bader et al., 2021).

Approaches to Prevent COVID-19 in Heart Failure Patients

It is very important that all the required steps be taken before the hospitalization to ensure the prevention of COVID-19 in HF patients (Zhang et al., 2020). Many countries took measures to protect their citizens with chronic diseases because of the pandemic. Curfew restrictions were applied, doctor controls for continuously used drugs were eliminated and receiving them directly from the pharmacy was provided, or follow-ups were made via online visits/telephone calls. HF patients were also affected by these restrictions. Vaccine supply has still not been achieved to protect against COVID-19 in our country for those with chronic diseases under the age of 65. Even if HF patients do not have COVID-19 vaccines, flu and pneumonia vaccines were recommended if possible to avoid secondary infections (Aktoz et al., 2020; Avcı & Eriş Güdül, 2020).

The pandemic also forced the healthcare employees to proactive, fast, and innovative practices (Agastoni et al., 2020; Gorodeski et al., 2020). For example, virtual visits (video calls) or phone calls are recommended for follow-up examinations for HF patients (Aktoz et al., 2020; Gorodeski et al., 2020; Hill et al., 2020; Inglis et al., 2020; Neubeck et al., 2020; Zhang et al.,2020; Bader et al., 2021). With these interviews, reduction of outpatient admissions (Agastoni et al., 2020; Zhang et al., 2020; Bader et al., 2021), and proper and safe monitoring of patients are aimed (Gorodeski et al., 2020; Bader et al., 2021). It was reported that vital signs including heart rate, blood pressure, and oxygen saturation can be followed up,

symptoms can be evaluated, medications can be regulated, different follow-ups can be made, including exercise intolerance and New York Heart Association (NYHA) classification during these visits (Zhang et al., 2020; Bader et al., 2021). There will of course be groups that will continue to use these after the pandemic (Gorodeski et al., 2020). Especially virtual visits/phone calls are suitable for HF patients who live in the countryside, who are elderly, who have reduced exercise tolerance or who need attendants for face-to-face appointments (Gorodeski et al., 2020; Zhang et al., 2020). In light of these data, remote monitoring at home is adopted as a routine clinical service for many health-related problems (Cleland et al., 2020; Inglis et al., 2020). This will also improve the effectiveness and quality of the nursing care, and will reduce patient demands, healthcare costs, and environmental pollution (Cleland et al., 2020).

The importance of patient self-care and self-monitoring because of the pandemic is greater than ever (Bader et al., 2021). With the recommended interview methods, close follow-up of the patient, earlier intervention for the symptoms, and decreasing emergency admissions can be achieved (Gorodeski et al., 2020; Neubeck et al., 2020; Zhang et al., 2020; Bader et al., 2021). Again, ordering the drugs from pharmacies, ordering them from homes, and sending them home can also potentially decrease the risk of exposure to the virus (Neubeck et al., 2020; Bader et al., 2021). In this respect, nurses must be informed about virtual visits/phone calls (Inglis et al., 2020). However, the fact that mobile admissions and virtual visits can be difficult for certain age groups or populations must not be ignored (Bader et al., 2021). Also, HF patients delay hospital admissions fearing possible infections (Ekmekci & Özdogan, 2020; Inglis et al., 2020; Neubeck et al., 2020). For this reason, patients must be informed about the importance of receiving medical care when they require hospital care during the pandemic (Neubeck et al., 2020; Bader et al., 2021).

Nursing Approach in COVID-19 Patients With Heart Failure Comorbidity

Literature data are quite limited on nursing care for COVID-19 patients with HF comorbidity (Aktoz et al., 2020; Zhang et al., 2020). The treatment and medications used by HF patients who have mild disease symptoms are continued in the same way. Isolation and close follow-up of patients who have moderate infection must also be provided. However, caution must be taken for patients who need hospitalization treatment in terms of cardiac complications (Aktoz et al., 2020; Ünsal Avdal, 2020). It is also important to protect HF patients from COVID-19 infection in hospital environment and to continue the treatment of those who with COVID-19 (Agastoni et al., 2020). Because HF patients have higher morbidity and mortality rates because of COVID-19 when compared to other individuals (Aktoz et al., 2020; Inglis et al., 2020; Neubeck et al., 2020; Sofulu et al., 2020; Bader et al., 2021). For this reason, care priorities of HF patients who are diagnosed with COVID-19 must be identified, and a human-oriented, holistic and individualized evidence-based nursing care must be provided (Göçmen Baykara & Eyüboglu, 2020; Hill et al., 2020; Inglis et al., 2020; Sofulu et al., 2020).

When a patient who has HF admits to hospital with COVID-19, the symptoms, used medications and contact status, and travel abroad must be questioned; and the approach must be determined according to the course of the disease (Aktoz et al., 2020). Vital signs, such as body temperature, blood pressure, heart rate, rate and depth of respiration, and oxygen saturation must be measured. All physical examinations of the patients must be performed carefully, and the symptoms and findings that are specific to COVID-19 disease must be evaluated (Göçmen Baykara & Eyüboğlu, 2020; Gök Metin, 2020; Gülbahar & Gök Metin, 2020). Since both HF and COVID-19 causes symptoms, such as dyspnea and fatigue, it must

be questioned why these symptoms are caused (Türen, 2020). These findings must be monitored because there may be Echocardiography (ECG) changes and elevated cardiac enzymes stemming from myocardial damage of the virus together with dyspnea (Aktoz et al., 2020; Ekmekci & Özdogan, 2020; Türen, 2020). Severe pneumonia and respiratory failure caused by COVID-19 can exacerbate HF because they cause the deterioration of oxygen and carbon dioxide balance, stimulate the sympathetic nervous system excessively, and ultimately narrow the vessels in the peripheral regions, and increase the load of the heart on the left ventricle (Gülbahar & Gök Metin, 2020). In such a case, non-invasive or invasive oxygen treatment must be implemented according to the tolerance level of the patient and the request of the doctor. Complications, such as patient consciousness, heart rate, respiratory rate and depth, and cyanosis must be monitored closely during oxygen treatment, which must also be continued in eating and drinking hours of the patient; and close follow-up of the patient must be provided regarding these complications (Gök Metin, 2020; Türen, 2020).

Since COVID-19 infection might cause sepsis and septic shock, along with serious problems in HF patients, close hemodynamic follow-up must be performed (Gülbahar & Gök Metin, 2020). Symptoms that are associated with infection, such as muscle and joint pains, fatigue, cough and chest pain must also be monitored in this respect. Patients must be monitored for 24 hours to maintain liquid-electrolyte and acid-base balance. Samples, such as blood, phlegm, urine, and feces must be collected quickly and accurately for infection follow-up (Gök Metin, 2020; Gülbahar & Gök Metin, 2020; Zhang et al. 2020)

Medications must be administered as described in the instructions of the physician, and caution must be taken when using antiviral drugs along with HF drugs (Gök Metin, 2020; Türen, 2020). The side effects of the drug must be monitored closely. The treatment effects of the drugs must be monitored frequently in patients (Gök Metin, 2020). Some drugs used for COVID-19 can have harmful effects on the cardiovascular system by interacting directly or with other cardiovascular system drugs (Gülbahar & Gök Metin, 2020; Türen, 2020). The nurse must learn the medications the patient is using constantly, and explain the important points to the patient or his/her relatives. It is also recommended to carry out ECG before and after the treatment (Gülbahar & Gök Metin, 2020; Inglis et al., 2020; Türen, 2020; Ünsal Avdal, 2020; Zhang et al. 2020).

The psychological conditions of patients must also be evaluated regularly in addition to medical treatments, and support must be requested from the department of psychiatry in case of any problems (Gök Metin, 2020). In such a case, integrative approaches, such as breathing exercises and relaxation techniques can be employed. Nurses cannot use non-verbal means of communication such as smiles, facial expressions and body language because of Personal Protective Equipment (PPE). Nurses must be provided with appropriate verbal encouragement and reassurance and it must be ensured that they identify themselves to their patients and benefit from therapeutic touch (Hill et al., 2020; Türen, 2020).

HF patients who recover from COVID-19 and will be discharged and their relatives must be trained by the nurse to prevent infection, to provide the patient's compliance with social distancing and hand hygiene in predetermined places for 14 days (Inglis et al., 2020). The points they must pay attention to and the treatment they will continue at home must be explained to them in detail. Contact numbers must be given to them to call in case of emergency (Agastoni et al., 2020; Inglis et al., 2020). These patients may be given a home monitor device, which can provide distant connection for live monitoring, wearable devices

that can detect heart rates, respiratory rates and movements, and scales (Agastoni et al., 2020; Neubeck et al., 2020).

The best understanding and management of chronic HF patients in COVID-19 pandemic can be achieved by the team, which will include the cardiologist and cardiology nurse and a multidisciplinary approach. The family must also be able to participate in the care process of the inpatient as much as possible; and when needed, information must be given by phone calls and e-mails. In this way, problems, which may arise in the negative situation change, can be addressed. Another issue for patients with poor conditions is the end-of-life support. The nurse must make the speech intended for end of life earlier, and support the family. It is also important to consult the relatives of the patient about some applications (Hill et al., 2020). There are also some other situations, which a nurse, who provide care to HF patients, must pay attention to. These are given below (Aktoz et al., 2020; Göçmen Baykara & Eyüboglu, 2020; Inglis et al., 2020; Sofulu et al., 2020; Türen, 2020; Zhang et al., 2020).

- Precautions must be taken to protect HF patients from COVID-19.
- The care and follow-up of patients must be planned and implemented in a specific way for the individual.
- The healthcare staff must always work with personal protective equipment.
- Care must be paid to contact and droplet protection measures until COVID-19 patient becomes asymptomatic.
- Care must be taken regarding the effects of SARS-CoV-2 treatment on the heart (such as long QT and arrhythmia).
- Continuity of the medications of the patient must be provided.
- Daily weight and edema monitoring must be carried out.
- Cross-infection between patients must be avoided.
- Patients must be provided with online patient monitoring, care opportunities, and access to healthcare.
- The psychological health of patients must also be considered.
- Patients must be informed about COVID-19 and ways of protection.
- Interviews must be conducted with patients and their relatives about end-of-life care earlier.
- Nurses must also protect themselves from COVID-19.
- Patients must be fed with a healthy diet.
- The sleep quality of patients must be improved, and it must be provided that patients are active during daylight activities. The mobilization of patients who have limited movement ability must be ensured in their beds.
- Patients must be advised to exercise, stay away from alcohol, and stop smoking.

Conclusion

SARS-COV-2 infection is closely related to morbidity and mortality in HF patients (Aktoz et al., 2020; Gülbahar & Gök Metin, 2020; Inglis et al., 2020; Neubeck et al., 2020; Sofulu et al.,2020; Bader et al., 2021). For this reason, it is necessary to comprehend various interactions between the disease and the virus to ensure patient management (Bader et al., 2021). It is also important to emphasize that the recommendations are based mostly on present situation, and requires to be updated according to the changes to be faced in the pandemic (Zhang et al., 2020). Nurses play key roles in COVID-19 pandemic as well as in previous

period to cover the care needs of the community (Göçmen Baykara & Eyüboglu, 2020). Patients must be protected from COVID-19, and in case they are infected with COVID-19, close monitoring must be carried out, and caution must be taken for complications. Providing and maintaining nursing care in HF patients has become more important in COVID-19 pandemic. For this reason, it is recommended to nurses that they keep their knowledge on COVID-19 up-to-date, and reflect it to nursing care.

References

Agostoni, P., Mapelli, M., Conte, E., Baggiano, A., Assanelli, E., Apostolo, A., Alimento, M., Berna, G., Guglielmo, M., Muratori, M., Susini, F., Palermo, P., Pezzuto, B., Salvioni, E., Sudati, A., Vignati, C., & Merlino, L. (2020). Cardiac patient care during a pandemic: how to reorganise a heart failure unit at the time of COVID-19. European journal of preventive cardiology, 27(11), 1127–1132. https://doi.org/10.1177/2047487320925632

Akbıyık, A, Avşar, Ö. (2020). Epidemiology and Control of Coronavirus Infection Disease (COVID-19). İzmir Katip Çelebi University Journal of Health Sciences Faculty, 5 (2), 109-116.

Aktoz, M., Altay, H., Aslanger, E., Atalar, E., Atar, İ., Aytekin, V., Baykan, A. O., Barçın, C., Barış, N., Boyacı, A., Çavuşoğlu, Y., Çelik, A., Çinier, G., Değertekin, M., Demircan, S., Ergönül, Ö., Ertürk, M., Erol, M. K., Görenek, B., Gürsoy, M. O., … Yıldızeli, B. (2020). Turkish Cardiology Association Consensus Report: COVID-19 Pandemic and Cardiovascular Diseases (May 13, 2020). Turkish Society of Cardiology archive: Publication organ of the Turkish Society of Cardiology, 48(Suppl 1), 1–87. https://doi.org/10.5543/tkda.2020.36713

Avcı, A., Eriş Güdül, N. (2020). Cardiovascular Assessment of Patients with COVID-19. Turk J Diab Obes, 4 (2), 147-154. https://dergipark.org.tr/en/pub/tudod/issue/56483/737968

Bader, F., Manla, Y., Atallah, B. et al. (2021). Heart failure and COVID-19. Heart Fail Rev 26, 1–10. https://doi.org/10.1007/s10741-020-10008-2

Cleland, J., Clark, R. A., Pellicori, P., & Inglis, S. C. (2020). Caring for people with heart failure and many other medical problems through and beyond the COVID-19 pandemic: the advantages of universal access to home telemonitoring. European journal of heart failure, 22(6), 995–998. https://doi.org/10.1002/ejhf.1864

Gorodeski, E. Z., Goyal, P., Cox, Z. L., Thibodeau, J. T., Reay, R. E., Rasmusson, K., Rogers, J. G., & Starling, R. C. (2020). Virtual Visits for Care of Patients with Heart Failure in the Era of COVID-19: A Statement from the Heart Failure Society of America. Journal of cardiac failure, 26(6), 448–456. https://doi.org/10.1016/j.cardfail.2020.04.008

Göçmen Baykara, Z, Eyüboğlu, G. (2020). Nursing Care In The Covid-19 Pandemic. Gazi Journal of Health Sciences, Gazi Journal of Health Sciences Special Issue 2020, 9-17.

Gülbahar, M., Gök Metin Z. (2020). Effects of Coronavirus-19 on the Cardiovascular System. Turkey Clinics J Nurs Sci.; 12(2): 305-14. https://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=4&sid=6fce3228-a18c-40ab-ba3a-f2aabba73290%40sessionmgr4008

Hill, L., Beattie, J. M., Geller, T. P., Baruah, R., Boyne, J., Stolfo, G. Di, Jaarsma, T., (2020). Palliative care: Essential support for patients with heart failure in the COVID-19 pandemic,

European Journal of Cardiovascular Nursing, , 1474515120932814. https://doi.org/10.1177/1474515120932814

Inglis, S. C., Naismith, C., White, K., Hendriks, J. M., Bray, J., Hickman, L. D., Aldridge, C., Bardsley, K., Cameron, J., Candelaria, D., Cartledge, S., Du, H., Ferguson, C., Martin, L., Selkow, T., Xu, X., Wynne, R., Driscoll, A., Gallagher, R., Clark, R., … Davidson, P. M. (2020). CSANZ COVID-19 Cardiovascular Nursing Care Consensus Statement: Executive Summary. *Heart, lung & circulation*, *29*(9), 1263–1267. https://doi.org/10.1016/j.hlc.2020.08.001

Ekmekçi C., Özdoğan Ö. (2020). COVID-19 COVID-19 Infection and Cardiovascular Diseases. Journal of Tepecik Educate. and Research. Hospital. 30 (Additional issue): 94-100. doi:10.5222/terh.2020.24654.

Neubeck, L., Hansen, T., Jaarsma, T., Klompstra, L., & Gallagher, R. (2020). Delivering healthcare remotely to cardiovascular patients during COVID-19 : A rapid review of the evidence. European journal of cardiovascular nursing : journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology, 19(6), 486–494. https://doi.org/10.1177/1474515120924530

Lai, C. C., Shih, T. P., Ko, W. C., Tang, H. J., & Hsueh, P. R. (2020). Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. International journal of antimicrobial agents, 55(3), 105924. https://doi.org/10.1016/j.ijantimicag.2020.105924

Ministry of Health, (2020). COVID-19 Information Page. Republic of Turkey Ministry of Health: Access: http://covid19.saglik.gov.t , Access Date: 02.04.2021.

Sofulu, F , Özgürsoy Uran, B , Ünsal Avdal, E , Tokem, Y . (2020). Nursing Management in Chronic Diseases in the COVID-19 Epidemic. İzmir Katip Çelebi University Journal of the Faculty of Health Sciences, 5 (2), 147-151. Retrieved from https://dergipark.org.tr/en/pub/ikcusbfd/issue/55773/737759

Türen, S. (2020). Intensive Care Management of Heart Failure Patients in COVID-19 Pandemic. Journal of Intensive Care Nursing 2020; 24(Annex 1): 57-60.

Ünsal Avdal E. (2020). COVID-19: Care Management in Comorbid Conditions. Şenuzun Aykar F, editor. Internal Medicine Nursing and COVID-19. 1st Edition. Ankara: Turkey Clinics; 2020. p.10-4.

Zhang, Y., Coats, A., Zheng, Z., Adamo, M., Ambrosio, G., Anker, S. D., Butler, J., Xu, D., Mao, J., Khan, M. S., Bai, L., Mebazaa, A., Ponikowski, P., Tang, Q., Ruschitzka, F., Seferovic, P., Tschöpe, C., Zhang, S., Gao, C., Zhou, S., … Metra, M. (2020). Management of heart failure patients with COVID-19: a joint position paper of the Chinese Heart Failure Association & National Heart Failure Committee and the Heart Failure Association of the European Society of Cardiology. European journal of heart failure, 22(6), 941–956. https://doi.org/10.1002/ejhf.1915

Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z., Xiang, J., Wang, Y., Song, B., Gu, X., Guan, L., Wei, Y., Li, H., Wu, X., Xu, J., Tu, S., Zhang, Y., Chen, H., & Cao, B. (2020). Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan,

China: a retrospective cohort study. Lancet (London, England), 395(10229), 1054-1062. https://doi.org/10.1016/S0140-6736(20)30566-3

World Health Organization (WHO), (2020). Official Coronavirus Updates. Access: https://www.who.int/, Access Date: 04.02.2021.

ARDIŞIK AFETLER VE COVID-19 PANDEMI SÜRECİ

Öznur AKDUMAN
ORCID NO: https://orcid.org/0000-0003-0258-2959
Ayşe Handan DÖKMECİ
ORCID NO: https://orcid.org/0000-0002-4439-4422
Tekirdağ Namık Kemal University, Turkey

Özet
Gelişen teknolojiler, hızla çoğalan insan nüfusu, küresel iklim değişikliği ve sanayileşmenin sürekli büyümesi Dünya'da afetlerin oluşum sıklığını giderek artırarak kontrol edilmesi ve yönetilmesi çok zor bir süreç haline getirmiştir. Son yıllarda birden fazla afetin aynı anda yaşanmasıyla ortaya ardışık afet tanımını çıkartmıştır. Ardışık afetler bir afet ile mücadele ederken toplumun aynı zamanda başka afetlerle de karşı karşıya kaldığı durumdur. Günümüzde afetler ortaya çıktıkları alanlarda sınırlı kalmayıp küresel bir sorun haline gelmektedir. Bunun en iyi örneği Çin'in Wuhan kentinde ortaya çıkıp neredeyse bütün Dünya'ya yayılan Covid-19 virüsü yerel olma özelliğini yitirerek Covid-19 pandemisine dönüşmüştür. Bu süreçte insanlar doğrudan olumsuz sağlık koşulları ile karşı karşıya kalsa da andemi sürecinin etkileri sadece sağlık sorunları ile sınırlı kalmamış, insanları sosyal, ekonomik ve psikolojik yönden etkileyerek yaşam standartlarını değiştirmiştir. Aynı zamanda Dünya'nın birçok yerinde göçler, kıtlık, ekonomik krizler, savaş ve terör olayları, depremler, seller ve fırtınalar gibi hem doğal hem de insan kaynaklı ya da hibrit afetlerin etkileri ve sıklıkları artarak özellikle gelişmekte olan toplumları olumsuz yönde etkilemiştir. Ardışık afetler aniden ve birbirinden bağımsız olarak gelişebildiği gibi birbirini tetikleyebilir de. Ardışık afetlerin etkileri domino etkisi gibi tıpkı domino taşlarının birbiri üzerine düşmesiyle ortaya çıkan etkiye benzetilebilir. Basamaklı olarak artan ve tabanındaki afetlerin sürekli birbirini etkilemesi ile meydana gelen ardışık afetler kayıp ve hasarın artmasına yol açmakta ve her yıl milyonlarca insanın yaşamını olumsuz etkilemektedir. Bu çalışmada özellikle Covid-19 pandemisi süreci içerisinde, çeşitli nedenlere bağlı olarak ortaya çıkan ardışık afetleri tanıma ve birbirleri üzerindeki etkileri anlama, önleme, hazırlık, acil müdahale ve dayanıklılık üzerine durularak toplumun zarar görebilirliğinin azaltılmasına yönelik araştırmalar yapılmıştır.

Anahtar Kelimeler: Ardışık Afetler, Covid-19, Domino etkisi, Küresel Afetler, Afet Yönetimi

CASCADE DISASTERS AND THE COVID-19 PANDEMIC PERIOD

Abstract
Developing technologies, rapidly increasing human population, global climate change and continuous growth of industrialization have gradually increased the frequency of occurrence of disasters in the world, making it a very difficult process to control and manage. In recent years, the definition of cascading disasters has emerged with the occurrence of more than one disaster at the same time. Cascading disasters; when dealing with a disaster, society is also faced with other disasters. Today, disasters are not limited to the areas where they occur, but become a global problem. The best example of Cascading disasters the Covid-19 virus, which emerged in Wuhan, China and spread almost all over the world, lost its local feature and turned into a Covid-19 pandemic. In this process, although people are directly faced with adverse health conditions. The effects of the pandemic process have not only been limited to health problems, further more have changed their living standards by affecting people socially. At the same time, the effects and frequencies of both natural and human-induced or hybrid disasters such as migrations, famine, economic crises, war and terrorist events, earthquakes, floods and storms in many parts of the world have negatively affected especially developing societies. Cascading disasters; independently of each other, as well as triggering each other and can occur suddenly. The effects of cascading disasters can be likened to the domino effect, just like the effect of dominoes falling on each other. Cascading disasters, which gradually increase and occur as a result of the continuous impact of the disasters at their base, lead to an increase in loss and damage and negatively affect the lives of millions of people every year. In this study, studies have been conducted to reduce the vulnerability of the society by focusing on recognizing cascading disasters that occur due to various reasons, pandemic process and understanding their effects on each other, prevention, preparedness, emergency response and resilience**.**

Keywords: Successive Disasters, Covid-19, Domino effect, Global Disasters, Disaster Management

GİRİŞ

Tarih boyunca insanlar afetleri deneyimleyerek öğrenmiştir. Günümüzde ise sürekli artan nüfus, teknolojik gelişmeler ve sanayileşmenin de etkisi ile afetlerden görülen zararlar giderek kontrol edilemez bir hale gelmiştir. Afetlerin oluşum sıklıkları giderek artmış milyonlarca insanın yaşamını olumsuz etkilemiştir (Dökmeci, 2018 & Ergünay, 1995). Afet Epidemiyolojisi Araştırma Merkezi (Centre for Research on the Epidemiology of Disasters - CRED)'nin verilerine göre yaşanan afetlerde 1980-1999 yılları arasında Dünya'da 4212 afet meydana gelmiş. Bu afetlerde yaklaşık 1,19 milyon insan hayatını kaybetmiş, 3,25 milyar insan etkilenmiş ve toplamda 1,63 trilyon ABD doları ekonomik zarar kaydedilmiştir. 2000-2019 yılları arasındaki döneminde ise 4,23 milyon kişi hayatını kaybetmiş ve 4,2 milyar insanı etkileyen 7348 büyük afet yaşanmıştır. Ekonomik açıdan ise yaklaşık 2,97 trilyon doları kayıp verilmiştir. 1980-1999 yılları ve 2000-2019 arası edinilen afet istatistikleri incelendiğinde; yaşanan afet sayısı, etkilenen ve hayatını kaybeden insan ve maddi kaybın ciddi bir artışa geçtiği görülmektedir (CRED, 2020).

Şekil 1. 1980-1999 yılları ve 2000-2019 yılları afet istatistikleri (CRED, 2020).

Şekil 2. 1980-1999 yılları ve 2000-2019 yılları afet etki istatistikleri (CRED, 2020).

Son yıllarda yaşanan afetlerin sayısının ve etkilerinin bu denli artması, yaşanan afetlerin birbiri ile bir ilişkisinin olup olmadığı sorusunu akla getirmektedir. Ekonomik gelişme ve büyüme süreci üzerinde olumsuz etkileri bulunan ve günümüzün en önemli sorunu olan afetlerin, toplumların ve ülkelerin gelişmişlik düzeyine bağlı olarak verdiği zarar oranları değişebilmektedir (CRED, 2020). Hızla gelişen ve değişen Dünya'da teknoloji ve toplum giderek bütünleşmiş, yani tarihin diğer dönemlerine kıyasla birbirine daha bağımlı hale gelmiştir (Âmin & Little, 2002). Çalışmamızda, Covid-19 Pandemi süreci ile birlikte ortaya çıkan ardışık afetleri tanıma ve birbirleri üzerindeki etkilerini anlama, bütünleşik afet yönetimi kapsamında önleme, hazırlık, acil müdahale ve dayanıklılık çalışmaları ile toplumun zarar görebilirliğinin azaltılmasına yönelik çalışmalar değerlendirilmiştir.

ARDIŞIK AFETLER

Afetler; insanlar için fiziksel, sosyal ve ekonomik zararlar doğuran, hayatı durduran veya sekteye uğratan, imkanları yetersiz bırakan doğal, teknolojik, insan kaynaklı ya da bu kaynakların bir veya birkaçının sebep olduğu olayların sonuçlarıdır (Kadıoğlu, 2011). Tarih boyunca art arda yaşanan afetler 21. yüzyılda savunmasızlığın ve güvenlik açıklarının da artması ile evrim geçirmiş ve ardışık afetler olarak yeni bir boyut kazanmıştır (Perry & Quarantelli, 2005). Ardışık afetler arka arkaya oluşan etkilerin zamanla artarak, beklenmedik bir zamanda, güçlü etkilere sahip başka olumsuz olayların tırmanması ile oluşan aşırı olaylardır (Alexander & Pescaroli, 2019). Ardışık afetler; toplumda yaşanmakta olan herhangi

bir afetin, sonuçlarının başka bir afetin nedenini veya nedenlerinden birini oluşturur (Mizrahi, 2020). Başka bir deyişle, tetiklenmiş başka bir afet potansiyelini tetikleyerek meydana gelmesine neden olur ya da meydana gelmesini hızladır. Bu süreçte yaşanılan durum ardışık afetlerin meydana gelme sürecidir (Qingyuan ve ark., 2020). Ardışık afetlere en gerçek örnek; 11 Mart 2011 tarihinde yaşanılan Tohoku Depremidir. Japonya'nın ana adası olan Kuzeydoğu Honshu'daki üç vilayet bölgesini etkileyerek yaklaşık 100 kişinin ölümüne neden olmuştur. Ardışık olarak devamında yaşanan ve yaklaşık 18. 000 kişinin ölümüne neden olan tsunaminin en kalıcı sonucu olarak Fukushima Dai'ıchi nükleer santralinde hasar yaşanmış ve kısa vadede 200.000 kişi çevreden tahliye edilmiştir. Ardından yaşanan radyoaktif kirlenmenin hem kısa dönem hem de halen uzun dönem ciddi çevresel hasarı devam etmektedir. Yaşanılan bu felaket dünya çapında olumsuz sonuçları ile ardışık afetlerin olağanüstü bir örneğidir (Pescaroli &Alexander, 2015).

ARDIŞIK AFETLER; COVID-19 PANDEMİ SÜRECİ

COVID-19 virüsü, 113 milyon kişiye bulaşarak pandemiye dönüşmüş ve 2,5 milyon kişi hayatını kaybetmiştir. 215 ülke ve bölgede halen yayılımına devam ederek mevcut dünya krizine neden olmuştur (WHO, 2020). 2019 yılında ortaya çıkan ve kontrolsüz bir etki yaratan Covid -19, tüm sağlık kurumlarının kitlendiği ve sosyal -ekonomik hayatın kesintiye uğradığı, altyapının bozulduğu yaşam tehdidi olarak algılanır (İnce, 2020). Toplumsal güvenlik açıklarına neden olur. İnsan aktivitelerinin pandeminin yayılımı üzerindeki arttırıcı etkisi ile insan davranışları bağımlı bir hale gelir (Depoux ve ark., 2020). Zayıf ekonomik koşullar pandemi sürecini diğer kıtalardan farklı kılmaktadır. Bu nedenle tüm kıtaların Covid -19 pandemisine karşı savunmasız kaldığı süreçte eşzamanlı olarak yaşanan ve ardışık olarak devam eden afetlerin etkilerine bakılacak olunursa, ilk olarak dünyanın savunmasız kıtası olan Afrika'dan başlamak daha doğru olur (WHO, 2020). Afrika kıtasının zayıf sağlık koşulları, anemi, sıtma, HIV/AIDS, tüberküloz hastalıklarının yüksek prevalansı nedeniyle düşük bağışıklık sistemine sahip insanlar Covid-19 salgınını da deneyimlemeye başladı (WEF, 2020). Şartların çok zor olduğu bu bölgelerde ardışık afetler yaşanarak kıtlık, yoksulluk ve sağlık tehlikeleri kendini göstermiş, temiz su ve yeteli gıdanın bulunamadığı için mevcut bulaşıcı hastalık riski artma eğilimine geçmiştir. Sağlık hizmetlerinin de zarar görmesi ile savunmasızlığı katlanan kıtanın mevcut olan salgın hastalık riskinin girerek artmıştır (Topaz ve ark., 2012). Bu nedenle salgın süreci yönetilirken tüm koşullar ele alınarak acil eylem planlarının hazırlanması gerekmektedir.

SONUÇ

Covid-19 Pandemisi yaşanmaya başladığı günden itibaren her aşaması tırmanan bir kriz olarak kabul edilmektedir. Bu kriz sürecinin tırmanması; salgının epidemiyolojisi, etiyolojisinin ilerleyişi, toplumun savunmasızlığı, hazırlığı ve ekonomik etkilerine bağlıdır. Pandeminin çevresel etkileri; zaman, mekân, belirsizlikler, sosyal ve ekonomik etkiler ve tehlikeli koşullar ardışık afetler açısından değerlendirildiğinde en iyi ve en güncel örnek Afrika kıtasıdır belki de. Bu kıtada zayıf ekonomik koşullar, pandemi sürecini diğer kıtalardan farklı kılmış ve mevcuttaki birçok savunmasızlığında eklenmesi ile tüm sosyal, teknolojik, ekonomik hasara yol açan ve kriz durumuna neden olan olayların yönetilmesi zorlaşmıştır. Sadece Afrika kıtasında değil tüm Dünya da aynı anda birden çok yaşanan afetlerin risk ve kriz yönetimlerinden kaynaklanan zorluklar, etkili müdahalelerinin gerçekleşmesi durumlarında savunmasız kalan toplumların, art arda yaşadığı ve birbirini etkileyen yeni afet olguları ardışık afetlerin doğmalarına neden olmaktadır. Toplum olarak ardışık afetleri öngörebilmeli ve başa çıkmak için; reaktif, uzlaşmacı ve kontrollü müdahalelerde bulunmalıyız.

KAYNAKÇA

Dökmeci A.H., (2018). Toksikolojik -Çevresel ve Endüstriyel- Afetler. Nobel Tıp Kitabevi, Basım sayısı:1, ISBN:978-605-335-436-9,

Ergünay O., (1995), Afet Yönetiminde Verimli Kaynak Kullanımı İçin Gerekli Kurumsal ve Yasal Çerçeve. Türkiye Mühendis Haberleri, İnşaat Mühendisleri Odası, 379; 9-13, Ankara.

Centre for Research on the Epidemiology of Disasters (CRED), UN Office for Disaster Risk Reduction (UNDRR), (2020), The Human Cost of Disasters-An overview of the last 20 years 2000-2019.

Amin M., (2002), Toward Secure and Resilient Interdependent Infrastructures.Jurnal of Infrastructure Systems, Volume 8, Number 3, pp.67–75.

Kadıoğlu, M., (2011). Afet Yönetimi Beklenilmeyeni Beklemek En Kötüsünü Yönetmek. T.C. Marmara Belediyeler Birliği Yay. 2.b., S:38-40, İstanbul.

Perry R.W. and Quarantelli E.L. (Eds.), (2005), What Is a Disaster? New Answers to Old Questions. Xlibris, Philadelphia, pp. 325. 325-396.

Alexander D. and Pescaroli G., (2019), The Role of Translators and Interpreters in Cascading Crises and Disasters: Towards a Frameworkfor Confronting the Challenges.Disaster Prev. Manag. Int, 144-156.

Mizrahi S. (2020), Cascading disasters, information cascades and continuous time models of domino effects. International Journal of Disaster Risk Reduction 49: 101672.00

Qingyuan Y., Guan M., Peng Y., Chen H., (2020), Numerical investigation of flash flood dynamics due to cascading failures of natural landslide dams. 2020Engineering Geology 276: 105765.

İnce C. (2020), Afetler Çağı, Afetlerin Yapısal Dönüşümü ve COVID-19. Turkish Studies 15(4):565-578.

Depoux, A., Mart'in, S., Karafillakis, E., Preet, R., Wilder-Smith, A. Ve Larson, H. (2020). Sosyal medya paniği salgını, COVİD-19 salgınından daha hızlı ilerliyor. Seyahat Tıbbı Dergisi, 27(3). Doı:10.1093/jetim/taaa031 [Crossref], [Web of Science ®], [Google Showlar]

World Healty Organization (2020). WHO Coronavirus Disease (COVID-19) Dashboard. [Alıntı 2021 ŞUBAT 18]. Şu adresten temin edilebilir: https://covid19.who.int/

World Healty Organization (2020). COVID-19 cases top 10 000 in Africa. [Alıntı 2021 ŞUBAT 18]. Şu adresten temin edilebilir: https://www.afro.who.int/news/covid-19-cases-top-10-000-africa.

World Economic Forum. (2020) Why Sub-Saharan Africa needs a unique response to COVID-19? [Alıntı 2021 Şubat. 17]. Şu adresten temin edilebilir: https://www.weforum.org/agenda/2020/03/why-sub-saharan-africa-needs-a-unique-response-to-covid-19 /

Topaz C.M., D'Orsogna M.R., Edelstein-Keshet L., Bernoff A.J. (2012), Locust Dynamics: Behavioral Phase Change and Swarming. PLOS Computational Biology 8(8): e1002642.

Liftle, R.G. (2002), Controlling Cascading Failure: Understanding the Vulnerabilities of Interconnected Infrastructures. Journal of Urban Technology, Volume 9, Number 1, pp. 109–123.

THE CORRELATION BETWEEN THOUGHTS AND ANXIETY LEVELS OF THE NURSING STUDENTS ABOUT COVID-19

Arş. Gör. Sibel SERÇE
ORCID ID: 0000-0003-3490-5193
Prof. Dr. Özlem OVAYOLU
ORCID ID: orcid.org/0000-0002-7335-4032
Gaziantep University, Turkey
Prof. Dr. Nimet OVAYOLU
ORCID ID: 0349orcid.org/0000-0002-4505-0349
SANKO University, Turkey

Abtract
This study was conducted to determine the correlation between thoughts and anxiety levels of the student nurses about the new type of coronavirus (COVID-19).
While the study Nursing Department of a Faculty of Health Sciences population consisted of all students, the sample was composed of 346 nursing students who were voluntary to participate in the study.

It was determined that 98.6% of the students knew about COVID-19, all of them knew the measures to be taken to protect from COVID-19 and obeyed these measures, 73.1% of the students experienced stress due to this virus, 95.7% had concerns about the future, 82.7% believed that their education was affected negatively, and 67.9% believed that their quality of life was affected negatively. It was determined that SAI mean scores was 46.4±9.2 and there was a correlation between SAI mean scores with the gender, chronic disease in the family, taking disinfectant, keeping food stock, obeying the call to stay at home, having stress, and believing that education and quality of life were negatively affected ($p<0.05$).

It was found that the students experienced “moderate” level anxiety, had sufficient knowledge about COVID-19 and complied with protection rules, but most of them had concerns about the future, and their education lives and quality of lives were negatively affected. In line with these results, it may be recommended to evaluate and support the anxiety levels of the students during online education process.

Keywords: COVID-19, student, anxiety, nursing

INTRODUCTION

Coronaviruses Middle East Respiratory Syndrome (MERS-CoV) and Severe Acute Respiratory Syndrome (SARS-CoV) (hsgm.saglik.gov.tr). While the number of COVID-19 cases increasing rapidly in China all over the world, associated deaths increased rapidly and it has a rapid rate of transmission; therefore, it was declared as pandemic by the World Health Organization (WHO, 2020; Rokni, Ghasemi, Tavakoli, 2020). With the rapidly increasing rate of contagion, COVID-19 causes different symptoms in individuals (hsgm.saglik.gov.tr; Uğraş

Dikmen, Kına, Özkan, İlhan, 2020). Due to the fact that the agents remains alive on surfaces for days or even weeks and spreads through droplets, issues like individual hygiene rules for the society, closing mouth and nose during coughing-sneezing, avoiding close contact with people showing symptoms of respiratory tract illness and disinfection of frequently used areas are emphasized (Fathizadeh, 2020). In this process, especially nurses are at the forefront of the epidemic. Therefore, WHO and International Nursing Council (ICN) work together for COVID-19 and emphasize the importance of using personal protective equipment for nurses and ensuring their own safety (Catton, H. 2020). It is seen that COVID-19 not only threatens the physical health of healthcare professionals but also causes a severe effect on mental health (Lai, J. et al. 2020). In addition, restrictions imposed due to the disease negatively affect daily life, education, and thus clinical practices of the students. Situations such as witnessing these hard conditions faced by the profession as well as difficulties they may experience if they start the profession and coping methods may cause nursing students, professionals of the future, to have anxiety (Aslan and Pekince, 2020). In this sense, this study was planned to evaluate opinions and anxiety levels of the nursing students about COVID-19.

MATERIAL AND METHOD

Type, Place, Population and Sample of the Study: This descriptive study was conducted with 346 students who were voluntary to participate in the study and were studying in the Nursing Department of a Faculty of Health Sciences between April and May 2020, without using sample selection.

Data Collection Tools and Data Collection:

The data of the study were collected online with State Anxiety Inventory (SAI) and the Questionnaire prepared by the researchers. Since the students were in the online education process, the Questionnaire and State Anxiety Inventory were sent online to each student's mobile phone as a "questionnaire link". The students, who were voluntary to participate in the study, were asked to fill out the questionnaire completely and send it back to the researcher again via e-mail and the study was completed with 346 students since 433 students make a come-back about the questionnaire.

Data Assessment: Data obtained as a result of the study were evaluated in computer environment with frequency, number, percentage, mean, student t, ANOVA, Kruskal Wallis test, and Mann Whitney U test. The value of $p<0.05$ were accepted as statistically significant.

Ethical Aspect of the Study: This study was conducted in accordance with the "Declaration of Helsinki" and approval from the clinical trials ethics committee, permission from the institution and consent from students were obtained in order to collect data.

RESULTS

Results on the Correlation Between the Status of Preventing COVID-19 and State Anxiety Inventory Mean score of the Nursing Students

It was found that all of the students knew the precautions to be taken for COVID-19 and implemented these precautions, 94.5% obeyed 14 rules suggested by the Ministry of Health, 98.8% stayed away from crowded environments, 93.4% paid attention to distance in communication with people, and 98.6% complied with the call to "stay at home". 66.2% of the students took protective equipment such as gloves-mask and 89.6% took disinfectant,

90.2% paid attention to their diet, 91.6% paid attention to fluid intake, and 99.4% paid attention to hygiene rules.

It was determined that those who knew 14 rules suggested by the Ministry of Health, did not pay attention for fluid intake, took disinfectants, stocked food, and complied with the stay at home suggestion had higher mean score in state anxiety inventory and this result was statistically significant ($p<0.05$).

Results on the Comparison of Nursing Students' Some Thoughts on COVID-19 and Their State Anxiety Inventory Mean score

It was found that 73.1% of the students experienced stress due to COVID-19, 35.3% did not do anything to cope with stress, and 95.7% concerned about the future. 82.7% of the students stated that their education was affected and 67.9% stated that their quality of life was affected due to COVID-19 and 87.0% stated that they could go to the hospital if they were called to serve as a nurse.

It was found that those who stated that they experienced stress due to COVID-19 and believed that their education and quality of life were affected had high state anxiety inventory mean score and this result was statistically highly significant.

DISCUSSION

The rapid spread of the virus and its slow clinical course make it difficult to fight the pandemic, make the process uncertain and increase the anxiety level of people (Çıkaroğlu, 2011). Although anxiety is experienced in all age groups, while it was seen widely among university students even under normal conditions, it can be experienced more intensely in pandemic periods where education life is negatively affected. (Savitsky, Findling, Ereli, and Hendel, 2020). In this regard, this study was conducted to investigate the effect of nursing students' thoughts about COVID-19 on their state anxiety level.

As it is known, contagious diseases increase anxiety levels of individuals from past to present (Taylor, Agho, Stevens, and Raphael, 2008). In their study, Lau et al., determined that psychological reactions such as high levels of stress and helplessness were commonly seen in individuals due to SARS-CoV (Lau, et al. 2005). In the study by Goulia et al., nurses experienced higher levels of anxiety compared to the other healthcare professionals in the swine flu pandemic that affected the world in early 2009 (Goulia, Mantas, Dimitroula, Mantis, and Hyphantis, 2010). In their study, Balkhy et al., similarly, determined that individuals had high anxiety levels (Balkhy, Abolfotouh, Al-Hathlool, and Al-Jumah, 2010). In this study, it was also found that the nursing students experienced "moderate level" of anxiety.

The World Health Organization recommends protective measures such as hygiene, disinfection, early detection, reporting, isolation, use of personal protective equipment and social distance in order to reduce the rapid spread of infection since the medication and vaccine have not been found specific for COVID-19 yet (Çelebi, 2020). While in the study conducted by Kwok et al., in Hong Kong almost all of the participants stated that they were worried about COVID-19 pandemic and their daily routines were disturbed (Kwok, et. al. 2020), in a study conducted by Zhang et al., to evaluate the psycho-social status of healthcare professionals, anxiety level of those who had direct contact with the patient was found to be higher than those who had no direct contact (Zhang, et. al. 2020). In the study of Wang, it was determined that when detailed, up-to-date and correct health information was given to the

individuals, the rate of applying the measures such as hand washing, social isolation and wearing mask increased and stress and anxiety levels decreased (Wang, et. al. 2020). In the study conducted by Bostan et al., in Turkey, it was concluded that the people had high sensitivity to COVID-19, therefore they showed the maximum importance to hygiene, wearing mask, social distance and isolation rules (Bostan, Erdem, Öztürk, Kılıç and Yılmaz, 2020).

Considering the different clinical prognosis of COVID-19 disease, the age groups it is seen and its spread, it is seen that the issue will not be limited only with the medical dimension, but it also has some negative effects in terms of education and public health (Üstün and Özçiftçi, 2020). From the first days of when the cases were seen in Turkey, the schools were closed and education continued online in order to minimize the transmission risk. However, conducting the education online due to pandemic has adversely affected the mental processes of the students especially in the health field requiring applied education. (Cao, et. al. 2020; Ferrel and Ryan, 2020; Ikhlaq et. al. 2020). In their study, Savitsky et al., concluded that uncertainty experienced during the education process due to COVID-19 increased the anxiety levels of the nursing students (Savitsky, et. al. 2020). In this study, it was determined that the students stating that their education and quality of life were affected due to COVID-19 had higher anxiety mean score.

CONCLUSION AND RECOMMENDATIONS

It was determined that almost all nursing students had knowledge about COVID-19, knew and applied the protective measures, most of them experienced stress, worried about the future and their education and quality of life were negatively affected. It was found that students experienced moderate level of anxiety and those who were female, had someone with chronic disease in the family, had knowledge about COVID-19, stated that they took measures, paid attention for fluid intake, took disinfectant, stocked up foods, stayed away from crowded places, stated to experience stress, and believed that their education and quality of life were affected had higher anxiety level. In accordance with these results, it is recommended to support especially the students having the specified characteristics during online education process, to consider absolutely their anxiety levels while eliminating their lack of knowledge, and to focus more on anxiety and coping methods in the courses.

KAYNAKLAR

1. Aslan H, Pekince H, *Nursing Students' Views On The COVID-19 Pandemic And Their Percieved Stress Levels*, Perspect Psychiatr Care. 2020;1–7. doi: 10.1111/ppc.12597).
2. Balkhy HH, Abolfotouh MA, Al-Hathlool RH, Al-Jumah MA. *Awareness, attitudes, and practices related to the swine influenza pandemic among the Saudi public*. BMC Infect Dis. 2010;10:42. Published 2010 Feb 28. doi:10.1186/1471-2334-10-42).
3. Bostan, S., Erdem, R., Öztürk, Y. E., Kılıç, T., & Yılmaz, A. (2020). The Effect of COVID-19 Pandemic on the Turkish Society. *Electronic Journal of General Medicine*, *17*(6), em237. https://doi.org/10.29333/ejgm/7944
4. Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). *The psychological impact of the COVID-19 epidemic on college students in China. Psychiatry research, 287,* 112934. https://doi.org/10.1016/j.psychres.2020.112934.

5. Catton H. (2020). *Global challenges in health and health care for nurses and midwives everywhere*. International nursing review, 67(1), 4–6. https://doi.org/10.1111/inr.12578.
6. Çelebi, C. (2020). *Nursing Care in Patients Diagnosed with Covid-19* "Ege Clinical Medicine Journal. 58(1)35-40). (Original work published in Turkish).
7. Çıkaroğlu, O. C. (2011). *Investigation of Perceptions Associated with Swine Flu (H1N1) Epidemic in the Context of Variables of Anxiety and Avoidance.* Turkish Journal of Psychology. 26 (67); 49-64. (Original work published in Turkish).
8. Fathizadeh, H., Maroufi, P., Momen-Heravi, M., Dao, S., Köse, Ş., Ganbarov, K., Pagliano, P., Esposito, S., & Kafil, H. S. (2020). *Protection and disinfection policies against SARS-CoV-2 (COVID-19*). Le infezioni in medicina, *28*(2), 185–191.
9. Ferrel, M. N., & Ryan, J. J. (2020). *The Impact of COVID-19 on Medical Education.* Cureus, 12(3), e7492. https://doi.org/10.7759/cureus.7492.
10. Goulia, P., Mantas, C., Dimitroula, D., Mantis, D., & Hyphantis, T. (2010). *General hospital staff worries, perceived sufficiency of information and associated psychological distress during the A/H1N1 influenza pandemic.* BMC infectious diseases, 10, 322. https://doi.org/10.1186/1471-2334-10-322.
11. hsgm.saglik.gov.tr (Access Date: 18.03.2020).
12. https://www.who.int/emergencies/diseases/novel-coronavirus-2019, (Access Date: 20.03.2020).
13. Ikhlaq, A., Bint-e-Riaz, H., Bashir, I., & Ijaz, F. (2020). *Awareness and Attitude of Undergraduate Medical Students towards 2019-novel Corona virus.* Pak J Med Sci. 36(COVID19-S4):COVID19-S32-S36. doi: https://doi.org/10.12669/pjms.36.COVID19-S4.2636.
14. Kwok, K. O., Li, K. K., Chan, H., Yi, Y. Y., Tang, A., Wei, W. I., & Wong, S. (2020). *Community Responses during Early Phase of COVID-19 Epidemic, Hong Kong*. Emerging infectious diseases, 26(7), 1575–1579. https://doi.org/10.3201/eid2607.200500.
15. Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., Wu, J., Du, H., Chen, T., Li, R., Tan, H., Kang, L., Yao, L., Huang, M., Wang, H., Wang, G., Liu, Z., & Hu, S. (2020). *Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019*. JAMA network open, *3*(3), e203976. https://doi.org/10.1001/jamanetworkopen.2020.3976.
16. Lau, J. T., Yang, X., Pang, E., Tsui, H. Y., Wong, E., & Wing, Y. K. (2005). *SARS-related perceptions in Hong Kong*. Emerging infectious diseases, 11(3), 417–424. https://doi.org/10.3201/eid1103.040675.
17. Rokni, M., Ghasemi, V., & Tavakoli, Z. (2020). *Immune responses and pathogenesis of SARS-CoV-2 during an outbreak in Iran: Comparison with SARS and MERS.* Reviews in medical virology, 30(3), e2107. https://doi.org/10.1002/rmv.2107.
18. Savitsky, B., Findling, Y., Ereli, A., & Hendel, T. (2020). *Anxiety and coping strategies among nursing students during the covid-19 pandemic.* Nurse education in practice, *46*, 102809. https://doi.org/10.1016/j.nepr.2020.102809.
19. Taylor, M. R., Agho, K. E., Stevens, G. J., & Raphael, B. (2008). *Factors influencing psychological distress during a disease epidemic: data from Australia's first outbreak of equine influenza.* BMC public health, *8*, 347. https://doi.org/10.1186/1471-2458-8-347.
20. Uğraş, Dikmen., A, Kına., M, Özkan, S., & İlhan, M. (2020). *COVID-19 Epidemiology: What We Learned From The Pandemic*. Journal of Biotechnology and

Strategic Health Research, 4,29-36. DOI: 10.34084 / bshr.715153. (Original work published in Turkish).

21. Üstün, Ç., & Özçiftçi, S. (2020). *Effects of the COVID-19 Pandemic on Social Life and Ethical Plane: An Evaluation Study.* Anatolian Clinic the Journal of Medical Sciences, 25 (Special Issue on COVID 19), 142-153. DOI: 10.21673 / anaadoluklin.721864. (Original work published in Turkish).
22. Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. S., & Ho, R. C. (2020). *Immediate Psychological Responses and Associated Factors during the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic among the General Population in China.* International journal of environmental research and public health, 17(5), 1729. https://doi.org/10.3390/ijerph17051729.
23. Zhang, W. R., Wang, K., Yin, L., Zhao, W. F., Xue, Q., Peng, M., Min, B. Q., Tian, Q., Leng, H. X., Du, J. L., Chang, H., Yang, Y., Li, W., Shangguan, F. F., Yan, T. Y., Dong, H. Q., Han, Y., Wang, Y. P., Cosci, F., & Wang, H. X. (2020). *Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China*. Psychotherapy and psychosomatics, 89(4), 242–250. https://doi.org/10.1159/000507639.

THE USE OF WEARABLE TECHNOLOGIES IN CHRONIC DISEASES

Arş. Gör. Sibel SERÇE
ORCID ID: 0000-0003-3490-5193
Prof. Dr. Özlem OVAYOLU
ORCID ID: orcid.org/0000-0002-7335-4032
Gaziantep University, Turkey

Abstract
The importance of IT-based new approaches has come into prominence upon the increase in the elderly population and chronic health problems both in the world and in Turkey. Especially, information technologies are benefited in order to provide disease management by the treatment and follow up of chronic diseases, to reduce workload, to enhance the quality of life, to maintain the well-being situation, and to provide a cost-effective management. Among all, wearable technology products attain a place in the new-developing technology market. Today, wearable technology products, which are used in chronic diseases, enable to get better health outcomes. In addition, they decrease the health expenses and length of hospital stay and also positively affects the health system by enhancing the quality of life and extending the life expectancy. Particularly by means of the wearable technologies, the patients/individuals can get information about their general health conditions without going to a health institution, and the general health status of the patients can be followed for a long time outside the hospital. In this sense, this review will focus on the wearable technologies used in chronic diseases and the situations related to their usage areas.

Key words: Chronic Diseases, Wearable Technology, Patient Follow-up

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Key words: Chronic Diseases, Wearable Technology, Patient Follow-up

INTRODUCTION

The World Health Organization (WHO) defines chronic diseases as slowly progressing diseases that cover a long period of life and require medical care (WHO, 2018) With the increasing elderly population, cardiovascular diseases, cancer, respiratory tract diseases and diabetes are primary ones among the chronic diseases responsible for 70% of deaths in the world (Yıldırım and Çevirgen, 2019), The main goal in the management of these diseases is to reduce the severity of symptoms, to enhance the quality of life and to maximize the function and responsibility of the individual in self-care (Özdemir and Taşcı, 2013). Because of the ever-increasing number of chronic diseases and due to the fact that a great majority of deaths associated with them are preventable (Özdemir and Taşcı, 2013). WHO emphasizes within the scope of 2030 sustainable development project that all sectors, including health, finance, transportation, education, agriculture, and planning should work together to ensure the access of individuals to health services especially in low-income countries and to reduce the effect of diseases on the society and act in cooperation with the WHO Integrated Chronic Disease Prevention and Control Program (Yıldırım and Çevirgen, 2019; WHO, 2018)

The healthcare services offered today in the treatment and care of chronic diseases in both developed and developing countries threaten the sustainability of the healthcare systems as well as national economy and may cause loss of production (Özdemir and Taşcı, 2013). Therefore, it is emphasized that it can be provided only with appropriate technology for spending in the field of health to be on the programs of protection and prevention of individuals, for hospitalization duration to be taken, for health services to be distributed equally, and for the care costs to be decreased without compromising service quality (Demirci, 2018). In this regard, the provision of the healthcare services, which is an important part of the economy and the use of wearable technology devices, which are rapidly increasing in this field are evaluated as priceless since they minimize the damage to people's lives and enhance the quality of life of individuals (Demirci, 2018). Wearable technology products are the special electronic monitoring devices (Öcal et all. 2019; Demirci, 2018), integrated into a computer or smart phone in order to provide wirelessly long-term data detecting and storing data by placing them into human body (Pericleous and van Staa, 2019). Contact lenses in the early diagnosis of diabetic retinopathy, artificial pancreas in the treatment of diabetes, smart fiber clothes providing early warning by following skin cancer symptoms (lesions, redness), thermometer patch placed under the skin and providing information about cardiovascular activity (for heart attack and stroke) by following the temperature in blood flow, shoes and smart socks that track physical activity, monitors providing continuous data bout the physical conditions, rings, smart glasses, smart watches, bracelets, technological devices that can be integrated into the clothes of the users, any material they carry or their bodies are used all over the world especially in the diagnosis, treatment and monitoring of chronic diseases (Tezcan, 2016).

These technologies used in the healthcare services enable to obtain better health results. In addition, they positively affect the healthcare system by enhancing the quality of life and prolonging life expectancy, and reducing the hospitalization duration and health expenditures. This is because with wearable technologies, patients/individuals can get the opportunity to have information about their general health conditions without visiting a health institution and the general health conditions of patients can be followed easily for a long time outside the hospital. All of these possibilities contribute to reducing costs, improving hospital outcomes,

and providing time management in terms of both patients and healthcare professionals providing treatment and care services.

Keyword: *Chronic Diseases, Wearable Technology, Patient Follow-up*

KAYNAKLAR

1. Demirci, Ş. Giyilebilir Teknolojilerin Sağlık Hizmetlerine ve Sağlık Hizmet Kullanıcılarına Etkileri, Anemon Muş Alparslan Üniversitesi Sosyal Bilimler Dergisi, 2018, 6(6); 985-992.
2. Öcal, H., Doğru, A., Barışçı, N. Akıllı ve Geleneksel Giyilebilir Sağlık Cihazlarında Nesnelerin İnterneti, Politeknik Dergisi, 2019; 22(3); 695-714.
3. Özdemir, U., Taşcı, S. (2013), Kronik Hastalıklar ve Bakım, Erciyes Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, Cilt 1, Sayı 1.
4. Pericleous, P., & van Staa, T. P. (2019). The use of wearable technology to monitor physical activity in patients with COPD: a literature review. International journal of chronic obstructive pulmonary disease, 14, 1317–1322. https://doi.org/10.2147/COPD.S193037.
5. Tezcan, C. Sağlığa Yenilikçi Bir Bakış Açısı: Mobil Sağlık, 2016. Yayın No: TÜSİAD-T/2016-03/575.
6. WHO, 2018, Noncommunicable diseases: the slow motion disaster. Access Link: http://www.who.int/publications/10-year-review/ncd/en/index3.html, Access Link: 06.02.2021.
7. WHO, 2018, Noncommunicable diseases; Key facts. Access Link: http://www.who.int/en/news-room/fact-sheets/detail/noncommunicable-diseases, Access Link: 09.02.2021.
8. Yıldırım, JG., Çevirgen, A. (2019), Kronik Hastalıkların Yönetiminde Kullanılan Bilişim Tabanlı Uygulamalar DERLEME REVİEW CBU-SBED, 6(1): 65-73.

THE EFFECT OF ROYAL JELLY ON THE EXPRESSION OF SOME APOPTOTIC PROTEIN MARKERS

Ozlem Gok
ORCID NO: 0000-0001-8521-6369
Seda Beyaz
ORCID NO: 0000-0003-0436-8112
Gozde Parlak
ORCID NO: 0000-0002-8982-887X
Firat University, Elazig, Turkey
Muhammed Ismail Can
ORCID NO: 0000-0002-0118-2278
Inonu University, Malatya, Turkey
Abdullah Aslan
ORCID NO: 0000-0002-6243-4221
Firat University, Elazig, Turkey

Abstract
Royal jelly plays an important role in feeding honey bee larvae and adult queens. It consists of various bioactive components such as proteins, free amino acids, lipids, vitamins and minerals. Royal jelly is of great interest by many researchers due to its highly effective antioxidant capacity and free radical scavenging properties. Fluoride is a highly reactive element in the environment in terms of chemical properties. Excessive fluoride intake has caused side effects, especially in hard tissues (bones and teeth), as well as damage to soft tissues such as kidney, lung, liver, heart and muscle. Therefore, in this study, the protective effect of royal jelly on lung injury in Wistar albino male rats was investigated. In our study, 42 male rats were used and divided into 6 groups, each group included 7 rats. Groups: (i) Control Group: Group fed with standard diet; (ii) Royal jelly Group: Royal jelly (100 mg/kg CA, gavage); (iii) Fluoride-50 Group: Fluoride (50 mg/kg CA, drinking water); (iv) Fluoride-100 Group: Fluoride (100 mg/kg CA, drinking water); (v) Fluoride-50 + Royal jelly Group: Fluoride (50 mg/kg CA, drinking water) + Royal jelly (100 mg/kg CA, gavage); (vi) Fluoride-100 + Royal jelly Group: Fluoride (100 mg/kg CA, drinking water) + Royal jelly (100 mg/kg CA, gavage). Rats were decapitated after 8 weeks and lung tissues were removed and examined. Compared to Fluoride-50 and Fluoride-100 groups; GSK-3, COX-2 and Tnf-alpha protein expression levels decreased significantly BDNF and caspase-9 protein expression levels increased significantly in the group of Fluoride-50 + Royal Jelly and Fluoride-100 + Royal Jelly. As a result of this study, it has been determined that royal jelly application is a promising drug in the treatment of many diseases in the future by reducing lung damage. This work was supported by Firat University Scientific Research Projects Unit (FUBAP) with FF.19.16 project number.

Keywords: Apoptotic marker, Caspase-9, COX-2, Lung, Royal Jelly

UNDERSTANDING OF EFFECTS OF GEOMETRY ON GLASS FIBER EPOXY COMPOSITE UNDER THREE POINT BENDING LOADING

Taha Yasin EKEN
ORCID NO: 0000-0001-6693-8091
Cihan KABOGLU
Bursa Technical University, Bursa, Turkey
ORCID NO: 0000-0002-6249-0565

Abstract
Glass fiber reinforced polymer (GFRP) composites used a wide range of applications from dentistry to airplane industries. The reasons for using these types of composites are their extraordinary properties such as high stiffness to weight, flexural strength to weight, and resistance to wear. Since the application parts in the industries can be flat and curved, the flexural strength of the composites has significant importance. The three-point bending test gives the flexural stress and strain values and elastic modulus under three-point bending loading. In this work, GFRP composites with two different curves, 380 mm radius and flat composites with same stacking sequences ([0/0/-45/+45/90/90]s), were subjected to three-point bending tests, and their bending strength behaviors were investigated. The tests were performed on Shimadzu AG-X Plus 250 kN machine with a three-point bend fixture, and the velocity was 1 mm/min according to the ASTM790-17 standard test method. The dimension of the specimen is 30 mm length and 7.5 mm width and four specimens prepared for each geometry. After the three-point bending tests, the specimens observed under optical microscopy to understand the damage modes of the composites. According to the three-point bending tests, bending stiffness, and no oscillation to the peak load were the behaviors of both composites. However, flat composite showed almost no delamination, and curved composite showed delamination and debonding in microscopic investigations. Comparing these two types of composites, the flat composites showed better flexibility properties such as almost no delamination, moderate debonding, and higher peak load compared to curved composite. Therefore, in flexural and stiffness-sensitive applications, flat composites should be preferred compared to 380 mm radius curved composites due to their better resistance against to bending loading.

Keywords: Three-Point Bending Test, GFRP, Geometry, Airplane Industry

Introduction

Glass Fiber Reinforced Polymers (GFPRs) have become one of the most preferred composites in recent years, due to their reasonable price and desired material properties. One of the most important features of GFRPs is that they have a high strength density ratio compared to many materials [1]. When the graph prepared by Granta Design in Figure 1 (a) is examined, it can be seen that composites and polymers have a higher strength-density ratio than most of them

[2]. In addition, high stiffness to density ratios provides high bending properties [3]. In Figure 1 (b), the area shown by the red rectangle in the graph showing the yield strength-density ratio represents GFRPs [4]. It can be seen from here that it has high flexural strength. Corrosion properties are also better than many metals, ensuring that the material has a high oxidation resistance [5]. In Figure 1 (c), it can be seen how much a steel structure has rusted in 12 years and the fiber glass structure is in much better condition [6].

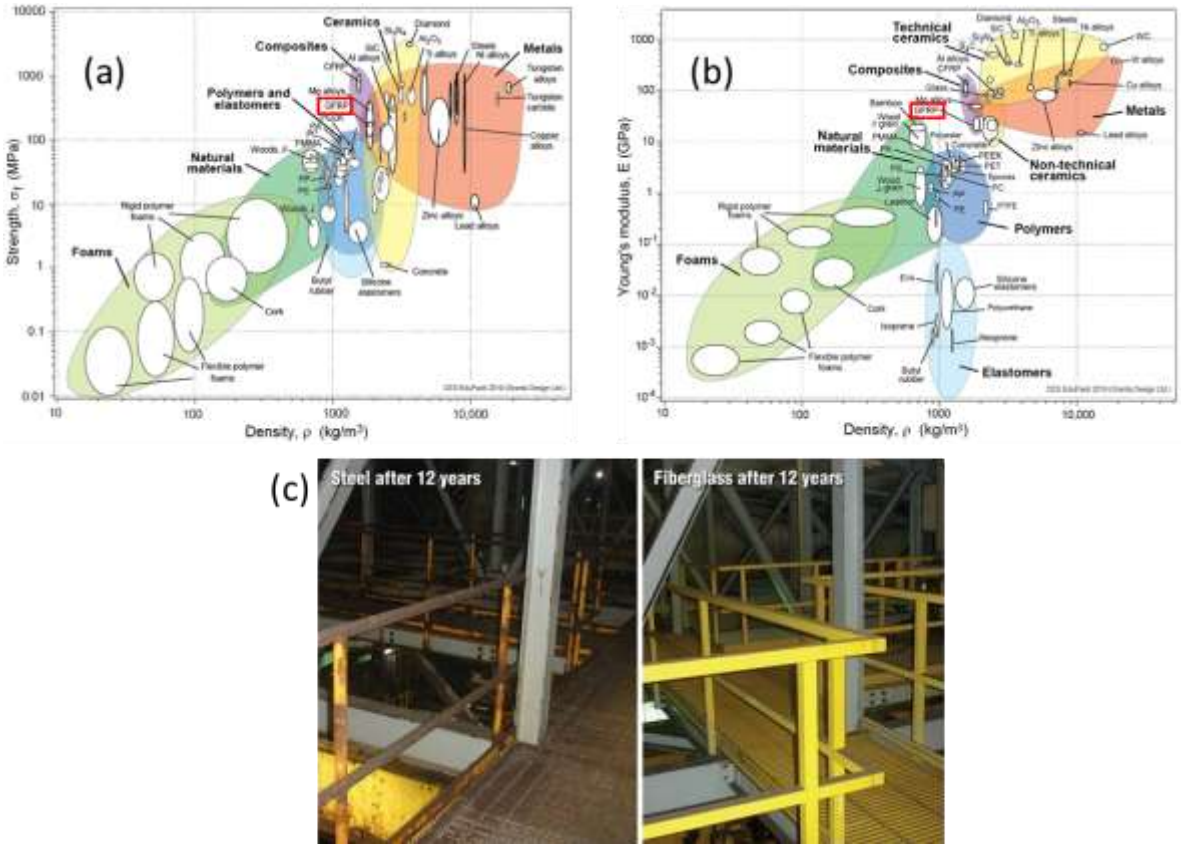


Figure 1. (a) Strength-density, (b) young modulus-density materials selection charts from CES Edupack program. And, (c) a corrosion example for GFRPS [2,4,6].

The application areas are aerospace, automotive, wind turbines and so on. For aerospace industry, flooring, closets, seating, air ducts, cargo liners, insulating applications and various other cabin interior parts are produced using the GFRPs. In automotive industry GFRPs are using for the interior, exterior, structural assembly, and power-train components. Wind turbine rotor blades are made up with GFRPs in the wind turbine industries. Figure 2 shows some examples from these three industries which use the GFRPs. GFRPs are used as flat and curved in industry.

Figure 2. Examples of GFRP composite applications. Jet turbine blades of planes, wind turbine blades, suspension springs of GFRPs for Audi automobiles [11–13] .

The three-point bending tests of curved GFRPs has an importance to detect the flexural strength properties. Azzam et al. studied the carbon fiber composite with different laminates and they applied three-point bending tests. They found the maximum load points about 1020 N and 700 N [7]. Cheloni et al. studied the three-point bending behaviors of epoxy and the epoxy reinforced polymers. Epoxy showed a 7.97 N load and the PE3L composite showed 46.63 N and the PE5L composite showed 69.80 N [8]. Sideridis and Papadopulos studied the three point bending behaviour of the glass fiber reinforced epoxy composites. The failure mode they observed was the shear failure [9]. Zhou et al. studied the damage growth of GFRP under three point bending tests. According to their results, the mechanical behavior of GFRP composites are affected from the orientation angles of fibers. They found that when the loading direction is perpendicular to the fiber orientation the strength becomes the highest value and the stiffness of composites under three-point bending loading are also reaches the highest values [10]. There are many examples of applications in the industry where curved parts are found in critical parts.

Materials&Method

Epoxy resin, hardener, release film, flow media, peel ply, glass fibers, vacuum bag, vacuum pump and tank are used as materials for this study. While hardened epoxy resin is used as matrix material in the composites produced, glass fibers are used as additives. Vacuum Infusion Process used to produce the composites in this study and the schematic view of the method is shown in Figure 3.

The application of the method in the laboratory environment is given in Figure 4. While composites are being produced, the tops of the molds are wrapped with a release film to prevent adhesion. Flow media was laid on one top to provide epoxy flow. Then, peel ply was laid and it was aimed to wrap the composite with two fabrics from the top and bottom. On the peel ply, the fibers were arranged in a certain stacking order and then the system was completely closed with the vacuum bag. After blocking the air flow with sealing tapes, the system was vacuumed and fed with epoxy.

Figure 3. Schematic view of the vacuum infusion method.

Figure 4. Laboratory photographs of the vacuum infusion method.

Flat and 380 mm diameter curved composites were produced using molds shown in Figure 5(a)&(b). The dimensions of the glass mold are 300 mm x 300 mm, the dimensions of the steel mold are 300 mm x 150 mm, and the thickness of the mold is approximately 10 mm. The manufacturing process were applied under room temperature. The epoxy was cured at about 45-50 ° C in 120 minutes. Fibers were stacked in an order [0/0/-45/+45/90/90]S shown on Figure 5(c).

Produced composites were cut using water-jet cut for the three-point bending tests. The dimensions of the impact test specimens are 300 mm x 75 mm x (4.5±0.5) mm. Figure 7 represents technical drawing of a flat composite specimen. A total of eight samples, four for both flat composite and curved composite, were prepared for the three-point bending test. Shimadzu AGS-X device was used for the tests. 1 mm/min pressing speed was applied.

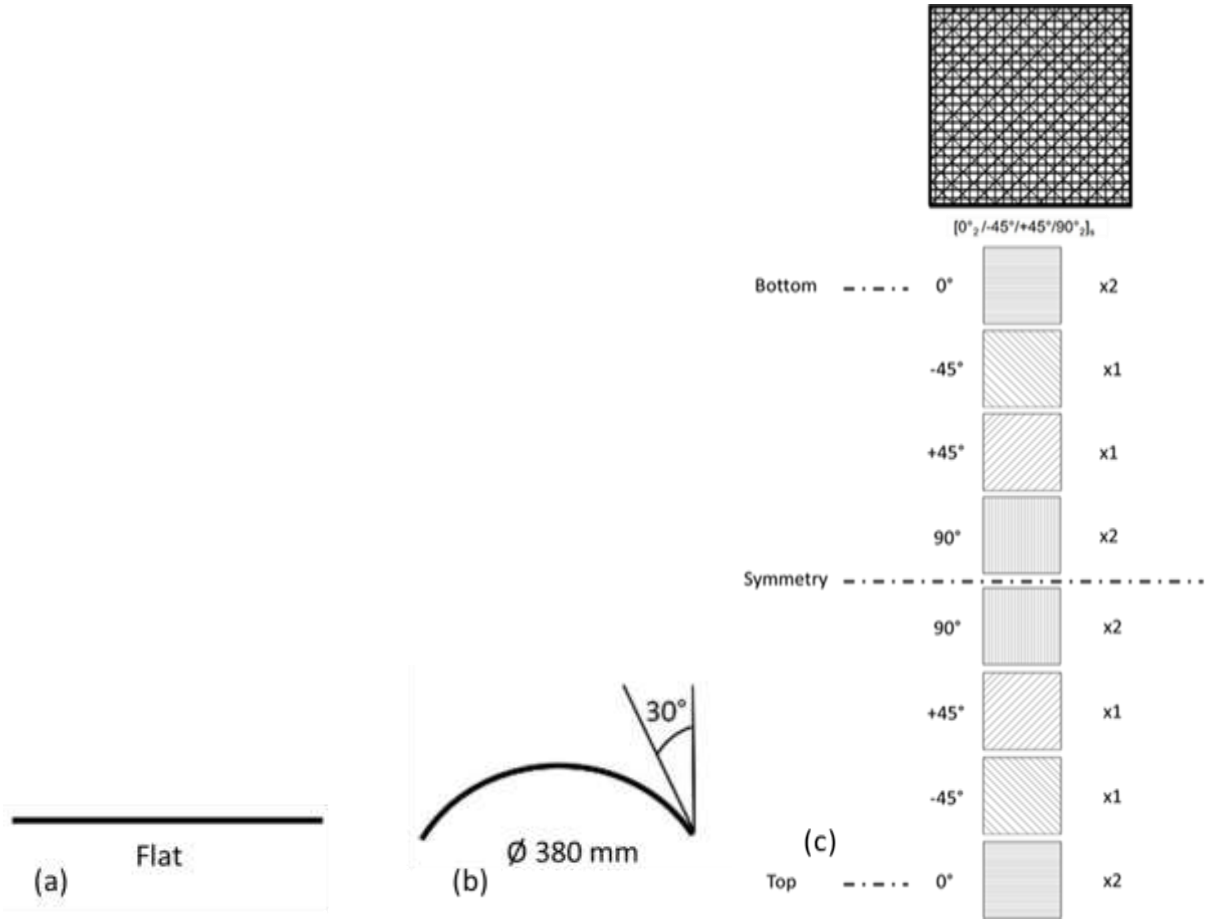


Figure 5. The schemes of the (a) flat glass and (b) curved steel molds with the angles and diameters. (c) [0/0/-45/+45/90/90]s stacking sequence of the glass fibers used in composite production.

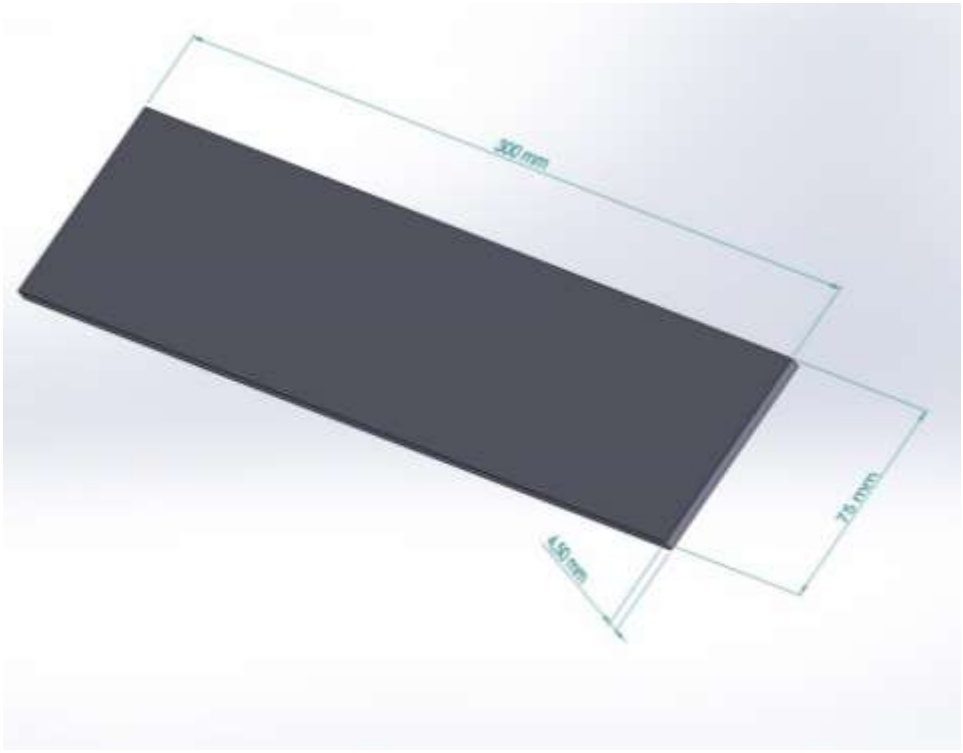


Figure 6. The technical drawing of the flat form three-point bending test specimens.

Results&Discussion

Average force-displacement plots for curved and flat composites of [0/0/-45/+45/90/90]S consisting of 12 layers are shown in Figure 7. The graph indicates that the flexural forces of both composite increases proportionally with the rise of the displacement. The maximum point of curved composite is approximately 878 N, and flat composite ise 1198 N. This shows that the flexural strength of the flat composite is higher than the curved composite. Also, the modulus of elasticity of flat composite is higher than the curved composite.

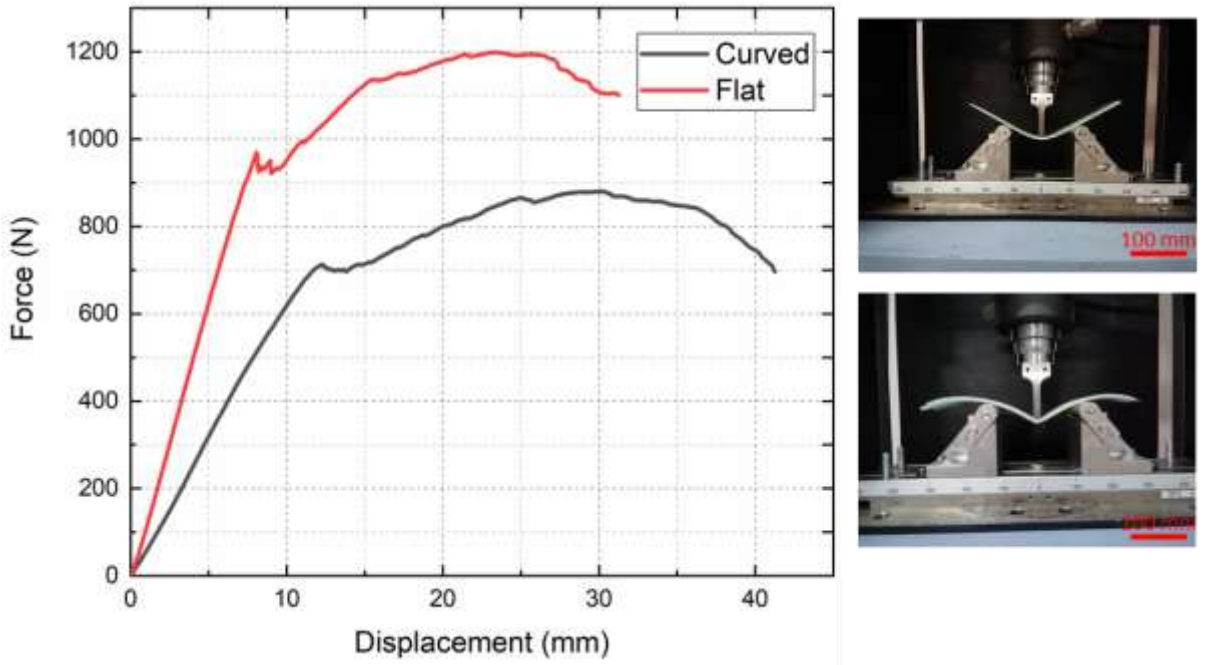


Figure 7. The Force-Displacement graph of the curved and flat composites from three-point bending tests.

The failure modes of the composites after the tests are shown in Figure 8. After the three-point bending tests, the bending of the flat composite was less than the curved composite. The fiber cracks on the surface of the curved composite are more than the flat composite. In addition, it was observed that post-impact delamination on the surface of the curved composite is more than the flat composite.

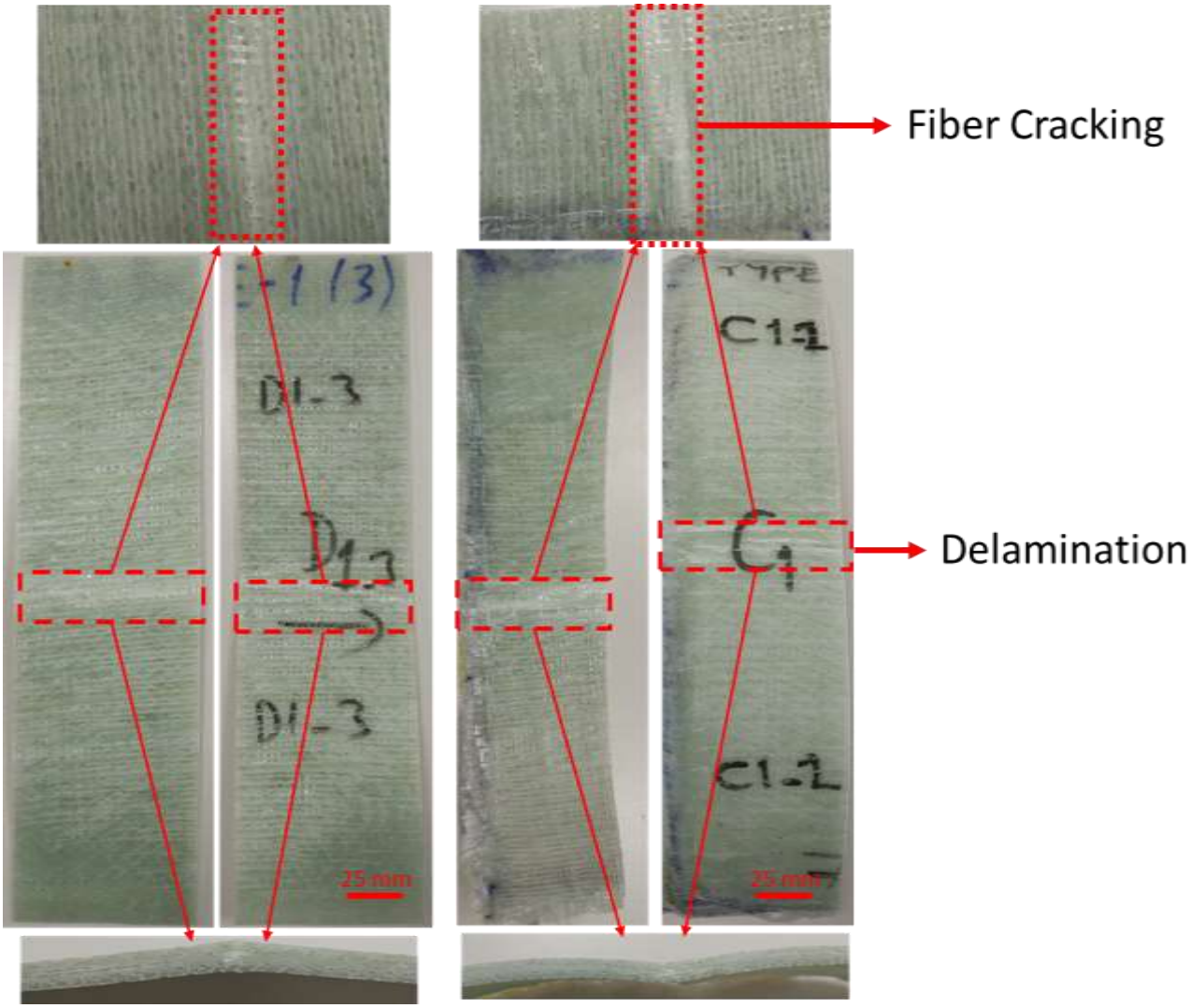


Figure 8. The surfaces of the composites after three-point bending tests (a) backward of curved composite (b) front of curved composite (c) backward of flat composite (d) front of the flat composite. The dashed areas showed the bending areas and the arrows are the center part of the composite bodies.

Conclusion

The studies and the results obtained can be summarized as follows:

- According to the three-point bending tests, bending stiffness, and no oscillation to the peak load were the behaviors of both composites.
- Flat composite showed almost no delamination, and curved composite showed delamination and debonding in surface images.
- Comparing these two types of composites, the flat composites showed better flexibility properties such as almost no delamination, moderate debonding, and higher peak in force-displacement graph force compared to curved composite.
- Therefore, in flexural and stiffness-sensitive applications, in suitable conditions, flat composites should be preferred compared to 380 mm radius curved composites due to their better resistance against to bending loading.

References

[1] Mannocci F, Sherriff M, Watson TF. Three-point bending test of fiber posts. J Endod 2001;27:758–61. https://doi.org/10.1097/00004770-200112000-00011.

[2] GrantaDesign_AshbyCharts3_2018_640x960.png (961×641) n.d. https://www.grantadesign.com/wp-content/uploads/2018/11/GrantaDesign_AshbyCharts3_2018_640x960.png (accessed February 27, 2021).

[3] Christiansen AW, Lilley J, Shortall JB. A three point bend test for fibre-reinforced composites. Fibre Science and Technology 1974;7:1–13. https://doi.org/10.1016/0015-0568(74)90002-5.

[4] GrantaDesign_AshbyCharts2_2018_2520x2048.png (1921×1280) n.d. https://www.grantadesign.com/wp-content/uploads/2018/11/GrantaDesign_AshbyCharts2_2018_2520x2048.png (accessed February 27, 2021).

[5] LeBlanc J, Shukla A. Underwater explosion response of curved composite plates. Composite Structures 2015;134:716–25.

[6] Corrosion Performance of Fiberglass. AZoMCom 2016. https://www.azom.com/article.aspx?ArticleID=13065 (accessed February 27, 2021).

[7] Ahmed A, Wei li. An experimental investigation on the three-point bending behavior of composite laminate. vol. 62. 2014. https://doi.org/10.1088/1757-899X/62/1/012016.

[8] Cheloni JPM, Silveira ME, Silva LJD. Different methods of three-point bending analysis of polymer epoxy reinforced with fiberglass laminated faces, 2018. https://doi.org/10.21452/bccm4.2018.16.03.

[9] Sideridis E, Papadopoulos GA. Short-beam and three-point-bending tests for the study of shear and flexural properties in unidirectional-fiber-reinforced epoxy composites. J Appl Polym Sci 2004;93:63–74. https://doi.org/10.1002/app.20382.

[10] Zhou H, Mishnaevsky Jr L, Brøndsted P, Tan J, Gui L. SEM in situ laboratory investigations on damage growth in GFRP composite under three-point bending tests. Chinese Science Bulletin 2010;55:1199–208. https://doi.org/10.1007/s11434-009-0560-1.

[11] Mototok. Composite Materials in Aerospace Manufacturing n.d. https://www.mototok.com/blog/composite-materials-in-aerospace-manufacturing (accessed February 27, 2021).

[12] kThu-c-wind-825x340.jpg (825×340) n.d. https://recyclingfirst.org/wp-content/uploads/2018/11/kThu-c-wind-825x340.jpg (accessed February 27, 2021).

[13] Audi to use suspension springs of glass fiber-reinforced polymer instead of steel for ~40% weight savings. Green Car Congress n.d. https://www.greencarcongress.com/2014/06/20140630-audi.html (accessed February 27, 2021).

MEYVE ATIKLARI VE ARITMA ÇAMURU KARIŞIMININ ÇÖZÜNEBİLİR ORGANİK MADDE ORANININ ARTTIRILMASI AMACI İLE ELEKTRO-OKSİDASYON VE FENTON PROSESLERİ İLE ÖN İŞLEMİ

Habibe Elif GÜLŞEN AKBAY
Halil KUMBUR
Mersin Üniversitesi, Mersin, Türkiye
https://orcid.org/0000-0003-1144-9279

Özet

Anaerobik fermantasyon teknolojisi, organik atıklarda genel olarak bulunan kompleks biyopolimerler nedeniyle hidroliz hızının yavaş olması gibi kısıtlamalara sahiptir. Bu durum, hidrolik alıkonma süresini artırarak, organik maddenin daha az bozunmasına ve metan veriminin düşmesine neden olacaktır. Bu sorunları çözmek için karışımların biyobozunurluğu ön işleme benzer şekilde dezentegrasyon adı verilen bazı yöntemler uygulanarak arttırılmaktadır. Bu çalışmada meyve işleme endüstrisinden temin edilen meyve atıkları ve evsel nitelikli arıtma çamurundan oluşan karışıma uygulanan farklı dezentegrasyon yöntemlerinin (Fenton ve Elektro-Oksidasyon) karışımın çözünebilirliğine olan etkisi, çözünmüş kimyasal oksijen ihtiyacı (ÇKOİ), çözünmüş karbonhidrat ve protein parametrelerindeki değişimler üzerinden açıklanarak karşılaştırılmıştır. Elde edilen sonuçlara göre uygulanan ön işlemler karışımın ÇKOİ içeriğini %28,66 ile %47,17 arasında, çözünmüş karbonhidrat içeriğini % 29,24 ile %46,22 arasında ve çözünmüş protein içeriğini %7,63 ile %36,24 arasında değişen oranlarda arttırmıştır. Farklı pH değerleri ve $[H_2O_2]/[Fe^{2+}]$ konsatrasyonlarının karşılaştırıldığı Fenton prosesinde pH değeri düştüğünde ve ortamdaki $[H_2O_2]$ oranı artırıldığında daha fazla çözünme verimi elde edilmiştir. Benzer şekilde Elektro-Oksidasyon prosesinde de ortamın asitlik derecesi arttıkça çözünmenin daha verimli gerçekleştiği gözlemlenmiştir. Fenton ve Elektro-Oksidasyon prosesleri karşılaştırıldığında Fenton dezentegrasyonu ile çözünmüş karbonhidrat ve KOİ içeriğinin daha etkili olarak arttırılabildiği, Elekto-Oksidasyonun ise daha çok proteinlerin çözünürlüğünü arttırmada etkili olduğu belirlenmiştir.

Anahtar Kelimeler: Çözünebilir Karbonhidrat, Protein ve KOİ, Dezentegrasyon, Elektrooksidasyon, Fenton, Organik Atık

ELECTRO-OXIDATION AND FENTON PRE-TREATMENT OF FRUIT WASTE AND SEWAGE SLUDGE MIXTURE BEFORE THE ANAEROBIC

FERMENTATION PROCESS TO INCREASE THE SOLUBLE ORGANIC MATTER RATIOS

Abstract

Anaerobic fermentation technology has limitations such as slow hydrolysis rate due to complex biopolymers commonly found in organic wastes. This will increase the solid retention time, resulting in less degradation of organic matter and lower methane yield. To overcome these difficulties the biodegradability of the mixtures can be increased by applying some methods called disintegration similar to pre-treatment. In this study, the effects of different disintegration methods (Electro-Oxidation and Fenton) applied to the mixture consisting of domestic sewage sludge and fruit wastes obtained from the fruit processing industry on solubility were discussed and compared in terms of dissolved chemical oxygen demand (SCOD), changes in dissolved carbohydrate and protein parameters. According to the results, the pretreatments increased the SCOD content between 28.66% and 47.17%, the dissolved carbohydrate content between 29.24% and 46.22%, and the dissolved protein content by 7.63% and 36.24%. In the fenton process where different pH values and $[H_2O_2]$ / $[Fe^{2+}]$ concentrations are compared, a higher dissolution efficiency has been obtained when the pH value is decreased and the $[H_2O_2]$ ratio is increased. Similarly, in the Electro-Oxidation process, it was observed that the more acidity of the mixture, the more efficient the dissolution. When Fenton and Electro-Oxidation processes were compared, it was determined that the dissolved carbohydrate and SCOD content could be increased more effectively with fenton disintegration. Electro-Oxidation was found to be more effective in increasing the solubility of proteins.

Keywords: Soluble Carbohydrate, Protein and COD, Disintegration, Electro-oxidation, Fenton, Organic Waste

Production systems and endogenous knowledges of tiger nuts (Cyperus sculentus L.) in the district of Tanguieta

BLENON Enock Arcadius
Dr. (MC) EZIN Ishola Vincent
Prof. AHANCHEDE Adam
University of Abomey-calavi (UAC)

Abstract
Tiger nut (*Cyperus esculentus* L.) is a crop mainly cultivated for its tasty tubers and high market value. Thus, it appears to be a real tool for the diversification of agricultural products for producers in northern Benin because of the numerous nutritional and economic advantages provided by its production. Despite the multiple advantages it provides, it remains one of the neglected crops (NUS) by Beninese research. The agronomic practices used, the varieties cultivated, knowledge about the nut grass and its different uses are very limited or even non-existent. The objective of the present study was to improve our knowledge on the techniques of production of tiger nut and its uses in the district of Tanguiéta located in northern Benin. To achieve this objective, 109 producers were surveyed systematically using the snowball method and a semi-structured survey questionnaire providing information on endogenous knowledge and production systems of tiger nuts. This investigation was preceded by a literature review. Mainly cultivated in pure culture and sometimes in association with soybeans, millet, corn, sorghum and cowpea, tiger nuts called “yassipouanga” in the Naténi language is more adopted by women, its production is also estimated profitable. Sown on ridges and in hills of 0.15 m from each other and at 0.30 m between rows, nut grass tubers mature after 3 months. Harvesting takes place 3-4 months after sowing due to yellowing of leaves. Harvest products are mainly sold in local markets. Only the tubers are used in the preparation of sauce, appetizers and porridge. They are also used to avert bad spells and protect newborns. Plowing, weeding and harvesting are the main farming operations, which require a lot of physical and financial effort from producers. The yield is limited by the population of insects which attack the nuts in the field. It was also observed the difficulties attached to the harvest due the rudimentary harvested used. Therefore, a study which aims at the development of harvesting equipment to promote the cultivation of tiger nuts should be considered.

Key words: Tiger nut, productivity, techniques of production, Tanguiéta, North Benin

PİRİNÇ KABUĞU KÜLÜ İKAMESİNİN HARMAN TUĞLASININ SU EMME VE BASINÇ DAYANIMI ÜZERİNE ETKSİ

Arzu Çağlar
ORCID ID: 0000-0003-3928-8059
Hakan Çağlar
ORCID ID: 0000-0002-1380-8637
Adem Ahıskalı
ORCID ID: 0000-0002-1265-7312
Kırşehir Ahi Evran University, Turkey

Özet

Tuğla, geçmişten günümüze kadar varlığını sürdürmeyi başaran ve inşaat sektöründe aktif bir şekilde kullanılan önemli yapı malzemelerinden biridir. Teknolojinin gelişmesi ile birlikte tuğla bünyesinde iyileştirmeye gidilmektedir. Son zamanlarda bu iyileştirmenin atık malzemelerle yapılması tuğla sektöründe önemli bir adım olmuştur. Tuğla yapı malzemesinde endüstriyel atıkların yanı sıra tarımsal atıklarda kullanılmaktadır.

Bu çalışmada, tarımsal bir atık olan pirinç kabuğunun yüksek sıcaklıklarda yakılması sonucu elde edilen pirinç kabuğu külünün harman tuğlası üzerindeki etkisinin araştırılması hedeflenmiştir. Bu hedef doğrultusunda tuğla bünyesine farklı oranlarda (%2, %4, %6, %8 ve %10) pirinç kabuğu külü ikame edilerek harman tuğlasının ağırlıkça su emme ve basınç dayanımlarının incelenmesi amaçlanmıştır. Çalışma üç aşamadan meydana gelmiştir. Ilk aşamada; fabrika üretimi harman tuğla (referans numune) üretim alanından temin edilmiş ve bu numunelere ağırlıkça su emme ve basınç dayanımı deneyleri uygulanmıştır. İkinci aşamada; %2, %4, %6, %8 ve %10 oranında pirinç kabuğu külü ikame edilerek katkılı harman tuğlası üretimi yapılmıştır. Üretilen numuneler ağırlıkça su emme ve basınç dayanımı deneylerine tabi tutulmuştur. Üçüncü ve son aşamada ise, referans ve üretilen pirinç kabuğu külü katkılı harman tuğla numunelerinin karşılaştırılması yapılmıştır. Tüm harman tuğla numuneleri 900 ºC ve 1000 ºC sıcaklıkta kademeli bir şekilde pişirilmiştir. Sonuç olarak, su emme oranı açısından en iyi sonucun 900 ºC'de pişirilen %10 oranında pirinç kabuğu külü ikameli harman tuğla numunelerinden elde edildiği, basınç dayanımı açısından ise 1000 ºC'de pişirilen referans numunelerinden elde edildiği tespit edilmiştir. Ayrıca pirinç kabuğu külünün harman tuğla üretiminde kullanılmasında herhangi bir sakınca bulunmadığı vurgulanmıştır. Pirinç kabuğu külünün harman tuğla sektöründe kullanılması çevre kirliliğini azaltmaya katkıda bulunacağı bildirilmiştir.

Anahtar Kelimeler: Pirinç kabuğu külü, tuğla, su emme, basınç dayanımı

THE EFFECT OF RICE HUSK ASH ADDITIVE ON THE WATER ABSORPTION AND COMPRESSIVE STRENGTH OF THE BLEND BRICK

Abstract

Brick is one of the important building materials that has survived from the past to the present and is actively used in the construction industry. With the development of technology, improvement is made within the brick body. Recently, making this improvement with waste materials has been an important step in the brick industry. In brick building material, it is used in agricultural wastes as well as industrial wastes.

In this study, it was aimed to investigate the effect of rice husk ash obtained by burning rice husk, which is an agricultural waste, on the threshing brick. In line with this goal, it was aimed to examine the weight of water absorption and compressive strength of the blending brick by substituting rice husk ash in different ratios (2%, 4%, 6%, 8% and 10%) to the brick body. The study consisted of three stages. In the first stage, factory production blend brick (reference sample) was procure from the production area and were applied to water absorption and compressive strength tests to these samples. In the second stage; Blend brick was produced by substituting 2%, 4%, 6%, 8% and 10% rice husk ash. The samples produced were subjected to water absorption percent by weight and compressive strength tests. In the third and last stage comparison of reference and blended brick samples with additives rice husk ash were made. All blend brick samples were fired gradually at 900 ^{o}C and 1000 ^{o}C. As a result, it was determined that the best result in terms of water absorption rate was obtained from blend brick samples with 10% rice husk ash substituted fired at 900 ^{o}C, and in terms of compressive strength, it was obtained from reference samples fired at 1000 ^{o}C. Also it was emphasized that there is any drawbacks in using rice husk ash in the production of blend bricks. It has been reported that the use of rice husk ash in the blend brick industry will contribute to reducing environmental pollution.

Keywords: Rice husk ash, brick, water absorption, compressive strength

GİRİŞ

Eski tuğlalar topraktan oluşmuş, elle kalıplanmış ve sıkıştırılmadan doğrudan güneş ışığı altında sertleştirilmiştir (Gupta vd, 2020). Tuğla üretimi için sürekli kil madenciliği ve üst toprağın kaldırılması işlenmemiş kaynakların önemli ölçüde azalmasına neden olmuştur. Buna rağmen, kil tuğlalar duvar kaplama malzemesi olarak popüler olmuştur. Tuğla kilinin üstel kullanımı, doğal kil kaynaklarının kıtlığına neden olmaktadır (Kazmi, 2016a, Kazmi, 2016b, Silva ve Malwatta, 2018). Bu yüzden tuğla hammaddesinin kullanımını azaltmak için endüstriyel atıklar tuğla üretimine katılmıştır. Endüstriyel atıkların yanı sıra tarımsal atıklarda tuğla üretiminde kullanılmaktadır. Tarımsal atıklardan biri de pirinç kabuğu külüdür.

Tarım ülkelerinin çoğu büyük miktarda pirinç üretmekte ve bu nedenle büyük miktarda pirinç kabuğu atık olarak çevreye atılmaktadır (Silva vd, 2018). Dünya pirinç üretimi 2017 yılında yaklaşık 759 milyon tondur (FAO, 2018). Asya ülkeleri 689 milyon ton pirinç üretimi ile toplam üretimin yaklaşık % 91'ni oluşturmaktadır. Pirinç kabuğunun yaklaşık % 20'si, genellikle su kütlelerine ve çevreyi kirleten nehirlere veya çöplüklere atılmaktadır (Jitin vd, 2020; Bie vd., 2015; Xu vd, 2015; Rosa vd, 2015). Bu atıkların pirinç kabuğu külüne (PKK) dönüştürülmesi gerek çevre gerekse ekonomi açısından önem arz etmektedir.

Bilim insanları yaptıkları çalışmalarda, tuğla üretimi için atık pirinç kabuğu külü yapmanın olası yollarını araştırmak için girişimlerde bulunmuşlardır. Sultana vd. (2011) pirinç kabuğu külü üretmiş (fırınlarda 750 °C'de 2 saat yanarak) ve test numuneleri için kullanmışlardır. Örnekleri, elektrikli bir fırında 800 °C'den 1100 °C'ye kadar pişirmiş ve mekanik dayanım açısından test etmişlerdir. Pirinç kabuğu külü miktarının artmasıyla basınç dayanımında azalma meydana geldiğini tespit etmişlerdir. Bunun nedenini çalışmada kullanılan pirinç kabuğu külünün, çoğunlukla yanmamış karbondan oluşan siyah renkte olmasıyla bağdaştırmıştır. Mohan vd., (2012) atık pirinç kabuğu külünün eklenmesinden dolayı tuğlaların mukavemetinde herhangi bir gelişme olmadığını tespit etmiştir. Hossain vd. (2011), pirinç kabuğunun kontrolsüz bir ortamda yakıldığı ve daha sonra tuğla üretiminde kilin yerine kullanıldığı yerel bir pirinç değirmeninden pirinç kabuğu külü toplamıştır. PKK ile üretilen numunelede su emme oranının arttığı kırılma mukavemetinin azaldığını tespit etmişlerdir. Agbede ve Joel (2011) PKK'nün pişmiş kil tuğlaların özelliklerine etkisini araştırmıştır. % 2 oranında PKK ikamesinin basınç dayanımını % 6 oranında iyileştirdiğini bildirmişlerdir.

Bu çalışmada, tarımsal bir atık olan pirinç kabuğunun yüksek sıcaklıklarda yakılması sonucu elde edilen pirinç kabuğu külünün harman tuğlası üzerindeki etkisinin araştırılması hedeflenmiştir. Bu hedef doğrultusunda tuğla bünyesine farklı oranlarda (%2, %4, %6, %8 ve %10) pirinç kabuğu külü ikame edilerek harman tuğlasının ağırlıkça su emme ve basınç dayanımlarının incelenmesi amaçlanmıştır.

MATERYAL VE YÖNTEM

Materyal

Pirinç Kabuğu Külü

Pirinç kabuğunun yapısı, pirinç kabuğu külü özelliklerini belirlemektedir. Yüksek sıcaklıklarda kabuğun yakılması ile elde edilen külde organik bileşiklerden gelen az miktarda karbon bulunur. Tablo 1 de mineralojisi verilen pirinç kabuğu külünde silis %80-90 oranında bulunmaktadır (Özdemir, 2020).

Tablo 1. Pirinç kabuğu külü mineralojisi (Aygün, 2019)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	K_2O	MgO	Yanma Kaybı	pH
Değer %	93,15	0,21	0,21	0,41	22,31	0,45	2,36	9,83

Kil

Ana malzeme olarak kullanılan killi toprak, Kastamonu ili Taşköprü ilçesi sınırları içerisinde bulunan killi toprak yığınından elde edilmiştir. Kastamonu Üniversitesi Merkezi Araştırma Laboratuvarı Uygulama ve Araştırma Merkezi'nde incelenen killi toprakta en sık rastlanan elementin silis (Si) olduğu görülmüştür (Tablo 2). Ayrıca kil yapısında alüminyum (Al), kalsiyum (Ca), oksijen (O), demir (Fe) ve magnezyum (Mg) elementleri yer almaktadır.

Table 2. Kil mineralojisi (Çağlar, 2018)

Element	O	Mg	Al	Si	Nb	K	Ca	Fe
Ağırlık (%)	21,83	1,87	8,67	38,49	5,21	2,06	14,95	6,93

Karışım suyu

Pirinç kabuğu ikameli harman tuğla üretiminde Kastamonu ili şehir şebeke suyu kullanılmıştır.

Yöntem

Numunelerin üretilmesi

Çeyrekleme metodu ile alınan killi toprak numunesi laboratuvar tipi merdaneli ezicide öğütüldükten sonra 1mm'lik elek altı malzeme elde edilmiştir. Deneyde katkı maddesi olarak kullanılacak olan PKK de aynı işlemlere tabi tutulmuştur. Tuğla hamuru için hazırlanan karışım reçetesi Tablo 3' de verilmiştir. Yoğurma suyu hazırlanan numunelere her bir karışıma toplam malzeme ağırlığının %20'si oranında ilave edilmiştir.

Tablo 3. Numunelerin karışım reçetesi

Reçete	Pirinç Kabuğu Külü (%)	Killi Toprak (%)	Karışım suyu (%)
REF	---	100	20
%2 PKK	2	98	20
%4 PKK	4	96	20
%6 PKK	6	94	20
%8 PKK	8	92	20
%10 PKK	10	90	20

PKK ve killi toprak numuneleri ilk olarak etüv fırınında, etüv kurusu haline getirilmiştir. Daha sonra hassas terazide reçetede verilen oranlarda tartılarak hamur oluşturulacak karışım kabına alınmıştır. Tüm malzemeler kuru karışım yapıldıktan sonra su ilave edilerek karıştırılmış, oluşturulan tuğla hamuru rutubetini kaybetmeyecek biçimde 24 saat dinlendirilmeye bırakılmıştır. Dinlendirildikten sonra mikserde içinde hava kabarcığı kalmayıncaya kadar (5 dakika) karıştırılmıştır. Yoğurma işlemi bittikten sonra plastik kıvamda hazırlanan karışım çelik kalıplara dökülmüş, 24 saat normal hava şartlarında bekletildikten sonra kalıplardan çıkarılmıştır. Çıkarılan tuğla numuneleri yarı açık bir alanda 7 gün kurumaya bırakılmış, 7 günün sonunda 900 ve 1000 °C sıcaklıkta zaman ayarlı elektrikli kül fırında sıcaklığını kademeli bir şekilde arttırarak pişirilmiştir. Fırından çıkarılan tuğla numuneleri oda sıcaklığına getirilmiştir. Pişirilen numuneler su emme ve basınç dayanımı deneylerine tabi tutulmuştur.

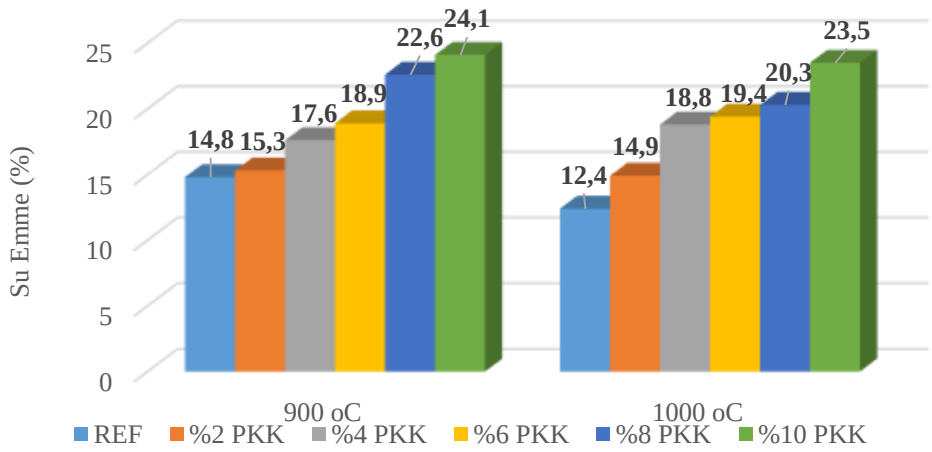
Numunelere Uygulanan Deneyler

Numunelerin su emme miktarını belirlemek için ASTM C373-14a' ye dayanan Arşimet yöntemi kullanılmıştır. Numunelerin basınç dayanımını ise ASTM C773-88 standardında belirtilen yöntemler kullanılarak ölçülmüştür. Tüm deney sonuçları 6 adet numunenin aritmetik ortalaması alınarak bulunmuştur.

ARAŞTIRMA SONUÇLARI VE DEĞERLENDİRME

Su Emme (Ağırlıkça) (%)

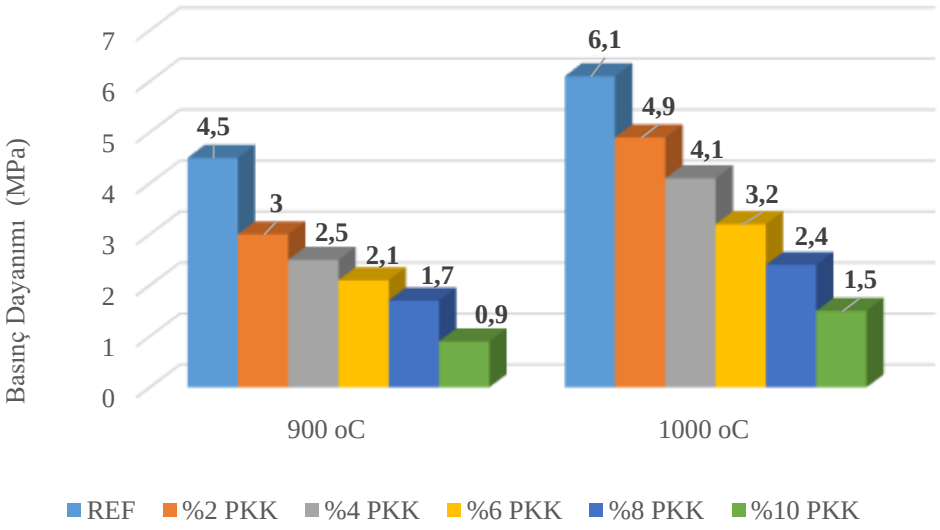
Su emme faktörü doğrudan kil tuğlaların dayanıklılığı ile ilişkilidir. Tuğla su emdiğinde kil tuğlanın dayanıklılığı azalmaktadır (Phonphuak, 2016). Pirinç kabuğu külü katkılı numunelerin su emme oranlarının verildiği Şekil 1'de sunulan grafik incelendiğinde; Her iki pişirilme sıcaklığında da katkı miktarının artması ile su emme oranında artış meydana gelmiştir. Numunelerin su emme değerleri 900 ºC'de %14,8 ila %24,1 arasında değişmektedir. En yüksek su emme oranı %24,1 ile %10 oranında PKK ikameli numunelerden, en düşük su emme oranı ise %14,8 ile referans numunelerden elde edilmiştir. 1000 ºC'de su emme değerleri %12,4 ile %23,5 arasında değişmektedir. En yüksek su emme oranı %10 oranında PKK ikameli numunelerden sağlanırken en düşük su emme oranı referans numunelerden sağlanmıştır.



Şekil 1. Katkılı numunelerin su emme grafiği

Basınç Dayanımı (MPa)

Tuğla yapı malzemesinin basınç dayanımı, yapı malzemeleri için en önemli mühendislik kalitesi endeksidir (Phonphuak, 2016). 900 ºC ve 1000 ºC'de pişirilen tuğla numunelerinin basınç dayanımı grafiği Şekil 2'de verilmiştir. Grafiğe göre; PKK ikamesinin artmasıyla numunelerin basınç dayanımında azalma meydana geldiği görülmüştür. Hem 900 ºC'de hem de 1000 ºC'de en düşük basınç dayanımı %10 oranında PKK ikameli numunelerden sağlanırken en yüksek basınç dayanımı ise referans numunelerinden elde edilmiştir.



Şekil 2. Katkılı numunelerin basınç dayanımı grafiği

SONUÇ VE ÖNERİLER

Bu çalışmada, harman tuğla bünyesine pirinç kabuğu külü ikame edilerek üretim yapılmıştır. Numuneler 900 ºC ve 1000 ºC de pişirilmiş ve üretilen numunelere su emme ve basınç dayanımı deneyleri uygulanmıştır. Deneylerden elde edilen sonuçlar değerlendirildiğinde;

900 ºC ve 1000 ºC'de pişirilen katkılı harman tuğla numunelerinde pirinç kabuğu külü miktarının artmasıyla su emme oranında artış meydana gelmiştir. 900 ºC'de pişirilen numunelere oranla bu artış daha az miktardadır. Pirinç kabuğu külü katkılı numunelerin su emme miktarları TS 705 standardında verilen değerin (%25) altında olduğu tespit edilmiştir.

900 ºC ve 1000 ºC'de pişirilen pirinç kabuğu katkılı harman tuğla numunelerinde katkı miktarının artmasıyla basınç dayanımında azalma meydana gelmiştir. Tarımsal atık olan pirinç kabuğu külünün belli oranlarda ikame edilerek harman tuğla numunesine katılması, tuğla özelliklerini iyileştireceği ve uygun oranlarda ikame edilmesi durumunda kullanımında herhangi bir sakınca olmayacağı sonucuna varılmıştır. Endüstriyel atıkların tuğla üretiminde kullanılması, atıkların bertaraf edilerek çevreyi korumakla kalmayacak, ayrıca atık depolama maliyetini düşürecektir.

KAYNAKLAR

Gupta V., Chai HK., Lu Y., Chaudhary S., (2020). A state of the art review to enhance the industrial scale waste utilization in sustainable unfired bricks. *Construction and Building Materials*, 254 (2020), 119220.

Kazmi, SMS, Abbas S., Munir MJ. Khitab A. (2016a). Exploratory study on the effect of waste rice husk and sugarcane bagasse ashes in burnt clay bricks, *Journal of Building Engineering*, 7 (2016) 372–378.

Kazmi SMS, Abbas S., Saleem MA., Munir MJ., Khitab A. (2016b). Manufacturing of sustainable clay bricks: utilization of waste sugarcane bagasse and rice husk ashes, *Construction and Building Materials*, 120 (2016) 29–41.

Silva GHMJ, Malwatta MPDP. (2018). Strength, durability, thermal and run-off properties of fired clay roof tiles incorporated with ceramic sludge, *Construction and Building Materials*, 179 (2018) 390–399.

Food and Agricultural Organization of United Nations, (2018). ‘‘Rice Market Monitor’ Newsletter 21(1).

Jittin V., Bahurudeen A, Ajinkya SD (2020). Utilisation of rice husk ash for cleaner production of different construction products, *Journal of Cleaner Production*, 263 (2020) 121578.

Bie RS, Song XF., Liu QQ, Ji XY, Chen P. (2015). Studies on effects of burning conditions and rice husk ash (RHA) blending amount on the mechanical behavior of cement. *Cement and Concrete Composites*, 55 (2015) 162–168.

Xu W., Lo YT, Ouyang D., Memon SA., Xing F., Wang W., Yuan X. (2015). Effect of rice husk ash fineness on porosity and hydration reaction of blended cement paste. *Construction and Building Materials*, 89 (2015) 90–101.

Rosa LC., Santor CG., Lovato A., Rosa CS, Güths S. (2015). Use of rice husk and sunflower stalk as a substitute for glass wool in thermal insulation of solar collector, Journal of Cleaner Production, 10 (2015) 90–97.

Sultana MS, Hossain MI, Rahman MA, Khan MH. (2011). Influence of rice husk ask and fly ash on properties of red clay, *Journal of Scientific and Industrial Research*, 2 (4) (2011) 674–677.

Mohan NV., Sathyanarayana PVV., Rao KS. (2012). Influence of rice husk ask and fly ash on properties of red clay, *International Journal of Engineering Research and Applications*, 2 (5), 906–910.

Hossain T., Sarker SK., Basak BC. (2011). Utilization potential of rice husk ash as a construction material in rural areas, *Journal of Building Engineering* 39 (2), 175–188.

Agbede OI, Joel M. (2011). Effect of rice husk ash (RHA) on the properties of Ibaji burnt clay bricks, *The American Journal of Scientific and Industrial Research*, 2 (4), 674–677.

Özdemir İ. (2020). *Pirinç kabuğu külü ikameli çimento harçlarının hidratasyon gelişiminin fiziksel ve mekanik özelliklerine etkisinin araştırılması*. (Yüksek Lisans Tezi), Düzce Üniversitesi Fen Bilimleri Enstitüsü, Düzce.

Aygün T. (2019). *Siltli bir zeminin kireç ve pirinç kabuğu külü ile iyileştirilmesi*, (Yüksek Lisans Tezi), Kırklareli Üniversitesi Fen Bilimleri Enstitüsü, Kırklareli.

Çağlar A. (2018). *Geleneksel Kastamonu evlerinde kullanılan harman tuğlası özelliklerinin bor atığı katkısı ile iyileştirilmesi üzerine deneysel araştırma*. (Doktora Tezi), Selçuk Üniversitesi Fen Bilimleri Enstitüsü, Konya.

ASTM C373-14a, Standard Test Method for Water Absorption, Bulk Density, Apparent Porosity, and Apparent Specific Gravity of Fired Whiteware Products, Ceramic Tiles, and Glass Tiles. West conshohocken, PA, USA: ASTM International; 2014.

ASTM C773-88, Standard Test Method for Compressive (Crushing) Strength of Fired Whiteware Materials. West conshohocken, PA, USA: ASTM International; 2011.

Phonphuak N., Kanyakam S., Chindaprasirt P. (2016). Utilization of waste glass to enhance physical–mechanical properties of fired clay brick. *Journal of Cleaner Production*, 112(4), 3057-3062.

TS 705, (1985). Fabrika tuğlaları-Duvarlar için dolu ve düşey delikli. Türk Standartları Enstitüsü, Ankara.

PİRİNÇ KABUĞU KÜLÜNÜN HARMAN TUĞLASININ BİRİM HACİM AĞIRLIK VE POROZİTE DEĞERLERİ ÜZERİNE ETKİSİNİN ARAŞTIRILMASI

Arzu Çağlar
ORCID ID: 0000-0003-3928-8059
Hakan Çağlar
ORCID ID: 0000-0002-1380-8637
Selçuk Çimen
ORCID ID: 0000-0002-1265-7312
Kırşehir Ahi Evran University, Turkey

Özet

Harman tuğlası genellikle tarihi yapıların restorasyonunda ve yığma yapım tekniğiyle üretilen yapıların inşaasında kullanılmaktadır. Hammaddesi olan kilin bol miktarda bulunması ve üretim tekniğinin kolay olması kullanılma sebeplerinin başında gelmektedir. Zaman içerisinde iyileştirilmeye gidilerek geliştirilen harman tuğlalar, son zamanlarda atık malzemelerle güçlendirilmiştir. Güçlendirme işleminde genellikle endüstriyel atıklar kullanımaktadır. Endüstriyel atıkların yanı sıra tarımsal atıklarda kullanılmaktadır.

Bu çalışmada, tarımsal bir atık olan pirinç kabuğunun yüksek sıcaklıklarda yakılması sonucu elde edilen pirinç kabuğu külünün harman tuğlası üzerindeki etkisinin araştırılması hedeflenmiştir. Bu hedef doğrultusunda tuğla bünyesine farklı oranlarda (%2, %4, %6, %8 ve %10) pirinç kabuğu külü ikame edilerek harman tuğlasının birim hacim ağırlık ve porozite değerlerinin incelenmesi amaçlanmıştır. Çalışma üç aşamadan meydana gelmiştir. Ilk aşamada; fabrika üretimi harman tuğlası (referans numune) üretim alanından temin edilmiş ve bu numunelere birim hacim ağırlık ve porozite deneyleri uygulanmıştır. İkinci aşamada; %2, %4, %6, %8 ve %10 oranında pirinç kabuğu külü ikame edilerek katkılı harman tuğlası üretimi yapılmıştır. Üretilen numuneler birim hacim ağırlık ve porozite deneylerine tabi tutulmuştur. Üçüncü ve son aşamada ise, referans ve üretilen pirinç kabuğu külü katkılı harman tuğlası numunelerinin karşılaştırılması yapılmıştır. Üretilen tüm harman tuğlası numuneleri 900 ºC ve 1000 ºC sıcaklıkta kademeli bir şekilde pişirilmiştir. Sonuç olarak, pirinç kabuğu külü oranının artmasıyla birim hacim ağırlık değerlerinde azalma, porozite değerlerinde ise artış meydana geldiği görülmüşür. En düşük porozite değeri 900 ºC'de referans numunelerinden sağlanırken, en iyi birim hacim ağırlık değeri ise 900 ºC'de %10 oranında pirinç kabuğu külü ikamesiyle elde edilmiştir. Ayrıca pirinç kabuğu külünün harman tuğla üretiminde kullanılmasında herhangi bir sakınca bulunmadığı vurgulanmıştır. Pirinç kabuğu külünün harman tuğla sektöründe kullanılması çevre kirliliğini azaltmaya katkıda bulunacağı bildirilmiştir.

Anahtar Kelimeler: Pirinç kabuğu külü, harman tuğla, birim hacim ağırlık, porozite

INVESTIGATION OF THE EFFECT ON THE BULK DENSITY AND POROSITY VALUES OF BLEND BRICK OF RICE HUSK ASH

Abstract

Blend brick is generally used in the restoration of historical buildings and in the construction of structures produced by the masonry construction technique. The abundance of clay and its easy production technique are the main reasons for its use. Blend bricks which have been improved over time, have recently been strengthened with waste materials. Industrial wastes are generally used in the reinforcement process. It is used in agricultural wastes as well as industrial wastes.

In this study, it was aimed to investigate the effect of rice husk ash obtained by burning rice husk, which is an agricultural waste, on the threshing brick. In line with this goal, it was aimed to examine the bulk density and porosity of the blend brick by substituting rice husk ash in different ratios (2%, 4%, 6%, 8% and 10%) to the brick body. The study consisted of three stages. In the first stage, factory production blend brick (reference sample) was procure from the production area and were applied to bulk density and porosity tests to these samples. In the second stage; Blend brick was produced by substituting 2%, 4%, 6%, 8% and 10% rice husk ash. The samples produced were subjected to bulk density and porosity tests. In the third and last stage comparison of reference and blended brick samples with additives rice husk ash were made. All the brick samples produced were fired in stages gradually at 900 ^{o}C and 1000 ^{o}C. As a result, it has been observed that bulk denstiy decrease and porosity values increase with the increase of rice husk ash ratio. While the lowest porosity value was obtained from reference samples at 900 ^{o}C, the best bulk density was obtained at 900 ^{o}C with 10% rice husk ash substitution. Also it was emphasized that there is any drawbacks in using rice husk ash in the production of blend bricks. It has been reported that the use of rice husk ash in the blend brick industry will contribute to reducing environmental pollution.

Keywords: Rice husk ash, brick, water absorption, compressive strength

GİRİŞ

Eski tuğlalar topraktan oluşmuş, elle kalıplanmış ve sıkıştırılmadan doğrudan güneş ışığı altında sertleştirilmiştir (Gupta vd., 2020). Teknolojinin gelişmesiyle tuğla, özel fırınlarda killi veya killi toprakların su ile karışımının ısıtılmasıyla elde edilen, bazen de kum ilave edilen bir yapı malzemesi olmuştur (Karaman, 2006). Tuğla üretimine uygun toprağın bol olması, üretimin ucuz ve kolay olması, tuğlaların inşaat sektöründe yoğun olarak kullanılmasına neden olmaktadır (Çimen vd.,2020; Canbaz ve Albayrak, 2014). Gelişen teknoloji ve kullanıcı gereksinimleri göz önüne alınarak tuğlanın iyileştirilmesi önem kazanmıştır. Bu iyileştirmede endüstriyel atıkların yanı sıra tarımsal atıklarda kullanılmaktadır. Bunlardan en önemlisi ise pirinç kabuklarının yakılması ile elde edilen pirinç kabuğu külüdür.

Tuğlaların özelliklerini geliştirirken kil için alternatif kaynaklara geçiş, inşaat endüstrisinde bir zorluk olşturmuştur (Silva ve Hansamali, 2019). Tuğlaların çeşitli parametreler üzerindeki performansını iyileştirmek için zaman zaman hammadde ve üretim süreçlerinde birçok değişiklik yapılmıştır (Gupta vd., 2020). Tuğla elemanların üretimi artarken, tarımsal kil

yatakları azalmaktadır. Bu nedenle araştırmacılar, farklı katkı maddeleri kullanarak ana bileşenlerin miktarını azaltmak ve tuğlanın özelliklerinde iyileştirmeler yapmak için çalışmalar yapmaktadır (Canbaz ve Albayrak, 2012). Bu araştırmalara göre, tuğla üzerine diyatomit ve perlit üretimi incelenmiş ve% 20 diyatomit kullanılarak uygun mekanik özellikler elde edilmiştir (Bideci ve Bideci, 2008). Tuğla üretiminde atık uçucu kül, bazaltik pomza ve tekstil külü kullanımı değerlendirilmiştir (Ulusoy, 2008). Bor atığı ve silis dumanı kullanılarak üretilen tuğlaların su emme özelliği incelenmiştir (Çağlar ve Çağlar, 2020. Ayrıca harman tuğla üretiminde bor atığı kullanılarak tuğla iyileştirilmesi yapılmıştır (Çağlar vd., 2019; Çağlar vd., 2018a, Çağlar vd, 2018b). Başka bir çalışmada, tuğla üretiminde farklı tipte tuğla atıkları çalışılmış, bunun sonucunda atık oranı mukavemet azalır ve pişirme sıcaklığı arttıkça mukavemet de artar (Yıldız, 2008).

Bu çalışmada, tarımsal bir atık olan pirinç kabuğunun yüksek sıcaklıklarda yakılması sonucu elde edilen pirinç kabuğu külünün harman tuğlası üzerindeki etkisinin araştırılması hedeflenmiştir. Bu hedef doğrultusunda tuğla bünyesine farklı oranlarda (%2, %4, %6, %8 ve %10) pirinç kabuğu külü ikame edilerek harman tuğlasının birim hacim ağırlık ve porozite değerlerinin incelenmesi amaçlanmıştır.

MATERYAL VE YÖNTEM

Materyal

Pirinç Kabuğu Külü

Pirinç kabuğunun yapısı, pirinç kabuğu külü özelliklerini belirlemektedir. Yüksek sıcaklıklarda kabuğun yakılması ile elde edilen külde organik bileşiklerden gelen az miktarda karbon bulunur. Tablo 1 de mineralojisi verilen pirinç kabuğu külünde silis %80-90 oranında bulunmaktadır (Özdemir, 2020).

Table 1. Pirinç kabuğu külü mineralojisi (Aygün, 2019)

	SiO_2	Al_2O_3	Fe_2O_3	CaO	K_2O	MgO	Yanma Kaybı	pH
Değer %	93,15	0,21	0,21	0,41	22,31	0,45	2,36	9,83

Kil

Ana malzeme olarak kullanılan killi toprak, Kastamonu ili Taşköprü ilçesi sınırları içerisinde bulunan killi toprak yığınından elde edilmiştir. Kastamonu Üniversitesi Merkezi Araştırma Laboratuvarı Uygulama ve Araştırma Merkezi'nde incelenen killi toprakta en sık rastlanan elementin silis (Si) olduğu görülmüştür (Tablo 2). Ayrıca kil yapısında alüminyum (Al), kalsiyum (Ca), oksijen (O), demir (Fe) ve magnezyum (Mg) elementleri yer almaktadır.

Table 2. Kil mineralojisi (Çağlar, 2018)

Element	O	Mg	Al	Si	Nb	K	Ca	Fe
Ağırlık (%)	21,83	1,87	8,67	38,49	5,21	2,06	14,95	6,93

Karışım suyu

Pirinç kabuğu ikameli harman tuğla üretiminde Kastamonu ili şehir şebeke suyu kullanılmıştır.

Yöntem

Numunelerin üretilmesi

Çeyrekleme metodu ile alınan killi toprak numunesi laboratuvar tipi merdaneli ezicide öğütüldükten sonra 1mm'lik elek altı malzeme elde edilmiştir. Deneyde katkı maddesi olarak kullanılacak olan PKK de aynı işlemlere tabi tutulmuştur. Tuğla hamuru için hazırlanan karışım reçetesi Tablo 3' de verilmiştir. Yoğurma suyu hazırlanan numunelere her bir karışıma toplam malzeme ağırlığının %20'si oranında ilave edilmiştir.

Tablo 3. Karışım reçetesi

Reçete	Pirinç Kabuğu Külü (%)	Killi Toprak (%)	Karışım suyu (%)
REF	---	100	20
%2 PKK	2	98	20
%4 PKK	4	96	20
%6 PKK	6	94	20
%8 PKK	8	92	20
%10 PKK	10	90	20

PKK ve killi toprak numuneleri ilk olarak etüv fırınında, etüv kurusu haline getirilmiştir. Daha sonra hassas terazide reçetede verilen oranlarda tartılarak hamur oluşturulacak karışım kabına alınmıştır. Tüm malzemeler kuru karışım yapıldıktan sonra su ilave edilerek karıştırılmış, oluşturulan tuğla hamuru rutubetini kaybetmeyecek biçimde 24 saat dinlendirilmeye bırakılmıştır. Dinlendirildikten sonar mikserde içinde hava kabarcığı kalmayıncaya kadar (5 dakika) karıştırılmıştır. Yoğurma işlemi bittikten sonra plastik kıvamda hazırlanan karışım çelik kalıplara dökülmüş, 24 saat normal hava şartlarında bekletildikten sonra kalıplardan çıkarılmıştır. Çıkarılan tuğla numuneleri yarı açık bir alanda 7 gün kurumaya bırakılmış, 7 günün sonunda 900 ve 1000 °C sıcaklıkta zaman ayarlı elektrikli kül fırında sıcaklığını kademeli bir şekilde arttırarak pişirilmiştir. Fırından çıkarılan tuğla numuneleri oda sıcaklığına getirilmiştir. Pişirilen numuneler su emme ve basınç dayanımı deneylerine tabi tutulmuştur.

Numunelere Uygulanan Deneyler

Numuneler üzerinde uygulanan birim hacim ağırlık ve porozite deneyi TS EN 772-4 "Kagir Birimler- Deney Metotları- Bölüm 4: Tabii Taş Kagir Birimlerin Toplam ve Görünen Porozitesi İle Boşluksuz ve Boşluklu Birim Hacim Kütlesinin Tayini" standardı baz alınarak yapılmıştır. Standarda göre; 72 adet numune, su dolu bir kap içerisinde 3 saat süreyle kaynatılmıştır. Süre sonunda kap içerisinden alınarak, su dolu bir kaba konulmuş ve su içerisindeki asılı ağırlıkları ölçülmüştür. Kuru bir bez yardımıyla yüzey suyu alınan

numunelerin suya doygun yüzey kuru ağırlıkları ölçülmüştür. Daha sonra örnekler etüvde +105 ^{0}C'de değişmez ağırlığa gelinceye kadar kurutulmuştur. Bulunan değerlere göre numunelerin birim hacim ağırlık değerleri formül 1.1'de, porozite değerleri ise formül 1.2'de verilen formül kullanılarak hesaplanmıştır. Formülde yer alan P_1; Kuru ağırlık, P_2; Suya doygun havadaki ağırlık, P_3; Suya doygun sudaki ağırlık

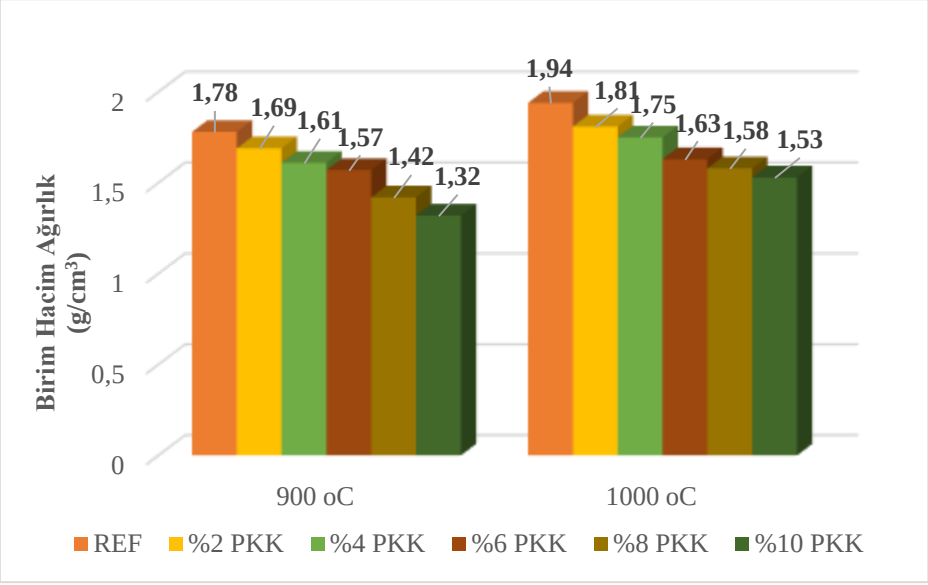
$$\textbf{Birim Hacim Ağırlık (g/cm}^3\textbf{)} = P_1/P_2\text{-}P_3 \qquad (1.1)$$

$$\textbf{Porozite (\%)} = ((P_2\text{-}P_1) / (P_2\text{-}P_3)) \text{ x } 100 \qquad (1.2)$$

ARAŞTIRMA SONUÇLARI VE DEĞERLENDİRME

Birim Hacim Ağırlık (g/cm^3)

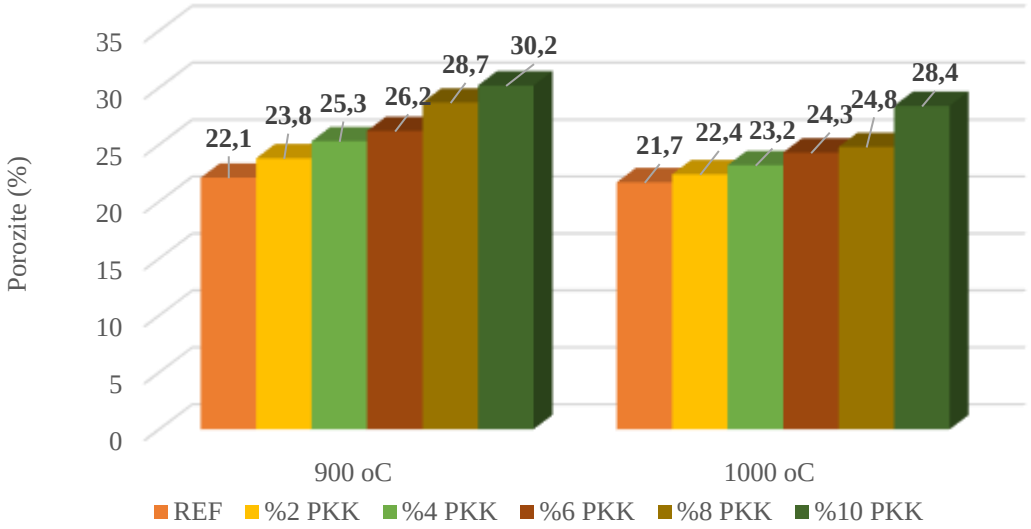
Harman tuğlalarının birim hacim ağırlığı, tuğlaların performansı üzerinde önemli bir parametredir. Bu, toplam ölü yükün azaltılması yönünden önem arz etmektedir (Puhonphuank vd., 2019). Birim hacim ağırlık değerlerini gösteren ve Şekil 1'de verilen grafik incelendiğinde; birim hacim ağırlık değerleri ve pirinç kabuğu külü miktarı arasında ters orantı olduğu görülmektedir. Bir başka deyişle pirinç kabuğu miktarının artmasıyla numunelerin birim hacim ağırlık değerlerinde azalma meydana geldiği görülmüştür. 900 ^{o}C'de pişirilen numunelerin birim hacim ağırlık değerleri 1,32-1,78 g/cm^3 arasında değişmektedir. En yüksek birim hacim ağırlık değeri 1,78 g/cm^3 ile referans numunelerinden elde edilmiştir. En düşük değer ise %10 PKK ikameli tuğla numunelerinden gözlenmiştir. 1000 ^{o}C'de pişirilmiş tuğla numunelerinin birim hacim ağırlık değerleri 1,53-1,94 g/cm^3 arasında değişmektedir. Çalışmada en düşük birim hacim ağırlık değeri 900 ^{o}C'de pişirilmiş %10 oranında PKK ikameli numunelerden elde edilmiştir.



Şekil 1. Katkılı numunelerin birim hacim ağırlık grafiği

Porozite (%)

Porozite değerlerinin verildiği Şekil 2 incelendiğinde; her iki sıcaklıkta da PKK miktarının artması ile porozite değerlerinin artığı görülmüştür. 900 ºC'de en düşük porozite değeri %22,1 ile referans numunelerden sağlanırken, en yüksek değer ise %30,2 ile %10 oranında PKK ikamesi ile elde edilmiştir. Bu sıcaklıkta porozie değerleri %22,1-%30,2 arasında değişmektedir. 1000 ºC'de en düşük porozite değeri %21,7 ile referans numunelerden sağlanırken, en yüksek değer ise %28,4 ile %10 oranında PKK ikamesi ile elde edilmiştir. Tüm sıcaklık ve oranlar arasında en düşük porozite değeri 1000 ºC'de pişirilen referans numuneden elde edilmiştir.



Şekil 2. Katkılı numunelerin porozite grafiği

SONUÇ VE ÖNERİLER

Bu çalışmada, harman tuğla bünyesine pirinç kabuğu külü ikame edilerek üretim yapılmıştır. Numuneler 900 ºC ve 1000 ºC de pişirilmiş ve üretilen numunelere birim hacim ağırlık ve porozite deneyleri uygulanmıştır. Deneylerden elde edilen sonuçlar değerlendirildiğinde;
Katkılı harman tuğla numunelerinde pirinç kabuğu külü miktarının artmasıyla birim hacim ağırlık değerinde azalma meydana gelmiştir. 900 ºC'de pirinç kabuğu külü katkılı numunelerin porozite değerleri %4 ve üzeri katkı oranları, 1000 ºC'de ise %10 oranında katkı miktarlı harman tuğla standartların üzerindedir. 900 ve 1000 ºC'de pişirilen pirinç kabuğu katkılı harman tuğla numunelerinde katkı miktarının artmasıyla porozite değerlerinde artış meydana gelmiştir. Tarımsal atık olan pirinç kabuğu külünün belirli oranlarda harman tuğla üretiminde kullanılmasında herhangi bir sakınca olmadığı sonucuna varılmıştır.

KAYNAKLAR

Gupta V., Chai HK., Lu Y., Chaudhary S., (2020). A state of the art review to enhance the industrial scale waste utilization in sustainable unfired bricks. *Construction and Building Materials*, 254 (2020), 119220.

Karaman S (2006) Color Formation in Building Bricks. *Kahramanmaraş Sütçü İmam University Journal of Engineering Sciences*, 9, 125–129.

Çimen S., Çağlar H., Çağlar A., Can Ö. (2020), 'Effect of Boron Wastes on the Engineering Properties of Perlite Based Brick, *Türk Doğa ve Fen Dergisi*, 9(2), 50-56.

Canbaz M., Albayrak U. (2014). Freeze-Thaw Durability of Blended Harman Bricks That Used As Infill Material in Reinforced Concrete Framed Buildings. *APCBEE Procedia* 9 (2014) 258 – 263.

Silva GHMJ, Hansamali E. (2019). Eco-friendly fired clay bricks incorporated with porcelain ceramic sludge. *Construction and Building Materials*, 228 (2019), 116754.

Canbaz M and Albayrak U. (2012). Utilization of Bottom Ash in Lightened Harman Brick Production. *10th International Congress on Advances in Civil Engineering*, Ankara.

Bideci A, Bideci ÖS. (2008). Diatonit hammaddesinin tuğla üretiminde kullanılabilirliğinin araştırılması. Trakya University Journal of Natural Sciences, 8(2), 69-76.

Ulusoy A. (2008). Uçucu kül-tekstil fabrikası atık külü ve bazaltik ponzanın tuğla üretiminde katkı olarak kullanılması. (Yüksek Lisans Tezi), Kahramanmaraş Sütçü İmam Üniversitesi Fen Bilimleri Enstitüsü. Kahramanmaraş.

Çağlar A., Çağlar H. (2020), Çevre Dostu Tuğla Üretiminde Aynı Oranda Silis Dumanı Ve Bor Atığı Kullanımının Su Emme Özelliğine Etkisinin Araştırılması, *Anadolu 5. Uluslararası Uygulamalı Bilimler Kongresi*, Diyarbakır.

Çağlar A., Korkmaz S.Z., Demirel B., Çağlar H., (2019). Use Of Boron Wastes As An Additive in Blend Bricks, *Research & Revıews In Archıtecture, Planning And Design*, Gece Kitaplığı, 5-14

Çağlar A., Çağlar H., Şahin A., Uzunalioğlu H., (2018a). Experimental Research on Water Absorption Properties of Blended Bricks of Fly Ash Based, Blast Furnace Slag Addition, *Current Academic Studies in Engineering Sciences*, İvpe Yayınevi, Cilt II, 719-726.

Çağlar H., Çimen, S., Çağlar A., (2018b), Determination of Amount of Capilarity Water Absorption of Perlite and Boron Waste Additive Produced Brick Building Material, *I. International Architecture Symposium*, Diyarbakır

Yıldız K. (2008). Farklı tuğla fabrikası atıklarının tuğla üretiminde kullanılabilirliği. *Yapı Teknolojileri Elektronik Dergisi*. 4(2), 31-41.

Özdemir İ. (2020). Pirinç kabuğu külü ikameli çimento harçlarının hidratasyon gelişiminin fiziksel ve mekanik özelliklerine etkisinin araştırılması. (Yüksek Lisans Tezi), Düzce Üniversitesi Fen Bilimleri Enstitüsü, Düzce.

Aygün T. (2019). Siltli bir zeminin kireç ve pirinç kabuğu külü ile iyileştirilmesi, (Yüksek Lisans Tezi), Kırklareli Üniversitesi Fen Bilimleri Enstitüsü, Kırklareli.

Çağlar A. (2018). Geleneksel Kastamonu evlerinde kullanılan harman tuğlası özelliklerinin bor atığı katkısı ile iyileştirilmesi üzerine deneysel araştırma. (Doktora Tezi), Selçuk Üniversitesi Fen Bilimleri Enstitüsü, Konya.

TS EN 772-4, TS EN 772-4, (2000). Kagir Birimler- Deney Metotları- Bölüm 4: Tabii Taş Kagir Birimlerin Toplam ve Görünen Porozitesi İle Boşluksuz ve Boşluklu Birim Hacim Kütlesinin Tayini Türk Standartları Enstitüsü, Ankara.

Phonphuaka N., Saengthongb C. , Srisuwan A. (2019). Physical and mechanical properties of fired clay bricks with rice husk waste addition as construction materials, *Materials Today: Proceedings* 17 (2019) 1668–1674.

PLACE DU CLIMAT DANS LE CHOIX DES TOURISTES EN DESTINATIONS DE LA CITE HISTORIQUE D'ABOMEY AU BENIN

BOKO Nouvêwa Patrice Maximilien
Université d'Abomey-Calavi (Bénin)

Résumé
Dans le secteur du tourisme, l'ensemble des acteurs ont conscience de l'importance du « temps qu'il fait » à cause des activités touristiques qui sont font en plein air. Cependant, il y a très peu de connaissance en ce qui concerne la place du climat dans le choix des touristes au Bénin, L'objectif de ce travail vise à combler ce vide en ce qui concerne la destination de la cité historique d'Abomey.
L'approche méthodologique s'est essentiellement accentuée sur les travaux de terrain. Les principaux groupe cible sont les touristes. L'échantillon des touristes à partir d'une population mère non fixe (population infini) a été déterminé par le choix aléatoire mais avec les critères de choix raisonné.
L'ensemble des résultats permet de conclure que la cité historique d'Abomey compte plusieurs attraits touristiques dont la visite est susceptible d'être influencé par le climat. Il s'agit principalement des marchés historiques et lieux sacrés, les places historiques. Quant au poids du climat dans la prise de décision des touristes, on remarque qu'il varie n fonction du profil des touristes, selon notamment le sexe, l'âge, la présence d'enfants et surtout la région de résidence ou de provenance. Ainsi la catégorie de personne pour qui le climat est très important au point d'influencer la décision de voyage sont les femmes (44 %), les jeunes entre 18e et 25 ans) (49 %), les parents ayant des enfants de moins de 15 ans (47%) et enfin les touristes provenant de l'Europe (50 %) Amérique (49 %) Asie (49 %) et Afrique du nord (45 %). Ces résultats ont permis de distinguer les caractéristiques des touristes climato-sensibles et les touristes climato-insensible. Mais globalement, les trois premières craintes climatiques des touristes sont dans l'ordre décroissant : un temps pluvieux (80 %), une température trop élevée (79 %) et un faible ensoleillement (67 %)
Bien que préliminaire, ces résultats peuvent aider la politique gouvernementale à redynamiser le secteur touristique dans le contexte des changements climatique

Mots clés : Abomey, Bénin, tourisme, climat, choix, changements climatiques

Abstract
Place of climate in the choice of tourists to destinations of the historic city of Abomey In Benin
In the tourism sector, all stakeholders are aware of the importance of "the weather" because of the tourist activities that are done outdoors. However, there is very little knowledge regarding the place of the climate in the choice of tourists in Benin. The objective of this work is to fill this void regarding the destination of the historic city of Abomey.
The methodological approach has mainly focused on field work. The main target group are tourists. The sample of tourists from a non-fixed mother population (infinite population) was determined by random choice but with reasoned choice criteria.

All the results allow us to conclude that the historic city of Abomey has several tourist attractions whose visit is likely to be influenced by the climate. These are mainly historic markets and sacred places, historic squares. As for the influence of the climate in tourist decision-making, we note that it varies depending on the profile of tourists, in particular according to sex, age, presence of children and especially the region of residence or origin. Thus the category of people for whom the climate is very important to the point of influencing the travel decision are women (44%), young people between the ages of 18 and 25) (49%), parents with children under 15 years (47%) and finally tourists from Europe (50%) America (49%) Asia (49%) and North Africa (45%). These results made it possible to distinguish the characteristics of climate-sensitive tourists and climate-insensitive tourists. But overall, the top three climatic fears of tourists are in decreasing order: rainy weather (80%), too high a temperature (79%) and little sunshine (67%)
Although preliminary, these results may help government policy to revitalize the tourism sector in the context of climate change.

Keywords: Abomey, Benin, tourism, climate, choice, climate change

REMEDIATION AT POINT SOURCE CONTAMINATED SITES WITH BARRIER SYSTEMS

Menşure Erişgin
ORCID 0000-0002-5093-9994
Emre Burcu Özkaraova
ORCID 0000-0001-5033-2853
Ondokuz Mayis University, Samsun, TURKEY

Abstract
Various point sources cause to soil and groundwater pollution. The fate and risk of contaminants to the human and environmental health depend on the characteristics of contaminants, geology and hydrogeology of area. Different methods are available for the remediation of contaminated sites. Impermeable and permeable barrier systems may be used as single or combined remedial action on site. While impermeable barrier helps to encapsulate the main source of pollution, the enlargement of plume may be limited. Permeable barrier systems, on the other hand, are accepted as a sustainable groundwater clean-up technology relying on the removal of contaminants during the migration of plume through the reactive zone. The contaminated groundwater flows under its natural gradient enabling a convenient, efficient and cost-effective passive treatment system. No aboveground facilities and energy requirements are exiting. The reactive materials used in the treatment zone are selected according to the features of contaminant and related removal process (e.g. adsorption, oxidation/reduction, bio-transformation). This paper aims to summarize the different treatment processes, contaminant group of concern and system configurations. The steps of treatment design will be summarized.

Keywords: groundwater pollution, passive treatment system, impermeable and permeable barrier systems

INTRODUCTION

Clean drinking water and food supply are among the most important requirements in the world. With a share of approximately 30% groundwater is the most important freshwater resource widely used as drinking water in many countries of the world (Zhai et al, 2017). Due to populational growth and developments in consumption habits intensive industrial and agricultural production, caused to the detoriation of water resources which requires management efforts to preserve water quality and quantity.

The main causes of pollution in groundwater, apart from industrial and agricultural activities, have been explained as leakage from waste disposal and mining areas, septic tanks and sewage network, under and over ground storage tanks, discharge of treatment sludge and leaks from big animal farms (Wakida and Lerner, 2005, Pastén-Zapata et al., 2014). Main point sources for soil and groundwater polltion can be seen in Figure 1.

In order to reduce the risk from contaminant sources to human and environmental health various remediation measures can be taken. Remedial actions can also be divided as control measures and clean-up techniques. Impermeable barrier systems will help to restrict clean groundwater movement into the contamination zone and/or contaminant transport away from the sites by encapsulation as a control technique. Permeable reactive barriers, on the other hand, contain reactive treatment zones filled with reactive media enabling removal of contaminants as the plume migrates through the zone.

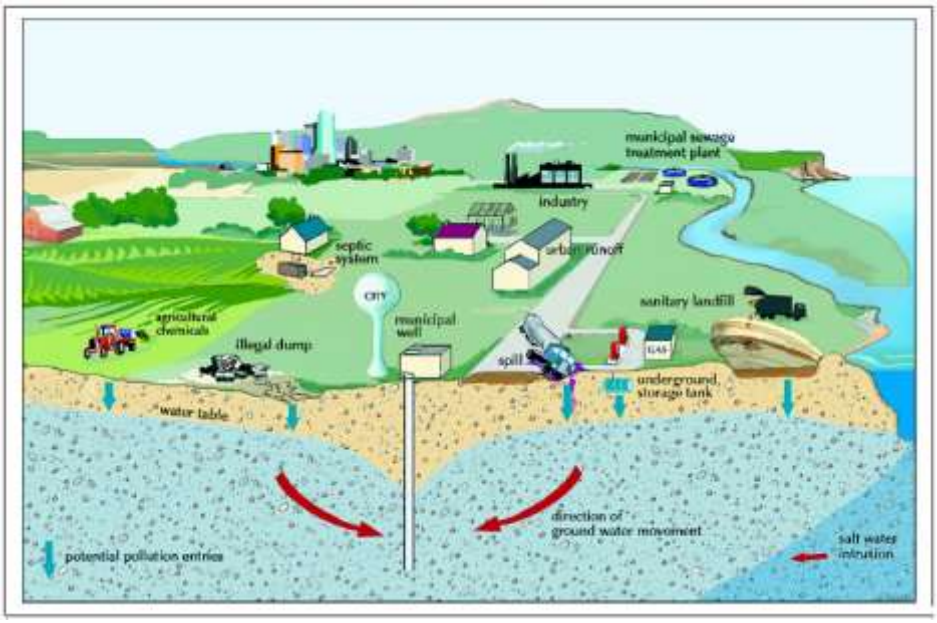


Figure 1. Main point sources of groundwater contamination (Barilari et al., 2020)

REMEDIAL ACTIVITIES AT POINT SOURCES WITH PERMEABLE REACTIVE BARRIER SYSTEM

In order to reduce the risk from contaminant sources to human and environmental health various remediation measures can be taken. Permeable Reactive Barriers (PRB) are one of the innovative technologies used for on-site remediation of contaminated groundwater (USEPA, 2012). As can be seen from Figure 2, PRB basically involves the enplacement of a reactive zone perpendicular to the contaminated groundwater plume to create a vertical reactive environment (Obiri-Nyarko et al., 2014). While the contaminant plume, flows under its natural gradient through this reactive treatment zone pollutants are retained and groundwater purification happens.

Some pollutants are removed by physical contact, others by biogeochemical processes in the treatment zone, thus providing conditions favorable for pollutant immobilization or biodegradation (Obiri-Nyarko et al., 2014). PRB systems are also facilated to prevent the migration of groundwater pollutants into uncontaminated aquifers, which can be difficult to find and fix (Liu et al., 2006).

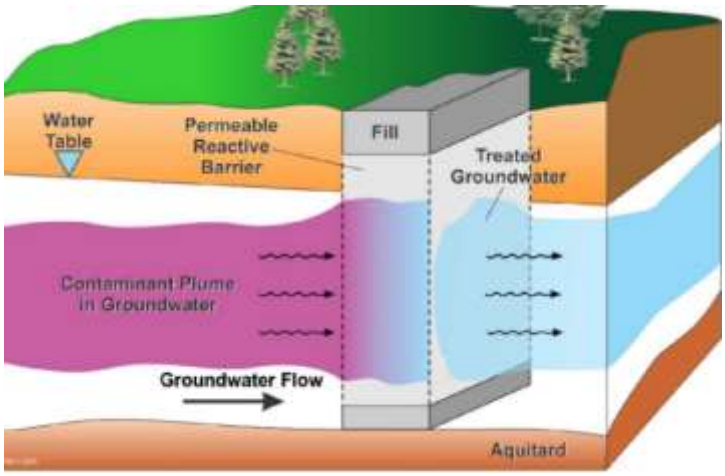


Figure 2. Schematic View of the Permeable Reactive Barrier Installation (FRTR, 2021)

Efforts are still being made to find more suitable and cost-effective material to expand the spectrum of pollutants that can be removed with PRBs. Similarly, innovative configurations are continuously developed to enlarge their area of application and easiness of construction and maintenance. Important design criteria can be are as follows:

1. Groundwater hydrology
2. Hydraulic gradient
3. Groundwater flow rate and direction
4. Groundwater aquifer depth
5. Soil permeability
6. Water quality
7. Contaminant characteristics

Various materials can be used to physically, chemically or biologically removal of pollutants. Commonly used reactive materials in barriers are granular zero valent iron, activated carbon, granular peat moss, peat, zeolite and various clay minerals. Removal mechanism and relevant reactives can be seen in Table 1. Pollutants tested for barrier removal are chlorinated solvents, gasoline, BTEX, PAHs, pesticides, metals, arsenite / arsenate, uranium, nitrobenzene and mine drainage (Rasmussen et al., 2002). Criteria for the selection of reactive materials are as follows:

- ✓ Reactivity
- ✓ Hydraulic performance
- ✓ Stability
- ✓ Environmental compatibility
- ✓ Availability and cost

Tablo 1. Summary of reactive materials for metals and radionuclides (Rhiruvenkatachari et al., 2008)

Mechanism	Reactive Materials
Inorganic Sorption	Activated carbon, Activated alumina, Bauxite, Exchange resin, Iron oxides and hydroxides, Magnetite, Peat, Humate, Lignite, Coal, Phosphates, Titanium dioxide, Zeolite
Inorganic Precipitation	Biota, Dithionite, Iron hydroxides, Iron carbonate, Iron sulfide, Hydrogen sulfide gas, Lime, Fly ash, Limestone, Zero-valence metal, Magnesium hydroxide ($Mg(OH)_2$), Barium chloride ($BaCl_2$), Calcium sulfate ($CaSO_4$)
Inorganic Degradation	Biota, Zero-valence metals
Organic Degradation	Ferrous minerals, Oxygen release, Ultra Microbacteria, Zero Valued Metals
Organic Sorption	Zeolite, Activated carbon, Clay

Table 2. Advantage and disadvantages of PRB systems (Maitra, 2019; Thiruvenkatachari et al., 2008)

Advantage	Disadvantage
Relatively inexpensive due to low energy cost, low maintenance and monitoring cost, with the exception of initial installation cost	Requires detailed geological and hydrogeological site characterization and accurate plume delineation
Allows treatment of wide range of pollutants	Restricted to treatment of dissolved pollutants
Allows treatment of multiple pollutants/multiple plumes with sequenced and or multiple PRBs	Plumes at great depth require different PRB configurations (e.g. alloys of permeable wells)
Allows usage of sustainable and cheap reactive materials	Aquifer systems with too high or low hydraulic conductivities may result in higher installations cast
Aboveground usage is not restricted and does not influence PRB performance	Below ground structıres (e.g. services, foundation) may influence installation and performance
No cross-media contamination as contaminants remain below ground	Limitations due to reduction in pore size (clogging) by precipitates etc
Require occasional monitoring or PRB performance and maintenance	May require long-term monitoring under extreme conditions (presence of persistent pollutants and low hydraulic conductivity)

Permeable Reactive Barrier Configurations

Two installation schemes are more frequently used in field applications; continuous and funnel-and-gate system (Xenidis et al., 2002)**.** The continuous PRB configuration consists of a single trench filled with reactive materials to create a zone enplaced perpendicular infront of the contaminant plume (Figure 3). The groundwater flow is encouraged to flow through the reactive zone by selecting the permeability of reactive material equal or greater than the permeability of aquifer (USEPA, 1998). Therefore, fine reactive materials are generally blended with other coarse materials like sand. Consequently, a higher water velocity in the reactive zone is ensured and thus the overflow around or underneath the trench is avoided.

Figure 3. Continous Wall (ITRC, 2005; Geo-Solutions, 2021)

The funnel and passage system uses shear walls (funnels) that guide groundwater and smoke to flow contaminated water through a gate or gates containing highly conductive reagents. Reagents in gates are often designed for easy change and this is often considered an advantage of the funnel and gate system. Figure 5 represents different gate and reactive material configurations that enable a more effective capture of the whole plume and retainment of contaminants.

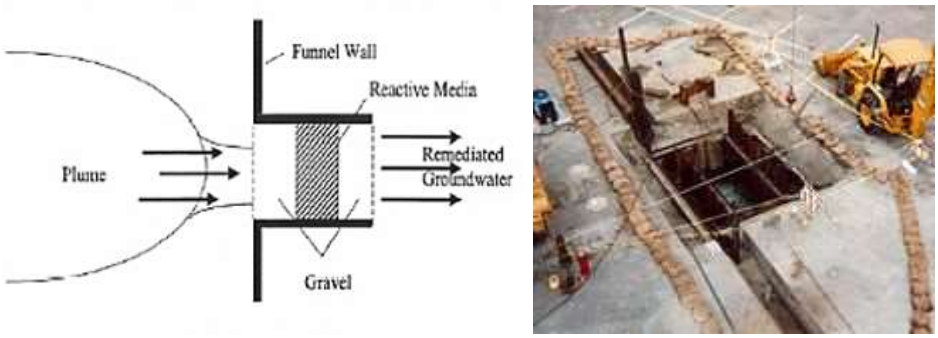


Figure 4. Funnel And Gate (ITRC, 2005; Wikiwand, 2021)

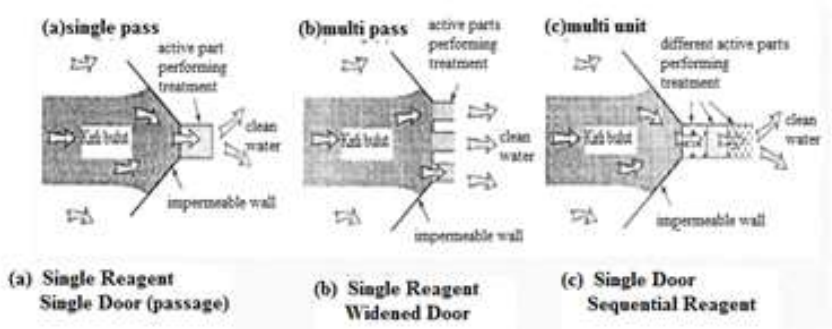


Figure 5. Other forms of funnel and gate system (Houlihan and Lucia, 1999)

Innovative PRB systems have been developed to overcome some obstacles such as barrier depth, bigger plume size, contaminant strength (e.g. multiple pollutants and/or mechanisms), cost and easiness of construction. As presented in Figure 6, multiple unpumped wells that have been closely located and thus function like discontinuous PRB systems may be a solution like multi gate funnel-gate PRBs for large plumes with poorly defined, widely distributed or inaccessible source areas (Wilson et al., 1997). The multiple unpumped well system involves creating a treatment zone within the contaminant boundary by drilling series

of bore holes or injection of reactive material (chemical/particulate mixture) into the treatment zone. Potential advantages of this approach are that there is no need to construct a trench and possible aquifer access at greater depths. Ususally, two or three rows of overlapping, interlocking columns can offer effective barrier. These PRB systems also enable easy exchange of filter media emplaced as fully-penetrating cartridges or cassettes.

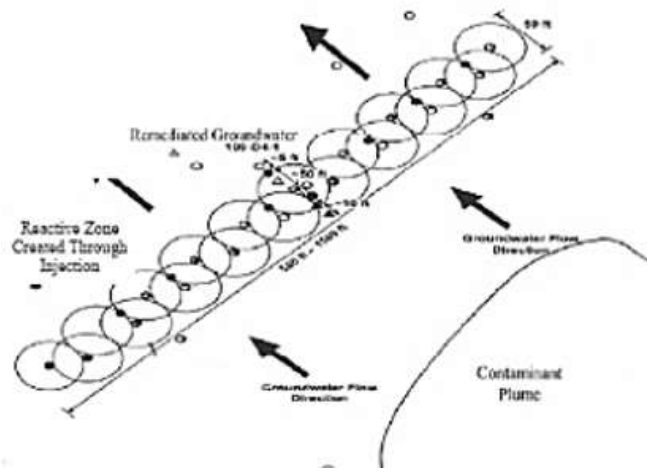


Figure 6. Multiple unpumped wells working as injection well configuration (ITRC, 2005)

Plumes that contain multiple contaminants or that require more than one removal mechanism may be trapped with multiple enplaced PRBs. These may also reduce intermediate products directly or by extending the reaction zone, especially when emplaced close to each other (Figre 7). Horizontal reactive media treatment (HRX) wells involve a fully screened large-diameter horizontal well located underground roughly parallel to the main ground water flow directions (Divine et al., 2018). This treatment technique has been developed to capture the contaminated ground water and as passive flow continuous pollutants are cleaned-up by the reactive media in the well (Figure 8).

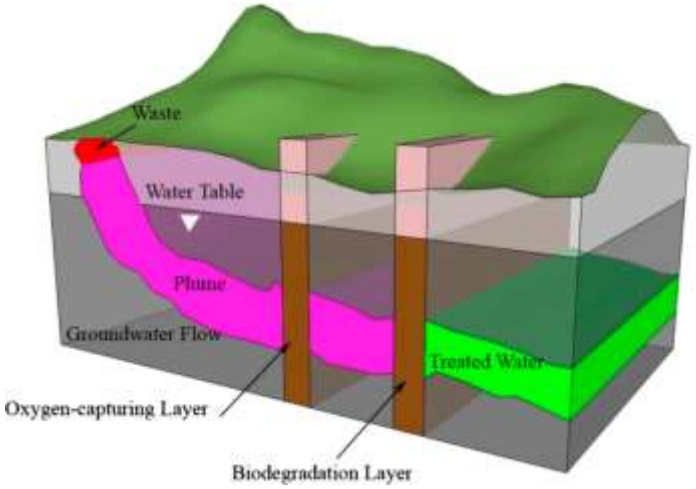


Figure 7. Schematic presentation of a multiple biobarrier system (Liu et al., 2013)

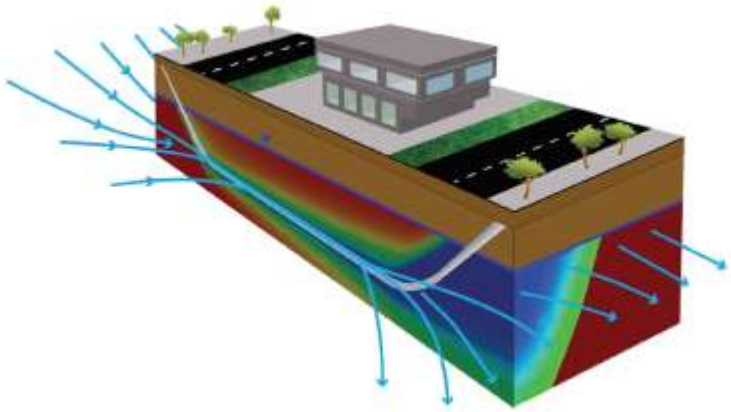


Figure 8. Conceptional presentation of a horizontal reactive media treatment well (Divine et al., 2018).

Reactive Material Selection

The selection of reactive materials requires several steps which are as stated below:
- Contaminant distribution in the plume
- Determination removal mechanism regarding the contaminants of concern
- Determination of reactive material that stimulates the reaction mechanism
- Determination of residence time to ensure the contaminants of concern
- Determination of reactive size and/or permeability of media that enables the flow rate neccessary for ensuring the residence time

To gather the required knowledge batch and continuous flow lab-scale experiments are conducted. Leaching tests enable the evaluation of the potential of reactive to release organic and/or inorganic constituents and avoid their pollution swapping potential (Healy et al., 2012). Batch reactors, specifically developed for contaminant removal of concern, help to determine the appropriatness of reactive material, optimum treatmment conditions such as approximate residence time, particle size and percentage of material, optimum environmental conditions (redox potential, pH, etc). Column studies, on the other hand, enable a better understanding of materials removal potential in longer time-scales under continuous flow conditions. For exsample results of a leaching study showed that organic materials like tea factory wastes and almond shell leach organic constituents (expressed as chemical oxygen demand) as high as 5600 and 200 mg O_2/L, respectively. While almond shells may not represent a long term potential, tea factory waste may not support the removal mechanism due to inhibition. Column tests with peanut shell, on the other hand, reflected excellent removal efficienies for higher substrate percentages. In another laboratory study in which physicochemical and biological processes were combined, results showed that columns with organic substrates prolonged the lifetime of activated carbon or when used as the single reactive represented removal efficiencies at the same level (Erişgin, 2021).

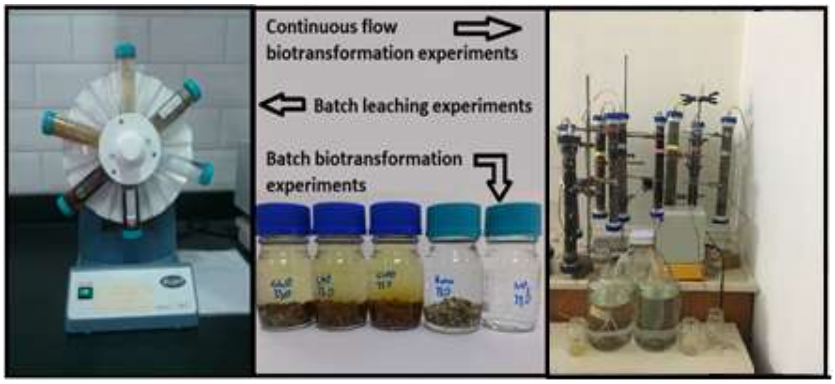


Figure 9. Batch and continuous flow experiments to test the potential use of agricultural residues as bioreactor materials.

CONCLUSION

Permeable reactive barrier systems are known as sustainable contaminated groundwater treatment options. They have been favoured due to their low cost and easy mantainace. To capture and treat the contaminated plume various conventional and innovative PRB systems have been used and /or developed. Besides conventional PRBs like continuous trench and funnel-gate systems more recently developed configurations like unpumped wells, horizontal well systems enable passive treatment system. Everey country has its own capacity of reactive materials which can be selected with the help of batch and continuous flow experiments. While reactives with very high capacity can be used in continuous trench PRBs, others with relatively lower capacities may be used in unpumped wells with fully-penetrating exchangable cassettes.

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REFERENCES

Gavaskar AR, Gupta N, Sass BM, Janosy RJ, O'Sullivan D 1998. Permeable barriers for groundwater remediation: design, construction, and monitoring, Battelle Press, Columbus, Ohio.

Aydın S 2018. Investigation of nitrate removal from groundwater using organic wastes, MSc. Thesis Department of Environmental Engineering, Ondokuz Mayis University, Samsun, Turkey.

Barileri A, Londoio MQ, Paris MDC, Lima MA, Massone HE 2020. Groundwater pollution from point sources. A hazard index to protect water supply coasts in intermediate cities. Groundwater for Sustainable Development,10: 100363.

Carey MA, Fretwell BA, Mosley NG, Smith JWN 2002. Guidance on the use of permeable reactive barriers for remediating contaminated groundwater. National Groundwater & Contaminated Land Centre report NC/01/51. Environment Agency, Bristol, UK.

Divine CE, Roth T, Crimi M, DiMarco AC, Spurlin M, Gillow J, Leone G 2018. The Horizontal reactive media treatment well (HRX well) for passive in-situ remediation. Groundwater Monitoring and Remediation, 38: 56-65.

Erişgin M 2021 Evaluation of denitrification and adsorption processes for sequential nitrate removal from groundwater by reactive barrier system, MSc. Disertation Thesis, Ondokuz Mayis University, Samsun, Turkey.

Federal Remediation Technologies Roundtable (FRTR) 2020. Permeable reactive barriers, Available at: https://frtr.gov/matrix/Permeable-Reactive-Barriers/ [03.03.2021]

Gavaskar AR 1999. Design and construction techniques for permeable reactive barriers. Journal of
Hazardous Materials, 68:41–71.

Healy M, Ibrahim TG, Lanigan GJ, Serrenho AJ, Fenton O 2012. Nitrate removal rate, efficiency and pollution swapping potential of different organic carbon media in laboratory denitrification bioreactors. Ecological Engineering. 40:198-209.

ITRC Mining Waste Team 2005. Permeable reactive barrier systems. ITRC. Available at: http://www.itrcweb.org/miningwaste-guidance/to_permeable.htm [03.03.2021]

ITRC Technology Update Team 2011. Permeable reactive barrier: Technology update. Technical/Regulatory Guidance. Available at: http://www.itrcweb.org/GuidanceDocuments /PRB-5, [03.03.2021]

Liu S-J, Jiang B, Huang G-Q, Li X-G 2006. Laboratory column study for remediation of MTBE-contaminated groundwater using a biological two-layer permeable barrier. Water Research, 40: 3401-3408.

Liu SJ, Zhao ZY, Li J, Wang J, Qi Y 2013. An anaerobic two-layer permeable reactive biobarrier for the remediation of nitrate-contaminated groundwater. Water Research, 47:5977-5985.

Maitra S 2019. Permeable reactive barrier: A technology for groundwater remediation- A mini review. Research Faculty of the Graduate College at the University of Nebraska, Lincoln, Nebraska, USA.

Obiri-Nyarko F, Grajales-Mesa S J, Malina G 2014. An overview of permeable reactive barriers for in situ sustainable groundwater remediation. Chemosphere, 111:243-259.

Özcan B 2011. Konya İli 2. Organize sanayi bölgesinde yeraltı suyu kirletici parametreler, Yüksek Lisans Tezi Jeoloji Mühendisliği Anabilim Dalı.

Özdemir T 2006. Nitratın çeşitli topraklardaki adsorpsiyon ve taşınımının incelenmesi, Doktora Tezi, Fırat Üniversitesi Fen Bilimleri Enstitüsü, Elazığ.

Pastén-Zapata E, Ledesma-Ruiz R, Harter T, Ramírez AI, Mahlknecht J 2014. Assessment of sources and fate of nitrate in shallow groundwater of an agricultural area by using a multi-tracer approach. Science of the Total Environment, 470:855-864.

Geo-Solutions 2021. Permeable reactive barrier installation; Available at: https://www.geo-solutions.com/resource-category/zero-valent-iron-permeable-reactive-barriers/ [03.03.2021]

Wikiwand 2021. Permeable reactive barrier; https://www.wikiwand.com/en/Permeable_reactive_barrier [03.03.2021]

Permeable Reactive Barriers, Permeable treatment zones and zero valued ıron application, Available ar:https://cluin.org/techfocus/default.focus/sec/Permeable_Reactive_Barriers%2C_Permeable_Treatment_Zones%2C_and_Application_of_Zero-Valent_Iron/cat/Overview/ [03.03.2021]

Rasmussen G, Fremmersvik G, Olsen RA 2002. Treatment of creosote-contaminated groundwater in a peat/sand permeable barrier—a column study. Journal of Hazardous Materials, *93*(3): 285-306.

Shabalala AN, Ekolu SO, Diop S, 2014. Permeable reactive barriers for acid mine drainage treatment: a review, Construction Materials and Structures, 1416.

Şahin Ü, Örs S, Molinari N B, Tunç T 2010. Yeraltı suyu kalitesi ve organik tarım. Türkiye IV. Organik Tarım Sempozyumu, Erzurum

Thiruvenkatachari R, Vigneswaran S, Naidu R 2008. Permeable reactive barrier for groundwater remediation. Journal of Industrial and Engineering Chemistry, 14: 145-156.

U.S. Environmental Protection Agency (USEPA) 1992. Guidelines for water reuse. EPA 625/R-92/004. Office Of Water, Washington, DC, And Office Of Res. And Development, Cincinnati, OH.

U.S. Environmental Protection Agency (USEPA) 1998. *Permeable reactive barrier technologies for* contaminant remediation. Office of Solid Waste and Emergency Response, EPA/600/R-98/125.

U.S. Environmental Protection Agency (USEPA) 2012. A Citizen's Guide to Permeable Reactive Barriers (PRBs), EPA 542-F-12-015.

Wakida FT, Lerner DN 2005. Non-agricultural sources of groundwater nitrate: a review and case study. *Water research*, *39*(1): 3-16.

Wilson RD, Mackay DM, Cherry JA. 1997. Arrays of unpumped wells for plume migration control by semi-passive in situ remediation. Groundwater Monitoring and Remediation, 17:185-193.

Xenidis A, Moirou A, Paspaliaris I, Miner J. Wealth 123-2002-35.

Zhai, S, Zhao, Y, Ji, M, & Qi, W. 2017. Simultaneous removal of nitrate and chromate in groundwater by a spiral fiber based biofilm reactor. Bioresource Technology, 232:278-284.

COST-EFFECTIVE INTERVENTIONS AT ABANDONED MINING SITES FOR GROUNDWATER PROTECTION

Merve Arman
ORCID 0000-0003-4136-1198
Emre Burcu Özkaraova
ORCID 0000-0001-5033-2853
Ondokuz Mayis University, Samsun, TURKEY

Abstract
Abandoned mining sites continue to be an important contaminant source with serious health risks to the human and environment. Inadequate closure practices generally resulted in the distribution of contaminants to clean soil and groundwater resources. Strategic and knowledge-based interventions generally help to reduce the number of exposure pathways and thus the risk to the surrounding area. Knowledge on the hydrology and hydrogeology increases the understanding of contaminant transport and delivering strategic clues for sustainable remedial measures. Water management is one of the critical issues on site as pollutant transport is mediated by water movement. Leaching of pollutants can be avoided with different control techniques such as landscaping with slope reduction, constructed layers for surface capture and stabilization/solidification technique. Stabilization/solidification mainly relies on the use of binding materials determined according to the type and concentration of pollutants. Sustainable reactive materials with complexation, sorption and/or ion exchange capacity will reduce the availability of contaminants. The aim of this study is to present sustainable and cost-effective remedial measures for pollution mitigation at abandoned mining sites. Immobilization of pollutants with natural minerals will be emphasized.

Keywords: Abandoned mines, sustainable control techniques

INTRODUCTION

Mining activities produce large amounts of waste, and these wastes have a high impact on the environment, when stored in the vicinity of mining activities. Environmental pollution occurs as a result of unappropriate storage of mine waste (Falagán et al., 2017). These hazardous materials are wastes containing reactive sulphide minerals such as pyrite (FeS_2) or pyrrhotite (FeS). Generally producing sulfuric acid by weathering pyrite and other metal sulphides under atmospheric conditions and together with other toxic substances being transported to down gradient groundwater and surface waters. The details of the process are complex and include numerous gas exchanges, mineral precipitation, surface chemistry and redox reactions, many of which are catalyzed by microbes. Dissolution of acid extractable metals from mining and waste disposal areas can have severe consequences on human health, aquatic organisms, and the environmental economy (Agboola et al., 2019; Oyewo et al., 2018).

Most of the mining areas are located in the upper parts of the basin areas. Various heavy metals can migrate as dissolved phase or on surface of fine constituents (e.g. clays) down gradient directly from open pit ores or mine dumps after heavy rain casts. Thus, wind and/or water erosion of mine tailings can greatly affect the quality of down gradient surface soil. The penetration of rain and/or surface runoff water in to mine wastes or seepage from tailling dams causes to the formation of waste water (e.g. acid mine drainage (AMD)). The further infiltration of AMD and/or leachate deeper into the subsurface may result in the formation of a contaminated groundwater plume (Figure 1). Thus, both tailings and waste water from mines pose danger to the ground and surface water system (e.g. unconfined aquifer, stream etc.).

Figure 1. Dynamics and environmental impacts at abandoned mining sites

Direct or indirect pollution caused by mining has a high impact on the agricultural lands and other cultivation industrial lands in the region. Vegetation damage and soil erosion caused by mining production will affect downgradient farmland. Mine wastewater such as AMD may flow into agricultural areas, causing soil and water pollution. The products planted in the agricultural field decrease in quality and yield due to this pollution. The main problems are high pollution in the region, rapid soil erosion, lack of technology support, lack of environmental protection awareness, insufficiency of inspection and regulation system. Environmental contamination can be controlled by removing contaminated soil, water management and reducing soil pollutant concentration by physical chemical measures. The removal of pollutants from contaminated ground and surface water is also possible in addition to standard rehabilitation measures.

REHABILITATION AND REMEDIAL MEASURES AT MINING SITES

Mining can be done as open pit and underground mining. These two mining activities cause damage in different ways and can lead to irreversible effects. While mining in the form of open pit damages the surface ecological environment, underground mining may bring dangers such as ground subsidence (Hipp et al., 2015). The restoration of the ecosystem structure, functioning and services as well as the re-vegetation and rehabilitation of the areas degraded by mining activities is aimed to be at the final stage (Clewell and Aronson, 2013; Gibbs and Salmon, 2015). Planning for land management of abandoned mining sites is a slow and long-term process that needs to be done beforehand. Restoration should be considered comprehensively in terms of ecology (Young, 2000). Plant science underpins restoration ecology. Vegetation restoration in mining areas is the basis of ecological restoration. The ecosystem can be rebuilt by reclamation of degraded land (Dong et al., 2019). While the reclamation studies of the mine lands are being carried out, it is aimed to make the necessary actions in a way that the mine wastes will not be eroded by the wind and water and to make the land usable (Lamb et al., 2015). A successful breeding process implies a stable and efficient ecosystem with biophysical processes that sustain itself. Without human intervention, processes such as plant growth, organic matter and nutrient accumulation are a natural process for soil restoration. In abandoned mining areas, vegetation will gradually improve naturally with the length of the process (Bradshaw, 1997).

Control Measures at Abandoned Mining Sites

Depending on the topography, hydrology and hydrogeology of region minning wastes, tailings can move down gradient or to the surrounding area by rain and wind which are the actual drivers of transport. The transport of pollutants to human and environmental receptors generally causes to health riscs when remedial measures are not taken. Basic remedial measures can be seen in Figure 2.

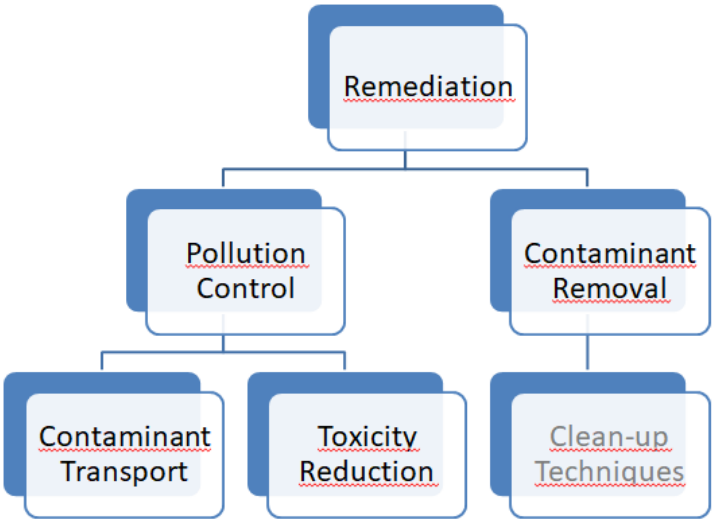

Figure 2. Classification of control measures at abandoned mining sites

Controling the movement of clean and contaminated water on site is cruitial. The movement of surface runoff water (e.g. rain) can be redirected upstream of the site by placement of drainage channels working as diversion ditches. Thus, the entrance of surface runoff water into the disturbed mining area or tailing site with high contamination potential will be avoided (Figure 3). As the water will not interact with the wastes, dissolution and transport of

pollutants will not occur. Similarly the contact of stream water flowing within the site or along the edge of contaminant source can be avoided in this way.

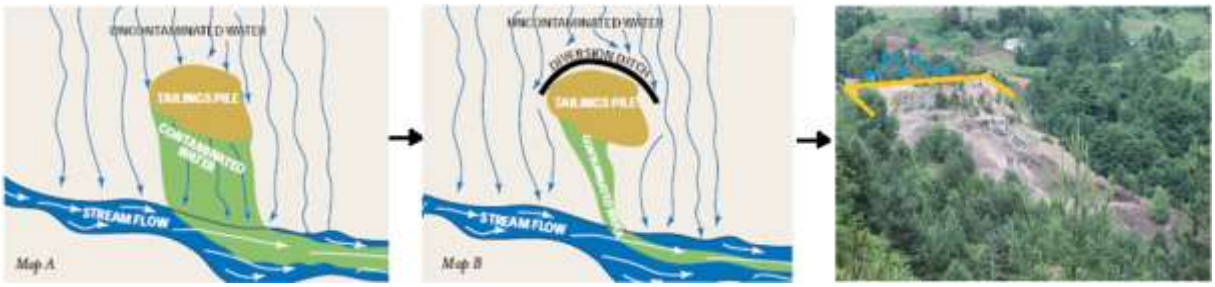

Figure 3. Diverting surface runoff water (Map A and Map B from State Colerado, 2002)

As rain falling onto the disturbed mining site and/or tailings causes to both migration of fines and leaching of contaminants within and from the waste area, another downgradient drainage collection channel with a acid mine drainage pool can be constructed (Figure 4). If the acid mine water is not collected and treated spreading of contaminants and thus enlargement of exposure area happen. An additional conventional rehabilitation measure is landscaping with slope reduction and contoured furrowing. For tailings with higher heavy metal levels top cover with low permeable compacted layer together with a capillary break and a vegetation support layer is recommended (Figure 5). This specially constructed cap will reduce the infiltration of water due to precipitation and thus the migration of contaminated water into the waste body will be minimized.

Sometimes toplayer formation may not be enough. Stabilization solidification technique can also be applied as a control technique. This technique relys on the pollutant fixation by using single or mixtures of binders. If cement is used as the binder solidification causes the plume to mainly flow around the solidified hot spot contaminated area. Reactives like lime, gypsium will bind the pollutants but not change the structure of tailing, contaminated sediment and soil. Mixing of these binders can be in-situ executed with special mixing machines.

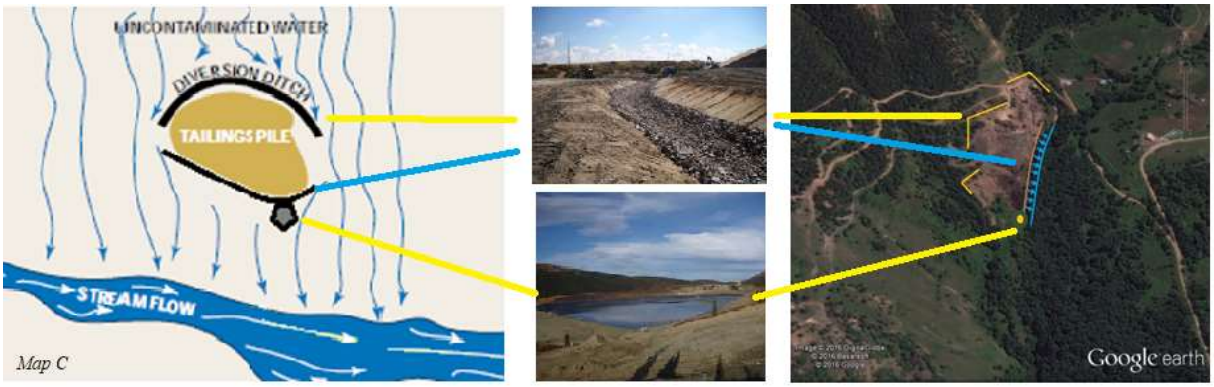

Figure 4. Divertion and collection of surface runoff water (Map C derived from State Colerado, 2002)

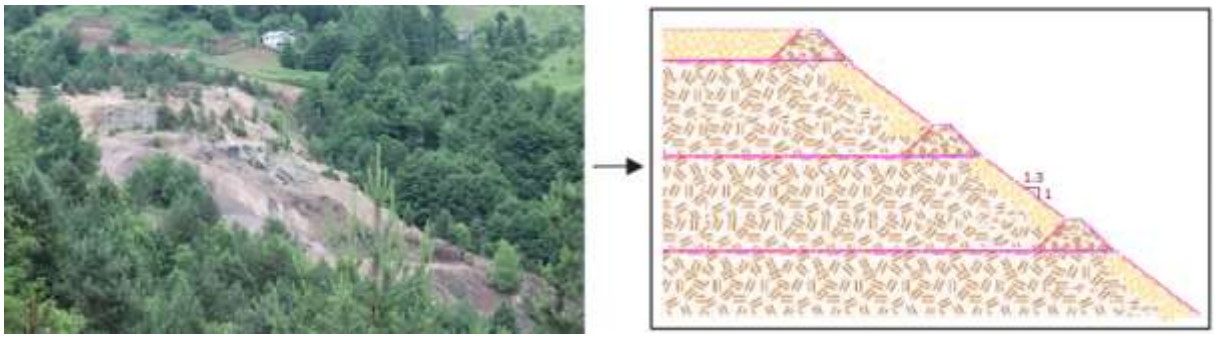

Figure 5. Landscaping with slope reduction and contoured furrowing

The composition of acid mine drainage water changes according to geological properties of site. Generally, low pH and high heavy metal concentrations can be expected. If the drainage water is not collected risc to human and environmental health continues. When acid mine drainage water is collected, sustainable water treatment methods can be used to reduce the pollution potential. Various physicochemical and biological water treatment techniqiues do exist (Figure 6). Anoxic limestone drain may work as passive and low cost treatment systems, while aeration and lime addition may be more effective as active systems. The involvement of microorganisms in the treatment of acid mine drainage waters is possible. Off-line sulfidogenic bioreactors are options for active systems and aerobic wetlands, packed bed iron-oxidation bioreactors and permeable reactive barriers. When contaminant dissolution and transport from the tailings is prevented, ground and surface water resources will be protected.

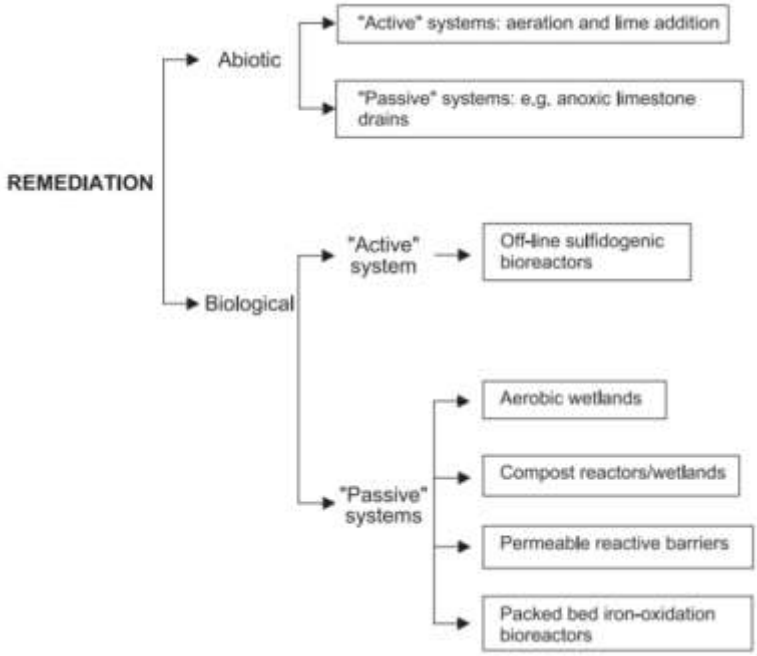

Figure 6. Physicochemical and biological treatment systems for acid mine drainage water (Johnson and Hallberg, 2005)

During mining activities or after closure leaching of acid mine drainage can occur resulting in the contamination of groundwater resources. The contaminant plume moves deeper into the aquifer systems and further downgradient enlarging its exposure area. Thus to avoid the effect of contaminated groundwater several interventions can be taken. Permeable reactive barrier

systems (PRBs) are sustainable and low cost remedial alternatives. PRBs are downgradient reactive treatment zones that are directly constructed perpendicular to the plume (Figure 7). As the permeability of treatment zone is higher than the surrounding geological formation, the migration of contaminant plume happens by its natural flow. During the passage of plume, reactives in the treatment zone clean-up the groundwater. PRBs can be sen as passive working self sustainable system.

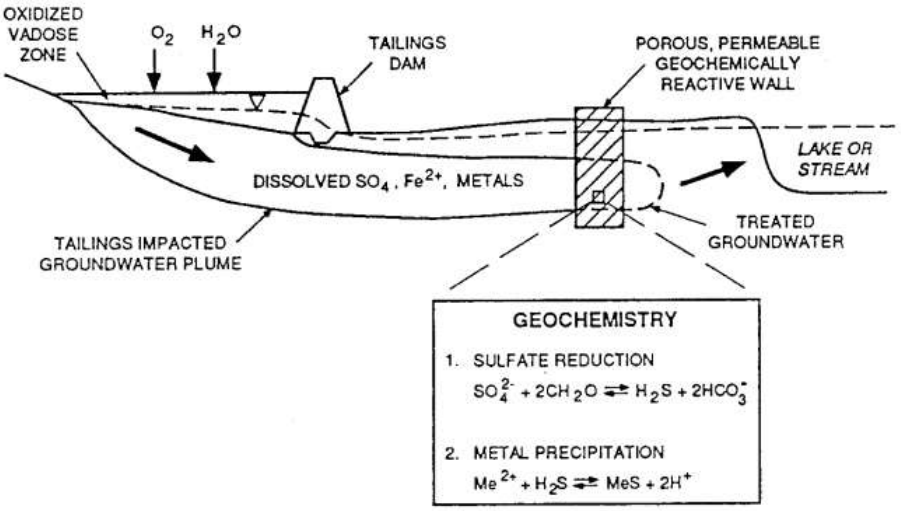

Figure 7. Permeable reactive barrier at a mine drainage site (Waybrant et al., 2002)

Other Possible Remedial Interventions

Soil change: This intervention relys on total or partial removal of contaminated soil from the environment and replacement with cleaner soil, thus, diluting the heavy metal content in the soil and area (Nejad et al., 2017). It is known as the most common method used in cleaning contaminated areas before 1984.

Vitrification: It is the process by which mineral material is melted by burning organic matter at high temperature and the metals are retained in small glassy material (Mallampati et al., 2015). The vitrification process can be applied both in the contaminated soil area and by taking it from the field (Colombo et al., 2003). Since it can evaporate, some restrictions may be required.

Electrokinetic enhancement: It is a physical method used to improve soil contaminated with heavy metals. Electric field is created by applying a current of appropriate density to the electrodes placed in the soil. Under the electric field, metal ions move towards opposite charged electrodes and are based on removing metals from the soil.

Chemical stabilization and/or Solidification (Immobilisation): This remedial intervention relys on the addition of immobilizing agents to reduce the mobility of heavy metals in contaminated soil. It does not remove heavy metals from the soil. Heavy metals are immobilized by chemical precipitation, ion exchange and adsorption, limiting the transport of heavy metals (Porter et al., 2004). Among the materials used as reactives are clay minerals, phosphate compounds, liming materials, organic composts, metal oxides and biochar. This

method is preferred because of its low cost and easiness of application. Solidifying the soil is the process of solid encapsulation of waste material (Khan et al., 2004).

Clay minerals can act as a natural scavenger of heavy metals (Yuan et al., 2013). The most commonly used are clay minerals such as sepiolite, palygorskite, aluminacids, and bentonite (Liang et al., 2014; Sun et al., 2015, 2016). These materials are widely used in the immobilization of heavy metals because they are environmentally friendly and cost-effective. For the immobilization of heavy metals in soil taken from Kruvashan abandoned copper mine, sepiolite was mixed at percentages between 1 to 10% (Arman, 2021). Toxicity Characteristic Leaching Procedure (TCLP) experiments showed that the release of copper from soil (~6000 mg Cu/kg) was reduced approximately 17-68%. The Synthetic Precipitation Leaching Procedure (SPLP) experiments revealed reductions between 53-92% and Rhizosphere-based extraction experiments reductions between 26-67%.

Phosphate compounds are another substance used in the immobilization of heavy metals. Phosphate-containing minerals are the process of immobilization of heavy metals by direct metal adsorption, phosphate-induced metal adsorption or surface complexing, and chemical precipitation of metals. Common phosphate compounds include synthetic apatite and hydroxyapatite.

Common materials used for liming in soil are oyster shells and egg shells (Lim et al., 2013), lime and limestone (He et al., 2016). Due to affordable prices and availability, liming materials are a cost-effective and effective method of reducing the toxicity of heavy metals. It is widely used in field areas.

Metal oxides with large active surface areas and amphoteric structure such as Fe, Mn and Al oxides can be used to stabilise the metal in the soil. These components can bind strongly to the metal in the soil through absorption co-precipitation and inner-sphere complexing. The aim of this method is to reduce the mobile biologically accessible metal fractions in the soil, to prevent its leakage from the soil and to reduce its uptake by plants and humans.

Biochar is a porous coal rich in carbon, which is formed during the pyrolysis of organic residues such as animal waste, municipal waste, wood, crop waste and bio-solids. It has been observed that when biochars are added to the soil, they inactivate heavy metals and decrease accumulation in plants. Biochar plays an important role in the chemical, physical and biological recovery of the soil in land applications.

Bioremediation is accepted as an environmentally friendly method applied to restore the natural conditions of the contaminated soil to make it reusable. In this method microorganisms (i.e. bacteria, fungi and algae) are used to induce adsorption, precipitation, oxidation and reduction of heavy metals in the soil. The contaminated soil is inoculated with selected microorganisms through spray irrigation or infiltration galleries. Injection wells can be applied if the pollutants are deep in the soil. Typical microbial remediation techniques include biosorption, bioprecipitation and biotransformation. Thus, microorganisms reduce the availabilty or toxicity of heavy metals as a result of precipitaion or change in valence value of heavy metal (e.g. $Cr^{6+} \rightarrow Cr^{3+}$). The improvement method is natural, but it is a method that takes a long time.

CONCLUSION

Mining activities and abandoned mining sites continue to expose risk to human and environmental health if contamination prevention measures are not taken. Regarding the economic conditions different remedial actions can be implemented. So to say “there is always something that can be done to protect environmental resources (water, soil and air). Risk reduction can be achieved by reducing and/or controling exposure pathways. Thus, limiting contaminant migration at mining sites with the construction of upgradient diversion ditches and/or downgradient drainage channels will reduce further spreading of wastes and contaminants. The treatment of collected waste water (e.g. acid mine drainage water) will stop downgradient migration of pollutants. Additional interventions like landscaping with slope reduction and contoured furrowing will reduce penetration of rain into the waste body and further dissolution of contaminants during downgradient movement. At sites where groundwater contamination has occurred permeable reactive barrier systems may help to clean-up and control the plume. All the mentioned remedial measures are simple, low-cost and self sustaining systems for the protection of mother earth and the human kind.

ACKNOWLEDGEMENT

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REFERENCES

Agboola O 2019. The role of membrane technology in acid mine water treatment: a review. Korean Journal of Chemical Engineering, 36(9), 1389-1400.

Arman M Evaluation of stabilizing materials for the immobilization of toxic heavy metals in copper mine soils, MSc. Disertation Thesis, Ondokuz Mayis University, Samsun, Turkey, 2021.

Bradshaw A 1997. Restoration of mined lands—using natural processes. Ecological Engineering, 8(4), 255-269.

Clewell A, Aronson J 2013. The SER primer and climate change. Ecological Management & Restoration, 14(3), 182-186.

Colombo P, Brusatin G, Bernardo E, Scarinci G 2003. Inertization and reuse of waste materials by vitrification and fabrication of glass-based products. Current Opinion in Solid State and Materials Science, 7(3), 225-239.

Dong L, Tong X, Li X, Zhou J, Wang S, Liu B 2019. Some developments and new insights of environmental problems and deep mining strategy for cleaner production in mines. Journal of Cleaner Production, 210, 1562-1578.

Falagán C, Grail BM, Johnson DB 2017. New approaches for extracting and recovering metals from mine tailings. Minerals Engineering, 106, 71-78.

Gibbs HK, Salmon JM 2015. Mapping the world's degraded lands. Applied geography, 57, 12-21.

He H, Tam NF, Yao A, Qiu R, Li WC, Ye Z 2016. Effects of alkaline and bioorganic amendments on cadmium, lead, zinc, and nutrient accumulation in brown rice and grain

yield in acidic paddy fields contaminated with a mixture of heavy metals. Environmental Science and Pollution Research, 23(23), 23551-23560.

Hipp AL, Larkin DJ, Barak RS, Bowles ML, Cadotte MW, Jacobi SK, Weiher E. 2015. Phylogeny in the service of ecological restoration. American Journal of Botany, 102(5), 647-648.

Interstate Technology and Regulatory Council (ITRC), Permeable Reactive Barrier Team, Permeable Reactive Barriers: Lessons Learned/New Directions, PRB-4 2005. Washington DC, USA.

Johnson DB, Hallberg KB, Acid mine drainage remediation options: a review, the Science of the Environment, 2005, 338, 3-14.

Khan, F. I., Husain, T., & Hejazi, R. 2004. An overview and analysis of site remediation technologies. Journal of Environmental Management, 71(2), 95-122.

Lamb D, Erskine PD, Fletcher A 2015. Widening gap between expectations and practice in A ustralian minesite rehabilitation. Ecological Management & Restoration, 16(3), 186-195.

Liang X, Han J, Xu Y, Sun Y, Wang L, Tan X 2014. In situ field-scale remediation of Cd polluted paddy soil using sepiolite and palygorskite. Geoderma, 235, 9-18.

Lim JE, Ahmad M, Lee SS, Shope CL, Hashimoto Y, Kim KR, Ok YS. 2013. Effects of lime-based waste materials on immobilization and phytoavailability of cadmium and lead in contaminated soil. Clean–Soil, Air, Water, 41(12), 1235-1241.

Mallampati SR, Mitoma Y, Okuda T, Simion C, Lee BK. 2015. Dynamic immobilization of simulated radionuclide 133Cs in soil by thermal treatment/vitrification with nanometallic Ca/CaO composites. Journal of Environmental Radioactivity, 139, 118-124.

Nejad ZD, Jung MC, Kim KH 2018. Remediation of soils contaminated with heavy metals with an emphasis on immobilization technology. Environmental geochemistry and health, 40(3), 927-953.

Oyewo OA, Agboola O, Onyango MS, Popoola P, Bobape MF 2018. Current methods for the remediation of acid mine drainage including continuous removal of metals from wastewater and mine dump. Bio-geotechnologies for Mine Site Rehabilitation (pp. 103-114). Elsevier.

Porter SK, Scheckel KG, Impellitteri CA, Ryan JA 2004. Toxic metals in the environment: thermodynamic considerations for possible immobilization strategies for Pb, Cd, As, and Hg. Critical Reviews In Environmental Science And Technology, 34(6), 495-604.

Sun Y, Li Y, Xu Y, Liang X, Wang L 2015. In situ stabilization remediation of cadmium (Cd) and lead (Pb) co-contaminated paddy soil using bentonite. Applied Clay Science, 105, 200-206.

Sun Y, Xu Y, Xu Y, Wang L, Liang X., Li Y 2016. Reliability and stability of immobilization remediation of Cd polluted soils using sepiolite under pot and field trials. Environmental Pollution, 208, 739-746.

State of Colorado, 2002. Best Practices in Abandoned Mine Land Reclamation: the remediation of past mining activities, Department of Natural Resources, Colorado Division of Minerals and Geology, Denver, www.mining.state.co.us/bmp.pdf

Waybrant KR, Ptacek CJ, Blowes DW, Treatment of mine drainage using permeable reactive barriers: Column experiments, Environmental Science and Technology, 2002, 36, 1349-1356.

Young TP 2000. Restoration ecology and conservation biology. Biological conservation, 92(1), 73-83.

Yuan GD, Theng BKG, Churchman GJ, Gates WP. 2013. Clays and clay minerals for pollution control. Developments in Clay Science, Vol. 5, pp. 587-644. Elsevier.

THE EFFECT OF STACKING SEQUENCE ON THE MECHANICAL BEHAVIOR OF HYBRID COMPOSITE PIPES

Yusuf KEPIR
ORCID ID 0000-0002-3536-3931
Alper GUNOZ
ORCID ID 0000-0001-7978-6306
Memduh KARA
ORCID ID 0000-0002-5201-5453
Mersin University, Mersin, Turkey

Abstract
Strength/weight ratio of fiber-reinforced composite pipes and pressure vessels produced by the filament winding method is quite high. In addition to their high strength, these pipes have high resistance to chemical effects such as acid, salt and moisture. For this reason, composite pipes and tubes are used in the storage and transportation of various chemicals. In this study, glass, basalt and hybrid (glass + basalt) reinforced epoxy matrix composite pipes were produced in various configurations at ± 55° winding angle. The stacking sequence configurations were set as Glass/Glass/Glass, Basalt/Basalt/Basalt, Glass/Basalt/Glass and Basalt/Glass/Basalt. The mechanical properties of the produced composite pipes were determined by the hoop tensile tests according to ASTM D 2290 standard. Then, damage analysis of composite pipes subjected to hoop tensile test was performed. The effects of the hybridization process and fiber stacking sequence on mechanical properties and damage behavior of materials were investigated.

Keywords: Filament winding, Hybrid composite pipe, Hoop tensile strength, Stacking sequence

INTRODUCTION

Nowadays, filament wound fiber reinforced composite pipes are widely used, especially fluid transportation, such as petroleum, geothermal water, water, and natural gas (Gunoz et al., 2020).

Carbon and glass carbon fibers are generally used as reinforcement elements in polymer matrix composites. Recently, the use of basalt fibers has also become widespread. Since basalt fibers have higher fracture strength than glass fibers and they are cheaper than carbon fibers, their usage has become widespread (Farhood et al., 2018). Moreover, due to environmental concerns and climate change, in the last years natural and mineral fibers such as basalt fibers are being researched (Liu et al., 2006; Lopresto et al., 2011). Lopresto et al. (2011) determined that the mechanical behaviors of basalt fiber reinforced composites were approximately 35% higher than glass fiber reinforced composites. In addition, basalt fiber reinforced composite was found to perform better in terms of compressive and bending strength, impact resistance, and energy absorption capacity compared to glass reinforced composites. Dorigato and Pegoretti (2012) compared the fatigue properties of static tensile

of basalt, carbon, and glass fiber woven fabrics reinforced epoxy matrix laminates. Test results showed that the tensile strength of basalt fiber reinforced laminates was approximately 20% higher than that of glass fiber reinforced laminates. Therewithal, it was observed that the tensile strength values of basalt fiber reinforced laminates were close to those of carbon fiber reinforced laminates. Carmisciano et al. (2011) conducted a comparative study on glass and basalt fiber woven reinforced polymer resins. Mechanical properties of composites were calculated by a three-point bending test. Experimental results indicated that basalt fiber had higher flexural modulus and interlayer strength than glass fiber, but lower flexural strength.

Basalt fiber has also shown synthetically advantages in terms of structural strengthening and its use as new structural components. Considering the high material costs of carbon fiber reinforced composites, hybrid applications with glass or basalt fibers can be recommended (Wu et al., 2010). The production of composite materials as hybrid reinforced composite, which has recently been subjected to mechanical damage, is one of the areas that have been extensively researched (Özbek et al., 2019). Hybridization is a process performed to achieve the best properties (thermal stability, compressive strength, high mechanical strength, hardness, and reduced water absorption properties, etc.) by combining two reinforcing materials in a polymeric matrix. These mechanical properties, which cannot be achieved with conventional composite materials, are obtained with hybrid composites (Sahin, 2006). The outer surfaces of hybrid composites are made of high strength materials against both contact forces and bending, while the inner parts are made of low cost, light, and high strength materials, providing great advantages in terms of lightness, cost and strength. Cao et al. (2009) studied the tensile strengths of glass, basalt, and carbon fiber reinforced polymer composites at different temperature. It was resolved that the tensile strengths of glass, basalt, and carbon fiber reinforced polymers decreased with increasing temperature. They suggested that hybridization of fibers may reduce the distribution of tensile stresses of carbon fiber reinforced composites at high temperatures. Cicala et al. (2009) examined the hybridization effects of glass and natural fibers on mechanical properties such as tensile and bending for curved pipes. They found that natural fibers have poor properties compared to glass. They achieved 20% cost reduction and 23% weight reduction in commercial pipe construction by hybridizing the fibers. Wu et al. (2010) in their study using glass-basalt hybrid composite, noted that the hybrid effect can improve fatigue resistance. Fiore et al. (2011) investigated the use of glass-basalt fiber reinforced epoxy hybrid composite materials in the marine industry. For this purpose, a composite material containing glass fiber chopped in random orientation in the matrix and hybrid reinforced by the unidirectional use of glass fiber with basalt fiber was produced. The effect of the number of basalt layers and the stacking sequence on the mechanical behaviors of composite materials was investigated. According to the experimental results obtained, they observed that hybridization increases the mechanical behaviors of the material. In addition, thanks to the usage of two-layers basalt fibers in the material structure have been reached the highest strength.

In some studies in the literature, it was mentioned that the fiber stacking sequence also significantly affected the mechanical behaviors of the composite material. Xia et al. (2001) analyzed the stress and deformation behavior of multilayer composite pipes, produced by the filament winding, under internal pressure. The results indicated that the stress and deformation are largely dependent on the stacking sequence. Gemi et al. (2016) and Gemi et al. (2017) studied the effects of hybridization on the impact response and mechanical properties of composite pipes and made detailed damage analyses. They observed that the position of the carbon fiber layer during stacking had a great influence on the damage and

mechanical behaviors of hybrid reinforced composite pipes.

In this study, glass, basalt and hybrid (glass + basalt) reinforced epoxy matrix composite pipes were produced in various configurations at ± 55° winding angle. Then, the hoop tensile test of composite pipes was performed. The effects of the hybridization process and fiber stacking sequence on mechanical behaviors and damage behavior of materials were investigated.

EXPERIMENTAL METHODS

Manufacturing of hybrid composite pipes

In this study, Araldite MY 740, the bisphenol A diglycidyl ether epoxy resin, was used as the matrix, Aradur HY 918 was used as the hardener, and DY 062 was used as the accelerator. In the production of composite pipes, 400 tex basalt and 1200 tex glass fiber filaments were used. The average diameters of basalt and glass fiber are 13 and 17 μm, respectively. The mechanical properties of matrix and fibers are given in Table 1.

Composite pipes were produced by the filament winding method as shown in Figure 1. In filament winding looms, winding at desired angles can be performed by synchronizing the rotation speed of a rotating mandrel and the advancement of the reinforcement material with a conveyor car. The winding process is carried out by wetting the fiber bands with a certain width adhered to each other by dipping into the resin and removing it or by continuously wrapping them on the mandrel with previously wetted but not hardened fiber. The winding can be continued until the desired thickness is reached or a desired number of layers is achieved on the mandrel. The filament winding process was realized with a winding angle of ±55°. Six-layered produced composite pipes have an inner diameter of 72 mm and an outer diameter of 77 mm. The stacking sequence configurations were set as Basalt/Basalt/Basalt, Glass/Glass/Glass, Glass/Basalt/Glass and Basalt/Glass/Basalt starting from inner surface to outer surface.

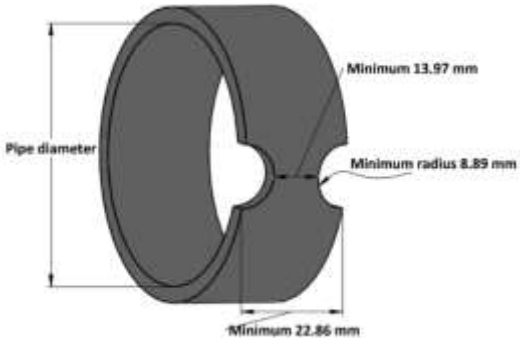
Table 1. Mechanical properties of the materials used in composite pipes (Gunoz et al., 2020; Sepetcioglu et al., 2021)

Material	Elasticity Modulus E (GPa)	Tensile Strength σ_t (MPa)	Density ρ (g/cm^3)
Glass Fiber	73	2400	2.6
Basalt Fiber	90-95	2900-3200	2.48
Epoxy Resin	3.4	50-60	1.2

Figure 1. Filament winding method

Hoop tensile strength tests

The hoop tensile strength tests were done based on ASTM D2290 Procedure A. Procedure A is used for reinforced thermoset resin composite pipes. Ambient temperature was set as 25 ± 0.5°C. The test speed of the device was arranged as 5 mm/min. Tensile test device and test specimen were prepared from hybrid composite pipes following the dimensions given in Figure 2.



(a)

(b)

Figure 2. a) Prepared composite samples according to Procedure A and **b)** Tensile test device (Sepetcioglu et al., 2021)

In the hoop tensile test, the strength values of composite pipe specimen can figure out by the Equation 1. In the equation, σ_T, P, A present that the hoop tensile strength value (MPa) of the specimen, the maximum load value (N), and the minimum cross-sectional area (mm^2), respectively.

$$\boldsymbol{\sigma_T = \frac{P}{2A}} \qquad (1)$$

A total of twelve samples were prepared, three from each composite sample. The prepared samples are shown in Figure 3.

Figure 3. Hoop tensile test samples

RESULTS AND DISCUSSION

Hoop tensile tests were performed using three of each basalt, glass and hybrid reinforced composite pipes. As a result of the hoop tensile tests, the strength of composite pipes was determined by taking the average values. Figure 4 shows the strength values of composite pipes with different reinforcement elements.

As it is known from the studies in the literature, the tensile strength of basalt fiber is higher than that of glass fiber (Carmisciano et al., 2011; Fiore et al., 2011). In this study, it was determined that the tensile strength of basalt fiber reinforced composite pipes was approximately 18% higher than the strength of glass fiber reinforced composite pipes. In addition, the hybridization process significantly affected the strength of glass fiber reinforced composite materials. The tensile strength of composite pipes produced in the form of Glass / Basalt / Glass was found approximately 7% higher than the tensile strength of only glass fiber reinforced composite pipes. The tensile strength of Basalt / Glass / Basalt pipes was found to be approximately 12% higher than the tensile strength of glass reinforced pipes.

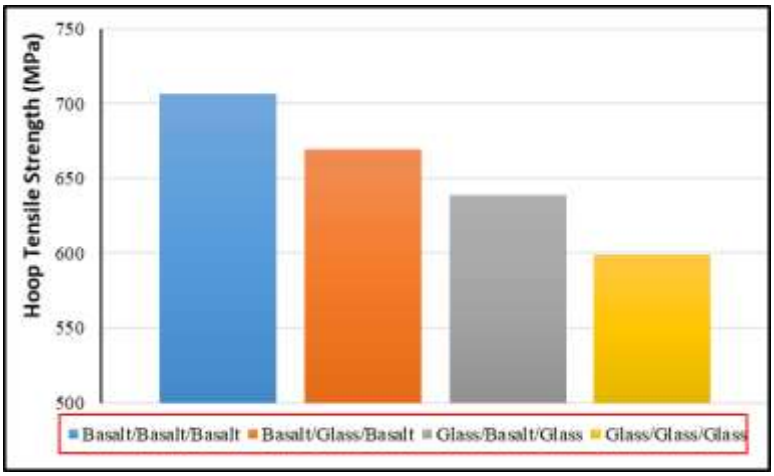
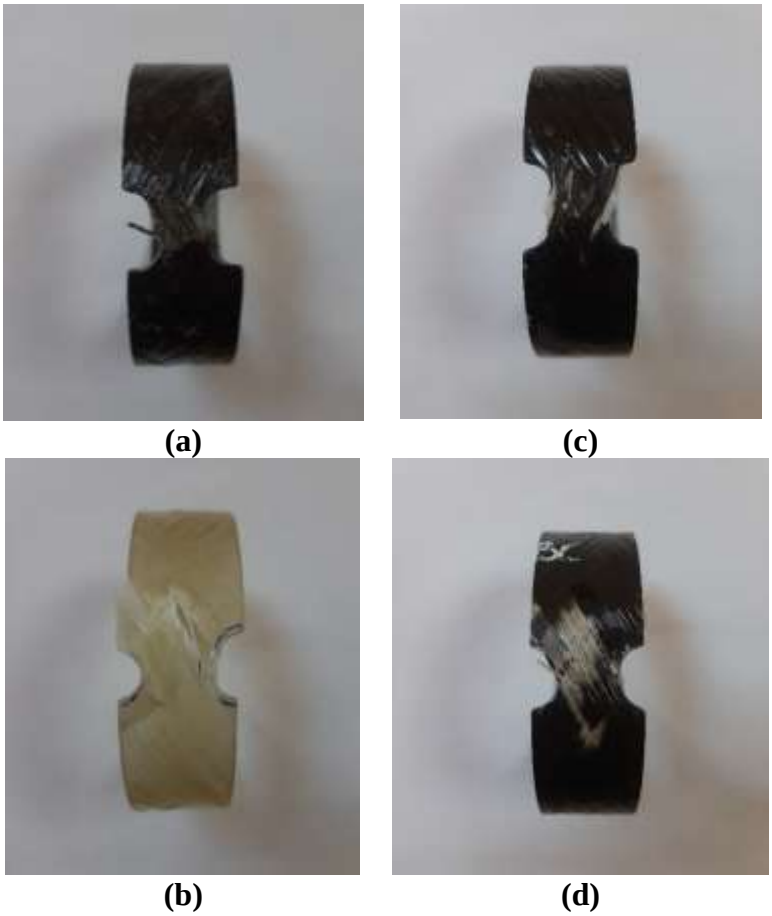


Figure 4. Average hoop tensile strength of different stacking sequence composite pipes

As a result of the hoop tensile tests, when the samples reached their tensile strength, they were separated from the notch area at a 55 ° winding angle. During the test, the shear stresses at the fiber-matrix interface increased and with this increase, the interface bonds were weakened. Then the fibers were separated from the matrix. When the force exceeds a certain value, the fibers could not carry the load. As seen in Figure 5, the fibers are broken in accordance with the winding angle.



(a) **(c)**

(b) **(d)**

Figure 5. Failure images of composite pipes for (a) Basalt/Basalt/Basalt, (b) Glass/Glass/Glass, (c)Basalt/Glass/Basalt , (d) Glass/Basalt/Glass

CONCLUSION

Basalt, glass and hybrid reinforced epoxy resin composite pipes were produced by the filament winding method. Basalt and glass fibers were used alone and as a hybrid reinforcement material during production. The strengths of composite materials produced by hoop tensile tests have been examined. Consequently;

- The hoop tensile strength of basalt fiber reinforced composite pipes was obtained approximately 18% higher than that of glass fiber reinforced composite pipes.
- With the hybridization process, the tensile strength of glass fiber reinforced composite pipes was increased.
- It has been determined that the fiber stacking sequence changes the tensile strength of composite materials.
- Higher strength values were obtained in composite pipes produced with Basalt/Glass/Basalt sequence compared to those produced with Glass / Basalt / Glass sequence.
- In all of the composite samples, fracture occurred in the fiber direction as a result of a stress reaching tensile strength values.

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REFERENCES

ASTM International. ASTM D2290: Standard test method for apparent hoop tensile strength of plastic or reinforced plastic pipe. (2020). In. West Conshohocken: PA.

Cao, S., Zhis, W. U., & Wang, X. (2009). Tensile properties of CFRP and hybrid FRP composites at elevated temperatures. *Journal of composite materials, 43*(4), 315-330.

Carmisciano, S., De Rosa, I. M., Sarasini, F., Tamburrano, A., & Valente, M. (2011). Basalt woven fiber reinforced vinylester composites: Flexural and electrical properties. *Materials Design, 32*(1), 337-342.

Cicala, G., Cristaldi, G., Recca, G., Ziegmann, G., El-Sabbagh, A., Dickert, M. J. M., & Design. (2009). Properties and performances of various hybrid glass/natural fibre composites for curved pipes. *30*(7), 2538-2542.

Dorigato, A., & Pegoretti, A. (2012). Fatigue resistance of basalt fibers-reinforced laminates. *Journal of composite materials, 46*(15), 1773-1785.

Farhood, N. H., Karuppanan, S., Ya, H. H., & Ovinis, M. (2018). Experimental study of low velocity impact response of carbon/basalt hybrid filament wound composite pipes. *International Journal of Structural Stability Dynamics, 18*(07), 1850089.

Fiore, V., Di Bella, G., & Valenza, A. (2011). Glass–basalt/epoxy hybrid composites for marine applications. *Materials Design, 32*(4), 2091-2099.

Gemi, L., Kara, M., & Avci, A. (2016). Low velocity impact response of prestressed functionally graded hybrid pipes. *Composites Part B: Engineering, 106*, 154-163.

Gemi, L., Şahin, Ö. S., & Akdemir, A. (2017). Experimental investigation of fatigue damage formation of hybrid pipes subjected to impact loading under internal pre-stress. *Composites Part B: Engineering, 119*, 196-205.

Gunoz, A., Kepir, Y., & Kara, M. (2020). Tensile Strength Alteration of GFRP Composite Pipes Under Seawater-Dominated Conditions. *Journal of Failure Analysis and Prevention, 20*(4), 1426-1430. doi:10.1007/s11668-020-00962-2

Liu, Q., Shaw, M. T., Parnas, R. S., & McDonnell, A. M. (2006). Investigation of basalt fiber composite mechanical properties for applications in transportation. *Polymer composites, 27*(1), 41-48.

Lopresto, V., Leone, C., & De Iorio, I. (2011). Mechanical characterisation of basalt fibre reinforced plastic. *Composites Part B: Engineering, 42*(4), 717-723.

Özbek, Ö., Bozkurt, Ö. Y., & Erkliğ, A. (2019). An experimental study on intraply fiber hybridization of filament wound composite pipes subjected to quasi-static compression loading. *Polymer Testing, 79*, 106082.

Sahin, Y. (2006). *Kompozit Malzemelere Giriş*: Seçkin Yayıncılık San. ve Tic. AŞ.

Sepetcioglu, H., Gunoz, A., & Kara, M. (2021). Effect of hydrothermal ageing on the mechanical behaviour of graphene nanoplatelets reinforced basalt fibre epoxy composite pipes. *Polymers and Polymer Composites*, 0967391121992939.

Wu, Z., Wang, X., Iwashita, K., Sasaki, T., & Hamaguchi, Y. (2010). Tensile fatigue behaviour of FRP and hybrid FRP sheets. *Composites Part B: Engineering, 41*(5), 396-402.

Xia, M., Takayanagi, H., & Kemmochi, K. (2001). Analysis of multi-layered filament-wound composite pipes under internal pressure. *Composite Structures, 53*(4), 483-491.

THE EFFECT OF INTERNAL PRESSURE ON THE LOW VELOCITY IMPACT BEHAVIOR OF COMPOSITE PIPES

Yusuf KEPIR
ORCID ID 0000-0002-3536-3931
Alper GUNOZ
ORCID ID 0000-0001-7978-6306
Memduh KARA
ORCID ID 0000-0002-5201-5453
Mersin University, Mersin, Turkey

Abstract
In this study, the effect of internal pressure on the low velocity impact behavior of filament wound glass reinforced plastic (GRP) pipes was investigated. Low velocity impact tests were applied at 5 J impact energy level to 10 layered E-glass/epoxy composite pipe samples with ± 55° winding angle. The pipes were exposed to different internal pressure level during the impact tests. Tests have examined the mechanical behavior of the material under operating conditions by applying internal pressure at three different levels: 4 bar, 16 bar and 32 bar. In the experiments, a 12 mm diameter hemispherical tip striker with a mass of 6.35 kg was used. As a result of the low energy impact tests, the contact force-time, force-displacement, velocity-time and absorbed energy-internal pressure histories were obtained, and damage development on the sample was evaluated.

Keywords: Low energy impact, Glass reinforced plastic, Damage behavior, Internal pressure

INTRODUCTION

Glass reinforced plastic (GRP) materials are widely used in various industries due to their high corrosion resistance and superior mechanical properties. It is especially preferred due to its high wear resistance in the transmission lines of some corrosive fluids (Liao et al., 2021; Gunoz et al., 2020). Fiber reinforced plastic (FRP) pipes are 75-80% lighter than cast iron pipes and 90% lighter than reinforced concrete pipes compared to other materials used in current applications. It provides ease of transportation and assembly due to the low weight of the unit length (Hu et al., 2021). In addition, FRPs have much higher strength values compared to steel, reinforced concrete or non-reinforced plastic materials according to weight/unit area (Sepetcioglu et al., 2021). Due to its many superior mechanical properties, it can be easily adapted to various usage areas and is preferred in many industries (Arslan et al., 2021).
Composite materials can be subjected to various impacts under operating conditions. It is very important that the material is resistant to these impacts. In particular, it is vital that the vehicles used in the military field have high impact resistance. For this reason, the reaction of composite materials to impacts and similar adverse mechanical events under working conditions should be well investigated and determined in advance (Ulus et al., 2016). There have been many studies in the literature (Öndürücü et al., 2020; Deniz et al., 2012; Kaybal et

al., 2021; Nebe et al., 2021) that examine the low velocity impact effect of composite materials. Deniz et al. (Deniz et al., 2012) studied the impact behavior of GRP composite pipes kept in sea water for different periods. Pipes were subjected to impact tests at different energy levels. The impact response of the samples waiting in a dry environment and the impact response of the samples kept in sea water were experimentally investigated.

Composite pipes used in transmission lines are exposed to an internal pressure with the effect of the fluid passing through them. Therefore, in order to determine the mechanical responses of these pipes to impacts and loads in actual operating conditions, various levels of internal pressure must be applied to the samples during the mechanical tests. In this way, the mechanical tests performed in pre-stressed condition provide more realistic results regarding the response of the samples to the mechanical loads and impacts they will be exposed to under operating conditions (Kara, 2012). There are studies (Kara, 2012; Kara et al., 2014; Xia et al., 2001; Tarakcioglu et al., 2007) investigating the impact response of composite pipe materials under internal pressure analytically and experimentally. Kara et al. (Kara et al., 2014) performed low velocity impact tests at different energy levels on filament winding GRP composite pipes with ± 55° winding angle, where they created pre-stress by applying 32 bar internal pressure. Pipes damaged by low velocity impact tests were blasted with the static blasting test in accordance with ASTM D 1599-99 standard. As a result of the static explosion test, it was determined that the burst pressure value of the pipe sample decreased with the increase of impact energy.

In this study, the damage behavior of filament-wound GRP pipes produced with ± 55° winding angle against low-velocity impacts with an internal pressure of 4, 16 and 32 bars was investigated.

MATERIALS AND METHODS

Production of GRP composite pipes

The ± 55° E-glass/epoxy filament winding composite pipes used in this study were produced by Izoreel. E-glass/epoxy composite pipes are produced at ± 55° winding angle and the properties of the fiber and matrix used. It is given in Table 1.

Table 1. Properties of the materials used in composite (Kara et al., 2014)

Material	E (GPa)	σ_t (MPa)	ρ (g/cm3)	ε_{frac}(%)
Fiber: E-glass	73	2400	2.6	1.5-2
Matrix: Epoxy Resin	3.4	50-60	1.2	4-5

Low velocity impact test

In order to investigate the damage behavior of GRP composite pipe samples exposed to low velocity impact under internal pressure, the low energy impact mechanism given in Figure-1 was used. With this impact device, low velocity impact tests can be performed at different impact rates or different impact energies. The total mass of the striker on the device is 6.35 kg. Low energy impact tests at 5 J energy level with a 12 mm diameter hemispherical striker were performed on the pipe sample placed on the V bearing.

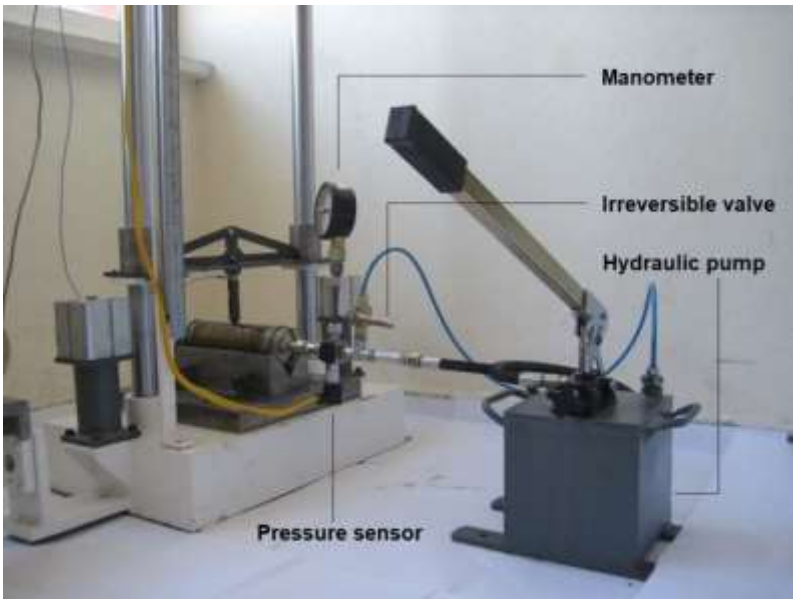


Figure 1. Low velocity impact test mechanism (Kara, 2012)

RESULTS AND DISCUSSION

Contact force-time histories

In Figure-2, contact force-time changes obtained from GRP composite pipe samples exposed to impact at three different internal pressure levels are given. As the internal pressure increases, the samples behave more rigidly. For this reason, the contact force of the sample applied with an internal pressure of 32 bar reached its highest value, while the contact time got its smallest value. When the force-time curves are examined, while the force value continues to increase, a sudden fall occurs when it reaches a certain value. This point is the point where permanent damage (matrix cracks and delamination) starts in the sample. When the force-time curves of the samples with lower internal pressure were examined, it was observed that the contact force decreased and the contact time increased as the pressure decreased.

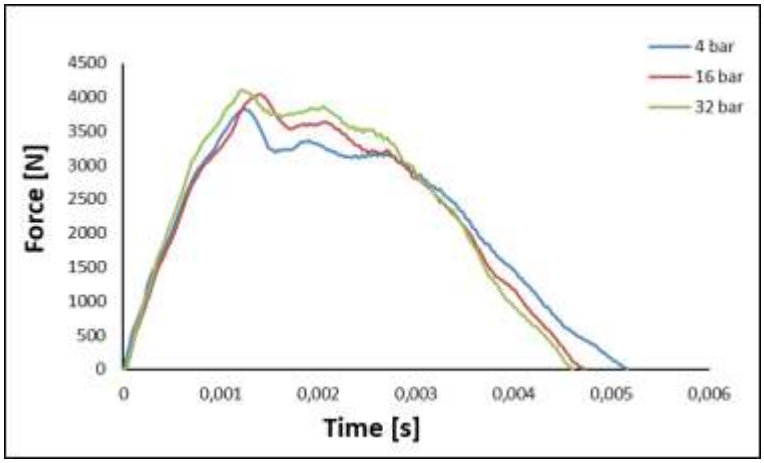


Figure 2. Force-time graph of the FRP composite pipe sample at 4 bar, 16 bar and 32 bar internal pressure levels

Contact force-displacement histories

In Figure-3, contact force-displacement changes obtained from GRP composite pipe samples at 5 J impact energy level for three different internal pressure values are given. The slope in the increasing part of the curve in force-subsidence graphs is called bending stiffness. It is observed that the bending stiffness gradually increases due to the increase in internal pressure. The highest bending stiffness value occurred in the curve obtained from the sample with 32 bar internal pressure. In addition, as the internal pressure increases, the largest displacement amount in the sample decreases. The strength of the bonds between fiber and matrix against impact also increases with the increase of internal pressure.

The area under the force-displacement curve gives the amount of energy absorbed by the sample during impact. Figure-4 shows the change in the amount of absorbed energy by the sample for 5 J energy level depending on the internal pressure. It is seen that as the internal pressure increases, the amount of absorbed energy decreases. Some of the impact energy is absorbed during impact, while the rest is transformed into rebound energy. When the graph is examined, it is seen that the sample with the highest rebound energy is the sample with 32 bar internal pressure. As the internal pressure decreases, the amount of absorbed energy increases and the amount of rebound energy decreases due to the decrease in the rigidity of the material.

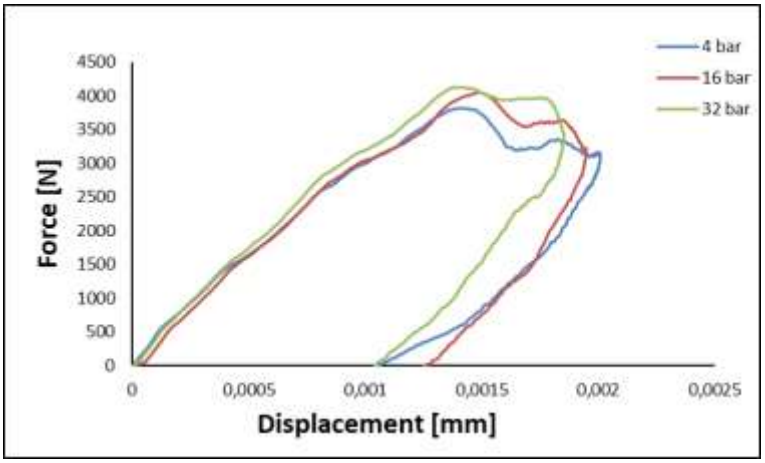


Figure 3. Force-displacement graph of the FRP composite pipe sample at 4 bar, 16 bar and 32 bar internal pressure levels

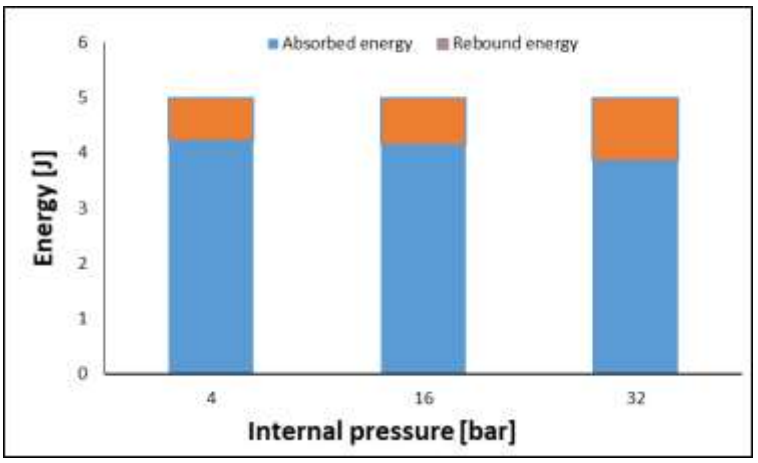


Figure 4. The absorbed energy and rebound energy change graph of the FRP composite pipe sample at 4 bar, 16 bar and 32 bar internal pressure levels.

Damage Mechanism

In Figure-5, damage areas of GRP composite pipes exposed to impact at 5 J energy level at 4 bar, 16 bar and 32 bar internal pressure are shown. High resolution photos were taken by shining light on the back of the damage areas. In glass fiber and Kevlar/epoxy samples, matrix cracks and delamination areas caused by impact can be detected by shining a light behind the sample (Taşyürek et al., 2020). When Figure-5 is examined, it is seen that the smallest damage occurred in the composite sample with 32 bar internal pressure and the biggest damage occurred in the sample with 4 bar internal pressure. In the center of all damage zones, the striker's penetration zone is visible. The area seen around the penetration zone and shrinking as the applied internal pressure decreases is the delamination area.

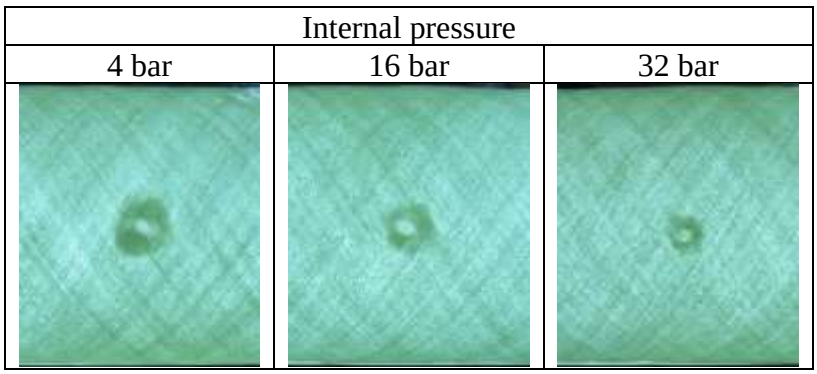


Figure 5. Damage images of GRP composite samples exposed to impacts at different internal pressure levels

The graph of the change in the damage area depending on the internal pressure is given in Figure-6. The damage area of the specimen, which was subjected to impact with 16 bar internal pressure, decreased by 29.7% compared to the damage area of the specimen with 4 bar internal pressure. The damage area of the sample with 32 bar internal pressure decreased by 37.5% compared to the damage area of the sample with 16 bar internal pressure. When the damage areas of the samples with the highest and lowest internal pressure are compared, it is seen that increasing the internal pressure from 4 bar to 32 bar creates a 56% smaller damage area.

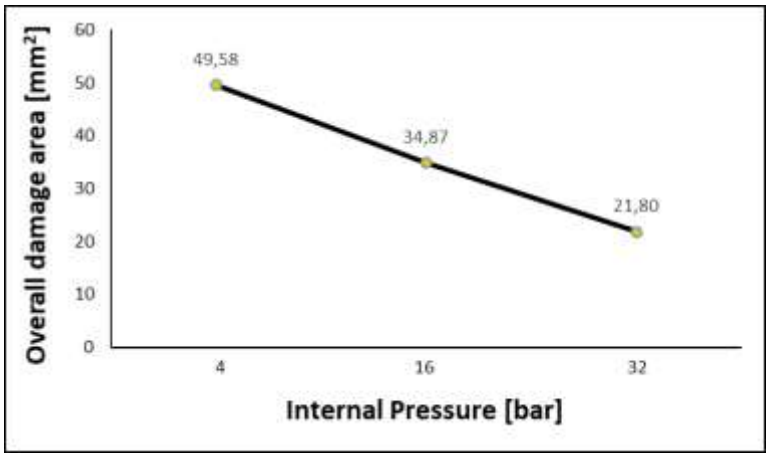


Figure 6. Damage area change graph for samples with 4 bar, 16 bar and 32 bar internal pressure

In Figure-7, the images obtained by taking high-resolution photographs of the sections and sample sub-surfaces of the samples exposed to impacts at different internal pressure levels are given. When the damage area is examined, it is seen that the damages occurring in the sample section and on the bottom surface decrease with the increase of the internal pressure.

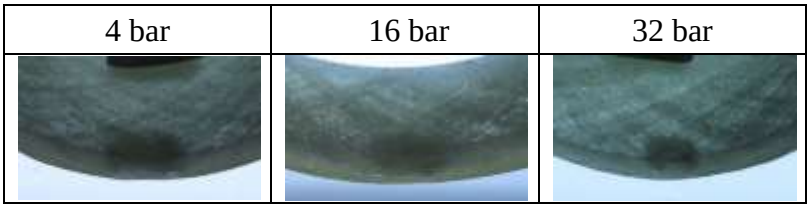


Figure 7. Damage images in the cross-sectional area of composite specimens exposed to impacts at different internal pressure levels

CONCLUSION

• Increasing internal pressure in GRP composite pipe samples subjected to impact caused an increase in bending stiffness.

• When the force-time diagrams are examined, it is seen that the greatest contact force occurs in the sample with 32 bar internal pressure. The contact force decreased as the internal pressure decreased.

• When the force-displacement diagrams are examined, the largest displacement value is seen in the sample with 4 bar internal pressure.

• As the stiffness of the samples increases, the absorbed energy by the sample during impact decreases and the rebound energy increases. Therefore, as the internal pressure increases, the energy absorbed decreases and the rebound energy increases.

• It is clearly seen that the impact damage area shrinks as the applied internal pressure increases. The largest delamination area for the same energy level was observed in samples with 4 bar internal pressure.

• Impact damages mostly spread around the center of the impact and most of it was caused by delaminations.

REFERENCES

Arslan, A, Severcan, M. (2021). Analysis of single curvature space truss beams made of glass frpnforced polyester (GRP) profiles with artificial neural networks. Niğde Ömer Halisdemir University Journal of Engineering Sciences, 10 (1), 312-318. DOI: 10.28948/ngumuh.815736

Hu, Y., Liu, D., Guo, J., Shi, Y., & Shan, C. (2021). Low-velocity impact damage research on 2-dimentional UHMWPE/CF hybrid woven laminates under preloading. Thin-Walled Structures, 161, 107472.

Deniz, M. E., & Karakuzu, R. (2012). Seawater effect on impact behavior of glass–epoxy

composite pipes. Composites Part B: Engineering, 43(3), 1130-1138.
Gunoz, A., Kepir, Y., & Kara, M. (2020). Tensile Strength Alteration of GFRP Composite Pipes Under Seawater-Dominated Conditions. Journal of Failure Analysis and Prevention, 20(4), 1426-1430. doi:10.1007/s11668-020-00962-2
Kara, M. (2012). Damage behavior under internal pressure of filament winding GRP pipes repaired with patch after low velocity impact (Doctoral dissertation, Selcuk University Institute of Science).
Kara, M., Uyaner, M., Avci, A., & Akdemir, A. (2014). Effect of non-penetrating impact damages of pre-stressed GRP tubes at low velocities on the burst strength. Composites Part B: Engineering, 60, 507-514.
Kaybal, H. B., Ulus, H., Eskizeybek, V., & Avcı, A. (2021). An experimental study on low velocity impact performance of bolted composite joints part 1: Influence of halloysite nanotubes on dynamic loading response. Composite Structures, 258, 113415.
Liao, B., Zhang, Z., Sun, L., Zhou, J., Wang, P., Lin, Y., ... & Fang, D. (2021). Experimental investigation on the double-position impact responses and damage mechanism for Z-pinned composite laminates. Composite Structures, 259, 113463.
Nebe, M., Schmack, T., Schaefer, T., & Walther, F. (2021). Experimental and numerical investigation on the impact response of CFRP under 3-point-bending. Composites Part C: Open Access, 4, 100079.
Öndürücü, A., & Gökhan, C. A. N. (2020). Investigation of the Effect of Impact Energies Applied to Glass and Kevlar Surfaces on Impact Behavior of Kevlar-Glass Fiber / Epoxy Resin Based Hybrid Composites with Functionalized Alumina and Silica. Suleyman Demirel University Journal of the Institute of Science, 24 (3), 707-717.
Sepetcioglu, H., Gunoz, A., & Kara, M. (2021). Effect of hydrothermal ageing on the mechanical behaviour of graphene nanoplatelets reinforced basalt fibre epoxy composite pipes. Polymers and Polymer Composites, 0967391121992939.
Tarakcioglu, N., Samanci, A., Arikan, H., & Akdemir, A. (2007). The fatigue behavior of (±55) 3 filament wound GRP pipes with a surface crack under internal pressure. Composite structures, 80(2), 207-211.
Taşyürek, M., & Kara, M. (2020). Low-velocity impact response of pre-stressed glass fiber/nanotube filled epoxy composite tubes. Journal of Composite Materials, 0021998320961552.
Ulus, H., Üstün, T., Şahin, Ö. S., Karabulut, S. E., Eskizeybek, V., & Avcı, A. (2016). Low-velocity impact behavior of carbon fiber/epoxy multiscale hybrid nanocomposites reinforced with multiwalled carbon nanotubes and boron nitride nanoplates. Journal of Composite Materials, 50(6), 761-770.
Xia, M., Kemmochi, K., & Takayanagi, H. (2001). Analysis of filament-wound fiber-reinforced sandwich pipe under combined internal pressure and thermomechanical loading. Composite structures, 51(3), 273-283.

TELEKOMİNİKASYON BAZ İSTASYONU SOĞUTULMASINDA GÜNEŞ KAYNAKLI SOĞURMALI SOĞUTMA SİSTEMİNİN KULLANIMI ANKARA İLİ UYGULAMASI

Mehmet Ümit İRVASA
Orcid: 0000-0001-6289-8352
Mustafa Bahadır ÖZDEMİR
Orcid: 0000-0001-7801-9367
Gazi Üniversitesi, Ankara Türkiye.

Özet

Telekomünikasyon baz istasyonları, mobil ağ sistemlerinde sinyal alışverişinde kullanılan birimlerdir. Baz istasyonları hizmet verdiği alanın büyüklüğüne göre; tek bir cihaz ve antenden (piko baz) oluşacağı gibi birçok cihazın bulunduğu bir kabin ve anten kulesinden (makro baz) oluşabilmektedir. Kendi fiziksel şebeke altyapısına sahip olan iletişim firmalarında toplam elektrik tüketiminin %60'ını baz istasyonları tüketmektedir. Dünyada, 2020 yılında telekomünikasyon baz istasyonlarının sayısının 11 milyona ulaştığı ve baz istasyonları tarafından tüketilen elektrik enerjisi 98 TWh olduğu tahmin edilmektedir. Makro baz istasyon kabinlerinde, cihazların ısıl yüklerinden ve çevresel koşullar nedeniyle soğutma sistemi bulunması gerekmektedir. Makro baz istasyonun enerji tüketiminin %10-%25'i soğutma sisteminin çalışması için harcanılmaktadır. Baz istasyonlarının elektrik enerjisi tüketimini azaltabilmek için pek çok çalışmalar yapılmıştır. Bu çalışmalar kapsamında soğutma maliyetinin düşürülmesi için yapısal ve sistemsel bazı çözümler üretilmiştir. Bu çalışmada telekomünikasyon baz istasyonlarında soğutma maliyetinin azaltılması için Güneş kaynaklı Lityum Bromür – Su akışkan çiftini kullanan sürekli çalışan soğutma sistemleri incelenmiş ve düşük kurulum maliyetine sahip bir soğurmalı soğutma sistemin tasarımı yapılmış, Ankara İline ait meteorolojik veriler kullanılarak bilgisayar ortamında soğutma sistemi modellenmiştir. Elde edilen sonuçlar ile buhar sıkıştırmalı çevrim ile çalışan soğutma sisteminin yatırım ve işletme giderleri kıyaslaması yapılmıştır. Ankara gibi soğuk iklime sahip ve yıllık güneş ışınımın fazla olmadığı bir bölgede güneş kaynaklı soğurmalı sistem, buhar sıkıştırmalı sisteme göre daha yüksek işletme maliyetine sahip olduğu görülmüştür. Yüksek maliyetin düşürülmesi için soğurmalı soğutma sistemine ek olarak serbest soğutma sistemi kullanılmış ve sistemin işletme giderleri ilk duruma göre yaklaşık %97-%81 arasında düşürülmüştür. Serbest soğutma sitemi destekli Güneş Kaynaklı Soğurmalı Soğutma sistemi ile buhar sıkıştırmalı soğutma sisteminin kurulum ve işletme maliyetleri sabit yıllık %10 enflasyona göre hesaplanmış her iki sistemin 6 yıl sonunda toplam maliyetlerinin eşitlenebileceği hesaplanmıştır.

Anahtar Kelimler: Telekomünikasyon baz istasyonu, Güneş kaynaklı soğurmalı soğutma

USING SOLAR ASSISTED ABSORPTION COOLING SYSTEM IN THE TELECOMUNICATION BASE STATION COOLING ANKARA PROVINCE APPLICATION

Abstract

Telecommunications base stations are units used in signal exchange in mobile network systems. According to the size of the area they serve base stations can consist of a single device and single antenna (pico base) as well as a cabinet with many devices and an antenna tower (macro base). In the world, in 2020, it is estimated that the number of telecommunication base stations reached 11 million and the electrical energy consumed by the base stations is 98 TWh. Macro base station cabinets must have a cooling system due to the thermal loads of the devices and environmental conditions. 10-25% of the energy consumption of the macro base station is spent for the operation of the cooling system. Many studies have been carried out to reduce the electrical energy consumption of base stations. Within the scope of these studies, some structural and systemic solutions were devised to reduce the cooling cost. In this study, in order to reduce the cost of cooling in telecommunication base stations, continuously operating cooling systems using Solar-borne Lithium Bromide - Water fluid pairs were examined and an absorption cooling system with low installation cost was designed, and a computerized cooling system was modelled using meteorological data of Ankara province. A comparison of the investment and operating costs of the cooling system operating with the vapor compression cycle has been made with the results obtained. In a region such as Ankara, which has a cold climate and does not have much annual solar radiation, the solar absorption system has higher operating costs compared to the vapor compression system. In order to reduce the high cost, free cooling system was used in addition to the absorption cooling system and the operating costs of the system were reduced by approximately 97% -81% compared to the initial situation. Installation and operating costs of the Solar Based Absorption Cooling system with free cooling system support and the vapor compression cooling system were calculated according to a fixed annual inflation of 10%, and the total costs of both systems were calculated to be equal at the end of 6 years.

Keywords: Telecommunication base station, solar absorption cooling

Giriş

Gelişen teknolojinin etkisiyle telekomünikasyon cihazları daha fazla nitelikli hale gelmekte, daha fazla kullanıcı tarafından kullanılmakta ve cihazların talep ettiği veri hacmi artmaktadır. Bu artışın sonucu olarak talep edilen veri hacmini sağlamak amacıyla telekomünikasyon altyapısı büyümekte ve altyapının çalışabilmesi için daha fazla enerjiye ihtiyaç duymaktadır. Dünyada, 2020 yılında telekomünikasyon baz istasyonlarının sayısının 11 milyona ulaştığı ve baz istasyonları tarafından tüketilen elektrik enerjisi 98 TWh olduğu tahmin edilmektedir.(Wolde & Alarefi, 2021) Kendine ait mobil alt yapısı olan bir şirketinin elektrik toplam elektrik tüketiminin %60'ı telekomünikasyon baz istasyonlarının (TBS) çalışması için harcanmaktadır.(Ahmed vd., 2018)

Telekomünikasyon Baz istasyonları kapsama alanı (anten gücü) baz alındığında makro, mikro ve piko olmak üzere üç kategoriye ayrılmaktadır. Makro Baz istasyonu 0-35 km mesafedeki mobil cihazların iletişiminde, mikro baz istasyonu şehir içinde cadde, meydan gibi kullanıcı

yoğunluğunun çok olduğu alanlarda, piko baz istasyonu ise en küçük kapsama alanı ile bina içine (Avm, Otel, Plaza gibi) hizmet vermek üzere kullanılmaktadır. (*Bilgi Teknolojileri ve Haberleşme Kurumu*, 2021)

Makro baz istasyonlarının kapsama alanının geniş olması nedeniyle daha büyük elektronik ekipmana sahiptirler. Bu ekipmanlar baz istasyonunun kapsama alanı ve anlık bağlantı sayısına bağlı olarak pek çok kısımdan oluşabilmekte ve toplam ısıl güçleri 2-7.5 kWh arasında değişmektedir. (Zhang vd., 2008)(Gürses, 2012)(Tu vd., 2011) Makro Baz istasyonlarının tükettiği elektrik enerjisinin %10-%25'i soğutma sisteminin çalışması için harcanmaktadır.(Wolde & Alarefi, 2021)

Materyal ve Yöntem

Bu çalışmada, telekomünikasyon baz istasyonunda bulunan cihazın ısıl yükü ve kabin özellikleri ile Ankara ili 2014 yılı meteorolojik verileri (dış hava sıcaklığı, rüzgâr hızı, güneş radyasyonu) kullanılarak Matlab programıyla benzetim (simülasyon) yapılmıştır.

Avrupa Telekomünikasyon Standartları Enstitüsü (ETSI) bu değeri 25 ^{o}C (±2 ^{o}C) olarak belirleniştir. (Environmental Engineering (EE); Metrics and Measurement Method for Energy Efficiency of Wireless Access Network Equipment ; Part 2 : Energy Efficiency - dynamic measurement method, 2018) Çalışmada, standartlara uygun olarak kabinin içinin sıcaklığının 25 ^{o}C olduğu kabul edilmiştir.

Makro baz istasyonu yapısı çeşitli yapı elemanları ile inşa edilmektedir. Ülkemizde ise inşası ve montajı kolay olan prefabrik yapılar tercih edilmekte ve prefabrik yapı üreticileri tarafından çeşitli baz istasyonu kabin çözümleri sunulmaktadır. Benzetimde (simülasyon) ülkemizde faaliyet gösteren GSM firması tarafından kullanılmakta olan bir baz istasyonu kabininin yapısal özellikleri esas alınmıştır. (Gürses, 2012) Bu değerlere göre kabinin farklı yüzeylerindeki ısı iletim katsayıları hesaplanmıştır.

Tablo 1 Telekomünikasyon Baz İstasyonu Kabinini Özellikleri

YÜZEY	BOYUTLARI (m)	ISI İLETİM KATSAYISI (W/mK)
YAN DUVAR	2 x 2.4	0.41
TAVAN	2 x 2	0.32
TABAN	2 x 2	0.28

Kabinin her yüzeyinin farklı ısı iletim değerine ve günün saatine göre değişen güneş ışınım değerine sahip olmasından dolayı farklı yüzey sıcaklıkları oluşmaktadır. Yüzey sıcaklıklarının hesaplanabilmesi için Denklem (1) kullanılmıştır.(Cengel, 2003)

$$Q_{iletim} = Q_{güneş} - Q_{taşınım} - Q_{ışınım} \quad (1)$$

Denklem (1) de bulunan terimlerin matematiksel ifadeleri yazıldığında Denklem (2) elde edilir.

$$k \cdot \left(T_{yüzey}\text{-}T_{iç\ duvar}\right) = x * \left[\alpha \dot{q}_{güneş} - h \cdot \left(T_{yüzey} - T_{hava}\right) - \varepsilon \cdot \sigma \cdot \left(T_{yüzey}^4 - T_{hava}^4\right)\right] \quad (2)$$

İç duvar sıcaklığı sabit 303.15^{0}K (25^{0}C) olarak kabul edildiğinde ve bilinmeyen değişken olan yüzey sıcaklığı terimi çekildiğinde ise Denklem (6) elde edilir. (Isı taşınım katsayısının hesaplanması için dış hava sıcaklığı ve rüzgar hızı kullanılmıştır.)

$$T_{yüzey} = \left[\frac{x}{k} * \left(\alpha \dot{q}_{güneş} - \left[h\left(T_{yüzey} - T_{hava}\right)\right] - \left[\varepsilon\sigma\left(T^4_{yüzey} - T^4_{hava}\right)\right]\right)\right] + (303.15) \qquad (3)$$

Yüzey sıcaklığı bilindiğinde, ısı iletim denkleminden sistemin belirli bir ısı yükü altında atmosfere transfer ettiği ısı miktarı bulunabilmektedir. Bulunan değer sistemin saatlik soğutma ihtiyacını verecektir.

Güneş kaynaklı soğurmalı soğutma sisteminde kullanılacak güneş kolektörlerinin verim hesaplamasında daha önce yapılan deneylerin sonuçlarına bağlı olarak geliştirilen Denklem (4) kullanılabilir.(Ketfi vd., 2016) (Martı vd., 2012)

$$\eta_c = a_0 - a_1\left(\frac{T_{ort}-T_{hava}}{I}\right) - a_2\left(\frac{T_{ort}-T_{hava}}{I}\right)^2 \qquad (4)$$

Denklem (4) te bulunan sabit katsayıların kollektör türüne göre seçimi aşağıda sunulmuştur.

Tablo 2 Güneş kolektörleri verim hesaplamasında kullanılan katsayılar

Kollektör Tipi	Düzlemsel Kollektör	Vakum tüplü ısı borulu kollektör(Viessmann, 2021)
a0 (W/ m2K)	0.818	0.832
a1 (W/ m2K)	3.47	1.87
a2 (W/ m2K2)	0.0101	0.0041

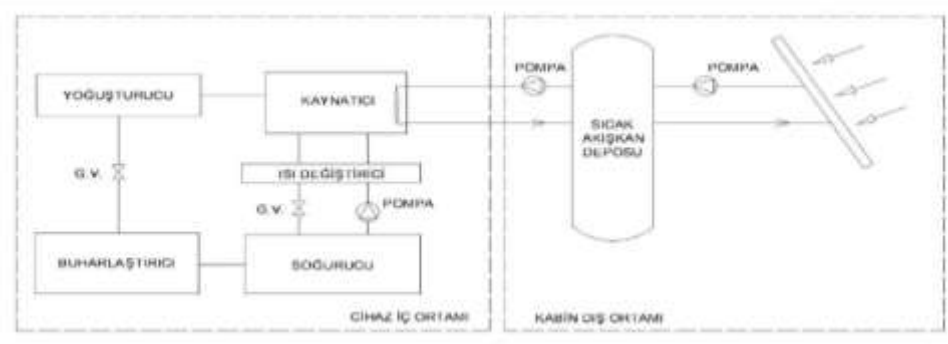
Verimi bilinen Güneş kolektörlerinin ürettiği ısıl güç Denklem (5) de gösterilmiştir.

$$Q_{\text{güneş kolektörü}} = \eta_C * A_c * I \qquad (5)$$

Soğutma sistemi için tasarımı için LiBr-H_2O akışkan çifti kullanan tek kademe soğurmalı sistemi kullanılmıştır. LiBr-H_2O akışkan çifti ile çalışan soğurmalı soğutma sisteminde su soğutucu akışkan, Lityum Bromür ise soğurucu akışkan görevi görmektedir. LiBr-H_2O akışkan çifti kullanan soğurmalı soğutma sisteminde meydana gelecek herhangi bir hasar durumunda sistemden su buharı dışarıya çıkacağı için sistem güvenli bir şekilde kullanılmaktadır. Ayrıca LiBr-H_2O akışkan çifti ile çalışan soğurmalı soğutma sisteminin bir diğer avantajı ise düşük kaynatıcı sıcaklığına ihtiyaç duymasıdır. Sürekli enerji gerektiren bir sistem için ısı enerjisinin depolanması ve bu enerjinin korunması büyük bir sorun olabilmektedir.

Telekomünikasyon baz istasyonları sürekli çalıştığı için ısı üretmektedir ve üretilen ısı enerjisinin kabin dışına (atmosfere) atımı kesintisiz olarak devam etmek zorundadır. Sürekli çalışan Güneş kaynaklı soğurmalı soğutma sistemin için genellikle ısıl depolu (heat storage) ve soğutucu akışkan depolu (refrigerant storage) tasarım kullanılmaktadır. (Al-Ugla vd., 2015)

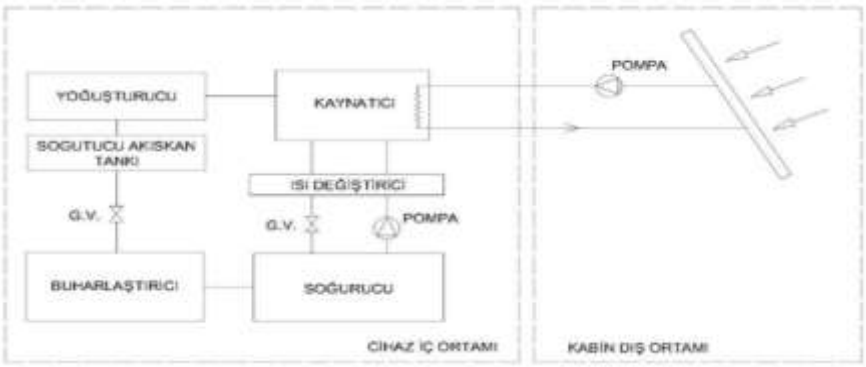
Sıcak depolu tasarımda soğurmalı soğutma sistemini sürekli beslemek için elde edilen güneş



kaynaklı ısı enerjisi depolanmaktadır.

Şekil 1 Sıcak Depolu Güneş Kaynaklı Soğurmalı Soğutma Sistemi Şeması

Soğutucu akışkan depolama sisteminde yoğuşturucudan çıkan anlık ihtiyaçtan fazla olan soğutucu sıvı depolanarak sistemin ısı ile beslenmediği zamanda kullanılmaktadır. (Lazzarin, 2007)(Said vd., 2012)



Şekil 2 Soğutucu Akışkan Depolu Güneş Kaynaklı Soğurmalı soğutma sistemi şeması

Bu çalışmada LiBr-H_2O akışkanı kullanan tek kademeli soğurmalı soğutma sistemi tasarımında bazı kabuller yapılmıştır. Bu kabuller:

- Soğutma sisteminin kararlı bir yapıda olduğu (steady-state),
- Isı değiştiricisinin verimi %70 olduğu,
- Yoğuşturucu sıcaklığını 313.15K olduğu ve doymuş sıvı suyun bulunduğu,
- Buharlaştırıcı çıkış sıcaklığının 288.15 K olduğu ve doymuş buharın çıktığı,
- Kaynatıcı çıkış sıcaklığı 353.15 K olduğu ve kaynatıcı çıkışında saf su buharının bulunduğu kabul edilmektedir.
- Soğurmalı Soğutma sistemindeki tersinmezlikler ihmal edilmiştir.
- Absorber ve Yoğuşturucu hava ile soğutulmaktadır.

Soğurmalı soğutma sistemi için yapılan matematiksel modelde LiBr-H_2O karışımının entalpi değerini bulmak için Merkel denklemi (diyagramı), karışımın basıncını bulmak için Oldham denklemi (diyagramı) kullanılmıştır. (Florides vd., 2003)

Isı deposu kullanan güneş kaynaklı soğurmalı soğutma sistemi için sıcak sıvı deposu miktarı denklem (6) kullanılarak hesaplanabilir. Denklemin paydasında bulunan terimler güneş enerjisinin kullanımda olduğu zamanda depo tankına giren ve depo tankından çıkan sıvının entalpileri ifade etmektedir. (Al-Ugla, 2015)

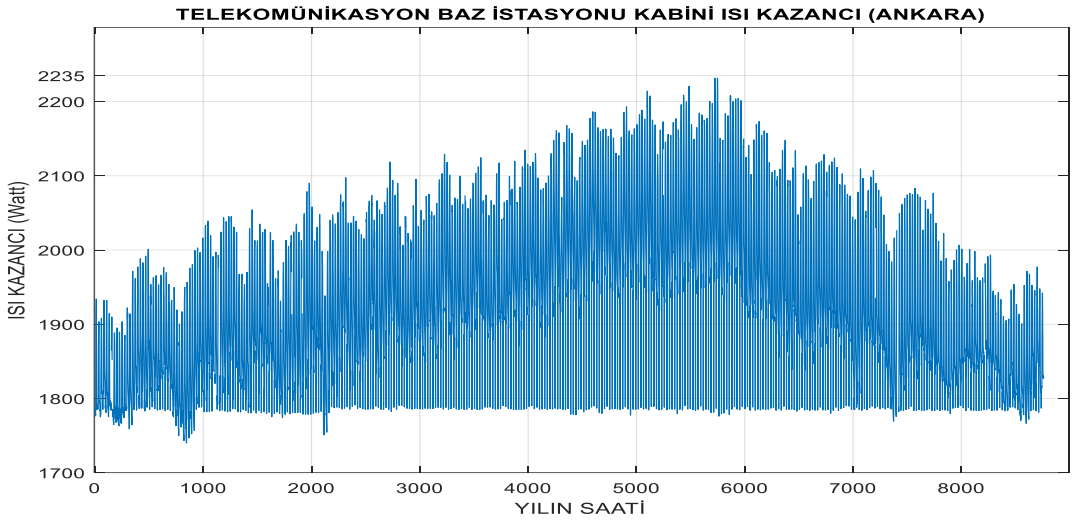
$$m_{depo} = \frac{Q_{kaynatıcı} * 3600 * [24 - Günlük\ güneşli\ saat\ sayısı]}{h_{tank\ giris} - h_{tank\ çıkış}} \quad (6)$$

Soğutucu depolayan güneş kaynaklı soğurmalı soğutma sisteminde soğutucu akışkan tank deposunun hacmi ise Denklem (7) de verilmiştir.

$$m_{depo} = \frac{3600 * Q_E * [24 - Günlük\ güneşli\ saat\ sayısı]}{h_{buharlaştırıcı} - h_{yoğuşturucu}} \quad (7)$$

Sonuçlar

Ankara iline ait gerçek meteorolojik veriler kullanıldığında açık bir alanda bulunan telekomünikasyon baz istasyonunun, cihazlar tam kapasite çalışırken 2000Watt ısıl yük altında, kabinin saatlik ısıl yükü 2235Watt olarak Şekil 3 te görülmektedir.



Şekil 3 Baz İstasyonu Kabinin Yıllık Isı Kazancı

2235 Wattlık soğutma ihtiyacına göre 80º C derece kaynatıcı sıcaklığına sahip ısı depolu ve soğutucu depolu güneş kaynaklı soğurmalı soğutma sisteminin cihaz kapasiteleri ve sistem parametreleri Tablo 3 de verilmiştir.

Tablo 3 Cihaz Kapasiteleri Kıyaslaması

	ISI DEPOLAMA TASARIMI	SOĞUTUCU DEPOLAMA TASARIMI
Kaynatıcı (Watt)	2736	3428
Yoğuşturucu (Watt)	2326	2948
Buharlaştırıcı (Watt)	2235	2235
Soğurucu (Watt)	2613	3280
Dolaşan soğutucu kütlesel debisi (kg/sn)	0.00095	0.0012
Kollektör Alanı (m^2)	25	13
Depolama Hacmi (m^3)	0.8	0.082

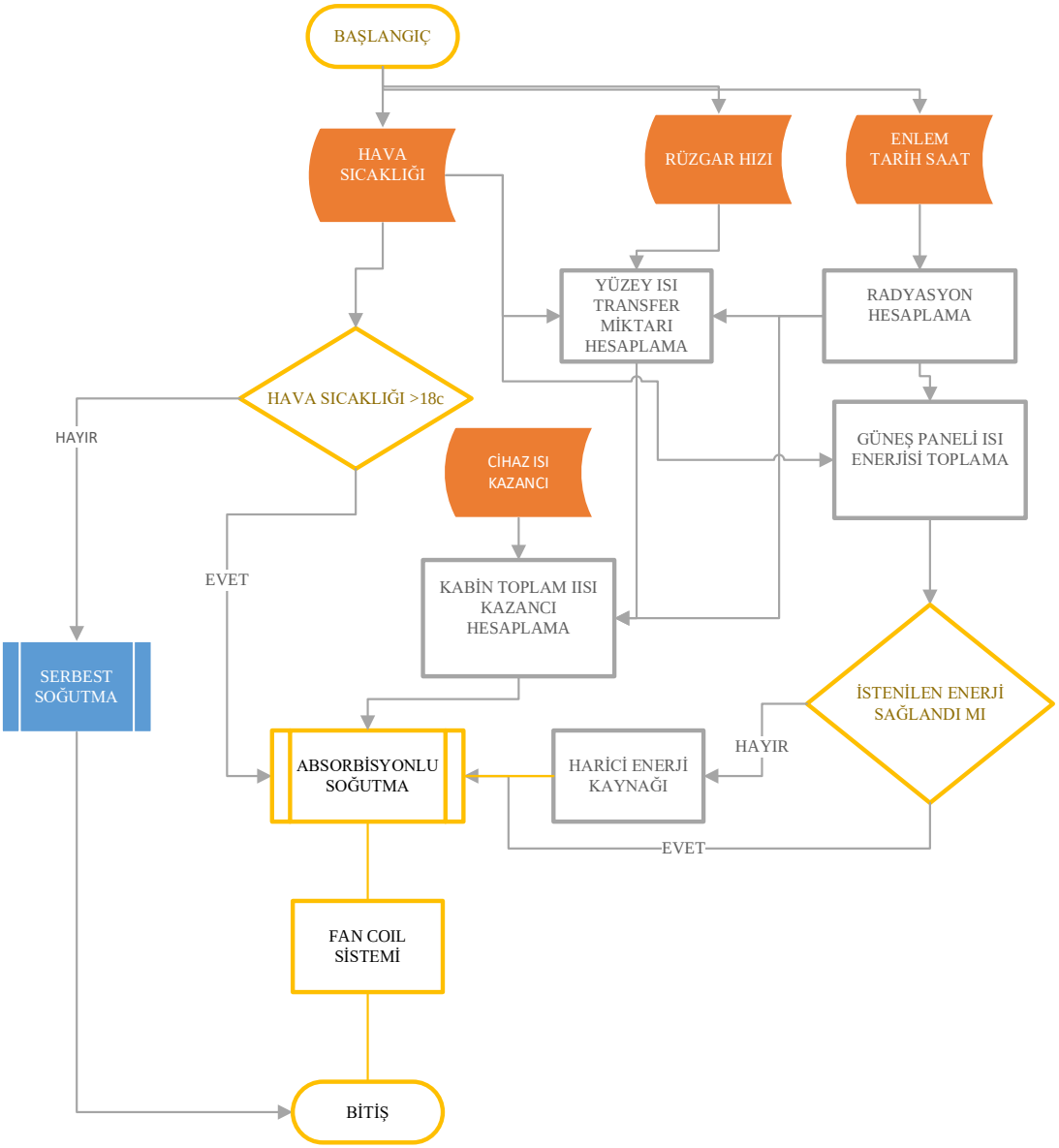
Daha önce yapılan araştırmada hesaplanan değer Tablo 3 de görülebileceği üzere iki farklı sistemin karşılaştırılmasında soğutucu depolama tasarımı hem boyut hem de kollektör alanı olarak daha avantajlı olduğu görülerek benzetimde bu sistem seçilmiştir.

Yapılan Matlab programında yapılan hesaplama sonucunda tek kademeli soğurmalı sistem harcadığı elektrik enerjisi miktarı etkinliği 4 olan buhar sıkıştırmalı sistemin tükettiği elektrik enerjisi miktarına göre kıyaslandığında yılda yaklaşık 15330 kWh daha fazla elektrik enerjisi tükettiği hesaplanmıştır.

Güneş kaynaklı Absorbisyonlu Soğutma Sisteminin harcadığı enerji miktarı halihazırda kullanılan buhar sıkıştırmalı sisteme göre daha fazla olduğu görülmektedir. Bu sorunun çözümü için serbest soğutma tekniklerinden biri olan dış hava ile soğutma kullanılabilir. Ankara ili için 18ºC ye kadar olan dış hava sıcaklığında çalışacak serbest soğutma sisteminin yılda yaklaşık 6085 saat çalışması beklenmektedir. Bu şarta bağlı olarak çalışan serbest soğutma sistemi ile desteklenen Güneş kaynaklı soğurmalı soğutma sistemi için Şekil (4 de gösterilen akış şeması tasarlanmış ve hesaplamada bu şema kullanılmıştır.

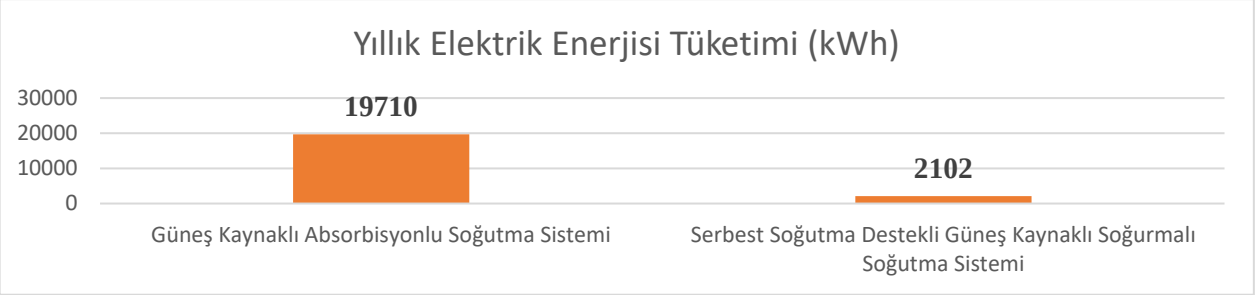
18 ºC dış hava sıcaklığında 2000W ısıl güce sahip telekomünikasyon ekipmanlarının soğutulması için 50 Watt gücünde bir aksiyal fan yeterli olmaktadır. Yeni durum elektrik enerjisi tüketimi buhar sıkıştırmalı soğutma sistemi ile kıyaslandığında yılda yaklaşık 2277 kWh daha az elektrik enerjisi tüketecek, serbest soğutma olmayan soğurmalı soğutma sisteme göre ise yıllık 17607 kWh daha az elektrik enerjisi tüketecektir. Yüzde olarak ifade etmek gerekirse soğutmalı soğutma sisteminin elektrik enerjisi tüketimi serbest soğutma uygulaması ile %89 oranında düşmektedir.

Buhar sıkıştırmalı sistem saatte yaklaşık 500 Watt elektrik enerjisi harcarken Güneş kaynaklı soğurmalı soğutma sistemi ise yaklaşık 250 Watt elektrik enerjisine ihtiyaç duymaktadır. Telekomünikasyon baz istasyonu elektrik enerjisi kesintisine uğradığında soğutma sistemi tarafından talep edilen elektrik enerjisi miktarı daha az olacağı için akümülatörlerden beslenen sistem daha uzun süre çalışabilecektir.



Şekil 4 Hesaplamada kullanılan Akış Şeması

Sürekli çalışan buhar sıkıştırmalı soğutma sisteminin (split klima sistemimim) yaklaşık 5 yılda bir değişmesi gerekmektedir. Soğurmalı soğutma sisteminde korozyonlar nedeniyle cihaz ömrü yaklaşık 20 yıl olmaktadır. (Florides vd., 2003)



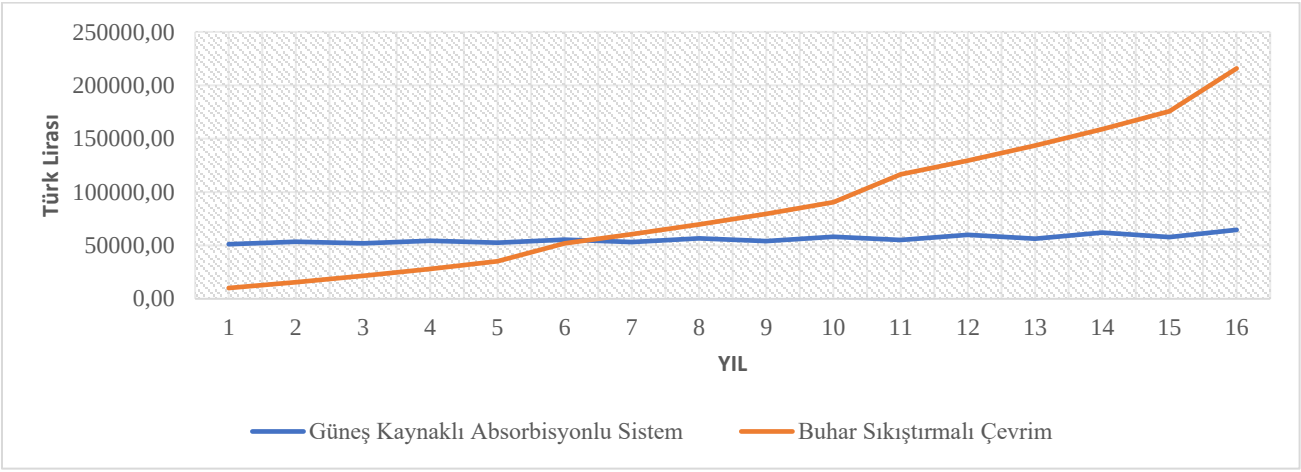
Şekil 5 Serbest Soğutma destekli sistem ile serbest soğutma olmayan sistemin elektrik tüketimi kıyaslaması

Buhar sıkıştırmalı soğutma sistemi, Güneş destekli soğurmalı sistem ve serbest soğutma sisteminin kurulum maliyetleri Tablo 4 te verilmiştir.

Tablo 4 Sistem Kurulum Maliyetleri

Cihaz	Yaklaşık Maliyet (Türk Lirası)
Soğurmalı Soğutma Sistemi (Chiller+Güneş Kollektörü+ Fan Coil)	48613 TL
Serbest Soğutma	1500 TL
Toplam Maliyet	50113 TL
Buhar Sıkıştırmalı Soğutma Sistemi (Split Klima)	5500TL

Soğurmalı soğutma sisteminin korozyon sorunlarından dolayı yaklaşık 20 yıl çalışacağı tahmin edilmektedir. (Florides vd., 2003)(Yattara vd., 2003) Sürekli çalışan bir buhar sıkıştırmalı çevrim kullanan soğutma sistemi (split klima) için verimli kullanım süresi 5 yıl, serbest soğutma için kullanılan fanın kullanım süresi 2 yıl olarak kabul edilmiştir.



Şekil 6 Soğutma Sistemlerinin Toplam Giderlerinin Kıyaslaması

Enflasyon oranı %9 olarak kabul edildiğinde, buhar sıkıştırmalı soğutma sistemi ile serbest soğutma sistemi destekli Güneş kaynaklı soğurmalı soğutma sistemin devreye alınmasından yaklaşık 6 yıl sonra ilk yatırım ve işletme maliyetlerinin eşitlendiği görülmektedir.

Tartışmalar ve Öneriler

Görüleceği üzere Serbest Soğutma Destekli Güneş Kaynaklı Soğurmalı Soğutma Sistemi hem ekonomik açıdan hem de elektrik kesintilerinde sistemin daha uzun çalışması açısında avantajlıdır. Konu ile ilgili henüz deneysel çalışmanın bulunmamasından dolayı yapılan hesaplamada elde edilen sonuçlar ile yapılacak olan deneysel çalışma sonuçlar kıyaslanabilir.

Kaynakça

Ahmed, F., Naeem, M., Ejaz, W., Iqbal, M., & Anpalagan, A. (2018). Resource management in cellular base stations powered by renewable energy sources. *Journal of Network and Computer Applications*, *112*(November 2017), 1–17. https://doi.org/10.1016/j.jnca.2018.03.021

Al-Ugla, A. A. (2015). *Development Of A Solar Air- Condıtıonıng System In Saudi Arabia* [KING FAHD]. http://library1.nida.ac.th/termpaper6/sd/2554/19755.pdf

Al-Ugla, A. A., El-Shaarawi, M. A. I., & Said, S. A. M. (2015). Alternative designs for a 24-hours operating solar-powered LiBr–water absorption air-conditioning technology. *International Journal of Refrigeration*, *53*, 90–100. https://doi.org/10.1016/j.ijrefrig.2015.01.010

Bilgi Teknolojileri ve Haberleşme Kurumu. (2021). http://www.bthk.org/tr/tuketici/baz-istasyonlari-ve-saglik

Cengel, Y. A. (2003). Heat Transfer: A Practical Approach. Içinde *Mc Graw-Hill*. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC341276/pdf/nar00305-0003.pdf

Environmental Engineering (EE); Metrics and Measurement Method for Energy Efficiency of Wireless Access Network Equipment ; Part 2 : Energy Efficiency - dynamic measurement method, 1 1 (2018). https://www.etsi.org/deliver/etsi_ts/102700_102799/10270602/01.05.01_60/ts_1027060 2v010501p.pdf

Florides, G. A., Kalogirou, S. A., Tassou, S. A., & Wrobel, L. C. (2003). Design and construction of a LiBr-water absorption machine. *Energy Conversion and Management*, *44*(15), 2483–2508. https://doi.org/10.1016/S0196-8904(03)00006-2

Gürses, C. (2012). *Gsm Baz İstasyonlarında Enerji Verimlilği Amaçlı Isıl Modelleme Ve Deneysel Analiz* [Master Thesis, İstanbul Technical University]. https://tez.yok.gov.tr/UlusalTezMerkezi/TezGoster?key=vVNzTGHHhjH-u3WMToxQ-gBA9VxO0JVPEP8nXPBWZ-EsTYuwo14I0EFA2jtPTvct [01.01,2020]

Ketfi, O., Merzouk, M., Merzouk, N. K., & Metennani, S. El. (2016). Modeling and simulation of a single stage solar absorption cooling machine under Algerian climate. *Proceedings of 2015 IEEE International Renewable and Sustainable Energy Conference, IRSEC 2015*, 2–6. https://doi.org/10.1109/IRSEC.2015.7455091

Lazzarin, R. M. (2007). Solar cooling plants: How to arrange solar collectors, absorption chillers and the load. *International Journal of Low Carbon Technologies*, *2*(4), 376–390.

https://doi.org/10.1093/ijlct/2.4.376

Martı, C., Lucas, M., & Martı, P. J. (2012). *Design and test results of a low-capacity solar cooling system in Alicante (Spain). 86*, 2950–2960. https://doi.org/10.1016/j.solener.2012.06.030

Said, S. A. M., El-Shaarawi, M. A. I., & Siddiqui, M. U. (2012). Alternative designs for a 24-h operating solar-powered absorption refrigeration technology. *International Journal of Refrigeration*, *35*(7), 1967–1977. https://doi.org/10.1016/j.ijrefrig.2012.06.008

Tu, R., Liu, X. H., Li, Z., & Jiang, Y. (2011). Energy performance analysis on telecommunication base station. *Energy and Buildings*, *43*(2–3), 315–325. https://doi.org/10.1016/j.enbuild.2010.09.019

Viessmann. (2021). *VITOSOL Planlama Kılavuzu*. https://www.viessmann.com.tr/content/dam/vi-brands/TR/Brosur/TumUrunler/GunesEnerjiSistemleri/200906_PK_Vitosol_5870440.pdf/_jcr_content/renditions/original./200906_PK_Vitosol_5870440.pdf

Wolde, H. K., & Alarefi, S. A. S. (2021). *Sustainable Feasibility and Economic Viability for Renewable Power assisted Base Stations Vehicle-to-Telecom-Grid*. *Irec*, 1–6. https://doi.org/10.1109/irec48820.2020.9310437

Yattara, A., Zhu, Y., & Ali, M. M. (2003). Comparison between solar single-effect and single-effect double-lift absorption machines (Part I). *Applied Thermal Engineering*, *23*(15), 1981–1992. https://doi.org/10.1016/S1359-4311(03)00132-7

Zhang, Y., Chen, Y., Wu, J., & Meng, Q. (2008). Study on energy efficient envelope design for telecommunication base station in Guangzhou. *Energy and Buildings*, *40*(10), 1895–1900. https://doi.org/10.1016/j.enbuild.2008.04.006

MODELISATION DE LA VULNERABILITE DES AIRES DE PATURAGE AUX RISQUES D'INONDATIONS PLUVIALES ET FLUVIALES DANS L'EXTREME-NORD DU BENIN

Talahatou TABOU
Guy WOKOU
Soufouyane ZAKARI
Ibouraïma YABI
Université d'Abomey-Calavi, Bénin

Résumé
Le département de l'Alibori fait partie des zones d'élevage par excellence avec près de la moitié de l'effectif total du cheptel national. La récurrence des contraintes liées au climat ajoutées aux facteurs anthropozoogènes compromet l'avenir de l'élevage pastoral dans cette région du Bénin. L'objectif de la présente recherche est de modéliser la vulnérabilité des aires de pâturage aux risques d'inondation dans les Communes de Banikoara, Kandi, Malanville et Karimama. Les hauteurs pluviométriques moyennes annuelles des 11 stations météorologiques extraites du fichier de l'Agence pour la Sécurité de la Navigation Aérienne en Afrique et à Madagascar (ASECNA) couvrant les quatre Communes sur la période 1981-2017, les données satellitales constituées de l'image SRTM de 2010 et l'image Landsat OLI-TIRS de septembre 2017 de la scène ayant pour Path : 192 et Row : 053 ont servi à la modélisation de la vulnérabilité des aires de pâturage aux risques d'inondation pluviale et fluviale. Le logiciel ArcGIS a permis d'évaluer les facteurs d'exposition, de sensibilité, les impacts potentiels et la vulnérabilité des aires dans chaque Commune concernée. Les résultats obtenus montrent qu'à Karimama, les terres à fort potentiel d'impact aux inondations représentent 7,82 % soit 47 779,43 ha, dans la Commune de Malanville, ces terres fortement impactées font 11,66 % du territoire communal, 0,12 % à Kandi et 0,87 % à Banikoara. Les aires de pâturage de la Commune de Karimama sont plus vulnérables aux inondations avec 89,92 % d'espace fortement et moyennement vulnérable, suivie de Banikoara (66,87 %), de Malanville (65,31 %) et de Kandi (47,15 %). Pour réduire les effets de la vulnérabilité des aires de pâturage sur le cheptel dans ces Communes, les acteurs et les décideurs doivent œuvrer pour l'amélioration de la résilience à travers le renforcement des capacités d'adaptation.

Mots clés : Extrême-Nord Bénin ; modélisation ; vulnérabilité ; aires de pâturage ; Inondations

ÖĞRETMEN ADAYLARINA GÖRE 21.YÜZYILDA 4C BECERİLERİ

Doç. Dr. Sevda KOÇ AKRAN
Siirt Üniversitesi, Türkiye
ORCID NO: 0000-0003-4205-0148

Özet

21. yüzyılda, öğrencilerin bilgi ve ağ toplumlarında başarılı olmasını sağlayan üst düzey beceriler bulunmaktadır. Bu becerilerin başta eğitim olmak üzere birçok kurumdaki bireylerde bulunması beklenmektedir. Bunlar; öğrenme, yenilikçi, bilgi, medya, teknoloji, yaşam ve kariyere yönelik becerilerdir. *Öğrenme ve yenilikçi beceriler* arasında; öğrencilerin yaratıcı ve eleştirel düşünmeye sahip olması beklenmekte, problem çözme, iletişim ve işbirliği içinde çalışması amaçlanmaktadır. *Bilgi, medya ve teknoloji becerileri arasında*; bilgi, iletişim ve medya okuryazarlığı bulunmaktadır. Yaşam ve kariyer becerilerinde ise; esneklik ve uyum, kendini yönetme, sosyal beceriler, üretkenlik, liderlik ve sorumluluk yer almaktadır. 21.yüzyılda küreselleşen dünyada değişen eğitim anlayışlarına uygun öğrenci profillerinin yetiştirilmesinde bütün bu becerilerin çok büyük bir yeri bulunmaktadır. Çünkü bilginin hızlı değiştiği toplumlarda bir iş sahibi olmak ve bu toplumların bireye kazandırmış olduğu yeterliliklere sahip olmak için 21.yüzyıl becerilere herkesin sahip olması gerekmektedir. Böyle bir beklentide toplumun öncüleri olan ve yeni nesillere bu becerileri aktaran öğretmenlere daha fazla sorumluluk düşmektedir. Bu sorumlulukla öğrenci merkezli eğitim anlayışının uygulayıcıları olan öğretmenler, 21.yüzyıl becerilerini davranışa dönüştürmelidir.

Öğretmenler, gerçek ve sanal yaşamda 21.yüzyıl becerileriyle olaylara eleştirel yaklaşmakta, iletişim kanallarını etkili kullanmakta, işbirliği içinde çalışmakta ve yaratıcı ürünler ortaya koymaktadır. Başka bir deyişle 4C (eleştirel düşünme-critical thinking, iletişim-communication, işbirliği-collaboration, yaratıcılık-creativity) olarak ifade edilen becerileri yaşamın her alanına transfer etmektedir. Bu çalışmada da geleceğin öğretmenleri, toplumun rehberi olan öğretmen adaylarının mesleki yaşamının her alanında kullanacağı 4C becerilerine yönelik görüşleri incelenmiştir.

Bu araştırmanın temel amacı, öğretmen adaylarının 21.yüzyılda 4C becerilerini belirlemektir. Olgu bilim desenin kullanıldığı araştırmanın çalışma grubunu Siirt Üniversitesinde öğrenim gören öğretmen adayları oluşturmaktadır. Araştırmada veri toplama aracı olarak araştırmacı tarafından geliştirilen anket formu kullanılmıştır. Anket formundan elde edilen veriler içerik analizine tabi tutulacaktır. Yapılan analizler sonucunda ulaşılan bulgular tablolar halinde gösterilerek yorumlanacak ve elde edilen sonuçlar tartışma bölümünde sunulacaktır.

Anahtar Kelimeler: Eğitim, Beceri, 21.Yüzyıl Becerileri, 21.Yüzyıl Yaşam Becerileri

4C SKILLS IN THE 21st CENTURY ACCORDING TO TEACHER CANDIDATES

Abstract
There are high-level skills that enable students to succeed in the information and networking societies in the 21st century. These skills are expected to be found in individuals in many institutions, especially in education. These are learning, innovative, information, media, technology, life and career skills. Among learning and innovative skills, students are expected to have creative and critical thinking, problem solving, communication and collaboration. Information, communication and media literacy are among information, media and technology skills. Flexibility and adaptability, self-management, social skills, productivity, leadership and responsibility are among life and career skills. In the 21st century, all these skills have a great place in raising student profiles in accordance with the changing educational understanding in the globalizing world. Because in societies where knowledge is changing rapidly, everyone should have 21st century skills to have a job and to have the competencies that these societies have brought to individuals. Teachers who are pioneers of the society and transfer these skills to the new generations have more responsibility with such an expectation. Teachers who are the practitioners of student-centered education should transform 21st century skills into behavior with this responsibility.
Teachers approach events critically with their 21st century skills in real and virtual life, use communication channels effectively, work collaboratively and create creative products. In other words, 4C transfers skills expressed as critical thinking, communication, collaboration, creativity to all areas of life. In this study, the opinions of future teachers, teacher candidates, who are the guides of the society, about 4C skills that they will use in all areas of their professional life were examined.
The main purpose of this research is to determine the 4C skills of teacher candidates in the 21st century. The study group of the research, in which the phenomenology pattern was used, consists of teacher candidates studying at Siirt University. A survey form developed by the researcher was used as a data collection tool in the study. The data obtained from the survey form will be subject to content analysis. The findings obtained as a result of the analysis will be interpreted by showing in tables and the results obtained will be presented in the discussion section.

Keywords: Education, Skill, 21st Century Skills, 21st Century Life Skills

GİRİŞ

Uygarlık tarihiyle birlikte toplumlar tarım, sanayi ve bilgi olmak üzere üç farklı süreçten geçmiştir. Bu süreçlerden Alvin Toffler (2008) tarım toplumunu, “birinci dalga”, sanayi devrimini “ikinci dalga” ve endüstri toplumunu “üçüncü dalga” olarak tanımlanmıştır. Toplumlara yönelik yapılan tanımlamalardan özellikle son paradigma olan bilgi toplumu (post endüstriyel toplum’, ‘beyaz yakalı devrimi’) (Güner, 2020), 2000’li yılların başında sanayileşmenin tamamlanmasıyla ortaya çıkmıştır. 1960’lı yıllarda Amerikalı iktisatçı Fritz Machlup’un da kullandığı bilgi toplumu kavramında (Yazıcı ve Karlı, 2016) *bilgi ve teknoloji* önemli iki değişken olarak görülmektedir. Bu sebeple bilgi toplumunda makine yerini bilgiye, maddi sermaye ise bilgi ve insan sermayesine bırakmıştır. Bilgisayar, beyin

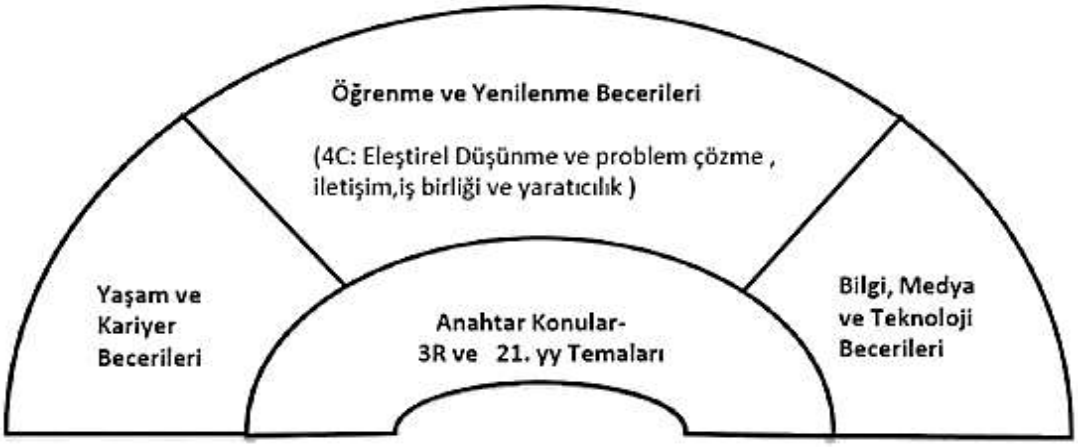
gücü, iletişim ve elektronik araçlar, robotlar, yeni gelişmiş malzeme teknolojileri, e-öğrenme, e-birey, e-vatandaş, iletişim ağ sistemi, bireyselleştirilmiş eğitim anlayışı, moleküler biyoloji, nano teknoloji gibi kavramlar yine bu toplumda ortaya çıkmıştır. Aynı zamanda 2011 yılında ilk defa kullanılan endüstri 4.0 kavramı, siber-fiziksel sistemler (CPS), nesnelerin interneti, akıllı fabrikalar ve üretim, bulut teknolojileri bilgi toplumunun tanımladığı kavramlar arasında yer almaktadır (Genç ve Eryaman, 2007; Özkan, 2009;Güner, 2020; Gritzalis, Sideri, Kitsiou, Tzortzaki ve Kalloniatis, 2021).

Bilginin üretiminde ve tüketiminde başat bir rol oynadığı bilinen bilgi toplumunda "birey" dengeleyici bir unsur olarak görülmektedir. Çünkü birey, dengeye ulaşma sürecinde değişimi başlatarak, 21.yüzyıl da bilgiye ulaşan, onu kullanan, düzenleyen, sunan ve değerlendirendir. Bilgi toplumun gereklerini yerine getirerek, bilgi teknolojilerini yakından takip etmektedir (Triana, Ulung Anggraito ve Ridlo, 2020). Öğrenen ve öğreten konumuyla yeni nesillerin yetişmesine katkı sağlamaktadır. Her yönden bilgi toplumuna yön veren bireyin bu katkıları göz öne alındığında çok iyi yetiştirilmesi ve eğitim alması gerekmektedir. Yani 21.yüzyıl bilgi toplumunda bilgi ve birey arasındaki bağı güçlendiren eğitimdir. Eğitimle, bir toplum kalkınmakta ve dirik ilişkiler kurulmaktadır (Kültekin, 2006). Eğitim, toplumsal değişimi başlatarak, geçmişten günümüze birçok değeri aktarmaktadır. En önemlisi Uluslararası Eğitimde Teknoloji Derneği'nin de (ISTE, 2016) bireylerde bulunmasını istediği 21.yüzyıl becerilerini informal ve ya formal bir şekilde bireye kazandırmaktadır. Bunlar Tablo 1'de görüldüğü üzere öğrenme ve yenilenme, bilgi, medya ve teknoloji, yaşam ve kariyer becerilerini yaşam boyu öğrenme sürecidir (Çiftçi ve Bakar, 2020).

Tablo 1. P21 tarafından 21. yüzyıl becerilerine yönelik yapılan sınıflandırma (Kalemkuş, 2021:66).

Öğrenme ve Yenilik Becerileri	Eleştirel Düşünme ve Problem Çözme Yaratıcılık ve Yenilik İş birliği İletişim
Bilgi-Medya-Teknoloji Becerileri	Medya Okuryazarlığı Bilgi Okuryazarlığı Bilgi, İletişim ve Teknoloji Okuryazarlığı
Yaşam ve Kariyer Becerileri	Girişimcilik ve Özyönetim Esneklik ve Uyum Liderlik ve Sorumluluk Verimlilik ve Hesap Verebilirlik Sosyal ve Kültürler Arası Beceriler

P21 (Partnership for 21st Century Skills-P21), 33 kurumun desteklediği ve ABD'nin 21 eyaletinde uygulanan stratejik bir eğitim projesidir. Projede 21.yüzyıl becerileri ve bunların kazandırılmasında öncü olan temalar bulunmaktadır. Bu temalar içerisinde çok fazla dikkat çeken eleştirel düşünme-problem çözme, yaratıcılık-yenilik, işbirliği ve iletişim kelimelerinin İngilizce karşılıklarının baş harflerinden oluşan 4C becerileridir (Cansoy, 2018; Yalı, 2021) (Bakınız: Şekil 1).



Şekil 1. P21 çerçevesi (Partnership for 21 st Century Learning (P21), 2019; Akt: Çiftçi ve Bakar, 2020).

Şekil 1'de görüldüğü üzere, 21.yüzyıl eğitim anlayışı "öğrenme kuşağı" biçiminde verilmektedir. Uçak ve Erdem'in (2020) belirtiği gibi gökkuşağının üst bölümünde yeni nesillerde bulunması beklenen 4C ve 3R becerileri bulunmaktadır. "3R" okuma yazma ve aritmetik gibi becerilerden oluşmaktadır. 4C'de ise eleştirel düşünme-critical thinking, iletişim-communication, işbirliği-collaboration, yaratıcılık-creativity) becerileri yer almaktadır. 4C becerilerden biri olan eleştirel düşünme ve problem çözmede birey, olayların, bilgilerin ve durumların doğruluğunu sorgulamaktadır (Handajani, Pratiwi ve Mardiyana, 2018). Bireyin karar vermesini, olayların geçerliliğinin değerlendirilmesini, ölçütlerin belirlemesini ve mantıklı problem çözmesini sağlamaktadır. Akademik becerinin gelişiminden entelektüel becerinin gelişimine kadar ki süreçleri etkilemektedir. Değerler ve değerlerin kazandırılmasında bireye rehber olmaktadır. Birey eleştirel düşünerek kendisi hakkında fikir sahibi olmaktadır. Bu beceriyle düşünceler sistemli bir şekilde kodlanmakta ve aktarılmaktadır (Yüksel, Arıbaş ve Bahadır Yılmaz, 2020). Bilişsel beceriler ya da stratejiler kullanılarak, problemlere çözümler üretilmektedir. Çözümleri üretirken, ilk olarak problemler fark edilmekte, tanımlanmakta, bilgiler toplanmakta, çözümler üretilmekte ve elde edilen bilgiler bir araya getirilmektedir (Karaçaltı, Korkmaz ve Çakır, 2018). Başka bir deyişle, eleştirel düşünme ve problem çözme becerisiyle bireyin zihinsel yapısında yeni bilgiler oluşmakta ve bu bilgilerle birey olaylara çok yönlü yaklaşmaktır. Aynı zamanda problemlerin çözümünde yeni fikirler oluşturmaktadır. Oluşan her fikir yeni bir ürün, yeni bakış açısı ve yeni düşünceleri ortaya çıkarmaktadır. Yaşama ve olaylara farkındalıkla yaklaşan birey bu sebeple birçok insanla işbirliği içinde çalışmaktadır. Liderlik ve sorumluluk duygusuyla olayları organize etmektedir. İletişim kanallarını kullanarak, duygu-düşüncelerini rahat bir şekilde paylaşmaktadır (Gültekin, 2020).

4C, 21.yüzyılda bütün bireylerde bulunması gereken becerilerdir. 4C becerileriyle birey, bilgiyi ezberlememektedir. Aksine birey kapasitesi ve yeteneklerini kullanarak bilgiyi açığa çıkartmaktadır. Bilimsel süreçleri kullanarak bilgiler arasında ilişkiler kurmaktadır. Orijinal fikirler, projeler, çalışmalar, etkinlikler, patentler, sertifikalar alarak bu ilişkileri somut bir şekilde göstermektedir. Bunu yaparken çeşitli kurumların kendisine sunduğu imkanlardan yararlanmaktadır. Örneğin, 21.yüzyıl becerilerinin bireye kazandırılması için Birleşmiş Milletler Eğitim, Bilim ve Kültür Örgütü'nün (UNESCO) çalışmaları ve "Herkes İçin Eğitim Hareketi- EFA" (Conference on Education for All in 1990) programları bulunmaktadır. Buna ek olarak, 2009'da OECD / CERI tarafından "OECD Ülkelerinde Yeni Milenyum Öğrencileri için 21. Yüzyıl Becerileri ve Yeterlilikleri" (NML) araştırması yapılmıştır. 2009-2015 yılları

arasında temel eğitim, okuryazarlık, cinsiyet eşitliği, adalet ve eğitimde kalite sorununa çözüm üretmeyi hedefleyen programlar geliştirilmiştir. 2015 yılına gelindiğinde ise Dünya Ekonomik Forumu 21. yüzyıl becerilerinin yaygınlaşmasında önemli girişimlerde bulunmuştur. 2017 yılında ise "21. yüzyıl Becerileri ve Eğitim: E2030" konulu çalışmada, "Sürdürülebilir Kalkınma Eğitimi" (ESD) ve "Küresel Vatandaşlık Eğitimi" yle (GCED) gelecekteki alfa kuşaklarının becerileri belirlenmeye çalışılmıştır (Uçak ve Erdem, 2020).

Kuşaklara kazandırdığı beceriler ve topluma katkıları göz önüne alındığında 21.yüzyıl becerileri konusunda gerek ulusal gerekse uluslar arası birçok çalışmanın olduğu görülmektedir. Bu çalışmalarda beceriler farklı değişkenlerle ele alınarak incelenmiştir. Örneğin farklı bölümlerde öğrenim gören öğretmen adaylarına (Anagün, Atalay, Kılıç ve Yaşar ,2016; Orhan Göksün, 2016;Dağhan, Nuhoğlu Kibar, Menzi Çetin, Telli ve Akkoyunlu, 2017;Kozikoğlu ve Altunova, 2018; Murat, 2018; Aydın, 2019; Çolak, 2019; Gömleksiz, Sinan ve Doğan, 2019; Güler, 2019; İpekşen, 2019; Peker, 2019;Alkoç, 2020;Çiftçi ve Bakar 2020; Erdoğan, Toy ve Kurt, 2020; Geçgel, Kana, Vatansever ve Çalık, 2020; Gökbulut, 2020; Korucu ve Ünüvar, 2020), öğretmenlere (Gürültü, Aslan ve Alcı, 2020; Çelebi ve Sevinç, 2019), Kalemkuş, 2021), kavramsal çerçeveye (Cansoy, 2018) yönelik araştırmalar bulunmaktadır. Yapılan araştırmalarda görüldüğü üzere bireyler 21.yüzyılda belirtilen becerileri davranışa dönüştürdüğü süreçte başarılı olmakta ve gerçek yaşam problemlerine daha etkili çözümler üretmektedir. Bireylerin bu tür süreçleri daha verimli geçirmesinde öğretmenler ve geleceğin öğretmen adaylarının deneyimleri, eğitimleri ve yeterlilikleri olmazsa olmaz bir faktör olarak göz önünde tutulmaktadır. Çünkü dünya genelinde ekonomik, sağlık, eğitim gibi alanlarda problemlerin ortaya çıkması, yaşamın karmaşık hale gelmesi, bilgi yoğunluğunun artması, sistemlerin tek elden değil, özerk biçimde yönetilmesi, insanın ve sahip olduğu özelliklerin önem kazanması, ülkeler arasında insan göçünün yaşanması ve nüfus dengesinin değişmesi, çok kültürlü anlayışın hâkim olması, teknolojinin hız kazanması 21.yüzyılda öğretmen eğitiminin bu değişimlerde ne kadar önemli olduğunu göstermektedir. Buradan hareketle araştırmanın problem cümlesi öğretmen adaylarına göre 21.yüzyılda 4C becerileri olarak belirlenmiştir.

Araştırmanın Amacı

Bu araştırmanın temel amacı, öğretmen adaylarının 21.yüzyılda 4C becerilerini belirlemektir. Araştırma amacı doğrultusunda aşağıdaki sorulara yanıt aranmıştır:

1. 4C becerileri hakkında öğretmen adaylarının görüşleri nedir?
2. Öğretmen adaylarının 21.yüzyılda sahip olduğu 4C becerileri nedir?
3. Öğretmen adaylarının 4C becerilerinin 21.yüzyıldaki diğer becerilerden farkına ilişkin görüşleri nedir?

YÖNTEM

Olgu bilim desenin kullanıldığı araştırmanın çalışma grubunu, Siirt Üniversitesinde öğrenim gören 56, 1., 2., 3., ve 4. sınıf öğretmen adayı oluşturmaktadır. Gönüllük esasıyla araştırmaya katılan öğretmen adaylarına ait demografik özellikler Tablo 2'de yer almaktadır.

Tablo 2. Çalışma grubuna ait demografik özellikler

Değişken		f	%
Cinsiyet	Kız	30	53,57
	Erkek	26	46,43
	TOPLAM	**56**	**100**
Sınıf	1.sınıf	10	17,86

	2.sınıf	16	28,57
	3.sınıf	18	32,14
	4.sınıf	12	21,43
	TOPLAM	**56**	**100**
Bölüm	Sınıf Öğretmenliği	19	33,92
	Matematik Öğretmenliği	10	17,86
	Türkçe öğretmenliği	10	17,86
	Sosyal Bilgiler öğretmenliği	9	16,07
	Fen Bilgisi Öğretmenliği	8	14,29
	TOPLAM	**56**	**100**

Tablo 2'de görüldüğü üzere, araştırmanın %53,57'si kız, %46,43'ü erkektir. Sınıf değişkenine göre, %17,86'si 1.sınıf , %28,57'si 2. sınıf , %32,14'ü 3.sınıf ve %21,43'ü 4. Sınıf; bölümlerine göre ise %33,92'si Sınıf, %17,86'sı Matematik %17,86'sı Türkçe, %16,07'si Sosyal Bilgiler ve %14,29'u Fen Bilgisi Öğretmenliğinde okuyan öğretmen adayları oluşturmaktadır.

Veri toplama aracı olarak araştırmacı tarafından geliştirilen açık uçlu anket formu kullanılmıştır. Yazıcıoğlu'na (2020) göre anket, konuyla ilgili grupların ya da toplumların görüşlerinin alındığı ve bunların kayıt altında tutulduğu veri toplama aracıdır. Ankette kapalı ve açık uçlu ifadeler yer alabilmektedir. Kapalı uçlu ifadelerde, seçenekler araştırmacı tarafından belirlenmekte ve katılımcılar bu seçenekler arasında işaretleme yapmaktadır. Açık uçluda ise, katılımcılar kendi duygu ve düşüncelerini yansıtan ifadeleri kullanmaktadır. Araştırmada bu açıklamalar doğrultusunda anket formu hazırlanırken, ilk olarak problem cümlesi tanımlanmıştır. Problem cümlesinin belirlenmesi alt problemlerin oluşturulmasında önemli bir ön koşul olduğu gerçeği göz önünde tutularak yazılmıştır. Problem cümlesi yazıldıktan sonra 21yüzyılda 4C becerilerine yönelik dört soru hazırlanmıştır. Soruların kapsam geçerliliğini sağlamak amacıyla uzman görüşüne başvurulmuştur. Uzmanlar görüşlerini "uzman değerlendirme formunda" belirtmişlerdir. Uzmanlardan gelen düzeltme ve önerilerden sonra açık uçlu anket formu öğretmen adaylarına 20-25 dakika aralığında uygulanmıştır.

Araştırmada açık uçlu anket formundan elde edilen veriler içerik analizine tabi tutulmuştur. İçerik analizi yapılırken Yıldırım ve Şimşek'in (2006:228) belirtiği dört aşama dikkate alınmıştır: *Verilerin Kodlanması*: İçerik analizinin ilk aşamasını oluşturmaktadır. Bu aşamada araştırmacı tarafından ulaşılan veriler incelenmekte ve anlamlı bölümlere ayrılmaktadır. Kodlama şeklinde yapılan bu işlem için araştırmacı kod listeni hazırlamıştır. Burada kodlar daha önceden belirlenen ve verilerden çıkarılan kavramlarla yapılandırılmıştır. Daha sonra bunlar bilgisayar ortamına aktarılmakta ve güvenirliği hesaplanmaktadır. Kodların güvenirliği için Miles ve Huberman'ın (1994) güvenirlik formülü; *Güvenirlik = Görüş Birliği / (Görüş Birliği + Görüş Ayrılığı)* kullanılmıştır. Hesaplama sonucunda güvenirlik .92 olarak bulunmuştur.
Temaların bulunması: İkinci aşama olarak nitelendirilen bu basamakta, araştırmacı kodları belirli kategoriler altında toplamakta ve temalara ulaşmaktadır. Temalara ulaşılırken, kodların aralarında anlamlı bütün oluşturması ve benzerlik-farklılıklarının dikkate alınması önemlidir.
Verilerin kodlara ve temalara göre düzenlenmesi ve tanımlanması: İkinci aşamada oluşturulan tematik kodlama sonucunda araştırmacı ulaştığı verileri düzenlemekte ve bunları açıklamaktadır. Burada okuyucunun anlaması ve açıklayıcı ifadelerin kullanılması gerekmektedir.

Bulguların yorumlanması: İçerik analizinin son aşamasını oluşturan bu bölümde bütün veriler yorumlanmakta ve bazı sonuçlara ulaşılmaktadır. Ulaşılan sonuçları desteklemek amacıyla katılımcıların görüşlerinden doğrudan alıntılar yapılmıştır. Alıntılar yapılırken Sınıf öğretmenleri için S_1, S_2, S_3,..... S_{19}, Matematik Öğretmenliği için M_1, M_2, M_3,..... M_{10}, Türkçe öğretmenliği için T_1, T_2, T_3,..... T_{10}, Sosyal Bilgiler öğretmenliği için S_{os1}, S_{os2}, S_{os2},….. S_{os9} ve Fen Bilgisi Öğretmenliği için F_1, F_2, F_3,..... F_8 kodları kullanılmıştır.

BULGULAR ve YORUM

Öğretmen Adaylarının 4C Becerileri İlişkin Görüşleri

Öğretmen adaylarının 4C becerileri hakkındaki görüşlerinin betimsel analiz sonuçları Tablo 3'de yer almaktadır.

Tablo 3. Öğretmen adaylarının 4C becerileri hakkındaki görüşlerinin betimsel analiz sonuçları

Soru	Tema	Kodlama		Kodlama Yoğunluğu	
		f	%	f	%
En çok bildiğiniz 4C becerileri nedir?	**Eleştirel Düşünme**	30	53,57	33	50,77
	İşbirliği	18	32,14	22	33,85
	İletişim	8	14,29	10	15,38
	TOPLAM	**56**	**100**	**65**	**100**
4C becerilerinizi en çok nerede kullanıyorsunuz?	**Formal Eğitimde**	30	53,57	30	53,57
	İnformal Eğitimde	26	46,43	26	46,43
	TOPLAM	**56**	**100**	**56**	**100**

Tablo 3'de görüldüğü üzere, 56 katılımcının "en çok bildikleri 4C becerilerine" ilişkin görüşlerinin betimsel analiz sonuçları yer almaktadır. Bu görüşlerden hareketle, eleştirel düşünme, işbirliği ve iletişim olmak üzere 3 tema oluşturulmuştur. Bu temalardan;

- Eleştirel düşünme teması [olaylara çok yönlü bakma (f=11), sorgulama (f=8), olaylara tarafsız yaklaşma (f=6), analitik düşünme (f=5) ve çelişkileri belirleme (f=3)];
- Işbirliği teması [paylaşma (f=8), sorumluluk alma (f=6), takım ruhu (f=5) ve liderlik (f=3)];
- İletişim teması [duygu-düşünceleri aktarma (f=4), farklı kanalları kullanma (f=4) ve jest-mimikleri kullanma (f=2)] şeklinde alt temalardan oluşmaktadır.

Yukardaki temalar içerisinde en fazla vurgulanan "eleştirel düşünme" başlığı altında yer alan "olaylara çok yönlü bakma" alt temasının olduğu görülmektedir. Buradan hareketle, katılımcılara göre en çok bilinen 4C becerisi eleştirel düşünmedir. Eleştirel düşünme ile bireylerin olaylara tek yönlü yaklaşmadığını, bir olaya etki eden bir çok faktörün olduğunu ve sebep-sonuç ilişkisiyle bunların sorgulandığını belirtmektedir. Katılımcıların bu konu hakkındaki görüşleri aşağıda yer almaktadır.

S_1: Aslında birçok üst düzey beceri bulunmakta fakat eleştirel düşünmeyi daha çok biliyorum.

S_8: Derste, diğer birçok yerde olaylara eleştirel yaklaşıyoruz…

S_{12}: 21.yüzyılda eleştirel düşünme önemli bir beceridir ve olaylara çok yönlü bakmamızı sağlıyor.

M_6:Bölümümüz gereği her probleme eleştirel yaklaşıyoruz. Bir problemin birçok çözümü olabiliyor.

M_9: Neden-sonuç ilişkisiyle çalışmalarımızı yaptığımız için eleştirel düşünmeyi daha çok biliyorum.

T_4: Bir öykü, şiir yazarken zihinsel yapımızdaki bütün bilgileri kullandığımız için eleştirel düşünme benim en çok bildiğim beceridir.

T_{10}:…çok fazla metin okuyoruz. Kitapları inceliyoruz. Bu incelemeler esnasında olaylara eleştirel bir bakış açısıyla yaklaşıyoruz.

S_{os2}: Bizler tarihi olayları ve bunların geçmişe yansımalarını ele alan konularla çok iç içe bir öğretim alıyoruz. Geçmişi bilerek gelecek hakkındaki olaylara çeşitli yorumlar yapıyoruz. Bu sebeple en çok bilinen eleştirel düşünmedir.

S_{os5}: 21.yüzyılda çağdaş eğitim ve ona uygun öğretim ortamları bulunmaktadır. Bu ortamlarda öğrencilerin en fazla kullandığı beceridir eleştirel düşünme... Çünkü hayatta birçok olayla karşı karşıya kalıyoruz. Bu olaylar bizi sorgulamaya, ön yargılı olmamaya yönetmektedir.

F_3: En basit bir deneyde bile olayın meydana geliş sebebini araştırıyoruz. Onun için eleştirel düşünme hayatımızın vazgeçilmez beceridir.

F_6: Günümüzde özellikle bölümümüz gereği teknolojik araçları kullanmamız gerekiyor. Laboratuvar ortamında çeşitli deneyler yapıyoruz. Bu deneylerde ele aldığımız olayın gerçekleşme aşamalarını doğal olarak sorguluyoruz. Bundan dolayı eleştirel düşünme bilinen bir beceridir.

Tablo 3'de görüldüğü üzere, 56 katılımcının "4C becerilerini kullanmaya" yönelik görüşlerinin betimsel analiz sonuçları yer almaktadır. Bu görüşlerden hareketle, formal ve informal eğitim olmak üzere 2 tema oluşturulmuştur. Bu temalardan;

- Formal eğitimde teması [sınıf içi-dışı uygulamalarda (f=12), ödevlerde (f=9), sınavlarda (f=9)] ve
- İnformal eğitimde teması [sanal ortamda (f=10), aile ortamında (f=8) ve arkadaş ortamında (f=8)] şeklinde alt temalardan oluşmaktadır.

Yukardaki temalar içerisinde en fazla vurgulanan "formal eğitim" başlığı altında yer alan " sınıf içi-dışı uygulamalarda " alt temasının olduğu görülmektedir. Buradan hareketle, katılımcılara göre 4C becerileri daha çok planlı-programlı eğitimin yapıldığı ortamlarda kullanılmaktadır. Bu ortamlarda gerek sınıf içinde gerekse sınıf dışında yapılan eğitim faaliyetlerinde çok tercih edildiği ifade edilmektedir. Katılımcıların bu konu hakkındaki görüşleri aşağıda yer almaktadır.

S_{18}: Okulda yapılan etkinliklerde çok kullanıyorum.

S_{19}: Derslerde etkinlik yaparken eleştirel düşünme becerimi kullanıyorum.

M_1: Bir problemi sınavda ya da sınıfta çözerken kullanıyorum.

M_6: … sınavlarımız klasik olduğu için burada bu becerimi çok kullanıyorum.

T_5: Hocamız sınıf dışında bir etkinlik ya da çalışma verdiğinde kullanıyorum.

T_7: Yaş ilerledikçe daha farklı düşündüğünüz için aile ortamından çok okul ortamında eleştirel düşünceyi kullanıyoruz.

T_8: Evde çok az kullanıyorum ama asıl yer formal eğitimin olduğu yerde kullanıyorum.

S_{os1}: Hayatımın aslında birçok alanında kullanıyorum ama daha çok okulda…

S_{os3}: …Sınavlarda çok kullanıyorum…

S_{os7}: Dönem başı ve sonunda verilen sınıf dışı ödevlerde…

F_2: Okulda yapılan etkinliklerde sorgulama becerimi daha çok kullandığımı fark ettim…

F_7: Herhangi bir proje ödevinde kullandığımı biliyorum…

Öğretmen Adaylarının 21.Yüzyılda Sahip Olduğu 4C Becerilerine İlişkin Görüşleri

Öğretmen adaylarının 21.yüzyılda sahip olduğu 4C becerilerine ilişkin görüşlerinin betimsel analiz sonuçları Tablo 4'de yer almaktadır.

Tablo 4. Öğretmen adaylarının 21.yüzyılda sahip olduğu 4C becerilerine ilişkin görüşlerinin betimsel analiz sonuçları

Soru	Tema	Kodlama		Kodlama Yoğunluğu	
		f	%	f	%
21.yüzyılda sahip olduğunuz 4C becerileri nedir?	**Eleştirel düşünme**	21	37,50	33	43,42
	Yaratıcı düşünme	18	32,14	20	26,32
	İletişim	9	16,07	12	15,79
	İşbirliği	8	14,29	11	14,47
	TOPLAM	**56**	**100**	**76**	**100**

Tablo 4'de görüldüğü üzere, 56 katılımcının "21.yüzyılda sahip olduğu 4C becerilerine" ilişkin görüşlerinin betimsel analiz sonuçları yer almaktadır. Bu görüşlerden hareketle, eleştirel düşünme, yaratıcı düşünme, iletişim ve işbirliği olmak üzere 4 tema oluşturulmuştur. Bu temalardan;

- Eleştirel düşünme teması [açık fikirli olma (f=14), ilişkileri belirleme (f=7), mantık yürütme (f=5), kaynağı sorgulama (f=5) ve ölçütleri yargılama (f=2)];
- Yaratıcı düşünme teması [yeni materyal hazırlama (f=7), yeni düşünceler paylaşma (f=4), yeni etkinlik yapma (f=3), yeni şiir yazma (f=3) ve yeni çözüm yolları bulma (f=3)];
- İletişim teması [saygılı olma (f=3), dinleme (f=3), beden dilini kullanma (f=2), duyguları paylaşma (f=2) ve iletişim kanallarını kullanma (f=2)];
- İşbirliği teması [ortak bir ürün ortaya koyma (f=4), paylaşma (f=3), sorumluluk alma (f=2) ve dayanışma (f=2)] şeklinde alt temalardan oluşmaktadır.

Yukardaki temalar içerisinde en fazla vurgulanan "eleştirel düşünme" başlığı altında yer alan " açık fikirli olma " alt temasının olduğu görülmektedir. Buradan hareketle, katılımcıların sahip oldukları 4C becerileri arasında en fazla vurgulanan eleştirel düşünmedir. 21.yüzyıl becerileri arasında yer alan bu beceriyle katılımcılar, zihinsel yapılarındaki düşüncelerini başkalarıyla rahat bir şekilde paylaşmakta ve içe dönük öğrenme yollarından çok dışa dönük özellikler göstermeketedir. Katılımcıların bu konu hakkındaki görüşleri aşağıda yer almaktadır.

S_7: Bir sınav olduğumda nasıl değerlendirme ölçütleri kullanılacak bu benim için önemlidir.

S_{11}: Düşüncelerimi her zaman açık bir şekilde ifade ettim.

M_4: Anlamadığım yer olursa anında soru sorarım.

M_5: Sosyal ve diğer bütün yaşamımda her zaman düşüncelerimi açık bir şekilde ifade ederim.

M_7: İnsanlar iletişim kurarken bezen duygularını aktarmakta zorlanmaktadır. Bunun sebebini anlamıyorum. Oysaki o anki bir olay için aklımıza takılan soruları sormamız ve eleştirmemiz gerekmektedir.

T_1: Arkadaş ortamında çok rahat düşüncelerimi söylerim.

T_2: Dışa açık bir öğrenme stilim vardır.

T_3: Eleştirel düşünme bence bir insanda bulunması gereken bir değer. Çünkü düşüncelerini rahat paylaşman ve karşıdaki insanlara düşüncelerinle rehber olman gerekmektedir.

S_{os5}: Olayları sorgularken bir yer mantığıma uymadıysa bunu hemen sorgularım.

S_{o6}: Açık fikirli olmak düşünmenin yarısıdır.

S_{os9}: Eleştirmek zihnindeki düşüncelerin dışa yansımasıdır.

F_1: …özellikle sınıf içi uygulamalarda değerlendirme kriterlerim benim için önemlidir.

F_5: Eğitim yaşamım boyunca fikirlerimi sorgulamaktan ve söylemekten çekinmedim.

F_8: Aile, arkadaş ve eğitim ortamında aklıma gelen düşünceleri çok rahat bir şekilde ifade edebiliyorum.

Öğretmen Adaylarının 4C Becerilerinin 21.Yüzyıldaki Diğer Becerilerden Farkına İlişkin Görüşleri

Öğretmen adaylarının 4C becerilerinin 21.yüzyıldaki diğer becerilerden farkına ilişkin görüşlerinin betimsel analiz sonuçları Tablo 5'de yer almaktadır.

Tablo 5. Öğretmen adaylarının 4C becerilerinin 21.yüzyıldaki diğer becerilerden farkına ilişkin görüşlerinin betimsel analiz sonuçları

Soru	Tema	Kodlama		Kodlama Yoğunluğu	
		f	%	f	%
Sizce 4C becerileri diğer 21.yüzyıl becerilerden farkı nedir?	**Bir çok beceriye ön koşul olması**	17	30,36	26	36,62
	Gerçek yaşamda kullanılması	15	26,79	18	25,35
	İlk kazanılan beceriler olması	13	23,21	15	21,13
	Bireyin yaşamını kolaylaştırması	11	19,64	12	16,90
	TOPLAM	**56**	**100**	**71**	**100**

Tablo 5'de görüldüğü üzere, 56 katılımcının "4C becerilerinin diğer becerilerden farkına" ilişkin görüşlerinin betimsel analiz sonuçları yer almaktadır. Bu görüşlerden hareketle, bir çok beceriyi kapsaması, gerçek yaşamda kullanılması, ilk kazanılan beceriler olması ve bireyin yaşamını kolaylaştırması olmak üzere 4 tema oluşturulmuştur. Bu temalardan;

- Birçok beceriye ön koşul olması teması [olmazsa olmaz beceriler (f=11), diğer becerilerle ilişkili olması (f=9) ve daha çok tercih edilmesi (f=6)];
- Gerçek yaşamda kullanılması teması [insanlarla olan iletişimde (f=8), eğitim hayatında (f=6) ve aile ortamında kullanılması (f=4)];
- İlk kazanılan beceriler olması teması [yaşam boyu kullanılması (f=9) ve temel beceriler olması (f=6)];
- Bireyin yaşamını kolaylaştırması teması [kolay çözümler bulması (f=7) ve hedeflere kolay ulaşmayı sağlaması (f=5)] şeklinde alt temalardan oluşmaktadır.

Yukardaki temalar içerisinde en fazla vurgulanan "birçok beceriye ön koşul olması" başlığı altında yer alan "olmazsa olmaz beceriler" alt temasının olduğu görülmektedir. Buradan hareketle, katılımcılara göre 4C becerileri ve diğer beceriler arasında farklılıklar bulunmaktadır. Bu farklılıklardan en önemlisi 4C becerilerinin bilgi-medya-teknoloji ve yaşam ve kariyer becerilerinin tamamlayıcı niteliğinde olduğu ve bu becerilerin kazandırılmasında önemli görüldüğüdür. Katılımcıların bu konu hakkındaki görüşleri aşağıda yer almaktadır.

S_{13}: …yaşamımızda birçok beceriyi kullanıyoruz. Ama 4C becerileri benze temel beceriler.

S_{19}:..Eleştirel düşünme, işbilirliği bu becerileri birçok yerde kullanıyoruz ve diğer becerileride kapsamaktadır.

M_5: Bir halkanın zincirleri gibi. 4C olmadan diğer beceriler pek anlam ifade etmez.

M_8: Okuryazarlık becerisini kullanmamız için eleştirel düşünce ve problem çözme gibi becerilere sahip olmamız gerekiyor.

T_7: Girişimci bir ruha sahip olmak için yaratıcı düşünceleri kullanmalısınız.

T_9: Bir konuyu eleştirmek yeni fikirler ortaya koymak demektir. Eleştirdiğimiz bilgileri farklı kaynaklardan araştırırız. Sonra tekrardan yeni bilgilere ulaşırız. Yani bilgi, medya gibi okuryazarlıklarımızı bile kullanırken, her zaman eleştirel düşüncemizi, yaratıcı düşüncelerimizi kullanıyoruz.

S_{os7}: …Diğer okuryazarlıklarda çok önemli ama bireyin en fazla kullandığı 4C becerileridir.

S_{os9}: Günümüzde bilgi sürekli değişmektedir. Ulaştığımız her bilgiyi ilk olarak sorguluyoruz.

F_4: 4C becerileri yaşamımıza yön vermektedir. Küçük yaştan beri bence bu becerileri kullanıyoruz. Sonradan okuryazar ve esneklik, uyum gibi becerileri kazanıyoruz.

F_5: Dünyaya ilk geldiğimizde bile şemalarımızda sınırlı sayıda temel bilgiler bulunmaktadır. Sonradan dünyayı keşfettikten sonra olayları sorgulamaya, yeni fikirler ortaya koymaya başlıyoruz.

F_8: Yaşam boyu öğrenme sürecinde bu beceriler diğer becerilere zemin hazırlamaktadır.

TARTIŞMA, SONUÇ ve ÖNERİLER

Araştırmada öğretmen adaylarının en çok bildikleri 4C becerisi eleştirel düşünmedir. Tarihi geçmişi çok uzun yıllara dayalı olan eleştirel düşünme Yunanca'da "Kritikos" teriminden türetilmiş, Latinceye "Critucus" olarak çevrilmiştir. Kullanım alanı olarak, Sokrates'e kadar uzanan eleştirel düşünme bir şeyin iyi ve kötü yönlerini değerlendirmektedir (Durnacı ve Ültay, 2020). Bu beceriyle bireyler olaylara çok yönlü bakmakta ve olayların sonuçları analiz edilmektedir. Analizlerle bireyin öğrenme isteği artmaktadır. Birey öğrenirken sabırlı olmakta ve işbirliği içinde çalışmaktadır. Değerlendirme, ayırt etme ve yargılama davranışını kazanmaktadır. Geçerliliği olmayan ve değişime direnç gösteren bilgileri sorgulamaktadır (Akbıyık ve Seferoğlu, 2006). Yeni fikirler geliştirmektedir. Kavramlar arasındaki bağlantıyı keşfetmektedir. Merak duygusuyla olayları analiz etmektedir. Çıkarımlar yapılarak elde edilen sonuçları değerlendirmektedir. Karşılaştığı gerçek yaşam problemlerini doğru bir şekilde tanımlamaktadır (Selman ve Jaedun, 2020). Ulaşılan kaynakların doğruluğunu test etmektedir. Tümdengelim ve tümevarım akıl yürütme yollarını kullanmaktadır. Ön yargıları ve varsayımları tespit etmektedir. Sözel ve yazılı dil etkin bir şekilde kullanmaktadır. Akıcı ve doğru bir dil kullanarak ulaşılan her bilgiyi özetlemektedir (İşeri, 2020). Bütün bu yönleriyle ele alındığında eğitimden felsefeye, psikolojiden siyaset bilimine kadar eleştirel düşünmenin yaygın kullanıldığı görülmektedir. Kullanım alanı bakımından geniş bir yelpazeye yayılan

eleştirel düşünmeyle bireyler, ilişkisiz bilgileri ayıklayabilmektedir. Bilişsel yapılan hataların farkında olmaktadır. Etkili sorular sorarak sözlü ve yazılı dil becerilerini kullanmaktadır. Tutarsız bilgilerin güvenirliğini test ederek, kanıtları ustaca ileri sürmektedir. Bağımsız öğrenerek, uygun hipotezleri test etmektedir (Özdemir, 2005).

Öğretmen adayları 4C becerilerini daha çok formal eğitimin uygulandığı sınıf içi-dışı faaliyetlerde kullanmaktadır. Bu uygulamalarda olaylar arasındaki ilişkileri görmekte, açık fikirli olmakta ve düşüncelere ön yargısız bakabilmektedir. Bireyin olaylara bu yaklaşımında okul önemli bir kurum olarak görülmektedir. Çünkü okul, formal eğitimin yapıldığı yerlerdir. Burada topluma yol gösterecek ve kalkınmasına öncülük edecek bireyler yetişmektedir. Aynı zamanda 21.yüzyıl becerilerin birçoğu bireye okulda kazandırılmaktadır. Okul 21.yüzyıl becerilerini aktarmakla kalmayıp, bireyin bunu gerçek yaşam durumlarıyla ilişkilendirmesini ve davranış olarak göstermesini sağlamaktadır. Bundan dolayı, 21.yüzyılda okul bireyin davranışlarını şekillendiren, günün koşullarına uyum sağlamasında bireye yardımcı olacak bilgi-beceriyle donatan ve hedeflerine ulaşmada bireye rehberlik eden eğitimin önemli bir öğesidir (Uçak ve Erdem, 2020). Okul aracılığıyla bilgi toplumun anahtar kavramlarından olan "bilgi" öğrenciye doğru ve planlı bir şekilde aktarılmaktadır. Gerçekleşen bu aktarımla öğrenci, çağdaş öğrenme ortamında ulaştığı bilgiyi yapılandırmaktadır. Örneğin Endonezya'da 2013 yılında okullarda uygulanan okul programlarında 21.yüzyıl becerilerine, bilimsel becerilere ve otantik değerlendirme kavramlarına yer verilmiştir. Programda 21.yüzyıl becerileri arasında 4C'ye (eleştirel düşünme-critical thinking, iletişim-communication, işbirliği-collaboration, yaratıcılık-creativity) dikkat çekilmiştir. Bu beceriler Sipayung, Sani, Rahmatsyah ve Bunawan'a (2018) göre uzmanlık gerektirmektedir. Öğrenci merkezli bir eğitim anlayışıyla, öğrencilerin işbirliği içinde çalışmasını, iletişim kanallarını çeşitlendirmesini, biliş ötesi stratejilerini problem çözmede kullanmasını, analiz-sentez düzeyinde davranışlar göstermesini ve olaylar arasında ilişkileri görmesini sağlamaktadır.

Öğretmen adaylarına göre 4C ile diğer beceriler arasında farklılıklar bulunmaktadır. Bu farklılıklar arasında ön planda tutulan 4C becerilerinin birçok beceriye ön koşul teşkil ettiğidir. Burada önemli olan 21.yüzyılda 4C gibi bireyin hayatına yön veren becerilerin nasıl? kazandırıldığı dikkate alınmalıdır. Böyle bir yaklaşım 4C ve diğer beceriler arasındaki farklılığı da ortaya koymaktadır. Fakat genel olarak bakıldığında, 4C becerilerinin bireyler tarafından çok tercih edildiği görülmektedir. Çünkü 4C becerileriyle birey, küresel boyuttaki bütün olayları önemsemektedir. Gelişimlere açık olmaktadır. Değişimlere karşı direnç göstermeden yeni fikirler ortaya koymaktadır. Karşılaştığı soruna etkili çözümler üretmektedir (Handajani, Pratiwi ve Mardiyana, 2018; Triana, Ulung Anggraito ve Ridlo, 2020). Çözüm üretirken, bilginin alternatifini değil, bilginin kendisi kullanmaktadır. Etkili ve verimli bir eğitimi anlayışından yararlanmak için gayret göstermektedir (Fisher, 2008). Sipayung, Sani, Rahmatsyah ve Bunawan'ın (2018) çalışmaları bu görüşü destekler niteliktedir. Onlara göre 4C becerileri öğrencilerde işbirliği içinde çalışma imkânı sunmaktadır. Geleneksel eğitimin aksine bu becerilerle öğrenciler kendi öğrenme yoluna uygun etkinlikleri seçmekte, ulaştığı bilgileri ilişkilendirmekte, yeni bilgiler oluşturmakta, başkalarıyla paylaşmak ve öz değerlendirme yapmaktadır. Aynı zamanda 4C becerileri öğrencilere esnek öğrenme ortamı sunmaktadır. Yu ve Wan Mohammad'a (2019) göre ise 4C becerilerinin öğrencilerin yabancı dil öğretiminde etkili olduğu düşünülmektedir. Öğrenciler yabancı dil öğrenirken, yazma, dinleme, okuma ve konuşma gibi dil yeterliliklerinde eleştirel, yaratıcı düşüncelerini kullanmakta, bireysel çalışmaktan çok grupla öğretimi tercih etmekte ve öğrendikleri kavramlarla iletişim kurmaktadır. Buda öğrencinin kendi bireysel hızıyla hareket etmesine yardımcı olmaktadır. Öğrenme ortamında öğrencinin açık katılım göstermesini

sağlamaktadır. Güven duygusuyla öğrenciler her türlü etkinliğe, projeye ve araştırmaya katılmaktadır. Gelecekteki mesleklerini ve hedeflerini iyi bir şekilde planlamaktadır (Erdoğan, 2019). 4C becerileri diğer 21.yüzyıl becerileri gibi birçok çağdaş model, yaklaşım ve stratejide uygulama alanı bulmaktadır (Mahande, Malago ve Hartoto, 2021).

Öneriler

4C becerilerinin öğrencilerin akademik başarılarına katkısına ilişkin karma çalışmalar yapılabilir.

4C becerilerini kullanan öğrencilerin öğrenme profilleri araştırılabilir.

21.yüzyıldaki öğrenme ve yenilik becerilerinin (4C), bilgi-medya-teknoloji, yaşam ve kariyer becerilerinden farkı araştırmalarda ortaya konulabilir.

KAYNAKÇA

Akbıyık, C.& Seferoğlu, S. S. (2006). Eleştirel düşünme eğilimleri ve akademik başarı. *Çukurova Üniversitesi Eğitim Fakültesi Dergisi, 3*(32):90-99.

Alkoç, N. (2020). *Okulöncesi öğretmen adaylarının 21.yüzyıl öğrenen becerileri ile eleştirel düşünme eğilimleri arasındaki ilişkinin incelenmesi.* (Yayımlanmamış Yüksek Lisans tezi). Kafkas Üniversitesi, Sosyal Bilimler Enstitüsü, Kars.

Anagün, Ş. S., Atalay, N., Kılıç, Z. ve Yaşar, S. (2016). Öğretmen adaylarına yönelik 21. yüzyıl becerileri yeterlilik algıları ölçeğinin geliştirilmesi: Geçerlik ve Güvenirlik Çalışması. *Pamukkale Üniversitesi Eğitim Fakültesi Dergisi,* 40:160-175.

Aydın, A. (2019). *İngilizce öğretmen adaylarının görüşleri çerçevesinde öğretmen eğitiminde 21.yüzyıl becerilerinin incelenmesi*. (Yayımlanmamış Yüksek Lisans Tezi). Hacettepe Üniversitesi, Eğitim Bilimleri Enstitüsü, Ankara

Cansoy, R. (2018). Uluslararası çerçevelere göre 21.yüzyıl becerileri ve eğitim sisteminde kazandırılması. *İnsan ve Toplum Bilimleri Araştırmaları Dergisi, 7* (4):3112-3134. Retrieved from http://www.itobiad.com/issue/39481/494286.

Gritzalis S., Sideri M., Kitsiou A., Tzortzaki E. & Kalloniatis C. (2021). Sustaining Social Cohesion in Information and Knowledge Society: The Priceless Value of Privacy. In: Tsihrintzis G., Virvou M. (eds) *Advances in Core Computer Science-Based Technologies. Learning and Analytics in Intelligent Systems*, vol 14. Springer, Cham. https://doi.org/10.1007/978-3-030-41196-1_9.

Çiftçi, B. & Bakar, M. H. D. (2020). Sosyal bilgiler öğretmen adaylarının 21. yüzyıl becerileri yeterlilik algılarının incelenmesi: (Nevşehir İli Örneği). *Kapadokya Eğitim Dergisi,* 1(2):44-60.

Çolak, M. (2019). *Fen bilgisi öğretmen adaylarının 21.yüzyıl becerilerine yönelik algılarının çeşitli değişkenler açısından incelenmesi*. (Yayımlanmamış Yüksek Lisans Tezi). Niğde Ömer Halisdemir Üniversitesi Eğitim Bilimleri Enstitüsü, Niğde.

Dağhan, G., Nuhoğlu Kibar, P., Menzi Çetin, N., Telli, E. & Akkoyunlu, B. (2017). Bilişim teknolojileri öğretmen adaylarının bakış açısından 21. yüzyıl öğrenen ve öğretmen özellikleri. *Eğitim Teknolojisi Kuram ve Uygulama, 7* (2):215-235.

Durnacı, Ü. & Ültay, N.(2020). Sınıf öğretmeni adaylarının eleştirel ve yaratıcı düşünme eğilimleri. *Turkish Journal of Primary Education (TUJPED), 2020, 5* (2):75-97

Erdoğan, Ö., Toy, M. &Kurt, M. (2020). Robotik uygulamaların fen bilgisi öğretmen adaylarının bazı 21. yüzyıl becerileri üzerindeki etkisinin incelenmesi. *Avrasya Sosyal ve Ekonomi Araştırmaları Dergisi (ASEAD), 7* (4):117-137. ISSN:2148-9963.

Erdoğan, V. (2019). Integrating 4C Skills of 21st Century into 4 Language Skills in EFL Classes. *International Journal of Education and Research,* 7(11):113-124.

Fisher. A. (2008). *Critical Thinking: An Introduction, Translation by Benjamin Hadinata*. Jakarta: Erland.

Geçgel, H., Kana, F., Vatansever, Y. Y. & Çalık, F. (2020). Türkçe öğretmeni adaylarının çok boyutlu 21.yüzyıl becerilerinin belirlenmesi. *Uluslararası Türkçe Edebiyat Kültür Eğitim Dergisi, 9*(4):1646-1669.

Genç, S.Z., & Eryaman, M.Y. (2007). Değişen değerler ve yeni eğitim paradigması. *Afyon Kocatepe Üniversitesi Sosyal Bilimler Dergisi, 9* (1):89-102.

Gömleksiz, M. N., Sinan, A. T. & Doğan, F. D. (2019). Türkçe, Türk Dili ve Edebiyatı ile çağdaş türk lehçeleri öğretmen adaylarının 21. yüzyıl becerileri yeterlik algıları. *Avrasya Uluslararası Araştırmalar Dergisi, 7* (19):163 – 185.

Gökbulut, B. (2020). Öğretmen adaylarının eğitim inançları ile 21. yüzyıl becerileri arasındaki ilişki. *The Relationship Between Teacher Candidates' Beliefs in Education and 21st Century Skills. Turkish Studies - Education, 15* (1):127-141.

Güner, O . (2020). Bilgi toplumu göstergeleri bağlaminda avrupa birliği ülkeleri ve Türkiye'ye dair bir değerlendirme . *İşletme Ekonomi ve Yönetim Araştırmaları Dergisi , 3* (2):121-143 .

Gürültü, E., Aslan, M. & Alcı, B. (2020). Ortaöğretim öğretmenlerinin 21. Yüzyıl becerileri kullanım yeterlikleri. *Hacettepe Üniversitesi Eğitim Fakültesi Dergisi (H. U. Journal of Education) 35*(4):780-798.

Gültekin, M . (2020). Değişen toplumda eğitim ve öğretmen nitelikleri . *Anadolu Journal of Educational Sciences International, 10*(1):654-700 . DOI: 10.18039/ajesi.682130.

Handajani, S., Pratiwi, H. & Mardiyana (2018). *The 21st century skills with model eliciting activities on linear program.* IOP Conf. Series: Journal of Physics: Conf. Series 1008 (2018) 012059 doi :10.1088/1742-6596/1008/1/012059

İpekşen, S. (2019). *Fen bilimleri öğretmen adaylarının 21. yüzyıl öğrenen becerileri ile öğrenme biçimleri, öğrenme stilleri ve çoklu zekâ alanları arasındaki ilişkilerin incelenmesi.*

(Yayımlanmamış Yüksek Lisans Tezi). Kütahya Dumlupınar Üniversitesi, Eğitim Bilimleri Enstitüsü, Kütahya.

İşeri, A . (2020). Küresel beceriler ve ders kitaplarına yansıması . *Türk Eğitim Bilimleri Dergisi , 18* (1):296-325 . DOI: 10.37217/tebd.686477

Kalemkuş, J. (2021). Investigation of science curriculum learning outcomes in terms of 21st century skills. *Anadolu Journal of Educational Sciences International, 11*(1):63-87. DOI: 10.18039/ajesi.800552.

Karaçaltı, C., Korkmaz, Ö. ve Çakır, R. (2018). Öğrencilerin programlama başarılarının bilgisayarca-eleştirel düşünme ile problem çözme becerileri çerçevesinde incelenmesi. *Amasya Üniversitesi Eğitim Fakültesi Dergisi, 7*(2):343-370.

Korucu, A. T. ve Ünüvar, M. (2020). Bilgisayar ve öğretim teknolojileri öğretmenliği bölümünde okuyan öğretmen adaylarının aldıkları eğitim ile bilişim liderliği vasfı ve 21. yüzyıl becerileri arasındaki ilişki. *Bilgi ve İletişim Teknolojileri Dergisi (Journal of Information and Communication Technologies), 2* (1):45-54.

Kozikoğlu, İ. &Altunova, N. (2018). Öğretmen adaylarının 21. yüzyıl becerilerine ilişkin öz-yeterlik algılarının yaşam boyu öğrenme eğilimlerini yordama gücü. *Yükseköğretim ve Bilim Dergisi (Journal of Higher Education and Science), 8* (3):522- 531. DOI: 10.5961/jhes.2018.293.

Kültekin, S. (2006). *Bilgi toplumu ve eğitim programlar*. (Yayınlanmış Yüksek Lisans Tezi). Balıkesir Üniversitesi, Sosyal Bilimler Enstitüsü, Balıkesir.

Miles, M, B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded Sourcebook.* (2nd ed). Thousand Oaks, CA: Sage.

Mahande, R.D., Malago, J.D.& Hartoto, H.(2021). The Prototype of 4CS-Based Blended Learning Content. *Journal of Educators Online 18*(1):2021 DOI: 10.9743/JEO.2021.18.1.4

Murat, A. (2018). *Fen bilgisi öğretmen adaylarının 21.yüzyıl becerileri yeterlik algıları ile stem'e yönelik tutumlarının incelenmesi*. (Yayınlanmış Yüksek Lisans Tezi). Fırat Üniversitesi Eğitim Bilimleri Enstitüsü, Elazığ.

Özdemir, S .M. (2005). Üniversite öğrencilerinin eleştirel düşünme becerilerinin çeşitli değişkenler açısından değerlendirilmesi . *Türk Eğitim Bilimleri Dergisi , 3* (3:297-316 .

Orhan Göksün, D. (2016). *Öğretmen adaylarının 21. yy. öğrenen becerileri ve 21. yy. öğreten becerileri arasındaki ilişki*. (Yayımlanmamış Doktora Tezi). Anadolu Üniversitesi Eğitim Bilimleri Enstitüsü, Eskişehir.

Özkan, H . (2009). Bilgi toplumu eğitim programları. *Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi,* (10): 113-132 .

Peker, B. (2019). *Sosyal bilgiler öğretmen adaylarının 21.yüzyıl öğrenen becerilerini kullanım düzeylerinin incelenmesi.* (Yayımlanmamış Yüksek Lisans Tezi). Niğde Ömer Halisdemir Üniversitesi, Eğitim Bilimleri Enstitüsü, Niğde.

Selman, Y.F.& Jaedun, A. (2020). Evaluation of the implementation of 4C Skills in Indonesian
subject at senior high schools. *JPI, 9*(2):244-257.

Sipayung, D.H., Sani, R.A., Rahmatsyah &Bunawan, H. (2018). *Collaborative ınquiry for 4C skills.* Advances in Social Science, Education and Humanities Research, volume 200. 3rd Annual International Seminar on Transformative Education and Educational Leadership (AISTEEL 2018).

Triana, D. Ulung Anggraito, Y. & Ridlo, S. (2020). Effectiveness of environmental change learning tools based on STEM-PjBL towards 4C skills of students . *Journal of Innovative Science Education, 9* (2) 2020 : 181-187.

Uçak, S. & Erdem, H.H. (2020). Eğitimde yeni bir yön arayışı bağlamında "21. yüzyıl becerileri ve eğitim felsefesi". *Uşak Üniversitesi Eğitim Araştırmaları Dergisi, 6*(1):76- 93

Yalı, S . (2021). 21. Yüzyıl Becerileri Perspektifinden Tarih Eğitiminin Yönü . *İnsan ve İnsan , 8* (27):209-233 . DOI: 10.29224/insanveinsan.818785

Yazıcı, T. & Karlı, İ. (2016). *Bilgi toplumunda teknoloji, medya ve siyaset.* İstanbul: Volga Yayıncılık.

Yazıcıoğlu, A. (2020). Veri toplama araçları. (Editör:Ebru Oğuz). Eğitimde araştırma yöntemleri.(s.144 içinden) Ankara:Eğiten Kitap Yayıncılık.

Yıldırım, H. &Yıldırım, A. (2006). *Sosyal bilimlerde nitel araştırma yöntemleri*. Ankara: Seçkin Yayıncılık.

Yu, T.X.& Wan Mohammad, W.M.R. (2019). Integration of 21st Century Learning Skills (4C Elements) in Interventions to Improve English Writing Skill Among 3K Class Students. *International Journal of Contemporary Education,* 2(2): 100-121.

Yüksel, A. , Arıbaş, A. &Bahadır Yılmaz, E . (2020). Eleştirel düşünme ve problem çözme becerileri arasındaki ilişki: Sağlık Hizmetleri Öğrencileri Örneği . *The Journal of Social Science , 4* (7) :160-174 . DOI: 10.30520/tjsosci.673816

THE POTENTIAL OF CANISTEL, A RARE TROPICAL FRUIT AS THE MAIN INGREDIENT IN ICE-CREAM

Faiqah Afifah Binti Joannes
Nurul Hidayah Binti Mahirin
Keningau Vocational College, Keningau, Malaysia

Abstract
This project aimed to create a food product known as Canistel Ice Cream. This product was a sweetened frozen food that can be usually eaten as a snack or dessert blended with a rare ingredient which was canistel, a tropical fruit that many were not familiar with. The main ingredients needed to make this Canistel Ice Cream are milk, cream and sweetener. Canistel fruit is a seasonal fruit. It is an evergreen tree native to tropical areas like South America and Southeast Asia. The objective of this research was to understand the potential use of canistel as food ingredient by exploring the target group's opinions on it in order to identify whether they could further experiment on their product in order to popularize it. The respondents were three experienced chefs who were working in top hotels and restaurants in the city. The instrument was a set of items that this panel of experts needed to rate after sampling the ice-cream. The questions were designed to gather their opinions on canistel-based Ice Cream in the terms of its taste, texture and appearance. Based on the findings, the panel expressed strong approval on the three primary aspects of the ice-cream. This indicated that this product had a commercial value and there is a possibility that canistel, the main ingredient used in this ice-cream, could be further introduced to other products.

Keywords: canistel, ice-cream, tropical fruit, food product

Ethnobotanical study of pumpkin (*Cucurbita moschata* Duchesne) and winter squash (*Cucurbita maximal* Duchesne) landraces in Benin

Ulrich H. GBEMENOU
Dr. (MC) Vincent Ishola EZIN
Prof. Dr. Ir. Adam AHANCHEDE
University of Abomey-Calavi

Abstract
Pumpkin, *Cucurbita moschata* Duchesne and winter squash, *Cucurbita maxima* Duchesne are important food resources due to their nutritional composition. Despite their food advantages, they still remain underutilized crops in Africa and particularly in Benin. No documented information is available on the knowledge of producers on the use, conservation and commercialization of *Cucurbita moschata* and *Cucurbita maxima*. The objectives of this study are to (i) to constitute a reference collection of the different accessions of winter squash and pumpkin for future research needs; (ii) identify the different uses of pumpkin and winter squash in Benin. To this end, an investigation was carried out in the departments of Couffo (Dogbo, Djakotomey, Klouékanme and Aplahoué) and Borgou (Parakou and N'dali). One hundred twenty (120) farmers grouped into 06 different ethnic groups (*Adja*, *Bariba*, *Bialy*, *Fon*, *Gourmantché* and *Zarma*) were interviewed. The results showed that 06 local landraces from 08 ethnic names were identified in 19 villages surveyed through systematic census of farmers supported by the snowball technique. Varietal diversity on a municipal level varied from two to four. Pumpkin and winter squash were mainly cultivated by men and about 15% were cultivated in cultural association with maize, cassava, cowpea and groundnut. The harvested fruits were used for consumption, commercial, therapeutic and occult purposes. However, about 48% of producers have abandoned its production mainly due to production and marketing constraints. This abandonment could induce a risk of genetic erosion of this species. Thus, the conservation and enhancements of the genetic resources of these species are essential. This study made it possible to establish farmers' knowledge on the utilization and production of pumpkin and winter squash local varieties, and identify the varietal diversity of Benin landraces of pumpkin and winter squash.

Key words: pumpkin, winter squash, Benin, varietal diversity

INTRODUCTION

The genus *Cucurbita* consists of five different species. They are: *Cucurbita argyrosperma*, *Cucurbita moschata*, *Cucurbita maxima*, *Cucurbita pepo* and *Cucurbita ficifolia*. *C. maxima*, *C. moschata* and *C. pepo* are the most important species in terms of world agricultural

production (Oecd, 2016). Their annual production is estimated about 20 million tons (Kim et *al.*, 2012). The world production of all *Cucurbita* species in tons for 2000, 2004, 2005, 2016 were 16 000 000, 19 310 604, 19 527 949 and 26 486 618 respectively (FAOSTAT, 2016). (Mbogne et *al.*, 2015), revealed that African production is estimated at 1.8 million tons from 140 000 ha, with an average yield of 12.8 t/ha. In Africa, exceptional production is recorded in Malawi (480 233 t), Egypt (477 283 t) and Algeria (388 875 t) (FAOSTAT, 2018). However, there are no statistics related to the production of *Cucurbita* in Benin, as it is still a marginalized crop in terms of research, production, industrialization and marketing.

Cucurbita moschata and *Cucurbita maxima* are generally grown for their leaves, flowers, fruits and sometimes for their oil seeds (Fu et *al.*, 2006). According to Mbogne et *al.* 2015 the leaves of *C. maxima* is regarded as a reservoir of nutrients (iron, vitamin A and C) that are important in countries where anemia due to malaria and immune deficiency is common. They are low-calorie vegetables that are suitable for any diet. Vines and fruits are used as fodder for domestic animals (Noguera, 2002). González et al. (2001), reported that pumpkin and winter squash are an important source of vitamin A (4 ± 20mg / g). They can thus play an important role in the fight against Avitaminosis A, which affects more than 250 million children under five years of age worldwide (Mbogne et *al.*, 2015). They are rich in carotenoids, particularly β-carotene (0.006 - 2,340,000 µg/g), lutein (0.03 - 20.6 µg/g) and α-carotene (6 - 47 µg/g), all of which are nutritionally important (González et *al.*, 2001; Noseworthy et *al.*, 2008; Rodriguez-Amaya et *al.*, 2008; Toshiro et *al.*, 1987). A diet rich in carotenoids is associated with improved immune response and reduced risk of cancer and cardiovascular disease (González et *al.*, 2001; Rodriguez-Amaya et *al.*, 2008). They are a good source of ascorbic acid (22.9 mg/100 g) and inhibit the development of degenerative diseases such as cancer, diabetes, cardiovascular and neurological diseases (Roura et *al.*, 2007). The seeds of *Cucurbita* species are sources of oils and proteins (Robinson and Decker-Walters, 1997). Its seeds contain 50% oil and up to 35% protein (Oecd, 2016). According to the same source, most of the oil is composed of unsaturated fatty acids and therefore has a high nutritional value. Oil from pumpkin and winter squash helps prevent prostate disease, delays the progression of hypertension and relieves diabetes (Zhou et *al.*, 2017). Despite their nutritional benefits, pumpkin and winter squash are among the neglected crops in Benin.

Farmers play a crucial role in plant domestication and conservation (Missihoun et *al.*, 2012). They ensure the preservation and management of local species. The international scientific community has officially recognized the importance of the contributions of local populations and especially farmers in the conservation of genetic resources for the well-being of present and future populations (OAU, 2002). This institutional recognition is mainly based on the evidence that farmers, on the one hand, over centuries of domestication, management and breeding, have shaped the diversity of crop plants and, on the other hand, the observation that this action continues over time in some parts of the world (Missihoun et *al.*, 2012). Therefore, a better strategy for the conservation, valorization and improvement of *C. moschata* and *C. maxima* genetic resources in Benin must take into account the perception of farmers who are the first actors. Despite the nutritional, medicinal and biodiversity benefits of pumpkin and winter squash to agriculture, humans and livestock, to the best our knowledge, no work has been done on the level of varietal diversity by township, the drivers for its production and utilization, the farm management methods, the local taxonomy, the probable origin and seed management practices of these Beninese landraces. Hence, the specific objectives are: specific objectives were to (i) conduct a survey for the collection of the various accessions of pumpkin

and winter squash on the basis of local taxonomic criteria in Benin; (ii) identify the different uses of pumpkin and winter squash in Benin.

Materials and methods

Study areas

The survey for the collection of the various accessions, uses and knowledge of producers on were carried out in the departments of Borgou (townships of Parakou, N'dali) and Couffo (townships of Aplahoué, Djakotomey, Dogbo, Klouékanmey) in the Republic of Benin. The township of N'dali located in the agro-ecological zone 3 is known as the food-producing zone of South-Borgou and covers an area of 23 444 Km^2. The climate is of Sudano and has a Sahelian trend towards the north of the country. The climate is also marked with rainy and dry seasons. The rainy season lasts from May to September, with 145 rainy days ranging from 900 to 1 300 mm per year. However, the spatio-temporal distribution of rainfall causes marked rainfall deficits in some places.

The townships of Parakou and Aplahoué located in the agro-ecological zone 5 are known as the cotton-producing zone. According to RNDH (2015) it covers a vast area of 31 722 Km^2. The climate is both Sudano and Sudano-Guinean with abundant rainfall of 1 000 to 1 400 mm per year with large rainy season and small dry season, spreading over 80 to 110 days.

The township of Djakotomey, Dogbo and Klouékanmey situated at the agro-ecological zone called the zone of ferric oxide soils made of sandy clay in a wet state. It covers an area of 10 500 km^2. The climate is of Sudano-Guinean type with two rainy seasons alternating with two dry seasons. The rainfall generally recorded in the area varies between 800 and 1 400 mm per year. On average, the temperature varies between 25.3°C and 29.7°C.

These townships are favorable to agricultural production and are characterized by a diversity of crop production which constitutes an in-situ conservation of different local landraces of crops including *Cucurbita moschata* and *Cucurbita maxima*. Pumpkin and winter squash were predominantly grown in Borgou and Couffo departments. Thus, the six townships were randomly selected so as to collect, identify and document the use of different accessions of pumpkin and winter squash in study area. Figure 1 shows the different townships investigated.

Figure 1: Map of Benin showing the different Townships investigated.

Sampling techniques and data collected

The systematic censuses of producers supported by the snowball technique were used for the identification of respondents. One hundred and twenty respondents were surveyed in the six townships. A questionnaire was administered to farmers for data collection on pumpkin and winter squash landraces. The main ethnic groups were *Adja*, *Fon*, and *Bariba*. The local authorities were of great help in meeting the producers of pumpkin and winter squash. The sampling unit was represented by the six municipalities, the producers were considered as the elements in the sampling unit. The producers were selected for interview based on their experience in pumpkin and winter squash production at least once. Data collection and accessions were carried out through direct and individual interviews with the help of local translators. Thus, it was of paramount importance that the respondents had good knowledge of the species before being interviewed, as a criterion for direct and individual.
The below parameters were used to estimate the existing relationships between pumpkin, winter squash and different ethnic groups: number of varieties identified, local names given to the pumpkin and winter squash, meaning of the names and origin of the varieties, proportion of women and men involved in their production , variety preference, crop production system, seed selection methods for sowing, distribution of species and their use, description of the processing of pumpkin and winter squash products, their medicinal uses, grouping of the pumpkin and winter squash producers, problems related to their production, uses of different organs of the plant in diet, and marketing.

Statistical analysis

The data obtained was analyzed using descriptive statistics (mean and frequency) with R 3.6.2 software to plot graphs and present some data with tables. The level of fidelity of food and medicinal uses of *C. moschata* and *C. maxima* were determined according to the formula: FL= lp / lu * 100% according to Friedman et *al.* (1986) where:
Ip = the number of informants who mentioned a species for a certain purpose p
Iu = the number of informants who mentioned the species for any use. The use value (UV) served to assess the importance of *C. moschata* and *C. maxima* species for a given community Phillips (1996), according to the formula:

$$UV = \sum_{I=1}^{I_n} U_i / n$$

Ui= the number of uses mentioned by an informant i
n= the total number of informants interviewed.

Results

Nineteen villages were visited during the survey. The number of villages at the communal level was 03 in Dogbo, 06 in Djakotomey, 03 in Klouékanme, 02 in Aplahoué, 03 in Parakou, and 02 in N'dali (Table 1). The dominant ethnic groups in the department of Couffo were "*Adja*" and "*Fon*". In Borgou, "*Zarma*", "*Bariba*", "*Bialy*" and "*Gourmantché*" were the most represented ethnic groups. The number of local landraces interviewed per township varies from 2 to 4 with an average of 2.17 over the entire survey area. In N'dali, the ethnic groups were "*Bariba*", "*Bialy*", and "*Gourmantché*" with the highest number of local varieties (4). A small number of local variety (1) was obtained in Dogbo township.

Table 1: Township and villages surveyed and number of varieties identified (n=120).

Townships	Villages	Ethnics	Number of local varieties identified per township

Dogbo	Ayomi-Centre Avedjin Zohoudji	*Adja*	1
Djakotomey	Lokou-Bedjamey Tohouehoue Houngbézanmey Houégamey Loko-Atoui Houngba	*Adja*	2
Klouékanme	Zounzonkanmé Akouegbadja Gnantchimé	*Adja* *Fon*	2
Aplahoué	Zohoudji Djikpamé	*Adja*	2
Parakou	Zongo II Swinrou Wore	*Zarma*	2
N'dali	Boko Gomez-Kparou	*Bariba* *Bialy* *Gourmantché*	4

Eight (08) names in local languages including synonyms were identified and used to designate the diversity of 06 local varieties of pumpkin and winter squash grown by producers. These local varieties names in local languages were given to the varieties based on two criteria of varietal nomenclature: fruit morphology (62.5%) and human food (37.5%). The vernacular names vary according to the ethnic group (Table 2). The "*Adja*" ethnic group describes a variety with a round shape and protruding ribs (Figure 2) as "*Yovogbo* or *Agonli yovogbo*", which means the big fruit of the white people. Seeds of these varieties came from Klouékanme (27%), Nigeria (18.9%), Dogbo (13.5%), Azovè (10.8%), Cotonou (8.1%), Parakou (5.4%), the remaining percentage i.e. 16.3% were from unknown sources, Abomey, Djakotomey, Lokossa, Pobè, Togo respectively (2.7%). "*Ekpin* or *Yovoté*" means the egg-shaped fruit or the fruit of the whites in "*Adja*", represents a variety of which fruit color is green with white spots (Figure 3). The seeds of this variety came from Azovè (42.9%), Djakotomey (21.4%), Cotonou, Klouékanme, Nigeria, Porto-Novo and Toffo (7.1%, respectively).

"*Ekpin*" or *"Wianru"* were found both in the south and north. Base on the two production zones and different ethnic groups, "*Ekpin*" and *"Wianru"* were classified into two different local varieties. Each ethnic group in the North (*Bariba, Zarma, Gourmantché,* and *Bialy*) used a local name to call several varieties. All these varieties (Figure 5) were given the same name in each ethnic group in the North. Among the "*Bariba*", it is "*Wianru*" in Bariba local name and among the "*Zarma*", it was given "*Laboutanga*" meaning a sauce or stew made from squash. "*Wianru*" seeds came from N'dali (82.9%), Malanville (8.6%), Natitingou (5.7%), and Parakou (2.9%). "*Laboutanga*" seeds came from Parakou (85%), N'dali (10%) and Malanville (5%). "*Lifèly*" and "*Nousam*" in "*Gourmantché*" and "*Bialy*", respectively mean a sauce or soup made from squash. The seeds of "*Lifèly*" came only from Malanville while those of "*Nousam*" came only from N'dali.

The means of acquisition of these different seeds by the producers were buy (9.9%), donation (89.2%) and loan (0.8%).

Figure 2: *Yovogbo*

Figure 3: *Ekpin* or *Wianru*

Figure 4: *Wianru, Laboutanga, Lifèly, Nousam*

Table 2: Vernacular names of pumpkin and winter squash, and meaning of the names and origin of the varieties (n=120).

Number	Ethnic group	Vernacular names	Another vernacular names	Meaning of names	Origin of varieties
1	*Adja*	*Yovogbo*	*Agonli yovogbo*	The big fruit of the Whites	Abomey, Azovè, Cotonou, Djakotomey, Dogbo, Klouékanme, Lokossa, Nigéria, Parakou, Pobè, Togo
2	*Adja*	*Ekpin*	*Yovoté*	Yam of the White The fruit is shaped like a pawpaw (ovoid).	Azovè, Cotonou, Djakotomey, Klouékanme, Nigéria, Porto-Novo, Toffo
3	*Bariba*	*Wianru*	-	Squash sauce or soup	Malanville, Natitingou, N'dali, Parakou
4	*Zarma*	*Laboutanga*	-	Squash sauce or soup	Malanville, N'dali, Parakou
5	*Gourmantché*	*Lifèly*	-	Squash soup	Malanville
6	*Bialy*	*Nousam*	-	Squash soup or stew	N'dali

The proportion of women and men growing pumpkin and winter squash are presented in figure 5. Men (53%) were the main producers of pumpkin and winter squash.

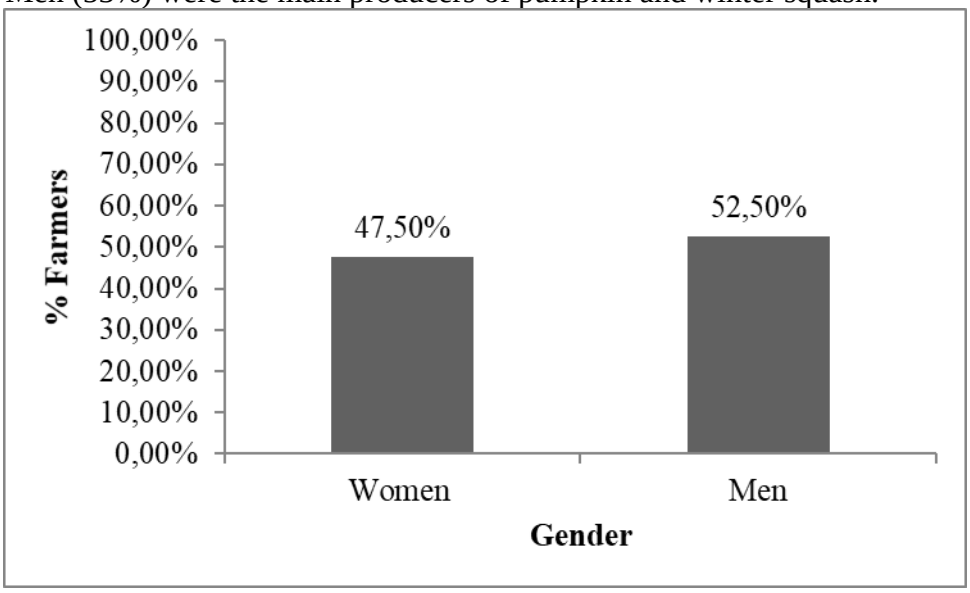


Figure 5: Proportions of women and men growing pumpkin and winter squash (n=120).

The varietal preference of *C. moschata* and *C. maxima* in the study areas are presented in figure 6. 70% of the producers had no preference for the different varieties grown. Good post-

harvest conservation, good organoleptic quality and high yield were the main criteria for the choice of the different varieties grown by producers as varietal preference.

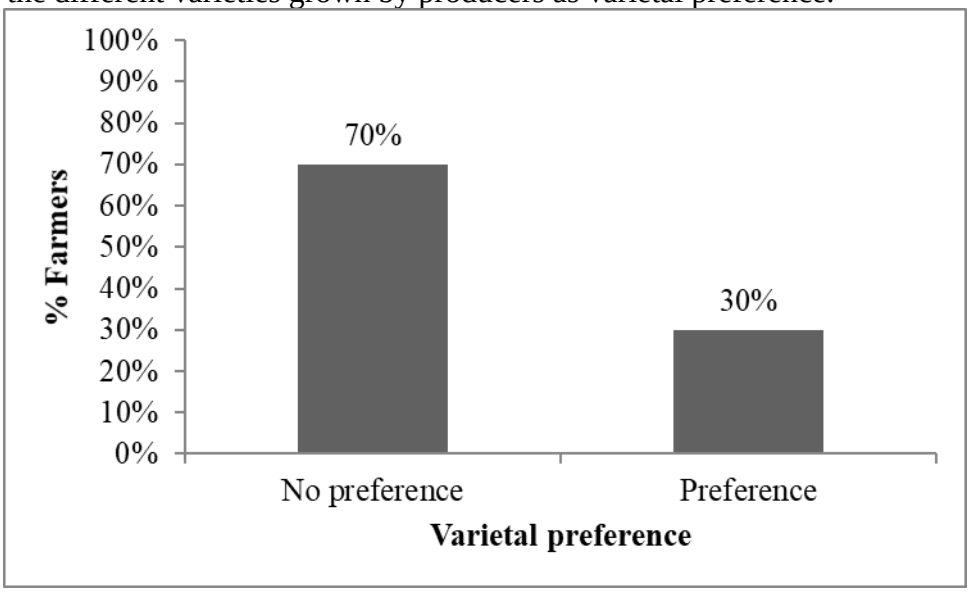


Figure 6: Varietal preference (n=120).

The analysis of figure 7 indicates that 14.20% of the producers practice cultural association with maize, cassava, cowpea and groundnut. Farmers adopted mixed cropping in order to maximize the use of agricultural land, avoid crop failure and mulch the soil with other crop residues so as to prevent pumpkin and winter squash fruits being in direct contact with the soil. Monoculture was practiced by most of farmers because they consider the species as creeping species with good soil coverage capacity.

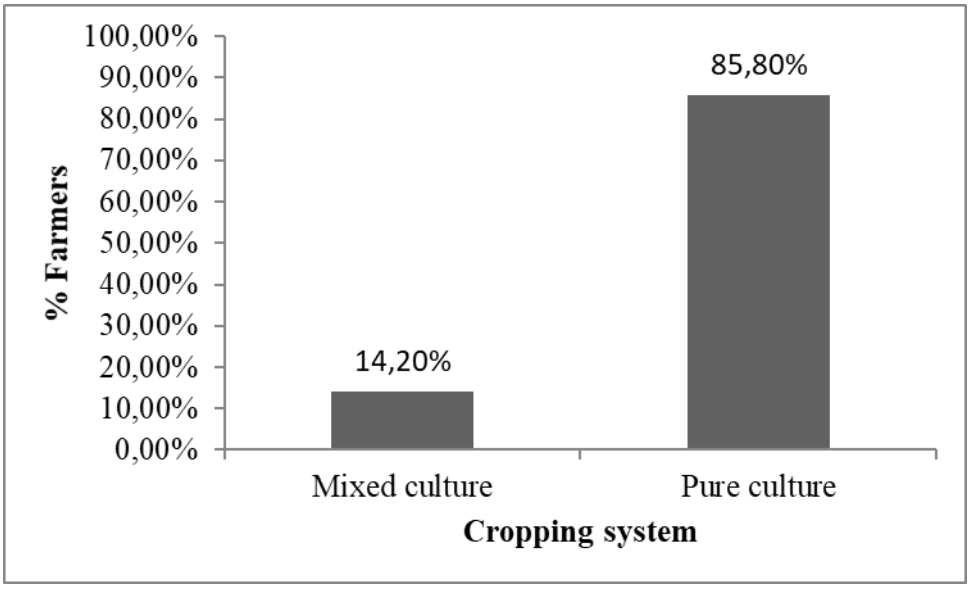


Figure 7: Production systems of *C. moschata* and *C. maxima* (n=120).

The yield and organoleptic quality of the fruits of pumpkin or winter squash depend on the quality of the seeds used for sowing. It is therefore necessary to pay great attention to the type of seeds for crop production. The results show that 56% of producers adopt the manual seed sorting method to eliminate seeds that are infested by insects or of poor quality while 44%

used floating method before sowing (Figure 8). Farmers reported that manual sorting and floating of seeds in water results in a high germination rate. However, no producer in the surveyed areas practices the combination of the two methods.

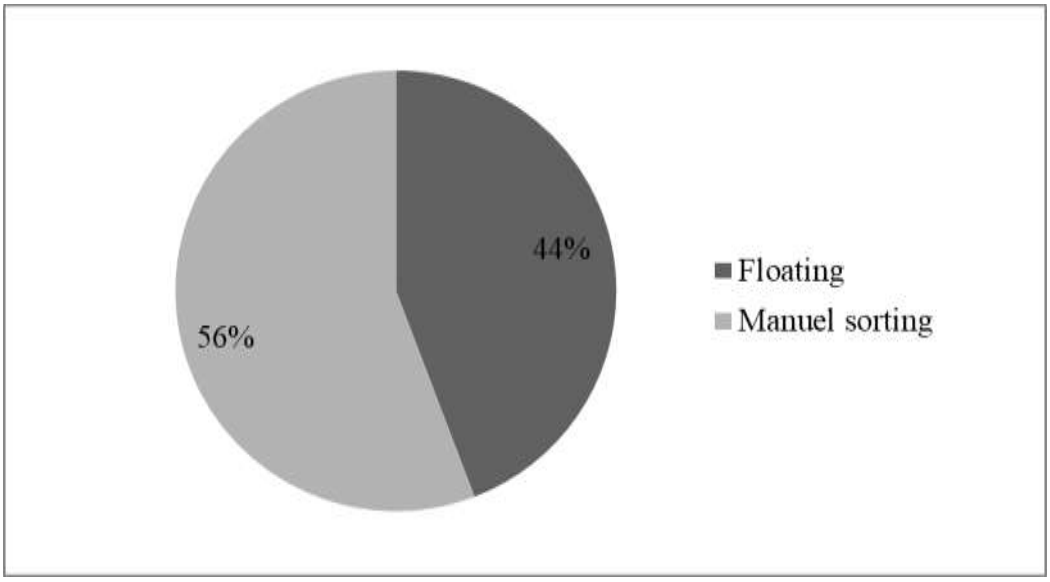


Figure 8: Seed selection methods for sowing (n=120).

In Borgou Department where 20 and 40 producers were respectively interviewed in Parakou and N'Dali, the different local varieties were used for consumption or sale (Table 3). In the townships of Dogbo, Djakotomey, Klouékanme, and Aplahoué the number of farmers interviewed were 12, 14, 18, and 16, respectively. The different uses of the varieties in the Couffo are for human consumption, sale, medicinal use, and occultism. "*Ekpin*" was used for rituals to break the negative effects of enemies. It consists in putting a powder on the fruit, then pronounce incantation and cut. In doing so, all curses are broken. The average use value (1.95) was the quantified value of the importance of *C. moschata* and *C. maxima* recorded in "*Adja*" ethnic group. The average of this use value was (2) recorded in "*Bariba, Bialy, Fon, Gourmantché*, and *Zarma*" communities.

Table 3: Distribution and use of *C. moschata* and *C. maxima* (n=120).

Departments	Townships	Utilization (%)
Borgou (60)	Parakou (20)	Human food (100)
	N'dali (40)	Sale (100)
		Medicinal use (0)
		Occultism (0)
Couffo (60)	Dogbo (12)	Human food (97)
	Djakotomey (14)	Sale (93)
	Klouékanme (18)	Medicinal use (3,33)
	Aplahoué (16)	Occultism (2)

Table 4 shows the description of the processing of pumpkin and winter squash. Several recipes were obtained from the fruits and seeds of the different varieties identified during the survey. "*Cooked Ekpin* and *fried Ekpin*" were recipes very loved by the "*Adja*", the average monthly consumption of each of them was 10 and 9 times, respectively. Fruits of "*Yovogbo*", "*Wianru*" and "*Laboutanga*" varieties were used to prepare simple sauce, vegetable sauce and snacks. These recipes were consumed 9.61, 10.67 and 10.95 respectively on average in a month. The almonds from the seeds of «*Ekpin*" variety was used by the "*Adja*" to prepare egusi sauce with an average monthly consumption of 12. The fruits of the varieties of "*Wianru, Laboutanga, Lifèly,* and *Nousam*" were used to prepare different recipes: okra sauce, groundnut sauce and stew. The average monthly consumption of each of these recipes was 4; 6 and 10.12, respectively. The organoleptic quality of all these recipes varies from sweet to very sweet throughout the survey area. Indeed, after the calculation of the Fidelity Level, *C. moschata* and *C. maxima* were used by the rural population for the preparation of a simple sauce (75%) with a high degree of consensus. However, these species are not widely used for the preparation of a vegetable sauce (5%) and egusi sauce (0.83%) based on the same indices.

The majority of the producers surveyed (98.33%) used the medicinal aspects of the different varieties to the fullness. The medicinal uses were therefore revealed by a minority of producers in the township of Djakotomey. The leaves of "*Ekpin*" were used to fight against fever and external hemorrhoid (Table 5). According to the Loyalty Level indices, *C. moschata* and *C. maxima* are not popular for the treatment of fever and external hemorrhoid (0.83%).

Table 4: Description of the processing of pumpkin and winter squash (n=120).

Recipes	Processing	Side dishes	Average monthly consumption
Cooked *Ekpin*	Wash the fruit, cut it into pieces, remove the seeds, put a bowl at the bottom of the pot, put the pieces, pour the water with salt then allow to boil.	Groundnut oil, pepper juice, fried food	9.45
Fried *Ekpin*	This recipe consists of peeling, cutting, shelling, washing, cutting the fruit into pieces, salting and then frying with oil.	Pepper juice	9
Frying	Wash the fruit, cut into pieces, shell, and cook the crushed fruits by pouring oil and condiments over the resulting puree and stir	Cowpea, rice	10.95

	until cooked.		
Stew	To obtain this recipe you need to peel the fruit, wash, cut, and shell, chop, wash, pour over the yam, put altogether in a sauce, then mix and allow to cook.	-	10.12
Simple sauce	It is necessary to wash the fruit, cut, cook it, crush it, cook it for 15 min; the puree obtained is mixed with the oil and condiments to prepare the sauce.	Solidified corn pap, rice	9.61
Egussi sauce	Cut the fruit into pieces, shell, wash, dry the seeds, sort, shell, crush the almond, mix the powder obtained with the simple sauce and then allow to cook. This makes the sauce heavier.	Solidified corn pap, rice	12
Okra sauce	After cooking the simple sauce, put the okra cut into pieces in the sauce and then allow to cook.	Solidified corn pap, pounded yam	4
Vegetable Sauce	After preparing the simple sauce it is necessary to cut the pre-cooked leaf vegetable and mix it with the sauce.	Solidified corn pap, cooked gari	10.67
Groundnut sauce	After cooking the simple sauce, the peanut paste and allow to cook.	Solidified corn pap , rice, crushed yam	6

Table 5: Medicinal virtues of pumpkin and winter squash (n=120).

Ethnics	Local names	Plant organs	Descriptions	Healed diseases	Dosages
Adja	*Ekpin*	Leaf	Triturate, the leaves and massage the children's bodies with the resulting liquid.	Fever	At will
Adja	*Ekpin*	Leaf	Put the leaves on the fire. Then use the obtained ash to massage around the anus.	External hemorrhoid	At will

Pumpkin and winter squash production is at risk of extinction over time as many producers are giving up (Figure 9) due to certain constraints affecting different links in the value chain (Table 6). Figure 10 show that 52.50% of producers had abandoned the production of vegetables of the genus *Cucurbita*. The main difficulties encountered by producers are related to the production and marketing.

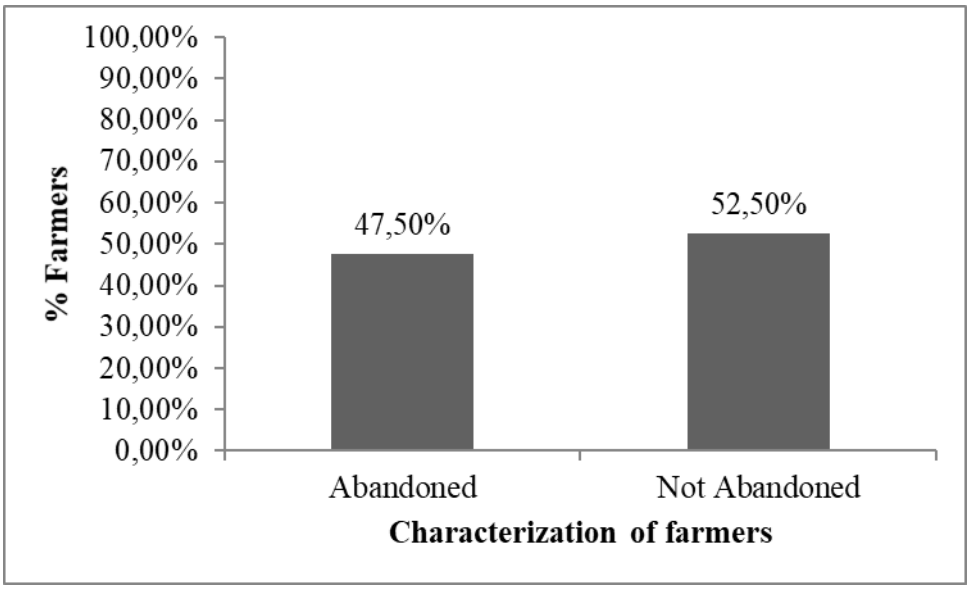


Figure 9: Characterization of pumpkin and winter squash farmers (n=120).

Table 6: Problems related to the production of pumpkin and winter squash (n=120).

Different stages	Problems	% of respondents
Production	Seed pests	3.1
	Lack of agricultural land	31.3
	Infertility of agricultural land	15.6
	Drought	3.1
	Insect infestation of fruits	46.9
Harvest	No problem	100
Storage	No problem	100
Processing	No problem	100
Sale	Low consumption rate	100

Figure 10 shows the degree of food utilization of the different plant organs. The analysis of this figure shows that during the survey only 1% of farmers use pumpkin seeds for food purposes. The fruit (99%) is mostly used in the preparation of various recipes, while the flowers and leaves are not consumed at all.

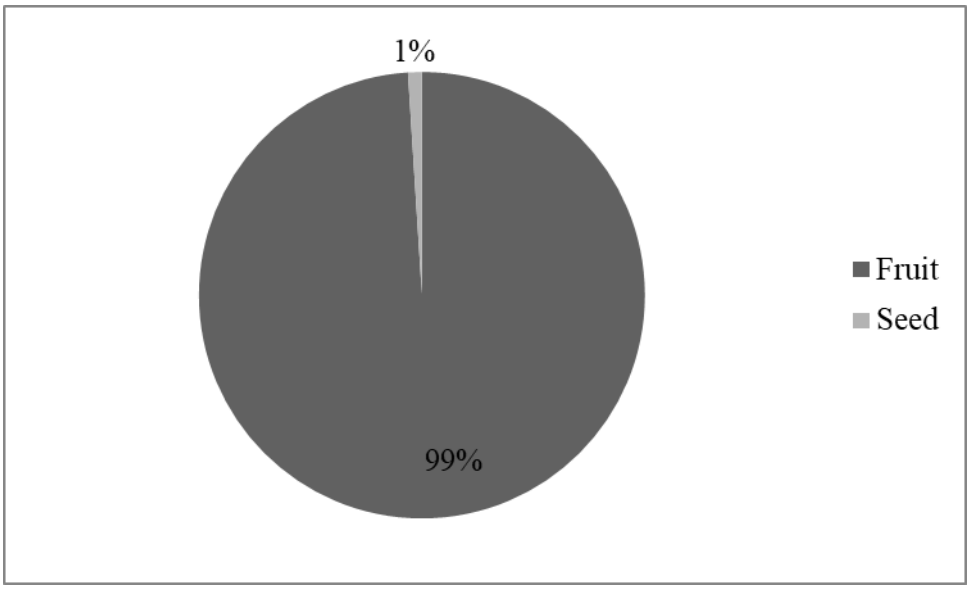


Figure 10: Degree of food utilization of different plant organs (n=120).

The analysis of figure 11 shows the price of different local landraces of pumpkin and winter squash in times of abundance and scarcity. "*Yovogbo*" is the local landrace with the lowest unit price in time of abundance (100 francs per fruit). During the lean season, "*Wianru*" and "*Nousam*" cost 400 and 350 francs per fruit respectively.

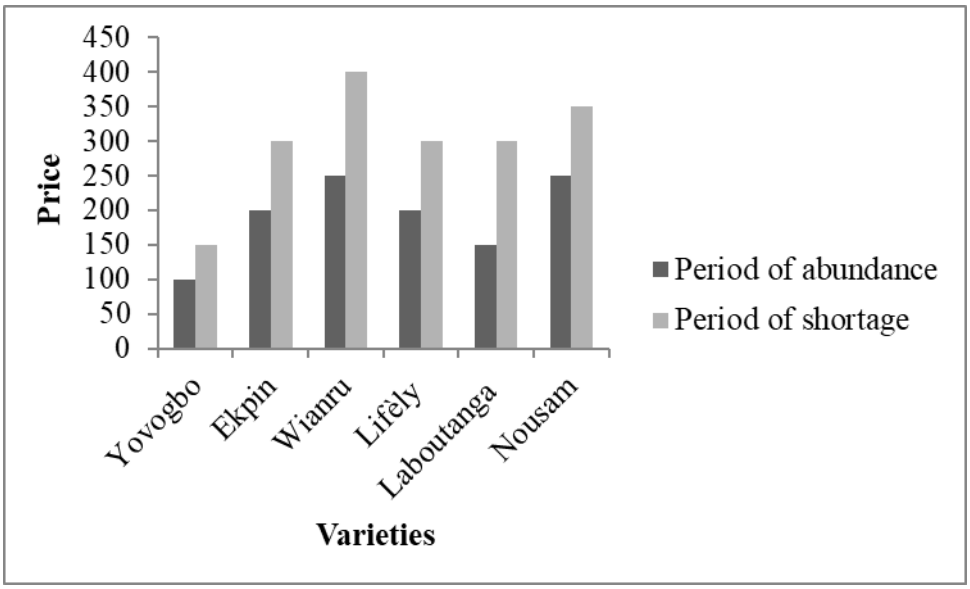


Figure 11: Marketing of pumpkin and winter squash (n=120).

Discussion

According to Missohoun et *al.* (2012) in traditional agriculture, local landraces constitute the bulk of the plant material used. They are old and well adapted to the difficult pedoclimatic conditions in which they are grown. These local landraces are found in rural areas and are preserved by farmers over the years. The systematic census supported by the snowball technique has enabled a total of nineteen villages to be surveyed in the communes of Dogbo, Djakotomey, Klouékanme, Aplahoué, Parakou and N'dali. This method made it possible to make an inventory of six different local landraces of pumpkin and winter squash. These are: "*Yovogbo*", "*Ekpin*", "*Wianru*", "*Laboutanga*", "*Lifèly*", "*and Nousam*". The existence of these local names is linked to the diversity of languages and the geographical distribution of production areas. Thus, this study showed that a single name can designate different varieties of pumpkin. This observation is made among producers in the North. A similar situation exists for other species: for example, the same local name can designate different ecotypes of sorghum in Ethiopia (Mekbib, 2007). The different ethnic groups concerned by the survey are: "*Adja*", "*Bariba*", "*Bialy*", "*Fon*", "*Gourmantché*" and "*Zarma*". A similar study on the endogenous knowledge of local landraces of *Cucurbita moschata* and *Cucurbita maxima* in Zimbabwe identified seven different local landraces "*Nzunzu*", "*Ditimanga*", "*Ndodo*", "*Hokore*", "*Musatani*", "*Dasanana*" and "*Muzwere*" in four communes (Ndoro et *al.*, 2007). The recognition of the names given to the varieties and a perfect knowledge of the traditional classification system are important because the local landraces name is the basic unit that producers use in the management and selection of these genetic resources **(**Missihoun et *al.*, 2012). Local names provide important information on plant morphology. The local taxonomy (shape and color of fruits) was used to differentiate between local landraces collected in the South and those collected in the North. Consequently, local taxonomy criteria play a crucial role in the management and conservation of crop genetic resources (Adoukonou-Sagbadja et *al.*, 2006; Barnaud et *al.*, 2007; Kudadjie, 2006; McGuire, 2002; Sambatti et *al.*, 2001).

The seeds of the different varieties are acquired either nationally or regionally. This phenomenon favors the genetic flow and genetic variability in the species and reduces the risk of extinction of these species in case of natural disasters. The more a species has genetic

variability, the more likely it will be able to withstand abiotic and biotic stresses. The impact of seed exchanges between producers on gene flow will be specifically evaluated using molecular genetic analyses to confirm this hypothesis (Missihoun et *al.*, 2012).

The results of this investigation on pumpkin and winter squash recorded that men (53%) were the main producers. Similar observations were reported in Kenya (Isaboke et *al.*, 2012). These observations are contrary to those obtained by (Mbogne et *al.*, 2015). According to them *Cucurbita moschata* and *Cucurbita maxima* were mainly grown by women (90%) in Cameroon. This gender variation in production can be explained by several determinants. Household size, land tenure, access to credit, group membership, market information and access to extension services significantly influence the likelihood of adopting pumpkin (Isaboke et *al.*, 2012).

In this study, good post-harvest preservation, good organoleptic quality and high yield are the main criteria for choosing the different varieties grown by the producers. These results corroborate that of Mbogne et *al.* (2015) which states that the choice of *Cucurbita moschata* and *Cucurbita maxima* morphotypes grown by farmers in Cameroon is based, among others, on the organoleptic characteristics of the fruits, fruit texture, leaf size and fruit yield. Producers take these factors into account so that the fruits of the pumpkin and winter squash meet consumer demands. Priori et *al.* (2018) reported that the commercialization of *Cucurbita maxima* fruit for consumption is related to the fresh matter (size and weight of the fruit), a characteristic of a quality that is essential for the consumer market.

About 86% of the producers practiced monoculture because of the creeping capacity of the species. Mixed cropping was done with maize, cassava, cowpea and groundnuts. In the same vein, Mbogne et *al.* (2015) indicated that in Cameroon, monoculture represents 80% while mixed cropping (20%) was generally with groundnut, maize, cassava, soybean and yam. The observations of Ndoro et *al.* (2007) are contrary to the above observations. According to these authors, most farmers (85%) grow *C. moschata* and *C. maxima* in mixed cropping with maize and other crops. The main reason is due to lack of land and labor in most rural areas of Zimbabwe. Mixed cropping will help to reduce the pest build up and thus decrease the rate of fruit infestation in the field. According to the research carried out by Oecd (2016) in America, *Cucurbita* have traditionally been one of the three sisters of indigenous agriculture along with beans (*Phaseolus vulgaris*) and corn (*Zea mays*). All these three crops were grown together, with maize providing support for the climbing beans and shade for the *Cucurbita*. *Cucurbita* covers the soil to limit weed development and keep the soil moist. The beans fix nitrogen for all three crops. Pumpkin and winter squash are house crops. They are mainly produced on garbage heaps.

During our investigations, it appears that 56% of the producers adopt the manual seed sorting system and 44% the water floating method. These rudimentary methods used by the growers enabled to eliminate seeds of poor quality and thus increase the germination rate during sowing. This finding corroborates that of Mbogne et *al.* (2015) in Cameroon. The farmers' seed management practices (selection and exchange) observed and described in this study are widely known practices already reported on various crops in the West African sub-region (Adoukonou-Sagbadja et *al.*, 2006). The survey shows that pumpkin and winter squash can be used for food, medicinal and occult purposes. Different recipes are obtained from the fruits and seeds in order to meet the food and nutritional needs of rural populations. According to Robinson and Decker-Walters (1997) *Cucurbita* seeds can be consumed directly, ground into paste, semolina, fine flour. They are also sources of oils and proteins. Once the hull is removed, the seeds contain about 50% oil and up to 35% protein. Most of the oil is composed of unsaturated fatty acids and therefore has a high nutritional value. According to farmers, the morphotypes of *Cucurbita maxima* commonly called "big leaves" in the Central Cameroon

region are mainly grown as leafy vegetables (Mbogne et *al.*, 2015). Similar observations are made by Ndoro et al. (2007) in Zimbabwe, where *C. maxima* leaves are consumed 3 to 4 times per week during the rainy season. In Latin America, flowers are also consumed as vegetables (Merrick, 1992; Nee, 1990).

The leaves of the varieties "*Ekpin*" have therapeutic virtues. It can treat fever and external hemorrhoids. Several species of *Cucurbita* are used in traditional medicine; as anthelmintic (Argueta, 1994; Chou and Huangfu, 1960, Schabort, 1978). Fu et *al.* (2006) reviewed the pharmacological properties of several squashes (*C. moschata, C. pepo, C. maxima, C. mixta, and C. ficifolia* and *Telfairia occidentalis*) and reported that these squashes are antidiabetic, antimicrobial and anticancer. In the "*Adja*", the fruit of the "*Ekpin*" variety is used during rituals to break curses. In general, the uses of pumpkin and winter squash are significantly correlated with ethnicity.

The different varieties of pumpkin and winter squash are sold in local markets. They are produced in a rain-fed agricultural system. They are accessible because their prices reflect the importance of the fruit in the food security of rural populations. The price depends on the size and weight of the fruit. These fruits are mostly bought by the food vendors. However, despite their food and nutritional importance, it is clear that producers are experiencing enormous difficulties in selling the fruit in the market. This is due to the lack of consumer awareness of their nutritional and therapeutic virtues.

During the different phases of production of pumpkin and winter squash, growers are faced with several problems. These problems are particularly encountered during production and when the fruit is being sold. These are the sluggishness and infestation of the fruit in the field. These reasons explain the abandonment of production by about 48% of farmers. This abandonment can cause genetic erosion of local landraces and consequently the loss of biodiversity. The agro-morphological and molecular characterization of these local landraces in Benin is necessary in order to organize an efficient documentation of the data relating to these local landraces and make them available to the national and international scientific community for a judicious use in the crop improvement and crop production. In line with these observations, Ndoro et *al.* (2007) indicated that insect pests and diseases would be the biggest problems (60.7%) in production and excess in the market (52.5%). Hence, there is need to undertake scientific studies on the pests of pumpkin and winter squash plants and the physico-chemical, nutritional and technological characteristics of these fruits. Which can help minimize the infestation rate and also put in place technological packages for its popularization among consumers.

Conclusion

The results of this study revealed that the phenotypic diversity of local landraces of pumpkin and winter squash is maintained and managed by farmers in the Borgou and Couffo departments of Benin. These farmers are knowledgeable about the pumpkin and winter squash varieties they produce. This study also enables us to establish farmers' knowledge on the diverse utilization and production of pumpkin and winter squash local varieties, and identify the varietal diversity of Benin landraces of pumpkin and winter squash. But in managing this diversity, farmers encounter constraints that need to be addressed. The results show that the criteria most used by pumpkin and winter squash growers to categorize varieties are the color and shape of the fruit. However, these criteria do not allow for effective differentiation of these varieties. Research on agro-morphological and molecular characterization based on UPOV and IPGRI descriptors of these local landraces will facilitate efficient conservation management and sustainable use of these genetic resources in varietal improvement.

References

Adoukonou-Sagbadja, H., Dansi, A., Vodouhè, R., Akpagana, K. Indigenous knowledge and traditional conservation of fonio millet (Digitaria exilis, Digitaria iburua) in Togo. *Biodiversity & Conservation*. 2006;15:8-2395.

Argueta, A. Two decades of Mexican ethnobotany and research on plant derived drugs. *Atlas de las plantas de la medicina tradicional mexicana.* 1994;3:172.

Barnaud, A., Deu, M., Garine, E., Mckey, D., Joly, H. I. Local genetic diversity of sorghum in a village in northern Cameroon: structure and dynamics of landraces. *Theoretical and Applied Genetics.* 2007;114:2-248.

Chou, H. C., Huangfu, M. Pumpkin seed (Cucurbita moschata) in the treatment of acute schistosomiasis. *Chinese medical journal.* 1960;80:2-120.

FAOSTAT (2018). Crop statistics. Food and Agriculture Organization of the United Nations, http://faostat3.fao.org/home/E.

FAOSTAT (2016). Agriculture Organization of the United Nations Statistics Division. *Economic and Social Development Department, Rome, Italy.* Available online: http://faostat3. fao. org/home/E (accessed on 8 Février 2020).

Friedman, J., Yaniv, Z., Dafni, A., Palewitch, D. A preliminary classification of the healing potential of medicinal plants, based on a rational analysis of an ethnopharmacological field survey among Bedouins in the Negev Desert, Israel. *Journal of ethnopharmacology*. 1986;16:3-287.

Fu, C., Shi, H., Li, Q. A review on pharmalogical activities and utilization technologies of pumpkin. *Plant foods for human nutrition*. 2006;61:2-77.

González, E., Montenegro Mariana, A., Nazareno Monica, A., Lopez de Mishima Beatriz, A. Carotenoid composition and vitamin A value of an Argentinian squash (Cucurbita moschata). *Archivos latinoamericanos de nutricion*. 2001;51:4-399.

Isaboke, H. N., Mshenga, P., Mutai, B. K., Saidi, M. Determinants of adoption of butternut squash (Cucurbita moschata) farming among small-holders in Suba district, Kenya. *Research Application Summary*. 2012;5:1010.

Kim, M. Y., Kim, E. J., Kim, Y. N., Choi, C., Lee, B. H. Comparaison of the chemical compositions and nutritive values of various pumpkin (Cucurbitaceae) species and parts. Nutrition research and Practice. 2012;6:1-27.

Kudadjie, C. Y. Integrating science with farmer Knowledge: Sorghum diversity management in north-east Ghana. *Wageniningen University and Research Centre*.2006.

Mbogne, J. T., Youmbi, E., Ibouraïman, B., Ntsefong, G.N. Agromorphological, Chemical and Biochemical Chararacterization of Pumpkin (Cucurbita maxima and Cucurbita moschata, Cucurbitaceae) Morphotypes cultivated in Cameroun. *Research in Plant Sciences*. 2015;3:1,12-17.

McGuire, S. Farmers's views and management ogf sorghum diversity in Western Harerghe, Ethiopia: Implications for collaboration with formal breeding. *Collaborative Plant Breeding: Integrating Farmers' and Plant Breeders' Knowledge and Practice.* 2002.

Mekbib, F. Infra-specific folk taxonomy in sorghum (Sorghum bicolor (L.) Moench) in Ethiopia: folk nomenclature, classification, and criteria. *Journal of Ethnobiology and Ethnomedicine.* 2007;3:1-38.

Merrick, L. C. Systematics, evolution, and ethnobotany of a domesticated squash, Cucurbita argyrosperma. *PhD Thesis Cornell Univ, Ithaca, NY.* 1992.

Missihoun, A. A., Agbangla, C., Adoukonou-Sagbadja, H., Ahanhanzo, C., Vodouhe, R. Gestion traditionnelle et statut des ressources génétiques du sorgho (Sorghum bicolor L. Moench) au Nord-Ouest du Bénin. *Int. J. Biol. Chem. Sci.* 2012;6:3-1018.

Ndoro, O. F., Madakadze, R. M., Kageler, S., Mashingaidze, A. B. Indigenous Knowledge of the traditional vegetable pumpkin (Cucurbita maxima/moschata) from Zimbabwe. *African Journal of Agricultural Research.* 2007;2:12-655.

Nee, M. The domestication of Cucurbita (Cucurbitacea). *Economic Botany.* 1990;44:3-58.

Noguera, F. A. "Historia natural de Chamela". *UNAM*. 2002.

Noseworthy, J., Loy, B., Pitrat, M. Improving eating quality and carotenoid content of squash. *In M. Pitrat (Ed.).* 2008;528.

Oecd. Squashesn pumpkins, zucchins and gourds (Cucurbita species)in Safety Assessment of Transgenic Organisms in the Environment. *OECD Publishing Paris.* 2016.

OUA. Projet Modèle Loi Nationale sur la Sécurité en Biotechnologie. 2002. p.44.

Phillips, O. L. Some quantitative methods for analyzing ethnobotanical Knowledge. *Advances in Economic Botany.* 1996; 10:197.

Priori, D., Barbieri, R. L., Mistura, C. C., Villela, J. C. B. Caracterização morfológica de variedades crioulas de abóboras (Cucurbita maxima) do sul do Brasil. *Rev. Ceres, Viçosa.* 2018;65:4-345.

RNDH. Rapport National Sur le Developpement Humain, Bénin. 2015.

Robinson, R. W., Decker-Walters, D. Cucurbits. *Cab international*. 1997.

Rodriguez-Amaya, D. B., Kimura, M., Godoy, H. T., Amaya-Farfan, J. Updated Brazilian database on food carotenoids: Factors affecting carotenoid composition. *Journal of Food Composition and Analysis.* 2008;21:6-463.

Roura, S., Del Valle, C., Aguero, L., Davidovich, L. Changes in apparent viscosity and vitamin C retention during thermal treatment of Butternut Squash (Cucurbita moschata Duch) pulp: effect of ripening stage. *Journal of Food Quality.* 2007;30:4-551.

Sambatti, J., Martins, P. S., Ando, A. Folk taxonomy and evolutionary dynamics of cassava: a case study in Ubatuba, Brazil. *Economic Botany.* 2001;55:1-105.

Schabort, J. C. Cucurbitacin 19-hydroxylase in Cucurbita maxima. *Phytochemistry.* 1978;17:6-1064.

Toshiro, H., Takahiko, A., Seiichiro, N. The composition and vitamin A value of the carotenoids of pumpkins of different colors. *Journal of Food Biochemistry.* 1987;11:1-68.

Zhou, C. L., Mi, L., Hu, X. Y., Zhu, B. H. Evaluation of three pumpkin species: correlation with physicochemical, antioxidant properties and classification using SPME-GC–MS and E-nose methods. *J Food Sci Technol.* 2017;54:10-3131.

Towards disruptive agricultural innovation process in West Africa: lessons learnt when strengthening multi-stakeholder engagements in the scaling of RiceAdvice in northern Nigeria

Espérance Zossou
Kazuki Saito
Alidou Assouma-Imorou
Kokou Ahouanton
Bitrus Dawi Tarfa
University of Abomey-Calavi, Benin Republic

Abstract

RiceAdvice is a free android based application tool for providing farmers with guideline on field-specific crop management practices for rice. This was developed for improving rice productivity and profitability, and reducing decline in soil fertility. Large-scale testing with farmers in Nigeria showed that this tool increased farmers' yield. The challenge is its scaling up/out for a sustainable impact. To assess opportunities and constraints for its scaling up/out, a Rapid Appraisal of Agricultural Innovation Systems was used, and qualitative and quantitative data were collected through semi-structured interviews, multi-stakeholder workshop, and questionnaires distributed to 368 farmers selected in Kano State, northern Nigeria. Farmers reported a clear benefit from using RiceAdvice and were willing to pay more than service providers' expectation. Women farmers had difficulty to assess RiceAdvice due to social/cultural issues. Farmers and youth service providers indicated potential improvement in their livelihoods (social, human, financial and physical capitals). Major constraints in diffusion of RiceAdvice were institutional rather than economic, technological, socio-cultural or biophysical. Causes of constraints were mostly related to the absence of or poor functioning of institutions and the absence of or limited capabilities of financial resources. Constraint relationships showed a need for institutional innovation that requires partnerships among stakeholder groups. RiceAdvice scaling up/out should focus on: (i) building women capacities in service provision, (ii) involvement of traditional/religion institutions, farmers' organizations and inputs/services dealers, (iii) mobilization/awareness using mass media, and (iv) developing and strengthening public-private partnership for sustainable business model for youth in service provision. The success of RiceAdvice diffusion is important to positively impact food security in sub-Saharan Africa.

Keywords: RiceAdvice, soil fertility, multi-stakeholder approach, scaling up and out, sub-Saharan Africa

INTRODUCTION

Across many countries in sub-Saharan Africa (SSA), rice is one of staple food crops and has become a commodity of strategic significance (AfricaRice, 2011; van Ittersum et al., 2016). Rice also occupies an important role in the economies and cultures of West African countries (Diagne et al., 2013).

Despite the importance of rice in SSA, its local production has not caught up with the demand. Currently, around 40% of rice consumed in SSA is imported one (Saito et al., 2015a). Rice importation can drain foreign currency reserves and aggravate poverty and food insecurity. Thus, further increase in domestic rice production and achieving for rice self-sufficiency remain a challenge for SSA countries.

To increase the productivity and profitability of the rice sector in ways that ensure the sustainability of the farming environment in Africa, there is a need of innovative ways to improve rice productivity, maximize rice farmers' investment potential, catalyse youth employment and reduce environmental footprints compared to existing farmer practices.

Fertilizer is costly for smallholder farmers in Africa and many rice farmers are not aware of the right type, dosage and timing of the fertilizer application. RiceAdvice is a free android based application tool for allowing rice farmers to apply mineral fertilizer more efficiently to optimize production and profits and reduce waste. It helps to identify best choice of fertilizers to be purchased based on nutrient requirement and fertilizer prices, and their amounts and application timing. It provides farmers with guideline on field-specific crop management practices for rice to improve rice productivity and increase profitability.

RiceAdvice is an interesting innovation to increase the productivity and profitability of the rice sector with a sustainability. This electronical service is supposed to be used in a context characterized by a low literacy rates and a high level of rurality. It is a disruptive innovation because of its highly revolutionary nature that will radically disrupt the current habits of farmers and stakeholders living in this context. The challenge is how to succeed the scaling up and out of this technology for a long-time and sustainable adoption by the end users. The main objective of this study is therefore to elicit constraints and opportunities for innovation in RiceAdvice using and scaling in Kano State in Nigeria.

MATERIALS AND METHODS

Qualitative data were collected between January to May 2017 in Kano State in Nigeria using Semi-structured in-depth interviews and Multi-stakeholder workshop.

Semi-structured in-depth interviews

We used focus group discussion in homogenous group to interview the main Rice value chain stakeholders and local authorities of Kano state to get information about the functioning of innovation systems, including collaboration between stakeholder groups, effectiveness of policies and other institutions, and what constrains and enables the scaling of RiceAdvice. During the interviews, each category of the stakeholders was represented by at least five members previously identified with the collaboration of the facilitation and coordination team of the rice value chain innovation platform in Kano State. An interview guide was prepared and fine-tuned for the semi-structured interviews with a topic list, with a degree of flexibility to identify and to anticipate interesting storylines relating to the problem.

Multi-stakeholder workshop

The purpose of the workshop was to facilitate different groups of stakeholders (individually, in homogeneous and in heterogeneous groups) to identify, categorise and analyse constraints and challenges for innovation in the process of RiceAdvice scaling. About 33 participants attended the workshop, with at least three representatives from each of the categories of stakeholders. Three categories of sessions were held during the workshop for two days: (i) identifying constraints and challenges, (ii) categorizing constraints and challenges, and (iii) exploring specific and generic Entry Points for innovation to succeed in RiceAdvice use and scaling.

The descriptive statistics, tables, histograms and spider diagrams were used with means and frequencies to analyse the dimension of constraints, causes and opportunities for intervention.

RESULTS

3.1 Constraints faced when using RiceAdvice

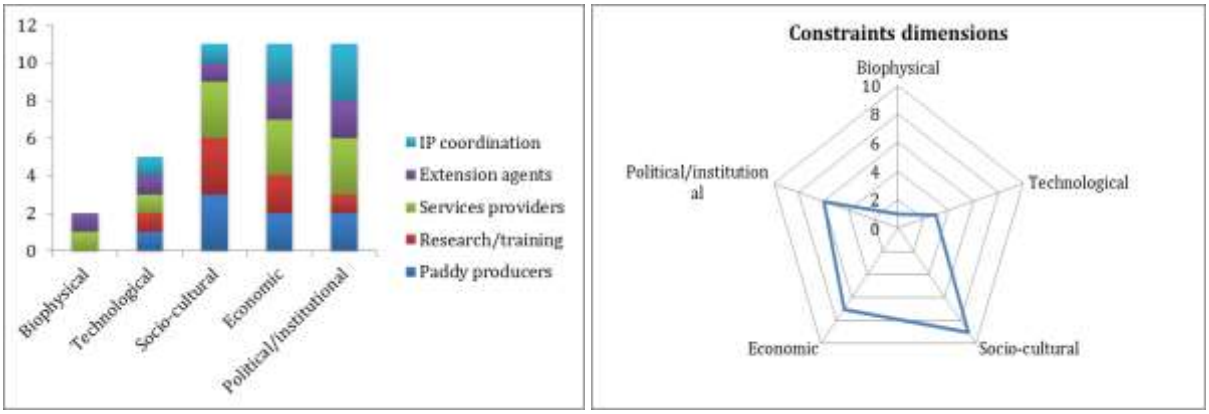


Figure 1: Overview of constraints faced by rice value chain stakeholders in using RiceAdvice

Source: Data from Semi-structured in-depth interviews

The services providers, extension agents and farmers are those who faced more challenges in all areas. The three main constraints of service providers and extension agents are respectively (i) the difficulty in the access to farmers 'fields; (ii) the lack of accessibility to electricity; and (iii) the lack of capacities in the handling of electronical materials. The three mains constraints of farmers are respectively (i) the language Bias due to the high illiteracy rate; (ii) the limited access of women due to cultural barriers; and (iii) the financial and physical accessibility to fertilizers.

The most important constraints encountered by the rice value chain actors are respectively of socio-cultural, economic, political/institutional and technological dimension. The analysis of RiceAdvice as a tool shows some strengths, weakness, opportunities and treats summarized in the table 1.

Table 1: strengths, Weakness, Opportunities and Treats (SWOT) analysis of RiceAdvice as a tool

Strengths	**Weaknesses**
• Easy to carry • With clear benefit (yield increase, reduction of fertilizer quantity, reduction pest and disease, …) • Simple to use • Can be used for several farmers (no limit on the application capacity) • Diversity of parameters of the tool • well-suited to several ecologies in Africa	• Output only in English • Focuses only on chemical fertilizers • Need follow up • As it is an electronic material, a lot of effort to convince producers •
Opportunities	**Threats**
• Job opportunity • NICT promotion and use in agriculture • Favourable environment for the promotion of ICT materials (android phone, social network, …) • Social interaction with RVC stakeholders	• Poverty (financial, monetary) • Cultural/Religion barriers (lack women access to RiceAdvice services • Cost of ICT materials • Use depends on the availability of electricity

Source: Data from multi-stakeholder workshop

3.2 Benefits from using RiceAdvice

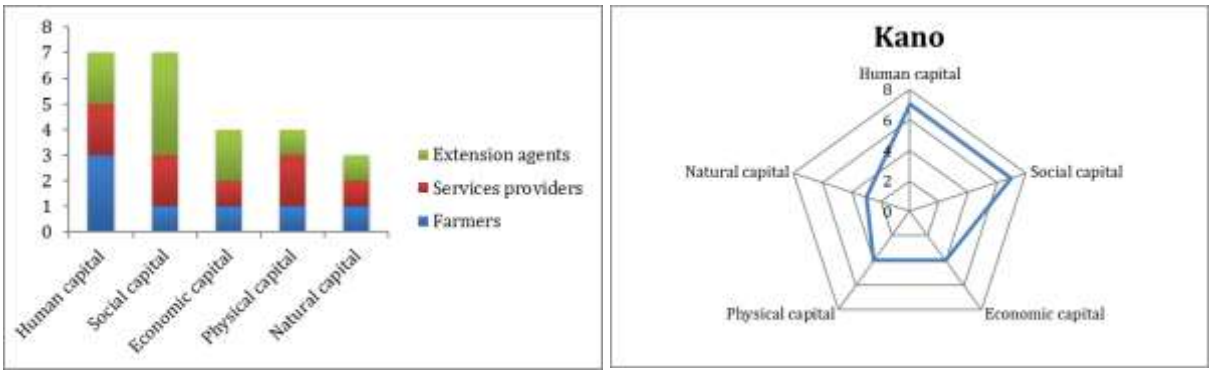


Figure 2: Overview of Potential impact of RiceAdvice on Users' livelihoods

Source: Data from Semi-structured in-depth interviews

The users of RiceAdvice (Farmers, service providers and extension agents) noted an improvement on their livelihoods, specifically on the social, human, financial and physical capitals. Some direct benefits by using RiceAdvice are: (i) increase of the yield of 30%; (ii) reduction by the half of fertilizer quantity leading to less pollution and saving money; (iii) reduction of pests and diseases in the fields; (iv) getting good quality paddy/seeds (less empty grains); (v) knowledge of the exact area of the farm; (vi) improvement of knowledge (use of fertilizers, ICT materials, Good Agricultural Practices); (vii) and strengthening relations between rice value chain stakeholders.

3.3 Potential constraints in RiceAdvice scaling

The dimension of potential constraints according to different key stakeholders in RiceAdvice scaling up and out are summarized in the figure 3.

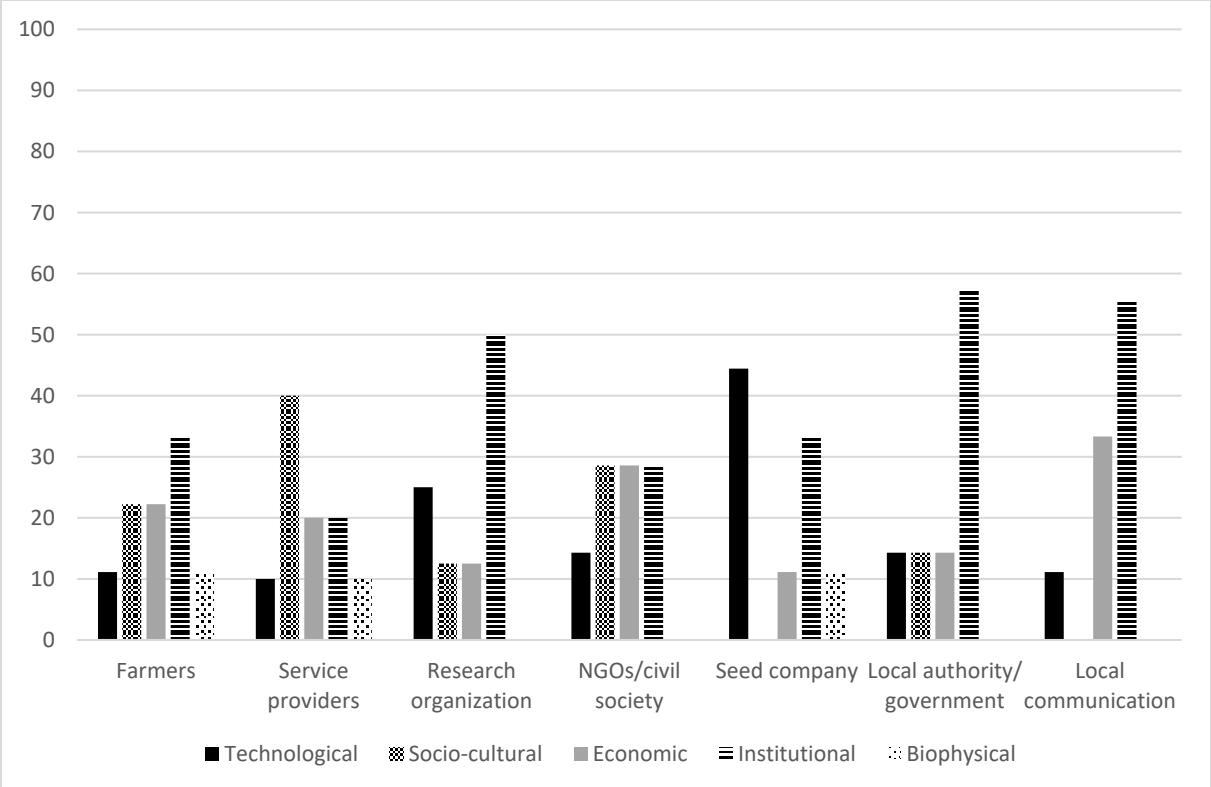


Figure 3: Dimension of constraints according to different key stakeholder in RiceAdvice scaling

Source: Data from multi-stakeholder workshop

The constraints faced by all stakeholders were more institutional rather than economic, technological, socio-cultural or biophysical. Some of the potential constraints identified are summarized in table 2:

Table 2: Potential constraints in RiceAdvice scaling

Biophysical	Technological	
Difficulty to access some farms due to the relief/ ecology	Recommendation in kg and not in local measures Output in English Need of regular follow-up Lack of capacities in the handling of electronical materials need of training before using the technology Absence of recommendation on organic fertilizer Absence of some rice varieties in the RiceAdvice application	
Economical	Socio-cultural	Political/ institutional
Financial access fertilizers Financial access electronic material Financial issue SP transport Financial issues dissemination Financial issues more training (use of the tool, skill to be more confident with farmers, …) Financial capital for entrepreneurs to invest in this business	Risk aversion first contacts Culture/religion limiting women Language Bias & high illiterate rate Non-commitment to take it as business Non-compliance by some farmers Land issues Using of local measures for inputs Gratuity mind 'expecting something with no self-contribution'	Less promotion of gender High rate of illiteracy in RA Physical accessibility to tablets accessibility to electricity "Lack of roads to access farms High cost of fertilizers Land issues Access to credit Interconnection between institutions organizations related to the rice value chain

Source: Data from multi-stakeholder workshop

DISCUSSION

Findings confirm previous results from on-farm trials conducted in Senegal River Valley which showed that rice yield and profit were increased by using web-based decision support tool on nutrient management (Saito et al., 2015b). Interestingly, positive advantages of use of RiceAdvice by farmers and service providers include not only financial capital, but also human and social ones. These benefits from this study could justify further effort for scaling RiceAdvice as a new innovation in northern Nigeria.

This study could not deal with gender issues at farmer level as we did not realize gender barriers at the beginning of dissemination in 2016, in that male service providers cannot access to female rice farmers. In SSA in general, and particularly in predominant Muslim countries, women are negatively affected by socio-cultural and religious constraints, which forbid them from communicating freely with men outside their families (Zossou et al. 2017). Based on preliminary results from this study and monitoring and evaluation in dissemination process (data not shown), we identified several female farmers' groups, and they nominated female service providers from 2017 onwards for enhancing female farmers' use of RiceAdvice.

Findings indicated that major constraints to scaling RiceAdvice were institutional rather than others (economic, technological, socio-cultural, and biophysical). These findings are consistent with previous RAAIS studies, which showed the need for institutional innovation to address agricultural systems intensification in Africa (Schut et al. 2015, 2016; Muilerman, Wigboldus, and Leeuwis 2018). Institutional innovation for scaling RiceAdvice requires partnerships with other sectors/ stakeholder groups.

CONCLUSION

The advantages of RiceAdvice go beyond financial capital by also impacting human and social capitals. Capacity development is needed for the illiterate to reduce inequality in access to RiceAdvice among farmers. The contribution of female farmers' groups to the process of scaling is important to overcome gender bias. Results show that the main constraint for scaling was institutional nature,

which was caused by the absence or poor functioning of institutions, the absence of or limited capabilities and resources, and the absence or poor interaction and collaboration among stakeholders. Further empirical research is needed to investigate these elements.

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REFERENCES

AfricaRice (2011). Boosting Africa's Rice sector. A research for development strategy 2011-2020. Africa Rice Center, Cotonou, Bénin.

Diagne, A., Alia, D., Amovin-Assagba, E., Wopereis M.S.C., and Saito, K. (2013). Farmer perceptions of the biophysical constraints to rice production in sub-Saharan Africa, and potential impact of research. In: Wopereis, M.C.S., Johnson, D.E., Ahmadi, N., Tollens, E., and Jalloh, A. (Eds), Realizing Africa's Rice Promise. CABI, pp. 46-68.

Muilerman, S., Wigboldus, S., and Leeuwis, C. (2018). Scaling and institutionalization within agricultural innovation systems: the case of cocoa farmer field schools in Cameroon. International Journal of Agriculture Sustainability 16 (2), 167–186.

Saito, K., Dieng, I., Toure, A., Somado, E.A., Wopereis, M.C.S. (2015a). Rice yield growth analysis for 24 African countries over 1960–2012. Global Food Security 5, 62-69.

Saito, K., Diack, S., Dieng, I., Ndiaye, M.K. (2015b). On-farm testing of a nutrient management decision-support tool for rice in the Senegal River valley. Computers and Electronics in Agriculture 116, 36–44.

Schut, M., Rodenburg, J., Klerkx, L., Hinnou, L.C., Kayeke, J., and Bastiaans, L. (2015). Participatory appraisal of institutional and political constraints and opportunities for innovation to address parasitic weeds in rice. Crop Protection 74, 158-170.

Schut, M., van Asten, P., Okafor, C., Hicintuka, C., Mapatano, S., Nabahungu, N.L., Kagabo, D., Muchunguzi, P., Njukwe, E., Dontsop-Nguezet, P.M., Sartas, M., and Vanlauwe, B. (2016). Sustainable intensification of agricultural systems in the Central Africa Highlands: The need for institutional innovation. Agricultural Systems 145, 165-176.

Zossou, E., Arouna, A., Aliou, A. and Agboh-Noameshie, A.R. (2017). Gender Gap in Acquisition and Practice of Agricultural Knowledge: Case Study of Rice Farming in West Africa. Expl Agric. 53 (4), 566–577.

USE OF INTERCROP AGRICULTURE SYSTEM AND INVESTIGATION OF OLIVE INTERCROP AGRICULTURE

Ayça AKÇA UÇKUN
Olive Research Institute, Izmir, Turkey

Abstract
In recent years, the ecosystem and human health have started to be under threat due to the increase in industrialization and the increasing greenhouse gases due to the destruction of nature and climate change has come to the fore. Due to the rapid increase in the world population, the decrease in agricultural areas and the negative effects of climate change on agricultural productivity, producers have started to search for a new environment and ecosystem-friendly system where they can gain additional income, obtain the highest benefit from agricultural lands. In the search for these systems, it was the intercrop agricultural system that disappeared with monoculture production and came back to the agenda with the effect of climate change.
The intercrop agriculture system is a system that increases the productivity of agricultural products and soil fertility, reduces the impact of diseases and pests, provides weed control, ensures efficient use of resources, and contributes to the environment and ecosystem by generating additional income for producers.
In this compilation study, information is given about the benefits of the intercrop agriculture system, which existed in the past and is now important again, in terms of soil, water, disease, pests, productivity and the use of olives, which is a strategic product of the Mediterranean region, in olive cultivation. With this review, revealing the scientific studies in the intercrop agriculture system will shed light on the future intercrop agricultural system studies, especially the missing researches on olive intercrop agriculture.

Keywords: Intecropping Agriculture, Olive, Biodiversity, Climate Change

INTRODUCTION

In recent years, the whole world has been threatened by rapid and unexpected climate changes. Studies have reported that temperatures will increase between 1.1 and 6.4 ° C until the end of 2050, according to the Intergovernmental Panel on Climate Change (IPCC). In the final report published in 2007, they determined that 30% of the total living species of 1 degree increase will be exhausted and all living things of the ecosystem will be affected by high temperatures (Brown, 2008). There are negative effects on climate change, not only temperature but also precipitation irregularities and drought. All these negative effects pose a serious threat to productivity and sustainability rates in agriculture (Brown, 2008).

Today, population growth, industrialization, increase in global energy demand, increasing need for urbanization cause an uncontrolled decrease in green areas and agricultural areas. In addition to this, agricultural productivity and quality are gradually decreasing due to

decreasing water resources, sudden temperature during plant growth period, precipitation changes, negative effects of inputs on environment and ecosystem. Therefore, in recent days, it has become imperative to develop viable farming systems that increase efficiency in reduced production and make full use of arable land. In this quest, intercrop agriculture system comes to mind, the system that was very popular 2000 years ago, but disappeared with monoculture production with the transition to agricultural mechanization and came back to the agenda with climate change. Intercrop agriculture system allows the farmer to use the available resources effectively and gain more benefits. The intercrop agriculture system increases the income of the producers, enables them to use the existing land resources effectively with lower environmental costs and to produce different products at different times (Center, 2011). It is also an economically beneficial approach for the agricultural sector, which generates short-term income from intercrop plants and also medium to long-term products from trees or shrubs (Jose, 2006). In agriculture, the intercrop agricultural system refers to two or more types of crops or genotypes that grow together and coexist for a while (Gordon, 2004). The first known examples of intercrop agriculture date back to 2000 years ago. Looking at the old inscriptions, the first samples showed that especially wheat was planted among the olive plants (Lelle, 1994).

Intercrop agriculture system consists of planting different types of plants between trees. Intercrop agriculture differs from mixed single crop cultivation and rotation cultivation (Vandermeer, 1989; Li et al., 2013). In countries with subsistence agriculture and low amounts of agricultural mechanization, main cultivation (monoculture) production is common. Intercrop agriculture is generally carried out in small parcels and low-input, low-yield agricultural areas (Ngwira et al., 2012). In agriculture, intercrop agriculture is known as an old practice that is only placed in 'modern agriculture', where monocultural production is made and where high yield products are dominated by large areas (Vandermeer, 2010; Zhang et al., 2010; Li et al., 2013).

The intermediate agricultural system in agriculture is divided into 3.

1. Growing two or more crops at the same time without a planting distance or with very little distance,
2. Sowing the second crop before the first crop matures,
3. Growing two or more crops at the same time, growing with a certain distance (Zhu et al., 2000; Lithourgidis et al., 2011; Smith et al., 2013).

Soil and Intercrop Agriculture System

When the relationship between soil and intercrop agriculture system is examined, P (phosphorus) or Al toxicity is generally observed in crop production in acidic soils (White et al., 2013). In the agricultural system, if products adapted to acidic soils such as peanuts, cowpea, potatoes, sweet potatoes, corn, beans and cabbage are cultivated, the plant roots release organic acids and phosphatases into the rhizosphere, and soil P (phosphorus) increases the availability (Li et al., 2007 , 2013; Zhang et al., 2010; Shen et al., 2011; White et al., 2013). Thus, the release of organic acids appears to also protect the roots of beneficial plants from Al toxicity (Ryan et al., 2011; Simões et al., 2012). In alkali and calcareous soils, crop production is generally limited to the presence of P, Fe, Zn, Mn or Cu (White and Greenwood, 2013). Crops such as cabbage, corn, beets, and squash that are tolerant of slightly alkaline soils acidity the soil rhizosphere and release organic acids and phosphatases into the

soil. Thus, it increases the availability of P, Fe, Zn, Mn and Cu and the uptake of mineral nutrients from the soil by beneficial plants (Li et al., 2013; Zhang et al., 2010). However, cereals that release phytosiderophores (root secretions) improve the uptake of cationic micronutrients such as Fe, Zn, Mn, and Cu by plants with metal-phytosiderophore uptake capacity (Zhang et al., 2010; Zuo and Zhang, 2011; Li et al. , 2014).

In the relationship between the soil and the Intercrop Agriculture System, the roots of the complementary plant species used in the intercrop agriculture system also improve the soil stability and soil structure. Thus, it improves resource acquisition (water, nutrients) (Hallett & Bengough, 2013). For example, rooted species can penetrate compacted soil layers for the benefit of fibrous rooted species, thus taking in water and nutrients easily (Chen & Weil, 2010). Plants that promote microbial activities that increase soil fertility or decrease pathogenic organism populations also increase yield in polyculture (Bennett et al., 2013). In North America and Europe, there have been many studies showing both the production and environmental benefits of intercrop agriculture (Zamora, 2008). In these studies, it was revealed that the fertilizer residue in the soil significantly improved and contributed to the development of the olive tree as a result of the mineralization of organic nitrogen and stimulation of the soil microbial biomass (Rivest, 2009). *Racemosus* (Asparagus) as an intercrop agriculture system in *Arecanut* (walnut) plantations created a fresh root yield of 10.666 kg ha − 1 among all medicinal and aromatic plants and contributed to a maximum biomass yield of 1524 kg ha - 1. In the intercrop agriculture system, especially in *Aloe vera, Artemisia pallens, Piper longum and Bacopa monnieri,* soil organic carbon content increases (Sujatha et al. 2006).

Water and Intercrop Agricultural System

When we look at the relationship between intermediate agriculture system and water, it is seen where water is the biggest limiting factor, intercrop agriculture generally increases water availability or efficient use of existing resources (Morris & Garrity, 1993; Xu et al., 2008). In cases where the plant root distribution to be used as intercrop agriculture and the main plant root distribution are complementary (Shackel and Hall, 1984; Mao et al., 2012), the water is lifted hydraulically and the surface runoff is reduced (Caldwell et al., 1998; Prieto et al., 2012). With semi-arid savannah communities (scattered trees or shrubs and an underlying layer of grass / plants whose roots occupy different soil niches), it has been found that water acquisition in intercrop agriculture is improved by using intercrop products with complementary root structures that most effectively benefit from precipitation (De Barros et al., 2007).

Disease, Pest and Weed and Intercrop Agriculture System

It has been determined that the applied traditional farming methods cause pollution of the soil and water with pesticides and various synthetic chemicals, causing harm to both the environment and biological diversity and human health. These negative methods indicate the necessity of changing the production methods used to date to ensure the sustainability of agricultural systems and the production of sufficient amount of food in the future (Subić et al., 2010; Golijan & Veličković, 2015). Looking at the intercrop agricultural system and the disease-pest relationship, it has been determined that in areas where pesticide use is not allowed (such as organic production), planting with medicinal and aromatic plants is the

simplest and at the same time very effective method to reduce the occurrence of pests and diseases (Golijan and Veličković , 2015).

It is widely used to combat plant diseases in intercrop agricultural systems. 73 % of the studies conducted revealed that intercrop agricultural systems generally reduce the disease rate in the range of 30-40 % compared to monoculture production. The ability to reduce the population of weeds and pests affects the yield increase of one or more simultaneously grown crops and better use of available resources in the environment (compared to continuous cultivation) (Poggio, 2005; Hatcher and Melander, 2003). In a study conducted by Singh and Kothari (1997*), Brassica arvensis* (L.) mustard plant, *Artemisia annua* L. (prayer broom), *Coriandrum sativum L*. (coriander), *Chamomilla recutita* (german chamomile), Foeniculum vulgare (fennel) was planted together and the reduction of aphid infestation was studied. As a result of the study, it was recommended that *Brassica arvensis* (L.) be planted with fennel and coriander due to its aphid repellent effect. While *Datura stramonium L.* (tubular flower) alkaloids increase the yield of plants grown around such as *Lupinus albus L*. (white lupine), it has the effect of decreasing the yield of *Mentha piperita L*. (mint).
The presence of many species in the agricultural ecosystem reduces the presence of pests and predators that delay the development and incidence of some pathogens by reducing the number of pests as well as the spread of spores and changing less favorable environmental conditions. Although interest in the intercrop agricultural system of medicinal and aromatic plants has increased in the organic production system, there is still a lack of research on this subject. Previous scientific data show that this system is a useful way to increase biodiversity (Huang et al., 2002). Intercrop agriculture systems have the potential to reduce the damage of pests against plants by providing a habitat with a greater variety of resources for beneficial organisms, increasing the diversity of pollinators and natural enemies of their parent plants (Finch & Collier, 2012). An example of these effects on crop yields is bananas planted with cocoa. The doubling of the midget fly, which enables the pollination of cocoa flowers, has been revealed in the studies that it increased the banana yield five times. Because in intercrop agriculture systems, it is known that the increase in natural enemy activity leads to a decrease in product damage (Hatcher and Melander, 2003). In 79 % of the studies on biodiversity, it has been found that biomass production in systems with species diversity is on average 1.7 times higher than monoculture production. Rich biodiversity increases productivity and other ecosystem functions through substitution and complementarity effects (Vandermeer, 2010).

It has been found to be caused by various factors such as suppression of the disease, reduced host plant availability, rain, wind and insect vectors, and microclimatic effects on pathogen formation. However, increased plant diversity does not always mean increased yield or improved pollination and biological control. In studies, increasing plant diversity helps to preserve soil organism diversity (Van der Putten et al., 2013). Plant productivity increases with an increase in soil organism diversity, for example a 50 % increase in shoot biomass observed with increasing number of mycorrhizal species (Van der Heijden et al., 1998). Ecologically, in polyculture production systems, the negative interactions of competition, parasitism and amensalism and positive interactions of complementarity are seen. Ecologists have studied the ecology of agricultural systems for many years to understand the interactions of species (Vandermeer, 2010). In ecological research, plant-plant interactions have been gaining attention (Brooker et al., 2008). Recently, under more severe environmental conditions (e.g. semi-arid, arctic, alpine or dense grazing systems), net beneficial (branch differentiating) interactions appear to be more common (She et al., 2013; Li et al., 2013).

Plant Selection and Intermediate Agriculture System

Plant selection is very important in intermediate agriculture. In plant selection, crop types or variety combinations that increase productivity and minimize negative interactions are selected. The characteristics of the crop to be selected in intercrop agriculture are complementary and curative, focusing on overcoming resource constraints and increasing the availability and acquisition of limiting resources (Costanzo & Barberi, 2014). It has been determined that there is a need for new approaches to plant breeding for crop cultivation systems (Hill, 1996; George et al., 2014). In particular, crops used to evaluate the benefits and management of intercrop agriculture were generally grown and tested for monoculture systems. The interactions of multiple species, such as nutrient cycling, water redistribution or biodiversity impact, have not been fully evaluated. In the intercrop agriculture system, it has been revealed that some of the different types of plants planted between trees have negative effects while others have positive effects (Robinson, 1991).

Studies have shown that plants used as intercrop agriculture have a nitrogen fixing effect and are beneficial in soil improvement. It is seen that the herbaceous plants used in the intercrop agriculture system compete with the trees for nitrogen at the beginning of the photosynthesis cycle and in this case the plants are negatively affected. However, intercrop agriculture is not desired when focusing on a single main product standardized in terms of labor and time management in agricultural production. In agricultural production, intercrop agriculture is not considered suitable for products that will be mechanized intensively (Feike et al., 2012). According to studies, intercrop agriculture is the dominant form of agriculture in some regions and continues to be. For example, in Latin America, small farmers grow 70-90 % of their corn production with beans, potatoes and other crops. While corn is cultivated in Africa, 98 % of it is sown with cowpea and 90% with beans in Colombia (Robinson, 1991). In intercrop agriculture, the desired benefit is not always provided. For example, in temperate regions, grain legumes and grains planted as animal feed provide variable gains depending on the grain and legume varieties, the sowing rate and the specific growing conditions. Legume-grain mixtures generally give lower biomass and protein yields than cereals planted alone (Anıl et al., 1998). Legumes are very important in many cultivation systems, and seven of the 10 most commonly used intercrop types listed by Hauggaard - Nielsen and Jensen (2005) were found to be legumes. As intercrop agriculture in products with limited N (nitrogen), legumes increase agricultural productivity (Altieri et al., 2012). It turns out that legumes can produce up to 15 % of the N in the air in intercrop cultivation of other non-legumes, especially for the N component derived from air (Altieri et al., 2012).

As the first step of the evaluation of genotypes for arable farming, various germplasms of main crops are tested by producing them together as intercrop products in order to determine the characteristics that provide suitable yield/quality. For example, companies such as KWS are carrying out breeding studies to plant beans and corn together (Costanzo & Barberi, 2014).

Olive and Intermediate Agriculture System

Olive is a strategic product of the Mediterranean region with high healing and economic returns. Olive tree is considered as one of the trees grown as one of the least demanding in terms of soil and nutrients and therefore it can grow even in rocky areas in soils obtained from poor and hard limestone (Özilbey, 2011). Olive has different economic benefits with different

evaluation methods. It is used primarily as table and oil olives, and then in many areas such as feed for animals, firewood, biogas plant, high-value furniture and handicrafts (jewelry), cosmetics industry (cream, shampoo) (Schultz et al. 1986).

In recent years, olive cultivation has become a plant facing climate change and its sustainability is threatened. In critical physiological periods for olives such as fruit setting, bud, flowering, when exposed to negative effects of climate change (excessive rainfall, excessive temperature increase, excessive wind), yield and quality decrease is encountered. In addition, with the periodicity event in the olive genotype, the income of our producers has been decreasing considerably in recent days. Olive producers around the world have a tendency to the intercrop agriculture system for reasons such as gaining additional income, increasing biodiversity, weed control, and decreasing the use of pesticides. Researches show that the use of the intercrop agricultural system in olive production, adaptation to different environments such as drought and socio-economic importance, has been determined to be involved in Moroccan agricultural policy. Studies conducted in Morocco have revealed that the intercrop agriculture system based on olive trees and intercrop plants was carried out in both rain-fed and irrigated areas, and the intercrop agriculture system dates back to ancient times (Roose, 1992).

In ancient studies carried out in Morocco, approximately 75 % of olive groves were used with intercrop plants and especially grains such as wheat and barley, legumes, chickpeas, peas and lentils, aromatic and medicinal plants such as coriander and fenugreek and vegetable products with potatoes and onions. It turned out to be planted together. Looking at the history of olives grown in Mediterranean countries, it was found that with the intercrop agriculture system, grain products, especially wheat, almond, argan, chestnut and oak trees were grown together with olives (Dupraz, 1997).
In the surveys carried out in recent years, it is seen that species such as carob (mostly in Crete), almond, walnut, apricot and poplar are grown along with the olive tree. In the intercrop agriculture system, it has been revealed that olives and arachnids share the same field for 15 to 20 years until the shading of the trees prevents the growth of intercrop plants. In some cases where the distances between olive tree rows are high, the shading of the trees is not a limiting factor, it has been determined that the intercrop planting olive grove is maintained throughout its life (Daoui, 2004). It has been found that trees generally compete for light, water and soil minerals, especially in areas surrounding the canopy of trees. However, it has been revealed that these negative situations can be prevented when plant-plant interactions and planting distances are selected well (Cabanettes, 1999).

Research has revealed that the planting width is important in the cultivation of olives and wheat together. It has been found that the yield of wheat planted 2 m away from the olive tree yields 45 to 50 % higher than the wheat planted 50 cm away from the olive trunk (Dupraz, 1994). In a study on intercrop agriculture in olive cultivation, 6 different intercrop plants were used. Among the plots, (1) olives grown on non-planting soil (Control); and (2) *Brachypodium distachyum L.*, (3) *Lolium rigidum L.* (rye), (4) *Bromus madritensis L.* (5) *Aegilops ventricosa L.*, (6) *Hordeum vulgare L.* (barley) and (7) *Festuca rubra* L. was used. In the experiment, 6 different plant species were planted among the olive trees in the first year; In the second year, the two best performing plant species in the previous year were studied in various calcareous olive soils. In the third year, chickpeas and peanuts were planted among the olive trees. As a result of the experiment, it has been observed that when these

plants are used as intercrop agriculture, they are effective in obtaining Fe especially in calcareous soils (Cesco et al., 2006).

Studies have shown that olive intercrop agriculture, together with different herbs, provide a sustainable strategy to prevent chlorosis in Fe deficiency. As a result of the research, it was determined that when planting with Bromus madritensis L. and Hordeum vulgare L., leaf chlorophyll concentrations and growth of olive trees increased in three different calcareous soils. Growth of olives has been adversely affected as a result of water competition due to intercrop agriculture. However, agricultural cultivation in olives increased Fe, Mn, Cu and Zn leaf contents. The mixing of the soil with the soil generally increased the existing soil Fe, Mn, Cu and Zn levels. However, chickpea or peanut cultivation did not significantly reduce Fe chlorosis in olives (Rombolà et al., 2003).

In another study, it was conducted to examine the effect of wheat, broad bean and chickpea plants planted between olive trees in Morocco on both olive tree distance and soil fertility. The study was carried out in olive groves of 10x10 m2. Soil samples were taken from a 0-30 cm soil layer after the harvest season. Plants were planted at 10 different distances between olive rows. As soil fertility parameters, organic matter, nitrate, available phosphorus and exchangeable potassium, nitrogen in the leaf, phosphorus, potassium contents were examined. As a result of the study, it was seen that yields of 1.7, 2.5, 3 t.ha (wheat, broad bean, chickpea) respectively were obtained in olive orchards, and intercrop planting at different distances was effective on olive yield. For wheat, it has been determined that the maximum organic matter content is closest to the tree, the broad bean has no effect on the distance between the olive rows, and in the chickpea plant, the effective distance between the olive rows is 5 meters (Razouk et al., 2016). In another study, it was found that olive production in the farm in Molos decreased significantly in 2015 due to the negative effects of climate change during the flowering period in olive cultivation. In 2016, chickpeas were planted among olive trees, and it was observed that both chickpea yield and olive oil yield and quality increased. Producers have been reported to save on both reduced fertilizer applications and income from chickpea production (Pantera, 2014).

In a European Union project carried out in Spain, they worked on producing saffron as an intercrop agriculture in olives. The Andalusian olive groves where the study was conducted have been very inefficient and insufficient in organic matter and have problems with runoff. Therefore, they could not get the desired yield in olives. By using saffron as intercrop agriculture in olives, they have increased the yield obtained from their lands with product diversity and low input management practices, and at the same time, they have increased productivity in these lands by reducing costs (Anonymous, 2015).

In another study conducted in Morocco, the optimum planting distance of one-year herbal products applied between olive trees was examined. The olive garden is completely irrigated with rain water. The plants used as intercrop agriculture were wheat (Triticum), broad beans (Vicia faba) and coriander (Coriandrum sativum). As a result of the study, it was revealed that wheat cultivation in the area close to the crown projection of the olive tree reduces the vegetative component and yield of the plant, while the broad bean increases, and coriander has no effect (Razouk et al., 2016). As a result, it has been suggested that the plant to be used as intercrop agriculture in olives should be selected from the species that can compete with olives at a minimum rate, the broad bean and coriander should be planted in the winter resting period of the olive, and the wheat in terms of soil moisture and nutrient supply.

A study was conducted in the North of Morocco to optimize the planting distance between olive trees and annual crops. In the study, crops such as olive-broad bean, olive-wheat, olive-coriander were used as an intercrop agriculture system with different planting distances. In the study, only rainwater feeding was used. Two planting distances determined, one close to the olive tree trunk and the other planted in the projection of the crown. Looking at the results, it was found that the yield of wheat with the crown projection decreased, while the yield of broad bean increased. However, it has been revealed that coriander has no effect on the olive tree. Olive tree shade negatively affected production in general (Bouhafa et al.;, 2015).

RESULTS

The intercrop farming system is an economically beneficial approach for the agricultural sector, which provides short-term income from intercrop plants and also medium to long-term products from trees or shrubs (Jose, 2006). In general, the intercrop agricultural system has many positive contributions such as increase in green areas, increase in agricultural biodiversity, increase in soil fertility, increase in the number of natural enemies, decrease in pesticide use, and provide additional income. At the same time, compared to monoculture production, it provides benefits such as obtaining maximum benefit from agricultural areas, increasing yield, effective use of resources with plant-plant interactions. As a result of many researches, when it comes to reducing the impact of climate change indirectly, the intercrop agricultural system will be very popular in the coming years. Considering the studies in recent years, it has been revealed that studies involving plant-plant interactions are insufficient and scientific studies on the intercrop agricultural system are scarce.

CONCLUSION

In the light of this review, it is important to better understand the intercrop agriculture system and to shed light on scientific studies on the development of olive intermediate agriculture. In the agricultural system, it is recommended to study the selection of intermediate products, complementary and competitive effects, repellent effects of plants on insects, planting distances in the future.

REFERENCES

Anonim, 2015. http://www.diverfarming.eu/(Date of access 30.12.2020).

Anil, L., Park, J., Phipps, R.H. and Miller, F.A. 1998. Temperate Intercropping of Cereals for Forage: Review of Potential for Growth and Utilization with Particular Reference to the UK. Grass and Forage Science, 1998, 53: 301-317.

Altieri, M.A. and Nicholls, C.I. 2005. Agroecology and the Search for a Truly Sustainable Agriculture. Environmental Training Network for Latin America and the Caribbean Boulevard de los Virreyes 155, Colonia Lomas de Virreyes 11000, Mexico D.F., Mexico.

Bennett AE, Daniell TJ, White PJ. 2013. Benefits of breeding crops for yield response to soil organisms. In: de Bruijn FJ, ed. Molecular microbial ecology of the rhizosphere, vol 1. Hoboken, NJ, USA: Wiley, 17–27.

Brooker RW, Maestre FT, Callaway RM, Lortie CJ, Cavieres LA, Kunstler G, Liancourt P, Tielborger K, Travis JMJ, Anthelme F et al. 2008. Facilitation in plant communities: the past, the present, and the future.Journal of Ecology 96: 18– 34.

Bouhafa K, Moughli L, Daoui K, Douaik A, Taarabt Y (2015) Soil properties at different distances of intercropping in three olive orchards in Morocco. Int J Plant Soil Sci 7:238–245. https://doi.org/10.9734/IJPSS/2015/16807.

Cabanettes D. Auclair W. Imam (1999) Diameter and height growth curves for widely-spaced trees in European agroforestry Agrofor. Syst. 43 169–181 10.1023/A:1026440329824.

Caldwell MM, Dawson TE, Richards JH. 1998. Hydraulic lift: consequences of water efflux from the roots of plants. Oecologia 113: 151–161.

Cesco, S., Rombolà, A.D., Tagliavini, M., Varanini, Z., Pinton, R. 2006. Phytosiderophores released by graminaceous species promote 59Fe-uptake in citrus. Plant Soil. 287, 223–233..

Centre, W.A. Annual Report 2010–2011 of World Agroforestry Centre (2011)., Wicked Challenges Today, Wicked Solutions Tomorrow; World Agroforestry Centre: Nairobi, Kenya, 2011; pp. 6–7.

Chen GH,Weil RR. 2010. Penetration of cover crop roots through compacted soils. Plant and Soil 331: 31–43.

Costanzo A, Barberi P. 2014. Functional agrobiodiversity and agroecosystem services in sustainable wheat production. A review. Agronomy for Sustainable Development 34: 327–348.

Daoui, K. and Fatemi, Z.E.A. (2014). Agroforestry Systems in Morocco: The Case of Olive Tree and Annual Crops Association in Saïs Region. In Science, Policy and Politics of Modern Agricultural System (pp. 281-289). Springer Netherlands.

De Barros I, Gaiser T, Lange FM, Romheld V. 2007. Mineral nutrition and water use patterns of a maize/cowpea intercrop on a highly acidic soil of the tropic semiarid. Field Crops Research 101: 26–36.

Dupraz C. Le chêne et le blé: l'agroforesterie peut-elle intéresser les exploitations européennes de grandes cultures? Rev. For. Fr. 1994 ;46:84–95.

Dupraz C, Newman SMN. Temperate agroforestry: The European way. Dans A.M. Gordon and S.M Newman (Eds.). Temperate agroforestry systems. CAB International, Wallingford, UK. 1997;181–236.

Hauggaard-Nielsen, H. and Jensen, E.S. 2005. Facilitative Root Interactions in Intercrops. Plant and Soil, 2005, 274: 237-250.

He, X.H., Critchley, C. and Bledsoe, C. 2003. Nitrogen Transfer Within and Between Plants Through Common Mycorrhizal Networks (CMNs). Critical Reviews in Plant Sciences, 2003, 22: 531-567.

Feike T, Doluschitz R, Chen Q, Graeff-H€onninger S, Claupein W. 2012. How to overcome the slow death of intercropping in the North China Plain. Sustainability 4: 2550–2565.

Finch S & Collier RH (2000) Host-plant selection by insects – a theory based on 'appropriate / inappropriate landings' by pest insects of cruciferous plants. Entomologia Experimentalis et Applicata 96: 91–102.

George TS, Hawes C, Newton AC, McKenzie BM, Hallett PD, Valentine TA. 2014. Field phenotyping and long-term platforms to characterise how crop genotypes interactwith soil processes and the environment.Agronomy 4: 242–278.

Golijan, J., Veličković, M. (2015) Nutritivni sastav organski i konvencionalno proizvedenih namirnica. Hrana i ishrana, vol. 56, br. 2, str. 43-46.

Hallett PD, Bengough AG. 2013. Managing the soil physical environment for plants. In: Gregory PJ, Nortcliff S, eds. Soil conditions and plant growth. Chichester, UK: Wiley-Blackwell, 238–268.

Hatcher P.E., Melander B. (2003) Combining physical, cultural and biological methods: prospects for integrated non-chemical weed management strategies, Weed Res. 43, 303–322.

Huang, N.N., Mootz, D.E., Walhout, A.J., Vidal, M., and Hunter, C.P. (2002). MEX-3 interacting proteins link cell polarity to asymmetric gene expression in Caenorhabditis elegans. Development 129, 747–759. Abstract.

Hill J.1996.Breedingcomponentsformixture performance.Euphytica92:135–138.

Jose, S.;Williams, R.; Zamora, D. Belowground ecological interactions in mixed-species forest plantations. For. Ecol. Manag. 2006, 233, 231–239.

Lelle MA, Gold MA. Agroforestry systems for temperate climates: Lessons from Roman Italy. Forest Conserv. Hist. 1994; 38:118–126.

Li L, Li SM, Sun JH, Zhou LL, Bao XG, Zhang HG, Zhang FS. 2007. Diversity enhances agricultural productivity via rhizosphere phosphorus facilitation on phosphorus-deficient soils. Proceedings of the National Academy of Sciences, USA 104: 11192–11196.

Li L, Zhang L-Z, Zhang F-Z. 2013. Crop mixtures and the mechanisms of overyielding. In: Levin SA, ed. Encyclopedia of biodiversity, 2nd edn, vol, 2. Waltham, MA, USA: Academic Press, 382–395.

Li L, Zhang L-Z, Zhang F-Z. 2013. Crop mixtures and the mechanisms of overyielding. In: Levin SA, ed. Encyclopedia of biodiversity, 2nd edn, vol, 2. Waltham, MA, USA: Academic Press, 382–395.

Lithourgidis, A.S., Dordas, C.A., Damalas, C.A and Vlachostergios, D.N. 2011. Annual Intercrops: an Alternative Pathway for Sustainable Agriculture. Australian Journal of Crop Science, 2011, 5(4): 396-410.

Ngwira AR, Aune JB,Mkwinda S. 2012.On-farm evaluation of yield and economic benefit of short term maize legume intercropping systems under conservation agriculture in Malawi. Field Crops Research 132: 149–157.

Mao LL, Zhang LZ, Li WQ, van der Werf W, Sun JH, Spiertz H, Li L. 2012. Yield advantage and water saving in maize/pea intercrop. Field Crops Research 138: 11– 20.

Morris RA, Garrity DP. 1993. Resource capture and utilization in intercropping-Water. Field Crops Research 34: 303–317.

Shackel KA, Hall AE. 1984. Effect of intercropping on the water relations of sorghum and cowpea. Field Crops Research 8: 381–387.

Shen JB, Yuan LX, Zhang JL, Li HG, Bai ZH, Chen XP, Zhang WF, Zhang FS. 2011. Phosphorus dynamics: from soil to plant. Plant Physiology 156: 997–1005.

Smoes, T. “Agricultural Development in the Democratic Republic of the Congo.” Global Growing Casebook: Insight into.

Rachid Razouk*, Khalid Daoui,Abdelhamid Ramdani, Abdelaziz Chergaoui, 2016. National Agricultural Research Institute, P.O. Box 578, Meknes, (MOROCCO).

Robinson JB. 1991. The growth of Clorisgayana within and adjacent to a plantation of eucalyptus grandis. Tropical Grasslands. 1991;25:287-290.

Rombolà, A.D., Baldi, E., Franceschi, A., Ammari, T., Minguez-Paramio, J., Tagliavini, M. 2003. Prevenzione della clorosi ferric dell'actinidia (Actinidia deliciosa) mediante consociazione temporanea con specie graminacee. In: G. Costa (ed). Proc. Convegno Nazionale dell'Actinidia, Verona, Italy, pp: 249-254.

Ryan PR, Tyerman SD, Sasaki T, Furuichi T, Yamamoto Y, Zhang WH, Delhaize E. 2011. The identification of aluminium-resistance genes provides opportunities for enhancing crop production on acid soils. Journal of Experimental Botany 62: 9–20.

Rivest D, Cogliastro A, Vanasse A, Olivier A (2009) Production of soybean associated with different hybrid poplar clones in a tree-based intercropping system in southwestern Que´bec, Canada. Agric Ecosyst Environ 131:51–60.

Roose E., M.Sabir, A.Laouina (1992)., Gestion de líeau et des sols au Maroc, valorisation des techniques traditionnelles mÈditerranÈennes, 1st Ed., Research Institute for development; Marseille, France.

Özilbey N. 2011. Zeytin Çeşitlerimiz. Filiz Matbaacılık, Ankara, s. 13.

Pantera A (2014). Initial Stakeholder Meeting Report: Intercropping of olive groves in Greece http://agforward.eu/index.php/en/intercropping-of-olive-groves-in-greece.html?file=files/agforward/documents/WP3_GR_olives_Molos.pdf

Prieto I, Armas C, Pugnaire FI. 2012. Water release through plant roots: new insights into its consequences at the plant and ecosystem level. New Phytologist 193: 830–841.

Poggio, S. L. 2005. Structure of weed communities occurring in monoculture and intercropping of ?eld pea and barley, Agr. Ecosyst. Environ. 109: 48– 58.

Schultz RM. 1986. Molecular aspects of mammalian oocyte growth and maturation. In: Rossant J, Pedersen RA, editors Experimental approaches to mammalian embryonic development. Cambridge University Press. Cambridge: pp 195–237.

Singh, D. and Kothari, S. K.1997. Intercropping effects on mustard aphid (Lipaphis erysimi Kaltenback) populations. Crop Science, 37 (4): 1263-1264.

Subić, J., Bekić, B., Jeločnik, M. (2010) Značaj organske poljoprivrede u zaštiti životne sredine i savremenoj proizvodnji hrane. Škola biznisa, 50-56; 3.

Sujatha, S., Bhat Ravi, Balasimha, D., Kannan, C., 2006. Crop diversification in arecanut plantation through intercropping of medicinal and aromatic plants. J. Plantation Crops 34 (3), 318–322.

Van der Heijden MGA, Klironomos JN, Ursic M, Moutoglis P, Streitwolf-Engel R, Boller T, Wiemken A, Sanders IR. 1998. Mycorrhizal fungal diversity determines plant biodiversity, ecosystem variability and productivity.Nature 396: 69–72.

Van der PuttenWH, Bardgett RD, Bever JD, Bezemer TM, Casper BB, Fukami T, Kardol P, Klironomos JN, Kulmatiski A, Schweitzer JA et al. 2013. Plant-soil feedbacks: the past, the present and future challenges.Journal of Ecology 101: 265– 276.

Vandermeer J. 2010. The ecology of agroecosystems. Sudbury, MA, USA: Bartlett and Jones.

Vandermeer JH. 1989. The ecology of intercropping. Cambridge, UK: Cambridge University Press.

Xu BC, Li FM, Sham L. 2008. Switchgrass and milkvetch intercropping under 2:1 row-replacement in semiarid region, northwest China: aboveground biomass and water use efficiency. European Journal of Agronomy 28: 485–492.

White PJ, Greenwood DJ. 2013. Properties and management of cationic elements for crop growth. In: Gregory PJ, Nortcliff S, eds. Soil conditions and plant growth. Oxford, UK: Blackwell Publishing, 160–194.

Zamora, D. S., Jose, S., Nair, P., Jones, J., Brecke, B., & Ramsey, C. (2008). Interspecific competition in a pecan-cotton alley-cropping system in the southern United States: Is light the limiting factor? Toward Agroforestry Design (pp. 81-95): Springer

Zhang F, Shen J, Zhang J, Zuo Y, Li L, Chen X. 2010. Rhizosphere processes and management for improving nutrient use efficiency and crop productivity: implications for China. Advances in Agronomy 107: 1–32.

Zhu YY, Chen HR, Fan JH, Wang YY, Li Y, Chen JB, Fan JX, Yang SS, Hu LP, Leung H et al. 2000. Genetics diversity and disease control in rice. Nature 406: 718–722.

INVESTIGATION OF THE IMPACT OF CLIMATE CHANGE ON OLIVE WITH HOLISTIC APPROACHES

Ayça AKÇA UÇKUN
Olive Research Institute, Izmir, Turkey

Abstract
Climate change, threatening the ecosystem, living things and even us, has brought people all over the world together to fight it. Each country has started to develop its own action plans. To combat climate change, we need to change our perspectives and production systems. Although all kinds of damage will be affected by climate change, olives, which have a rich history and a source of healing, will be more affected. This review will be the first study in which many holistic approaches such as the effect of climate change on the physiology of olives, the effect of CO2 emission on olives, the effect of drought on olives, climate change and new olive regions, socio-cultural dimension, new methods to reduce climate change, and the sustainability of olive groves. With this review, the interaction between climate change and olives will be revealed, and will shed light on future studies.

Keywords: Climate Change, Olive, CO2 Emission, Sustainability

INTRODUCTION

Olive tree is an indispensable product of the Mediterranean basin, which has economic value with thousands of years of history and is considered as a miraculous healing source. Most of the world's olive growing regions are located in regions with a Mediterranean-type climate characterized by favorable climatic conditions for the growth of the olive plant. The growth and development of the olive tree is mainly controlled by climatic conditions (Moriondo et al., 2015). Climate events and water availability greatly affect olive cultivation, ultimately changing crop yields (Vossen, 2007). Recent research has shown that crops in Mediterranean-type climates will be greatly affected by climate change (Galán et al., 2005). It has been reported that the entire Mediterranean basin, especially Southern European olive groves, will struggle with climate change due to frequent and long high temperature waves and low precipitation (IPCC, 2013). The cultivation of the olive tree (Olea europaea subsp. Europaea) is of great importance in terms of its ecology, economy and culture in the Mediterranean Basin (Carrión et al., 2010). Olive cultivation is considered to be an agricultural ecosystem with significant potential for use opportunities (e.g. oil and wood), environmental impacts (e.g. water availability, CO2 emission contribution) and cultural heritage (e.g. biodiversity conservation) (Garbach et al., 2017; Haines-Young and Potschin, 2018).

Generally, olive thrive in different soil types, preferably light textured and well-drained soils (Barranco et al., 2005). Olives can also be grown at different altitudes up to 900-1000 m above sea level (1200 m). Although olive trees can tolerate high levels of drought stress, drought negatively affects tree and shoot growth, leaf formation and fruit bearing. However, olive trees have physiological requirements such as cooling needs (ie a vernalization period) and can withstand different temperature regimes depending on the geographical location.

Olive trees can withstand temperatures of -8 ° C and an upper limiting temperature of about 35 ° C for short periods (Krishna, 2013). The olive plant is derived from the domestication of a common wild species (Olea europaea var. Sylvestris Mill.) (Terral et al., 2004). It is estimated that there are more than 2000 olive varieties worldwide (Barranco and Rallo, 2000). However, the rapid spread of a small number of varieties in economic terms prevents the recognition of other varieties (Diez et al., 2015). Some olive growing regions where economically produced varieties are grown are located in relatively narrow geographical niches and have certain microclimatic characteristics (Rubio de Casas et al., 2002). In addition, today olive cultivation is subject to a continuous modernization and intensive management process and the necessities of global supply and demand cause the homogenization of olive cultivation and a serious loss of agricultural biodiversity. This endangers olive genotypes, which in new and unpredictable climate change scenarios are a source of genetic diversity that are resistant to diseases or pests or adapted to innovative cultivation techniques, which can be very useful for obtaining new olive varieties.

As different olive varieties are adapted to specific climatic, edaphic and lithological conditions, variations that may occur in the context of climate change will have a significant impact on the distribution of olive varieties and their growth and productivity as a result (Moriondo et al., 2008).
Therefore, these varieties are predicted to be more vulnerable to both short-term and long-term climate change than the main olive varieties (Olesen et al., 2011). For this reason, it is important to reveal the appropriate areas for the production of olive varieties that will expand or contract with the effect of climate change (Moriondo et al., 2013). Studies on the needs of different varieties in combating climate change and how they may be affected by climate change should be focused on. Because it is estimated that the mediterranean basin climate change will cause significant warming and a significant decrease in precipitation in the coming years, and will cause ecological, economic and social changes (Dell'Aquila et al., 2012). Although olive groves are generally grown in dispersed and low-yield farming systems, olive cultivation is increasing rapidly, especially for economic and social reasons (Loumou, 2013). In the Mediterranean, the expansion of olive groves leads to regional development by promoting employment and preventing rural migration (Lambarraa, 2007). Although the main driving force behind the expansion of olive groves is the increasing demand for olive oil, olive grove production is currently of great socio-economic importance in terms of employment and contribution to farm income (Vossen, 2007). Studies conducted, analysis of the olive oil value chain show that the low values of bulk oils negatively affect olive farms economically (Dekhili, 2011). This situation threatens economic and social sustainability (Rodriguez-Souza, 2019).

According to the results of the studies, urgent approaches are needed for the consequences of climate change and its effects on olive cultivation. This review aims to present the results of studies focusing on the effects of climate change on olive cultivation and production, as well as on CO2 emission, irrigation, erosion and sustainability. This compilation projects the studies of climate change on olives in the world and points out the points that should be followed in olive cultivation in order to reduce the effect of climate change in our country and aims to shed light on the future studies on this subject.

The Effect of Climate Change on Olive

Tanasijevic et al. (2014), using the climate data in the A1B scenario of the Emission Scenarios Special Report (SRES) and with scenarios and spatial simulations by 2050, an increase of 0.8-2.3 ° C per year for the Mediterranean region and 200 mm per year in precipitation decrease of up to 40% is predicted.
Climate change has a significant impact on olive cultivation and it is predicted to change the production efficiency. Different olive varieties react differently to abiotic factors. Studies show that each variety needs to evaluate the future environmental compatibility impact and analyze the expected climate change effects of annual olive production. In a study, research was conducted with seven most productive olive varieties and wild olive species in Andalusia to develop Species Distribution Models (SDMs) with soil characteristics, geomorphology, water balance and climate effects. Climate scenarios have been designed to assess the impact of climate change on the environmental suitability and productivity of each olive variety. As a result of the study, it was determined that soil pH is the most important factor for climatic scenarios such as continental index, summer and autumn precipitation and winter. In general, it is predicted that Andalusian olive groves will decrease due to the increase in evapotranspiration and decrease in precipitation. It is estimated that olive production will decrease in almost all olive growing regions studied (Antonio, 2020). Olive trees (Olea europaea, L.) are perennial evergreen woody plants (Ighbareyeh, 2016). Olive trees have adapted to the Mediterranean climate with dry and hot summers, annual and varying irregular annual and inter-year rainfall (Rodríguez-Entrena, 2013). Considering the hot summers with temperatures above 40 oC, a shift towards the altitude of the olive groves towards the mountainous areas is expected, towards areas where there will be less frost and minimum temperatures for olive growth.

It was predicted that rising temperatures will affect the phenological timings, especially the blossom period (Avolio et al., 2012; Galán et al., 2005; Orlandi et al., 2010; Osborne et al., 2001). In addition, it has been determined that the olive harvest period will progress, and due to the phenological changes that occur, the blossom and fruit ripening of the olive trees will be later (Galan, 2005). Studies have shown that maximum temperatures above 35-40 oC affect the photosynthesis mechanization of olive trees, and abnormally high temperatures limit the development and growth of olives. However, high temperatures have been reported to affect the quality and yield of olive harvest by enabling the reproduction of most harmful organisms, shortening the life cycles of pests, increasing insect populations and supporting the emergence of new threats (Ponti, 2014). It has been determined that when the weather warms due to climate shocks, olive groves on high hills or slopes will be less damaged, and gardens or plains at low altitudes will become completely inefficient. The reason for this is that the temperature decreases as high altitude (Vasilopoulos, 2013). Climate change also causes change in the insect population. Studies have shown that due to the increasing temperatures, olive fly populations will decrease, especially in the southern regions, and olive fly populations will advance towards the northern regions. The reason for this is the limitation of the life cycle of the insect population above 30 oC (Moran, 2014). Along with the negative effects of extreme temperatures, it damages olive groves in extreme cold. In 1998, severe cold weather caused serious damage to olive groves in California. This is because olive trees can normally handle short-term cold, but temperatures below freezing for more than a few hours cause damage to new and small shoots, decrease fruit yield in the next year, and even death of olive trees in the later stage (Moran, 2014).

The Effect of Drought on Olive

Water availability is the main limiting factor for crop productivity, especially under arid and semi-arid conditions (Henderson, 1979). Increased need for water in population growth or environmental protection competes for existing water resources needed by agricultural production (Hsiao et al., 2007;).
However, resource scarcity associated with climate change is considered to be a key component of water management in agriculture to ensure medium and long term olive sustainability. Climate change makes it difficult to develop and evaluate agricultural practices to improve water management, causing environmental factors and crop yield changes. The olive tree is a very drought tolerant species and the annual rainfall limit is around 350 mm (Ponti et al., 2014). In olive cultivation, the presence of approximately 30 mm of water in the summer months (June-July-August) is necessary for the olive to reach the appropriate yield (Iglesias and Garrote, 2015). In the olive tree, water stress causes a wide range of adverse effects such as low blooming, flowering and low fruit set, small leaf area, limited photosynthesis (Arampatzis et al., 2018).
In a study conducted in Portugal, water is a more difficult resource, especially in the southern and most inland regions of the country. On the other hand, the importance of water is increasing due to population growth and industrial growth and intense agricultural water demand. Irrigation to rain-fed olive groves involves sustainability of water resources and economic, environmental and social costs. As a measure of adaptation to water scarcity, smart irrigation strategies are implemented that provide a balance between environmental costs and meeting plant water requirements (Tanasijevic et al., 2014). However, the answer to the question of how much irrigation water is needed to reduce the harmful effects of climate change is not fully understood. One possible solution to investigate different climate scenarios in the future is to apply product models (Ribeiro et al., 2009).

Crop models need to be simulated dynamically of product stress responses to management practices (eg. irrigation), soil properties (eg. strugs, depth) and physiological responses of the product to climatic conditions (eg. air temperature, precipitation, CO2). Several models have been developed to estimate biomass yield, targeting the growth and development of olive trees. One of them is the EUROCORDEX regional climate model. By combining high-resolution climate simulations with crop models, the characterization of water requirements for olive trees was obtained (Cesaraccio et al., 2004). In the studies, climate change forecasts predict that olive groves in Southern Europe, especially Portugal, will be endangered due to heat and drought. Alentejo, the main olive growing area in Portugal, has carried out adaptation studies in irrigation to ensure the sustainability of olive cultivation. They simulated olive tree yield with a modeling study over 1981-2005 and the next scenario (RCP4.5 and RCP8.5, 2021-2080). As a result of the work done until 2080, an increase in temperature up to 2 oC, an increase of 40-50 mm in potential evapotranspiration, a decrease of 80-90 mm in the amount of precipitation and a 50-70 mm decrease in actual evopotranspiration were detected. In the future, it was predicted that the olive yield will decrease by 15-20 %, and the total olive yield will decrease between 8 and 10 t / ha by 2080 (Fraga, 2020).

It has been demonstrated that these efficiency losses will result from increased heat and water stress in the future. When the adaptation of the olive tree is examined with the irrigation model, depending on the adaptation strategy, it points to a higher yield compared to the current values (± 1%) and thus reduces the expected future yield decreases. They concluded

that although irrigation is a viable adaptation measure against climate change threats in Alentejo olive groves, this strategy may be threatened by scarcity of water resources (Fraga, 2020). Simulation models are used to assist in the development and evaluation of climate change adaptation strategies. In a study, the Olive Water Balance (WABOL) model was conducted to reveal the water balance components that integrate orchards and soil management strategies. Different climatic scenarios were used for this research, and the two most common soil management strategies, tillage and bare soil were evaluated. The results show that when vegetation is properly managed (when properly controlled and its transpiration with mowing or herbicides in the spring is controlled), surface water flow decreases, deep infiltration occurs, and evapotranspiration in general decreases even if precipitation decreases. An approach to evaluating different and innovative agricultural alternatives is required to assess water balance and yield (Monteiro & Lopes, 2007). The important limiting factor in most models is the evaluation of a single type of product. Thus, by Hulugalle and Lal (1986), water of maize (Zea mays L.) and cowpea (Vigna unguiculata (L.) Walp.) In order to model the water balance in the plant root zone during the growing season in Nigeria, which is located in the tropical region. As a result of the study, it has been determined that cultivation increases water use efficiency compared to monoculture production.

The expected decrease in precipitation poses a risk factor for the sustainability of the olive grove, although olive trees are highly resistant to drought. When the annual precipitation is less than 200 mm, production decreases drastically (Ropero, 2018). In this sense, flowering affects drought conditions and decreases fruit production percentage (Orlandi, 2005).
The intensification of precipitation in the form of storms increases the magnitude of erosion processes in olive groves, exacerbates soil structure degradation and negatively affects crop productivity (Gomez, 2014). In addition, excessive rainfall causes large volumes of water to accumulate in a short time in olive plantations, affecting the vitality of the plant, resulting in root asphyxia (that is, water displaces oxygen in the soil and limits the plant's breathing from its roots). Due to increased temperatures and reduced precipitation, an increase in crop evaporation of up to 9 % is expected with the addition of higher amounts of water to maintain the efficiency of olive growing systems (Fraga, 2020). Regarding the increasing water demand of olive plantations, the increase in atmospheric CO2 concentration positively stimulates the photosynthetic process of C3 plants (olive trees), promoting plant growth and agricultural yield without increasing water demand by evapotranspiration. When considered physiologically, a high concentration of CO2 reduces stomatal conductivity in olive trees, causing the plant to sweat more, thus causing a reduction in plant evaporation-transpiration and increasing water use efficiency (Field, 1995).
Hatfield et al. (2011), and similar studies found that in environments where CO2 concentration doubled, plant evapotranspiration would decrease by 6-8% in irrigated agricultural products. In the cultivation of crops without irrigation, they reported that it increased water use efficiency by 4 % up to 51%.

The Effect of CO2 Emission on Olive

The relationship between agriculture and climate change has recently gained importance due to both mitigation and adaptation problems (Young et al., 2007). Carbon emissions to agriculture contribute mainly to the expansion of agricultural land and the increase of crop applications (Tilman et al., 2002). In addition, carbon sequestration with agriculture, especially carbon sequestration, has been found to be one of the most cost-effective mitigation

options (Antle and McCarl, 2003). Agriculture gained importance in the 20th century in terms of contributing to carbon emissions and serving as a carbon sink, and it has become different from other sectors. Agriculture covers 14 % of total anthropogenic emissions (FAO, 2006). According to the Intergovernmental Panel on Climate Change (IPCC, 2003), in the carbon emissions trend, reducing tillage significantly increases soil carbon sequestration by up to 0.3 tons per year and per hectare (Schneider et al., 2007). In general, olive groves are a rich habitat source in terms of biological diversity. Although olive groves have low input density (fertilizer, pesticide use), having natural herbs and mixed crop pattern throughout the year facilitates the sustainability of olive groves (Beaufoy & Cooper, 2009).

Greenhouse gas reduction through agriculture is becoming a technically feasible alternative. However, additional research is needed to know if it is an economically viable option. However, in the last 10 years, intensive tillage, year-round input practices (modernization) that keep the soil bare have led to a decrease in ecological benefits and an increase in negative environmental factors (Beaufoy & Pienkowski, 2000).
With modernization, the spread of monoculture production to large areas, the loss of biodiversity with the intensive use of agricultural chemicals, the increase of olive cultivation towards high slope areas and the increase of erosions due to bare soil management, increased water pollution due to excessive use of herbicides and fertilizers. However, despite all these negative situations, olive trees contribute more than 900,000 tons of CO2 emissions each year (CAyP, 2008). It has not yet been scientifically demonstrated whether olive trees lead to a net reduction in CO2, as emission studies associated with the intensification process are lacking. For olive groves to play the role of a carbon sink in the ecosystem, olive groves must increase. Research has shown that Andalusian olive groves have increased by 15 % in the last 15 years, but caused a price crisis at the international level in the sector. When the carbon sink performances of the carbon related olive groves are examined, the bare soil due to excessive tillage in the olive groves, the burning of pruning residues and the very low organic matter contents of the soil show that the carbon sink performances are low (Sofo et al., 2005). Tillage is done in more than half of the olive groves. In addition, most of the pruning waste collected from olive groves is incinerated. These practices show the lowest carbon sequestration levels in the soil. However, re-burial of pruning residues, use of vegetation, increase in soil organic matter content contribute to carbon sink performance (Gómez-Calero et al., 2009). Thus, expanding the adoption of soil management practices not only increases the carbon sequestration function of olive groves but also reduces soil erosion (Gómez-Calero et al., 2009) and increases the biodiversity of the farming system (De la Concha et al., 2007).

The use of fossil fuels in agricultural activities, the application of nitrogenous fertilizers that generate CO2 and NO2 emissions accelerate the changes in temperature and precipitation caused by climate change (Metzidakis, 2008). Farina et al. (2017) found in his research that approximately 38.25 t / ha / year of CO2 was emitted from olive groves. However, there are few studies that reveal atmospheric NO2 emissions from olive plantations (Avila, 2010). 80 % of the carbon sequestration in olive groves plays an important role in the presence of vegetation and stores 46.4-20.5 t / ha of CO2. Overall, it is estimated that each olive tree stores around 30.89 kg of CO2 in its first 20 years (Boja, 2015). In studies conducted, taking into account the new olive tree planting areas (58.106 olive trees) in Andalusia between 1990 and 2011, it has been revealed that total olive trees capture 13,106 tons of CO2 and the annual carbon capture rate is 1.7 (Eurostat, 2020). The main reason for these greenhouse gas emissions is olive cultivation agricultural management (eg. irrigation, fertilization and tillage practices). Therefore, intensive tillage increases the organic matter loss of the soil, decreases

the fertility of the soil and increases the greenhouse gas emissions (Parras-Alcantara, 2015). Taxidis et al. (2014), in his study, in management models such as olive groves produced with integrated production or organic production, a 10.18 % reduction in CO2 emissions compared to traditional management. In these management models, tillage practices and the use of chemicals (in a controlled manner) or organic fertilizer or waste contribute to the reduction of CO2 emissions from the soil (Parras-Alcantara, 2015). However, in these agricultural management practices, by using partial or total vegetation in the soil, it contributes to the capture and reduction of atmospheric CO2 (Boja, 2015). In addition, irrigation implementation is linked to higher greenhouse gas emissions. Applications such as drip irrigation bring water directly to tree roots and reduce these emissions (Karki, 2020). As a result, the growth of olive plantations is an important tool to mitigate climate change by reducing CO2 emissions, due to its role as a carbon scavenger (Boja, 2015).

The Effect of Erosion on Olive

According to the data taken from the National Erosion Inventory (Magrama, 2012), it is reported that Spain Andalusia is the most affected by severe erosion processes. Studies show that approximately 23 % of the total surface area of the Andalusia region, 25 t / ha of soil erosion (Parra-López et al., 2009).
Improper soil management (burning of pruning residues, bare soil management, removal of weed vegetation) in olive cultivation causes an increase in erosion (Nekhay et al., 2009). Soil erosion also includes negative impacts that lead to pollution of rivers and water reservoirs, and clogging of reservoirs (Colombo et al., 2005). Prevention of soil erosion contributes to climate change, prevents biodiversity loss, increases soil fertility, thus increasing olive productivity, and decreases production costs (Calatrava-Leyva et al., 2007). EU policy makers carry out Common Agricultural Policy (CAP) reforms in order to reduce the negative situations faced by agricultural production farm activities and develop modeling studies that support multifunctionality, ensure sustainability, and ensure the supply of domestic productions. In this context, CAP seeks a sustainable agricultural system that contributes to the economic viability and environmental quality of agricultural models and improves the quality of life for farmers and rural residents (Salazar -Ordónez et al., 2011). Thus, CAP aims to achieve sustainability targets and develop agro-environment programs by redefining agricultural land use policy (De Graaff et al., 2013) (EC, 1997, 2010). In this sense, erosion control practices put into effect issues such as leaving at least one vegetation in olive cultivation, using vegetation in olive groves with a slope of more than 10%, and no treatment in the soil when the slope exceeds 15% (CAP, 2009).

Detailed analysis of water balance by olive and cover crops is necessary for a proper understanding of the effect of cover crops on soil water balance and the erosion risk in all soil and climatic conditions specific to Mediterranean environments (Castro and Gómez, 2006). Agronomic management of olive groves is important under conditions where water is limited. Therefore, by using low tree density, by limiting the canopy crown size through periodic pruning, controlling tree transpiration, and by periodic tillage or weed control with the use of herbicides in recent years. The combination of the Mediterranean climate and bare land management on slopes has resulted in high erosions in many olive growing areas (Gómez et al., 2009). High erosion rates (Beaufoy, 2000), cited as one of the main environmental problems, encourage the development and implementation of cover crop soil management in many Mediterranean countries, including Spain. As most olive groves are located in arid or semi-arid areas, the proposed cover crop management is based on cover crop control with

mowing in late winter or controlled, regional herbicide application to avoid competition with the olive tree.

Socio-Cultural Dimension Impact of Climate Change

Recently, some studies point to a decrease in olive yield in some regions of the Mediterranean basin (Ponti et al., 2014). Combating climate change requires both more research and the development of climate change adaptation measures and the implementation of appropriate new irrigation systems (Gomez-Rico et al., 2007). In the fight against climate change, agricultural innovations should be applied massively, not individually (Knowler & Bradshaw, 2007). Studies have revealed that there are many factors affecting the adoption of agricultural innovations. These are listed as farmer age, social capital, management capacity, availability of machinery, land ownership type, farm size, crop performance, farm profitability, and land type (Rahm & Huffman, 1984). The water balance components in an olive grove vary during the growing period and between orchards, due to differences in tree canopy and density, and climatic conditions in general. All scientific efforts to measure the evapotranspiration of olive groves are new and very open to development. Studies on this subject need more research (Test et al., 2006).

Considering the multifunctional structure of olive groves, there are threats against their sustainability in economic, social or environmental dimensions (Lal, 2014). From an economic point of view, migration from rural areas is a major problem due to low agricultural income from olive groves (EC, 2016). According to researches, it has been found that farmers in Spain have suffered income losses of 49.22 % since 2003. In order to prevent rural migration, measures to encourage rural development policies should be taken (Rodriguez, 2013). Socially, rural migration and abandonment of agricultural lands generally cause loss of ecological information and destabilize regional economies (Duarte, 2008).

New Olive Regions Born Due To Climate Change

Climate change threatens the agricultural ecosystems of olives, an ancient drought-resistant crop of significant ecological and socio-economic importance in the Mediterranean Basin (Ponti et al., 2014).
Climate scenarios with simulations anticipate an expansion of olive growing areas to the north due to the warmer and drier conditions expected in the Mediterranean basin in the coming years (Moriondo et al., 2013). It is predicted that the expected temperature increase due to climate change will affect the ecology and physiology of olive cultivation. At higher temperatures, potential olive grove areas in Spain are expected to shift (Galan, 2005).
Research has shown that the region of Catalonia, the largest olive oil production in Spain, will become unavailable within 20 years due to rising temperatures and water scarcity, while the overall olive and olive oil production in Spain will face a 40 % decrease in yield. (Tupper, 2012). This situation points to the birth of new olive and olive oil leaders. Countries are determined as China, Libya, Australia, Jordan and India, in olive cultivation in the future (Vasilopoulos, 2013). Spain continues to work on the creation of new and innovative irrigation alternatives to combat the ever-changing climate, in order to maintain its leadership in olive and olive oil. Likewise, it is estimated that similar situations will occur in other leading countries (Greece, Italy and Portugal) (Tupper, 2012).
Therefore, considering the socio-economic importance of olive groves and the need to optimize the resources used in fruit and oil production, it is important to determine the current

and potential distribution of areas suitable for olive cultivation. This is especially important for the sustainability and adaptation of varieties of cultural and economic importance. Considering that olive trees are vulnerable to low temperatures and remain in a resting state before producing fruit, the increase in temperatures causes a decrease of 0–7.2 oC, which is necessary in winter cooling needs. This situation leads to a decrease in agricultural yield, development of olive groves and low flowering. Therefore, at higher temperatures, it is expected that the optimum distribution area of olive trees will shift towards the north and east regions, due to the fact that the cooling periods for both the resting and vernalization of the olive trees are not fully filled (Orlandi, 2004).

As a result of the researches, it is expected that the distribution area of the olive groves will change in the Mediterranean by 2050, assuming an increase of 0.8-2.3 oC in temperature and a decrease of up to 200 mm in precipitation per year. It is thought that new regions of olive cultivation will shift towards regions with lower temperatures and higher humidity. It is predicted that the cooling periods will decrease due to climate changes and will affect flowering and product yield. Therefore, management models that encourage olive grove adaptation in the face of climate change and ensure socio-ecological sustainability should be adopted (Ropero, 2018). Benyei et al. (2018) predict that olive cultivation areas will be dispersed due to climate change. In the projections for 2040, they determined that the predictable increase in average annual temperature due to climate change, especially 30% of olive cultivation in the Spanish Andalusia region will be destroyed.

Sustainability of Olive Cultivation

There are many environments that can harm the sustainability of olive groves. Soil erosion causes decline in agricultural production, and olive groves remain particularly vulnerable to abrasive processes in high-slope areas (Rodriguez, 2019). Due to the medium-high erosion risk characteristic of these olive groves, it is necessary to apply vegetation cover, which is an agro-environment practice that has been shown to reduce erosion loss by 75% (Comez-Calero, 2010). Using the olive pruning residues in the soil by not burning the olive pruning residues, the use of the shredded olive pruning residues in the soil provides the soil texture to improve and act as an inert cover to reduce the effect of rain and water flows. The use of a lawn mower is recommended to prevent the growth of herbiside among olive farmers. Mowing has been identified as the most eco-friendly option that preserves on the soil. In this sense, it has been proven that if olive producers choose more environmentally compatible practices, the impact of the olive growing sector on sustainability and social welfare will increase (Gómez-Limón & Arriaza, 2011; Rodríguez-Entrena et al., 2012).
Another issue is the abandonment of rural areas, increasing the rate of environmental degradation. The loss of a regional biodiversity species changes the economic system (Rodríguez Sousa, 2019). For this reason, it is necessary to develop the sustainability of olive groves, taking into account the agricultural systems and their interactions with the surrounding ecosystems (Peterson, 2017). Another environmental threat is environmental pollution from the use of chemical pesticides and fertilizers. These chemicals affect the quality of olive products and the biodiversity of agricultural systems (Rodríguez-Pleguezuelo, 2017).
Atmospheric pollution caused by the increased use of herbicides and pesticides, increased soil erosion processes, water loss and lower carbon holding capacity and erosion due to inadequate application of vegetation are important (Martinez, 2006). At the same time, meteorological changes cause a possible shift of olive groves towards colder areas due to

cooling requirements, and it has been determined that when soil cultivation practices specific to olive groves are taken into account, it will change the evaporation rate by increasing CO2 emissions (Galan, 2005).

Climate Change Mitigation Measures in Olive Groves

Considering the threat posed by climate change to agriculture in general and olive groves in particular, it is important to take measures to reduce its effects. In this context, it is necessary to increase the management models that promote the resilience of olive grove plantations and the capacity of these priority crops to adapt to the climate conditions that will occur in the near future (Gabaldón-Leal, 2017).
From this point of view, it is extremely important to develop new olive varieties that are more resistant to temperature increases and drought events and to implement vegetation cover as a climate change mitigation measure contributing to the reduction of greenhouse gas emissions in order to ensure the sustainability of olives. The use of vegetation, increasing organic matter and soil fertility, increasing rainwater infiltration, and mitigating erosion processes enables crops with greater durability (Zuazo, 2009). Considering the constraints that climate change will impose on water resources in the near future, and given that agriculture currently uses about 70 % of total water for irrigation (Zipori, 2020), agricultural management models, especially rational irrigation techniques applied to olive groves, efficient use and accumulation of rainwater (Romero-Gámez, 2017).

In order to increase the economic and ecological sustainability of olive groves, practices that maximize water resource efficiency and minimize losses through soil evaporation or infiltration need to be investigated (Zipori, 2020). In this sense, the use of drip irrigation or subsurface drip irrigation (SDI) in olive groves is recommended to use techniques that allow the application of certain volumes of water of maximum 1500 m3 ha / 1 to olives only during water stress periods. Such irrigation is done to the crown projection of the olive tree, reducing water losses through evaporation (Taxidis, 2015). Chartzoulakis et al. (2015), in their study, it has been observed that with RIP (restricted) irrigation methods, it reduces water consumption by 30% -70% and increases agricultural productivity by 20% -90%.

However, in studies conducted in olive groves in Andalusia (Spain), the application of drip irrigation and SDI (subsurface) irrigation creates 13.1 % increase in agricultural yield and a decrease of up to 20 % in water use (Martinez, 2014). In order to overcome the expected future water shortages due to climate change, it is extremely important to reduce the degradation in the soil environment and to increase the ecological sustainability of olive grove systems (Tanasijevic, 2014).

RESULTS

Although there are various threats to the sustainability of economic, social and environmental olive groves, medium and long term climate change is the main threat to the viability of these systems. Projected changes in terms of temperature rise and precipitation drop will have multiple effects that will affect the potential distribution area and phenological cycle of the olive grove. Moreover, these consequences of climate change will cause changes in the evapotranspiration of olives. In the face of this multidimensional threat, the application of agricultural environmental practices in olive cultivation (i.e. application vegetation) that

contribute to the carbon capture capacity of these systems and the pollutants responsible for greenhouse gas emission and use pollution become particularly important.
From a physiological point of view, an increase in temperature will cause an increase in evaporation-transpiration in irrigation systems and increase agricultural yield. On the other hand, the increase in temperatures with falling rainfall will restrict olive production due to long drought periods and reduce plant transpiration.

CONCLUSION

Finally, given the constraints on it, it is important to maintain rain-fed olive groves or increase water supply efficiency and encourage management models that emphasize the use of non-intensive irrigation practices such as drip irrigation, SDI (subsurface) or RDI (restricted irrigation).

REFERENCES

Antle, J.M., McCarl, B.A., 2003. The economics of carbon sequestration in agricultural soils. In: Tietenberg, T., Folmer, H. (Eds.), The International Yearbook of Environmental and Resource Economics 2002/2003: a Survey of Current Issues. Edward Elgar Publishing, Cheltenham, pp. 278e310.

Antonio A., Jesús M., Pedro A. Aguilera and Alejandro J. Rescia, 2020,. Examining Potential Environmental Consequences of Climate Change and Other Driving Forces on the Sustainability of Spanish Olive Groves under a Socio-Ecological Approach, Agriculture 2020, 10, 509; doi:10.3390/agriculture10110509.

Avila, A.; Molowny-Horas, R.; Gimeno, B.S.; Peñuelas, J. Analysis of decadal time series in wet N concentrations at five rural sites in NE Spain. Water Air Soil Pollut. 2010, 207, 123–138.

Benyei, P.; Cohen, M.; Gresillon, E.; Angles, S.; Araque-Jiménez, E.; Alonso-Roldán, M.; Espadas-Tormo, I. Pruning waste management and climate change in Sierra Mágina's olive groves (Andalusia, Spain). Reg. Environ. Chang. 2018, 18, 595–605.

Beaufoy, G., Pienkowski, M., 2000. The Environmental Impact of Olive Oil Production in the European Union: Practical Options for Improving the Environmental
Impact. European Commission, Brussels.

Barranco, 2004, D. BarrancoVariedades y patrones M.-P. Andalucía, J. de (Eds.), El Cultivo el Olivo.

Barranco D, Ruiz N, Campo MG, 2005., Frost tolerance of eight olive cultivars. Hortic Sci 40:558–560.

Beaufoy, G., Pienkowski, M., 2000. The Environmental Impact of Olive Oil Production in the European Union: Practical Options for Improving the Environmental Impact. European Commission, Brussels.

Beaufoy, G., Cooper, T., 2009. The Application of the High Nature Value Impact Indicator. European Commission, Brussels.

BOJA. Plan Director del Olivar Andaluz Decreto 103/2015; BOJA (Boletín Oficial de la Junta de Andalucía/O_cial Regional Government of Andalusia Bulletin): Andalusia, Spain, 2015.

Calatrava-Leyva, J., Franco-Martínez, J.A., González-Roa, M.C., 2007. Analysis of the adoption of soil conservation practices in olive groves: the case of mountainous areas in southern Spain. Spanish Journal of Agricultural Research 5, 249–258.

CAyP, Consejería de Agricultura y Pesca, 2008. El sector del aceite de oliva y de la aceituna de mesa en Andalucía. Junta de Andalucía, Sevilla.

CAP, Consejería de Agricultura y Pesca, 2009. Orden de 22 de junio de 2009. por la que se establecen los requisitos legales de gestión y las buenas condiciones agrarias y medioambientales. Consejería de Agricultura y Pesca, Junta de Andalucía, Sevilla. BOJA no 130 de 7 de julio.

Chartzoulakis, K.; Bertaki, M. Sustainable water management in agriculture under climate change. Agric. Agric. Sci. Procedia 2015, 4, 88–9.

Colombo, S., Hanley, N., Calatrava Requena, J., 2005. Designing policy for reducing the off farm effects of soil erosion using choice experiments. Journal of
Agricultural Economics 56, 81–95.

Dekhili, S.; Sirieix, L.; Cohen, E. How consumers choose olive oil: The importance of origin cues. Food Qual. Prefer. 2011, 22, 757–762.

De la Concha, I., Hernáez, C., Pinilla, J., Ripoll, I., Carricondo, A., Howell, D., Íñigo, A., 2007. Medidas beneficiosas para las aves ligadas a medios agrícolas. In:
Sugerencias para su diseño y aplicación en Natura 2000 en el marco de la programación de desarrollo rural 2007e2013. SEO-BirdLife, Madrid.

Dell'Aquila et al., 2012, A. Dell'Aquila, S. Calmanti, P. Ruti, M.V. Struglia, G. Pisacane, A. Carillo, G. SanninoEffects of seasonal cycle fluctuations in an A1B scenario over the Euro-Mediterranean region Clim. Res., 52 (2012), pp. 135-157, 10.3354/cr01037.

De Graaff, J., Aklilu, A., Ouessar, M., Asins-Velis, S., Kessler, A., 2013. The development of soil and water conservation policies and practices in five selected countries from 1960 to 2010. Land Use Policy 32, 165–174.

Diez et al., 2015, C.M. Diez, I. Trujillo, N. Martinez-Urdiroz, D. Barranco, L. Rallo, P. Marfil, B.S. GautOlive domestication and diversification in the Mediterranean Basin
New Phytol., 206 (2015), pp. 436-447, 10.1111/nph.13181.

Duarte, F.; Jones, N.; Fleskens, L. Traditional olive orchards on sloping land: Sustainability or abandonment? J. Environ. Manag. 2008, 89, 86–98.

EUROSTAT. Estadísticas sobre estructura de las explotaciones agrícolas; Eurostat (European Statistics): Brussels, Belgium, 2018; Available online: https://ec.europa.eu/eurostat/statistics-explained/index.php? title=Farm_structure_statistics/es (accessed on 21 September 2020).

EC, 1997. Agenda 2000. European Commission, Brussels. COM 2000 final.

EC. Europeans, Agriculture and the CAP. TNS Opinion & Social. Special Eurobarometer 440; EC (European Commission): Brussels, Belgium, 2016.

FAO, Food and Agriculture Organization of the United Nations, 2006. Livestock's Long Shadow: Environmental Issues and Options. FAO, Rome.

Farina, R.; Marchetti, A.; Francaviglia, R.; Napoli, R.; Di Bene, C. Modeling regional soil C stocks and CO2 emissions under Mediterranean cropping systems and soil types. Agric. Ecosyst. Environ. 2017, 238, 128–141.

Field, C.B.; Jackson, R.B.; Mooney, H.A. Stomatal responses to increased CO2:Implications from the plant to the global scale. Plant Cell Environ. 1995, 18, 1214–1225.

Fraga, H.; Pinto, J.G.; Viola, F.; Santos, J.A. Climate change projections for olive yields in the Mediterranean Basin. Int. J. Clim. 2020, 40, 769–781.

Gabaldón-Leal, C.; Ruiz-Ramos, M.; de la Rosa, R.; León, L.; Belaj, A.; Rodríguez, A.; Santos, C.; Lorite, I.J. Impact of changes in mean and extreme temperatures caused by climate change on olive flowering in southern Spain. Int. J. Clim. 2017, 37, 940–957.

Galán, C.; García-Mozo, H.; Vázquez, L.; Ruiz, L.; De La Guardia, C.D.; Trigo, M.M. Heat requirement for the onset of the Olea europaea L. pollen season in several sites in Andalusia and the efect of the expected future climate change. Int. J. Biometeorol. 2005, 49, 184–188.

Gómez-Calero, J.A., Giráldez, J.V., 2009. Erosión y degradación de suelos. In: Gómez-Calero, J.A. (Ed.), Sostenibilidad de la producción de olivar en Andalucía. Consejería de Agricultura y Pesca, Junta de Andalucía, Sevilla, pp. 45e86.

Gómez, J.A.; Infante-Amate, J.; De Molina, M.G.; Vanwalleghem, T.; Taguas, E.V.; Lorite, I. Olive cultivation, its impact on soil erosion and its progression into yield impacts in Southern Spain in the past as a key to a future of increasing climate uncertainty. Agriculture 2014, 4, 170–198.

Gómez-Calero, J.A. Sostenibilidad de la producción de olivar en Andalucía; Instituto de Agricultura Sostenible, Centro Superior de Investigaciones Científicas: Córdoba, Spain,2010;Availableonline:https://www.ias.csic.es/sostenibilidad_olivar/Sost_2009/Sostenibilidad_de_la_Producci%F3n_de_Olivar_en_Andaluc%EDa3.pdf (accessed on 30 September 2020).

Gómez-Rico A., Salvador M.D., Moriana A., Pérez D., Olemdilla N., Ribas F., Fregapane G., 2007. Influence of different irrigation strategies in a traditional Cornicabra cv. olive orchard on virgin olive oil composition and quality. Food Chemistry, 100:568–578

Hatfield, J.L.; Boote, K.J.; Kimball, B.A.; Ziska, L.H.; Izaurralde, R.C.; Ort, D.; Thomson, A.M.; Wolfe, D. Climate impacts on agriculture: Implications for crop production. Agron. J. 2011, 103, 351–370.

Lal, R. Soil carbon sequestration impacts on global climate change and food security. Science 2004, 304, 1623–1627.

Loumou, A.; Giourga, C. Olive groves: "The life and identity of the Mediterranean". Agric. Hum. Values 2003, 20, 87–95.

Lambarraa, F.; Serra, T.; Gil, J.M. Technical efficiency analysis and decomposition of productivity growth of Spanish olive farms. Span. J. Agric. Res. 2007, 5, 259–270.

Ighbareyeh, J.M.H.; Cano-Ortiz, A.; Suliemieh, A.A.A.; Ighbareyeh, M.M.H.; Cano, E.; Shahir, H. E ect of Bioclimate Factors on Olive (Olea europea L.) Yield: To Increase the Economy and Maintaining Food Security in Palestine. Int. J. Dev. Res. 2016, 6, 10648–1065.

IPCC, 2013. Climate change 2013: the physical science basis. In: Stocker, T.F., Qin, D., Plattner, G.-K., Tignor, M., Allen, S.K., Boschung, J., Nauels, A., Xia, Y., Bex, V., Midgley, P.M. (Eds.), Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 153.

Karki, S.; Burton, P.; Mackey, B. The experiences and perceptions of farmers about the impacts of climate change and variability on crop production: A review. Clim. Dev. 2020, 12, 80–95.

Knowler, D., Bradshaw, B., 2007. Farmers' adoption of conservation agriculture: a review and synthesis of recent research. Food Policy 32, 25–48.

Krishna, K. R., 2013. Agroecosystems: Soils, Climate, Crops, Nutrients Dynamics, and Productivity. Apple Academic Press, CRC Press, Taylor & Francis Group.

Nekhay, O., Arriaza, M., Boerboom, L., 2009. Evaluation of soil erosion risk using analytic network process and GIS: a case study from Spanish mountain olive plantations. Journal of Environmental Management 90, 3091–3104.

MAGRAMA, 2012. Avances de superficies y producciones de cultivos. Madrid: Ministerio de Agricultura, Alimentación y Medio Ambiente, Madrid.

Martínez, J.R.F.; Zuazo, V.H.D.; Raya, A.M. Environmental impact from mountainous olive orchards under
di_erent soil-management systems (SE Spain). Sci. Total Environ. 2006, 358, 46–60.

Martínez, J.; Reca, J. Water use e_ciency of surface drip irrigation versus an alternative subsurface drip

irrigation method. J. Irrig. Drain. Eng.-ASCE 2014, 140, 04014030.

Metzidakis, I.; Martinez-Vilela, A.; Nieto, G.C.; Basso, B. Intensive olive orchards on sloping land: Good water and pest management are essential. J. Environ. Manag. 2008, 89, 120–128.

Moriondo, M., Ferrise, R., Trombi, G., Brilli, L., Dibari, C., Bindi, M., 2015. Modelling olive trees and grapevines in a changing climate. Environ. Model. Softw. 72,
387–401

Moriondo, M., Stefanini, F. & Bindi, M. (2008) Reproduction of olive tree habitat suitability for global change impact assessment. Ecological Modelling, 218, 95–109.

Moriondo et al., 2013, M. Moriondo, G. Trombi, R. Ferrise, G. Brandani, C. Dibari, C.M. Ammann, M.M. Lippi, M. Bindi Olive trees as bio-indicators of climate evolution in the Mediterranean Basin Glob. Ecol. Biogeogr., 22 (2013), pp. 818-833, 10.1111/geb.12061.

Sofo, A., Nuzzo, V., Palese, A.M., Xiloyannis, C., Celano, G., Zukowskyj, P., Dichio, B., 2005. Net CO2 storage in mediterranean olive and peach orchards. Sci. Hortic.
107, 17e24.

Parras-Alcántara, L.; Díaz-Jaimes, L.; Lozano-García, B. Organic farming a_ects C and N in soils under olive groves in Mediterranean areas. Land Degrad. Dev. 2015, 26, 800–806.

Parra-López, C., Groot, J.C.J., Carmona-Torres, C., Rossing, W.A.H., 2009. An integrated approach for ex-ante evaluation of public policies for sustainable agriculture at landscape level. Land Use Policy 26, 1020–1030.

Rahm, M.R., Huffman, W.E., 1984. The adoption of reduced tillage: the role of human capital and other variables. American Journal of Agricultural Economics 66, 405–413.

Rodríguez-Entrena, M.; Arriaza, M. Adoption of conservation agriculture in olive groves: Evidences from southern Spain. Land Use Policy 2013, 34, 294–300.

Rodríguez-Pleguezuelo, C.R.; Zuazo, V.H.D.; Martínez, J.R.F.; Peinado, F.J.M.; Martín, F.M.; Tejero, I.F.G. Organic olive farming in Andalusia, Spain. A review. Agron. Sustain. Dev. 2018, 38, 20.

Rodríguez Sousa, A.A., Barandica, J.M.; Sanz-Cañada, J.; Rescia, A.J. Application of a dynamic model using agronomic and economic data to evaluate the sustainability of the olive grove landscape of Estepa (Andalusia, Spain). Landsc. Ecol. 2019, 34, 1547–1563.

Romero-Gámez, M.; Castro-Rodríguez, J.; Suárez-Rey, E.M. Optimization of olive growing practices in Spain from a life cycle assessment perspective. J. Clean. Prod. 2017, 149, 25–37.

Ropero, R.F.; Rumí, R.; Aguilera, P.A. Bayesian networks for evaluating climate change influence in olive crops in Andalusia, Spain. Nat. Resour. Model. 2018, 32, e12169.

Rubio de Casas et al., 2002, R. Rubio de Casas, L. Balaguer, E. Manrique, M.E. Pérez Corona, P. VargasOn the historical presence of the wild olive Olea europaea L. var. sylvestris (Miller) Lehr. in the Eurosiberian North of the Iberian Peninsula An. Jard. Bot. Madr., 59 (2002), pp. 342-344.

Olesen et al., 2011, J.E. Olesen, M. Trnka, K.C. Kersebaum, A.O. Skjelvåg, B. Seguin, P. Peltonen-Sainio, F. Rossi, J. Kozyra, F. MicaleImpacts and adaptation of European crop production systems to climate change, Eur. J. Agron., 34 (2011), pp. 96-112, 10.1016/j.eja.2010.11.003.

Orlandi, F.; Garcia-Mozo, H.; Ezquerra, L.V.; Romano, B.; Dominguez, E.; Galán, C.; Fornaciari, M. Phenological olive chilling requirements in Umbria (Italy) and Andalusia (Spain). Plant Biosyst. 2004, 138, 111–116.

Orlandi, F.; Ruga, L.; Romano, B.; Fornaciari, M. Olive flowering as an indicator of local climatic changes. Theor. Appl. Clim. 2005, 81, 169–176.

Salazar-Ordónez, M., Rodríguez-Entrena, M., Sayadi, S., 2011. Agricultural sustainability from a societal view: an analysis of southern Spanish citizens. Journal of Agricultural and Environmental Ethics 26, 473–490.

Schneider, U.A., McCarl, B.A., Schmid, E., 2007. Agricultural sector analysis on greenhouse gas mitigation in US agriculture and forestry. Agr. Syst. 94, 128e140.

Peterson, E.E.; Cunningham, S.A.; Thomas, M.; Collings, S.; Bonnett, G.D.; Harch, B. An assessment framework for measuring agroecosystem health. Ecol. Indic. 2017, 79, 265–275.

Ponti, L.; Gutierrez, A.P.; Ruti, P.M.; Dell'Aquila, A. 2014. Fine-scale ecological and economic assessment of climate change on olive in the Mediterranean Basin reveals winners and losers. Proc. Natl. Acad. Sci. USA, 111, 5598–5603.

Tanasijevic, L.; Todorovic, M.; Pereira, L.S.; Pizzigalli, C.; Lionello, P. Impacts of climate change on olive crop evapotranspiration and irrigation requirements in the Mediterranean region. Agric. Water Manag. 2014, 144, 54–68.

Taxidis, E.T.; Menexes, G.C.; Mamolos, A.P.; Tsatsarelis, C.A.; Anagnostopoulos, C.D.; Kalburtji, K.L. Comparing organic and conventional olive groves relative to energy use and greenhouse gas emissions associated with the cultivation of two varieties. Appl. Energy 2015, 149, 117–124.

Testi, L., F.J. Villalobos, F. Orgaz, and E. Fereres. 2006. Water requirements of olive orchards: I simulation of daily evapotranspiration for scenario analysis. Irrig. Sci. 24:69–76. doi:10.1007/ s00271-005-0011-y.

Terral, J.-F., N. Alonson, B. I. Capdevilla, N. Chatti, L. Fabre, G. Fiorentino, P. Marinval, G. Perez Jorda, B. Pradat, B. Rovira & P. Alibert. 2004. Historical biogeography of olive domestication (Olea europaea L.) as revealed by geometrical morphometry applied to biological and archaeological material. Journal of Biogeography 31: 63-77.

Tilman, D., Cassman, K.G., Matson, P.A., Naylor, R., Polasky, S., 2002. Agricultural sustainability and intensive production practices. Nature 418, 671e677.

Tupper N.,2012. Spanish olive oil under constant threat from climate change. Olive Oil Times, October 26, 2012.

Young, L.M., Weersink, A., Fulton, M., Deaton, B.J., 2007. Carbon sequestration in agriculture: EU and US. EuroChoices 6, 32e37.

Vasilopoulos C., 2013.Climate change effects on vines should alarm olive oil producers. Olive Oil Times, April 22 2013.

Zipori, I.; Erel, R.; Yermiyahu, U.; Ben-Gal, A.; Dag, A. Sustainable management of olive orchard nutrition: A review. Agriculture 2020, 10, 11.

Zuazo, V.H.D.; Pleguezuelo, C.R.R. Soil-Erosion and Runo Prevention by Plant Covers: A Review. Agron. Sustain. Dev. 2009, 28, 65–86.

Vossen, P. Olive oil: History, production, and characteristics of the world's classic oils. HortScience 2007, 42, 1093–1100.

Assessment of rice varieties tolerant to heat stress in Benin

Wassiou Worou AHANCHEDE
Dr. (MC) **Vincent Ishola EZIN**
Prof. Dr. **Ir. Adam AHANCHEDE**
University of Abomey-Calavi

Abstract
The increasing temperatures due to climate change around the world poses a serious threat to sustainable crop production. The growing adverse effects of heat stress are putting global food security at great risk. Crop improvement for the increase of heat tolerance is therefore of paramount importance. The aim of the present study was to assess the effects of heat stress in relations to agro-morphological and physiological traits of 06 varieties. The study was carried out in Glazoué, a rice-growing area of Benin and the experiments were laid in completely randomized block design with three replications. Two types of stress were imposed: high temperature stress in the dry season and normal temperatures in the rainy season. The calculated mean values of agro-morphological and physiological traits were used to estimate heritability, genetic advance, PCA, and correlation. The results showed that heat stress had a significant ($p \leq 0.01$) effect on plant height, leaf length, number of tillers, number internodes, days to flowering, days to maturity, 1000-seed weight, and yield per plant. The heat stress had significantly delayed the flowering of all the varieties when compared to the control. The highest values of 1000-seed weight (34,67 g) were recorded for BRIZ-8B while the lowest (25,33 g) were recorded for NERICA-L20. The highest values for genotypic coefficient of variation (43.05%) and phenotypic coefficient of variation (99.13%) were recorded for yield plant^{-1} under high temperature stress. The highest broad sense heritability estimates 92.72%, 69.33%, 68.50%, 57.35% and 54.55% for grain width, days to maturity, days to flowering, number of grains per panicle, and yield. Overall, BRIZ-8B, BRIZ-10B were most tolerant to high temperature amongst the six varieties and potentially could be used in breeding programs to improve heat tolerance in rice.

Key words: rice varieties, heat stress, heritability, genetic diversity, Benin

KOMPOST İÇERİKLİ BAZI ORGANOMINERAL GÜBRELERİN SERADA ÇİLEK YETİŞTİRİCİLİĞİNDE BİTKİLERİN VEJETATİF GELİŞİMİ VE MEYVE KALİTESİ ÜZERİNE OLAN ETKİLERİ

Dr. Öğr. Üyesi **Hülya Sayğı**
Çukurova Üniversitesi, Adana, Türkiye
https://orcid.org/0000-0002-2327-566X

Özet
Tüm dünyada yaygın olarak yetiştirilen, taze ve işlenmiş olarak tüketilebilen ve aile işletmeciliğine de uygun olan çilek (Fragaria x ananassa Duch.) ticari açıdan önemli ve üretimi artan meyve türlerinden birisidir. Bu çalışma örtüaltı koşullarında bazı organomineral gübrelerin çilek bitkisinin vejetatif gelişimi ve meyve kalitesi üzerine olan etkilerini belirleyebilmek amacıyla yürütülmüştür. Çalışma 2019-2020 yılları arasında, Çukurova Üniversitesi, Yumurtalık Meslek Yüksekokulu Araştırma ve Uygulama Arazisinde ısıtmasız cam serada gerçekleştirilmiştir. Çalışmada bitkisel materyal olarak 'Sweet Charlie' çilek çeşidi, organomineral gübre olarak "Agronatura", "Agrosülfür" ve "5X15"isimli kompost içerikli organomineral gübre kullanılmıştır. Deneme boyunca uygulamaların bitkilerin vejetatif gelişimine olan etkilerini tayin edebilmek amacıyla iki haftada bir bitkilerde gövde çapı, bitki boyu, yaprak sayısı ölçümleri, sezon boyunca iki haftada bir ise meyve kalite analizleri (meyve ağırlığı, meyve çapı, SÇKM, pH, titre edilebilir asit değerleri) yapılmıştır. Çalışma sonunda yapılan ölçümlerin ortalama değerleri istatistiksel olarak değerlendirilmiştir. Uygulamalara ait sonuçlar kontrol parselleri ile kıyaslandığında istatistiksel anlamda önemli düzeyde farklılıklar tespit edilmiş ve kompost içerikli organomineral gübre uygulamalarının çilek yetiştiriciliğinde tavsiye edilebileceği sonucuna varılmıştır.

Anahtar Kelimeler: Sweet Charlie, Organomineral Gübre, Örtüaltı, Üzümsü Meyveler

THE EFFECTS OF SOME ORGANOMINERAL FERTILIZERS WITH COMPOST CONTENT ON VEGETATIVE DEVELOPMENT AND FRUIT QUALITY OF PLANTS IN STRAWBERRY GROWING IN THE GREENHOUSE

Abstract
Strawberry (Fragaria x ananassa Duch.), Which is widely grown all over the world, can be consumed fresh and processed, and is suitable for family business, is one of the commercially important fruit types with increasing production. This study was carried out in order to determine the effects of some organomineral fertilizers on the vegetative growth and fruit quality of strawberry plants under greenhouse conditions. The study was carried out in an unheated glass greenhouse at the Çukurova University, Yumurtalık Vocational School Research and Application Area between 2019-2020. In the study, "Sweet Charlie" strawberry variety was used as herbal material, "Agronatura", "Agrosulfur" and "5X15" compost containing organomineral fertilizers were used as organomineral fertilizers. During the trial,

in order to determine the effects of the applications on the vegetative development of the plants, stem diameter, plant height, leaf number measurements in plants every two weeks, fruit quality analyzes every two weeks during the season (fruit weight, fruit diameter, soluble solids, pH, titratable acid values). has been made. At the end of the study, the average values of the measurements were evaluated statistically. When the results of the applications were compared with the control plots, statistically significant differences were determined and it was concluded that organomineral fertilizer applications containing compost can be recommended in strawberry growing.

Keywords: Sweet Charlie, Organomineral Fertilizer, Greenhouse, Berries

PREVALENCE OF CATTLE TRYPANOSOMOSIS IN SLAUGHTERHOUSES AND FARMS IN BENIN

Soha Sas
Dotché Ignace
Achadé Germain
Youssao Abdou Karim Issaka
Farougou Souhaïbou
Kpodékon Marc
University of Abomey-Calavi, Abomey-Calavi, Republic of Bénin

Abstract
Trypanosomosis has been classified as the second pathology that affects milk after foot-and-mouth disease in Bénin. The present study aimed to determine the prevalence of bovine trypanosomosis in Benin. For this purpose, the blood samples were taken from 932 cattle: 573 from slaughterhouses and 359 from the farms of the targeted divisions. After the blood samples, thick drops and blood smears were made. The prevalence of trypanosomosis in farms (27.02%) was significantly higher ($p < 0.001$) than that of animals in slaughterhouses (16.75%). In farms, the prevalence was 38.55% during the rainy season against 16.67% in the dry season ($p<0.001$). In slaughterhouses, prevalences were respectively 10.99%, 17.58% and 21.50% in Bohicon, Cotonou/Porto-Novo and Parakou. Young cattle are more vulnerable to trypanosomosis than older cattle. Given the endemic situation of bovine trypanosomosis and its impact on the economy, this knowledge of the health status of cattle will help out to seek ways and alternatives to reduce the damage.

Keywords: Benin, trypanosomosis, prevalence, slaughterhouses, farms

Assessment of Farmers willingness to Pay for Extension Services on Livestock Production in Lagos State

Ayandiji A.
Afolabi C.O.
Oluranti D.E.
Iwo, Osun State, Nigeria

Abstract
Agricultural extension services in Nigeria are still being solely funded by the government, since counterpart funding known in the states of the country are no longer available, thus extension services are either not effective and nose diving. Therefore a commitment to information delivery, training and retraining program is necessary and critical determinant of the success livestock farm towards food security. The study was carried out in Lagos state Nigeria, with the main objective of ascertaining the willingness of farmers to pay for extension services as regards livestock production. One hundred and fifty (150) questionnaires were administered to the selected respondents were randomly selected. The findings of the study revealed that majority of the respondents in the study area of them were males while majority (62.2%) of the respondents were married and had a house hold size that ranged between 1 and 15. Also, 97.3% have access to extension services. Information on castration (2.67 ± 1.403), artificial insemination (2.60 ± 1.437) and deworming (2.61 ± 1.469) were highly needed, and 56.0% were willing to pay for extension services. The hypothesis of the study tested using the chi-square test shows that age ($\chi^2 = 13.088$, p-value = 0.023) and household size ($\chi^2 = 12.991$, p-value = 0.002), farming experience ($\chi^2 = 11.001$, p-value = 0.004), income from sources ($\chi^2 = 9.754$, p-value = 0.021) and being a member of farmers' association ($\chi^2 = 4.788$, p-value = 0.039) were significantly related with willingness to pay for extension services on livestock production in Lagos State. There should be more awareness on the benefits of paying for agricultural extension services were necessary and farmers in the state should join a farmers' association for easier access to extension services.

Key Words: Willingness, Extension Services, Lagos, Deworming

Introduction

Nigeria is an agrarian country with 80 percent of its land mass in the rural areas (FMARD, 2000). Since agriculture and rural development are central to the nation's socio – economic development, it follows that policies which aims at transforming the rural sector is likely to favorably impact on agriculture. However, in any nations of the world, Livestock remains the mainstay of the household economies, food and livelihoods, such as seen in rural areas (ILRI, 2019). The livestock is an important and integral component of Nigeria's agriculture and serve

as a major source of household wealth and food security (Ilu *et al.*, 2016; Sesay, 2016). It's been observed that cattle are the most important livestock species in terms of outputs and capital value while sheep, goats, pigs and poultry are raised throughout the country, cattle are largely concentrated in the dry savannah parts of the country(Ilu *et al.*, 2016). Livestock farming is an essential part of the Nigerian agricultural system.

The agricultural extension service in recent years has played an important role in improving livestock production in Nigeria through advisory services and timely, adequate and consistent information on improved techniques of agricultural production. However, in ensuring the awareness and subsequent adoption of the improved methods, various extension teaching methods have been employed to make sure that the technologies get to the farmer. Agricultural extension services in Nigeria are still being solely funded by the government. The various shades of counterpart funding known in some other parts of the state of the country are informed by the need to allow for participation of people in programs that will benefit them (Ajayi, 2017). As the contention to pay for agricultural extension services increases between farmers and government, literatures had reviewed that some countries give a full financial support and formulation of policies for agricultural extension from the local taxes with the central government providing the initiative through Integrated Rural Development fund (Ajayi, 2017; Sokoya *et al.*, 2014). The increased complexity of Lagos State Agriculture exerts on the economy has necessitate a push for agricultural education and extension on livestock farming (Foti *et al.*, 2007). The Lagos state government has identified that agricultural extension could play an important role which can lead its government to devote a lot of resources to agricultural extension (Foti *et al.*, 2007; Mora-Delgado & Holguín, 2014). To achieve a thriving farming, a commitment to free information flow, training and retraining program is necessary. information is a critical determinant of the success in human endeavour such as in preserving farm livestock towards food security is needed (Sokoya *et al.*, 2014).

The objectives of the study are to: examine the socio-demographic of the respondents, ascertain access information, examine the information needs of farmers, identify farmers willingness to pay for agricultural extension services, and factors determining farmers willingness to participate in extension services

Methodology

The study was conducted in Lagos state within latitudes 6°23′N and 6°41′N and longitude 3°9′E and 3°28′E, in Lagos State, South-Western Nigeria which is made up of the 20 urban local government areas with 17 Local Council Development Areas seen in Figure 1. Five (5) Local Government Areas (LGA) and Local Council Development Areas (LCDA) in Lagos State susceptible to high agricultural farming especially in livestock cultivation (Epe LGA, Ikorodu LGA, Badagry LGA, Agbado Oke-odo LCDA, Igbogbo Baiyeku LCDA) were purposefully sampled. Data collected with the aids of structured questionnaire from 150 randomly selected farmers from the identified farms. From each of the sampled local Government and Council Development Areas, Data were analysed using descriptive statistics and analytical tool.

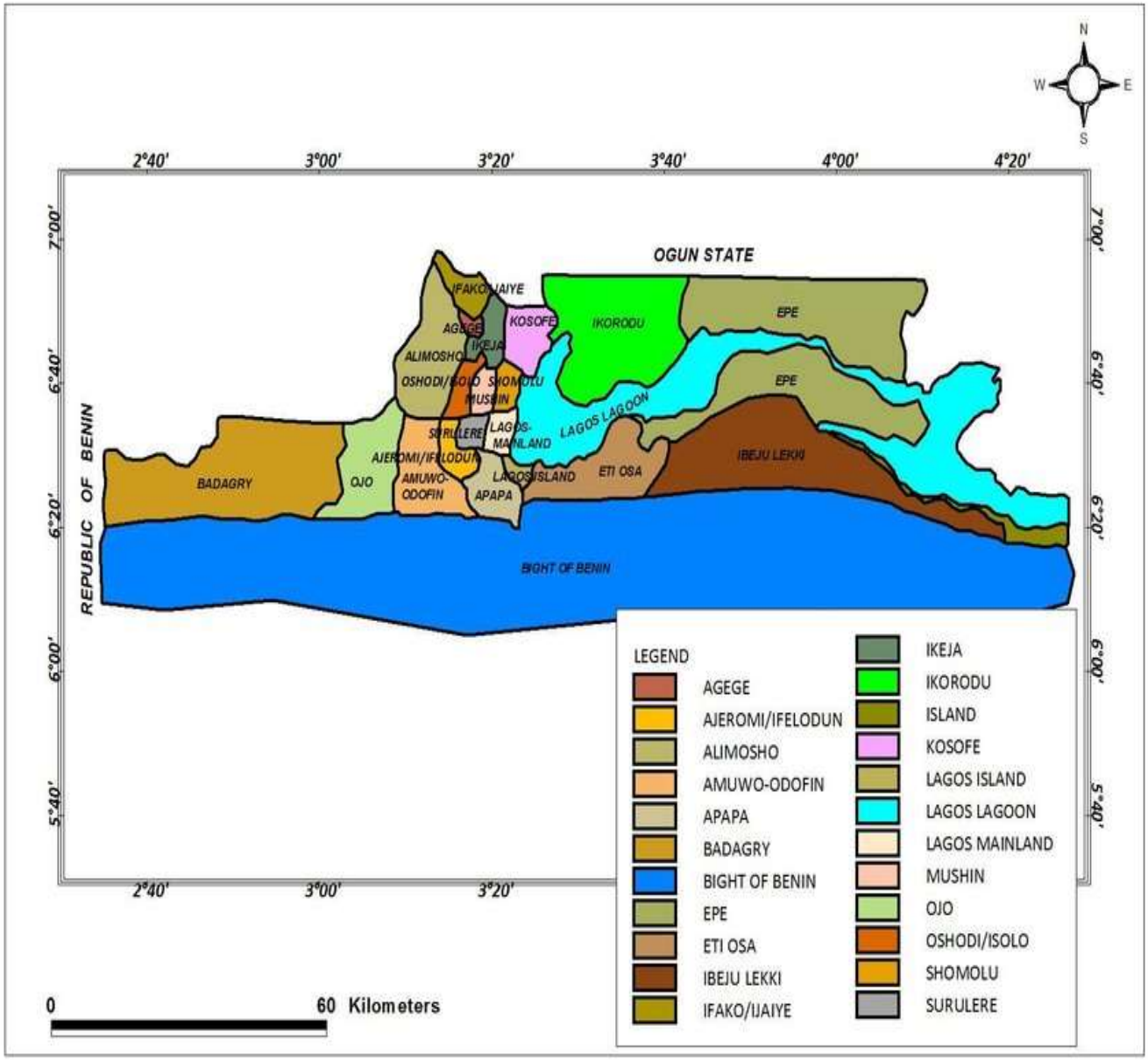


Figure 1: Map of Lagos State, Nigeria.

Results and Discuss

The average age of the respondents was 54.21 ± 11.896. Majority of the respondents (32.7%) fell within the age group 61 – 73years, more than half(62.2%) of the respondents were male while 37.8% were female. Also,55.2%, 44.1% and 0.7% of the respondents were Christians, Muslims and Traditional worshipers respectively while 87.0% of the respondents were Yoruba, 12.3% were Igbos while 0.7% were Hausa. Majority (87.1%) were married, 62.8% were graduates, and 82.0% to their homes were less than 2 kilometres. This is implies that men practice farming more than women, but this however may has no effect on the willingness to pay for extension service. The result is in line with the findings of Onoh (2004) who stated that younger and older farmers are less flexible in changing an old culture than the middle aged farmers who are restless and ready to explore and experiment in anticipation of breakthroughs Religion may not affect the willingness to pay for extension service, and obviously that the greater percentage of respondents are Yoruba, this is simply because the

study was carried out in Lagos state, predominantly Yoruba state ; this however may has no effect on the willingness to pay for extension services. The age range of the respondents are older and take to agriculture as a means of livehood to sustained thier families. majority of the farmers were educated which may likely affect their orientation and outlook thereby affecting their reasons and adoption of innovation.

Access to related Characteristics

Table 1 shows that almost all the respondents (97.3%) have access to farm extension, 55.8% preferred individual meeting with extension workers as a means to get information to extension services, and 91.1% prefferd meetings with extension agents for more than once in a month. Almost all the respondents 99.3% were aware of extension agencies in Lagos State, 99.6% have access to the agency's agents. More than half 56.2% have attended farm extension training for more than 20 times. ALso, table 1 shows that the distance from farms of the majority (82.0%) of the respondents to thier house were less than 2 kilometres. Also, majority (44.0%) reported that the nearest road to their house was major road and Almost all the respondents (97.3%) have access to extension services . More than half(55.8%) preferred individual meeting with extension workers as a means to get information to extension services, followed by group method with extension workers with a percentage of 39.5%.

Table 1 showing Access to socio economics related Characteristics

Access to related Characteristics	**Responses**	**Frequency**	**Percentage**
Distance is nearest farm	Less than 2km	123	82.0
	2.1-5km	16	10.7
	Above 5km	11	7.3
	Total	**150**	**100.0**
Nearest road to houses	Path	15	10.0
	Minor road	63	42.0
	Major road	66	44.0
	Express	6	4.0
	Total	**150**	**100.0**
Extension Access	Yes	145	97.3
	No	4	2.7
	Total	**149**	**100.0**
Preferred means of access to information on extension services	Mass media	7	4.8
	Group method	58	39.5
	Individual meetings	82	55.8
	Total	**147**	**100.0**
Frequency of meeting(s)	Once a month	8	5.5
	More than once a month	133	91.1
	Once in 3 months	3	2.1
	Annually	1	.7
	Others	1	.7
	Total	**146**	**100.0**
Are you aware of the extension agencies in Lagos state that are ready to provide assistance to your farm practice	Yes	147	99.3
	No	1	.7
	Total	**148**	**100.0**

Do you have access to extension agents	Yes	143	96.6
	No	5	3.4
	Total	**148**	**100.0**
Number of training ever attended	0-5	5	3.4
	6 - 10	13	8.9
	11 - 15	23	15.8
	16-20	23	15.8
	21 and above	82	56.2
	Total	**146**	**100.0**

It was observed in table 2 shows that more than half of the respondents strongly willing to pay for improvement technique in piggery, 88.7% were strongly willing to pay for improvement technique in poultry production while majority (79.2%) were strongly willing to pay for improvement technique in fish production, 88.7% were also strongly willing to pay for improvement technique in food production. It was also noted that 88.6% were strongly willing to pay for annual feed production, 88.7% were strongly willing to pay for advice on animal health while 71.8% strongly willing to pay for improvement technique in rabbit production. The willingness to pay may be as a result of individual needs. Farmers will be willing to pay if challenges at hand is about reducing or destroying his livelihoods.

Table 2 showing Farmers willingness to pay

Farmers willingness to pay	**Responses**	**Frequency**	**Percentage**	**Mean ± SD**
Improved technique in piggery	Strongly Willing	83	55.3	2.15 ± 1.373
	Willing	10	6.7	
	Unwilling	9	6.0	
	Strongly Unwilling	48	32.0	
	Total	150	100.0	
Improved technique in poultry production	Strongly Willing	133	88.7	1.21 ± 0.648
	Willing	8	5.3	
	Unwilling	4	2.7	
	Strongly Unwilling	5	3.3	
	Total	150	100.0	
Improved technique in fish production	Strongly Willing	118	79.2	1.31 ± 0.706
	Willing	22	14.8	
	Unwilling	3	2.0	
	Strongly unwilling	6	4.0	
	Total	149	100.0	
Improvement in food production	Strongly Willing	133	88.7	1.14 ± 0.434
	Willing	14	9.3	
	Unwilling	2	1.3	
	Strongly Unwilling	1	.7	
	Total	150	100.0	
Annual feed production	Strongly Willing	132	88.6	1.14 ± 0.451
	Willing	15	10.1	
	Strongly Unwilling	2	1.3	

	Total	149	100.0	
Advice on animal health	Strongly Willing	133	88.7	1.15 ± 0.501
	Willing	14	9.3	
	Strongly Unwilling	3	2.0	
	Total	150	100.0	
Improvement technique in rabbit production	Strongly Willing	107	71.8	1.47 ± 0.874
	Willingly	24	16.1	
	Unwilling	8	5.4	
	Strongly Unwilling	10	6.7	
	Total	149	100.0	

Need for Information Distribution Table

In table 3 shows that 48.7% that information about castration was not needed while majority 82.0% stated that information on insurance of animal was much needed, 49.0% said information about artificial insemination was not needed and 52.0% said that information about deworming was not needed. In the same vein, 58.0% said that information on meat inspection was not needed and 56.4% said that information about wound treatment was very much needed. Livestock farmers may have been well trained by extension agents in passed Seminars and lectures sponsored by government or non governmental organisations to improved thier production to meet the challenges in the past. However, 69.1% reported that information about treatment of skin diseases was very much needed, 77.2% said that information about vaccination was very much needed, and 60.8% said that information about bathing against ectoparasite was very much needed. Almost all the respondents (93.3%) said that information about increase yield was very much needed, 96.7% reported that information about disease diagnosis was very much needed, 94.7% reported it was very much needed on advice on annual health while 96.7% reported that information about marketing was very much needed. The rate or effects of diseases infection is alarming when broke out. Farmers are often proactive to prevention of diseases to save their farm.

Table 3 showing the information needs

Need for Information Domain	**Responses**	**Frequency**	**Percentage**	**Mean ± SD**
Castration	Very Needed	57	38.0	2.67 ± 1.403
	Needed	9	6.0	
	Less Needed	11	7.3	
	Not Needed	73	48.7	
	Total	150	100.0	
Insurance of Animal	Very Needed	123	82.0	1.47 ± 1.054
	Needed	3	2.0	
	Less Needed	4	2.7	
	Not Needed	20	13.3	
	Total	150	100.0	
Artificial Insemination	Very Needed	62	41.6	2.60 ± 1.437
	Needed	8	5.4	
	Less Needed	6	4.0	

	Not Needed	73	49.0	
	Total	149	100.0	
Deworming	Very Needed	64	43.2	2.61 ± 1.469
	Needed	6	4.1	
	Less Needed	1	.7	
	Not Needed	77	52.0	
	Total	148	100.0	
Meat Inspection	Very Needed	53	35.3	2.81 ± 1.425
	Needed	9	6.0	
	Less Needed	1	.7	
	Not Needed	87	58.0	
	Total	150	100.0	
Wound Treatment	Very Needed	84	56.4	2.19 ± 1.427
	Needed	7	4.7	
	Less Needed	3	2.0	
	Not Needed	55	36.9	
	Total	149	100.0	
Treatment of skin diseases	Very Needed	103	69.1	1.83 ± 1.312
	Needed	7	4.7	
	Not Needed	39	26.2	
	Total	149	100.0	
Vaccination	Very Needed	115	77.2	1.57 ± 1.123
	Needed	7	4.7	
	Less Needed	3	2.0	
	Not Needed	24	16.1	
	Total	149	100.0	
Bathing against ectoparasite	Very Needed	90	60.8	2.07 ± 1.395
	Needed	5	3.4	
	Less Needed	5	3.4	
	Not Needed	48	32.4	
	Total	148	100.0	
Increase yield	Very Needed	139	93.3	1.08 ± 0.339
	Needed	9	6.0	
	Not Needed	1	.7	
	Total	149	100.0	
Disease diagnosis	Very Needed	145	96.7	1.05 ± 0.292
	Needed	4	2.7	
	Not Needed	1	.7	
	Total	150	100.0	
Advice on annual health	Very Needed	142	94.7	1.09 ± 0.417
	Needed	5	3.3	
	Less Needed	1	.7	
	Not Needed	2	1.3	

	Total	150	100.0	
Marketing	Very Needed	145	96.7	1.03 ± 0.180
	Needed	5	3.3	
	Total	150	100.0	

Based on the sources of information, Table 4 shows that almost all the respondents (98.7%) were informed by extension workers, 99.3% also got to know about it on TV, radio and newspaper, 56.1% also heard about it for teacher/head of villages, 74.3% get to know about it from veterinary staff, 87.9% from drug sellers while 92.1% get to know about it from other sources. Extension workers were given area to cover in helping farmers. Farmers who are willing to learn from them with achieved a lots when compared with Conservative farmers. The ability to combine two sources of information will help farmers to increase yield and reduce risk.

Table 4 showing Sources of Information domain

Source of Information domain	**Responses**	**Frequency**	**Percentage**
Extension worker	Yes	147	98.7
	No	2	1.3
	Total	**149**	**100.0**
TV, Radio and newspaper	Yes	148	99.3
	No	1	.7
	Total	**149**	**100.0**
Teacher/head of village	Yes	83	56.1
	No	65	43.9
	Total	**148**	**100.0**
Veterinary staff	Yes	110	74.3
	No	38	25.7
	Total	**148**	**100.0**
Drug sellers	Yes	131	87.9
	No	18	12.1
	Total	**149**	**100.0**
Others	Yes	128	92.1
	No	11	7.9
	Total	**139**	**100.0**

In general, 56.0% were willing to pay for extension while 44.0% were not willing to pay. Since most of the farmers wanted to boost their production, they will be favourable dispose to news innovation and will be willing to adopt the new innovation. 43% of the farmers (51 out of 120) were willing to pay for extension services in, it should be noted that none of the farmers was willing to pay for all of the listed services, they picked the services they needed the most and indicated the amount they were willing to pay for such services, while 57% (69 out of 120) were not willing to pay for extension services with reasons highlighted

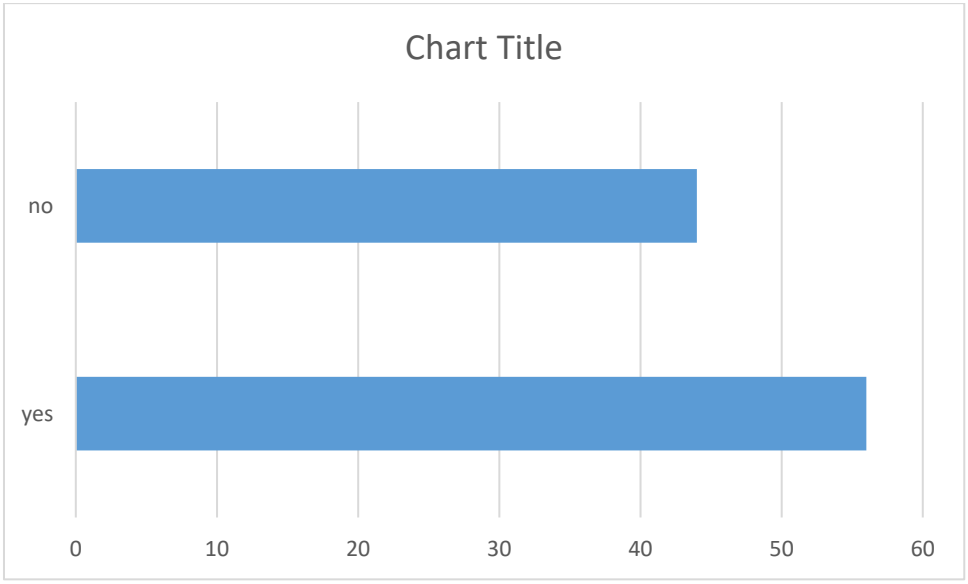


Figure 2: bar-Chart showing Willingness to Pay

HYPOTHESIS ONE

Ho: There is no significant relationship between socio-demographic and willingness to pay for extension services on livestock production

Based on the information in table 4.7 above, it was observed that age ($\chi^2 = 13.088$, p-value = 0.023) and household size ($\chi^2 = 12.991$, p-value = 0.002) were significantly related with willingness to pay for extension services on livestock production in Lagos State since their corresponding p-values was less than 0.05 level of significant. This showed that farmers were willing to pay for extension services as they are ageing and having bigger household sizes even without government involvement. This was in line with Oladele 2010 work that says farming experience and age were part of determinants of willingness to pay for agricultural extension services

Table 5 showing factors determining willingness to pay

Socio-Demographic	**Willingness to Pay**		χ^2	**p-value**
	Yes	**No**		
Age Group			**13.088**	**0.023***
21 - 30 years	4 (4.8)	1 (1.5)		
31 - 40 years	16 (19.0)	2 (3.0)		
41 - 50 years	20 (23.8)	15 (22.7)		
51 - 60 years	16 (19.0)	17 (25.8)		
61 - 70 years	23 (27.4)	26 (39.4)		
71 years & above	5 (6.0)	5 (7.6)		
Gender			**2.462**	**0.128**
Male	47 (56.6)	45 (69.2)		
Female	36 (43.4)	20 (30.8)		
Religion			**1.863**	**0.394**
Christian	47 (58.0)	32 (51.6)		
Muslim	33 (40.7)	30 (48.4)		

Traditional	1 (1.2)	0 (0.0)		
Ethnicity			**1.696**	**0.428**
Yoruba	67 (87.0)	53 (86.9)		
Igbo	10 (13.0)	7 (11.5)		
Hausa	0 (0.0)	1 (1.6)		
Marital Status			**2.938**	**0.230**
Single	7 (8.6)	2 (3.0)		
Married	70 (86.4)	58 (87.9)		
Others	4 (4.9)	6 (9.1)		
Level of Education			**7.279**	**0.064**
Primary	0 (0.0)	2 (3.1)		
Secondary	25 (30.1)	26 (40.0)		
Tertiary	56 (67.5)	37 (56.9)		
No formal education	2 (2.4)	0 (0.0)		
House Hold Size			**12.991**	**0.002***
1 – 5	39 (49.4)	13 (20.6)		
6 - 10	37 (46.8)	47 (74.6)		
11 - 15	3 (3.8)	3 (4.8)		

HYPOTHESIS TWO

Ho: There is no significant relationship between socio-economic status and willingness to pay for extension services on livestock production.

In the same vein, the information in table 6 showed that farming experience ($\chi^2 = 11.001$, p-value = 0.004), income from sources ($\chi^2 = 9.754$, p-value = 0.021) and being a member of farmers' association ($\chi^2 = 4.788$, p-value = 0.039) were significantly related with willingness to pay for extension services on livestock production in Lagos State since their corresponding p-values was less than 0.05 level of significant. The implication of the result is that the more experience, farmers have the higher their willingness to pay for extension services. In the same vein, when they join farming association and have enough money, these will encourage them to pay for extension services. This is in line with the findings of Foti *et al*., (2007) stated that high incomes are associated with a greater ability to buy. It therefore implied that farmers with higher income would be more willing to pay for extension services.

Table 6 showing other factors determining willingness to pay

	Willingness to Pay		χ^2	p-value
	Yes	No		
Farming Experience			**11.001**	**0.004***
0 - 10 years	26 (31.0)	7 (10.8)		
11 - 30 years	27 (32.1)	19 (29.2)		
31 years & above	31 (36.9)	39 (60.0)		
Farm Size in Hectares			**1.581**	**0.231**
1 - 5 Hectares	57 (67.9)	37 (57.8)		
6 - 10 Hectares	27 (32.1)	27 (42.2)		
Annual Income			**0.663**	**0.718**
N1 - N1,000,000	3 (3.6)	1 (1.5)		
N1,000,001 - N100,000,000	80 (95.2)	64 (97.0)		
N100,000,001 & above	1 (1.2)	1 (1.5)		
Number of Livestock			**3.966**	**0.265**
1 - 1000 Livestock	14 (18.4)	9 (17.3)		
1001 - 10000 Livestock	50 (65.8)	29 (55.8)		
10,001 - 50,000 Livestock	11 (14.5)	14 (26.9)		
50,001 Livestock & above	1 (1.3)	0 (0.0)		
Income from Sources			**9.754**	**0.021***
N1 - N1,000,000	37 (44.0)	20 (30.8)		
N1,000,001 - N10,000,000	45 (53.6)	42 (64.6)		
N10,000,001 - N20,000,000	0 (0.0)	3 (4.6)		
N20,000,001 - N30,000,000	2 (2.4)	0 (0.0)		
Being a member of farmers' association			**4.788**	**0.039***
Yes	70 (86.4)	62 (96.9)		
No	11 (13.6)	2 (3.1)		

Conclusion

Farmers' age, Experience, member of farmer's association, household size and income are important factors to willingness to pay for extension services. There should be more awareness on the benefits of paying for agricultural extension services were necessary and farmers in the state should join a farmers' association for easier access to extension services.

Reference

Akinnagbe O. M, and Adesina O. S.(2018) Willingness of Farmers to Pay for Agricultural Extension Services in Ondo State, Nigeria *RA JOURNAL OF APPLIED RESEARCH* ISSN: 2394-6709 DOI:10.31142/rajar/v4i10.14 Volume: 04 Issue: 10

Ajayi, O. (**2017**). Farmers willingness to participate in the financing of agricultural extension services in Oyo State, Nigeria: A factor analysis. *Journal of Sustainable Development, 1*(2), 2-11.

Federal Ministry of Agriculture and Rural Development, FMARD (2000). Nigeria: Agricultural and Rural Transformation Programme, From Vision to Action. Abuja, Sept.

Foti, R., Nyakudya, I., Moyo, M., Chikuvire, J., & Mlambo, N. (**2007**). Determinants of farmer demand for" fee-for-service" extension in Zimbabwe: the case of Mashonaland Central province. *Journal of International Agricultural and Extension Education, 14*(1), 95-104.

ILRI. (**2019**). *Options for the livestock sector in developing and emerging economies to 2030 and beyond*. Retrieved from 91-93 route de la Capite CH-1223 Cologny/Geneva Switzerland:

Ilu, I., Frank, A., & Annatte, I. (**2016**). Review of the livestock/meat and milk value chains and policy influencing them in Nigeria. *Food and Agriculture Organization of the United Nations and the Economic Community of West African States*.

Oladele OI (2010). Job-burn-out and coping strategies among extension agents in selected states of south western Nigeria Botswana J. Agric. Appl. Sci., 6(1):81-89.

Onoh P. A.(2004). Evaluation of the effectiveness of unified Agricultural Extension Services in Enugu State of Nigeria. MSc. Thesis, Department of Agricultural Economics, Extension and Management, Ebonyi State University, Abakaliki.

Mora-Delgado, J., & Holguín, V. (**2014**). Importance of livestock in small-scale farming systems of rural coffee areas in Colombia. *Indian Journal of Animal Sciences, 84*(8), 919-922.

Sesay, A. (**2016**). Review of the livestock/meat and milk value chains and policy influencing them in Sierra Leone. *Published by the Food and Agriculture Organization of the United Nations and the Economic Community of West African States*.

Sokoya, A. A., Alabi, A. O., & Fagbola, B. O. (**2014**). Farmers information literacy and awareness towards agricultural produce and food security: FADAMA III programs in Osun state Nigeria.

EFFECT OF FEEDING CASSAVA ON GROWTH PERFORMANCE OF GOATS IN AFRICA: A SYSTEMATIC REVIEW AND A META-ANALYSIS

Jacob Matovu
Ahmet Alçiçek
Ege University, İzmir, Turkey

Abstract
In the present study, the effects of feeding cassava on the growth performance of goats were evaluated using a systematic review and a meta-analysis. In total 7 studies got through an extensive literature data search that was performed in Africa were employed for the analysis. The results from diets with cassava and diets without cassava in each study were assigned as a treatment and control, respectively, and the mean difference between the treatment and the control was used for the evaluation of the pooled effect size. The summary pooled effect was calculated using a random-effect model. As result, in growth performance, positive effects were found in Average daily feed intake (ADFI) and final body weight (FBW). However, there was no significant effect in both ADFI (P=0.07) and FBW (P=0.20). There was a negative effect on the Average daily weight gain (ADWG) and the results were not significant. The analysis has shown also a poor Feed Conservation ratio (FCR) with diets containing cassava and a non-significant effect. The occurrence of substantial and considerable heterogeneity (P < 0. 00001) showed that the effects of cassava feeding in the diet varied from experiment to experiment for ADFI, FCR, and the ADWG. Based on the results cassava has shown to be a potential novel feed in Goat nutrition. Hence further research is needed to improve the efficiency of cassava utilization in Goats.

Keywords: Nutritive value, Africa, Growth Performance, Cassava, Meta-analysis

Introduction

By the year 2050, the world population is expected to be 9.1 billion people so this a main challenge for agriculture research to provide food to this huge population (Parfitt et al., 2010). Based on this livestock production is one sector that needs to be ventured in as a source of food to feed the expected growing population. Livestock sectors like goat production can help in solving this problem not only as a source of food but a source of income among other purposes (Muwanika, et al., 2019). As noted by Matovu et al., 2020, that one of the factors that hinder livestock production in Africa is diseases and pests, then the other strong factor is nutrition, as feed resources are limited in quantity and quality due to prolonged dry seasons (David, et al., 2020).

There has been search for novel feeds that can be used in livestock production as conventional feeds sources mainly cereal grains are facing stiff competition from other industries (Sugiharto, 2019). One of the best alternative has been cassava since it can grow well in most African climatic conditions (Oppong-Apane, 2013). Currently its widely grown in Africa, and the continent is the leading producer in the the world accounting for 55.7% (more than 124 million tons) (FAOSTAT, 2019).

Cassava products like roots and leaves have been used for some good time now in livestock feeds. Despite, different factors like antinutritional factors that affect their utilization (Chiwona-Karltun et al., 2015), there very many feeding trials that have reported positive results with feeding with cassava (Oni et al., 2010; Yousuf et al., 2007). Due to the very many inconsistent results of the effect of feeding cassava on the growth performance of goats. This motivated the need for evaluation of the existing literature to give a summarised effect of feeding diets containing cassava on the growth performance of goats. For the evaluation, Systematic review and meta-analyze have been used since their applications in animal sciences especially in animal nutrition have been limited and mostly has been used for clinical decision making in human medicine and psychology (Sauvant et al., 2008).

Materials and methods

Data selection: Papers to be included in the database had to meet the following criteria
Papers with research concerning the effect of feeding different cassava products on production performance parameters in goats. The growth production performance, parameters of interest for analysis were ADFI, FCR, ADWG, FBW. The study being conducted in any part of Africa. These papers described the standard error of the mean (SEM) or the standard deviation. Published between 2005 – 2021 and in English. Only studies published since 2005 were selected to provide a more current assessment.

Data search

A comprehensive literature search strategy was applied. To ensure this, the equivalent of keywords and Synonyms were used to construct research strings. Equivalents/Synonyms were combined in parentheses with “OR,” “AND” boolean operators. The search strings consisted of three parts: the first search terms related to the animal species (Goat OR Small ruminant), the second to the cassava (cassava OR Manihot esculenta Crantz), the third to the different word variables that could enable us to get the results of production parameters (e.g. performance OR nutritive value OR nutritional value OR feed value OR supplement). Other important keywords that were used include; Feed intake, Weight gain, Feed conversion Ratio, Bodyweight gain, and Digestibility.

With the help of the Ege University’s library service (https://kutuphane.ege.edu.tr/tr-10842/kutuphane_veritabani_select.html), we conducted the data search and the main databases were (Wiley online library, CAB Direct, Scopus, Web of Science, Taylor and Francis, Science Direct, SpringerLink, PubMed) and other databases were used.
The reference sections of all articles which were read in full were checked for other potentially relevant publications. Additional documents were located by the Google search engine, and other independent journals were used to scan for non-indexed relevant research papers, and different authors were contacted to available some papers that could not be accessed especially using the research gate. Others were contacted to explain more about their results.

Depending on each database, predefined combinations of keywords were searched through the title, abstracts, keywords, and the entire articles. The outputs of each search were filtered to meet the specified year interval of 2005 to 2021 and the last literature search was in January 2021. The Mendeley referencing Desktop software was used to manage and catalog the literature, references, and citations.

Data extraction and screening

A database was created in MS Excel professional plus 2019 and the following were recorded.
(1) Publication identities (authors' names, year of study, country/region, name of the database)
(2) Experimental design (inclusion rate, the form of cassava product used, number of treatments, duration of the experiment, sample size),
(3) Animal identities (Animal Type/species, age),
(4) Performance variables (ADFI, g/d, FCR, ADWG,g/d, FBW, kg,) and their standard deviation and standard error of mean were recorded. Data from studies were standardized to the same unit. Where each observation in the database referred to the mean of the different treatment groups.
The main exclusion criteria were: 1) absence of a detailed description of the methodology used; 2) absence of frequency distribution values (i.e. standard error mean or standard deviation); 3) presentation of data in graphs, without averages for selected variables (ADFI, FCR, ADWG, FBW).
Outcome data were then sorted into these categories by a single reviewer and subsequently validated by a second reviewer. Discrepancies were resolved through discussion.
After entering all the papers in Ms excel, and the other required data, we further went on to assess whether the methodology being used was well anchored in the literature, the author applied a proper experimental design, data is analyzed using suitable statistical techniques, no missing values and results were accurately interpreted. Guided by these methodological needs, an overall rating of suitability of articles was assigned on a scale of 1–5, where: 1 = poor; 2 = fair; 3 = satisfactory; 4 = good; and 5 = excellent. Only articles with ratings of 3 (satisfactory) or higher were selected for the full-text review this was guided by other systematic reviews and measurement tool (Affognon et al., 2015; Shea et al., 2007). The minimum set of items for reporting in systematic reviews and meta-analyses was followed (Liberati et al., 2009) based on the PRISMA diagram (Figure 1).

Data synthesis
Effect size calculation.
The effect size was measured by Hedges' g irrespective of statistical significance of effects of the source studies to quantify differences in outcomes between control and dietary cassava treated groups (Hedges, 1981),

$\mathbf{g} = (X_t - X_c)/SD_{pooled}$ Key to symbols: g = Hedges' g effect size, X_t = mean of treatment, X_c = mean of the comparison, SD = standard deviation

$\mathbf{SD}_{pooled} = \sqrt{((n_t - 1)S^2_t + (n_c - 1)S^2_c)/ (n_c - 1)}$ Key to symbols: S^2_t = standard deviation for treatment, S^2_c = standard deviation for Control, n = number of sample size, n_c for the control and n_t for the treatment.

In a case where the standard deviation was not given, it was calculate using the SEM(Henning et al., 2020), where **STD** = SEM$\sqrt{n}$ Where = SEM= Standard error of Mean, and n =

sample size number. The Estimated effect sizes were visually displayed with forest plots at 95% CI.

Heterogeneity

The heterogeneity test was calculated by applying Cochran's $\chi 2$ test (Q-test) which is distributed as a chi-square statistic. This Q-test describes the null hypothesis that all the combined studies are equal i.e. their homogenous. The I^2 was proposed as a method to quantify heterogeneity, and it is expressed in percentage of the total variability in a set of effect sizes due to true heterogeneity, that is, between-studies variability (Higgins and Thompson, 2002). High heterogeneity was expected because data in the included involved use of different cassava products, experiments being done in different locations, different sample sizes, and different cassava inclusion rates among other factors.

The meta-analysis, subgroup analysis and sensitivity test

When data are collected from studies performed by different researchers for different programs and different populations, a random-effects model is more appropriate (Sauvant et al., 2008). Therefore, using the random-effects model, the pooled effect value of cassava on different performance parameters and the 95% confidence interval (CI) were estimated. Within the model, two sources of variability arise; sampling error and heterogeneity of the different studies (Hedges and Vevea, 1998). We assumed that sampling error was minimized by the systematic screening of articles (Affognon et al., 2015). Subgroup analysis was done to determine the source of heterogeneity, the studies were divided into groups of the same cassava products and analyzed using the random fixed model and a sensitivity analysis was done to assess the potential effect of missing experiments. The meta-analyses, the effect size, heterogeneity, CI, forest plots subgroup and sensitivity analysis were conducted using Review Manager 5.4 software (Review Manager, 2014)

Results and discussions

Profile of studies used

Through database searching we identified 1,804 articles these were reduced to 264 after elimination of the literature reviews, book chapters, duplicates, summaries, studies with other animal species, studies not done in Africa. Thereafter elimination of articles based on the title, and abstracts was done, 17 articles were finally eligible for a full reading. Furthermore, full-text articles were excluded for reasons such as no full text, no original data, data not available and parameters not recorded daily. Based on the predefined criteria for inclusion stated in the protocol 7 studies remained from which data was extracted. The detail of steps involved in study selection is depicted in the flow diagram (Fig. 1).

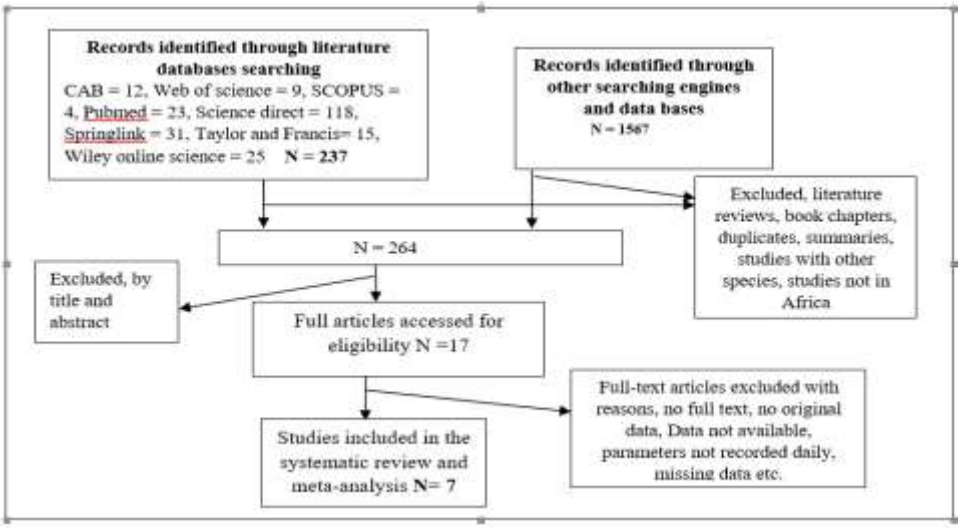


Figure 1: Flowchart of the paper search process summarizing literature selection processes.

All the eligible studies on the effect of feeding cassava in goats were tested only on one breed i.e West African Dwarf (WAD) Goat breed. Based on this information there is a need to test the effect of feeding cassava on other goat breeds, exotic breeds inclusive. 71% of the studies were conducted in Nigeria. This could be as a result of Nigeria's being the leading cassava producer in the world hence its use in the livestock industry. According to FAOSTAT, 2019, Nigeria accounted for 42% of the world's cassava production. Other countries were Sierra Leone (Akiwande et al., 2017) and Ghana (Baiden et al., 2007). The different cassava products used were the root products which accounted for 57%, these products were the CLM, CP, C. Pulp and CPM. The leaf products accounted for 43% and were the CLM and the CL products. The highest sample size was 40 (Oni et al., 2010) and the least was 12 (Baiden et al., 2007). The duration of the experiment ranged from 56 days to 180 days.

Table 1: Summary of studies used to evaluate the effects of cassava on growth performance in Goats

Study	Country	Goat breed	Cas. Form	Diet inclusion rate	N	Period
1	Nigeria	WAD	CLM	0, 25, 50, 75, 100%	20	56 days
2	Sierra Leone	WAD	CP	0%, 15% and 30%	27	180days
3	Nigeria	WAD	CL	0, 20, 40, 60 %	40	112days
4	Nigeria	WAD	CL	100, 200, 300, 400, 0 g/kg	30	16week
5	Ghana	WAD	C. Pulp	0, 15, 30%	12	9 week
6	Nigeria	WAD	CPM	0, 60, 60, 60, 60 %	40	60 days
7	Nigeria	WAD	CP	0, 4, 6, 8 %	20	12week

1,(Yousuf et al., 2007); 2,(Akiwande et al., 2017); 3,(Oni et al., 2010); 4,(Abatan et al., 2015); 5,(Baiden et al., 2007); 6,(David et al., 2020); 7,(Uza et al., 2005). N:Sample size; Cas. Form:Cassava Form; WAD:West African Dwarf Goats; CLM:Cassava Leaf Meal; CP: Cassava Peel; CL: Cassava Leaf; C.pulp: Cassava Pulp; CP: Cassava Peel; CPM:Cassava Peel Meal.

Table 2: Summarised pooled Effects of cassava feeding on the growth performance of Goats analyzed using Random fixed method.

Item	n	Summarized effect			Heterogeneity		
		Effect size 95% CI	Z value	P-value	Q statistic	T^2	I^2
ADFI	7	0.72 [-0.05, 1.48]	1.84	0.07	78.13 (P<0.00001)	0.98	92%
FCR	7	0.09 [-0.63, 0.80]	0.24	0.81	65.97(P<0.00001)	0.84	91%
ADWG	7	-0.74 [-1.76, 0.27]	1.44	0.15	117.43(P<0.00001)	1.73	95%
FBW	7	0.20 [-0.10, 0.50]	1.29	0.20	12.60 (P=0.05)	0.09	52%

Average Daily Feed Intake (ADFI), Feed Conversion Ratio (FCR), Average Daily Weight Gain (ADWG), and Final Body Weight (FBW)

Effects of cassava feeding on the growth performance of goats using a random-effect model

In this study, a comparison was made between diets with cassava and control diets without cassava to systematically and statistically summarize the effects of feeding cassava in Goats, and the studies were obtained from published literature and were centered in Africa. Therefore, when the result of the treatment group is arithmetically higher than that of the control group, a positive effect is calculated, and in the opposite case, a negative effect can be obtained.

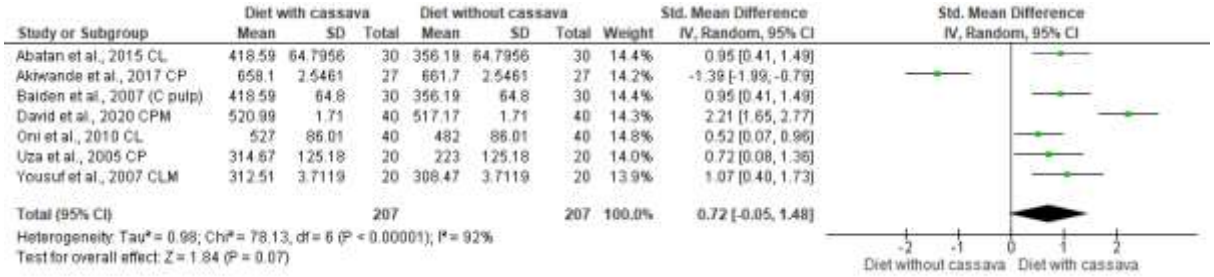


Figure 2: Effect on the Average daily feed intake (ADFI)

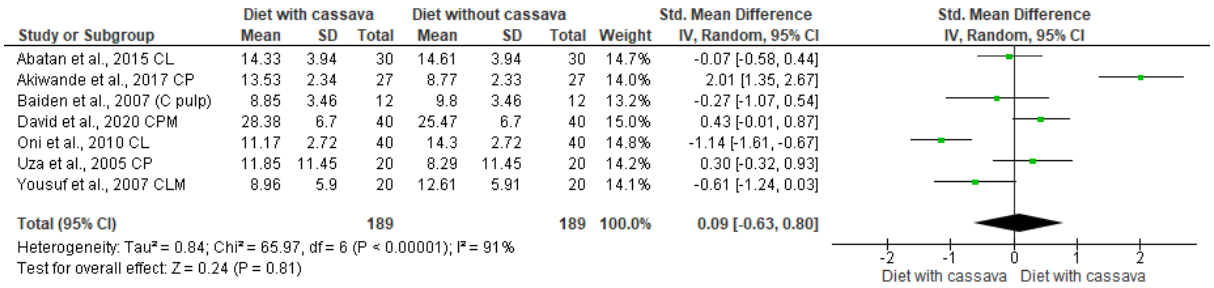


Figure 3: Effect on the Feed conversation Ratio (FCR)

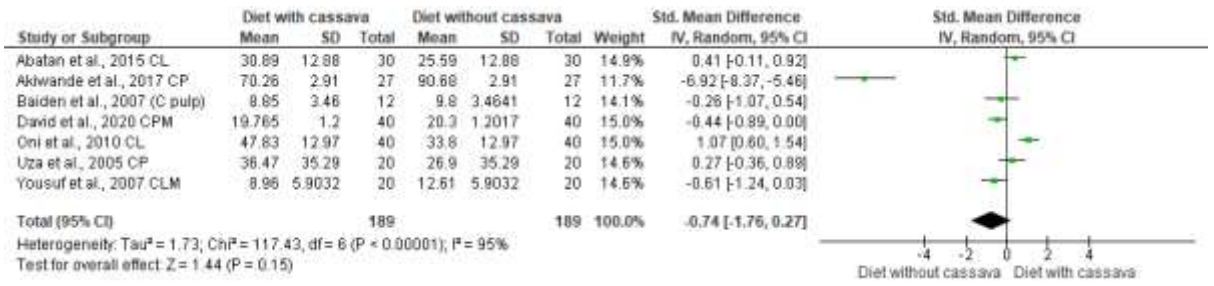


Figure 4: Effect on the Average daily body weight gain (ADWG)

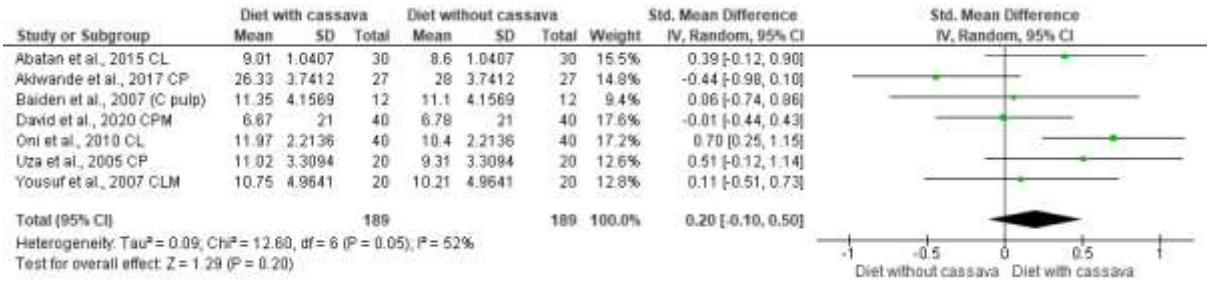


Figure 4: Effect on the final body weight (FBW)

Effect on Average Daily Feed intake

The summary effect (figure 2) on feed intake according to cassava feeding showed a positive effect and based on cohen's effect (Cohen, 1977) size categorization showed a medium effect size (0.72). Though the effect wasn't significant (p=0.07). All studies in the analysis showed a positive effect except (Akiwande et al., 2017). Regardless of whether there was a high cassava inclusion rate (Yousuf et al., 2007; Abatan et al., 2015) or low (Uza et al., 2005) in the diet results of the meta anlysis have shown a positive effect on feed intake. The increased intake in this study can be explained by the improved supply of readily available carbohydrates to the ruminal microbes probably improving the rate of degradation of the diets, microbial growth, and the fractional outflow of liquid matter from the rumen (Abatan et al., 2015). On the other hand, feed intake could be reduced due to the reduced palatability of cassava diets which is as a result of antinutritional factors content such as cyanides and tannins (Oni et al., 2010).

The significance of the Q statistic means that the studies used to calculate the summary effect do not share the same magnitude of the effect, and the Q statistic for feed intake was found to be significant ($p<0.05$). In other words, it can be seen that the magnitudes of the effects shown in each independent study are different, and the direction (definite effect or negative effect) is also different from each other. The T^2 value for feed intake was 0.98, which was relatively high compared to other results which means that the variance value of the effects on feed intake is very large. The I^2 statistic was 92% which is high. The high heterogeneity, which could partly be explained by differences in form of cassava products used, level of cassava supplementation, and few studies being included in the analysis, therefore more research is needed to be done on the utilization of cassava by small ruminants especially goats.

Effect on Average daily body weight gain (ADWG)

The summary effect on daily weight gain was -0.74 (figure 4) which was negative, but no significance was found ($p = 0.15$). The T^2 and I^2 statistics were 1.73 and 95%, respectively. The T^2 value was the highest among all items for specification performance. The results for daily weight gain are shown in Fig. 3. Only studies of Oni et al., 2010, Abatan et al., 2015, and Uza et al., 2005 showed positive effects others showed a negative effect. The negative pooled effect of ADWG on cassava feeding could be attributed to a poor FCR. For individual studies that had a positive ADWG like (Abatan et al., 2015) this weight gain could be attributed to the significant DM intake of the animals, and other factors like the high energy content and fiber values of the different cassava products, which might have contributed to the growth and feed utilization (Jiwuba and Jiwuba, 2020)

Effect on Feed conversation ratio (FCR)

The summary effect on FCR was 0.09 (Figure 3), showing relatively and slightly a positive effect but no significance was found (p=0.81), based on the results it has shown a poor FCR. All studies used in the analysis showed different magnitudes of effects. The study of (Akiwande et al., 2017) who fed cassava peels, showed remarkably high positive effects among studies in the analysis.

It appears that cassava supplementation can enhance ADFI, however, there is poor FCR which could be due to the poor nutritional value of the cassava products especially the low protein content (Ojewola et al., 2020) in roots and antinutritional factors like tannins in the leaves. Tannins tend to affect the nutritive value of ruminant feeds by reducing voluntary feed intake and digestibility (Oni et al., 2010). Hence the need to study for a better protein supplement in the cassava root diets and better application of detoxification methods. The poor FCR also explains the negative effect on the ADWG. For example, Akiwande et al., 2017, reported higher final live weight gain and a better FCR value were obtained in does fed 0% level of replacement of maize with sun-dried cassava peel compared to the 15 and 30% replacement levels.

Effect on the final body weight (FBW)

The effect of feeding cassava on final weight was 0.20 (figure 4), which was a positive effect, but no significance was found (p=0.20). The T^2 and I^2 statistics were 0.09 and 52%, respectively. It's only with the FBW that has shown moderate heterogeneity, while other parameters have shown considerable and substantial heterogeneity. The heterogeneity, which could partly be explained by differences in form of cassava products used and the level of cassava supplementation. The results for the final weight are shown in Figure 4. Except for the study of Akiwande et al., 2017 and (David, et al., 2020), other studies showed a positive effect. This positive effect could be explained by the high energy content and fiber of the root products for better growth and feed utilization for the goat (Jiwuba & Jiwuba, 2020). In addition to the high protein content of the leaves that can provide essential nitrogen and mineral elements both for effective rumen function and body metabolism by animals (Yousuf et al., 2007). Also, Yousuf et al., 2007, showed that there were high nitrogen retention values obtained with diets that had CLM which was positively translated into improved body weight gain hence increased final body weight.

Sub-group analysis and sensitivity test

We observed that all studies have shown considerable and substantial heterogeneity except the final bodyweight that shown moderate heterogeneity. There are many reasons for this high variability in heterogeneity. When there is high heterogeneity, there is a need to classify studies into subgroups based on common identities (Barendregt et al., 2013)**.** Therefore, meta-analyses should carefully evaluate the appropriateness of available studies and guide against combining those that have different outcomes (Israel and Richter, 2011)**.**

Table 3: Subgroup analysis of the effect of feeding cassava in goats

								Test for subgroup differences	
Item	n	**Effect size 95% CI**	**Z value**	**P value**	**Q statistic**	**T^2**	**I^2%**	**Q statistic**	**I^2%**
FBW									
CLP	3	0.45 [0.12, 0.78]	2.67	0.008	2.40 (P=0.30)	0.02	18	3.07 (P=0.08)	67.4
CRP	4	0.00 [-0.37, 0.38]	0.01	0.99	5.03 (P=0.17)	0.06	40		
ADFI									
CLP	3	0.62 [-0.84, 2.09]	0.84	0.40	75.56 (P<0.00001)	2.14	96	0.04 (P=0.83)	0
CRP	4	0.79 [0.45, 1.13]	4.54	(P<0.00001)	2.42(P=0.17)	0.02	17		
FCR									
CLP	3	-0.61 [-1.27, 0.05]	1.81	P=0.07	9.14 (P=0.01)	0.26	78	5.03(P=0.02)	80.1
CRP	4	0.63 [-0.23, 1.49]		P= 0.15	23.20(P<0.00001)	0.66	87		
ABWG									
CLP	3	-0.74 [-1.76, 0.27]	0.67	P=0.50	17.35(P=0.00002)	0.57	88	3.63(P=0.06)	72.5%
CRP	4	-1.69 [-3.54, 0.16]	1.79	P=0.07	80.74 (P<0.00001)	3.34	96		

CLP = Cassava leaf product :(Oni et al., 2010), (Abatan et al., 2015), (Yousuf et al., 2007);
CRP = Cassava root product:(Akiwande et al., 2017), (Baiden et al., 2007), (David, Oyewole, et al., 2020) (Uza et al., 2005). n; number of studies.

Subgroup analysis (table 3) was done to assess the source of heterogeneity and groups were divided according to the cassava product form and it was found out that only with FBW showed low heterogeneity between the two formed groups however with other groups the heterogeneity remained considerable and substantial meaning there other unexplained sources of heterogeneity such as different inclusion rates. The test for subgroup differences indicates that there is only one statistically significant subgroup effect only in FCR groups (P=0.02). Meaning cassava product significantly modifies the effect of diets without cassava in comparison with diets that contain cassava, whereas others are statistically non-significant.

When a sensitivity analysis was done by removing and adding studies using the Revman software to assess the potential effect of missing experiments in the calculation of the pooled effect and resulted in no greater effect on the final pooled effect. Publication bias wasn't done since testing for publication bias in the presence of heterogeneity is inappropriate, and may lead to false-positive claims (Ioannidis and Trikalinos, 2007).

Conclusion

In general, the effects of feeding cassava on growth performance in goats were further understood by this systematic review and meta-analysis and has shown a useful and a growing technique for evaluating, summarizing and interpreting results in the fields of animal science even though the number of included studies was not great, especially considering the large number of factors that influenced the results. The results also show the need of testing the effect of feeding cassava on other African and exotic goat breeds other than the WADG. In addition, more research is needed to improve the efficiency of cassava utilization in Goats for commercial use.

References

Abatan, O., Oni, A. O., & Adebayo, K. (2015). Effects of supplementing cassava peels with cassava leaves and cowpea haulms on the performance , intake , digestibility and nitrogen utilization of West African Dwarf goats. *Trop Anim Health Prod (2015)*, *47*(1), 123–129. https://doi.org/10.1007/s11250-014-0695-1

Affognon, H., Mutungi, C., Sanginga, P., & Borgemeister, C. (2015). Unpacking Postharvest Losses in Sub-Saharan Africa : A Meta-Analysis. *World Development*, *66*, 49–68. https://doi.org/10.1016/j.worlddev.2014.08.002

Akiwande, B., Kanu, S., & Sesay, A. R. (2017). Response of Pregnant and Lactating West African Dwarf Goats to Dietary Replacement of Maize with Sun-Dried Cassava Peels. *Imperial Journal of Interdisciplinary Research (IJIR*, *3*(8), 53–59. https://www.onlinejournal.in/IJIRV3I8/010.pdf

Baiden, R. Y., Rhule, S. W. A., Otsyina, H. R., Sottie, E. T., & Ameleke, G. (2007). Performance of West African Dwarf sheep and goats fed varying levels of cassava pulp as a replacement for cassava peels. *Livestock Research for Rural Development*, *19*(3), 35. http://www.lrrd.org/lrrd19/3/baid19035.htm

Barendregt, J. J., Doi, S. A., Lee, Y. Y., Norman, R. E., & Vos, T. (2013). Meta-analysis of prevalence. *Journal of Epidemiology and Community Health*, *67*(11), 974–978. https://doi.org/10.1136/jech-2013-203104

Chiwona-Karltun, L., Nyirenda, D., Mwansa, C. N., Kongor, J. E., Brimer, L., Haggblade, S., & Afoakwa, E. O. (2015). Farmer Preference, Utilization, and Biochemical Composition of Improved Cassava (Manihot esculenta Crantz) Varieties in Southeastern Africa. *Economic Botany*, *69*(1), 42–56. https://doi.org/10.1007/s12231-015-9298-7

Cohen, J. (1977). Statistical power analysis for the behavioral sciences. In *Journal of Materials Processing Technology, 19-74*.

David, A. A., Osigbodi, O. B., Oluwatoyin, A. S., & Peter, S. (2020). Performance of West African dwarf goats fed cassava peels treated with nitrogen sources. *GSC Biological and Pharmaceutical Sciences*, *10*(01), 9–12.

David, A. A., Oyewole, B. O., Aribido, S. O., & Oyibo, A. (2020). Nutrient intake of West African dwarf (WAD) goats fed cassava peels supplemented with nitrogen sources. *GSC Biological and Pharmaceutical Sciences*, *12*(1), 189–195. https://doi.org/10.30574/gscbps.2020.12.1.0214

FAOSTAT. (2019). (Food and Agriculture Organization of the United Nations). *Accessed on Febraury 02, 2021. Http://Www.Fao.Org/Faostat/En/#data*.

Hedges, L. V. (1981). Distribution Theory for Glass's Estimator of Effect size and Related Estimators. *Journal of Educational Statistics*, *6*(2), 107–128. https://doi.org/10.3102/10769986006002107

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and Random-Effects Models in Meta-Analysis. *Psychological Methods*, *3*(4), 486–504. https://doi.org/10.1037/1082-989X.3.4.486

Henning, P., Kaloyan, K., Christian, K., & Damgaard, F. (2020). The effect of Bt crops on soil invertebrates : a systematic review and quantitative meta-analysis. *Transgenic Research*, *29*(5), 487–498. https://doi.org/10.1007/s11248-020-00213-y

Higgins, J. P. T., & Thompson, S. G. (2002). Quantifying heterogeneity in a meta-analysis.

Statistics in Medicine, *21*(11), 1539–1558. https://doi.org/10.1002/sim.1186

Ioannidis, J. P. A., & Trikalinos, T. A. (2007). The appropriateness of asymmetry tests for publication bias in meta-analyses: A large survey. *Cmaj*, *176*(8), 1091–1096. https://doi.org/10.1503/cmaj.060410

Israel, H., & Richter, R. R. (2011). A guide to understanding meta-analysis. *Journal of Orthopaedic and Sports Physical Therapy*, *41*(7), 496–504. https://doi.org/10.2519/jospt.2011.3333

Jiwuba, P. C., & Jiwuba, L. C. (2020). Productive and physiological response of small ruminants fed Cassava (Manihot esculenta Crantz) and cassava by-products in their diets : A review. *Zhivotnovadni Nauki*, *57*(2), 17–31.

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., Clarke, M., & Devereaux, P. J. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions : explanation and elaboration. *Journal of Clinical Epidemiology*, *62*(10), e1-e34. https://doi.org/10.1016/j.jclinepi.2009.06.006

Matovu, J., Matovu, H., Magala, J., & Tainika, B. (2020). Ethno Medicinal Plants Used in the Management of Cattle Helminths in Kyanamukaaka Sub County , Uganda. *EAS Journal of Veterinary Medical Science*, *1881*(3), 18–26. https://doi.org/10.36349/easjvms.2020.v02i03.01

Muwanika, V. B., Nsubuga, D., Nampanzira, D. K., Kabi, F., & Masembe, C. (2019). Sedentarization among nomadic pastoralists of Uganda: which way to feed livestock? *Agroforestry Systems*, *93*(6), 2037–2046. https://doi.org/10.1007/s10457-018-0308-5

Ojewola, G., Unah, U., Baraza, D., Adedokun, O., & Onabanjo, R. (2020). Chemical composition and nutrient digestibility of umucass 36 cassava root meal by indigenous grower turkeys. *International Journal of Veterinary Sciences and Animal Husbandry*, *5*(2), 36–40.

Oni, A. O., Arigbede, O. M., Oni, O. O., Onwuka, C. F. I., Anele, U. Y., Oduguwa, B. O., & Yusuf, K. O. (2010). Effects of feeding different levels of dried cassava leaves (Manihot esculenta , Crantz) based concentrates with Panicum maximum basal on the performance of growing West African Dwarf goats. *Livestock Science*, *129*(1–3), 24–30. https://doi.org/10.1016/j.livsci.2009.12.007

Oppong-Apane, K. (2013). Cassava as animal feed in Ghana: Past, present and future. *Edited by Berhanu Bedane, Cheikh Ly and Harinder P.S. Makkar, FAO, Accra, Ghana.*

Parfitt, J., Barthel, M., & Macnaughton, S. (2010). Food waste within food supply chains : quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society B: Biological Sciences*, *365*(1554), 3065–3081. https://doi.org/10.1098/rstb.2010.0126

Review Manager, (RevMan). (2014). The Nordic Cochrane Centre, The Cochrane Collaboration,. *Version 5.4. Copenhagen: The Nordic Cochrane Centre, The Cochrane Collaboration*.

Sauvant, D., Schmidely, P., Daudin, J. J., & St-Pierre, N. R. (2008). Meta-analyses of experimental data in animal nutrition. *Animal*, *2*(8), 1203–1214. https://doi.org/10.1017/S1751731108002280

Shea, B. J., Grimshaw, J. M., Wells, G. A., Boers, M., Andersson, N., Hamel, C., Porter, A. C., Tugwell, P., Moher, D., & Bouter, L. M. (2007). Development of AMSTAR: A

measurement tool to assess the methodological quality of systematic reviews. *BMC Medical Research Methodology*, *7*, 1–7. https://doi.org/10.1186/1471-2288-7-10

Sugiharto, S. (2019). A review on fungal fermented cassava pulp as a cheap alternative feedstuff in poultry ration. *Journal of World's Poultry Research*, *9*(1), 1–6. https://doi.org/10.36380/jwpr.2019.0

Uza, D., Barde, R., & Ayoade, J. (2005). The effect of urea treated cassava peels as supplement to West African Dwarf (WAD) goats grazing natural pasture. *Nigerian Veterinary Journal*, *26*(1), 1-9.

Yousuf, M. B., Belewu, M. A., GBADAMOSIP, A., & Ogudun, N. I. (2007). Replacing Cotton Seed Cake with Cassava Leaf Meal in corn based diets to fed the Goat. *Bulgarian Journal of Agricultural Science, 13*, 231-236.

CAN AGRICULTURAL DROUGHT BE PREVENTED OR IS IT THE INEVITABLE END?

Duran Yavuz
https://orcid.org/0000-0001-9574-6929
Nurcan Yavuz
https://orcid.org/0000-0003-1833-0668
Selcuk University, Konya, Turkey

Abstract
Global climate change and drought increase the pressure on water resources with the increasing world population. Turkey's average annual rainfall is 643 mm; however, the distribution of precipitation by regions is not homogeneous. Although there are regional differences, arid and semi-arid climate prevails throughout the country. The amount of water per person is 1350 m^3/year and it is among the countries with water shortage. 77% of the available water resources are used in agriculture, 23% in domestic consumption and industry. Agricultural production is insufficient to meet the increasing food need; this leads researchers to work on getting maximum efficiency from unit area.

The Konya Plain has an annual precipitation of 323 mm and a semi-arid climate with limited water resources. It constitutes about 8% of available arable lands of Turkey. Konya provides alone 10% of wheat production, 14% of barley production, 32% of sugar beet production, 22% of corn production, 12% of potato production, 22% of dry legumes production, 15% of sunflower production, 64% of carrot production, and 8.5% of melon production in Turkey.

Most of 4.5 billion cubic meters of water, which is the annual available water amount, is used for agricultural irrigation in Konya; an important part of this water is met from underground water resources. In this study, the total irrigation water needs of plants grown in the region such as sugar beet, corn, potato, sunflower, melon, watermelon and confectionary pumpkin were calculated under full and deficit irrigation conditions. For this purpose, the total irrigation water needs under full and deficit irrigation conditions were calculated using the production amounts of these plants and the irrigation water use efficiency data obtained from previous studies. The results found were also compared with farmer practices and it was concluded that farmers growing sugar beet and maize used 35% more irrigation water on average as a result of these comparisons. If programmed irrigation is implemented in all of irrigated agriculture areas in Konya, more than 1 billion m^3 of water can be saved annually and new areas can be opened to irrigation with this water to be saved. Also, with deficit irrigation practices, much higher of 1billion m^3 water savings can be achieved and the pressure of agricultural drought on water resources can be reduced.

Keywords: Agricultural drought, Irrigation water requirement, Programmed irrigation

Introduction

Natural resources, which are insufficient to meet the needs of the increasing world population, increase their importance with the effect of climate change and drought. Since precipitation is not homogeneous in the world, water resources are not evenly distributed. According to the annual average rainfall, some regions are arid, semi-arid and some regions are humid. In arid and semi-arid regions, most of the plant water needs are compensate by irrigation. Producers who cannot reach sufficient water resources for agricultural production use groundwater; this rapidly consumes water reserves.

Turkey's average annual rainfall is 643 mm. Although there are regional differences, the dry and semi-arid climate prevails throughout the country. The amount of water per capita is 1350 m^3/year and it is among the countries with water shortage. Today of the water used, 44 billion m^3 (77%) is used in agriculture, 13 billion m^3 (23%) is used for industrial and domestic consumption. Although most of the available resources are used in agriculture, most of the irrigable lands still cannot be irrigated. In order to ensure the open of these areas to irrigated agriculture, alternative water resources should be found or plants that consume much less water should be grown. If the amount of water delivered to the plant root area is increased by increasing irrigation efficiency with effective water use and correct water management; more areas can be irrigated with the same water. This will increase the yield per unit area.

Agricultural production in the Konya Plain, which has an arid and semi-arid climate, is of great importance for the country. Many products grown in the region, is ranked first in Turkey's total production volume. In recent years, when climate change and drought have increased their impact, researchers have been working on breeding drought-resistant varieties. In particular, full and deficit irrigation programs are implemented on plants that use a large part of the water resources in the region, and ways are sought to increase the yield in drought conditions. In this study, with the data obtained from the water-yield relationship studies we conducted on plants with large cultivation areas in the region, it was determined how much water can be saved from the amount of water used under current conditions; solution suggestions have been presented to manage the agricultural drought.

Climate characteristics, water availability and agricultural structure of Konya province

Konya has 8.15% of the country's agricultural land assets. The amount of rainfall in Konya, which has the characteristics of arid and semi-arid climate, is 323 mm according to the average of long years. However, only 90-100 mm of annual precipitation falls during the growing period of the plant. High temperatures seen in the summer increase the amount of evaporation (Fig.1). In June-July-August-September, when the plants need the most water, precipitation is at minimum level, while evaporation reaches maximum levels (Fig.2). This deficit is covered by irrigation, which also puts pressure on the decreasing water resources due to insufficient rainfall. Thus, the agricultural drought that occurs after the meteorological drought brings along hydrological drought.

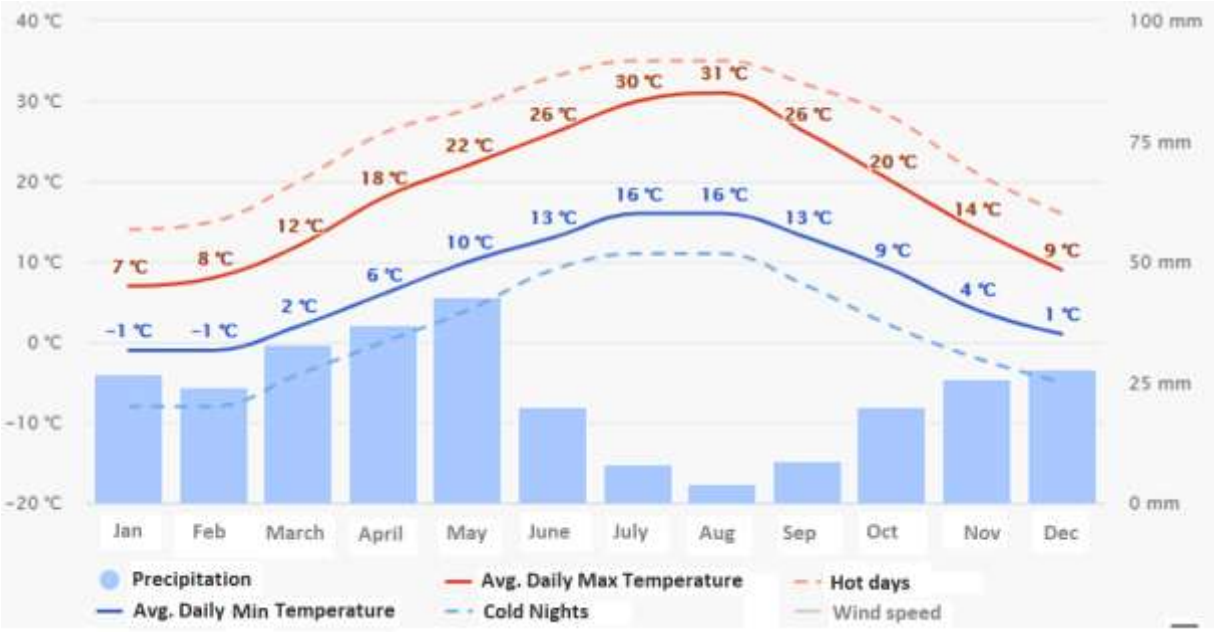


Fig.1. Change in temperature and precipitation regime by months in Konya

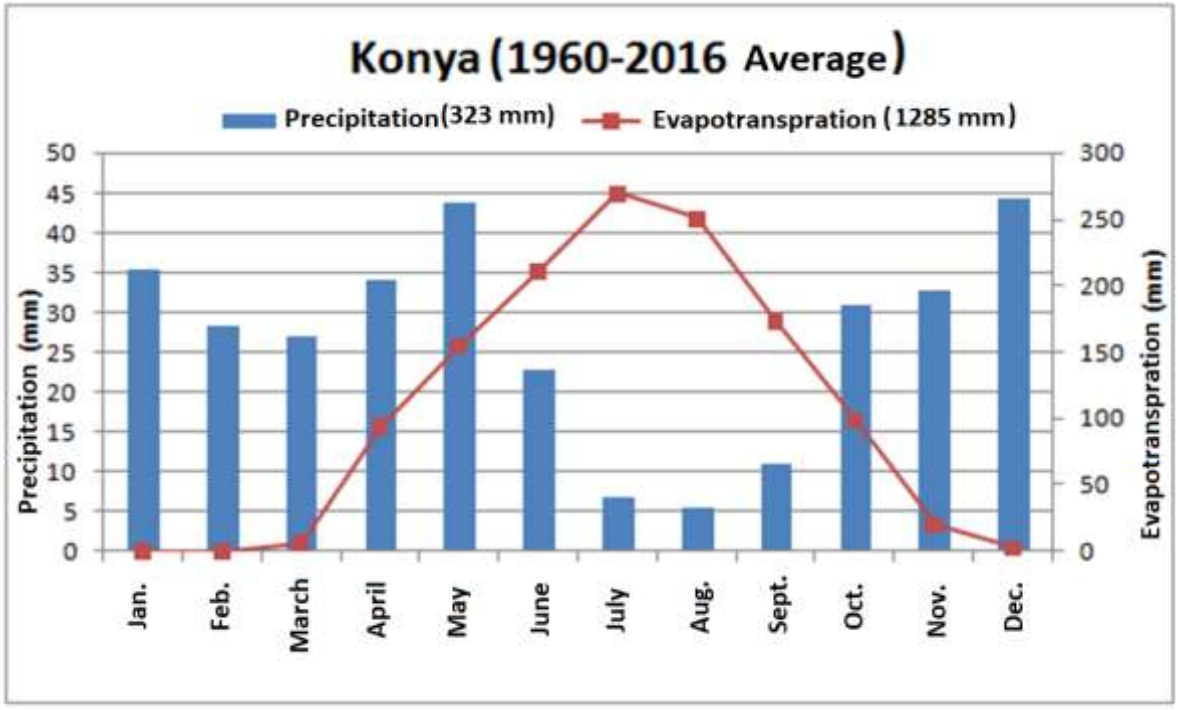


Fig.2. Change in evaporation and precipitation regime by months in Konya

The agro-land of Konya is 1890829 ha (Table 1). Total water requirement of Konya plain is 12 billion m^3/year. Konya's surface water resources amount to 2.94 billion m^3, groundwater resources are 1.5 billion m^3, and the total water asset is 4.5 billion m^3. Most of the annual available water amount is used for agricultural irrigation in Konya; in areas where this water is insufficient, groundwater is provided from illegal wells. However, it is not officially known how much water illegal wells consume. Excessive water withdrawal causes the groundwater level to decrease approximately 1m each year in the Konya Basin. Renewal of groundwater,

which should be preserved as water reservoirs in regions experiencing water scarcity, is rather slow. For this reason, its consumption at this rate increases the scale of the problems to be experienced during periods of increased drought.

Table 1. Land asset and agricultural land use (ha) (2018)

	Area	Agricultural Field	Forest	Meadow-Pasture	Other
Konya	4 083 800	1 890 829	492 857	816 444	888 343
Turkey	78 004 300	23 199 946	22 342 935	14 617 000	17 668 577
Konya/TR	**5.20%**	**8.15%**	**2.20%**	**5.60%**	**5.00%**

	Agricultural Field	Field Crops	Fallow	Vegetables	Fruit	Ornamental Plants
Konya	1 890 829	1 423 737	383 502	30 022	53 484	83
Turkey	23 199 946	15 435 979	3 512 773	783 632	3 462 387	5 174
Konya/TR	**8.15%**	**9.22%**	**10.92%**	**3.83%**	**1.54%**	**1.61%**

In Turkey; Konya provides alone 10% of wheat production, 14% of barley production, 32% of sugar beet production, 22% of corn production, 12% of potato production, 22% of dry legumes production, 15% of sunflower production, 65% of carrot production and 8.5% of melon production.

Water-yield relationship studies in some plants in Konya

Determining the water-yield relationships of the plants grown in large areas of the region is extremely important in terms of efficient water use. Using these data, appropriate irrigation programs should be prepared and the seasonal water need of the region should be calculated. If the planning of water resources is made using real figures obtained in land conditions, projects that are put into practice will result in a positive result. In this context; the plant water use was evaluated using the data obtained from the field studies we personally participated in. Brief summaries of the studies, each conducted in Konya climate and soil conditions, are respectively shared.

The Konya plain is one of the important regions for sugar beet production in Turkey. There may be two solutions to decrease agricultural water consumption. One of them is to grow crops which require less water, the other is to increase the water use efficiency. Because of its importance for regional farmers and Turkey economy, it is very difficult to grow crops which require less water instead of sugar beet.

As a result of our work on different row spacing and lateral spacing; it is found that when irrigation water amount increased, the root, sugar and reduced sugar yield increased, although there were differences between treatments which water was supplied when %50 available water content was consumed and %30 available water content was consumed, generally the effects of available water consumption percentage level (%50, %30) has minor effect on root, sugar and reduced sugar yield, irrigation water use efficiency and water use efficiency were high on the treatments where the irrigation water supplied less relatively. While the amount of irrigation water applied to the full irrigated treatment is 879 mm, the amount of irrigation water applied to the treatment where approximately 20% water is saved is 712 mm. The irrigation water use efficiency of the treatment is 7.62, 8.56 kg/m^3, respectively (Süheri et al., 2011).

This study was conducted to determine the effects of different plant and lateral spacing and wetted area percentage on maize yield and water use. According to results, maximum yield was obtained from the same treatment with 1507.4 kg/da and 1484.8 kg/da for both years. While the amount of irrigation water applied to the full irrigated treatment is 810 mm, the amount of irrigation water applied to the treatment where approximately 20% water is saved is 657 mm. The irrigation water use efficiency of the treatments is respectively 1.72, 1.94 kg/m^3 (Şahin et al., 2015).

In this study, different irrigation intervals (S) and crop-pan coefficients (Kcp) were used in drip irrigation of sunflower plants (Fig.3). The primary objective was to determine the effects of irrigation levels and intervals on yield and quality parameters of sunflower plants. Therefore, for optimum seed yields from sunflower plants grown in Konya plain, irrigation intervals should not exceed 10 days. Also, crop-pan coefficient should be taken as 1.00 for high seed yields. The average yield response factor (ky) was identified as 1.14. Since the value is greater than 1, it was concluded that sunflower plants were sensitive to water deficits under Konya conditions. While the amount of irrigation water applied to the full irrigated treatment is 574 mm, the amount of irrigation water applied to the treatment where approximately 20% water is saved is 458 mm. The irrigation water use efficiency of the treatments is respectively 0.88, 0.90 kg/m^3 (Yavuz et al., 2019).

Fig.3. A view from the sunflower trial field (Original; Yavuz, 2016)

This study was conducted to determine the effects of different lateral spacing and wetting factors on the yield and yield components of potato (Fig.4). The results showed that the total amounts of applied irrigation water ranged from 297 to 625 mm and from 288 to 598 mm in 2008 and 2009, respectively. Considering the average yields for the two years, the highest tuber yield (50.87 t ha^{-1}) was obtained from the full irrigation treatment. While the amount of irrigation water applied to the full irrigated treatment is 612 mm, the amount of irrigation

water applied to the treatment where approximately 20% water is saved is 484 mm. The irrigation water use efficiency of the treatments is respectively 8.31, 10.30 kg/m^3 (Yavuz et al., 2012; Yavuz et al., 2016a; Yavuz et al., 2016b).

Fig.4. A view from the potato trial field (Original; Yavuz, 2011)

This research was conducted in Kaşınhanı/Konya under field conditions. As a result of the study, the irrigation amounts depending on the treatments were ranged between 531 and 1195 mm, seasonal crop evaporations were ranged between 776 and 1331 mm. It is found that irrigation intervals, lateral spacing and irrigation water amount effected to carrot yield and yield parameters. The highest yield was obtained from the full irrigated treatment where irrigation interval, lateral spacing were 5 day, 40 cm respectively with 7216 kg/da yield. While the amount of irrigation water applied to the full irrigated treatment is 1195 mm, the amount of irrigation water applied to the treatment where 23% water is saved is 921 mm. The irrigation water use efficiency of the treatments is respectively 6.04, 6.92 kg/m^3 (Kutlar Yaylalı et al., 2016).

This study was conducted to determine the effects of the different irrigation in various growth stages on yield and yield components of the melon (*Cucumis melo* L.). As a result of the study, seasonal evapotranspiration of the treatments were ranged between 129.7 and 418.5 mm in 2016, 161.8 and 428.6 mm in 2017. In both trial years, the highest fruit yield (5287 kg/da) was obtained from VÇM treatment which is full irrigated at every stage and this treatment differentiated from other treatments statistically. While the amount of irrigation water applied to the full irrigated treatment is 329 mm, the amount of irrigation water applied to the treatment where 18% water is saved is 270 mm. The amount of irrigation water applied to the fully irrigated subject was 329 mm while the irrigation water applied to the subject with

limited irrigation was 270 mm. The irrigation water use efficiency of the treatments is respectively 13.51, 10.83 kg/m^3 (Yavuz et al., 2021).

This study aimed to determine yield and quality parameters of watermelon grafted on different rootstocks under deficit irrigation. As a result of the study, seasonal evapotranspiration of the treatments were ranged between 160 and 636 mm in 2017, 125 and 596 in 2018. The highest fruit yield was obtained from the plant grafted on TZ148 and kcp 1.00 treatments with 9345.6 kg/da. While the amount of irrigation water applied to the full irrigated treatment is 564 mm, the amount of irrigation water applied to the treatment where 24% water is saved is 429 mm. The irrigation water use efficiency of the treatments is respectively 11.7, 13.4 kg/m^3 (Yavuz et al., 2020).

Confectionary pumpkin (Cucurbita pepo L.) is one of the important snacks preferred by consumers in Turkey due to its higher nutrient contents. This study was conducted to determine the effects of different irrigation intervals (S) and irrigation levels (I) on the seed yield and yield components of drip-irrigated confectionary pumpkin under the Middle Anatolian climatic conditions in Konya, Turkey. Seasonal plant water consumption or actual evapotranspiration (ETa) of irrigation treatments varied from 194.2 to 660.2 mm in 2013 and from 208.6 to 629.6 mm in 2014. Seed yields were significantly affected in a linear relationship by the amount of irrigation water and evapotranspiration in both the years. While the amount of irrigation water applied to the full irrigated treatment is 530 mm, the amount of irrigation water applied to the treatment where 18% water is saved is 437 mm. The irrigation water use efficiency of the treatments is respectively 0.24, 0.27 kg/m^3 (Yavuz et al., 2015a; Yavuz et al., 2015b).

The scenario for the total amount of irrigation water for scheduled irrigation using the irrigation water use yields obtained from my studies and the crop production amounts for 2019 (TUIK, 2021) is given in Table 2.

The cultivation areas of the plants on which we work on water-yield relationships constitute a large part of irrigated agriculture areas in Konya. If programmed irrigation is done for all of plants such as sugarbeet, maize, sunflower, potato, carrot, melon, watermelon and pumpkin in Konya, the total amount of water consumed will be approximately 2.07 billion cubic meters. However, as a result of the examinations and measurements we made on the farmer lands engaged in sugar beet and maize cultivation, it was determined that the farmers used 35% more irrigation water and it was estimated that the same rate of extra irrigation water was used in other plants. The total amount of irrigation water used in these plants under farmer conditions is estimated to be approximately 2.79 billion cubic meters (Table 2). This amount constitutes 62% of the annual available water amount (4.5 billion m3) of Konya.

Table 2. The scenario for the total amount of irrigation water under scheduled irrigation in some plants in Konya

Plants	Irrigation water requirement (mm)	IWP (kg/m^3) 1*	Production (tons) 2*	Water use under scheduled irrigation (m^3) 3* [(2*x1000)/1*]	Total water use under farmers conditions (m^3) 4* [3*x 1.35]	Water usage per unit product (lt/kg) 5* [1000/1*]
Sugar beet	879	7.62	5,875,116	771,012,598	1,040,867,008	131
Maize	810	1.72	1,345,064	782,013,953	1,055,718,837	581
Sunflower	574	0.88	298,674	339,402,273	458,193,068	1136
Potato	612	8.31	599,699	72,165,945	97,424,025	120
Carrot	1195	6.04	425,241	70,404,139	95,045,588	166
Melon	329	13.51	146,827	10,868,024	14,671,832	74
Watermelon	564	11.7	81,299	6,948,632	9,380,654	85
Pumpkin	530	0.24	4,468	18,616,667	25,132,500	4167
Total				**2,071,432,231**	**2,796,433,512**	

If programmed irrigation was applied in all irrigated agricultural areas of Konya, more than 1 billion m^3 of water could be saved and new areas could be opened to irrigation with this water. On the other hand, this water to be saved is more than twice the water to be transported to the region through the blue tunnel, which is an important project for Konya. In addition, with this water to be saved in agriculture, the domestic and industrial water need of Konya for 10 years will be met. In this scenario, the amount of irrigation water given under the conditions that the plant water needs are fully met has taken into account. With deficit irrigation practices, much higher rates of water savings can be achieved and the pressure of agricultural drought on water resources can be reduced.

In order to produce the same amount of product, the total amount of irrigation water needed under deficit irrigation conditions have been calculated (Table 3). In this scenario, while saving 10% in total water use compared to scheduled irrigation under limited irrigation conditions, savings of 33% can be achieved compared to farmer practices. All these calculations show that if the results of the experiments are put into practice, a large amount of water can be saved and the effects of climate change on agricultural production can be felt less.

Table 3. The scenario for the total amount of irrigation water under deficit irrigation in some plants in Konya

Plants	Irrigation water requirement (mm)	IWP (kg/m^3) 1*	Production (tons) 2*	Water usage under deficit irrigation (m^3) 3* [(2*x1000)/1*]	Water use under scheduled irrigation (m^3)	Total water use under farmers conditions (m^3)
Sugar beet	712	8.56	5,875,116	686,345,327	771,012,598	1,040,867,008
Maize	657	1.94	1,345,064	693,331,959	782,013,953	1,055,718,837
Sunflower	458	0.90	298,674	331,860,000	339,402,273	458,193,068
Potato	484	10.30	599,699	58,223,204	72,165,945	97,424,025
Carrot	921	6.92	425,241	61,451,012	70,404,139	95,045,588
Melon	270	10.83	146,827	13,557,433	10,868,024	14,671,832
Watermelon	429	13.4	81,299	6,067,090	6,948,632	9,380,654
Pumpkin	437	0.27	4,468	16,548,148	18,616,667	25,132,500
Total				**1,867,384,172**	**2,071,432,231**	**2,796,433,512**

Conclusion

Today, about 77% of the water used in Turkey are used in agriculture. The drought, which has reached enormous dimensions in a significant part of our country with the effect of climate change in recent years, has adversely affected both underground and surface water resources. On the other hand, industrial use and urban drinking water requirements in these regions have led to a great competition on water resources. Excessive use of water in agriculture both cause the waste of scarce water resources and cause more energy to be used in the transmission and application of water to the land to be irrigated. In order to reduce the negative effects of drought on water resources, efficient water use in agriculture should be ensured. In this context;

- Considering previous scientific studies in arid and semi-arid regions with scarce water resources, deficit irrigation opportunities should be investigated,

- Pressurized irrigation systems with high water application efficiency in the field should be used,

- Irrigation systems should be designed and operated taking into account climate, soil, topography and plant characteristics,

- Appropriate irrigation programs should be made in irrigation fields,

The quality of the irrigation water should be preserved, so groundwater and groundwater contamination should be prevented,

It should be ensured that alternative water resources (waste water, rainwater harvest) are used in agriculture,

- By changing the existing irrigation water pricing policies, water charges should be priced per unit volume instead of unit area,

-Farmers should be informed about scheduled irrigation.

References

Kutlar Yaylalı, İlknur. Yavuz, Duran. Yavuz, Nurcan. 2016. The effects of different lateral spacing and irrigation programs on yield and quality of drip-irrigated Carrot. Project Number:14401017Selcuk University BAP

Şahin, Mehmet. Süheri, Sinan. Yavuz, Duran. 2015. The effect of different plant row and lateral spacing on yield and water use efficiency in corn that irrigated with drip irrigation. Project no: 09401066 Selcuk University BAP

Süheri, Sinan. Şahin, Mehmet. Değer, Tamer. Üstündağ, Aslan. 2011. The effect of the different drip irrigation desıgn and water applıcatıon on sugar beet yield and quality. Project No: 108O517

TÜİK, 2021. http://www.tuik.gov.tr, (Accessed date:18.02.2021)

Yavuz, Duran. 2011. Patates Tarımında Farklı Sulama Yöntemlerinin Su Kullanımı, Verim ve Enerji Tüketimi Yönünden Karşılaştırılması. Doktora tezi, Selcuk Üniversitesi, Fen Bil. Enst. p, 119. Konya

Yavuz, Duran. Kara, Mehmet. &Suheri, Sinan. 2012. Comparison of different irrigation methods in terms of water use and yield in potato farming. J. Selcuk Univ. Nat. Appl. Sci, 2, 1-12.

Yavuz, Duran. Seymen, Musa. Süheri, Sinan. Yavuz, Nurcan. Türkmen, Ö.&Kurtar, E. Sait. 2020. How do rootstocks of citron watermelon (Citrulluslanatus var. citroides) affect the yield and quality of watermelon under deficit irrigation? Agricultural Water Management, 241, 106351.

Yavuz, Duran. Seymen, Musa. Yavuz, Nurcan. Çoklar, Hacer. &Ercan, Muhammet. 2021. Effects of water stress applied at various phenological stages on yield, quality, and water use efficiency of melon. Agricultural Water Management, 246, 106673.

Yavuz, Duran. Seymen, Musa. Yavuz, Nurcan.&Türkmen, Önder. 2015a. Effects of irrigation interval and quantity on the yield and quality of confectionary pumpkin grown under field conditions. Agricultural Water Management, 159, 290-298.

Yavuz, Duran. Süheri, S. & Yavuz, Nurcan. 2016b. Energy and water use for drip-irrigated potato in the Middle Anatolian region of Turkey. Environmental Progress & Sustainable Energy, 35(1), 212-220.

Yavuz, Duran. Yavuz, Nurcan.&Süheri, Sinan. 2016a. Design and Management of a Drip Irrigation System f or an Optimum Potato Yield.

Yavuz, Duran., Yavuz, N., Seymen, M., & Türkmen, Ö. 2015b. Evapotranspiration, crop coefficient and seed yield of drip irrigated pumpkin under semi-arid conditions. Scientia Horticulturae, 197, 33-40.

Yavuz, Nurcan. 2016. Farklı sulama aralığı ve kısıtlı sulamanın, ayçiçeği verim ve kalitesi üzerine etkisi. Doktora Tezi, Selçuk Üniversitesi Fen Bilimleri Enstitüsü, Konya

Yavuz, Nurcan. Çiftçi, Nizamettin. & Yavuz, Duran. 2019. Effects of different irrigation interval and plant-pan coefficient applications on yield and quality parameters of oil sunflower grown in semi-arid climatic conditions. Arabian Journal of Geosciences, 12(22), 1-11.

YAYGIN MÜRDÜMÜK (*Lathyrus sativus* L.) TOHUMLARINA SİLİSYUM ÖN UYGULAMASININ ÇİMLENME ÜZERİNE ETKİLERİ

Semih AÇIKBAŞ
Orcid.org/0000-0003-4384-3908
Mehmet Arif ÖZYAZICI
Siirt University, Siirt, Turkey
Orcid.org/0000-0001-8709-4633

Özet

Bu çalışmada, yaygın mürdümük (*Lathyrus sativus* L.) bitkisi tohumlarında silisyum (Si) ön uygulamasının çimlenme üzerine etkilerinin belirlenmesi amaçlanmıştır. Araştırma, Siirt Üniversitesi, Ziraat Fakültesi, Tarla Bitkileri Laboratuvarı'nda, 24 ±1 °C kontrollü şartlar altında yürütülmüştür. Çalışmanın bitkisel materyalini Gürbüz-2001 yaygın mürdümük çeşidi oluşturmuştur. Laboratuvar çalışması, tesadüf parselleri deneme desenine göre 4 tekrarlamalı olarak petri kaplarında kurulmuştur. Çalışmada; silisyumun 2 mM (Si_1), 4 mM (Si_2) ve 6 mM (Si_3) olmak üzere 3 farklı dozu, su ile ön uygulama ve hiçbir uygulamanın olmadığı kontrol grubu araştırmanın konusunu teşkil etmiştir. Denemede 8. günün sonunda her bir petri kabındaki bitkilerden rastgele seçilen 10 bitki üzerinden ölçümler yapılmıştır. Çalışmada; çimlenme oranı, kökçük ve sapçık uzunluğu, kökçüklerde lateral kök sayısı, kökçük ve sapçık yaş ağırlığı, kökçük ve sapçık kalınlığı parametreleri incelenmiştir. Araştırma sonucuna göre, tohumlara Si ön uygulamasının kökçük ve sapçık uzunluklarına, sapçık yaş ağırlığı ve kökçük kalınlığına istatistiki açıdan çok önemli ($p<0.01$); çimlenme oranı, kökçükte lateral kök sayısı ve sapçık kalınlığı değerlerine ise önemli ($p<0.05$) etkileri olmuştur. Genel olarak 4 mM silisyum ön uygulamasının; kökçük uzunluğu (5.330 cm), sapçık uzunluğu (4.461 cm), lateral kök sayısı (3.83 adet), sapçık yaş ağırlığı (0.0713 g), kökçük kalınlığı (0.176 cm) ve sapçık kalınlığı (0.194 cm) değerlerinin istatistiksel açıdan en üst grubu oluşturduğu belirlenmiştir. Silisyum ön uygulamasının, sapçık ve kökçük yönünden homojen bir gelişme sağladığı görülmüştür. Tohumların çimlenmesini kolaylaştırmak, hızlandırmak ve hatta homojen çıkış ve fide gelişimi için tohumlara silisyum ön uygulamasının kullanılması önerilmektedir.

Anahtar Kelimeler: *Lathyrus sativus* L., silisyum, tohum ön uygulaması, çimlenme oranı, kökçük, sapçık

THE EFFECTS OF SILICON PRIMING APPLICATION ON GERMINATION IN COMMON GRASSPEA (*Lathyrus sativus* L.)

Abstract

In this study, it was aimed to determine the effects of silicon (Si) applications on germination and seedling development on common grasspea (*Lathyrus sativus* L.) seeds. The research was conducted in Siirt University, Faculty of Agriculture, Field Crops Laboratory under controlled conditions of 24 ± 1 ° C. The plant material of the study was Gürbüz-2001 common grasspea variety. The laboratory study was set up in petri dishes with 4 replications according to the randomized plot design. In the research, 3 different doses of silicon (Si) as 2 mM (Si_1), 4 mM (Si_2) and 6 mM (Si_3), hydropriming application and the control group without any application constituted the subject of the study. At the end of the 8th day in the experiment, measurements were made on 10 plants randomly selected from the plants in each petri dish. In the study; germination rate, radicula length, plumula length, lateral root number in radicula, radicula fresh weight, plumula fresh weight, radicula thickness and plumula thickness parameters were examined. According to the results of the study, Si priming had statistically significant effects on radicula and plumula length, plumula weight and radicula thickness ($p<0.01$), germination rate, number of lateral roots in radicula and plumula thickness ($p<0.05$). In general, seed applications priming with 4 mM silicon; It constituted the statistically highest group of radicula length (5.330 cm), plumula length (4.461 cm), lateral root number (3.83 piece), plumula weight (0.0713 g), radicula thickness (0.176 cm) and plumula thickness (0.194 cm). It has been observed that it provides a homogeneous development in terms of silicon priming, plumula and radicula. It is recommended to use silicon priming for seeds to facilitate, accelerate and even homogeneity and seedling growth.

Keywords: *Lathyrus sativus* L., silicon, priming, germination rate, radicula, plumula

Giriş

Yaygın mürdümük (*Lathyrus sativus* L.) yeşil ot, kuru ot ve tane yem olarak hayvan beslenmesinde, yeşil gübre bitkisi olarak toprak yapısının iyileştirilmesinde ve sebze olarak insan beslenmesinde kullanılan tek yıllık serin mevsim baklagil yem bitkisidir. Mürdümük; kuraklığa, soğuğa ve tuz stresine toleranslı olduğu gibi, hastalık ve zararlılara karşı da dayanıklılığı yüksektir (Urga ve ark., 2005; Talukdar ve Biswas, 2008). Mürdümük Türkiye'nin hemen her bölgesinde doğal olarak yetişmekle birlikte özellikle marjinal alanlarda yetişebilme özelliği ile ön plana çıkmaktadır.

Marjinal (taşlı topraklı, taşlık kayalık arazi yapısı) alanların önemli bir kısmında su kaynakları kıt olup, bazılarında ise arazi yapısından dolayı sulama olanağı bulunmamaktadır (Balkıç ve ark., 2017). Bu ve benzeri alanlarda, bitkiler yaşamlarını sürdürürken, gelişimlerini kısıtlayıcı çeşitli olumsuz koşullarla da karşı karşıya kalmaktadırlar. Bu durumda ise bitkiler strese girmekte ve buna bağlı olarak çimlenme, büyüme ve gelişme metabolizmaları etkilenmektedir (Gürel ve Avcıoğlu, 2011). Buna bağlı olarak bitkililerden istenilen düzeyde verim elde edilebilmesi için ekilen tohumların homojen ve eksiksiz bir şeklide çimlenip gelişmesi gerekir (Elkoca, 2007; Atış, 2011). Çıkışta görülen düzensizlikler, bitkilerin fide döneminden başlayarak çiçeklenme, olgunlaşma, hasat ve hasat sonrasına kadar geçen süreyi

etkileyebilmektedir (Gürbüz ve ark., 2009). Bunun yanında ekilen tohumların büyüklüklerinin üniform olmayışı ve genetik yapılarının farklı oluşu gibi faktörler de çimlenme ve çıkışa engel olabilmektedir. Bunun sonucunda da aynı zamanda istenilen düzeyde bitki sıklığı sağlanamamaktadır (Elkoca, 2007).

Bitkilerde çimlenme ve çıkış sırasında meydana gelebilecek olumsuzlukları azaltmak, istenilen sıklıkta ve homojenlikte fide çıkışı sağlamak için ekim öncesinde tohuma yapılan çeşitli uygulamalar tohum ön uygulama (priming) olarak adlandırılmaktadır (Heydecker ve Gibbins, 1978; Jisha ve Puthur, 2016; Paul ve Roychoudhury, 2017). Tohum ön uygulamaları, tohumda bulunan depo maddelerinin parçalanmasını sağlayan enzimleri aktive ederek, depo maddelerinin optimum şekilde kullanımını sağlamaktadır (Demir ve ark., 1994).

Tohum ön uygulamaları ile yapılan çalışmalarda kullanılan elementlerden birisi de silisyum (Si)'dur. Toprakta, toprak tipine bağlı olarak değişkenlik gösteren Si, oksijenden sonra yer kabuğunda en çok bulunan ikinci element olarak bilinir (Cuong ve ark., 2017). Silisyum, bitkilerin büyümesini ve verimi iyileştirdiği (Hameed ve ark., 2013; Kim ve ark., 2017), biyotik ve abiyotik strese karşı direnç sağladığı (Ma ve Yamaji, 2006; Liang ve ark., 2007; Shi ve ark., 2014; Çoşkun ve ark., 2016) bilinen ve tohum ön uygulama çalışmaları için kullanılabilen bir elementtir. Çeşitli abiyotik streslere dayanıklılık için tohumların Si ile hazırlanması yeni bir yaklaşım olarak görülmektedir (Sirisuntornlak ve ark., 2020). Bu çalışmada, yaygın mürdümük (*L. sativus* L.) tohumlarına silisyum ve su ile ön (hidropriming) uygulamalarının çimlenme üzerine etkilerinin belirlenmesi amaçlanmıştır.

Materyal ve Yöntem

Araştırma, Siirt Üniversitesi Ziraat Fakültesi Tarla Bitkileri Bölümü Laboratuvarı'nda yürütülmüştür. Bitkisel materyal olarak, Gürbüz-2001 yaygın mürdümük (*L. sativus* L.) çeşidi kullanılmıştır.

Denemede araştırma konusu; 3 farklı Si dozları (Si_1= 2 mM, Si_2= 4 mM ve Si_3= 6 mM), kontrol olarak da su ile ön uygulama ve sadece saf su kullanılan ön uygulama yapılmayan şeklinde planlanmıştır. Çalışmada Si kaynağı olarak sodyum metasilikat pentahidrat ($Na_2SiO_3.5H_2O$) kullanılmıştır. Buna göre laboratuvar denemesi, tesadüf parselleri deneme desenine göre 4 tekerrürlü olarak kurulmuştur. Her tekerrür için 25 adet tohum kullanılmıştır. Tohumlar 1 dakika % 70 etil alkolde steril edildikten sonra 3 defa steril su ile durulanmıştır. Daha sonra tohum yüzeyindeki mikroorganizmaların deforme olması için 10 dakika % 10'luk sodyum hipoklorit (NaOCl) + % 0.01 tween20 solüsyonu ile tohumları kaplayacak şekilde yüzey strerilizasyonu gerçekleştirilmiştir. Steril hale gelen tohumlar petri (90 mm x 15 mm) kaplarında bulunan iki katlı whatman filtre kâğıdının arasına yerleştirilmiştir. Üç farklı konsantrasyonda hazırlanan Si solüsyonları, her bir petri kabına 5 ml olacak şekilde uygulanmış ve 20 saat süreyle bekletilmiştir. Her bir petri kabına tohum/solüsyon oranı 2:1 g/ml olacak şekilde ayarlanmıştır (Johnson ve ark., 2005). Tohum ön uygulamaları sonrası tohumlar saf su ile tüm yüzey temizlenecek şekilde yıkanmış ve kurutma kağıdı içerisinde önce kabaca kurutulmuş, daha sonra tekrar kuru filtre kağıdı arasına alınarak başlangıç nemine kadar (% 3±) kurutulmuştur (Jatana ve ark., 2020).

Silisyum ile uygulanan hormonal ön uygulama dışında saf su ile ön uygulaması yapılmıştır. Tohum ön uygulamaları sonunda tohumlar saf su ile 3 defa durulanmıştır. Tohumlar kurutulmuş ve yeni petrilere yerleştirilmiştir. Her petri için 5 ml saf su eklenmiştir. Kontrol

grubu olarak kullanılan tohumlar sadece yüzey sterilizasyonuna tabi tutulup petri kaplarına ekilmiştir. Kontrol grubunda yer alan tohumlar ön uygulama yapılıp kurutulan tohumlar ile aynı zamanda ekilmiştir. Petri kapları 24±1 °C sıcaklığa ayarlı etüv (BINDER, GmbH, Almanya)'de çimlenmeye bırakılmıştır. Çalışmada, 24 saate 1 kez olacak şekilde her gün aynı saatte 4 gün boyunca çimlenen tohumlar sayılmıştır. Çalışmanın bittiği güne kadar 48 saatte bir 5 ml saf su tüm petri kaplarına ilave edilmiştir. Deneme 8. günün sonunda her bir petri kabındaki bitkilerden rastgele seçilen 10 bitki üzerinden ölçümler yapılmıştır. Çalışmada; çimlenme oranı, kökçük uzunluğu, sapçık uzunluğu, sapçık yaş ağırlığı, kökçük yaş ağırlığı, kökçük kalınlığı, sapçık kalınlığı ve kökçüklerde lateral kök sayısı özellikleri incelenmiştir. Çimlenme oranı tespit edilirken Scott ve ark. (1984) ile Soltani ve ark. (2012)'nın bildirdiği yöntemden yararlanılmış, en az 2 mm kökçük çıkışı çimlenme kıstas olarak kabul edilmiştir. Ağırlık ile ilgili gözlemler alınmadan önce tohumlar filtre kâğıdı ile yüzeydeki fazla sudan arındırılmış ve hemen hassas terazi ile ağırlıkları tespit edilmiştir. Gözlemler için rastgele seçilen kökçük ve sapçık örnekleri tarayıcı (EPSON L3050, Japonya) üzerine yerleştirilmiş ve 600 dpi çözünürlükte renkli olarak taranmıştır. Kökçük uzunluğu, sapçık uzunluğu, kökçük ve sapçık kalınlığı, kökçüklerde lateral kök sayısı parametreleri ImageJ (Rueden ve ark., 2017) yazılımı kullanılarak ölçümler yapılmıştır.

Elde edilen veriler, tesadüf parselleri deneme desenine göre varyans analizine tabi tutulmuş; ortalamalar arasındaki farklılıklar LSD çoklu karşılaştırma testi ile kontrol edilmiştir. Yüzde olarak ifade edilen verilere açı transformasyonu uygulanmıştır (Yurtsever, 1984).

Bulgular

Mürdümük bitkisinde Si dozları ve tohum ön uygulamalarının çimlenme oranı, kökçük ve sapçık uzunluğu ile lateral kök sayısı etkisine ilişkin ortalama değerler Tablo 1'de verilmiştir. Araştırmada incelenen çimlenme oranı ve lateral kök sayısı ($p<0.05$) ile kökçük ve sapçık uzunluğu ($p<0.01$) yönünden uygulamalar arasında anlamlı farklılıklar bulunmuştur. Çimlenme oranı yönünden en yüksek değerler silisyumun 2 mM (% 90.05) ve su ile ön uygulama (% 90.05) yapılanlarda tespit edilmiştir. Çalışmada, Si_2 ve Si_3 uygulamaları ile kontrol grubu istatistiksel olarak en alt grubu oluşturmuştur (Tablo 1).

Tablo 1. Mürdümük bitkisinde Si ile ön uygulamanın bazı çimlenme özelliklerine etkisi[1]

Uygulamalar	Çimlenme oranı (%)	Kökçük uzunluğu (cm)	Sapçık uzunluğu (cm)	Lateral kök sayısı (adet)
Kontrol	93.3 (77.52) b	4.060 c	1.847 c	2.03 b
Su ön uygulaması	100.0 (90.05) a	5.732 a	4.090 ab	3.85 a
Si_1	100.0 (90.05) a	4.977 ab	3.480 b	2.70 ab
Si_2	95.7 (77.52) b	5.330 a	4.461 a	3.83 a
Si_3	97.2 (79.77) b	4.347 bc	4.111 ab	2.80 ab
LSD değeri	9.058	0.821	0.927	1.307
F değeri	0.0245*	0.0033**	0.0002**	0.0408*

[1]: Aynı sütunda aynı harfle gösterilen ortalamalar arasındaki farklılık istatistiki açıdan önemli değildir, ( ): Açı transformasyonu değerleridir, *: $p<0.05$, **: $p<0.01$ düzeyinde önemli farklılık, Kontrol: Ön uygulama yapılmamış, Si_1: 2 mM Si dozu, Si_2: 4 mM Si dozu, Si_3: 6 mM Si dozu

Kökçük uzunluğu bakımından en yüksek değerler su ön uygulaması (5.732 cm) ve Si_2 (5.330 cm) uygulamalarında görülmüştür. Bu iki uygulama ile Si_1 uygulaması arasındaki değerler istatistiki açıdan önemsiz çıkmıştır. En düşük kökçük uzunluğu ise 4.060 cm değeriyle ön uygulama yapılmayan kontrol grubunda tespit edilmiştir. Silisyumun açısından 4 mM

uygulamasına kadar kökçük uzunluğu artış gösterirken, bu uygulamanın üstüne çıkıldığında anlamlı azalma olduğu görülmüştür (Tablo 1).

Sapçık uzunluğu verileri incelendiğinde, en yüksek değer Si_2 (4.461 cm) uygulamasında saptanmıştır. Si_2 uygulaması ile Si_3 ve su ön uygulamaları arasındaki farklılık istatistiki açıdan önemsiz çıkmıştır. Sapçık uzunluğu bakımından en düşük değer ise kontrol (1.847 cm) grubunda tespit edilmiştir (Tablo 1).

Lateral kök sayısı açısından su ön uygulaması 3.85 adet ve Si_2 uygulaması 3.83 adet değerleriyle istatistiki açıdan birinci grubu oluşturmuştur. Kontrol grubu ise 2.03 adet ile en düşük değer olarak tespit edilmiştir (Tablo 1).

Kökçük ve sapçıkların yaş ağırlıkları ile kalınlıklarına ait değerler ise Tablo 2'de verilmiştir. Mürdümük bitkisinde tohumlara uygulanan su ön uygulaması ve Si uygulamalarının sapçık yaş ağırlığı ve kökçük kalınlığına etkisi istatistiki açıdan $p<0.01$, sapçık kalınlığı üzerine etkisi ise $p<0.05$ düzeyinde önemli bulunurken; kökçük yaş ağırlığı bakımından ise uygulamalar arasındaki farklılıklar istatistiki açıdan önemsiz bulunmuştur (Tablo 2).

Tablo 2. Mürdümük bitkisinde Si ile ön uygulamanın bazı çimlenme özelliklerine etkisi[1]

Uygulamalar	Kökçük yaş ağırlığı (g)	Sapçık yaş ağırlığı (g)	Kökçük kalınlığı (cm)	Sapçık kalınlığı (cm)
Kontrol	0.0500	0.0353 b	0.178 a	0.188 ab
Su ön uygulaması	0.0523	0.0680 a	0.162 bc	0.185 ab
Si_1	0.0585	0.0655 a	0.172 ab	0.194 a
Si_2	0.0515	0.0713 a	0.176 a	0.194 a
Si_3	0.0490	0.0720 a	0.152 c	0.178 b
LSD değeri	0.008	0.0110	0.012	0.010
F değeri	0.1847 öd	0.0001**	0.0031**	0.0358*

[1]: Aynı sütunda aynı harfle gösterilen ortalamalar arasındaki farklılık istatistiki açıdan önemli değildir, *: $p<0.05$, **: $p<0.01$ düzeyinde önemli farklılık, öd: İstatistiki açıdan fark önemsizdir, Kontrol: Ön uygulama yapılmamış, Si_1: 2 mM Si dozu, Si_2: 4 mM Si dozu, Si_3: 6 mM Si dozu

Sapçık yaş ağırlığı bakımından kontrol grubu hariç, su ön uygulaması ve Si uygulamalarının istatistiki açıdan birinci grubu oluşturduğu ve bu uygulamaların sapçık yaş ağırlığı değerlerinin 0.0655-0.0720 arasında değişim gösterdiği tespit edilmiştir (Tablo 2).

Kökçük kalınlığı incelendiğinde, en yüksek değerler kontrol (0.178 cm) grubunda ve Si_2 (0.176 cm) uygulamasında saptanmış; en düşük değer ise 0.152 cm ile Si_3 uygulamasında belirlenmiştir. Silisyum uygulamalarının 4 mM sonraki dozlarında kökçük kalınlığını olumsuz yönde etkilediği görülmüştür (Tablo 2).

Araştırmada en yüksek sapçık kalınlığı Si_1 ve Si_2 uygulamalarında (0.194 cm) tespit edilmiş olup; bu uygulamalar ile kontrol ve su ön uygulamaları arasındaki farklılıklar istatistiksel açıdan önemsiz olduğu saptanmıştır. En düşük sapçık kalınlığı değeri ise 0.178 cm ile Si_3 uygulamasında tespit edilmiştir (Tablo 2).

Tartışma ve Sonuç

Bitkilerin çimlenme ve fide oluşumları yaşam döngüleri içerisinde en kritik dönemi oluşturmaktadır. Yapılan araştırmalarda (Mohammadi ve ark., 2010; Zhu ve ark., 2010; Siddiqui ve Al-Whaibi 2014; Roohizadeh ve ark., 2015; Tantawy ve ark., 2015; Ceritoğlu ve

Erman, 2020), farklı kimyasal uygulamaların birçok bitki türünde tohum çimlenmesini teşvik edebileceği rapor edilmiştir.

Bu çalışmada, tohuma su ön uygulaması ve Si uygulamalarının kontrole göre sapçık ve kökçüklerin daha homojen bir gelişme gösterdiği görülmüştür. Buna ek olarak, Si kullanımının; bitkinin çimlenme oranını, kökçük ve sapçık uzunluğunu, lateral kök sayısını, sapçık yaş ağırlığını, kökçük ve sapçık kalınlığını iyileştirdiği belirlenmiştir (Şekil 1). Bu durum Romero-Aranda ve ark. (2006) tarafından da bildirildiği üzere, silisyumun bitki su kullanımını iyileştirmedeki rolünden kaynaklanabileceği düşünülmektedir.

Şekil 1. Tohum ön uygulamaları sonucunda kökçük ve sapçıkların gelişimi

Roohizadeh ve ark. (2015) *Vicia faba* bitkisinde Si ile ön uygulamasında; 1.5 mM Si uygulamasının 3 mM Si uygulamasına göre çimlenme oranını anlamlı derecede etkilediğini, sapçık kalınlıklarının kontrol ile farklılığının önemli olmadığını ve hipokotil uzunluğu yönünden Si uygulamasının kontrole göre daha düşük değerlere sahip olduğunu bildirmişlerdir. Silisyum ile yapılan bazı tohuma ön uygulama çalışmaları gözden geçirildiğinde; *Glycine max* (Lu ve ark., 2002; Li ve ark., 2004), *Triticum aestivum* L. (Hameed ve ark., 2013), *Agropyron elongatum* L. (Azimi ve ark., 2014), *Vicia faba* (Roohizadeh ve ark., 2015), *Thymus kotschyanus* (Khalaki ve ark., 2016), *Triticum durum* desf. (Bijanzadeh ve Egan, 2018) ve *Trigonella foenum- graceum* L. (Ivani ve ark., 2018) bitkilerinde silisyumun çimlenme üzerine olumlu etkileri olduğu rapor edilmiştir.

Bu çalışmanın sonuçları sodyum metasilikat pentahidrat ($Na_2SiO_3.5H_2O$)'ın, mürdümük tohumların çimlenmesinde etkili olabileceğini göstermiştir. Araştırma sonucunda, mürdümük tohumlarında silisyum ile tohuma ön uygulamanın genel olarak silisyumun 4 mM dozuna kadar olumlu sonuçlar verdiği görülmüştür. Sapçık ve kökçük yönünden daha homojen bir

gelişim de dikkate alındığında, tohumların çimlenmesini kolaylaştırmak, hızlandırmak ve hatta homojen çıkış ve fide gelişimi için tohumlara silisyum uygulaması kullanılabilir.

Kaynaklar

Atış, İ. (2011). Bazı silajlık sorgum (*Sorghum bicolor* L. Moench) çeşitlerinin çimlenmesi ve fide gelişimi üzerine tuz stresinin etkileri. *Süleyman Demirel Üniversitesi Ziraat Fakültesi Dergisi*, 6(2): 58-67.

Azimi, R., Borzelabad, M.J., Feizi, H., Azimi, A. (2014). Interaction of SiO2 Nanoparticles With Seed Prechilling on Germination and Early Seedling Growth of Tall Wheatgrass (*Agropyron elongatum* L.). *Pol. J. Chem. Technol.*, 16(3) :25-29.

Balkıç, R., Güler, S., Gübbük, H. (2017). Marjinal Alanlarda Keçiboynuzu (*Ceratonia siliqua* L.) Tohumlarının Çimlenmesi Üzerinde Araştırmalar. *ÇOMÜ Ziraat Fakültesi Dergisi*, 5(2): 79-85.

Ceritoğlu, M., Erman, M. (2020). Mitigation of Salinity Stress on Chickpea Germination by Salicylic Acid Priming. *Uluslararası Tarım ve Yaban Hayatı Bilimleri Dergisi*, 6(3), 582-591.

Coşkun, D., Britto, D.T., Huynh, W.Q., Kronzucker, H.J. (2016). The Role of Silicon in Higher Plants Under Salinity and Drought Stress. *Front. Plant Sci.* 7:1072.

Cuong, T.X., Ullah, H., Datta, A., Hanh, T.C. (2017). Effects of Siliconbased Fertilizer on Growth, Yield and Nutrient Uptake of Rice in Tropical Zone of Vietnam. *Rice Sci.*, 24: 283-290.

Demir, İ., Ellialtıoğlu, Ş., Tıpırdamaz, R. (1994). The Effect of Different Priming Treatments On Reparability of Aged Eggplant Seeds. *Acta Horticulturae*, 362: 205-212.

Bijanzadeh, E., Egan, T.P. (2018). Silicon Priming Benefits Germination, Ion Balance, and Root Structure in Salt-Stressed Durum Wheat (*Triticum durum* desf.), *Journal of Plant Nutrition*, 41(20): 2560-2571.

Elkoca, E. (2007). Priming: Ekim Öncesi Tohum Uygulamaları. *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*, 38(1): 113-120.

Gürbüz, A., Kaya, M., Türkan, A.D., Kaya, G., Kaya, M.D., Çiftçi, C.Y. (2009). Bazı Nohut (*Cicer arietinum* L.) Çeşitlerinde Tane İriliği ve Kuraklık Stresinin Çimlenme Özelliklerine Etkisi. *Akdeniz Üniversitesi Ziraat Fakültesi Dergisi*, 22(1): 69-74.

Gürel, A., Avcıoğlu, R. (2011). Bitkilerde Strese Dayanıklılık Fizyolojisi, 21. bölüm, Editörler: Özcan, S., Gürel, E., Babaoğlu, M., Bitki Biyoteknolojisi II, Genetik Mühendisliği ve Uygulamaları, Selçuk Üniversitesi Vakfı Yayınları, 308-313.

Hameed, A., Sheikh, M.A., Jamil, A., Basra, S.M.A. (2013). Seed Priming With Sodium Silicate Enhances Seed Germination and Seedling Growth in Wheat (*Triticum aestivum* L.) Under Water Deficit Stress İnduced By Polyethylene Glycol. *Pak. J. Life Soc. Sci.*, 11(1): 19-24.

Heydecker, W., Gibbins, B. (1978). The `Priming` of Seeds. *Acta Horticulturae*, 83: 213-215.

Ivani, R., Sanaei Nejad, S. H., Ghahraman, B., Astaraei, A. R., Feizi, H. (2018). Role of Bulk and Nanosized SiO_2 to Overcome Salt Stress During Fenugreek Germination (*Trigonella foenum-graceum* L.). *Plant signaling & behavior*, *13*(7): e1044190.

Jatana, B.S., Ram, H., Gupta, N. (2020). Application of Seed and Foliar Priming Strategies to İmprove The Growth and Productivity of Late Sown Wheat (*Triticum aestivum* L.). *Cereal Research Communications*, 48: 383-390.

Jisha, K.C., Puthur, J.T. (2016). Seed priming With Beta-Amino Butyric Acid Improves Abiotic Stress Tolerance in Rice Seedlings. *Rice Science*, 23: 242-254.

Johnson, S.E., Lauren, J.G., Welch, R.M., Duxbury, J.M. (2005). A Comparison of The Effects of Micronutrient Seed Priming and Soil Fertilization on The Mineral Nutrition of Chickpea (*Cicer arietinum*), Lentil (*Lens culinaris*), Rice (*Oryza sativa*) and Wheat (*Triticum aestivum*) in Nepal. *Experimental Agriculture*, 41: 427-448.

Khalaki, M.A., Ghorbani, A., Moameri, M. (2016). Effects of Silica and Silver Nanoparticles on Seed Germination Traits of *Thymus kotschyanus* in Laboratory Conditions. *J. Rangel Sci.* 6(3): 221-231

Kim, Y.H., Khan, A.L., Waqas, M., Lee, I.J. (2017). Silicon Regulates Antioxidant Activities of Crop Plants Under Abiotic-İnduced Oxidative Stress: A Review. *Front Plant Sci.,* 8:510.

Li, Q., Ma, C., Li, H., Xiao, Y., Liu, X. (2004). Effects of Soil Available Silicon on Growth, Development and Physiological Function of Soybean. *J. Appl. Ecol.*, 15:73-76.

Lu, C.M., Zhang, C.Y., Wen, J.Q., Wu, G.R., Tao, M.X. (2002). Research of The Effect of Nanometer Materials on Germination And Growth Enhancement of *Glycine max* And Its Mechanism. *Soybean Sci.*, 21:168-172.

Ma, J.F., Yamaji, N. (2006). Silicon Uptake and Accumulation in Higher Plants. *Trends in Plant Science*, 11: 392-397.

Mohammadi, M., Fahimi, H., Majd, A. (2010). The comparative effects of Salicylic acid and Gibberellin on seed germination of the Lentil (*Lens culinaris* L.). *Journal of Biology*, 4: 43-44.

Paul, S., Roychoudhury, A. (2017). Seed Priming With Spermine and Spermidine Regulates The Expression of Diverse Groups of Abiotic Stress-Responsive Genes During Salinity Stress In The Seedlings of Indica Rice Varieties. *Plant Gene*. 11: 124-132.

Romero-Aranda, M. R., Jurado, O., Cuartero, J. (2006). Silicon Alleviates the Deleterious Salt Effect on Tomato Plant Growth by İmproving Plant Water Status. *Journal of plant Physiology*, 163(8): 847-855.

Roohizadeh, G., Majd, A., Arbabian, S. (2015). The Effect of Sodium Silicate and Silica Nanoparticles on Seed Germination and Some of Growth Indices in the *Vicia faba* L. *Trop Plant Res.*, 2(2):85-89.

Rueden, C.T., Schindelin, J., Hiner, M.C., DeZonia, B.E., Walter, A.E., Arena, E.T. Eliceiri, K.W. (2017). ImageJ2: ImageJ for The Next Generation of Scientific Image Data. *BMC Bioinformatics*. 18(1): 529.

Scott, S.J., Jones, R.A., Williams, W.A. (1984). Review of Data Analysis Methods for Seed Germination. *Crop Science*, 24: 1192-1199.

Shi, Y., Zhang, Y., Yao, H., Wu, J., Sun, H., Gong, H. (2014). Silicon Improves Seed Germination and Alleviates Oxidative Stress of Bud Seedlings in Tomato Under Water Deficit Stress. *Plant Physiol Biochem*, 78:27-36.

Siddiqui, M.H., Al-Whaibi, M.H. (2014). Role of Nano-SiO_2 in Germination of Tomato (*Lycopersicum esculentum* seeds Mill.). *Saudi J. Biol. Sci.*, 21:13-17.

Sirisuntornlak, N., Ullah, H., Sonjaroon, W., Anusontpornperm, S., Arirob, W., Datta, A. (2020). Interactive Effects of Silicon and Soil pH on Growth, Yield and Nutrient Uptake of Maize. *Silicon*, 1-11.

Soltani, A., Khodarahmpour, Z., Jafari, A.A., Nakhjavan, S. (2012). Selection of Alfalfa (*Medicago sativa* L.) Cultivars for Salt Stres Tolerance Using Germination Indices. *African Journal of Biotechnology*, 11(31): 7899-7905.

Talukdar, D., Biswas, A.K. (2008). Variability, Heritability and Scope of Selection for Some Quantitative Traits in Induced Mutant Lines of Grass Pea (*Lathyrus sativus* L.). *International Journal of Plant Sciences*, 3(2): 528-530.

Tantawy, A.S., Salama, Y.A.M., El-Nemr, M.A., Abdel-Mawgoud, A.M.R. (2015). Nano Silicon Application Improves Salinity Tolerance of Sweet Pepper Plants. *Int. J. Chem. Tech. Res.*, 8(10):11-17.

Urga, K., Fufa, H., Biratu, E. ve Husain, A. (2005). Evaluation *Lathyrus sativus* Culivated in Ethiopia for Proximate Composition, Minerals, â-odap and Anti-Nutritional Components. *African Journal of Food Agriculture and Nutritional Development*, 5(1):1-15.

Yurtsever, N. (1984). Deneysel İstatistik Metotları. Köy Hizmetleri Genel Müdürlüğü Yayınları, Genel Yayın No: 121, Ankara.

Zhu, S.Y., Hong, D.L., Yao, J., Zhang, X.L., Luo, T.K. (2010). Improving Germination, Seedling Establishment and Biochemical Characters of Aged Hybrid Rice Seed by Priming with KNO_3 + PVA. *African Journal of Agriculture Research*, 5(1): 78-83.

EFFECT OF SILICON PRIMING TREATMENTS ON GERMINATION AND SOME AGRONOMIC TRAITS IN LENTIL

Mustafa CERITOGLU
Murat ERMAN
Siirt University, Turkey

Abstract
Priming is described as seed treatments before sowing. Priming, applied with different techniques, depends on soaking the seeds in water or a solution that has low osmotic potential. In primed seeds, germination traits improve antioxidant defense systems are stimulated. Stimulating of defense systems before germination leads to increase tolerance to stress factors. Therefore, the priming technique is an economic, easy and effective way to stress management in plants. Commonly used priming techniques are Hydropriming, Osmopriming, Halopriming, Solid matrix priming, Thermopriming, Hormonal priming, Nanopriming and Biopriming. Silicon (Si) due to its versatile traits have been commonly used in the Osmopriming technique recently. Silicon (Si) is an important element that causes abnormalities in plants under Si deficiency and improves stress tolerance, plant growth and crop yield under stress conditions. Si is described as a plant promotive and protective material due to its these complex traits. This study was carried out to investigate the impacts of priming applications with Si on germination and seedling growth in lentils. The one lentil cultivar (Fırat-87) and 5 priming treatments (control, Hydropriming, 2-, 4- and 6-mM Si) were investigated with four replications in Petri plates. According to results, Hydropriming and Osmopriming application with 4-mM Si ensured to obtain better results compared with control plants in terms of all properties except root weight. Increasing Si concentrations exhibited promotive effects for lateral root numbers. This experiment was laid out as a pre-study because there is not enough study about the effects of Si-priming applications in lentils. The optimum concentration of Si-priming on germination and seedling growths was determined as 4 mM.

Keywords: Hydropriming, Lateral root formation, *Lens culinaris*, Osmopriming, Silicon, Seed priming

SİLİSYUM PRİMİNG UYGULAMALARININ MERCİMEKTE ÇİMLENME VE BAZI AGRONOMİK ÖZELLİKLER ÜZERİNE ETKİSİ

1. Introduction

Although silicon (Si) is the second most abundant element in the soil after oxygen, it is the eighth-most abundant macro element in nature (Sahebi et al., 2015). The Si is one of the elements described as almost essential for plants. The main reason behind this requirement is abnormalities in plant growth in case of its deficiency (Hasanuzzaman et al., 2017). In addition, it has a function of promoting plant growth and crop yield, especially under stress factors, as well as allowing an increase in stress tolerance (Latef and Tran, 2016). These properties lead to the evaluation of Si both as a plant growth promoter and plant protection.

Recent studies have reported that Si applications contribute to increase plant tolerance to environmental stress factors (drought, salinity, temperature, flooding, frost, nutrient deficiency and heavy metal toxicity) and protect against pathogens (Ahmed et al., 2015; Alves et al., 2020; Pereira et al., 2021). The Si fertilization is applied at different stages of development as foliar and shows effective results (Ahmad et al., 2020; Bukhari et al., 2020). However, another method of Si application for plant seeds that have poor germination characteristics or are exposed to stress factors is priming technology.

Pre-sowing seed applications (priming) are based on soaking the seeds in water or a solution with low osmotic potential for the specified time before planting (McDonald, 2000). The seeds that are kept in the solution can be sown directly after washing, or they can be dried to return to initial water content and stored at low temperatures for a while (Siregar et al., 2020). The technique of soaking seeds in water is called hydropriming (Khalid et al., 2019). Other commonly used priming methods are ozmopriming, halopriming, solid matrix priming, hormonal priming, nanopriming, termopriming and biopriming (Hasanuzzaman and Fotopoulos, 2019; Sen and Puthur, 2020). Germination process, various biochemical activities, ATP synthesis and antioxidant defense systems are stimulated with seed priming technique, however, root propagation is not allowed (Mauch-Mani et al., 2017). For this reason, priming is an effective, economical and easy technique to stimulate germination characteristics and improve stress tolerance (Adhikari et al., 2013; Batool et al., 2015; Ceritoglu and Erman, 2020).

Lentil is one of the most consumed foods in the world. Turkey is a major lentil producer country with 430,000 tons of production on 292,000 ha area annually (FAO, 2019). However, lentil cultivation is generally designed as a dry farming system in Turkey, therefore, high yield losses occur many times due to drought stress. Although drought is effective in various stages, if it coincides with the sowing period, significant yield losses are experienced due to heterogeneous outflows, non-germinating grains and exposure to stress in the early period. This study is a preliminary study conducted to observe the effects of hydropriming and Si-priming applications on germination and some agronomic properties of lentils.

2. Material and Methods

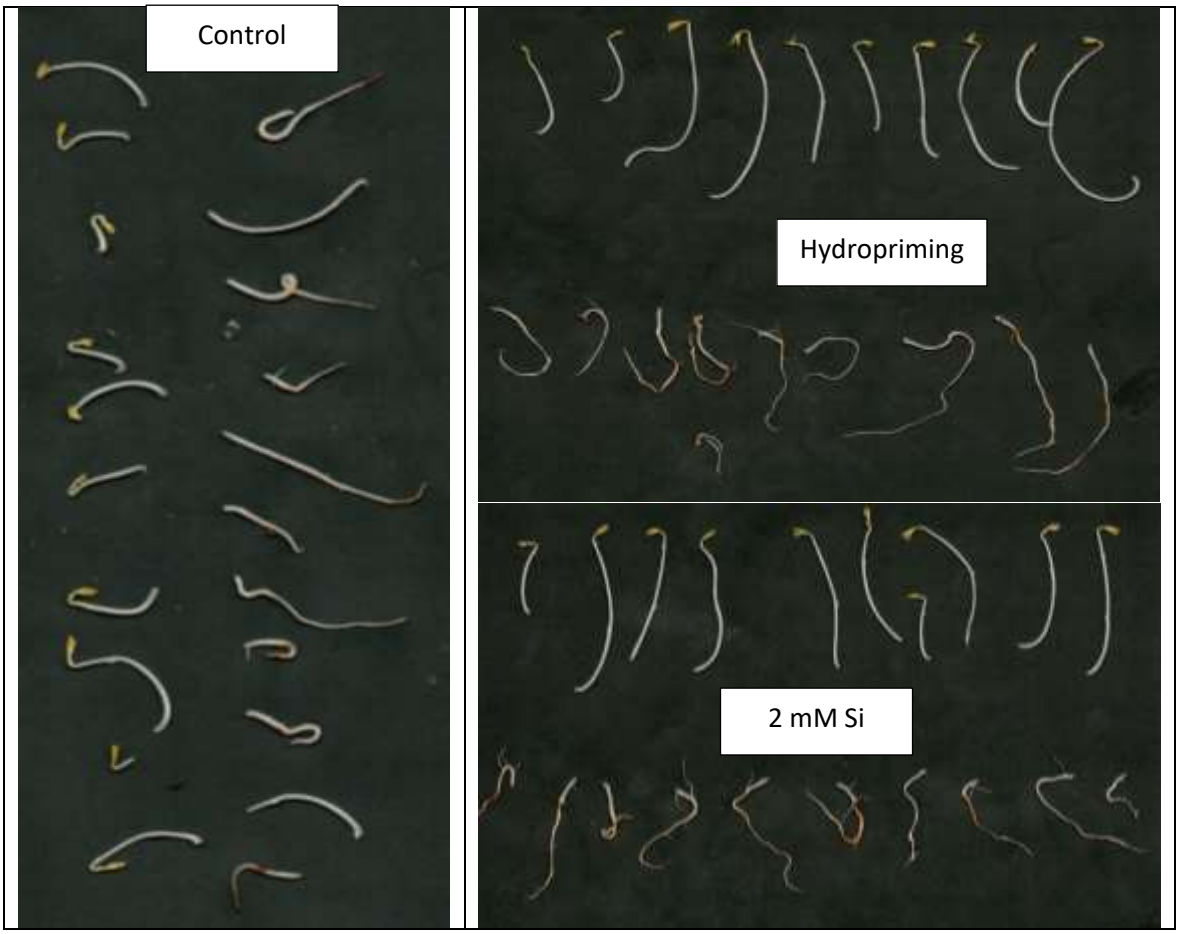
The Fırat-87, which is the most grown red lentil variety in Southeastern Anatolia Region, was used as the material in the study. Seed material was obtained from GAP International Agricultural Research and Training Center (GAPUTAEM). Homogeneous seeds were selected to inhibit endosperm impacts on the result.

The study was carried out in Siirt University, Faculty of Agriculture, Field Crops Laboratory in 2021. The five priming treatments (control, hydropriming and 3 different doses of osmopriming) were used in the study. Silicon doses (S1: 2 mM, S2: 4 mM and S3: 6 mM Si) were prepared for osmopriming and sodium metasilicate pentahydrate (Na2SiO3.5H2O) was used as the Si source. The study was set according to a completely randomized design with four replications. Distilled water was used for hydropriming. Non-primed seeds were accepted as control. Before priming, all weighted seeds were subjected to surface sterilization with 70% ethyl alcohol for 1 minute and 10% sodium hypochlorite (NaOCl) + 0.01% tween20 solution for 10 minutes. After sterilization, the seeds were washed 3 times with distilled water and dried with filter paper. The homogeneous 25 seeds were placed between 2 layers of filter paper in Petri dishes (90mm x 15mm). The solutions were added to each petri dish with a seed: solution ratio of 2: 1 g ml^{-} (Johnson et al., 2005). The Petri dishes were placed in an oven set at ± 24 ° C (BINDER GmbH, Germany) and kept in the dark for 20 hours. After priming, the seeds were washed with distilled water so that the entire surface was cleaned, and first roughly dried in blotter paper, then again placed in dry filter paper and dried until the

initial moisture (Jatana et al., 2020). The seeds kept for the control group were subjected to surface sterilization by the method mentioned before. After this stage, all seeds were sown between 2 layers of filter papers placed in Petri dishes as 25 pieces / petri dish. The 3 ml distilled water was added to each petri dish. Petri dishes were kept at ± 24 ° C through experiment. The 2 ml distilled water was added to each petri dish every 48 hours until the end of the study. The study was completed at 7_{th} day.

The germination percentage (GP), shoot fresh weight (SFW), root fresh weight (RFW), shoot length (SL), taproot length (TL) and the number of lateral roots (NLR) were investigated in the study. The observations were taken from 10 plants randomly selected from the germinated seeds in each petri dish. The method of Scott et al. (1984) was used to determine the GP and 2 mm root emergence was accepted as germination criteria. Before taking observations about the weight, the seeds were cleared of excess water on the surface with filter paper and immediately weighted with a sensitive scale. The seedlings were carefully cut from the junction of the root and the stem and the seeds were discarded. Image analysis software was used to obtain more precise measurements for SL, TRL and NLR. Randomly selected samples of radicles and pedicles were placed on a scanner (EPSON L3050, Japan) and scanned in color at 600 dpi resolution. The characteristics of the scanned samples were found in the Image J program by Ceritoglu et al. (2020). Some of the images obtained were given in Figure 1.

Data were calculated with analysis of variance in the JMP (5.0.1) according to the completely randomized design. The obtained results were grouped according to TUKEY multivariate test.



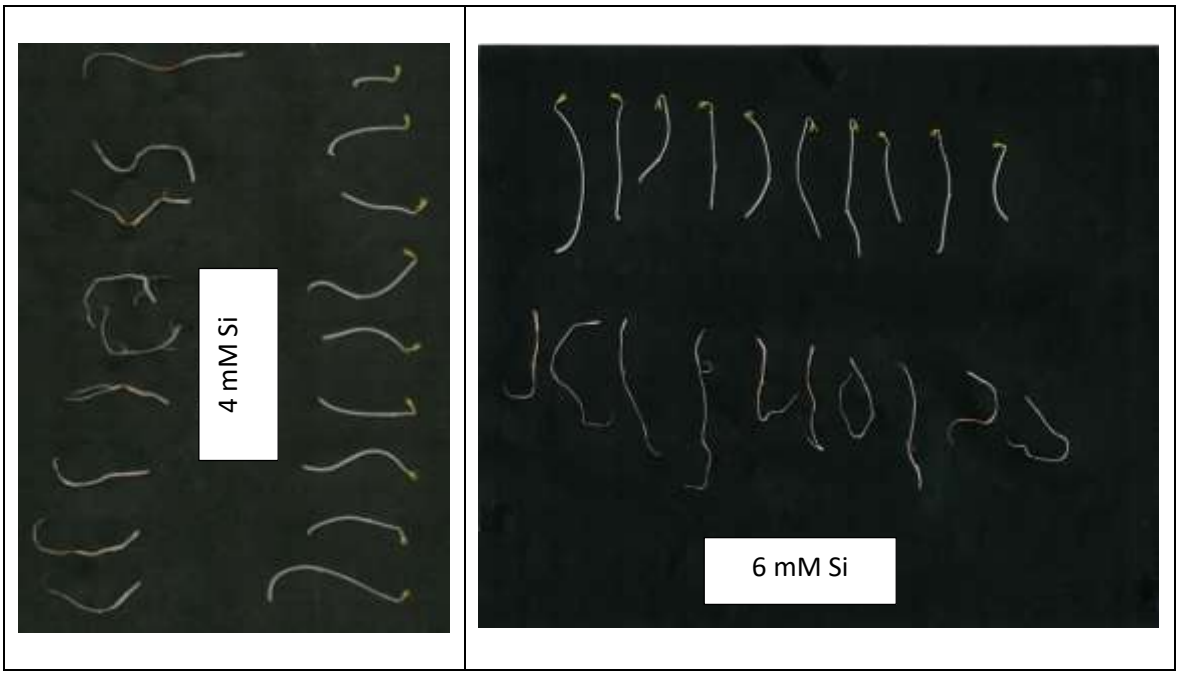


Figure 1. Growth of the seedlings depending on the applications at the end of the seven days. Heterogeneous development is noteworthy especially in the control plants.

3. Results and Discussion

Priming treatments lead to significant differences in GP, SFW, TRL, SL and NLR in the study. However, there was no difference between the applications on the RFW (Table 1). It has been observed that hydropriming and Si priming in different doses encourage germination and seedling growth. Besides, it was determined that the agronomic properties obtained with the harvest in primed seeds showed a more homogeneous development, while heterogeneous growth prevailed in control plants.

Table 1. Analysis of variance of investigated traits depending on priming treatments

Source of variation	DF	Germination percentage	Root fresh weight	Shoot fresh weight	Taproot length	Shoot length	Number of lateral roots
Applications	4	127.0	0.0023	0.0406	2.401	6.634	1.579
F_{prob}		**	ns	**	**	**	**
TUKEY		31.1	0.219	0.323	4.009	5.275	3.234

(**: <0.01, ns: No significant difference)

The highest germination percentage was obtained from 4 mM Si priming application while the lowest one was observed in control plants. The GP, RFW, SFW, TRL, SL and NLR varied between 92.5-83%, 0.288-0.228 g, 0.403-0.143 g, 5.015-2.959 cm, 4.303-1.464 cm and 1.850-0.325, respectively (Table 2). Hydropriming and 4 mM Si priming applications enabled the best results in all but RFW. However, hydropriming applications did not show as much effect as Si priming applications in terms of lateral root formation. Although the highest lateral root formation was obtained with 4 mM Si priming, no statistically significant difference was found between the other Si applications.

Table 2. Means of germination percentage and some agronomic traits

Source of variation	Germination percentage (%)	Root fresh weight (g)	Shoot fresh weight (g)	Taproot length (cm)	Shoot length (cm)	Number of lateral roots (plant^{-})
Control	81.5b	0.235	0.143b	2.959b	1.464b	0.325b
Hydropriming	92.5a	0.257	0.368a	5.015a	4.303a	1.200ab
2 mM Si	88.0ab	0.228	0.330a	4.189ab	3.850ab	1.525a
4 mM Si	96.5a	0.265	0.328a	4.641a	4.219a	1.850a
6 mM Si	87.8ab	0.288	0.403a	4.169ab	3.974ab	1825a
Mean	89.3	0.255	0.314	4.195	3.562	1.345

Vegetative development refers to a complex and long process that is affected by all stages from seed germination to harvest. Seed germination and seedling growth are the most critical and sensitive stages. This process that starts with the water uptake of the seed and finishes with emergence of radicle, plays a critical role in terms of healthy seedling development, resistance to environmental stress factors and ultimately high product yield. Lentil cultivation conditions in Turkey usually are sown in dry agriculture systems are the most important factors affecting the germination process for moisture in the subsequent process as planned. Particularly in conditions where soil moisture is insufficient, the rate of germinating grains decreases, or a heterogeneous stand establishment is observed in the field (Muscolo et al., 2013). If a heterogeneous emergence is realized in cultivated areas, the phenological development periods differ, thereby, it becomes difficult to obtain the whole product at optimum harvest maturity during the harvest period, thus product quality and grain yield significantly decrease (Sedghi et al., 2010). For this reason, priming practices provide positive results in terms of improving germination characteristics, ensuring a homogeneous emergence and developing resistant seedlings (Farooq et al., 2019; Ceritoglu and Erman, 2020; Mirmazloum et al., 2020). Significant differences were determined between priming treatments and control plants. Firstly, it should be known that the germination process takes place in 3 basic stages such as water uptake, activation and development (Ma et al., 2017). After priming applications, water uptake takes place in the seed, allowing the seed to increase in volume, breakdown down nutrients and stimulate antioxidant defense systems (Mauch-Mani et al., 2017). These processes realize in the first and second stages of germination. During germination, active cells continuously secrete Reactive Oxygen Species (ROS) and play an important role in breaking dormancy and seed germination. In the second stage of germination, internal and external factors cause an increase in ROS production and accumulation (Bailly et al., 2008). During germination, although hydration causes the resumption of mitochondrial activity, there may be instances where the electron transport chain transfers electrons directly to O_2 and reduced O_2 serves as the inevitable primary source of mitochondrial ROS (Noctor et al., 2007). Therefore, successful germination depends on ROS accumulation and ROS neutralization systems (Pedrosa and Souza, 2013). The ROS accumulation and enzyme activities are regulated in the activation phase of germination with Si-priming applications. As a result, the germination of the seed improves and germination characters are regulated effectively (Sen and Puthur, 2020).

After priming, the seeds which are dried to approximately the initial moisture have not yet emerged from the roots, but have reached the 3rd stage of germination. Seed tends to germinate and root emergence quickly in the normal germination process if the ambient humidity is sufficient. However, re-drying of the seeds causes slow down the 3rd stage of germination, thereby, the seed is ready to germinate in priming applications except for the

hydropriming technique. In this process, it is reported that the seed can be stored at low temperatures for a long time without germination and losing the positive effects of priming applications. However, it should not be kept for more than 15 days at 25 ° C (Hussain et al., 2015; Siregar et al., 2020). In the light of this information, it is an expected result that the germination activities of primed seeds will develop and create a more effective seedling compared to seeds without any application. However, when evaluated in terms of the effect on the germination percentage of lentil plants in priming applications with Si, the optimal dose was found as 4 mM. It has been reported by different researchers that Si-priming applications in lentils have an increasing effect on the germination percentage (Janmohammadi et al., 2015; Biju et al., 2017).

Seedling characteristics examined in the study showed significant differences depending on the priming practices. It has been determined that hydropriming and 4 mM Si priming applications lead to more effective results compared to other applications and control plants. It is predicted that hydropriming accelerates the germination process due to the rapid water uptake into the seed. Ajouri et al. (2004) noted that priming practices trigger the germination process with the production of biochemicals in the seed, contributing to enzyme production and expansion of the cell wall, leading to the breaking of dormancy. Si is an important bioactive element and supports the development of leaf morphology in plants, the increase of root penetration and stress tolerance, the improvement of plant growth and resistance to pathogens, and the promotion of nutrient uptake (Richmond and Sussman, 2003; Pilon-Smits et al., 2009). It also reduces apoplastic flow and absorption of toxic minerals due to the formation of silicon deposits in the roots. As a result of this situation, it causes a decrease in water loss through transpiration (Ma, 2004). The fact that priming applications encourage lateral root formation is a very important output in terms of seedling development. Lateral roots are organs that play a critical role in water and nutrient uptake (Rostamza et al., 2013). Therefore, it is one of the most important parameters in terms of root system architecture, which expresses the whole of the subsoil organs of the plant (Ceritoglu et al., 2020). Although hydropriming and Si-priming applications have the same importance in terms of almost all parameters in the study, it is a remarkable result that Si-priming applications significantly encourage lateral root formation.

The main factors underlying the negative effects of silicon in increasing doses are that it shows alkaline properties due to the silicate ions (SiO_3^-) in its structure, promoting the polymerization of toxic elements and causing an increase in the pH value of the environment (Sommer et al., 2006). In addition, overdoses limit cell growth and division, disrupting metabolism, nutrient uptake, and ion balance (Mohsenian and Roosta, 2015). Therefore, when a dose higher than 4 mM is applied in lentils, although better results were obtained compared to the control group, it was observed that the stimulating effect decreased. It has been determined that concentrations more than 4 mM should not be preferred in lentil priming applications with Si.

4. Conclusion

Seed germination and seedling growth are the most critical and sensitive periods during plant life. Hydropriming and Si-priming applications encouraged seed germination and seedling growth in the experiment. There is a need to establish repetitive experiments in field conditions to observe the effects of silicon in full-time and natural growing environments. The 4 mM Si-priming was determined as the optimum Si concentration for lentil. Although it is seen that silicon applications significantly encourage lateral root formation, their effects on the root system architecture are not clear yet. Therefore, new studies are needed to understand the effects of Si-priming on root system architecture.

REFERENCES

Adhikari, T., Kundu, S., Subba, R. A. (2013). Impact of SiO_2 and Mo nano particles on seed germination of rice (*Oryza sativa* L.). *International Journal of Agriculture Food Science & Technology*, 4 (8), 809-816.

Ahmad, Z., Waraich, E. A., Barutçular, C., Hossain, A., Erman, M., Çığ, F., Gharib, H., EL Sabagh, A. (2020). Enhancing drought tolerance in wheat through improving morpho-physiological and antioxidants activities of plants by the supplementation of foliar silicon. *Phyton-International Journal of Experimental Botany*, 89 (3), 529-540.

Ahmed, M., Qadeer, U., Ahmed, Z. I., Hassan, F. (2015). Improvement of wheat (*Triticum aestivum*) drought tolerance by seed priming with silicon. *Archives of Agronomy and Soil Science*, 62 (3), 299-315.

Ajouri, A., Haben, A., Becker, M. (2004). Seed priming enhances germination and seedling growth of barley under conditions of P and Zn deficiency. *Journal of Plant Nutrition and Soil Science*, 167, 630-636.

Alves, R. C., Nicolau, M. C. M., Checchio, M. V., Junior, G. S. S., Oliveira, F. A., Prado, R. M., Gratao, P. L. (2020). Salt stress alleviation by seed priming with silicon in lettuce seedlings: an approach base on enhancing antioxidant responses. *Bragantia, Campinas*, 79 (1), 19-29.

Bailly, C., El-Maarouf-Bouteau, H., Corbineau, F. (2008). From intracellular signaling networks to cell death; the dual role of reactive oxygen species in seed physiology. *Comptes Rendus Biologies*, 331, 806-814.

Batool, A., Ziaf, K., Amjad, M. (2015). Effect of halo-priming on germination and vigor index of cabbage (*Brassica oleracea* var. capitata). *Journal of Environmental and Agricultural Sciences*, 2 (7), 1-8.

Biju, S., Fuentes, S., Gupta, D. (2017). Silicon improves seed germination and alleviates drought stress in lentil crops by regulating osmolytes, hydrolytic enzymes and antioxidant defense system. *Plant Physiology and Biochemistry*, 119, 250-264.

Bukhari, M. A., Sharif, M. S., Ahmad, Z., Barutçular, C., Afzal, M., Hossain, A., El Sabagh, A. (2020). Silicon mitigates the adverse effect of drought in canola (*Brassica napus* l.) through promoting the physiological and antioxidants activity. *Silicon*, https://doi.org/10.1007/s12633-020-00685-x

Ceritoglu, M., Erman, M. (2020). Mitigation of salinity stress on chickpea germination by salicylic acid priming. *International Journal of Agriculture and Wildlife Science*, 6 (3), 582-591.

Ceritoglu, M., Ceritoglu, F., Erman, M., Bektas, H. (2020). Root system variation of pulse crops at early vegetative stage. *Notulae Botanicae Horti Agrobotanici Cluj-Napoca*, 48 (4), 2182-2197.

Farooq, M., Romdhane, L., AL Sulti, M. K. R. A., Rehman, A., Al-Busaidi, W. M., Lee, D. J. (2019). Morphological, physiological and biochemical aspects of osmopriming-induced drought tolerance in lentil. *Journal of Agronomy and Crop Science*, 206 (2), 176-186.

FAO, (2019). Dünyada mercimek üretimi. Erişim tarihi: 10.02.20201, Erişim adresi: http://www.faostat.fao.org/beta/en/#data/OA >

Hasanuzzaman, M., Fotopoulos, V. (2019). *Priming and Pretreatment of Seeds and Seedlings: Implication in Plant Stress Tolerance and Enhancing Productivity in Crop Plants*. Springer: Singapore. https://doi.org/10.1007/978-981-13-8625-1.

Hasanuzzaman, M., Nahar, K., Anee, T. I., Fujita, M. (2017). Exogenous Silicon Attenuates Cadmium-Induced Oxidative Stress in Brassica napus L. by Modulating AsA-GSH Pathway and Glyoxalase System. *Frontiers in Plant Science*, 8, 1061.

Hussain, S., Zheng, M., Khan, F., Khaliq, A., Fahad, S., Peng, S., Huang, J., Cui, K., Nie, L. (2015). Benefits of rice seed priming are offset permanently by prolonged storage and the storage conditions. *Scientific Reports*, 5, 8101.

Janmohammadi, M., Sabaghnia, N., Ahadnezhad, A. (2015). Impact of silicon dioxide nanoparticles on seedling early growth of lentil (*Lens culinaris* Medik.) genotypes with various origins. *Agriculture and Forestry*, 61 (3), 19-33.

Jatana, B. S., Ram, H., Gupta, N. (2020). Application of seed and foliar priming strategies to improve the growth and productivity of late sown wheat (*Triticum aestivum* L.). *Cereal Research Communications*, 48, 383-390.

Johnson, S. E., Lauren, J. G., Welch, R. M., Duxbury, J. M. (2005). A comparison of the effects of micronutrient seed priming and soil fertilization on the mineral nutrition of chickpea (*Cicer arietinum*), lentil (*Lens culinaris*), rice (*Oryza sativa*) and wheat (*Triticum aestivum*) in Nepal. *Experimental Agriculture*, 41, 427-448.

Khalid, M. F., Hussain, S., Anjum, M. A., Ejaz, S., Ahmad, M., Jan, M., Zafar, S., Zakir, I., Ali, M. A., Ahmad, N., Rao, M. J., Ahmad, S. (2019). Hydropriming for Plant Growth and Stress Tolerance. In: M. Hasanuzzaman, V. Fotopolulos (eds), *Priming and Pretreatment of Seeds and Seedlings*. Springer Nature Singapore.

Latef, A. A. A., Tran, L. P. (2016). Impacts of priming with silicon on the growth and tolerance of maize plants to alkaline stress. *Frontiers in Plant Science*, 7, 243.

Ma, J.F. (2004). Role of silicon in enhancing the resistance of plants to biotic and abiotic stresses. *Soil Science and Plant Nutrition*, 50 (3), 11-18.

Ma, Z., Bykova, N. V., Igamberdiev, A. U. (2017). Cell signaling mechanisms and metabolic regulation of germination and dormancy in barley seeds. *The Crop Journal*, 5 (6), 459-477.

Mauch-Mani, B., Baccelli, I., Luna, E., Flors, V. (2017). Defense priming: an adaptive part of induced resistance. *Annual Review of Plant Biology*, 68, 485-512.

McDonald, M. B. (2000). Seed priming. In: M. Black, J. D. Bewley (eds), *Seed Technology and its Biological Basis*, Sheffi eld Academic Press, England, 287-325.

Mirmazloum, I., Kiss, A., Erdelyi, E., Ladanyi, M., Nemeth, E. Z., Radacsi, P. (2020). The effect of osmopriming on seed germination and early seedling characteristics of *Carum carvi* L. *Agriculture*, 10 (4), 94.

Mohsenian, Y., Roosta, H. R. (2015). Effects of grafting on alkali stress in tomato plants: datura rootstock improve alkalinity tolerance of tomato plants. *Journal of Plant Nutrition*, 38, 51-72.

Muscolo, A., Sidari, M., Anastasi, U., Santonoceto, C., Maggio, A. (2013). Effect of PEG-induced drought stress on seed germination of four lentil genotypes. *Journal of Plant Interactions*, 9 (1), 354-363.

Noctor, G., De Paepe, R., Foyer, C. H. (2007). Mitochondrial redox biology and homeostasis in plants. *Trends in Plant Science*, 12, 125-134.

Pedrosa, M., Souza, Q. (2013). Reactive oxygen species and seed germination. *Biologia*, 68 (3): 351-357.

Pereira, A. S., Bortolin, G. S., Dorneles, A. O. S., Meneghello, G. E., De Amarante, L., Mauch, C. R. (2021). Silicon seed priming attenuates cadmium toxicity in lettuce seedlings. *Environmental Science and Pollution Research*. https://doi.org/10.1007/s11356-020-12249-y

Pilon-Smits, E., Quinn, C., Tapken, W., Malagoli, M., Shiavon, M. (2009). Physiological functions of beneficial elements. *Current Opinion in Plant Biology*, 12, 267-274.

Richmond, K. E., Sussman, M. (2003). Got silicon? The non-essential beneficial plant nutrient. *Current Opinion in Plant Biology*, 6: 268-272.

Rostamza, M., Richards, R. A., Watt, M. (2013). Response of millet and sorghum to a varying water supply around the primary and nodal roots. *Annals of Botany*, 112, 439-446.

Sahebi, M., Hanafi, M. M., Akmar, A. S., Rafii, M. Y., Azizi, P., Tengoua, F. F., Azwa, J. N. M., Shabanimofrad, M. (2015). Importance of silicon and mechanisms of biosilica formation in plants. *BioMed Research International*, 2015, 1-16.

Sedghi, M., Nemati, A., Esmaielpour, B. (2010). Effect of seed priming on germination and seedling growth of two medicinal plants under salinity. *Emirates Journal of Food and Agriculture*, 22 (2), 130-139.

Sen, A., Puthur, J. T. (2020). Influence of different seed priming techniques on oxidative and antioxidative responses during the germination of *Oryza sativa* varieties. *Physiology and Molecular Biology of Plants*, 26 (3), 551-565.

Scott, S. J., Jones, R. A., Williams, W. A. (1984). Review of data analysis methods for seed germination. *Crop Science*, 24, 1192-1199.

Siregar, I., Muharam, K. F., Purwanto, Y. A., Sudrajat, D. J. (2020). Seed germination characteristics in different storage time of Gmelina arborea treated with ultrafine bubbles priming. *Biodiversitas Journal of Biological Diversity*, 21 (10), 4558-4564.

Sommer, M., Kaczorek, D., Kuzyakov, Y., Breuer, J. (2006). Silicon pools and fluxes in soils and landscapes-a review. *Journal of Plant Nutrition and Soil Science*, 169: 310-329.

PAMUK ÜRETİMİNİN EKONOMİK PARAMETRELER AÇISINDAN DEĞERLENDİRİLMESİ: GAP-ŞANLIURFA ÖRNEĞİ

Hatice PARLAKÇI DOĞAN
ORCID ID:0000-0002-2186-3505
Mustafa Hakkı AYDOĞDU
ORCID ID:0000-0002-4945-5239
Harran Üniversitesi, Şanlıurfa, Türkiye

Özet

Bir toplumun temel yapısının belirleyicisi, o toplumdaki ekonomik altyapıdır. Ekonomik altyapının çok güçlü olduğu toplumlarda bile tarım, ülkelerin vazgeçemeyeceği sektördür. Araştırmanın yapıldığı GAP-Şanlıurfa İli'nde ise ekonomi, yüksek oranda tarıma dayalıdır. İl'de yer alan sanayii üretiminin hammaddeleri bile tarım ürünlerinden elde edilmektedir. Özellikle pamuk üretimi, söz konusu bölgede, yıllar itibariyle değişmekle birlikte 20,20% oranının altına düşmemektedir. Öyle ki 2019 yılı Türkiye pamuk üretiminin 52%'si Şanlıurfa'da gerçekleşmiştir. Bu çalışmada, GAP-Şanlıurfa'da, 2017-2020 yılları arasında, pamuk üretimindeki değişimler incelenmiştir. Pamuk üretimi, 2017-2018 yıllarında, kütlü verim bakımından değerlendirildiğinde, değişimin olmadığı belirlenmiştir. Değişken maliyet 44,07% oranında, satış fiyatları ise 20,0% oranında artış göstermektedir. Bu yıllarda, gelir açısından 20,06% oranında bir artışa gözlenirken, net karlılık açısından 1,12% oranında bir değişim gerçekleşmiştir. 2018-2019 yıllarında pamuk üretiminde, verimdeki değişim -26,32% olarak gerçekleşirken, değişken maliyet, -12,09% olmuştur. Bu yıllar arasında, ürün satış fiyatında bir değişiklik olmazken, gelirdeki değişim -26,34% olarak gerçekleşmiştir. 2018 yılında gerçekleşen toplam pamuk ithalatı 766,9 bin ton iken 2019 yılının ilk on ayında (Ocak-Ekim) 783 bin tonun üzerine çıkmıştır. 2019 yılında, açıklanan enflasyon oranı 11,84% olmasına rağmen, ithalatın artması ve maliyetlerin enflasyonun üstünde bir artış göstermesi, pamuk üretiminden elde edilen net karlılık oranında, 2018-2019 yılları arasında -42,2% bir değişim göstermiştir. GAP-Şanlıurfa'daki pamuk üretimi, 2019-2020 yılları arasındaki değişim, verim açısından değerlendirildiğinde, iki yıl arasında 40,85% oranında değişim meydana gelmiştir. Değişken maliyetler açısından 2019-2020 yılları arasındaki değişim 33,71% olarak gerçekleşmiştir. Satış fiyatında 17,87% oranında bir değişim olmasına rağmen, değişken maliyetlerdeki artışın (33,71%), açıklanan enflasyon oranı olan 25,15%'i aşmasıyla birlikte gelir 66,04,% oranında değişim göstermiştir. Hâlbuki 2019-2020 yılları arasında net karlılık değişimi 120% olarak gerçekleşmiştir. Ayrıca 2020 yılı pamuk ithalatının 820 bin ton olduğu tahminler arasındadır. 2020 yılında, maliyetlerin çok yükselmesi ve pamuk ithalatının da artış eğilimde olması, pamuk üretiminden elde edilen geliri önemli ölçüde düşürmektedir. Sonuç olarak, pamuk üretimi yapan çiftçinin geliri, yoğun bir dalgalanma halindedir. Ekonomisinin büyük bölümü tarıma dayanan GAP illerinde bu durum, önemli ölçüde problemlere sebep olmaktadır. Sübvansiyonlardan ari yapılan bu hesaplamalar, sübvansiyonlarla birlikte yinelenip, çiftçinin neden hala pamuk üretiminden vazgeçmediği belirlenmeli, GAP-Şanlıurfa ürün deseni bu hesaplamalar ışığında yeniden değerlendirilmelidir.

Anahtar Kelimeler: Pamuk, Ekonomik Analiz, GAP-Şanlıurfa

EVALUATION OF COTTON PRODUCTION IN TERMS OF ECONOMIC PARAMETERS: GAP-ŞANLIURFA SAMPLING

Abstract

Bir toplumun temel yapısının belirleyicisi, o toplumdaki ekonomik altyapıdır. Ekonomik altyapının çok güçlü olduğu toplumlarda bile tarım, ülkelerin vazgeçemeyeceği sektördür. Araştırmanın yapıldığı GAP-Şanlıurfa İli'nde ise ekonomi, yüksek oranda tarıma dayalıdır. İl'de yer alan sanayii üretiminin hammaddeleri bile tarım ürünlerinden elde edilmektedir. Özellikle pamuk üretimi, söz konusu bölgede, yıllar itibariyle değişmekle birlikte 20,20% oranının altına düşmemektedir. Öyle ki 2019 yılı Türkiye pamuk üretiminin 52%'si Şanlıurfa'da gerçekleşmiştir. Bu çalışmada, GAP-Şanlıurfa'da, 2017-2020 yılları arasında, pamuk üretimindeki değişimler incelenmiştir. Pamuk üretimi, 2017-2018 yıllarında, kütlü verim bakımından değerlendirildiğinde, değişimin olmadığı belirlenmiştir. Değişken maliyet 44,07% oranında, satış fiyatları ise 20,0% oranında artış göstermektedir. Bu yıllarda, gelir açısından 20,06% oranında bir artışa gözlenirken, net karlılık açısından 1,12% oranında bir değişim gerçekleşmiştir. 2018-2019 yıllarında pamuk üretiminde, verimdeki değişim -26,32% olarak gerçekleşirken, değişken maliyet, -12,09% olmuştur. Bu yıllar arasında, ürün satış fiyatında bir değişiklik olmazken, gelirdeki değişim -26,34% olarak gerçekleşmiştir. 2018 yılında gerçekleşen toplam pamuk ithalatı 766,9 bin ton iken 2019 yılının ilk on ayında (Ocak-Ekim) 783 bin tonun üzerine çıkmıştır. 2019 yılında, açıklanan enflasyon oranı 11,84% olmasına rağmen, ithalatın artması ve maliyetlerin enflasyonun üstünde bir artış göstermesi, pamuk üretiminden elde edilen net karlılık oranında, 2018-2019 yılları arasında -42,2% bir değişim göstermiştir. GAP-Şanlıurfa'daki pamuk üretimi, 2019-2020 yılları arasındaki değişim, verim açısından değerlendirildiğinde, iki yıl arasında 40,85% oranında değişim meydana gelmiştir. Değişken maliyetler açısından 2019-2020 yılları arasındaki değişim 33,71% olarak gerçekleşmiştir. Satış fiyatında 17,87% oranında bir değişim olmasına rağmen, değişken maliyetlerdeki artışın (33,71%), açıklanan enflasyon oranı olan 25,15%'i aşmasıyla birlikte gelir 66,04,% oranında değişim göstermiştir. Hâlbuki 2019-2020 yılları arasında net karlılık değişimi 120% olarak gerçekleşmiştir. Ayrıca 2020 yılı pamuk ithalatının 820 bin ton olduğu tahminler arasındadır. 2020 yılında, maliyetlerin çok yükselmesi ve pamuk ithalatının da artış eğilimde olması, pamuk üretiminden elde edilen geliri önemli ölçüde düşürmektedir. Sonuç olarak, pamuk üretimi yapan çiftçinin geliri, yoğun bir dalgalanma halindedir. Ekonomisinin büyük bölümü tarıma dayanan GAP illerinde bu durum, önemli ölçüde problemlere sebep olmaktadır. Sübvansiyonlardan ari yapılan bu hesaplamalar, sübvansiyonlarla birlikte yinelenip, çiftçinin neden hala pamuk üretiminden vazgeçmediği belirlenmeli, GAP-Şanlıurfa ürün deseni bu hesaplamalar ışığında yeniden değerlendirilmelidir.

Keywords: Cotton, Economic Analysis, GAP-Şanlıurfa

GİRİŞ

Bir toplumun temel yapısının belirleyicisi, o toplumdaki ekonomik altyapıdır. Ekonomik altyapının çok güçlü olduğu toplumlarda bile tarım, ülkelerin vazgeçemeyeceği bir sektördür. Tarımın, insanların beslenme, barınma ve korunma gibi en temel fizyolojik ihtiyaçlarını karşılaması, tüm dünya ülkelerinin odağında olmasını sağlamaktadır.

Pamuk üretimi, bu ihtiyaçların karşılanmasında, doğrudan ve dolaylı olarak etki etmektedir. Ayrıca pamuk tarımına elverişli alanların dünya üzerinde sınırlı olması sebebiyle bu bitkiyi stratejik bir noktada konumlandırmaktadır. Dünya pamuk üretiminin 80%'i, tüm bu sebeplerden dolayı Türkiye'nin de aralarında bulunduğu 7 ülke tarafından gerçekleştirilmektedir (Küçük, N. ve M.H. Aydoğdu, 2020). Dünya'da 2017-2020 yılları arasında, yıllık ortalama 34,03 milyon hektar alanda pamuk üretimi gerçekleşmiş olup, bu ekilişten yıllık 26,3 milyon ton lif pamuk üretimi sağlanmıştır. Bu üretimin 24%'ü Hindistan, 22%'si Çin, 17%'si ABD, 10%'u Brezilya, 5%'i Pakistan, 3%'ü Türkiye tarafından karşılanmıştır (Anonim, 2019a). Bu yıllarda dünya pamuk tüketimi, ortalama yıllık 26 milyon ton civarında seyretmiştir.

Türkiye, 2017 yılında yaklaşık 501 bin hektar alanda pamuk üretimi gerçekleşirken 2020 yılına gelindiğinde bu alan 359 bin hektara gerilemiştir. Dolayısıyla 2017 yılında yaklaşık, 2,5 milyon ton kütlü pamuk üretimi 2020 yılına gelindiğinde 1 milyon 773 bin ton kütlü pamuk üretimine düştüğü görülmektedir (TUİK, 2021).

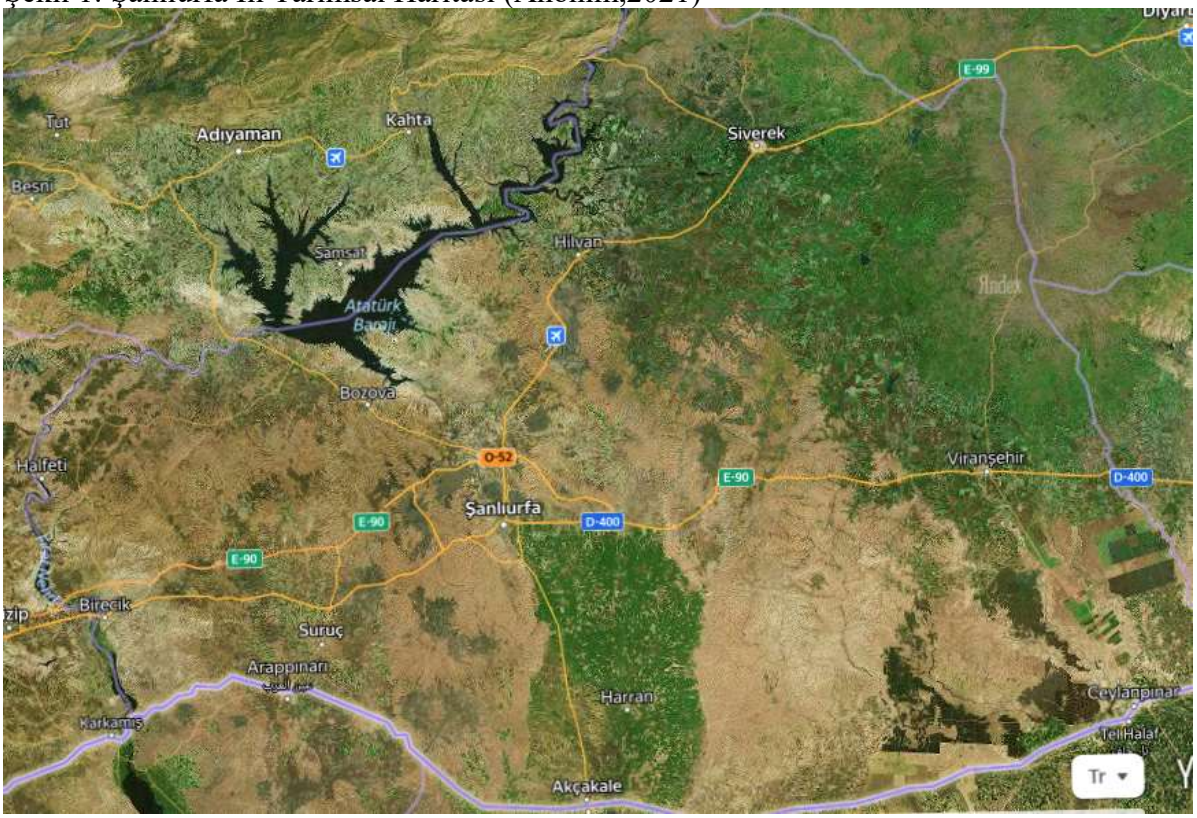
Türkiye pamuk üretiminin 52%'si Şanlıurfa ilinde gerçekleşmektedir. Şanlıurfa İli'nde yıllarla birlikte değişmekle birlikte yaklaşık 1 milyon ha alanda tarım yapılmaktadır. Şanlıurfa'da 2017 yılında tarım alanlarının 20,2%'sinde pamuk üretimi gerçekleşirken, yıllarla birlikte azalarak, 2020 yılında 12,27% oranında pamuk üretimi gerçekleşmiştir (TUİK,2021a). Bu çalışmanın amacı GAP-Şanlıurfa tarımının, büyük bir kısmını kapsayan pamuk üretiminin, 2017-2020 yılları arasında, verim, değişken maliyetler ve karlılık gibi ekonomik parametreler açısından değerlendirilerek, önerilerde bulunmaktır.

MATERYAL VE METOT

Bu çalışmanın materyali, GAP-Şanlıurfa İli tarımsal üretimi olup, bu üretimin önemli bir kısmını kapsayan pamuk üretimi ikincil verileridir.

Şanlıurfa İli Güneydoğu Anadolu Bölgesi'nde Anadolu ve Arap yarımadalarını birbirine bağlayan geçiş yolları üzerinde yer alır. Şanlıurfa'nın ekonomisi tarım ve hayvancılığa dayanmaktadır. Ekili alanların büyük bir kısmı tahıl üretimine ayrılmıştır. Buğday ilk sırayı almakta, onu arpa ve mercimek izlemektedir. Nohut ve antepfıstığı üretiminin de yapıldığı, Şanlıurfa'da sanayi bitkilerinden pamuk ve susam da üretilir. GAP'ın tamamlanmasıyla Şanlıurfa'da tekstil ve giyim sanayine ağırlık verilecek, aynı zamanda yemeklik yağ ile yem üretimi sanayii kuruluşlarının ekonomik kapasiteleri ve sayısı arttırılacaktır (GAP,2021). Bu bakımdan pamuk üretimi, Şanlıurfa için stratejik bir tarım ürünüdür.

Şekil 1: Şanlıurfa İli Tarımsal Haritası (Anonim,2021)



ŞANLIURFA PAMUK ÜRETİMİNİN EKONOMİK PARAMETRELER AÇISINDAN DEĞERLENDİRİLMESİ

GAP-Şanlıurfa'da, 2017-2020 yılları arasında, pamuk üretimindeki değişimler incelenmiştir.
Tablo 1: Pamuk Üretimi 2017-2018 yılları ekonomik analizi

PAMUK	2017	2018	Değişim Oranı (2017-2018) (%)
Verim (kg/da)	475	475	0
Satış fiyatı (TL/kg)	2,75	3,3	20
Değişken Maliyet (TL/da)	574	827	44,07
Gelir (TL/da)	1.306	1.568	20,06
Net Kar (TL/da)	732,25	740,5	1,12

TAMSİS ve İVA verileri kullanılmıştır.

GAP-Şanlıurfa İli'nde yapılan pamuk üretimi, 2017-2018 yılları arasındaki değişimler incelendiğinde; 2017 yılında verim 475 kg/da iken 2018 yılında da aynı miktarda verim elde edilmiş olup, değişim oranı 0%'dır. Bu yıllar, pamuk satış fiyatı açısından değerlendirildiğinde, pamuk, Şanlıurfa'da, 2017 yılında 2,75 TL/kg ile işlem görürken, 2018 yılında 3,3 TL/kg olarak gerçekleşmiştir. 2017-2018 yıllarında, pamuk satış fiyatı değişim oranı, 20%'dir. Bu değer, 2018 yılı açıklanan enflasyon oranı olan 20,30% ile paralel bir yükseliş yaşandığını göstermektedir (TUİK, 2019). Ancak değişken maliyetler açısından aynı durum söz konusu değildir. 2017 yılında 574 TL/da olan pamuk üretimi değişken maliyeti, 2018 yılında 827 TL/da'a yükselmiş ve değişim oranı bu iki yıl arasında 44,07% olarak gerçekleşmiştir. 2017 ve 2018 yılları arasındaki değişken maliyet değişim oranı, maliyetlerin,

açıklanan enflasyon oranının iki katından fazla bir değer aldığını ortaya koymaktadır. Bu sebeple, 2017 ve 2018 yılları arasındaki gelir 20,06% oranında bir artış gösterirken, net karlılıktaki değişim oranı yalnızca 1,12% olmuştur.

Tablo 2: Pamuk Üretimi 2018-2019 yılları ekonomik analizi

PAMUK	2018	2019	Değişim Oranı (2018-2019) (%)
Verim (kg/da)	475	350	-26,32
Satış fiyatı (TL/kg)	3,3	3,3	0
Değişken Maliyet (TL/da)	827	727	-12,09
Gelir (TL/da)	1.568	1.155	-26,34
Net Kar (TL/da)	740,5	428	-42,2

TAMSİS ve İVA verileri kullanılmıştır.

Şanlıurfa İli pamuk üretimi, 2018-2019 yılları arasındaki değişimler incelendiğinde; 2019 yılı pamuk verimi, 2018 yılı ile karşılaştırıldığında, -26,32% oranında negatif bir değişim göstermiştir. Pamuk üretimindeki bu düşüşün sebebi, 2018-2019 yıllarında Türkiye genelinde tespit edilen yağış miktarındaki artışın, GAP-Şanlıurfa İli'nde de gerçekleşmiş olmasından kaynaklanmakta olduğu düşünülmektedir. Şanlıurfa'da, 2018 ve 2019 yıllarında, normalin (1929-2019 yağış miktarı ortalaması) 100%'ünden daha fazla yağış almıştır. Özellikle Şanlıurfa'da pamuk ekilişinin yapıldığı Nisan ayında, 2019 yılında ekstrem yağışlar gözlenmiş olup, bu durum pamuk ekiminde önemli gecikmelere sebep olmuştur. Bununla birlikte, 2019 yılında, pamuk vejetasyon döneminde, yaz sıcaklıkları, uzun yıllar ortalamasının üstüne çıkarak, 44,1-46,8 ^{o}C aralığına yükselmiştir (Anonim, 2019b). Ayrıca bu dönemde pamuk zararlılarının epidemi yaptığı alanlar da tespit edilmiştir. Tüm bu sebeplerden dolayı pamuk veriminde, 2019 yılında önemli düşüşler meydana gelmiştir. Bununla birlikte 2018-2019 yılları arasında, Şanlıurfa İli pamuk satış fiyatında herhangi bir değişim olmayıp, 3,3 TL/kg olarak gerçekleşmiştir. Pamuk üretimi, değişken maliyetler açısından incelendiğinde, 2019 yılında, 2018 yılına nazaran -12,09% oranında negatif bir değişim yaşanmış ve 2019 yılı değişken maliyeti, 727 TL/da olmuştur. Ayrıca 2019 yılında, gelir miktarı da 1155 TL/da olmuş ve -26,34% oranında negatif değişim gerçekleşmiştir. Hâlbuki 2019 yılında açıklanan enflasyon oranı 11,84% olup, değişken maliyetlerle paralellik göstermektedir. Ancak 2018 yılında, Türkiye toplam pamuk ithalatı 766,9 bin ton iken 2019 yılına gelindiğinde, ilk on ayda (Ocak-Ekim) gerçekleşen pamuk ithalatı 783 bin tonun üzerine çıkmıştır (Anonim,2019a). Pamuk ithalatındaki bu artış, satış fiyatlarının düşük seyretmesine sebep olmuştur. Maliyetlerin düşmesi, verimde yaşanan düşüşü ve değişim göstermeyen satış fiyatını tolere edememiş ve pamuk üretimindeki net karlılığın 428 TL/da'a düşmesine sebep olmuştur. Bu durum 2018-2019 yılları arasında, pamuk üretimi net karlılığında, -42,2% oranında negatif bir değişime sebep olmuştur.

Tablo 3: Pamuk Üretimi 2019-2020 yılları ekonomik analizi

PAMUK	2019	2020	Değişim Oranı (2019-2020)(%)
Verim (kg/da)	350	493	40,85
Satış fiyatı (TL/kg)	3,3	3,89	17,87
Değişken Maliyet (TL/da)	727	972	33,71
Gelir (TL/da)	1.155	1.917,77	66,04
Net Kar (TL/da)	428	945,73	120

TAMSİS ve İVA verileri kullanılmıştır.

Şanlıurfa İli pamuk üretimi, 2019-2020 yılları arasındaki değişimler açısından incelendiğinde; 2020 yılı değerleri, 2019 yılında yaşanan travmanın bir nebze atlatıldığını ortaya koymaktadır. 2020 yılında, Şanlıurfa pamuk üretiminde verim, 493 kg/da olmuş ve bu verim, söz konusu yıllar arasındaki değişimin 40,85% oranına ulaşmasını sağlamıştır. Şanlıurfa'da, 2020 yılı pamuk satış fiyatı ise 2019 yılına oranla 17,87% oranında bir artış göstermiş ve 3,89 TL/kg'a yükselmiştir. Değişken maliyetlerde ise değişim 33,71% olmuş ve 2020 yılı değişken maliyeti 972 TL/da olmuştur. 2020 yılı açıklanan enflasyon oranı 25,15%'dir (TUİK, 2021b). Ancak söz konusu yılda satış fiyatı artış oranı enflasyon oranının altında kalmasına rağmen değişken maliyet oranı, enflasyon oranının oldukça üstünde bir artış göstermiştir. Buna rağmen verim değerlerindeki yükseliş, gelirde 66,04% oranında ve net karlılıkta ise 100%'ü aşan bir oranda pozitif değişim sağlamıştır.

SONUÇ

Şanlıurfa, ekonomisinin tarıma dayalı olması, barındırdığı tarımsal potansiyelle birlikte, Türkiye için stratejik ürünlerin yetiştirilebileceği iklim ve toprak koşullarına sahiptir. Bu sebeple tarım politikalarından doğrudan etkilenen bir yapısı vardır. Türkiye, pamuk üretimi bakımından kendi ihtiyacının ancak yarısını karşılayabilmektedir. Bunun yanında pamuk üreticisi çiftçilerin, pamuk üretmeye devam edebilmesi, bu bitkinin üretiminin karlılığı ile doğru orantılıdır. Ayrıca pamuk üretiminde, lif kalitesi ve kantitesi büyük önem arz etmektedir. Bu da pamuk tarımı sırasında daha fazla girdi anlamına gelir. Ancak son yıllarda üretim maliyetlerinin yükselmesi, pamuk üretiminde uygulanan politikalar ve üretici için uygulanması gereken gümrük politikalarının eksikliği, üreticiyi pamuk tarımından uzaklaştırmaktadır. Öyle ki Şanlıurfa'da 2017 yılında 223 bin hektar alanda pamuk üretimi yapılmaktayken, 2020 yılında 128 bin hektar alanda pamuk üretimi gerçekleşmiştir. Halbuki Türkiye'de tarımsal sübvansiyonların en büyük kısmını, pamuk üreticisine verilen sübvansiyonlardan oluşturmaktadır.

Araştırma sonucunda da görüldüğü gibi pamuk tarımı yapan çiftçinin geliri, dalgalanmalar halindedir. Bu da çiftçinin düşük bir hızla da olsa pamuk tarımından uzaklaştırmaktadır.

Bu çalışma, salt pamuk üretiminden elde edilen verilerle yapılmıştır. Ancak pamuk üretimini cazip hale getiren sübvansiyonlar da hesaplamalara dâhil edilmelidir. Bu yolla çiftçilerin pamuk üretimini daha iyi koşullarda ve kaliteli gerçekleştirmeleri sağlanmalıdır.

KAYNAKLAR

Anonim, 2019a. Ürün Masaları Pamuk Bülteni. Bitkisel Üretim Genel Müdürlüğü Tarım Havzaları Daire Başkanlığı, Aralık 2019. Ankara.

Anonim, 2019b. 2018 Yılı İklim Değerlendirmesi. T.C. Tarım ve Orman Bakanlığı Meteoroloji Genel Müdürlüğü Araştırma Dairesi Başkanlığı, Ocak 2019. Ankara.

Anonim, 2021. Yandex Haritaları.
https://yandex.com.tr/harita/geo/sanliurfa/2215906510/?l=sat&ll=38.800945%2C37.147374

GAP, 2021.
http://www.gap.gov.tr/upload/dosyalar/pdfler/icerik/istatiski_veriler/Tarim_Istatistikleri.pdf
https://yandex.com.tr/harita/geo/sanliurfa/2215906510/?l=sat%2Cskl&ll=38.800945%2C37.147374&z=13

Küçük, N. ve M.H. Aydoğdu, 2020. Türkiye'de Pamuk Üretiminin Son Dönemlerdeki Genel Analizi. Euroasia Journal Of Mathematics-Engineering Natural & Medical Sciences International Indexed & Refereed ISSN 2667-6702. Volume (8), Year (2020), p.77-82.

TAMSİS,2020. T.C. Tarım ve Orman Bakanlığı İstatistik Verileri.

TUİK,2019. Haber Bültenleri.

TUİK, 2021a. Veri Tabanları, 2021. https://biruni.tuik.gov.tr/medas/?kn=92&locale=tr

TUİK, 2021b. https://data.tuik.gov.tr/Kategori/GetKategori?p=enflasyon-ve-fiyat-106&dil=1

İKLİM DEĞİŞİKLİĞİ KAYNAKLI KİMYASAL, BİYOLOJİK, RADYOLOJİK, NÜKLEER (KBRN) OLAYLARI

Büşra Nur Türkeri
Ayşe Handan Dökmeci
Tekirdağ Namık Kemal University, Turkey

Özet
Afetler geçmişten bugüne tarihin her döneminde yaşanmıştır. Özellikle sanayi devrimi ile birlikte küresel çapta doğal ve insan kaynaklı afetlerin sayısı da günümüzde artarak devam etmektedir. İnsanoğlunun ihtiyaçları doğrultusunda yaptığı faaliyetler doğal kaynaklı afetlerin ve teknolojik afetlerin temel nedenlerinden biridir. Nüfusun artmasıyla birlikte tarım, sanayi, enerjiye teknolojik faaliyetlerdeki artış, atmosferde bulunan sera gazlarını artırarak iklim değişikliğine neden olmaktadır. Dünyada yaşanan iklim değişikliği sel, yangın, fırtına gibi doğal kaynaklı afetlerin sayısını ve şiddetini artırmaktadır. Yağış düzeninin değişmesi ve artan/azalan sıcaklıklar gibi sonuçlar insan ve çevreyi olumsuz etkileyerek ikincil afetlere neden olmaktadır. Özellikle sanayinin ve nükleer santrallerin bulunduğu bölgelerde iklim değişikliği kaynaklı doğal afetlerin artması sonucu KBRN olaylarının afet boyutunda yaşanması olasıdır. Bu çalışmada, iklim değişikliği nedeniyle artan doğal afetlerin tetiklediği KBRN olaylarına yönelik veriler derlenmiştir. Güncel literatür bilgisi doğrultusunda, günümüzde artık tüm dünyanın gündeminde yer alan iklim değişikliği ve KBRN olayları değerlendirilerek ve çözüm önerileri sunulmuştur.

Anahtar Kelimeler: İklim değişikliği, Doğal afetler, İnsan kaynaklı afetler, KBRN olayları

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR (CBRN) EVENTS CAUSED BY CLIMATE CHANGE

Abstract
Disasters have occurred in every period of history from the past to the present. Especially with the Industrial Revolution, the number of natural and human caused disasters on a global scale continues to increase today. Human activities in accordance with the needs of natural disasters and technological disasters are one of the main causes. As the population increases, the increase in agriculture, industry, energy and technological activities causes climate change by increasing the greenhouse gases present in the atmosphere. Climate change in the world increases the number and severity of natural disasters such as floods, fires, storms. Consequences such as changing rainfall patterns and increasing/decreasing temperatures negatively affect people and the environment, causing secondary disasters. As a result of the increase in natural disasters caused by climate change, especially in areas where industry and nuclear power plants are located, it is possible that CBRN events will occur in the size of

disasters. In this study, data on CBRN events triggered by increased natural disasters due to climate change were compiled. In line with current literature knowledge, climate change and CBRN events that are now on the agenda of the whole world are evaluated and solution proposals are presented.

Keywords: Climate change, Natural disasters, Human caused disasters, CBRN events

GİRİŞ

Dünya'da insan yerleşimlerinin karşı karşıya olduğu en büyük çevresel zorluklardan ve sorunlardan biri de afet sorunudur. Afet, beklenmeyen bir şekilde meydana gelen, canlıları ve çevreyi zarara uğratan, ülkenin kendi imkanlarıyla baş edemeyecek kadar büyük olaylar şeklinde tanımlanmaktadır. İnsanların yaşamlarını önemli ölçüde etkileyen bu afetler çeşitli şekillerde sınıflandırılmıştır. Ancak dünya ülkeleri tarafından ortak bir dil sağlamak ve epidemiyoloji alanında yapılan çalışmalara katkıda bulunmak için afetler, doğal kaynaklı afetler ve insan (teknolojik) kaynaklı afetler şeklinde sınıflandırılmıştır (Dökmeci, 2018). Günümüzde doğal afetler, doğayı tahrip edici etkisiyle görülmektedir. Doğal afetler; jeofiziksel (deprem, kütle hareketleri, volkanik hareketler), meteorolojik (aşırı sıcaklar, sis, fırtına), hidrolojik (sel, toprak kayması, dalga hareketi), klimatolojik (kuraklık, buzul gölü patlamaları, büyük yangınlar), biyolojik (epidemik, böcek istilası, hayvan kazaları), dünya dışından kaynaklı (çarpma, uzay iklimi) şeklinde sınıflandırılabilir. Günümüzde çok sayıda insan ölümüne sebep olan bu doğa olaylarının (küresel iklim değişikliği gibi birçok nedenden dolayı) sayıları, şiddetleri ve etkili oldukları süre hızlı bir şekilde artmaktadır (Dökmeci, 2018; Akay, 2019; T.C. Kalkınma Bakanlığı, 2020). İnsan faaliyetleri kaynaklı afetler ise, kendi kendine tetiklenebileceği gibi "depremin neden olduğu baraj yıkılması ya da nükleer santral kazaları" olarak doğa kaynaklı bir afet tarafından da tetiklenebilmektedir (T.C. Kalkınma Bakanlığı, 2020). İnsan kaynaklı kazalar çoğu zaman dikkatsizlik, tedbirsizlik, umursamazlık ve sorumsuzluk sebebiyle afet boyutu kazanmaktadır. Bu afetlerden bazıları; geniş çaplı gıda zehirlenmesi, hava, su, toprak kirliliği, büyük ulaşım kazaları (kara, deniz, hava ve demiryolu), küresel iklim değişikliği, büyük yangınlar, KBRN kazalar, salgın hastalıklar, tehlikeli madde sızıntı ve serpintileri, toksik gaz ve atıklar, tehlikeli madde taşıyan gemi, tren ve karayolu aracı kazaları ile uçak kazalarıdır (Akay, 2019; T.C. Kalkınma Bakanlığı, 2020). KBRN afetler de insan kaynaklı afetler kapsamında değerlendirilmektedir (Odabaş, 2019).

19. yüzyıldan bu yana insan faaliyetlerinin iklimi etkilediği yeni bir dönem başlamıştır. İnsan faaliyetleri için gerekli enerji ihtiyacını karşılayabilmek için kömür, petrol ve doğalgaz gibi fosil yakıtların daha fazla kullanılmasıyla atmosfere iklim dengesini tehdit edecek boyutta kirleticiler salınmaktadır. Tarihin ilk zamanlarından günümüze kadar insanlığın enerji ihtiyacı tüketim, üretim ve teknolojik olarak sürekli artmış ve sanayi devrimi ile zirveye ulaşmıştır (Aras ve Demir, 2020). Özellikle sanayinin ve nükleer santralin bulunduğu bölgelerde endüstri alanında meydana gelen gelişmeler ile KBRN riskleri artarak insanlığı olumsuz etkilemiştir (ANAKOM, 2014).

Birleşmiş Milletler (BM), Hükümetler Arası İklim Değişikliği Paneli'nin (IPCC) 2007 yılında 4. Raporu'nu kamuoyu ile paylaşmıştır. Bu durum ile iklim değişikliğinin neden olduğu afetler, uluslararası alanda önem kazanmıştır. Kapıda olan iklim krizinin nedeni sadece doğal olarak meydana gelen küresel ısınma değildir (Akay, 2019). İklim, doğal ya da insan etkisiyle

değişiklik göstermektedir. Yaşamın doğal bir parçası olan iklim; bir yerde uzun süre boyunca görülen meteorolojik olayların istatistiksel ortalaması olarak tanımlanmaktadır. İklim değişikliği ise, herhangi bir nedenle iklimin ortalama durumunda ve/veya durumun değişkenliğinde uzun süre boyunca meydana gelen değişiklikler şeklinde ifade edilmektedir. İklim değişikliği genel olarak, küresel ısınma ve/veya soğuma, şiddetli yağışlar, ani seller, buzulların erimesi, deniz seviyesinin yükselmesi, tarım alanlarında azalma, ekosistemlerinin etkilenmesi, göçler, salgın hastalıklar şeklinde karşımıza çıkmaktadır (Olgun Eker, 2020). Birey ve toplum tarafından önemsiz görülen olaylar ve önlemlerin alınmaması, olası afetlerin etkilerini artırmakta ve yeni afetlere neden olmaktadır (Ay ve Erik, 2020).

Bu çalışmanın amacı; yukarıda bahsedilen bilgiler ışığında iklim değişikliğinden dolayı dünyanın karşı karşıya kaldığı ekosisteme yönelik tehdit ve tehlikelerin araştırılmasıdır. Bu bağlamda günümüzde tüm dünyanın gündeminde yer alan küresel iklim değişikliğinin tetiklediği KBRN olayları ele alınmıştır.

KİMYASAL, BİYOLOJİK, RADYOLOJİK VE NÜKLEER OLAYLAR

Dünya çapında kullanılan CBRN (KBRN) terimi, kimyasal, biyolojik, radyolojik ve nükleer kelimelerinin baş harflerinden oluşmaktadır. KBRN; kimyasal, biyolojik, radyoaktif ve nükleer maddelerin kasten, kazaen ya da doğal afetler sonucu ortama yayılarak insan ve çevreyi olumsuz etkileyen zararlı ve tehlikeli durumlardır (ANAKOM, 2014).

Kimyasal özelliği nedeniyle öldüren, yaralayan ve tahriş eden, sis ve yangına sebep olan, canlı ve cansızları etkileyen katı, sıvı, gaz ve aerosol halde bulunan maddelerin yayılması ile meydana gelen olaylar kimyasal olaylar olarak tanımlanmaktadır. Doğal afetler, taşıma esnasındaki kazalar, sanayide meydana gelen kazalar kimyasal olaylara neden olabilmektedir. İnsan, bitki ve hayvanlarda hastalık ya da ölüme neden olan mikroorganizmaların ya da toksinlerinin kasıtlı ya da kaza ile maruziyetiyle meydana gelen olaylar ise biyolojik olaylardır ve tedavisi zaman alan salgınlara neden olabilirler. Radyoaktif maddelerin yayılması ile yayılan ısı ve ışığa maruz kalma sonucu meydana gelen olaylar radyoaktif olaylardır. Yüksek doz maruziyeti ölüm ile sonuçlanırken, düşük doz maruziyetleri çeşitli sistemler üzerinde kanser hastalığı gibi sorunlara neden olabilmektedir. Nükleer olaylar ise atom parçalanması ya da iki atomun bir araya gelmesiyle açığa çıkan yüksek miktardaki enerjinin kasıtlı ya da kaza ile canlı ya da cansız tüm varlıkları olumsuz etkilemesi olayıdır. Etkinin dağılımı öngörülemez, geniş alana yayılır, kalıcıdır ve etkisi uzun yıllar sürer (Faruk, 2020).

İKLİM DEĞİŞİKLİĞİNİN TETİKLEDİĞİ KBRN OLAYLARI

Sanayileşme ve insan faaliyetleri, doğayı tahrip ederek dünyanın atmosferinde ve ikliminde değişikliklere neden olmaktadır. İklim değişikliği zamanla oluşan doğal bir olay olmasına rağmen, hiçbir zaman günümüzdeki kadar hızlı gelişmemiş ve insanoğlunun etkisi de bu kadar büyük olmamıştır. Özellikle son yıllarda dünyada görülen şiddeti, etkisi, süresi ve oluşturduğu yer açısından daha önce benzeri görülmeyen ikincil afetlere de neden olmaya başlamıştır. Bu afetler ise, dünyada yaşayan canlıların ve toplumların sosyoekonomik, sağlık, kültürel gelişiminde tehdit oluşturmaktadır (T.C. Kalkınma Bakanlığı, 2020). İklim değişikliğinin sonuçları ve neden olduğu olumsuz tablo, ekolojik sistemde çok belirgin bir şekilde karşımıza çıkmaktadır. Özellikle son yıllarda ortaya çıkan iklim değişikliğinin olumsuz etkileri, dünya üzerinde kendisini baskın bir şekilde göstermiştir (Baltacı, 2019). İklim değişikliği doğrudan ve dolaylı olduğu gibi kısa ve uzun süreli şekilde de etkili olmaktadır. İklim değişikliğinin doğrudan etkileri hava olayları, dolaylı etkileri ise çeşitli

hastalıkların ortaya çıkmasıdır. Bu etkiler insan ve çevre sağlığını önemli ölçüde etkilemektedir (Olgun Eker, 2020).

İklim değişikliğinin tetiklediği doğrudan ve dolaylı KBRN olaylarına bakacak olursak:

- yağış düzensizliğinin su kaynaklarına etki etmesi ile;
  - içilebilir suya ve sulama suyuna erişimde sıkıntılar yaşanması,
  - tarım, enerji ve sanayi alanında taşkın suyu içinde serbest kalan kimyasal kirleticilere maruz kalma riskinin oluşması,
  - enfeksiyon hastalıklarının görülmesi (Hanilçi, 2018; Hoşgörmez, 2020),

- sıcaklık artışı, aşırı yağış, kuraklık, aşırı hava olayları ve deniz seviyelerinin artışıyla birlikte;
  - vektör, su, yiyecek ve hayvan yoluyla bulaşan hastalık etkenlerinin biyolojik ajan olarak tehdit oluşturması (Akay, 2019; Evci Kiraz, 2019),
  - gıda güvenliğinin ve gıda ihtiyacının giderilmesinde özellikle gelişmemiş ve yoksul bölgelerde tehlikeli durumların ortaya çıkması,
  - tatlı su, karasal ve kıyı bölgelerde bulunan biyoçeşitliliğin, ekosistemin zarar görmesi ve bu bölgelerde yaşayan canlıların hayatının olumsuz etkilenmesi (Baltacı, 2019),
- iklim değişikliği kaynaklı doğal afetler sonucu;
  - kanalizasyon, alt yapı sistemlerinin zarar görmesi/yok olması ve sonrasında doğal gereksinimlerin, su, elektrik ve sağlık hizmetlerinin aksamasından kaynaklanan risklerin oluşması,
  - toksik madde salınımı ve yayılımı ile birlikte yangınların, patlamaların ve sızıntıların meydana gelmesi (Hoşgörmez, 2020),
  - doğal afetlerin tetiklediği endüstriyel kazaların (Na-Tech kazaları) ve Haz-Mat olaylarının yaşanması,
  - nükleer enerji tesis kazaları.

Bu olaylar ülkemizin geçmişinde pek fazla yer almasa da dünyada oldukça fazla yaşanmıştır:

- Vektör kaynaklı hastalık sınıfında yer alan ve salgına neden olan Batı Nil Virüsü Enfeksiyonu (BNV) ilk kez 1937'de Uganda'nın Batı Nil bölgesinde tespit edilmiş ve en fazla Afrika, Batı Asya ve Orta Doğu bölgelerinde görülmüştür. Sıcaklıklardaki artışlar sivrisinekler yoluyla bulaşan Batı Nil Virüsü gibi hastalıkların yayılmasına neden olmuştur. BNV 2010 yılının Ağustos ayında ülkemizde de görülmüştür (Olgun Eker, 2020).

- 1993 ve 1994 yılının kış aylarında Fransa, Belçika ve Hollanda sınırları içerisinde bulunan Maas (Meuse) nehrinde yapılan bir araştırma ile sel ve taşkın olayı sonrasında toprakta meydana gelen ağır metal kirliliğinin kıyı bölgelerde yaşayan canlıları olumsuz etkilediği ortaya konulmuştur (Korkanç ve Yaşar Korkanç 2006). Günümüzde iklim değişikliği nedeniyle ülkemizde özellikle Karadeniz Bölgesi'nde sel ve taşkın olayları sık sık yaşanmaktadır.

- 1994'te yıldırım düşmesi sonucu Dronka-Mısır'da meydana gelen yakıt tankının patlaması ile 469 kişinin hayatını kaybetmiştir (Gökçekuş ve ark., 2018).

- Ocak 1997'de İzmir'de yaşanan selden sonra Sodyum Hiposülfit bulunan depoya su girmesiyle gaz sızıntısı ve yangın meydana gelmiş, bölgede görev alan birçok personel (itfaiye, 112, güvenlik) solunum yolu ile ajana maruz kalmış ve tedavi görmüştür. Sel sonrasında, arazi ve tarım alanlarının kirlenmesi sonucu balık ve hayvan popülasyonları da önemli ölçüde etkilenmiştir (Korkanç ve Yaşar Korkanç 2006).

- 1998'de Somali'de yaşanan sel sonrası, çocuklarda görülen diyare vakası artmış, birçok sayıda kolera ve sıtma salgını görülmüştür. Bununla birlikte kirli içme kaynaklarından su içen 50'den fazla kişi de şarbon salgını nedeniyle hayatını kaybetmiştir (Korkanç ve Yaşar Korkanç 2006).

- 2000'de Mozambik'te Limpopo Nehri'nin yüzlerce insanın evini sular altında bıraktıktan sonra insanların mülteci kampına kaçması ile hastalıklar görülmeye başlanmıştır. İnsanlar, sağlıklı olmayan koşullarda yayılan kolera ve nehrin kıyı bölgelerinde bulunan sivrisinekler tarafından yayılan sıtma nedeniyle hayatını kaybetmiştir [https://tr.wikipedia.org/wiki/Sel].

- 28 Ağustos 2005'te yaşanmış olan Katrina Kasırgası Meksika körfezindeki 30 civarı petrol platformunun zarar görmesine ya da yıkılmasına neden olmuştur. Burada yaşayan canlılar büyük ölçüde etkilenmiştir[https://tr.wikipedia.org/wiki/Katrina_Kas%C4%B1rgas%C4%B1#Ekonomik_sonu%C3%A7lar%C4%B1].

- 2009'da Avustralya Victoria'da bir yaz mevsiminde yaşanan sıcak hava dalgası, büyük orman yangınlarını tetikleyen koşulları yarattı. 2010'da ise Kuzey Yarıküre'nin yaz mevsiminde 2000'den fazla insanın ölümüne, yaygın hava kirliliğine ve binlerce kilometrelik ormanın yanmasına neden oldu (Gökçekuş ve ark., 2018).

- 2011'de Teksas Eyaleti'nde yaşanan kuraklık Bastrop yangınlarına neden olmuştur (Gökçekuş ve ark., 2018).

- 2020 yılında ABD Kaliforniya Eyaletinde sıcaklık artışlarıyla birlikte yaşanan büyük yangın birçok canlının hayatını kaybetmesine neden olmuştur (Dökmeci, 2018).

- Günümüzde dünyanın tek gündemi olan Koronavirüs, 2003'te SARS CoV salgını ile dünyada 8000 kişinin enfekte olmasına ve 700'den fazla kişinin de ölümüne neden olmuştur. 2012'de ilk olarak görülen MERS-CoV salgını ise 858 kişinin ölümüne neden olmuştur. 2019 yılının Aralık ayında küresel bir halk sağlığı sorunu olarak Çin'in Wuhan eyaletinde Yeni Koronavirüs (Covid-19) ortaya çıkmıştır (Olgun Eker, 2020). Bu salgının nedeni olarak çeşitli senaryolar olsa da, vahşi yaşamdan kaynaklandığı konusunda ortak bir görüş bulunmaktadır. Sıcaklıklardaki değişimler sonucu hayvanların insanların yaşam alanlarına kadar gelerek pek çok hastalığa neden olabileceği gibi, iklim değişikliği ile kutuplarda buzulların erimesi sonucu ilk çağlardan bugüne donmuş halde bulunan virüslerin yeni salgınlara neden olması biyolojik tehlikelerin her an gündemimizde olacağının işaret eden kanıtlardır.

SONUÇ VE ÖNERİLER

İklim değişikliği, seri ölçülen parametrelerle (küresel ortalama sıcaklık, deniz seviyesi, yağış seviyesi ve dağılım, arktik buz vb.) kanıtlanmış, yaygın olarak kabul gören küresel bir süreçtir. Sanayileşme ve insan faaliyetleri sonucunda atmosferde bulunan sera gazları oranlarının artması, ekolojik sistemdeki tehditler ve kimyasal kirlilik nedeniyle dünya ısınmaktadır. Bu ısınma ile doğal döngü etkilenerek iklimlerin değişmesi, devamında yağış

formlarının değişmesi, taşkınlar, seller, kuraklaşmalar, çölleşmeler, kutuplarda erimeler, deniz seviyelerinde değişiklikler meydana gelmektedir. Bu olaylar beraberinde tüm canlı çeşitlerini ve ekosistemi tehlikeye sokarak olumsuz etkilemektedir. Afet kavramı önemli olmakla beraber yaşanan birincil afetin ardından onun tetiklediği ikincil afetler meydana gelebilmektedir. Doğal afetlerin domino etkisi nedeniyle gelecekte KBRN olaylarının sayısını artırması muhtemeldir. Bu nedenle, doğal afetlerin yüksek riskli durumuyla etkin bir şekilde başa çıkmak ve düşük afet riskli toplum oluşturmak için iklim değişikliğine uyum çerçevesinde olası KBRN olayları da dahil edilerek kapsamlı afet azaltma stratejisinin uygulanması ve tüm doğal afet yönetimi süreci boyunca bütünleşik afet risk yönetimi oluşturmayı amaçlayan bir politika geliştirmesi konusunu ülkelerin gündemlerine almaları gerekmektedir.

KAYNAKLAR

AKAY A 2019. İklim Değişikliğinin Neden Olduğu Afetlerin Etkileri. Avrupa Birliği İklim Değişikliği Alanında Ortak Çabaların Desteklenmesi Projesi (AB iklimİN), s.6-15.

AKTAŞ A 2020. İklim Değişikliği Sorunu ve İklimin Finansmanı. Ankara Hacı Bayram Veli Üniversitesi, Lisansüstü Eğitim Enstitüsü, Yüksek Lisans Tezi, s.5-98.

ALMUHİSEN M BARLAS C EYNİ N GÖKÇEKUŞ H 2018. Doğal ve İnsan Kaynaklı Afetler, Sonuçları ve Afet Yönetimi. http://www.iusarc.org/wp-content/uploads/2020/11/Dogal-ve-Insan-Kaynakli-Felaketler-Sonuclari-ve-Afet-Yonetimi.pdf [18.02.2021]

Ankara Büyük Şehir Belediyesi, Fen İşleri Daire Başkanlığı, Afet Koordinasyon Merkezi (ANAKOM) 2014. KBRN Nedir, Tehlikeli Maddeler, Alınacak Önlemler. Ankara.

ARAS BB, DEMİR K 2020. İklim Değişikliğinin İnsan Sağlığı Üzerindeki Psikolojik Etkileri. Nazilli İktisadi ve İdari Bilimler Fakültesi Dergisi, 1 (2): 78-79.

AY F, ERİK YE 2020. Üniversite Öğrencilerinin Küresel Isınma ve İklim Değişikliğine Yönelik Bilgi ve Algı Düzeyleri. Sivas Cumhuriyet Üniversitesi Edebiyat Fakültesi Sosyal Bilimler Dergisi, 2: 2-3.

BALTACI G 2019. Küresel İklim Değişikliği ve İklim Değişikliği Politikalarını Etkileyen Argümanlar. Selçuk Üniversitesi, Sosyal Bilimler Enstitüsü, Yüksek Lisans Tezi, s.59-164.

BATAN M, TOPRAK ZF 2020. İklim Değişikliğinde Etkenler ile Sonuçların Birbirini Tetiklemesi. DÜMF Mühendislik Dergisi 11 (2): 766-767.

BAYRAKDAR S, İNCEKARA B, ŞANLI B 2017. Küresel İklim Değişikliğinin Etkileri ve Bu Etkileri Önlemeye Yönelik Uluslararası Girişimler. Süleyman Demirel Üniversitesi İktisadi ve İdari Bilimler Fakültesi Dergisi, 22 (1): 201-202.

DÖKMECİ AH 2018. Toksikolojik Çevresel ve Endüstriyel Afetler. Nobel Tıp Kitabevleri İstanbul.

EVCİ KİRAZ ED 2019. İklim Değişikliğinin İnsan Sağlığına Etkileri. Avrupa Birliği İklim Değişikliği Alanında Ortak Çabaların Desteklenmesi Projesi (AB iklimİN), s.8-13.

FARUK Ö 2020. KBRN Nedir ve Neden Önemlidir. https://www.acilcalisanlari.com/kbrn-nedir-ve-neden-onemlidir [10.01.2021]

HANİLÇİ N 2018. Afetlerin Toplum Üzerindeki Etkisi. http://auzefkitap.istanbul.edu.tr/kitap/acilyardimveafetyonetimi_ao/afetlerintoplum%C3%BCzerindekietkikleri.pdf [10.12.2020]

HOŞGÖRMEZ H. Afetlerde Bilişim ve İletişim Teknolojilerinin Kullanımı.

http://auzefkitap.istanbul.edu.tr/kitap/acilyardimveafetyonetimi_ao/abvitk.pdf [10.12.2020]
İspanyol Gribi. https://tr.wikipedia.org/wiki/%C4%B0spanyol_gribi [19.02.2021]
Katrina Kasırgası.
https://tr.wikipedia.org/wiki/Katrina_Kas%C4%B1rgas%C4%B1#Ekonomik_sonu%C3%A7lar%C4%B1 [19.02.2021]
KORKANÇ M YAŞAR KORKANÇ S 2006. Sel ve Taşkınların İnsan Hayatı Üzerindeki Etkisi. ZKÜ Bartın Orman Fakültesi Dergisi, 8 (9): 42-46.
ODABAŞ D 2019. Kimyasal, Biyolojik Radyolojik ve Nükleer Afetleri Yönetmek İçin Bir Karar Destek Sistemi Modeli Önerisi. Yüksek Lisans Tezi, s.1-2.
OLGUN EKER E 2020. İklim Değişikliğinin Sağlık Üzerine Etkileri. Doğanın Sesi, 5: 14-18.
Sel. https://tr.wikipedia.org/wiki/Sel [19.02.2021]
TC Kalkınma Bakanlığı 2014. Onuncu Kalkınma Planı, Özel İhtisas Kurulu Raporu 2014-2018, Afet Yönetiminde Etkinlik. Ankara.
TC Tarım ve Orman Bakanlığı, Meteoroloji Genel Müdürlüğü, Araştırma Daire Başkanlığı 2019. Meteorolojik Afetler 2018. Ankara.

CLIMATE CHANGE AND RISKS OF RAINFULL EROSIVITY IN THE AGRICULTURAL DEVELOPMENT POLE OF ALIBORI SUD-BORGOU NORD-2KP (NORTH BENIN / WEST AFRICA)

Alain I. AGUE
Cyr Gervais ETENE
Somiyabalo PILABINA
Ibouraïma YABI
LACEEDE/DGAT/FASHS/UAC-Bénin
Université de Lomé, Togo

Abstract

Water erosion is detrimental to soil stability and agriculture, especially in the current context of climate change. This work therefore aims to assess the impact of climate change on rainfall erosivity in the Agricultural Development Pole of Alibori Sud-Borgou Nord-2KP (PDA 2). The used data are monthly precipitation of 10 stations coming from Meteo-Benin and covering the period 1999 - 2018 and the simulation data of the HadGEM2-ES climate model for 2041-2060 under the RCP 4.5 and RCP 8.5 scenarios. The rainfall erosivity was determined by Arnoldus index and the changes are analyzed by Ardoin (2004) and Totin (2010) methods. The results show that the risk of rainfall erosivity is high at two stations and very high at all the others. Therefore, the PDA2 is subject to a strong aggressiveness of the rains. By 2041-2060 and whatever the scenario is (RCP4.5 or RCP 8.5), the Arnoldus index is clearly higher than 160 for all stations; this corresponds to a very high risk of rainfall erosivity. The highest values (233.60 under RCP 4.5 and 223.13 under RCP 8.5) are obtained at the Guene station located further north at latitude 11.72 degrees. Compared to the reference period 1999 – 2018, the Arnoldus Index increases and the rate varies from 11.69% (Ina Station) to 45.90% (Guénè Station) under RCP 4.5 and from 8.85% (at Kalalé Station) to 39.37% (at Guénè Station) under RCP 8.5. Climate change will therefore lead to an increase of rainfull erosion risk by 2041-2060. These results suggest the implementation of appropriate erosion control measures on the farms of PDA2.

Keywords: Benin, PDA2, Climate change, rainfall erosivity, Agricultural activities

INTRODUCTION

In West Africa, climate change manifests by a strong seasonal and intra-seasonal irregularity of rainfall, the appearance of sometimes severe dry sequences and a tendency for temperatures to rise and the occurrence of extreme events like severe floods or droughts (CILSS. 2015). The resurgence of these events accelerates soil erosion (Zhang *et al*., 2010) and could negatively influence the socio-economic activities of local populations (Sarr and Camara. 2017).

In Benin, the climatic physiognomy has also undergone various changes in recent decades (MEPN. 2010; Chédé. 2012; Boko *et al*., 2012; Yabi and Afouda. 2012; Issa. 2012; Lawin *et al*., 2013). There is a very high variability of extreme daily rainfall in several parts of the country, particularly in the north-west between latitudes 10° and 11°30 (Agué and Afouda. 2015). In the Sudanian zone of Benin, the agricultural seasons are marked by insufficient of

totals rainfall which is associated with late starts and early stops in rainfall and the appearance of dry sequences (Yabi. 2018). These climatic disturbances have led to the degradation of ecological components such as the soil and have resulted in negative impacts on the agricultural production system. Whereas The agricultural sector employs about 70% of the working population, contributes nearly 33% to GDP, provides about 75% of export earnings and 15% of state revenues (INSAE, 2015).

The problems raised by erosion have been known for several centuries but research has only been developed in Africa for 50 years (Roose and De Noni. 2004). In Benin, almost all localities are affected by water erosion, which takes the form of gullies and ravines (Eténé, 2017). It leads to the degradation of the functional attributes of the soil pores, allowing water to be retained and transmitted for root growth (Avakoudjo *et al*., 2018). Rainfall erosivity is one of the determining factors in the quantification of erosion. It characterises the aggressivity of rain and depends on its kinetic energy and then on the maximum hourly intensity observed for 30 min (Bollinne *et al*., 1979). In view of the scarcity of hourly rainfall data, formulae using monthly and annual rainfall data has been established. Future changes in rainfall will induce variations in the erosive power of rainfull (Zhang *et al*., 2010). Current and future rainfall information are therefore required for a better understanding of erosive power of rainfall in the current climate change context. In addition, several Climate Models are developed and can provide realistic simulation data on climate (IPCC. 2013).

In view of all the above, the following question emerges: what are the effects of climate change on the erosive power of rainfull in the Agricultural Development Pole of Alibori South-Borgou North-2KP (PDA 2) ? This research aims to analyze the impacts of climate change on rainfull erosivity in PDA 2.

MATERIALS AND METHODS

Study area

The PDA2 (Agricultural Development Pole of South Alibori - North Borgou - 2KP) is situated between 10°13' and 11°18' North latitude and between 1°41' and 3°41' East longitude (figure 1). It partially covers three (03) departments of northen Benin which are: Alibori. Borgou and Atacora. It groups together ten (10) Municipalities which are Kandi, Banikoara, Gogounou, Segbana, Kalale, Bembereke, Sinende, Kérou, Kouandé and Péhunco. The study area is characterized by one rainy season, which extends from April to September in the northern part and until October in the southern part.

The soils are mainly tropical ferruginous types. They are deep from 1 to 4 m, generally very well drained at least 1 m deep. Very cultivated, they are sensitive to erosion with important constraints on agriculture.

The relief is marked by the Atacora chain, the plateau of the Sinende region and the hills called "Monts of Bembereke". According to the fourth General Census of Population and Housing, the average population density is thirty-six (36) inhabitants per km². The rural population rate is 66.8%. The population growth rate is estimated at 4.3%. The municipalities with the highest growth rates are Banikoara (5.8%), Kalalé and Gogounou (4.7%) and Kandi (4.6%). These growth rates exceed the national average of 3.4%. Agriculture is essentially rainfed and is one of the main economic activities in the study area and.

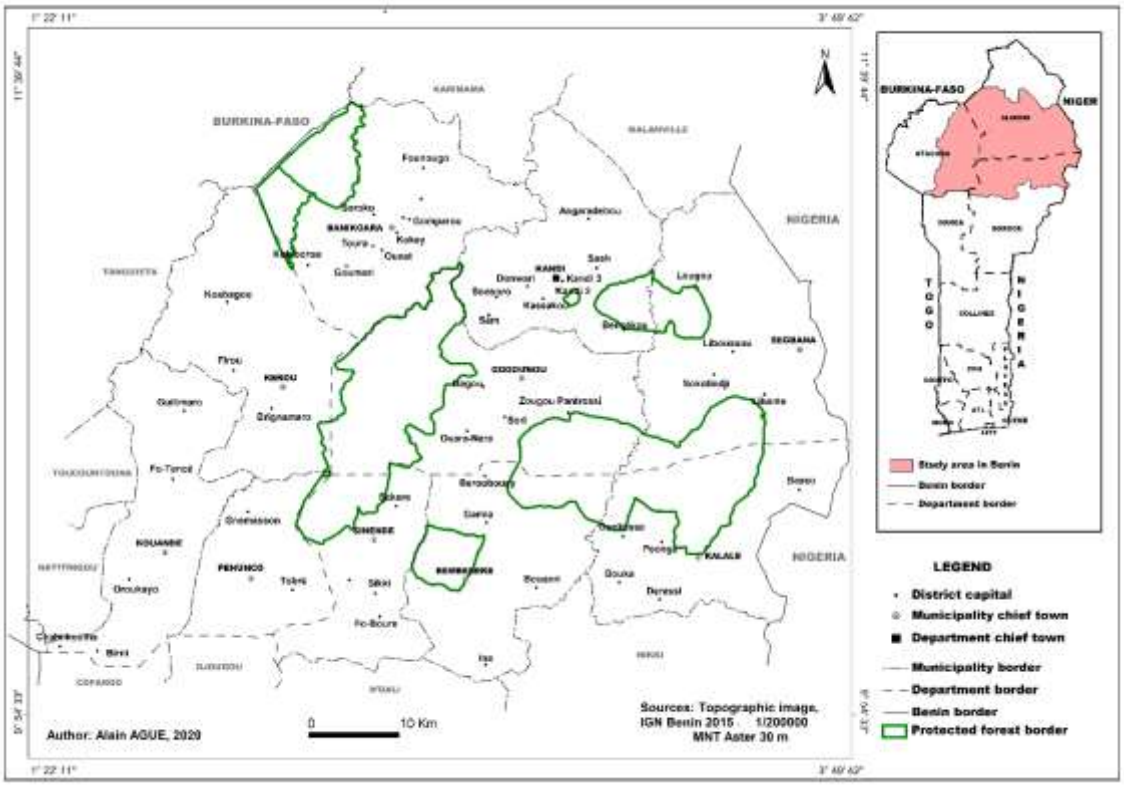


Figure 1. Location of the study area

Data collection and processing methods

The data used for this study are monthly rainfall from 10 stations located within or near the study area. These data cover the period from 1999 to 2018 and come from Benin Meterology Agency. For the analysis of future trends up to 2041 – 2060, monthly rainfall data simulated by the HadGEM2-ES climate model under the RCP 4.5 and RCP 8.5 scenarios were used. They come from the archives grouped under the Coupled Model Intercomparison Project 5 (CMIP5) of World Climate Research Programme (WCRP) (Pilabina. 2019).

Among the formulas established for the estimation of rainfull erosivity, we have Fournier index (1960) and Arnoldus index (used in the present study). This index was choiced because Fournier's index (1960) takes into account only the rainfall of the wettest month, whereas Arnoldus index takes into account all the monthly rainfall of the year.

The Arnoldus Index (*AI*) is obtained by the formula (1) :

$$AI = \sum_{i=1}^{12} (p_i^2 / P) \qquad (1)$$

Where p_i is the average of each month rainfall (mm) and P is the average of annual rainfall (mm).

Table 1 show the classes of Arnoldus Index proposed by a commitee of the European Commission which worked on erosion risks (CEC. 1992).

Table 1. Classes of the Arnoldus index

Classes	Description	Arnoldus Index (1980)
1	Very low	< 60
2	Low	60 – 90
3	Medium	90 – 120
4	High	120 – 160
5	Very High	> 160

Source : CEC,1992

The analysis of climate change is done by using Ardoin (2004) and Totin (2010) formula (2) :

$$IC = \frac{M_2 - M_1}{M_1} * 100 \quad (2)$$

Where IC = Indicator of change; M_1 = Reference average 1999 - 2018 and M_2 = Average at the horizon 2041 – 2060.

RESULTS

Estimation of the Arnoldus Erosivity Index in the PDA2

Table 2 shows the values of rainfall erosivity according to Arnoldus formula (1980) for ten (10) stations that influence the PDA2.

Table 2. Arnoldus rainfall erosivity values

Station	Altitude	Annual rainfall	Monthly maximun	Wetter months	Arnoldus Index
Alfakoara	282	1007.62	217.93	August	153.35
Banikoara	310	966.59	247.02	August	177.72
Kandi	290	1000.62	262.73	August	186.48
Guene	209	792.77	216.95	August	160.10
Kalale	410	1135.21	242.77	August	189.28
Bembereke	491	1092.41	232.33	august	176.21
Nikki	402	1036.87	229.19	august	168.46
Ina	358	1085.82	257.88	august	181.19
Natitingou	460	973.57	227.54	august	154.62
Kérou	314	1077.61	268.68	august	185.08

Source: Agué, processing of historical rainfall data, 2021

It shows that the highest values of Arnoldus index correspond to the highest rainfall. Arnoldus index are ranged from 153.35 at Alfakoara station to 189.28 at Kalalé station. Considering the index classes, the risk of rainfull erosivity is high for two stations and very high for the other. It can therefore be said that the study area is globally subject to a strong aggressiveness of the rains that can lead to soil degradation. In addition, August remains the wettest month at all stations under the period 1999 - 2018. This situation allows us to say that august is considered to be the month when the erosive activity is very intense, which is the basis of the degradation of agricultural land in the study area. Photo 1 shows an example of water erosion on a rice field in the municipalithy of Gogounou.

Photo1. Example of rainfull erosion on rice field at the municipality of Gogounou Shooting, Agué, 2021

Rainfall evolution in Alibori South-Borgou North-2KP agricultural development pole

Between the simulation period (2041-2060) and the reference period (1999 – 2018), the HadGEM2-ES climate model predicts an increase of annual rainfall at all stations whatever the scenario RCP4.5 or RCP8.5 (Figure 2). The increase rate is more than 20% at Guéné, Nikki and Natitingou for the both scenarios. It varies between 8% to 18% at the stations of Kalalé, Banikoara, Kandi, Bembèrèkè, Ina and Kérou. The station of Alfakoara stands out with an increase rate estimed to 3.3% under RCP 4.5 and 5.4% under RCP 8.5. This high variability of rainfall on the projected period would not be without consequences on the risks of soil erosion.

Table 3 shows the wetter months at the simulation period (2041-2060) under the RCP 4.5 and RCP 8.5 scenarios. It reveals that August is the wettest month in simulation period whatever is the station and the scenario with stabilization of emissions before the end of the 21st century at a low level (RCP 4.5) or the most pessimistic (RCP 8.5).

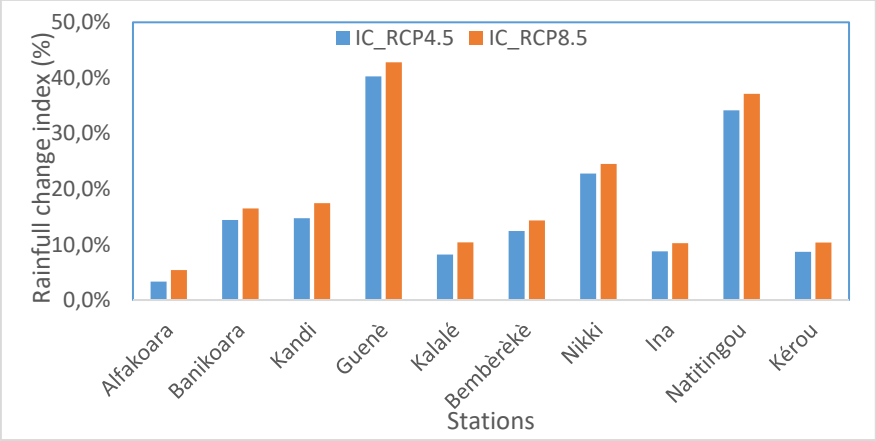


Figure 2. Variation of annual rainfall

Table 3: Wetter months according to the HadGEM2-ES model on the period 2041-2060

Station	Simulation period 2041-2060	
	Wettest month according to RCP4.5	Wettest month according to RCP8.5
Alfakoara	August	August
Banikoara	august	August
Kandi	august	August
Guenè	august	August
Kalalé	august	August
Bembèrèkè	august	August
Nikki	august	August
Ina	august	august
Natitingou	august	august
Kérou	august	august

Source: Agué, processing historical and simulation rainfall data, 2021

Evolution of the Arnoldus Index between the reference period 1999-2018 and the horizon 2041-2060

Table 4 shows the Arnoldus index for the period 2041-2060 and the change compared to the reference period 1999-2018 under RCP 4.5 and RCP 8.5.

Table 4. Evolution of Arnoldus Index between the reference period 1999-2018 and Horizon 50

Station	RCP4.5		RCP8.5	
	Arnoldus index	Variation (%)	Arnoldus index	Variation (%)
Alfakoara	207.09	35.05	196.95	28.44
Banikoara	221.66	24.72	209.07	17.64
Kandi	225.94	21.16	215.99	15.82
Guenè	233.60	45.90	223.13	39.37
Kalalé	211.89	11.95	206.04	8.85
Bembèrèkè	215.94	22.55	210.93	19.70
Nikki	208.94	24.03	205.50	21.99
Ina	202.37	11.69	197.83	9.18
Natitingou	217.03	40.36	214.01	38.41
Kérou	218.12	17.85	208.48	12.64

Source: Agué, processing historical and simulation rainfall data, 2021

It emerges from this table that at all the stations, the Arnoldus Index increases and the rate varies from 11.69% (Ina Station) to 45.90% (Guénè Station) under RCP 4.5 and from 8.85% (at Kalalé Station) to 39.37% (at Guénè Station) under RCP 8.5. Also, whatever the station and the scenario considered, the Arnoldus index is higher than 160. The highest values are obtained at the station of Guene located further north and are evaluated to 233.60 under RCP 4.5 and 223.13 under the most pessimistic scenario. It is therefore possible that the risks of rainfall erosivity in the study area will increase.

DISCUSSION

The results obtained are similar to those of Maamar-Kouadri *et al.*, (2016) who also used Arnoldus formula and found that the highest values of the erosivity index correspond to the high rainfall in the Oranian Tell (Algeria). The high aggressiveness of the rains corroborates

the results obtained by Ayena *et al.*, (2019) in the south of the Sota basin (around Bembèrèkè. Ina and Nikki) by using annual rainfall covering the period from 1971 to 2015 and the formula adopted by Ahiekpor (2011). Similarly Pilabina (2019), by using Fournier's index and data covering the period from 1950 to 2015, recorded a high rainfall erosivity in the extreme north of Togo which is a border region with similar characteristics to the study area. The same author also identified that August is the wettest month.

The results of the rainfall projection obtained in the present work are similar to many other studies carried out in West Africa and confirm once again the flood and drought risks associated to global warming (Sylla *et al.*, 2016; Sarr & Camara 2017). On annual scale, Kouakou *et al.*, (2014) showed that by 2031-2040, rainfall in West Africa could vary from -30% to +40%. The same source found that the central part of West Africa, which includes southern Niger and northern Nigeria which are bordering of our study area, may has an increase of annual rainfall from 10% to 40%.

Moreover, several climate models have been used in West Africa and suggest that rainfall projections in the region are still uncertain (IPCC 2013; Sylla *et al.*, 2016). The increase in rainfall erosivity is as high as 50.49% (at Kandi and under RCP 4.5) whereas on an annual scale and with the CSIRO-MK3.5 model, the increase is limited to 33% in the Western Rif in northern Morocco (Choukri *et al.*, 2016).

CONCLUSION

This study assessed the evolution of rainfull erosivity in the Alibori South-Borgou North-2KP Agricultural Development Pole by using on observation data from 10 stations and simulations data under the RCP 4.5 and RCP 8.5.

Overall, the PDA2 is subject to very higth rainfull aggressivity as indicated by Arnoldus index which varies from 153.35 to 189.28. Also, there could be an increase in annual rainfall on the simulation période (2041-2060). Similarly, the simulation data predict an increase in the risk of rain erosion with an increase in the erosivity index of up to 45.90% at Guénè and under RCP4.5.
These results once again call out to decision-makers, particularly on the need to develop hydro-agricultural and agro-pastoral developments through rehabilitation and new projects. Cultivation practices that limit soil erosion must be identified and popularized in rural areas.

REFERENCES

Agué A.I. & Afouda. A. 2015. Analyse fréquentielle et nouvelle cartographie des maxima annuels
de pluies journalières au Bénin. *Int. J. Biol. Chem. Sci.*. 9. 121-133.
Ahiekpor D. 2011. Impact de l'occupation des sols sur l'érosion hydrique dans le bassin versant du
Lac Togo. Mémoire de Master II. Université de Lomé. Lomé. Togo. 53 p.
Arnoldus H.M.J. 1980. Methodology used to determine the maximum average soil loss due to sheet and
rill erosion in Morocco. Bull. FAO. (34): 39-48.

Ardoin-Bardin S. 2004. Variabilité hydro-climatique et impacts sur les ressources en eau de grands
bassins hydrographiques en zone soudano-sahélien. Thèse de doctorat. Université de Montpellier II. 440 p.

Avakoudjo J., Toko Imorou I., Kouelo A. F., Kindomihou V., Amadji G. L. & Sinsin A. B. 2018.
Typologie des Dongas et effet de l'érosion hydrique sur l'acide et la teneur en matière organique des sols à Karimama au Nord-Ouest du Bénin. Revue de Géographie du Bénin Université d'Abomey-Calavi (Bénin) Volume thématique. décembre 2018. pp. 22 – 42.

Ayéna A. A., Totin V., Sourou H. & Vissin E. W. 2020. Sensibilité Potentielle du Bassin Versant de la
Sota à l'Erosion Hydrique. International Journal of Progressive Sciences and Technologies.18 (1). p. 196-208. doi:http://dx.doi.org/10.47494/ijpst.v18.1.1497.

Boko M., Kosmowski F. & Vissin E. W. 2012. Les Enjeux du Changement Climatique au Bénin.
Konrad-Adenauer-Stiftung Programme pour le Dialogue Politique en Afrique de l'Ouest. Cotonou. Bénin. 72p.

Bollinne A., Laurant A. & BooN W. 1979. L'érosivité des précipitations à Florennes Révision de la carte
des isohyètes et de la carte d'érosivité de la Belgique. Bulletin de la Société géographique de Liège. N° 15. pp. 77-99.

Choukri F., Chikhaoui M., Naimi M., Raclot D., Pepin Y., Lafia K. 2016. Impact du changement
climatique sur l'évolution de l'érosivité des pluies dans le Rif Occidental (Nord Du Maroc). European Scientific Journal. 12(32): 79-93.

CEC (Commission of European Communities). 1992. Corine Soil erosion risk and important land
resources in the southern regions of the European Community. Brussels. Commission of the European Community EUR 13233 EN. Luxemburg. Office for official Publications of the European Community. 97 p.

Chédé F. 2012. Vulnérabilité et stratégies d'adaptation au changement climatique des paysans du
Département des Collines au Bénin : cas de la commune de Savé. Mémoire de Mastère changement climatique. Niamey. Agrhymet. 65 p.

CILSS Agrhymet. 2015. L'agriculture intelligente face au climat : une solution gagnante pour relever le
défi de l'insécurité alimentaire et la lutte contre la désertification au Sahel et en Afrique de l'Ouest. Note aux décideurs. Niamey. Niger. 9p.

Eténé C. G. 2017. Erosion ravinante dans l'Arrondissement de Togba au Benin. Climat et
Développement. Laboratoire Pierre PAGNEY : Climat. Eau. Ecosystèmes et Développement (LACEEDE). de l'Université d'Abomey-Calavi. Cotonou. Bénin. pp. 41-56.

Fournier F. 1960. Climat et érosion : la relation entre l'érosion du sol par l'eau et les précipitations
atmosphériques. Presses universitaires de France. Paris: 201 p.

Issa M.S. 2012. Changements climatiques et agro-systèmes dans le moyen Bénin : Impacts et stratégies
d'adaptation. Thèse de doctorat unique de géographie. UAC/FLASH/EDP. 278 p.

Kouakou K. E., Koudio Z. A., Kouassi F. W., Goula Bi T.A. & Savane I. 2014. Modélisation de la
température et de la pluviométrie dans un contexte de changement climatique : cas de l'Afrique de l'Ouest. Afrique SCIENCE. 10(1):145-160.

Lawin A.E., Akponikpè P.B.I., Jalloh A., Nelson C.G. & Thomas S.T. 2013. Chapter 3: Benin. pp. 53
– 77. In West African Agriculture and climate change: A comprehensive analysis. Edited by Abdulai Jalloh. Gerald C. Nelson. Timothy S. Thomas. Robert Zougmoré. and Harold Roy-Macauley. 408p.

Maamar-Kouadri K., Kouri L. & Chebouti Y. 2016. Using the Arnoldus Indice to map the risks of
rainfall Erosivity in the Tell Oran (Algeria). Geo-Eco-Trop 40(4) : 287-296.

MEPN. 2010. Etude de la vulnérabilité. des impacts et de l'adaptation des ressources en eau du Bénin
aux changements climatiques. Rapport d'étude. Cotonou. Bénin. 97p.

Pilabina S. 2019. Dynamique du climat dans le Togo central et septentrional Thèse de doctorat.
Université de Lomé. 320 p.

Roose E. & De Noni G. 2004. Recherches sur l'érosion hydrique en Afrique : revue et perspectives.
sécheresse. 15(1). pp. 121-129.

Sarr A.B. & Camara M. 2017. Evolution Des Indices Pluviométriques Extrêmes Par L'analyse De
Modèles Climatiques Régionaux Du Programme CORDEX: Les Projections Climatiques Sur Le Sénégal. *European Scientific Journal. ESJ*. 13. 17 (Jun. 2017). 206. DOI:https://doi.org/10.19044/esj.2017.v13n17p206.

Sylla M.B., Nikiema P.M., Gibba P., Kebe I. & Klutse N.A.B. 2016. Climate change over West Africa:
Recent trends and future projections. In Adaptation to Climate Change and Variability in Rural West Africa; Springer: New York. NY. USA; pp. 25–40.

Totin V.H.S. 2010. Sensibilité des eaux souterraines du bassin sédimentaire côtier du Bénin à l'évolution
du climat et aux modes d'exploitation : stratégies de gestion durable. Thèse de doctorat unique de Géographie physique. Université d'Abomey-Calavi. Laboratoire Pierre PAGNEY. Climats. Eau. Ecosystèmes et Développement (LACEEDE). 283 p.

Yabi I. 2018. Sécheresse pluviométrique dans la zone soudanienne au Bénin : Manifestations et
Implications pour une agriculture climato-résiliente. Dynamiques Spatiales et Développement : Revue semestrielle du Laboratoire d'Etudes des Dynamiques Urbaines et Régionales. numéro spécial 002 : 115-134.

Yabi I. & Afouda F. 2012. Extreme rainfall years in Benin (West Africa). *Quaternary International*. 262
(7): 39-43. DOI: https://doi.org/10.1016/j.quaint.2010.12.010

Zhang Y.G., Nearing M., Zhang X.C., Xie Y. & Wei H. 2010. Projected rainfall erosivity changes under
climate change from multimodel and multiscenario projections in Northeast China. Journal of Hydrology 384: 97-106.

ETAT DES LIEUX DES INITIATIVES ALIMENTAIRES AXEES SUR LA PROMOTION DES PRODUITS LOCAUX DANS LES DEPARTEMENTS DE L'ATLANTIQUE ET DU LITTORAL AU BENIN

Salifou Chakirath Folakè Arikè
Boukari Adamou Djamiou
Konsaka Bernadette Mahikiwè
Youssao Abdou Karim Issaka
Université d'Abomey-Calavi, Bénin

Résumé
Au Sud-Bénin, plusieurs initiatives alimentaires ont été engagées de manière volontaire en faveur des produits locaux et engendrent des impacts divers. La présente étude vise à caractériser les initiatives alimentaires dans les départements de l'Atlantique et du Littoral. Au total, 41 porteurs d'initiatives alimentaires ont été identifiés à partir des foires, expositions ventes et des salons organisés dans les deux départements et interviewés. Les données collectées ont porté sur les caractéristiques socioéconomiques et démographiques des promoteurs et la nature des initiatives alimentaires. Ces données ont été analysées à l'aide du logiciel R 3.5.2. Les promoteurs des initiatives alimentaires de ces deux localités sont majoritairement (63,41%) des hommes ($P<0,05$). Ces initiatives étaient principalement des initiatives privées (44%) ($P<0,001$). Les initiatives étatiques et les organismes à but non lucratif s'intéressent plus aux services d'appui et à la valorisation non alimentaire tandis que les associations et les coopératives investissent dans la production agricole, la transformation, et à la commercialisation. Des actions de ces initiatives, 90,24% renforcent la compétitivité des produits locaux et 87,8% encouragent la production et la consommation locale ($P> 0,05$). L'originalité des initiatives à but non lucratif et des coopératives réside dans leur mode de distribution imaginé et le type d'évènement proposé, pour les associations, elle porte sur la qualité ou la spécificité du produit et sur le savoir-faire apporté et la méthode organisationnelle pour les structures étatiques. Les 41 initiatives prospectées ont engendré 115 externalités réparties dans quatre catégories dont les externalités sociales (36,59%), environnementales (29,27%) ; culturelles (24,39%) et pédagogiques (9,76%). Les initiatives alimentaires financées par des bailleurs sont confrontées à des problèmes de manque de personnels qualifiants et de réticence des populations. Des initiatives alimentaires responsables et durables axées sur la promotion des produits locaux existent donc et méritent d'être soutenues et vulgariser pour un meilleur impact dans la société.

Mots clés : initiatives alimentaires, durable, externalités

DIVERSITY AND HOST PLANTS OF TEPHRITIDAE FROM TWO ISLANDS OF THE COMORO ARCHIPELAGO (GRANDE-COMORE AND MOHÉLI).

B. KASSIM
T. ÜSTÜNER
Selçuk Üniversitesi, Konya, Türkiye
Institut National de recherche pour l'Agriculture, Union des Comores

Abstract
This article summarizes the different host plants and fruit flies present in two islands (Grande-Comore and Mohéli) of the Comoros Archipelago. Different exotic and wild fruit plants were sampled. Seventy-three plant species, potential hosts, belonging to thirty-five (35) families were collected and incubated for the emergence of fruit flies from December 2019 to September 2020. Twenty-five plant hosts from ten families comprising cultivated and wild fruits have been identified. Fruit fly infestation rates per kilogram of fruit (T.Kg-1) varied from plant to plant. Exotic fruit plants, which accounted for more than half of infested plants, including *Cucumis melo, Cucurbita pepo, Prunus persica, Coffea arabica* and *Capsicum frutescens* had high infestation rates. For wild plants, the highest infestation rates have been observed in some families including *Combretaceae, Cucurbitaceae, Solanaceae* and *Vitaceae*. The highest infestation rate per kilogram of fruit was observed in a wild plant: *Cyphostemma lageniflorum* (1162T.Kg-1). Thirteen new host plants infested by Tephritidae are reported and/or listed for the first time in Comoros. Eight species of fruit flies in total were identified. However, the species *Bactrocera dorsalis* Hendel, 1912 (47.5%) and *Dacus bivittatus* (Bigot, 1858) (37.6%) were the most representative of the Tephritidae that emerged.

Keywords: Comoros, Biodiversity, Tephritidae, Host-plants, Infestation rate

ANTIOXIDANT ACTIVITIES OF THE EXTRACTS OF WALNUT HULL PREPARED IN DIFFERENT SOLVENTS

Yousif Ghulam
Assoc. Prof. Dr. Remziye Aysun Kepekçi
Gaziantep University, Turkey

Abstract
Agribusiness has seen an increase of demand in the last 20 years for the use of agricultural byproducts. Fruit peelings and vegetable rinds can be essential sources for processing useful chemicals. Plant products are available at high levels and known for their bioactive compounds. The use of by-products has been improved for the production of useful compounds from inexpensive materials. Walnut is one of the most important tree nuts and its global production increases steadily. China, USA, Iran and Turkey are the top four producers of walnut. Walnut nuts are used as a snackfood, both raw and toasted, and are a confectionery ingredient in fermented meats, liqueur, bread, sauces and puding manufacturing. High amount of walnut hull is produced as a by-product of the walnut industries. Mainly, this by-product is directly incinerated for heating purpose because it has no important industrial use. Every year tons of walnut hull are separated and eliminated as waste products from walnut seeds. The hull (Green husk) is the largest waste product of the walnut industry. Walnut green husk, a valuable source of bioactive compounds, have not been investigated comprehensively. Therefore, the present study aimed to evaluate potential antioxidant activities of walnut green husk extracts prepared in different solvents by hydrodistillation method. The antioxidant activities were determined by DPPH Radical Scavenging Assay. IC_{50} (Inhibitory Concentration) values of the walnut hull extracts prepared in methanol, ethanol, ethyl acetate and hexane were found as 53.51, 15.484, 22.15 and 143.275 μgmL^{-1} respectively. The present study suggests that this agricultural by product could be used as cheap and natural source of antioxidants.

Keywords: walnut hull, green husk, antioxidant activity

INTRODUCTION

In the last two decades, there has been an explosive interest in the utilization of plants waste materials, more generally known as “agricultural by-products”. Fruit shells and other agricultural wastes are potentially important sources for producing valuable compounds (Brever, 2011). These plant-based byproducts are produced in high amounts and crop wastes are rich in different nutritional components with various uses (Mourtzinos and Goula, 2019). Recently, the utilization of by-products has been increased by pharmaceutical manufacturers for the production of valuable compounds from such cheap resources.

Walnut trees, belonging to *Juglandaceae* family, were cultivated in Europe as early as 1000 BC (Martinez et al., 2010). Walnuts are one of the most important agricultural products, owing to their different uses within the food industry. Walnuts are mainly cultivated in order

to obtain the kernels, and other parts of fruit such as the shell and husk are produced as waste crops during the fruit harvesting and processing (Jahanban-Esfahlan and Amarowicz, 2018). It has been well documented that in addition to the kernel different parts of the tree and fruit, including the green young walnut fruit, husk, shell, skin, even bark, root, shoot, branch and leaves can be employed in different industries as low cost materials (Anjum, Gani et al. 2017). Walnut shells have great potential because of their production in large amounts. In the walnut processing industry, upon separation of the kernel from the outer parts of the fruit, large amounts of husk and shell are produced. Different properties of these walnut fruit by-products, as valuable sources of bioactive compounds, have not been investigated comprehensively (Oliveira et al. 2008). These materials are the major part (more than 60%) of the walnut fruit and are discarded or burnt as fuel without any useful applications (Jahanban-Esfahlan et al. 2019). This objective has encouraged scientists to investigate the biological activity and functional properties of walnut fruit waste products in order to make better use of them. Therefore, the present study aimed to extract the antioxidant materials from walnut hull (green husk) using Soxhlet extractor by using four different solvents in extraction (ethanol, methanol, ethyl acetate, hexane) and to find out the solvent giving the highest antioxidant activity.

MATERIALS AND METHODS

Preparation of the extracts of walnut hull

The hull parts of the walnut were under shade at 25 ˚C. The air-dried hulls were ground into powder and extracted to exhaustion in solvents with different polarity (methanol, ethanol, ethyl acetate and hexane) using a Soxhlet apparatus. The obtained extracts were dried using rotary evaporator and stored at – 20 ˚C for further analysis.

Determining antioxidant activity of the extracts in vitro

The method based on a procedure (Wang et al., 2009) that consisted of the neutralization of DPPH• (2,2-diphenyl-1-picrylhydrazyl) free radicals by the antioxidant extracts was used. At the beginning of the experiment, the absorbance value at 516 nm of the blank tube containing 3.9 mL of 1:10 diluted DPPH• stock solution in methanol and 0.1 mL of methanol was recorded. Methanol was used to adjust zero. The percentages of DPPH• inhibition of the samples with a concentration of 1 mg mL^{-1} were calculated after incubation for 2 h at 25 ºC. BHT (Butylated Hydroxytoluen) solution in methanol with a concentration of 200 ppm was used as a standard antioxidant stock solution. The percentage of DPPH• inhibition against the antioxidant concentration was plotted to obtain the amount of antioxidant necessary to decrease the initial DPPH• concentration by 50%, the value described as IC_{50}. Each determination was done as triplicates. BHT was used as a standard antioxidant for the calibration of the assay.

RESULTS

The antioxidant activities of the walnut hull extracts were determined by DPPH free radical scavenging assay and indicated by the IC_{50} values calculated according to this assay (Table 1). The lowest IC_{50} value shows the highest antioxidant activity. The antioxidant activity of the ethanol extract was the strongest, followed in the descending order by ethyl acetate, methanol and hexane extracts.

Table 1. IC_{50} values of the samples

Sample	IC_{50} value
BHT	3.196µg/ml
Ethanol Extract	15.484 µg/ml
Ethyl acetate Extract	22.15 µg/ml
Methanol Extract	53.51 µg/ml
Hexane Extract	143.275 µg/ml

DISCUSSION

The selective extraction from walnut green husk by an effective solvent was essential for obtaining the highest levels of antioxidants, which would be useful for the production and applications of walnut green husk (Zhang et al.2015).

Many active therapeutic ingredients including phenolic compounds, flavonoids and terpenoids are found in walnut (Pereira et al. 2008, Oliveira et al. 2008). Hydrolysable tannins, naphthoquinones, naphthoquinone glycosides, naphthalenes, α-Tetralones, α-Tetralones glycosides, and α-Tetralone dimers, hydroxybenzoic acids, hydroxycinnamic acids, flavonoids, diarylheptanoids, ceramides, alkanes, steroids, triterpenoids, sesquiterpenes, vitamins (ascorbic acid and α-tocopherol) were determined in walnut (Jahanban-Esfahlan, Ostadrahimi et al. 2019).Previous experiments have shown that the anti-proliferative properties of walnut extracts are likely to be related to their flavonoids (Carvalho, Ferreira et al. 2010).

The impact of extraction solvents on the quality of phytochemicals (such as polyphenols, flavonoids, and condensed tannins), as well as their antioxidant activities of walnut green husk were examined by Zhang et. al. (2015). Results of their study revealed that extraction solvents greatly influence phytochemicals found in walnut green husk and the antioxidant activities (Zhang et al.,2015). The acetone, ethanol, methanol extracts had the largest content of phytochemicals, and showed high antioxidant activity, followed by ethyl-acetate and water extracts, and the hexane extract had the least antioxidant activity (Zhang et al.,2015). As in parallel to these results, the hexane extract showed the lowest antioxidant activity while the ethanol extract showed the highest antioxidant activity in our study.

Antioxidants show high capacity in the protection of food products from being oxidated. Recently, it has been a growing interest among food scientists to replace synthetic antioxidants with the natural ones due to safety issue. The most used synthetic antioxidants are harmful to health, but natural antioxidants are generally supposed to be safe (Carocho et al., 2018).

In the meat processing industry, the green husk of walnut can be used as a functional additive which is a low-cost source of valuable phytochemicals. The effect of adding green husk onto

the selected properties of cooked sausages was investigated and it was reported that the walnut husk reduced weight loss in the cooked sausage storage (Salejda et al., 2016).

CONCLUSION

Natural antioxidants can protect humans against the oxidative stress which has been linked to many diseases such as heart disease, cancer, arthritis, stroke, respiratory diseases, immune deficiency, and other inflammatory or ischemic conditions.

In this study, antioxidant properties of walnut hull (green husk) were evaluated by DPPH free radical scavenging assay. The results of this assay showed that the husk of walnut could be considered as antioxidant-rich waste product. Moreover, among the tested solvents, ethanol was the most efficient solvent with the highest antioxidant activity. So, we recommend using ethanol as an extraction solvent in the studies that are related to the antioxidant activity of walnut hull.

Also, more studies must be done to find the best solvent and extraction method for extraction of walnut hull that will give the highest antioxidant activity of walnut hulls.

Additionally, the content of crude wallnut husk extract should be analysed comprehensively and its crucial phytochemicals should be purified, and their pharmaceutical activity should be studied in detail.

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REFERENCES

Brewer, M. 2011. Natural antioxidants: sources, compounds, mechanisms of action, and potential applications. Comprehensive reviews in food science and food safety, 10(4): 221-247.

Carocho M, Morales P, Ferreira I 2018. Antioxidants: Reviewing the chemistry, food applications, legislation and role as preservatives.Trends in Food Science & Technology, 71: 107-120.

Carvalho M., Ferreiraa P, Mendes V, Silva R, Pereira J, Jerónimo C, Branca M, Silva M. 2010. Human cancer cell antiproliferative and antioxidant activities of Juglans regia L. Food and Chemical Toxicology, 48(1): 441-447.

Jahanban-Esfahlan A and Amarowicz R 2018. Walnut (Juglans regia L.) shell pyroligneous acid: chemical constituents and functional applications. Rsc Advances, 8(40): 22376-22391.

Jahanban-Esfahlan A, Ostadrahim A, Tabibiazar M, Amarowicz R 2019. A comparative review on the extraction, antioxidant content and antioxidant potential of different parts of walnut (Juglans regia L.) fruit and tree.Molecules, 24(11): 2133.

Martínez M, Labuckas DO, Lamarque AL, Maestri DM 2010. Walnut (Juglans regia L.): genetic resources, chemistry, by-products.Science of Food and Agriculture, 90(12):1959-1967.

Mourtzinos, I. and Goula A 2019. Polyphenols in agricultural byproducts and food waste. Polyphenols in plants, Elsevier: 23-44.

Oliveira I, Sousa A, Ferreira I, Bento A, Estevinho L, Pereira JA 2008. Total phenols, antioxidant potential and antimicrobial activity of walnut (Juglans regia L.) green husks.Food and chemical toxicology, 46(7): 2326-2331.

Pereira, JA, Oliveira I, Sousa A, Ferreira I, Bento A, Estevinho L 2008. Bioactive properties and chemical composition of six walnut (Juglans regia L.) cultivars. Food and chemical toxicology, 46(6): 2103-2111.

Salejda AM, Janiewicza U, Korzeniowskaa M, Ostek JK, Krasnowska G 2016. Effect of walnut green husk addition on some quality properties of cooked sausages. LWT-Food Science and Technology, 65: 751-757.

Wang T, Jonsdottır R and Ólafsdóttır G 2009. Total phenolic compounds, radical scavenging and metal chelation of extracts from Icelandic seaweeds. Food chemistry, 116(1), 240-248.

Zhang, Z, Liao L, Moore J, Wu T, Wang Z 2009. Antioxidant phenolic compounds from walnut kernels (Juglans regia L.).Food chemistry,113(1): 160-165.

DETERMINANTS DE L'UTILISATION DES INTRANTS CHIMIQUES PAR LES AGRICULTEURS DANS LES COMMUNES DE KEROU ET DE PEHUNCO, NORD-OUEST DU BENIN

Wanignissa Rose KOBTA
Ibouraïma YABI
Aboubakar KISSIRA
Université d'Abomey-Calavi

Résumé
Au Bénin, les producteurs agricoles sont de plus en plus enclins à l'utilisation des intrants chimiques pour des raisons diverses. Mais au-delà des effets positifs immédiats, l'utilisation inappropriés des produits chimiques peut induire des conséquences environnementales et sanitaires négatifs et compromettre l'objectif de la production agricole durable. La présente recherche vise principalement à analyser les déterminants de l'utilisation des intrants chimiques par les producteurs agricoles des Communes de Kérou et de Péhunco au Nord-Ouest du Bénin.
Les enquêtes auprès d'un échantillon de 346 producteurs agricole et les observations directes de terrain ont permis de collecter les données de terrain. A cet effet, un questionnaire et une grille d'observation ont été utilisés pour organiser les entretiens individuels et les observations. Des outils de la statistique descriptive et le test de différence ont permis de traiter les données collectées.
Les résultats obtenus ont permis de mettre en lumière trois principaux déterminants : les producteurs (57,2 %) cherchent la rentabilité par l'amélioration des rendements de production plutôt que par la diminution de leurs coûts de production ; 28,9 % évoquent le manque de main d'œuvre et 7,5 % des producteurs le font pour garantir la qualité des produits. L'utilisation de ces intrants se fait sans le respect des normes (qualité, doses, port d'équipements adéquats, etc.) Au regard des risques environnementaux et sanitaires liés à ces produits, il est nécessaire d'organiser des ateliers de formation sur les techniques innovantes en agriculture (pratiques agroécologiques) pour réduire l'utilisation des intrants chimiques dans le milieu de recherche.

Mots clés : agriculture, intrants agricoles, utilisation, Kérou, Péhunco, Nord-Ouest du Bénin

Spatial distribution of rainfall amounts and its impact on food production in the second agricultural development pole in northern Benin

André KINDJINOU
Hervé KOUMASSI
Barnabé HOUNKANRIN
Ibouraïma YABI
Université d'Abomey-Calavi, Benin

Abstract

In the second agricultural development pole located in the north of Benin , very diversified food production (sorghum, maize, rice) makes it possible to cover national food needs . These productions are threatened by the vagaries climate with resulting food insecurity.

The present paper aims to show that the spatio-temporal dynamics of precipitation makes food production difficult. Data stationnell es of the National Agency of M étéorologie concerning pluviomét series and temperature, the M Agricultural Statistics inistry of Agriculture, Livestock and Fisheries regarding sorghum, maize and rice from 1987 to 2017 and socio-demographic data were used. A cartographic approach with the use of the Pettit test, the standardized rainfall index and the Kriging method were used for the spatialization of isohyets under the software Matlab and Sufer 13. The regression lines between the yield values and the rain heights on the one hand, the yield values and the temperature on the other hand made it possible to determine the increases in yields, from which were calculated the de fi cits of production for each year. The results indicate that in terms of the start of the rainy season, for the years 1993, 1999, 2002 and 2010, negative precipitation anomalies are observed throughout or in the middle of the rainy season. The seasons of the irregularity of s impact on agricultural output. Indeed, the analysis of the results on yields also shows that during the years 1994 to 2015, the variation in rainfall more strongly affects food production in the study area.

Keywords : spatial analysis, rain, yield, agricultural development pole, Benin

Environmental and health risks related to the use of chemicals in the EXPLOITATION of the shallows in the municipalities of Save and OUESSE in the Department of hills in BENIN

Yabi Olladékpo ADEYANDJOU
Biaou O. Evariste ADEOTI
Ibouraïma YABI
University of Abomey-Calavi (Benin)

Abstract
The exploitation of the shallows is becoming more and more remarkable nowadays especially in the developing countries. In order to make them more fertile and increase their yields in these natural areas, farmers use chemicals and pesticides. This research aims to study the different risks related to the use of chemicals in the exploitation of the shallows of the Communes of Savè and Ouessè in Central Benin.
For this study, 111 heads of households were surveyed in four boroughs and six villages with high rates of lowland use. Qualitative and quantitative data obtained using a questionnaire and direct observations were processed. Health and environmental risk indices have been calculated.
The results revealed that 90% of bottom operators use chemicals such as carbofuran, chlorpyriphos-ethyl and endosulfan and only 10% use compost. Operators (98 %) point out that chemicals are a source of Health and environmental risk. To reduce these risks, awareness-raising campaigns must be organised for operators.

Keywords: Communes of Savè and Ouessè; risk; chemicals environment; health

RISQUES ENVIRONNEMENTAUX ET SANITAIRES LIES A L'EMPLOI DES PRODUITS CHIMIQUES DANS L'EXPLOITATION DES BAS-FONDS DANS LES COMMUNES DE SAVE ET DE OUESSE DANS LE DEPARTEMENT DES COLLINES AU BENIN

L'exploitation des bas-fonds devient de plus en plus remarquable de nos jours surtout dans les pays en voie de développement. Dans le souci de rendre plus fertile et accroitre leurs rendements dans ces zones naturelles, les exploitants font usage des produits chimiques, des pesticides. La présente recherche vise à étudier les différents risques liés à l'usage des produits chimiques dans l'exploitation des bas-fonds des Communes de Savè et de Ouessè au centre du Bénin.
Pour cette étude, 111 chefs de ménages ont été enquêtés dans quatre Arrondissements et six villages à forts taux d'utilisation de bas-fond. Les données qualitatives et quantitatives obtenues à l'aide d'un questionnaire et des observations directes ont été traitées. Les indices de risque sanitaire et environnemental ont été calculés.

Les résultats obtenus ont révélé que 90 % des exploitants de bas-fond utilisent les produits chimiques tels que le carbofuran, le chlorpyriphos-éthyl et l'endosulfan et seulement 10 % utilisent le compost. Les exploitants (98 %) soulignent que les produits chimiques sont sources de risque sanitaire et environnemental. Pour réduire ces risques, des campagnes de sensibilisation doivent être organisés pour les exploitants.

Mots-clés : Communes de Savè et de Ouessè ; Risque ; Produits chimiques Environnement; Santé

ABDOMINAL MASSAGE IN CONSTIPATION MANAGEMENT IN THE ELDERLY

Onur Çetinkaya
Osmaniye Korkut Ata University, Osmaniye, Turkey
Özlem Ovayolu
Gaziantep University, Gaziantep, Turkey

Abstract
The importance of health problems related to old age has increased more due to the increase in the elderly population. Constipation, which is one of the most important health problems that occur with old age, negatively affects the well-being of the individual both physically and emotionally. Pharmacological and non-pharmacological methods are frequently used in the management of constipation that occurs in old age. One of the non-pharmacological methods used in the treatment of constipation is abdominal massage. In this review, abdominal massage, an effective method in the management of constipation, which is commonly seen in the elderly in recent years, and can be applied by nurses, is discussed.

Keywords: Abdominal massage, constipation, elderly people, nursing

INTRODUCTION

Aging is a physiological process that includes all irreversible, functional, and structural changes that occur over time at the cell, tissue, and systems level of the organism (Aslan & Hocaoğlu, 2017). The World Health Organization (WHO) has taken the chronological age as the basis for old age and accepted the age over 65 as the elderly (Tekin & Fatih, 2016). The rate of the total population of the elderly population to the total population in Turkey became 9.1% in 2020, showing a big increase. In the world, this rate was determined as 9.3% (Ministry, 2020). Due to the increase in the elderly population, the importance of health problems related to old age has also increased. Constipation, which is one of the most important health problems that occur with old age, negatively affects the physical and emotional well-being of the individual (Bilgiç, Dilek, Arslan & Aysun, 2016). Constipation is the most common complaint related to the gastrointestinal system in the elderly population (Tufan & Akın, 2015), and is an important factor affecting the quality of life. Constipation in the elderly is also a common condition due to reasons such as the frequency of referral to outpatient clinic and hospitalization, and the need for surgical intervention when necessary (Uzun, Coşar & Erkut, 2019). Although the exact cause of constipation is not known, its incidence increases with age. Although it has been reported in studies conducted around the world that the frequency of constipation in elderly individuals varies between 11-74% and that it is between 41-80% among the elderly in acute and long-term care institutions (Birimoglu Okuyan & Bilgili, 2019). Accordingly, pharmacological and non-pharmacological methods are frequently used in the management of constipation in the elderly (Mounsey, Raleigh & Wilson, 2015). Most guidelines for treating this problem recommend the selection

of fibrous foods, increased fluid intake in the diet, and exercise. However, these approaches are not always possible in elderly patients (Emmanuel et al., 2017). Abdominal massage, on the other hand, is one of the methods that can be used in the management of constipation in the elderly with no side effects, and is also non-invasive (Birimoğlu Okuyan & Bilgili, 2019). The main purpose of this review is to emphasize the importance of abdominal massage, which is an effective approach in the management of constipation in the elderly, and which can be applied by nurses.

Constipation in the Elderly

Constipation is generally defined as infrequent and difficult defecation due to the decrease in defecation frequency (Turan, Aşti & Kaya, 2017). It is not a disease, but a subjective symptom that varies from person to person and can be interpreted in different ways (Bengi, Yalçın & Akpınar, 2014). Its prevalence in the general population varies between 2 and 30% (Birimoglu Okuyan & Bilgili, 2019; Vazquez Roque & Bouras, 2015). The incidence of constipation in Turkey is said to be between 22 and 40% (Olgun, 2016). As the age progresses, the prevalence of constipation increases by approximately 50% (Birimoglu Okuyan & Bilgili, 2019). It is also reported that severe constipation is seen 2-3 times more frequently in elderly women compared to elderly men (Vazquez Roque & Bouras, 2015). It was found in a study conducted with home care patients that the frequency of constipation was 56.9% (Komiya et al., 2019). It has been reported that age-related neuronal loss increases, colon mobility changes, and the number of altered and dysfunctional myenteric ganglia increases in the elderly. As a result, constipation may develop due to pelvic floor dysfunction (Vazquez Roque & Bouras, 2015). It has also been reported that some analgesic and anticholinergic drugs, metabolic diseases such as diabetes mellitus and hypothyroidism, psychological problems, sedentary life, nutritional disorders, and dehydration cause constipation in the elderly (De Giorgio et al., 2015; Emmanuel et al., 2017; Mounsey et al., 2017; Mounsey et al., 2015; Vazquez Roque & Bouras, 2015).

When constipation is not treated, it can cause back and low back pain, rectal pressure, incontinence, nausea, vomiting, anal fissure, rectal prolapse, hemorrhoids, bowel obstruction, diarrhea, distension, and syncope (Bengi et al., 2014; Birimoglu Okuyan & Bilgili, 2019; Olgun, 2016; Schuster, Kosar & Kamrul, 2015). Therefore, its diagnosis is very important. Rome III Diagnostic Criteria are widely used in the diagnosis of constipation. According to these criteria, experiencing at least two of the subjective and objective symptoms such as the onset of symptoms at least six months before, the active frequency of feces in the last three months, manual interventions for defecation, hard feces, inability to excrete completely, feeling of anorectal obstruction indicates constipation (Bengi et al., 2014; Bilgiç et al., 2016; Fathallah, Bouchard & De Parades, 2017; Yabunaka et al., 2018).

Currently, many pharmacological and non-pharmacological care and treatment methods are used in the management of constipation (Olgun, 2016; Turan & Aşti, 2015). The treatment aims to normalize bowel movements, provide soft defecation and defecation at least three times a week without difficulty, and increase the patient's quality of life without serious side effects (Bengi et al., 2014). However, a method of treatment specific to the underlying cause should be decided in the treatment of constipation in the elderly. It is important to consider other factors that affect constipation, such as dehydration and dementia, before starting a specific treatment in the elderly population (Vazquez Roque & Bouras, 2015). Non-pharmacological treatment consisting of diet and lifestyle changes has traditionally been

considered the first step of a comprehensive treatment program to effectively manage constipation (Costilla & Foxx-Orenstein, 2014; De Giorgio et al., 2015; Jani & Marsicano, 2018; Sharma & Rao, 2017). Patients should be educated about exercise, increased intake of fluids and fibrous products. If the cognitive functions of the patient are appropriate, defecation training has great potential. Patients should be advised to defecate after meals, indicating that colonic motility increases after meals (Tufan & Akın, 2015). The recommended amount of fiber in the diet is 20-30 grams/day. After a high-fiber diet, if there is no contraindication especially in the elderly, they should be advised to consume at least two liters of water per day (Bengi et al., 2014; De Giorgio et al., 2015; Tufan & Akın, 2015). Generally, laxatives are recommended when simple changes in lifestyle and diet do not improve constipation (De Giorgio et al., 2015). Mass-forming laxatives, osmotic laxatives, and stimulating laxatives are among the commonly preferred laxatives (Bengi et al., 2014). Laxatives included in pharmacological treatment should be selected considering the history, accompanying comorbidities of the elderly, drug interactions, and side effects (Tufan & Akın, 2015). The high number of side effects and cost of laxatives used in the treatment of constipation in recent years have revealed the necessity for non-pharmacological methods (Olgun, 2016). Abdominal massage, which is one of the non-pharmacological methods, is one of the interventions that is frequently used in the management of constipation, and has no side effects (Özdil, Gamze & Öztürk, 2020; Turan & Aşti, 2015).

Abdominal Massage

Abdominal massage is an inexpensive and non-invasive procedure that has no side effects, can be easily applied by healthcare professionals or patients' relatives (Baykal, Yıldırım & Can, 2018; Birimoğlu Okuyan & Bilgili, 2019; Kayikci, Kocatepe, Akyuz & Can, 2020; McClurg et al., 2018). Abdominal massage in constipation management was first applied in 1870. The use of abdominal massage reached its highest level in the late 19th and early 20th centuries. However, it disappeared in the 1950s, although it was included in treatment options. However, this type of massage continued to be actively practiced, especially in palliative care, oncology, and elderly care clinics (Kayikci et al., 2020; Olgun, 2016; Turan & Aşti, 2015). Today, abdominal massage is used to relieve healthy/sick individuals who have constipation for various physiological reasons (Turan & Aşti, 2015). Although there is evidence that abdominal massage prevents constipation by shortening the colonic transit time, its mechanism of action is not fully known (McClurg et al., 2018). It creates a mechanical and reflex effect on the intestines by changing the intra-abdominal pressure and applying pressure to the rectum. This effect stimulates peristalsis, and an increase in peristalsis accelerates intestinal movements by shortening the transit time of foods through the gastrointestinal tract (Olgun, 2016; Turan & Aşti, 2015). As a result of parasympathetic stimulation caused by massage, the motility of the muscles and digestive secretions increase, the sphincters in the gastrointestinal tract relax, and the transit time through the colon decreases. Besides, the feces softens with the mechanical effect, and its passage through the colon is facilitated (McClurg et al., 2018). Abdominal massage has been found to be effective in healthy/sick individuals with chronic constipation or fecal incontinence, altered abdominal muscle tone, abdominal pain due to cramps or flatulence, and defecation problems (Turan & Aşti, 2015). In a study conducted with elderly people with constipation living in a nursing home, it was reported that abdominal massage decreased constipation symptoms by increasing the number of bowel movements and the amount of feces (Çevik et al., 2018). In similar studies with the elderly, it was stated that abdominal massage prevented constipation and increased the quality of life in

the elderly (Baran & Ates, 2019; Birimoglu Okuyan & Bilgili, 2019; Turan & Atabek Ast, 2016). In another study conducted with elderly patients in intensive care, it was reported that abdominal massage increased the number of defecations and decreased abdominal distension and gastric residual volume (Çetinkaya, Ovayolu & Ovayolu, 2020). Similarly, it was found that abdominal massage reduced constipation when applied to patients hospitalized in the intensive care unit with an endotracheal tube (Dehghan, Fatehi Poor, Mehdipoor & Ahmadinejad, 2018), to neurosurgical intensive care patients (Altun Ugras et al., 2020), and to intubated and enterally fed patients (Dehghan, Fatehi Poor, Mehdipour-Rabori & Ahmadinejad, 2020). There are several studies in the literature examining the effects of abdominal massage on different patient groups and different symptoms. One study found that abdominal massage increased the number of defecations by 13% in patients with opioid-induced constipation (Yıldırım, Can & Köknel Talu, 2019). It was also reported that abdominal massage reduced neurogenic bowel dysfunction in patients with multiple sclerosis (McClurg et al., 2017), prevented constipation in Parkinson's patients (McClurg et al., 2016), reduced gastric residual volume and ventilator-associated pneumonia in intensive care patients (Kahraman & Ozdemir, 2015; Momenfar, Abdi, Salari, Soroush & Hemmatpour, 2018; Warren, 2016), and prevented symptoms of malignant ascites in cancer patients (Wang et al., 2015). Although abdominal massage can be applied in many patient groups, it is not recommended especially for healthy/sick individuals and pregnant women who have a family history of malignant bowel obstruction and irritable bowel syndrome (Turan & Aşti, 2015).

Abdominal Massage Application

Abdominal massage is a non-invasive method that involves stroking, kneading, and vibration movements in a clockwise direction over the abdominal wall to the area where the intestines are located, to stimulate bowel movements. By applying pressure to the anterior wall of the abdomen during the massage, the digestive organs are squeezed between the fingers used in the massage and the posterior abdominal wall, and a peristaltic stimulation occurs. The massage also pushes the feces from the intestines into the rectum. Besides, it can reduce the symptoms of constipation by treating the scar tissue that causes excessive gas, abdominal swelling and fullness, and the trigger points in the abdominal muscles (Olgun, 2016). Abdominal massage is applied clockwise to the large intestine to relax the abdominal wall and the application time is 15-20 minutes (Momenfar et al., 2018; Turan & Aşti, 2015). During the application, the practitioner being on the left side of the healthy/sick person's body that is in the supine position enables him/her to act according to the body mechanics, and accelerates the evacuation requirement of the healthy/sick person. Manipulations should start from the left lower quadrant of the sigmoid colon (Olgun, 2016; Turan & Aşti, 2015). During the abdominal massage, the healthy/sick individual should be placed in a supine position, in case of risky situations, the head of the bed should be tilted up 30-45°, and a small pillow should be placed under the head of the individual, and the knees should be bent slightly, if possible. Also, the application should not be practiced immediately after meals, and the urinary excretion needs of the healthy/sick individual should be met (Momenfar et al., 2018; Turan & Aşti, 2015). Healthy/sick individuals who will undergo abdominal massage for the first time can contract their muscles at the first contact and in this case, it is not possible to reach deep tissues. For this reason, the tension should be tried to be removed by starting abdominal massage with superficial effleurage. After the initial tension is eliminated, the main massage maneuvers should be started (Olgun, 2016; Turan & Aşti, 2015). There are three basic strokes in abdominal massage used in constipation; petrissage, effleurage, and vibration (McClurg et

al., 2017; Olgun, 2016; Turan & Aşti, 2015). Abdominal effleurage, petrissage, vibration, and tapotement reduce muscle tension, stimulate local circulation, facilitate digestion, stimulate gastric acid secretion, provide alertness and peristaltic stimulation, relieve constipation and reduce blood pressure (Olgun, 2016).

Abdominal massage maneuvers

Effleurage (Stroking): It is the slipping of the hand over the body surface with light or deep pressure. Effleurage is applied in two different ways as superficial or deep. The abdominal massage starts with effleurage and ends with effleurage (Turan & Aşti, 2015). In the application of effleurage in abdominal massage, the fingertips are placed on the symphysis pubis, advancing upward along the M.rectus abdominis with deep effleurage, the hands are opened sideways at the level of the lower ribs, advanced to the middle area along the line of the transverse abdominal muscles and moved down, and reaching the starting point obliquely at the second effleurage turn. Additionally, effleurage is started on the caecum with the right hand at the bottom and the left hand at the top. Hands are advanced upward on the ascending colon, the direction of the lower hand is changed in the midline, hands are advanced downward on the descending colon, moved down obliquely towards the pubis, and moved over the bladder with superficial effleurage. By repeating this maneuver, the contractions in the colon are supported and the pressure is increased. The increased pressure helps fecal material move through the intestine. During the application, the xiphoid protrusion should not be touched or pressure should not be applied to it. The bottom of the ribs should be palpated while doing this procedure to determine the stiffness of the ligaments of both abdominal muscles and the diaphragm. Besides, stiffness is palpated in the iliac crest along the upper surface of the pubic bone and the muscle connections around the pelvic area. This gives information not only about the stiffness in the lower abdominal muscle but also the iliac muscle (McClurg et al., 2017; Momenfar et al., 2018; Olgun, 2016; Turan & Aşti, 2015).

Petrissage (Kneading): It is a movement that helps to lift, roll and slightly compress the superficial fascia and the muscle mass underneath. Its main purpose is to lift the tissue and compress it after lifting it. The pressure is given in a vertical direction, and the movements are applied circularly. In practice, the pressure is increased and decreased successively. In this way, the tissues are gripped and released, then grasped again and moved on the tissue. Kneading movements should not be fixed and should not be applied on the same spot. Movements are performed with the palmar faces of one or both hands and the palmar faces of the thumb and fingers or with the palmar faces of the opposing thumbs and fingers. Petrissage facilitates the passage of fecal material from the intestines to the rectum. Since this part of the massage sometimes requires deep palpation, patients may feel uncomfortable with this situation. When effleurage is performed after petrissage, the transverse colon relaxes and the outflow of gas and feces becomes easier (Momenfar et al., 2018; Olgun, 2016; Turan & Aşti, 2015).

Vibration: It is the vibration movement applied by keeping hands and fingers in firm contact with the body. In vibration, the hand does not move in any direction and the movement is limited to the muscle it is on. When this technique is applied for a long time and with sufficient intensity, it creates reflex physiological effects. The expected effect is to stimulate the nervous system and relax the muscles. Vibration is a very effective maneuver in reducing intestinal spasms. Besides, it helps to remove the flatulence accumulated in the intestines from the body (McClurg et al., 2017; Turan & Aşti, 2015).

Conclusion and recommendations

Abdominal massage is an inexpensive and non-invasive procedure that has no side effects, can be easily applied by healthcare professionals or patients' relatives. Although studies are available evaluating the effectiveness of abdominal massage in the elderly with a high prevalence of constipation, the number of such studies in the literature is limited. It is recommended to conduct randomized controlled studies evaluating the effectiveness of abdominal massage in the management of constipation in the elderly and to apply this method, which is easy to apply, cheap, and has no side effects, more frequently to the elderly.

REFERENCES

Altun Ugras, G., Yüksel, S., Isik, M. T., Tasdelen, B., Dogan, H., & Mutluay, O. (2020). Effect of abdominal massage on bowel evacuation in neurosurgical intensive care patients. *Nurs Crit Care*. doi:10.1111/nicc.12575

Aslan, M., & Hocaoğlu, Ç. (2017). Yaşlanma ve yaşlanma dönemiyle ilişkili psikiyatrik sorunlar. *Düzce Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi, 7*(1), 53-62.

Bakanlığı, T. C. A. Ç. v. S. P. (2020). *Yaşlı Nüfusun Demografik Değişimi*. Ankara

Baran, A., & Ates, S. (2019). The Effects of Abdominal Massage in the Management of Constipation in Elderly People: A Randomized Controlled Study. *Topics in Geriatric Rehabilitation, 35*(2), 134-140. doi:10.1097/tgr.0000000000000223

Baykal, D., Yıldırım, D., & Can, G. (2018). Nörolojik Hastalıklarda Uygulanan Abdominal Masajın Etkinliğini Değerlendiren Çalışmaların İncelenmesi. *Florence Nightingale Hemşirelik Dergisi, 26*(1), 45-53.

Bengi, G., Yalçın, M., & Akpınar, H. (2014). Kronik konstipasyona güncel yaklaşım. *Güncel Gastroenteroloji, 18*(2), 181-197.

Bilgiç, Ş., Dilek, F., Arslan, H. S. A., & Aysun, Ü. (2016). Bir Huzurevinde Yaşayan Yaşlilarin Konstipasyon Durumları ve Etkileyen Faktörler. *International Journal of Basic and Clinical Medicine, 4*(1).

Birimoglu Okuyan, C., & Bilgili, N. (2019). Effect of abdominal massage on constipation and quality of life in older adults: A randomized controlled trial. *Complement Ther Med, 47*, 102219. doi:10.1016/j.ctim.2019.102219

Birimoğlu Okuyan, C., & Bilgili, N. (2019). Yaşlılarda konstipasyon sıklığı ve ilişkili faktörlerin belirlenmesi: Bir huzurevi çalışması.

Costilla, V. C., & Foxx-Orenstein, A. E. (2014). Constipation: understanding mechanisms and management. *Clin Geriatr Med, 30*(1), 107-115. doi:10.1016/j.cger.2013.10.001

Çetinkaya, O., Ovayolu, Ö., & Ovayolu, N. (2020). The Effect of Abdominal Massage on Enteral Complications in Geriatric Patients. *SAGE Open Nursing, 6*, 2377960820963772. doi:10.1177/2377960820963772

Çevik, K., Çetinkaya, A., Yigit Gökbel, K., Menekse, B., Saza, S., & Tikiz, C. (2018). The effect of abdominal massage on constipation in the elderly residing in rest homes. *Gastroenterology Nursing, 41*(5), 396-402. doi:10.1097/sga.0000000000000343

De Giorgio, R., Ruggeri, E., Stanghellini, V., Eusebi, L. H., Bazzoli, F., & Chiarioni, G. (2015). Chronic constipation in the elderly: a primer for the gastroenterologist. *BMC Gastroenterol, 15*, 130. doi:10.1186/s12876-015-0366-3

Dehghan, M., Fatehi Poor, A., Mehdipoor, R., & Ahmadinejad, M. (2018). Does abdominal massage improve gastrointestinal functions of intensive care patients with an endotracheal tube?: A randomized clinical trial. *Complement Ther Clin Pract, 30*, 122-128. doi:10.1016/j.ctcp.2017.12.018

Dehghan, M., Fatehi Poor, A., Mehdipour-Rabori, R., & Ahmadinejad, M. (2020). Effect of abdominal massage on prevention of aspiration in intubated and enterally fed patients: A randomized controlled trial. *J Complement Integr Med, 17*(3). doi:10.1515/jcim-2017-0124

Emmanuel, A., Mattace-Raso, F., Neri, M. C., Petersen, K. U., Rey, E., & Rogers, J. (2017). Constipation in older people: A consensus statement. *Int J Clin Pract, 71*(1). doi:10.1111/ijcp.12920

Fathallah, N., Bouchard, D., & de Parades, V. (2017). [Diet and lifestyle rules in chronic constipation in adults: From fantasy to reality...]. *Presse Med, 46*(1), 23-30. doi:10.1016/j.lpm.2016.03.019

Jani, B., & Marsicano, E. (2018). Constipation: Evaluation and management. *Mo Med, 115*(3), 236-240. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/30228729

Kahraman, B. B., & Ozdemir, L. (2015). The impact of abdominal massage administered to intubated and enterally fed patients on the development of ventilator-associated pneumonia: a randomized controlled study. *Int J Nurs Stud, 52*(2), 519-524. doi:10.1016/j.ijnurstu.2014.11.001

Kayikci, E. E., Kocatepe, V., Akyuz, F., & Can, G. (2020). The Effects of Abdominal Massage on the Management of Constipation: A Systematic Review of Randomised Controlled Trials/Konstipasyonun Yonetiminde Abdominal Masajin Etkisi: Randomize Kontrollu Calismalarin Sistematik Derlemesi. *Bezmialem Science, 8*(3), 311-318.

Komiya, H., Umegaki, H., Asai, A., Kanda, S., Maeda, K., Nomura, H., & Kuzuya, M. (2019). Prevalence and risk factors of constipation and pollakisuria among older home-care patients. *Geriatr Gerontol Int, 19*(4), 277-281. doi:10.1111/ggi.13610

McClurg, D., Goodman, K., Hagen, S., Harris, F., Treweek, S., Emmanuel, A., . . . Manoukian, S. (2017). Abdominal massage for neurogenic bowel dysfunction in people with multiple sclerosis (AMBER - Abdominal Massage for Bowel Dysfunction Effectiveness Research): study protocol for a randomised controlled trial. *Trials, 18*(1), 150. doi:10.1186/s13063-017-1890-y

McClurg, D., Harris, F., Goodman, K., Doran, S., Hagen, S., Treweek, S., . . . Mason, H. (2018). Abdominal massage plus advice, compared with advice only, for neurogenic bowel dysfunction in MS: a RCT. *Health Technol Assess, 22*(58), 1-134. doi:10.3310/hta22580

McClurg, D., Walker, K., Aitchison, P., Jamieson, K., Dickinson, L., Paul, L., . . . Cunnington, A. L. (2016). Abdominal massage for the relief of constipation in people with parkinson's: A qualitative study. *Parkinsons Dis, 2016*, 4842090. doi:10.1155/2016/4842090

Momenfar, F., Abdi, A., Salari, N., Soroush, A., & Hemmatpour, B. (2018). Studying the effect of abdominal massage on the gastric residual volume in patients hospitalized in intensive care units. *J Intensive Care, 6*, 47. doi:10.1186/s40560-018-0317-5

Mounsey, A., Raleigh, M., & Wilson, A. (2015). Management of constipation in older adults. *Am Fam Physician, 92*(6), 500-504. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/26371734

Olgun, S. (2016). Konstipasyon yönetİmİnde abdominal masaj uygulamasi. *Ege Üniversitesi Hemşirelik Fakültesi Dergisi, 32*(3), 118-126.

Özdİl, K., Gamze, M., & Öztürk, G. K. (2020). Yaşlılarda farmakolojik olmayan uygulamalar ve etkisinin İncelenmesine yönelik türkiye'deki mevcut tezlerin değerlendirilmesi. *Hacettepe Üniversitesi Hemşirelik Fakültesi Dergisi, 7*(3), 196-205.

Schuster, B. G., Kosar, L., & Kamrul, R. (2015). Constipation in older adults: stepwise approach to keep things moving. *Can Fam Physician, 61*(2), 152-158. Retrieved from https://www.ncbi.nlm.nih.gov/pubmed/25676646

Sharma, A., & Rao, S. (2017). Constipation: Pathophysiology and current therapeutic approaches. *Handb Exp Pharmacol, 239*, 59-74. doi:10.1007/164_2016_111

Tekİn, Ç. S., & Fatih, K. (2016). Dünyada ve türkiye'de yaşlilik. *Uluslararası Bilimsel Araştırmalar Dergisi (IBAD), 3*(1), 219-229.

Tufan, A., & Akın, S. (2015). Yaşlıda konstipasyon ve fonksiyonel dispepsi. *Turkiye Klinikleri Journal of Geriatric Special Topics, 1*(1), 95-99.

Turan, N., & Aşti, T. A. (2015). Konstipasyon yönetiminde abdominal masajin önemi. *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 18*(2), 148-154.

Turan, N., Aşti, T. A., & Kaya, N. (2017). Nöroşirürji yoğun bakım ünitesinde yatan hastalarda konstipasyon ve hemşirelik bakımı. *Hemşirelikte Eğitim ve Araştırma Dergisi, 14*(1), 73-78.

Turan, N., & Atabek Ast, T. (2016). The effect of abdominal massage on constipation and quality of life. *Gastroenterology Nursing, 39*(1), 48-59. doi:10.1097/sga.0000000000000202

Uzun, Y., Coşar, A. M., & Erkut, M. (2019). Yaşlılık ve Kabızlık. *Güncel Gastroenteroloji, 23 (2)*, 97-100.

Vazquez Roque, M., & Bouras, E. P. (2015). Epidemiology and management of chronic constipation in elderly patients. *Clin Interv Aging, 10*, 919-930. doi:10.2147/CIA.S54304

Wang, T. J., Wang, H. M., Yang, T. S., Jane, S. W., Huang, T. H., Wang, C. H., & Lin, Y. H. (2015). The effect of abdominal massage in reducing malignant ascites symptoms. *Res Nurs Health, 38*(1), 51-59. doi:10.1002/nur.21637

Warren, M. (2016). Abdominal massage may decrease gastric residual volumes and abdominal circumference in critically ill patients. *Evid Based Nurs, 19*(3), 76. doi:10.1136/eb-2015-102093

Yabunaka, K., Nakagami, G., Tabata, K., Sugama, J., Matsumoto, M., Kido, Y., . . . Sanada, H. (2018). Constipation in the elderly in a Japanese long-term medical facility: An ultrasonographic investigation. *Drug Discov Ther, 12*(4), 233-238. doi:10.5582/ddt.2018.01033

Yıldırım, D., Can, G., & Köknel Talu, G. (2019). The efficacy of abdominal massage in managing opioid-induced constipation. *Eur J Oncol Nurs, 41*, 110-119. doi:10.1016/j.ejon.2019.05.013

BABA BEBEK BAĞLANMASI İLE İLGİLİ YAPILAN ÇALIŞMALARIN İNCELENMESİ

Zeynep YILMAZ
ORCID ID: 0000-0002-2241-3952
Mehmet SAĞLAM
ORCID ID: 0000-0003-1784-4472
İnönü University, Malatya, Turkey

Özet

Bu araştırma ile geçmişten günümüze Türkiye'de baba-bebek bağlanması ile ilgili çalışmaların tarama modeli kullanılarak incelenmesi amaçlanmıştır. Baba bebek bağlanmasının konu alındığı çalışmaların incelenmesi ve alanyazında nasıl ele alındığının belirli kriterler çerçevesinde belirlenmesi bu konuda büyük resmin görülmesine katkı sağlayacaktır. Bu çerçevede "baba bebek bağlanması, baba bebek bağlanma" anahtar kelimeleri çerçevesinde Yükseköğretim Kurumu Ulusal Tez Merkezi ve Google Scholar Veri Tabanı üzerinde inceleme yapılmış ve 17 çalışmaya ulaşılmıştır.

Araştırma sonucunda, baba bebek bağlanması ile ilgili çalışmaların ulusal veya uluslararası hakemli dergilerde yayımlanma oranlarının düşük olduğu, uzmanlık alanında yapılan çalışmaların %90'ının yüksek lisans alanında yapıldığı, çalışmaların enstitülere göre dağılımına bakıldığında %80'inin sağlık bilimleri alanında olduğu, incelenen çalışmaların %58'inde geçerlik ve güvenirlik analizi yapılan ölçme aracı kullanıldığı ve %42'sinde ek olarak herhangi bir standardizasyon sürecinden geçirilmeyen ölçme araçları kullanıldığı, çalışmalarda en fazla alınan örneklem grubunun 6-12 aylık bebeği olan babalar olduğu, araştırmacılar tarafından en fazla kullanılan veri toplama aracının Baba-Bebek Bağlanma Ölçeği(B-BBÖ)'nin olduğu görülmüştür. Baba bebek bağlanmasının incelendiği çalışmalarda, çoğunlukla baba bebek bağlanmasını etkileyen faktörlerin ele alındığı bilgisi elde edilmiştir. Çalışmaya katılan babaların, yaşı, evlilik yaşı, gelir durumu, çekirdek aileye sahip olma, planlayarak bebek sahibi olma, bebek bakıcısı ve ev işlerinde yardımcısı bulunma durumu, doğuma hazırlık eğitimi almaları, kendi çocukluğunu iyi geçirme durumu, çocuğunun fiziksel ihtiyaçlarına yardım etmesi, çocuğuyla 5 saat ve üzeri zaman geçirme, eş ilişkisinden duyulan memnuniyet, gebelik-doğum bilgisi olması, çocuk sayısı, babalardaki depresyon riski ve bebek bakımına katılma durumunun baba-bebek bağlanma düzeyini etkileyen faktörler olduğu belirlenmiştir. Babayla ilgili faktörlerin ele alındığı gibi bebekle/çocukla ilgili faktörlerin de babayla bebek arasındaki bağlanmayı etkilediği görülmüştür.

Anahtar Kelimeler: Baba, Baba Bebek Bağlanma, Baba Bebek Bağlanması

EXAMINATION OF STUDIES ON FATHER INFANT ATTACHMENT

Zeynep YILMAZ
ORCID ID: 0000-0002-2241-3952
Mehmet SAĞLAM
ORCID ID: 0000-0003-1784-4472
İnönü University, Malatya, Turkey

Summary
The aim of this research is to examine the studies related to Father-baby attachment in Turkey from past to present using screening model. Examining the studies in which father and infant attachment is discussed and determining how it is handled in the field within the framework of certain criteria will contribute to seeing the big picture in this regard. In this context, 17 studies were conducted on the National thesis center of Higher Education and the Google Scholar database within the framework of the keywords “father baby binding, father baby binding”.
As a result of the research, studies related to Father-baby binding were low in national or international peer-reviewed journals, 90% of studies in the field of expertise were conducted in the field of Master's degree, 80% of studies were conducted in the field of Health Sciences, 58% of studies studied used a measurement tool that analyzed validity and reliability, and 42% used measurement tools that were not subjected to any standardization process in addition, in the studies, it was observed that the most taken sample group was fathers with a 6-12-month-old baby, and the most used data collection tool by the researchers was the father-child attachment scale(B-BBÖ). In studies that examined paternal infant attachment, information was obtained that the factors affecting paternal infant attachment were mostly considered. Of the fathers who participated in the study, the age of marriage, age, income status, having a nuclear family planning, having a baby baby sitter and the presence of House assistant status, training in preparation for childbirth, your own childhood good revision status of the child's physical needs, to help your child with over 5 hours, and spend time with peer relationship satisfaction, pregnancy-having knowledge of birth, number of children, and the risk of depression in fathers of the state to participate in the care of the baby, the father-infant attachment were determined to be factors that affect the level of. As well as Father-related factors, baby/child-related factors have been found to affect the connection between father and baby.

Key Words: Father, Father Baby Attachment, Father Baby Attachment

KAZA SONUCU KBRN (KİMYASAL, BİYOLOJİK, RADYOLOJİK, NÜKLEER) MADDE SALINIMININ SAĞLIK ve ÇEVRESEL ETKİLERİ

Zeliha KARACA
A. Handan DÖKMECİ
Tekirdağ Namık Kemal University, Turkey

Özet
KBRN (Kimyasal, Biyolojik, Radyasyon, Nükleer) maddeler kasıtlı, kazara veya meydana gelen doğal afetler sonucu ortama yayılarak insan ve çevre sağlığı üzerinde olumsuz etkiler oluşturan tehlikeli maddelerdir. KBRN olayları teknolojik/beşerî afet olayları kapsamındadır. Bu maddeler; endüstriyel faaliyetler, tarım uygulamaları, terör olayları, nükleer santral kazaları, çeşitli kimyasal maddelerin taşınması, depolanması ve tedariki sürecinde gerçekleşebilecek kazalarla çevreye yayılarak insan ve çevre sağlığı üzerinde kitlesel akut toksisiteye veya kronik ölümcül etkilere sebep olabilmektedir. Bu çalışmada, tarih boyunca yaşanmış Çernobil Nükleer Santral Kazası, İkitelli Radyasyon Kazası, Fukushima Daiichi Nükleer Santral Kazası, Kyshtym Kazası, Bhopal faciası ve Basel olayı gibi önemli KBRN madde salınımları ve bu maddelerin çevre ve insan sağlığına olan etkileri değerlendirilmiştir.

Anahtar Kelimeler: KBRN, Kaza, Toksisite, İnsan Sağlığı, Çevre Sağlığı

HEALTH AND ENVIRONMENTAL EFFECTS OF ACCIDENTAL CBRN (CHEMICAL, BIOLOGICAL, RADIOLOGICAL, NUCLEAR) MATERIAL EMISSION

Abstract
CBRN (Chemical, Biological, Radiation, Nuclear) substances are hazardous substances that cause adverse effects on human and environmental health by spreading to the environment as a result of intentional, accidental or natural disasters. CBRN events are within the scope of technological / human disaster events. These substances can cause mass acute toxicity or chronic fatal effects on human and environmental health by spreading to the environment through industrial activities, agricultural practices, terrorist incidents, nuclear power plant accidents, accidents that may occur during the transportation, storage and supply of various chemicals.In this study, important CBRN substance released such as in Chernobyl Nuclear Power Plant Accident, İkitelli Radiation Accident, Fukushima Dinici Nuclear Power Plant Accident, Kyshtym Accident, Bhopal disaster and Basel incident and the effects of these substances on environment and human health.

Keywords: CBRN, Accident, Toxicity, Human Health, Environmental Health

1. GİRİŞ

KBRN maddeleri artık hayatımızın her alanında bulunmaktadır. İnsan ve çevre için toksik maddelerin kullanımı, üretimi ve depolanması, özellikle teknolojinin gelişim hızına paralel olarak artmakta, buna bağlı olarak büyük kazalar ve kitlesel kayıplar yaşanmaktadır. İnsanlık tarihinin başlaması ile doğal afetler kadar, insan kaynaklı afetler de toplumları fiziksel, ekonomik ve sosyal anlamda etkilemiştir. Doğa ile uyum içerisinde yaşamak, doğayı keşfetmek, anlamak ve yeni kavramlar üretebilmekten geçmektedir. Doğa içerisinde var olan ekosistem bozulmaya başladığı anda yerini heyelan, sel, orman yangınları ve teknolojik kazalar gibi pek çok afete bırakmaktadır. Bu nedenle doğa ile uyum içerisinde yaşamayı öğrenemediğimiz takdirde insan kaynaklı olabilecek afetlerin önüne geçmek güçleşecektir (Helvacıoğlu, 2020; Ütük, 2018). Kimyasal maddeler her ne kadar hayatımızı kolaylaştırıyor olsa da bu maddelerin uygunsuz kullanımları ve yayılımları insan ve çevre için oldukça tehlikeli sonuçlara neden olabilmektedir. Toksik endüstriyel kimyasallar; üretim, depolama, taşıma veya imha aşamalarında tehdit oluşturabilmektedir Nükleer santral kazaları sonucu potansiyel tehlike ise, radyasyona maruz kalmaktır. Bu maruziyet buluttaki veya yerde depolanan radyoaktif parçacıklardan kaynaklanabilir, aynı şekilde radyoaktif maddeler solunabilir ve besinlere karışmış olanlar tüketilebilir (AFAD, 2020). Çalışmamızda meydana gelen KBRN kazalarının çevre ve insan sağlığına olan etkileri ve Türkiye'de ve Dünya'da meydana gelen önemli kazaların etkileri araştırılmıştır.

2. KBRN KAZALARI

KBRN (Kimyasal, Biyolojik, Radyolojik, Nükleer) maddelerinin kaza ile veya kasıtlı olarak çevreye yayılması önemli can ve mal kayıplarına yol açmakta ayrıca uzun bir zaman dilimi boyunca olumsuz etkiler doğurmaktadır (AFAD, 2020). KBRN ajanları, ulaşım kazaları, doğal afetler, tarımsal faaliyetler ve büyük endüstriyel kazalar sonucunda toplumda kargaşa ortamının oluşmasına, kitlesel ölüm ve yaralanmalara, sosyo-ekonomik kayıplara ya da çevre kirliliği sonucu ekosistem dengesinde bozulmalara neden olmaktadır (Dökmeci, 2019).

2.1. Çernobil Nükleer Santral Kazası

Çernobil nükleer santral kazası "hatalı bir dizaynın, yasal olmayan bir operasyonun ve izinsiz bir deneyin ölümcül kombinasyonuyla" 26 Nisan 1986'da saat 01.24'de meydana gelmiştir(Kiliç, 2017). Kazadan sonra yaklaşık 1 hafta boyunca atmosfere aşırı miktarda radyoaktif madde salınmıştır. Özellikle iki önemli izotop, İyot-131 ve Sezyum-137, halkın önemli miktarlarda doz almasına sebep olmuştur (NEI, 2012). Bu aşırı doz bölge de bulunan ilk müdahale ekipleri, santral çalışanları ve bölgede yaşayan insanlarda prodromal dönemde, akut radyasyon sendromu (ARS), sindirim sisteminde mukozal bozunumlara (mide bulantısı, anoreksi, kusma, diyare vb.) ve akciğer semptomlarına (pulmoner ödem vb.) sebep olmuş, kişilerde kısa sürede ani şok ve ölüm tablosu gelişmiştir. Kaza sonrası bölgede bulunan çam ağaçları turunculaşmış ve kısa sürede kurumuşlardır. Ormanın olduğu bölge tamamen kuraklaşmış, orman canlıları yok olmuştur. Çok sayıda kuş, böcek, kedi, köpek ve canlılarda da kitlesel ölümler görülmüştür. Aynı zamanda çevreye salınan çoğu madde enkaz üzerinde

toplanmıştır ancak daha hafif maddeler rüzgar ile taşınarak Ukrayna, Beyaz Rusya, Rusya ile İskandinavya ve Avrupa'nın bir bölümüne taşınmıştır (AFAD, 2020).

2.2. Fukushima Daiichi Nükleer Santral Kazası

11 Mart 2011 tarihinde Japonya'da meyden gelen 8.9 şiddetindeki tarihin en büyük depremi sonucu oluşan tsunaminin Fukushima Daiichi Nükleer Santrali'nin 1,2,3 ve 4 numaralı ünitelerini etkilemesi sonucu nükleer kazaya sebep olmuştur (Duman, 2011). Bu durumun yarattığı acil durum sonucu 11 Mart saat 19.03 de acil durum ilan edilmiş ve santralin 20 km çevresi tahliye edilmeye başlanmıştır (NEI, 2012). Kazadan sonra santral çalışanların aşırı radyasyona maruz kalmışlarve çevrede bulunan 170-200 bin kişi bölgeden tahliye edilmiştir (Dökmeci, 2019). Aşırı doza maruz kalan santral çalışanlarında akut radyasyon etkileri görülmüş, fakat bölgede kronik etkiler çok uzun vadede kendini göstermiştir. Fukushima Nükleer kazası, Çernobil'de meydana gelen kaza ile aynı seviyede olmasına rağmen, bu kazanın halk sağlığı bakımından ortaya çıkardığı sonuçlar Çernobil kazası ile kıyaslanamayacak kadar küçüktür (NEI, 2012). Santralden yayılan radyoaktif madde, toprak ve özellikle Pasifik Okyanusu'nda ciddi kirliliğe neden olmuştur. Yapılan dekontaminasyon çalışmalarının raporları incelendiğinde, kirliliğin okyanustan ve topraktan temizlenmesi 40-50 yıl süreceği ön görülmüştür.

2.3. Kyshtym Kazası

Bu kaza, Sovyetler Birliği'ne ait Mayak Nükleer Tesisinde 29 Eylül 1957 tarihinde gerçekleşmiştir (Dökmeci, 2019). Kaza, nükleer atık işleme tesisinde bulunan soğutma sisteminde arıza nedeniyle onlarca ton radyoaktivitedeki maddenin salınımına yol açan buhar patlaması sonucu ortaya çıkmıştır (Ülgen ve ark., 2011). Kaza da 200'den fazla kişi ölmüş, 270.000 kişi tehlikeli radyasyon seviyelerine maruz kalmıştır (Dökmeci, 2019). Kyshtym kazası yapısı bakımından hem radyoaktif hem kimyasal kirlenmeye yol açmıştır. Bölgede bulunan kişilerde akut radyasyonun etkilerine ek olarak, süt, su ve hasat edilen tahıllardan yapılan ekmekler de dahil kontamine gıda tüketimi sonucu iç radyasyona maruz kalınmıştır. 1957 ile 1959 arasında 10.000 tondan fazla tarım ürünü insan tüketimine uygun görülmemiş ve imha edilmiştir (NRPA, 2007).

2.5. Bhopal Faciası

3 Aralık 1984'te, Hindistan'ın Bhopal kentindeki bir pestisit fabrikasından 40 tondan fazla metil izosiyanat (MIC) gazı sızmış ve tahmini 3.800 kişi hayatını kaybetmiştir (Varma & Varma, 2005). Olaydan sonra devam eden araştırmalar hayatta kalanlar arasında; pulmoner, oftalmik, üreme, immünolojik, nörolojik ve hematolojik toksisitenin ortaya çıktığını göstermektedir (Varma & Guest, 1993). Yaşanan felaket tarihin en kötü kimyasal felaketlerinden biri olarak tarihe Bhopal Felaketi olarak geçmiş ve endüstriyel felaketle eşanlamlı hale gelmiştir (Varma & Varma, 2005).

SONUÇ ve DEĞERLENDİRME

Yaşanan felaketlerin ortak etkilerine bakıldığında kazayla gelişen KBRN olayları ekosistem dengesinde ve insanların fiziksel, mental ve ruhsal sağlığı üzerinde akut ve kronik etkilere neden olmuştur. Özellikle kazara doğal ortama salınan bu maddeler, toprakta, su ekosisteminde ve kara canlılarında da insanlarda olduğu gibi kitlesel kayıplara ve uzun

vadede bozulmalara yol açmıştır. Bu tür olayların çevrede yarattığı kirliliği ve organizma üzerine toksisitesini önlemek adına geliştirilen Seveso-II Direktifi, endüstriyel kimyasal afetleri ele alan Avrupa Komisyonu tarafından AB üye devletlerinin temsilcileriyle yapılan görüşmelerde oluşturulmuştur. Bu direktif kapsamında özellikle endüstriyel kazalarda risk ve tehlikelerin değerlendirmesi, risk bariyeri ve güvenlik standartlarının oluşturulması ve olası kaza ve afetler için yasal düzenlemelerin yapılmasını baz almıştır. Bu tehlikelerden korunmak ve önleyici tedbirler almak adına hukuksal düzenlemeler yapılmalı, iş yeri güvenliği sağlanmalı ve denetlenmeli ayrıca tehlike oluşturabilecek tesisler yaşam alanlarından uzak güvenli bölgelere kurulmalıdır. Toplumsal ve bireysel korunma için eğitim ve tatbikatlar arttırılmalı, olası kaza ve tehlikelere senaryo çalışmaları geliştirilmeli ve kapasite devamlı arttırılmalıdır.

KAYNAKÇA

AFAD (2020). Nükleer Santral Ve Tesis Kazaları. Retrieved from https://www.afad.gov.tr/kbrn/nukleer-santral-ve-tesis-kazalari[18.02.2020]

Dökmeci, A. H. (2019). Toksikolojik/Çevresel ve Endüstriyel Afetler. Nobel Tıp Kitabevi. p. 157-159. ISBN: 978-605-335-436-3.

Duman, V. (2011). Fukuşima nükleer santral kazası. https://www.fmo.org.tr/wp-content/belgeler/fukushimaraporu.pdf.

Fortun, K. (2009). Advocacy after Bhopal: Environmentalism, disaster, new global orders: University of Chicago Press.

Helvacıoğlu, E. (2020). Doğa ile savaş mı, uyum mu? . Bilim ve Gelecek,p. 1-17.

Kılıç, N. (2017). Çevre ve Dış Politika İlişkisi: Çernobil Kazası ve Türk Dış Politikasına Yansıması. İstanbul Gelişim Üniversitesi Sosyal Bilimler Dergisi, 4(1), 151-179.

Nuclear Energy Institute (NEI) (2012). Comparing Fukushima and Chernobyl. www.nei.org. Nuclear Energy Institute.

Norwegian Radiation Protection Agency (NRPA) (2007). The Kyshtym Accident, 29th September 1957. NRPA Bulletin.

Retrieved from https://www.nei.org/resources/fact-sheets/comparing-fukushima-and-chernobyl[20.02.2020]

Ülgen, S., SAYGIN, H., Or, İ., Kumbaroğlu, G., & Atiyas, İ. (2011). Nükleer Enerjiye Geçişte Türkiye Modeli.

Ütük, U. (2018). KBRN Tehdit ve Tehlikelerden Kaynaklı Zararlar Nedeniyle İdarenin Tehlike (Risk) İlkesine Dayalı Sorumluluğu. Resilience, 2(1), 39-56. doi:10.32569/resilience.407372

Varma, D. R., & Guest, I. (1993). The Bhopal accident and methyl isocyanate toxicity. Journal of Toxicology and Environmental Health, 40(4), 513-529. doi:10.1080/15287399309531816

Varma, R., & Varma, D. R. (2005). The Bhopal disaster of 1984. Bulletin of Science, Technology & Society, 25(1), 37-45.

THE IMPORTANCE OF HEALTH IMPROVEMENT IN PREVENTING CHRONIC DISEASES

Prof. Dr. Mukadder Mollaoğlu
Sivas Cumhuriyet University, Turkey
ORCID ID: 0000-0002-9264-3059
Res. Assist. Dr. Safiye Yanmış
Erzincan Binali Yıldırım University, Turkey
ORCID ID: 0000-0002-9095-4048

Abstract

Health promotion is expressed as the process of enabling individuals to increase their control over their own health and health indicators, thus improving their health level. The concept is now more important than ever in addressing public health problems. In today' s world, factors that help development such as the globalization of trade, urbanization, global travel convenience, and the advancement of technology not only lead to positive health outcomes, but also act as a double-edged knife by increasing vulnerability. In this context, the importance of health promotion has emerged as a basic practice, an integrative method and an economic strategy in the prevention of chronic diseases. In addition to therapeutic methods, health promotion practices include many social and environmental initiatives that are planned to help and protect individuals' health levels and a quality life by evaluating and preventing the etiological factors that cause diseases. All over the world, cardiovascular problems, cancer, chronic respiratory diseases and chronic diseases such as diabetes mellitus are among the primary causes of disability and death. These diseases cause the death of many people every year and it is predicted that the number of these deaths due to non-communicable diseases will increase worldwide in the coming years. Health promotion practices in preventing the occurrence of chronic diseases; it can be listed investigation of chronic diseases in detail at the global level, researching and raising awareness of society against these diseases, determining risk factors, managing risk factors, attaching importance to primary preventive health measures, ongoing disability and the reduction of problems related to labor loss and the systematic planning of health services in line with the needs of all individuals.

In chronic diseases, the need for more expensive hospital services is prevented or minimized with the nursing care services for more protection. Professional healthcare team members, especially nurses, have responsibilities such as education, care, counseling, organizing studies, being a representative of change, and being a resource person for individuals with chronic diseases. When planning care, the nurse should also consider the adaptation process and characteristics of the patient. In the light of these, the nurse identifies problems and plans care. By offering innovative solutions to chronic diseases, nurses will be able to positively change the lifestyle of the individual and those around them and contribute to the development of their health.

Keywords: Chronic Diseases, Health Promotion, Prevention of Chronic Diseases, Nursing

INTRODUCTION

Chronic diseases cause the death of 41 million individuals each year and these deaths cover 71% of all deaths in the world population. Every year, 15 million individuals between the ages of 30-69 die due to chronic diseases and more than 85% of these early deaths occur in populations with low and medium income levels (Pan American Health Organization, 2020). All over the world, cardiovascular problems, cancer, chronic respiratory diseases and chronic diseases such as diabetes mellitus are among the primary causes of disability and death (World Health Organization, 2018; Akpınar & Ceran, 2019). Each year 1.6 million individuals die from diabetes mellitus, 3.9 million individuals due to chronic respiratory diseases, 9.0 million individuals from cancer and 17.9 million individuals due to cardiovascular problems. It is reported that these four disease groups constitute more than 80% of deaths in all populations (Pan American Health Organization, 2020; World Health Organization, 2018).

There are four factors cited as the main cause of chronic diseases and the resulting disability and premature death: malnutrition (inadequate consumption of vegetables and fruits, excess consumption of saturated fats and sodium), lack of physical activity, excessive alcohol consumption and tobacco use (including passive smoking) (CDC, 2021). Considering the risk factors of chronic diseases in a broad framework, if the risk factors can be prevented, chronic diseases and thus morbidity and mortality rates can be reduced (Ovayolu & Ovayolu, 2016). Therefore, health promotion is more needed today than ever before in addressing public health problems such as chronic diseases (Aydın, 2019). In today' s world, factors that help development such as the globalization of trade, urbanization, global travel convenience, and the advancement of technology not only lead to positive health outcomes, but also act as a double-edged knife by increasing vulnerability. In this context, the importance of health promotion has emerged as a basic practice, an integrative method and an economic strategy in the prevention of chronic diseases (Kumar & Preetha, 2012). Thanks to practices aimed at improving health, it is possible to reduce the effect of modifiable risks and thus prevent chronic diseases by evaluating the behaviors that individuals do or do not practice through lifestyle changes (Schmidt, 2016).

Chronic Diseases

Chronic diseases are generally defined as all conditions that persist for a year or more and necessitate continuous medical intervention or significantly limit daily living activities. The World Health Organization (WHO) defines chronic disease as "long-lasting and slow-progressing diseases" and chronic condition as "health problems that require continuous care for several years or ten years (Durna, 2012). Noncommunicable diseases are also defined as diseases caused by a genetic predisposition lifestyle or environmental exposure that are not caused by an infectious agent (International Council of Nurses, 2010). The global burden of these diseases, the threat they pose have become a public health problem that prevents social and economic development in all countries of the world (World Organization Health, 2013).

Concept of Health Promotion

In the declaration published as the first of the health promotion conferences held in Ottowa-Canada in 1986, health is considered from a broader perspective as "a resource that enables

individuals to lead an individual, socially and economically productive life" (World Health Organization, 1986).When the concept of health is viewed from a broad perspective, "the characteristics of health are defined not only as well-being, but also as a state of balance, growth, functionality, integrity, superiority, empowerment and a resource" (Arnold & Breen, 2006). As defined by WHO, health is a state of physical, social and mental well-being as well as the absence of illness or disability (Larson, 1996; Sartorius, 2006). Therefore, it is among the fundamental rights of every individual to enjoy the highest attainable health standards (Sartorius, 2006). Accordingly, a comprehensive and holistic approach that goes beyond traditional therapeutic care and includes healthcare professionals and other stakeholders is effective in achieving the highest possible health standard for individuals. This approach should motivate individuals and communities to act for their subjective health, encourage them to be a leader for public health, enable intersectoral action in creating policies for public health, and develop sustainable health systems across the society (Şimşek, 2013). These factors are instrumental in helping people gain control over the factors that affect their own health and well-being, and capture the essence of "health promotion" that contributes to their health improvement. In addition to focusing on health promotion, treatment, addressing and preventing the main factors that cause diseases, it addresses planned multifaceted environmental and social interventions to significantly benefit and protect individuals' health conditions and quality of life (Sağlık Bakanlığı, 2011b).

The most well-known definition of health promotion is WHO' s definition in the Ottawa Convention. In this definition, health promotion is expressed as "the process of enabling individuals to increase their control over their own health and health indicators, thus improving their health level" (World Health Organization, 1986). This definition was slightly modified in the WHO' s Bangkok Charter for the Promotion and Promotion of Health in the Globalized World in 2005, and it was defined as the whole process that allows people to improve health, increase control over their health and improve their health level from the current situation (Aydın, 2019; Sağlık Bakanlığı, 2011b).

Health promotion is a process that uses biological, environmental, psychological and physical components to create health impacts and prevent disease, disability and premature deaths through education-oriented voluntary behavioral change activities (World Health Organization, 2012). Health promotion is defined as a combination of economic, educational, environmental and organizational supports for each of the behaviors aimed at creating health and the continuation of life (O'Donnell, 2009; Sağlık Bakanlığı, 2011a). Another definition of health promotion is "The art and science of helping people discover the synergy between their corepassions and their optimal health, increasing their motivation in their efforts to achieve optimal health, and supporting them in changing their way of life to move towards optimal health" (O'Donnell, 2009; Yardım et al., 2009). The purpose of improving health is to positively affect the health behaviors of individuals and communities as well as the living and working conditions that affect their health (Şimşek, 2013). Health promotion improves the health status of individuals, families, communities, states and nation (Özvarış, 2012). On the other hand, it contributes to the reduction of premature deaths by creating quality living conditions for all people. In addition, health promotion, where preventive work comes to the fore, helps manage financial and human resources that will be spent on individual, social and global treatment methods (Özcan & Bozhüyük, 2013; Şimşek, 2013).

Health promotion is effective in preventing health problems, encouraging healthy lifestyles and facilitating access to health services, and healing individuals physically, psychologically, educationally and professionally. It plays an important role in promoting health, controlling

overall health costs and making families, communities, workplaces and organizations healthier (Değerli & Yiğit, 2020). The basic principle of health promotion is to acknowledge that societies have the power and capacity required to take responsibility for their own health, and to prepare the necessary environment for them to take control of the work to be done for health promotion. Considering the elimination of social inequalities and inter-sectoral cooperation in improving health, every individual in the society should have the right to work and live in a healthy environment (Madenoğlu Kıvanç, 2016; Özvarış, 2012).

Health professionals make special efforts to reach various cultural and socio-economic groups, determine lifestyle and health practices, and direct them to protect and improve health (Pender, Murdaugh, & Parsons, 2015). Health professionals are also interested in promoting health-promoting behaviors. The aim is to motivate people to improve their lives, modify risky behaviors, and adapt to healthy lifestyle behaviors (Teyhen et al., 2018; Wang et al., 2015). It is also important that health promotion activities are evaluated by professionals. This evaluation will provide many benefits such as planning future studies, increasing the effectiveness of new programs to be implemented, budget planning for future studies, developing new methods, evaluating whether investments for health promotion are used effectively, and evaluating the effectiveness of initiatives (Ergün et al., 2017; Pender et al., 2015).

Health promotion practices in preventing the occurrence of chronic diseases

The most important feature of chronic diseases is that apart from some unchangeable factors such as family history and genetic basis, many of the underlying causes are completely preventable risk factors (International Council of Nurses, 2010). Although these diseases can be prevented when risk factors are eliminated, they still cause high human and economic costs. This situation reveals that the burden of chronic diseases should be reduced. In the prevention of chronic diseases, health promotion through primary prevention approaches is important (Akın, 2012; Akpınar & Ceran, 2019; Ovayolu & Ovayolu, 2016). Viewed from a broad frame health promotion practices in preventing the occurrence of chronic diseases; it can be listed investigation of chronic diseases in detail at the global level, researching and raising awareness of society against these diseases, determining risk factors, managing risk factors, attaching importance to primary preventive health measures, ongoing disability and the reduction of problems related to labor loss and the systematic planning of health services in line with the needs of all individuals (Akpınar & Ceran, 2019; Ministry of Health, 2013).

WHO accepts that the risk of chronic disease can be reduced by changing four life style (malnutrition (inadequate consumption of vegetables and fruits, excess consumption of saturated fats and sodium), lack of physical activity, excessive alcohol consumption and tobacco use (including passive smoking)) and by altering metabolic risk factors such as high blood pressure or cholesterol (World Health Organization, 2013). Prevention measures for the causes of diseases are expressed as primary level prevention. The interventions to be performed are multidimensional because there are multiple factors such as lifestyle, habits, traditions and genetic structure, age and gender that play a role in the emergence of chronic diseases and they are effective together. In this context, regulation of nutrition, regular physical exercise, prevention of the use of substances such as tobacco and alcohol are important preventive approaches (Durna, 2012; Çağatay Güler & Akın, 2015).

It is important to take these measures at the social level as well as at the individual level. It requires the active participation of the whole society, the development of supportive policies and action plans, and continuous cooperation between sectors (Akın, 2012). For this purpose,

through counseling services, improving the life skills of individuals against tobacco products and developing interventions regarding the prevention of accessibility to tobacco products, regulating the sale and accessibility of tobacco and alcohol (strengthening the implementation of prohibitions on advertising, promotion, sponsorship), reducing the amount of salt in food, etc. In order for many interventions to be implemented, there is a need to make common legislative arrangements with the relevant Ministries (Ministry of Health, 2017). In addition, blood pressure monitoring, establishing suitable areas and opportunities for physical activity and creating a healthy environment are among the practices that should be done (Akın, 2012). Ensuring the use of fiscal policies and marketing controls to influence the demand, access and supply of foods high in tobacco, alcohol and saturated fat, trans fat, salt and sugar at an affordable price, the use of unsaturated fats instead of saturated fat in food products, mainly by acting on processed foods and Working to virtually eliminate trans-fatty acids from the food source by reducing sugar in foods, and reducing dietary salt intake to ensure individuals consume no more than 5 g (2000 mg sodium) per day are actions to prevent chronic diseases at the societal level (Ministry of Health, 2017).

The work to be done to prevent chronic diseases at the global level is to strengthen international cooperation and advocacy, to ensure that priority is given to the prevention and control of chronic diseases in global, regional and national agendas and internationally agreed development goals, and national capacities to accelerate country responses to the prevention and control of chronic diseases, to strengthen leadership, governance, multisectoral action and partnerships, to reduce the modifiable risk factors and underlying social determinants of chronic diseases by creating health-promoting and promoting environments, and to prevent and control chronic diseases through people-centered primary health care and universal health insurance, and high-quality research on chronic disease prevention and control, empowering and directing the underlying social determinants to address to develop and support national capacity for a and development, to monitor the determinants of chronic diseases and to evaluate progress in prevention and control (Ministry of Health, 2013).

As per the definition of the concept of health, services to be provided are not limited to interventions when health deteriorates. This perspective has led to the emergence of the concept of health promotion and to move in this direction by governments, society and health professionals around the world (Aydın, 2019). Emphasizing issues such as improving health, preventing health problems, developing healthy lifestyle behaviors, increasing patient compliance, ensuring equality by accelerating access to health services and care; It contributes to the improvement of the physical, psychological, educational and working life activities of individuals and to the control or reduction of general health expenditures (Değerli & Yiğit, 2020).

As can be seen, studies on improving health are more important in the period before health deterioration (Akın, 2012). This perspective has led to the emergence of the concept of health promotion and to move in this direction by governments, society and health professionals around the world (Aydın, 2019). Emphasizing issues such as improving health, preventing health problems, developing healthy lifestyle behaviors, increasing patient compliance, ensuring equality by accelerating access to health services and care; It contributes to the improvement of the physical, psychological, educational and working life activities of individuals and to the control or reduction of general health expenditures (Değerli & Yiğit, 2020). For this reason, professional healthcare team members, especially nurses play an important role in preventing chronic diseases as individual, social and global level (International Council of Nurses, 2010; Ovayolu & Ovayolu, 2016).

The International Council of Nurses lists the roles of nurses in the control of chronic diseases as follows (International Council of Nurses, 2010):

• Supporting the implementation of appropriate policies,

• To provide training of human resources and adequate access to necessary medical and basic technologies,

• Taking an active role in the development of effective referral system and standards for primary health care services,

• To use evidence-based guidelines and standards for the care of common health problems such as cardiovascular problems, cancer, chronic respiratory diseases and diabetes mellitus,

• Taking an active role in the development of economic methods in the early diagnosis of some cancers, diabetes mellitus, hypertension such as cardiovascular risk agents,

• Planning continuous education programs for training physicians, nurses and other healthcare team members and improving their practical skills,

• To support individuals with chronic diseases to better manage their health problems and to support the development of mechanisms for sustainable health financing in order to reduce injustices in access to health services.

CONCLUSION

As a result, the practices that should be done to improve health can be listed as improving health policies, creating supportive living conditions, strengthening the initiatives that need to be done in unity and solidarity, gaining skills at the individual level and providing significant benefits to health care services. Professional healthcare team members, especially nurses, have responsibilities such as education, care, counseling, organizing studies, being a representative of change, and being a resource person for individuals with chronic diseases. When planning care, the nurse should also consider the adaptation process and characteristics of the individuals. In the light of these, the nurse identifies problems and plans care. By offering innovative solutions to chronic diseases, nurses will be able to positively change the lifestyle of the individual and those around them and contribute to the development of their health. Thus, nurses will contribute to the protection of the health level of individuals, the adoption of healthy lifestyle behaviors and the formation of a healthy society in a healthy environment, together with an individual-oriented medical approach in the prevention of chronic diseases.

REFERENCES

Akın, S. (2012). Primary and secondary prevention in chronic diseases. In Z. Durna (Ed.), *Cronic Disease and care*. İstanbul: Nobel Medical Bookstores.

Akpınar, N. B., & Ceran, M. A. (2019). Chronic Diseases and Rehabilitation Nursing. *Journal of Adnan Menderes University Health Sciences Faculty*, *3*(2), 140–152.

Arnold, J., & Breen, L. J. (2006). Images of Health. *Health Promotion in Practice.*, pp. 3–20. Hoboken, NJ, US: Jossey-Bass/Wiley.

Aydın, N. (2019). Sağlığın teşviki ve geliştirilmesi. *Black Sea Journal of Health Science*, *2*(1), 21–29.

CDC. (2021). About Chronic Diseases. Retrieved February 4, 2021, from National Center for Chronic Disease Prevention and Health Promotion website: https://www.cdc.gov/chronicdisease/about/index.htm

Değerli, H., & Yiğit, A. (2020). Sağlığın Korunması ve Geliştirilmesinde Bireylerin Sağlıklı Yaşam Biçimi Davranış Düzeyinin Belirlenmesi. *Süleyman Demirel Üniversitesi Vizyoner Dergisi*, *11*(27), 573–586. https://doi.org/10.21076/vizyoner.656563

Durna, Z. (2012). Chronic diseases and their importance. In Z. Durna (Ed.), *Chronic diseases and care* (pp. 1–8). İstanbul: Nobel Medical Bookstores.

Ergün, A., Eti Aslan, F., Vatan, F., Olgun, N., & Kuğuoğlu, S. (2017). Sağlık Bakımındaki Temel Kavramlar. In A. Karadakovan & F. Eti aslan (Eds.), *Dahili ve Cerrahi Hastalıklar da Bakım* (1. Baskı, pp. 1–24). Ankara: Akademisyen Kitabevi.

Güler, Çağatay, & Akın, L. (Eds.). (2015). *Public Health Basic Information*.

International Council of Nurses. (2010). *Delıverıng Qualıty, Servıng Communıtıes: Nurses Leadıng Chronıc Care*. Geneva, Switzerland. Retrieved from https://www.ghdonline.org/uploads/Delivering_Quality_Serving_Communities_-_Nurses_Leading_Chronic_Care.pdf

Kumar, S., & Preetha, G. (2012). Health promotion: An effective tool for global health. *Indian Journal of Community Medicine*, *37*(1), 5. https://doi.org/10.4103/0970-0218.94009

Larson, J. S. (1996). The World Health Organization's definition of health: Social versus spiritual health. *Social Indicators Research*, *38*(2), 181–192. https://doi.org/10.1007/BF00300458

Madenoğlu Kıvanç, M. (2016). Evrensel Sağlık Bildirgeleri ve Türkiye'de Sağlık Reformları. *Sağlık ve Hemşirelik Yönetimi Dergisi*, *3*(2), 162–166. https://doi.org/10.5222/SHYD.2015.162

Ministry of Health. (2013). *Global action plan for the prevention and control of noncommunicable diseases 2013-2020*. Retrieved from https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/bulaşıcı olmayan hastalıklar.pdf

Ministry of Health. (2017). *Multi-stakeholder Turkey Non-Communicable Diseases Action Plan 2017-2025*. Ankara. Retrieved from https://sbu.saglik.gov.tr/Ekutuphane/kitaplar/çok paydaşlı eylem.pdf

O'Donnell, M. P. (2009). Integrating Health Promotion into National Health Policy. *American Journal of Health Promotion*, *23*(6), 4–6. https://doi.org/10.4278/0890-1171-23.6.fmiv

Ovayolu, N., & Ovayolu, Ö. (2016). *Temel İç Hastalıkları Hemşireliği ve Farklı Boyutlarıyla Kronik Hastalıklar* (N. Ovayolu & Ö. Ovayolu, Eds.). Adana: Çukurova Nobel Tıp Kitabevi.

Özcan, S., & Bozhüyük, A. (2013). Sağlığın Geliştirilmesi ve Aile Hekimlerinin Rolü. *Turkish Journal of Family Medicine and Primary Care*, *7*(3), 46–51.

Özvarış, Ş. B. (2012). Sağlığı geliştirme ve sağlık eğitimi. In Ç Güler & L. Akın (Eds.), *Halk*

Sağlığı Temel Bilgiler (pp. 1676–1753). Ankara: Hacettepe Üniversitesi yayınları.

Pan American Health Organization. (2020). Noncommunicable Diseases. Retrieved from https://www.paho.org/en/topics/noncommunicable-diseases

Pender, J. N., Murdaugh, C. L., & Parsons, M. A. (2015). *Toward a definiton of health. Health promotion in nursing practice* (7. Baskı). New Jersey: Pearson Education, Inc.

Sağlık Bakanlığı. (2011a). *Sağlığın teşviki ve geliştirilmesi sözlüğü. World Health Organization 1998* (1. Baskı). Bakanlık Yayın.

Sağlık Bakanlığı. (2011b). *Sağlığın teşviki ve geliştirilmesine yönelik dönüm noktaları. World Health Organization 2009*. Ankara: Bakanlık yayın.

Sartorius, N. (2006). The meanings of health and its promotion. *Croatian Medical Journal*, *47*(4), 662–664. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/16909464

Schmidt, H. (2016). *Chronic Disease Prevention and Health Promotion*. https://doi.org/10.1007/978-3-319-23847-0_5

Şimşek, Z. (2013). Sağlığı geliştirmenin tarihi gelişimi ve örneklerile sağlık geliştirme stratejileri. *TSK Koruyucu Hekimlik Bülteni*, *12*(3), 343–358.

Teyhen, D. S., Robbins, D., & Ryan, B. A. (2018). Promoting and Sustaining Positive Personal Health Behaviors – Putting the Person First. *Military Medicine*, *183*(3), 213–219. https://doi.org/10.1093/milmed/usy212

Wang, S.-Y., Zang, X.-Y., Liu, J.-D., Gao, M., Cheng, M., & Zhao, Y. (2015). Psychometric properties of the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-Fatigue) in Chinese patients receiving maintenance dialysis. *Journal of Pain and Symptom Management*, *49*(1), 135–143. https://doi.org/10.1016/j.jpainsymman.2014.04.011

World Health Organization. (1986). Health promotion. Retrieved January 1, 2021, from https://www.who.int/health-topics/health-promotion#tab=tab_1

World Health Organization. (2012). *Health education: theoretical concepts, effective strategies and core competencies* (NLM Classi). Washington.

World Health Organization. (2013). Follow-up to the Political Declaration of the High-level Meeting of the General Assembly on the Prevention and Control of Non-communicable Diseases. Retrieved February 6, 2021, from https://apps.who.int/gb/ebwha/pdf_files/WHA66/A66_R10-en.pdf?ua=1

World Health Organization. (2018). Noncommunicable diseases. Retrieved February 4, 2021, from https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

Yardım, N., Gögen, S., & Mollahaliloğlu, S. (2009). Sağlığın Geliştirilmesi (Health Promotıon): Dünyadave Türkiye'de Mevcut Durum. *Journal of Istanbul Faculty of Medicine*, *72*(1), 29–35.

THE IMPORTANCE OF YOGA FOR SYMPTOM MANAGEMENT OF CANCER PATIENTS

Mukadder Mollaoğlu
Sivas Cumhuriyet University, Turkey
Safiye Yanmış
Erzincan Binali Yıldırım UniversityTurkey

Abstract
Yoga, which is one of the mind-body interventions, is one of the integrative therapies widely used for therapeutic purposes in medicine and health care systems. Yoga, which is not a religion or philosophy, is an ancient traditional science that is effective in maintaining the perfect control of the body, emotions and mind, uniting human beings with everything living and non-living in the universe, keeping in touch with the universal consciousness through the perfect harmony and integration of the body, mind and soul. This science is a combination of yogic physical postures (asanas), yogic breathing practices (pranayama), meditations and relaxation techniques. Asanas work at the physical level, pranayama at the vital energy level, relaxation and meditation at the psychological and intellectual level. Yoga, in which asana, pranayama, meditation and relaxation are performed together, provides physiological, psychological and biochemical benefits to the individual when applied correctly and regularly. As in the symptom management of many chronic diseases, mind-body practices such as yoga, one of the integrative treatment methods, can be used in cancer.

Cancer; It is one of the most important health problems of our age with many symptoms, requiring long-term treatment and care, threatening human health all over the world, and rapidly increasing in prevalence. Cancer causes patients with physical, emotional and psychological problems. All these problems negatively affect the quality of life of the patients. It is important to use yoga, which is one of the integrative treatments aimed at ensuring the physical, emotional and psychological well-being of cancer patients and increasing their quality of life. The main purpose of cancer patients applying for integrative treatments is; to support treatment, to prevent recurrence of cancer, to increase the quality of life, to cope with the side effects of treatment and disease, to strengthen the immune system and to increase well-being. Nurses have an active role in determining the use of integrative treatment methods, side effects and possible complications among their patients. Nurses, who are in open communication with patients about these treatments, should be aware of their patients' educational needs for treatments. Therefore, healthcare nurses should acquire sufficient knowledge in this area to advise patients appropriately about these methods, discussing safe and effective individual-specific treatments with patients and guiding them accordingly.

Keywords: Cancer, yoga, symptom management, integrative therapy, nursing

INTRODUCTION

Cancer is the second major public health problem among diseases that cause death worldwide (Siegel et al., 2021). Every year millions of people around the world are diagnosed with cancer and more than half of these patients die due to cancer (World Health Organization, 2021). Despite the developments, cancer continues to be a process that includes many physical, psychosocial and spiritual problems and difficulties for patients and their relatives, from the moment of diagnosis to the moment of treatment or death, and then to the mourning process. As a result of the developments in the field of medicine, the chance of treatment has been found in some cancer cases, while the life span has been extended in others and the cancer has gained a chronic process (Aslan & Yağcı Özen, 2019; Aydoğan & Uygun, 2011). In 2020, 19.3 million new cancer cases and 10.0 million cancer-related deaths were reported. On the other hand, 18.1 million new cancer cases and 9.6 million cancer-related deaths were reported in 2018, while the number of new cancer cases was 14.1 million and cancer-related deaths were 8.2 million in 2012 (GLOBOCAN, 2020).

Cancer; It is one of the most important health problems of our age with many symptoms, requiring long-term treatment and care, threatening human health all over the world, and rapidly increasing in prevalence. Cancer causes patients with physical, emotional and psychological problems. All these problems negatively affect the quality of life of the patients (Danhauer et al., 2019). The symptom burden of individuals with cancer is higher than individuals without cancer (Dong et al., 2016; Wu & Harden, 2015). Individuals with cancer are significantly affected by functional losses, permanent disability and decreased quality of life. Cancer causes premature deaths, and individuals who survive face long-term symptom management needs (Burton et al., 2015; Kroenke et al., 2013).

Many cancer patients generally resort to integrative methods in order to improve their physical and emotional well-being and to cope with the side effects of cancer treatment (Öğüt Düzen & Korkmaz, 2015). The main purpose of cancer patients applying for integrative treatments is; to support treatment, to prevent recurrence of cancer, to increase the quality of life, to cope with the side effects of treatment and disease, to strengthen the immune system and to increase well-being (Karakoç, 2020; Öğüt Düzen & Korkmaz, 2015).

As in the symptom management of many chronic diseases, mind-body practices such as yoga, one of the integrative treatment methods, can be used in cancer. It is important to use yoga, which is one of the integrative treatments aimed at ensuring the physical, emotional and psychological well-being of cancer patients and increasing their quality of life (Danhauer et al., 2019). Cancer patients use yoga practice to relax, cope with symptoms, manage chronic diseases accompanying the disease, increase energy, increase functional performance and improve overall health. Patients need to understand the potential benefits of yoga at all stages of cancer (McCall et al., 2015; van Uden-Kraan et al., 2013). Therefore, healthcare nurses should acquire sufficient knowledge in this area to advise patients appropriately about integrative therapies such as yoga, discussing safe and effective individual-specific treatments with patients and guiding them appropriately (Sisk, 2015).

Yoga

Yoga is a comprehensive health and well-being system for the mind, body and spirit that has been developed over 5000 years ago. It is believed that the word yoga is derived from the word “yuj”, which is the Sanskrit root (Land, 2008; Yüce, 2008). Yoga, which is one of the

mind-body interventions, is one of the integrative therapies widely used for therapeutic purposes in medicine and health care systems (Land, 2008; Manaf, 2007).

Yoga, which is not a religion or philosophy, is an ancient traditional science that is effective in maintaining the perfect control of the body, emotions and mind, uniting human beings with everything living and non-living in the universe, keeping in touch with the universal consciousness through the perfect harmony and integration of the body, mind and soul (Manaf, 2012; Rathfisch, 2015). This science is a combination of yogic physical postures (asanas), yogic breathing practices (pranayama), meditations and relaxation techniques. Asanas work at the physical level, pranayama at the vital energy level, relaxation and meditation at the psychological and intellectual level. Yoga, in which asana, pranayama, meditation and relaxation are performed together, provides physiological, psychological and biochemical benefits to the individual when applied correctly and regularly (Manaf, 2007; Rathfisch, 2015; Yüce, 2008).

Yoga sessions generally last between 20-60 minutes. Yoga sessions begin with calm and slow movements with deep and slow breaths from the abdomen. The sessions can be asana, pranayama, relaxation and meditation under the guidance of a guide, as well as with visual resources. At the end of the session, the session can be ended with words or sentences called mantra in order to achieve a deeper relaxation. While many people need several sessions a week to recover and maintain their health, some people report much better after a single session (Simon, 2020).

Yoga in symptom management of cancer patients

One of the symptoms most frequently complained by cancer patients is fatigue. Research shows that yoga, one of the integrative therapies, has a physical and mental stimulating effect and can significantly improve fatigue (Dong et al., 2019; Lin et al., 2019). In a systematic review study including ten articles, 583 participants were evaluated. According to the results of these studies, it was determined that there was a decrease in the fatigue levels of cancer patients after yoga practice. In addition, it has been reported that cancer patients who adapt to yoga practice and participate in more sessions have more fatigue levels compared to those who disrupt their practice sessions (Sadja & Mills, 2013). According to another meta-analysis study, 2183 patients were studied, and it was reported that yoga program applied for six weeks in cancer patients had an effect on moderate fatigue level. In addition, it was concluded that yoga, which was applied by a specialist for 60-90 minutes per session for eight weeks, greatly reduced the level of fatigue in cancer patients (Dong et al., 2019). According to a randomized controlled study conducted on four hundred and ten cancer patients, it was reported that the fatigue level of the group treated with yoga intervention significantly improved compared to patients using traditional cancer treatment methods. In addition, it was observed that in the intervention group, patients with sleep disorders and difficulties in their daily activities decreased daytime naps and increased sleep quality significantly (Lin et al., 2019).

Cancer patients cite sleep disturbance as another most common disturbing symptom. In addition, since insomnia causes symptom management not to be possible, it is important to perform yoga practice in order to address this situation of cancer patients and to eliminate the problem (Alexander & Lockwood, 2014). According to a randomized controlled study, it was observed that cancer patients in the yoga intervention group had decreased sleep disturbances and improved sleep quality. According to this result, yoga is recommended to reduce sleep problems and improve sleep quality in cancer patients (Rao et al., 2017). In a systematic

review study on cancer patients, seven out of ten clinical studies showed that performing yoga practice in low and medium intensity sessions lasting 60-120 minutes significantly improved patients' sleep, improved subjective sleep quality, shortened time to fall asleep, and more It has been reported to make it longer and reduce the intake of sleeping pills (Lin et al., 2018).

One of the most common cancer-related problems is pain. Cancer patients prefer to use non-pharmacological treatments instead of pharmacological treatments in pain management because of addiction and side effects. Yoga, which is one of the mind-body based therapies, is among these treatments (Mohan Rao et al., 2017). Twelve clinical trials were reviewed in a systematic review. In this study, in which a total of 531 cancer patients were examined, it was shown that yoga practice improved cancer pain compared to traditional treatment methods and can be used safely for this symptom (Agarwal & Afek, 2016). In another randomized controlled study, it is stated that a three-month yoga intervention is an effective intervention in reducing stress and pain in advanced cancer patients (Kumar et al., 2013). According to a qualitative study, it was determined that the subjective evaluations of individuals with cancer about yoga are effective in reducing symptoms and gaining body awareness. In addition, some cancer patients in this study explained that yoga is beneficial in increasing functional strength and reducing pain (McCall et al., 2015).

Cancer patients may experience serious psychological problems such as anxiety and depression due to side effects associated with the disease and treatment methods (Mohan Rao et al., 2017). There is evidence in the literature that yoga reduces these symptoms experienced by cancer patients (Buffart et al., 2012; Cramer et al., 2017; Porter et al., 2019). In a systematic review, it is reported that yoga applied to cancer patients has important effects on reducing depression and anxiety as well as problems such as fatigue and sleep disorders (Cramer et al., 2017). In a randomized controlled study in cancer patients, it was shown that the yoga program applied for eight weeks reduced the anxiety and depression levels of the patients (Porter et al., 2019). In another systematic review, it was reported that yoga applied to cancer patients was effective in lowering physical symptoms and moderately improving psychosocial symptoms, increasing the general well-being of patients. In the same study, it was determined that patients had a moderate improvement in their stress, anxiety, and depression levels (Buffart et al., 2012).

Cognitive impairments have also been reported in cancer patients. In a randomized controlled study, it is reported that a twelve-week yoga program applied to cancer patients can effectively reduce cancer-related cognitive complaints (Derry et al., 2015). In another randomized controlled study, yoga was found to improve sleep quality and alleviate decreased memory problems in cancer patients (Janelsins et al., 2016).

CONCLUSION

In conclusion, yoga, one of the integrative therapies for symptom management in cancer patients, is a useful and safe practice frequently used. Therefore, cancer patients and healthcare professionals need to understand the potential benefits of yoga at all stages of cancer. Nurses have an active role in determining the use of integrative treatment methods, side effects and possible complications among their patients. Nurses, who are in open communication with patients about these treatments, should be aware of their patients' educational needs for treatments. Therefore, healthcare nurses should acquire sufficient knowledge in this area to advise patients appropriately about these methods, discussing safe

and effective individual-specific treatments with patients and guiding them accordingly. In addition, it is recommended that nurses do scientific research on yoga in cancer patients and integrate research results into nursing care.

REFERENCES

Agarwal, R. P., & Afek, A. M. (2016). Integrating yoga into cancer pain management: A review of the research evidence. *Trends in Cancer Research, 11*, 157–170.

Alexander, G., & Lockwood, S. (2014). Effect of yoga on sleep quality among adult cancer patients: a systematic review. *JBI Evidence Synthesis*, *12*(6), 382–419.

Aslan, Ş., & Yağcı Özen, M. (2019). A Multidisciplinary Team Work: Care in the Last Period of Life in Cancer Patients. *Journal of Social Sciences of Mus Alparslan University*, *7*(5), 191–196. https://doi.org/10.18506/anemon.457788

Aydoğan, F., & Uygun, K. (2011). Palliative Treatments in Cancer Patients. *Clinical Development*, *24*, 4–9.

Buffart, L. M., van Uffelen, J. G., Riphagen, I. I., Brug, J., van Mechelen, W., Brown, W. J., & Chinapaw, M. J. (2012). Physical and psychosocial benefits of yoga in cancer patients and survivors, a systematic review and meta-analysis of randomized controlled trials. *BMC Cancer*, *12*(1), 559. https://doi.org/10.1186/1471-2407-12-559

Burton, C. L., Galatzer-Levy, I. R., & Bonanno, G. A. (2015). Treatment type and demographic characteristics as predictors for cancer adjustment: Prospective trajectories of depressive symptoms in a population sample. *Health Psychology*, *34*(6), 602–609. https://doi.org/10.1037/hea0000145

Cramer, H., Lauche, R., Klose, P., Lange, S., Langhorst, J., & Dobos, G. J. (2017). Yoga for improving health-related quality of life, mental health and cancer-related symptoms in women diagnosed with breast cancer. *Cochrane Database of Systematic Reviews*, *1*(1), CD010802. https://doi.org/10.1002/14651858.CD010802.pub2

Danhauer, S. C., Addington, E. L., Cohen, L., Sohl, S. J., Van Puymbroeck, M., Albinati, N. K., & Culos-Reed, S. N. (2019). Yoga for symptom management in oncology: A review of the evidence base and future directions for research. *Cancer*, *125*(12), 1979–1989. https://doi.org/10.1002/cncr.31979

Derry, H. M., Jaremka, L. M., Bennett, J. M., Peng, J., Andridge, R., Shapiro, C., … Kiecolt-Glaser, J. K. (2015). Yoga and self-reported cognitive problems in breast cancer survivors: a randomized controlled trial. *Psycho-Oncology*, *24*(8), 958–966. https://doi.org/10.1002/pon.3707

Dong, B., Xie, C., Jing, X., Lin, L., & Tian, L. (2019). Yoga has a solid effect on cancer-related fatigue in patients with breast cancer: a meta-analysis. *Breast Cancer Research and Treatment*, *177*(1), 5–16. https://doi.org/10.1007/s10549-019-05278-w

Dong, S. T., Costa, D. S. J., Butow, P. N., Lovell, M. R., Agar, M., Velikova, G., … Fayers, P. M. (2016). Symptom Clusters in Advanced Cancer Patients: An Empirical Comparison of Statistical Methods and the Impact on Quality of Life. *Journal of Pain and Symptom Management*, *51*(1), 88–98. https://doi.org/10.1016/j.jpainsymman.2015.07.013

GLOBOCAN. (2020). The Global Cancer Observatory. Retrieved January 12, 2021, from https://gco.iarc.fr/

Janelsins, M. C., Peppone, L. J., Heckler, C. E., Kesler, S. R., Sprod, L. K., Atkins, J., … Mustian, K. M. (2016). YOCAS©® Yoga Reduces Self-reported Memory Difficulty in Cancer Survivors in a Nationwide Randomized Clinical Trial. *Integrative Cancer Therapies*, *15*(3), 263–271. https://doi.org/10.1177/1534735415617021

Karakoç, M. D. (2020). The status of oncology patients about using complementary and alternative treatment methods. *Pamukkale Medical Journal*, *13*(1), 69–80. https://doi.org/10.31362/patd.640488

Kroenke, K., Johns, S. A., Theobald, D., Wu, J., & Tu, W. (2013). Somatic symptoms in cancer patients trajectory over 12 months and impact on functional status and disability. *Supportive Care in Cancer*, *21*(3), 765–773. https://doi.org/10.1007/s00520-012-1578-5

Kumar, N., Bhatnagar, S., Kashyap, K., Surajpal, Velpandian, T., Patnaik, S., … Singh, V. (2013). Randomized controlled trial in advance stage breast cancer patients for the effectiveness on stress marker and pain through Sudarshan Kriya and Pranayam. *Indian Journal of Palliative Care*, *19*(3), 180. https://doi.org/10.4103/0973-1075.121537

Land, A. (2008). *Hamilelikte Yoga Bedensel Zihibsel ve Ruhsal Bütünlük* (1. Baskı). İstanbul: Alfa Basım Yayım Dağıtım.

Lin, P.-J., Kleckner, I. R., Loh, K. P., Inglis, J. E., Peppone, L. J., Janelsins, M. C., … Mustian, K. M. (2019). Influence of Yoga on Cancer-Related Fatigue and on Mediational Relationships Between Changes in Sleep and Cancer-Related Fatigue: A Nationwide, Multicenter Randomized Controlled Trial of Yoga in Cancer Survivors. *Integrative Cancer Therapies*, *18*, 153473541985513. https://doi.org/10.1177/1534735419855134

Lin, P.-J., Peppone, L. J., Janelsins, M. C., Mohile, S. G., Kamen, C. S., Kleckner, I. R., … Mustian, K. M. (2018). Yoga for the Management of Cancer Treatment-Related Toxicities. *Current Oncology Reports*, *20*(1), 5. https://doi.org/10.1007/s11912-018-0657-2

Manaf, A. (2007). *Yoga nedir? Ne değildir?* (2. Baskı). İstanbul: İnkılap Kitabevi baskı tesisleri.

Manaf, A. (2012). *Yoga Asana Vücut Çalıştırma Sanatı* (3. Baskı). İstanbul: Şan Ofset Baskı.

McCall, M., Thorne, S., Ward, A., & Heneghan, C. (2015). Yoga in adult cancer: an exploratory, qualitative analysis of the patient experience. *BMC Complementary and Alternative Medicine*, *15*(1), 245. https://doi.org/10.1186/s12906-015-0738-9

Mohan Rao, R., Amritanshu, R., Vinutha, H., Vaishnaruby, S., Deepashree, S., Megha, M., … Ajaikumar, B. (2017). Role of yoga in cancer patients: Expectations, benefits, and risks:

A review. *Indian Journal of Palliative Care*, *23*(3), 225–230.

Öğüt Düzen, K., & Korkmaz, M. (2015). Symptom Control in Cancer Patients, and Use of Complementary and Alternative Medicine. *Dokuz Eylul University E-Journal of Nursing Faculty*, *8*(2), 67–76.

Porter, L. S., Carson, J. W., Olsen, M., Carson, K. M., Sanders, L., Jones, L., … Keefe, F. J. (2019). Feasibility of a mindful yoga program for women with metastatic breast cancer: results of a randomized pilot study. *Supportive Care in Cancer*, *27*(11), 4307–4316. https://doi.org/10.1007/s00520-019-04710-7

Rao, R., Vadiraja, H., Nagaratna, R., Gopinath, K., Patil, S., Diwakar, R., … Nagendra, H. (2017). Effect of yoga on sleep quality and neuroendocrine immune response in metastatic breast cancer patients. *Indian Journal of Palliative Care*, *23*(3), 253. https://doi.org/10.4103/IJPC.IJPC_102_17

Rathfisch, G. (2015). *Gebelikten Anneliğe Yoga Ebeveynliğe Bedensel, Zihinsel ve Ruhsal Hazırlık* (1. Baskı). İstanbul: Nobel tıp Kitabevleri.

Sadja, J., & Mills, P. J. (2013). Effects of Yoga Interventions on Fatigue in Cancer Patients and Survivors: A Systematic Review of Randomized Controlled Trials. *EXPLORE*, *9*(4), 232–243. https://doi.org/10.1016/j.explore.2013.04.005

Siegel, R. L., Miller, K. D., Fuchs, H. E., & Jemal, A. (2021). Cancer Statistics, 2021. *CA: A Cancer Journal for Clinicians*, *71*(1), 7–33. https://doi.org/10.3322/caac.21654

Simon, S. (2020). Say Yes to Yoga. Retrieved January 17, 2021, from https://www.cancer.org/latest-news/say-yes-to-yoga.html

Sisk, A. (2015). Yoga and Nursing in Cancer Care. *Beginnings (American Holistic Nurses' Association)*, *35*(3), 26–27.

van Uden-Kraan, C. F., Chinapaw, M. J. M., Drossaert, C. H. C., Verdonck-de Leeuw, I. M., & Buffart, L. M. (2013). Cancer patients' experiences with and perceived outcomes of yoga: results from focus groups. *Supportive Care in Cancer*, *21*(7), 1861–1870. https://doi.org/10.1007/s00520-013-1728-4

World Health Organization. (2021). Cancer. Retrieved January 16, 2021, from https://www.who.int/news-room/fact-sheets/detail/cancer

Wu, H.-S., & Harden, J. K. (2015). Symptom Burden and Quality of Life in Survivorship. *Cancer Nursing*, *38*(1), E29–E54. https://doi.org/10.1097/NCC.0000000000000135

Yüce, B. (2008). *Yoga-Meditasyon-Gevşeme Tekniği* (1. Baskı; Z. Özkan, Ed.). İstanbul: Özbay Yayıncılık.

THE EFFECT OF REFLEXOLOGY ON TORRY IN THE END OF THE KIDNEY FAILURE

Hatice GÜZEL
SANKO University, Gaziantep, Turkey
Özlem OVAYOLU
Gaziantep University, Gaziantep, Turkey

Abstract
Renal failure is defined as a chronic and progressive deterioration in metabolic-endocrine functions as a result of a decrease in the glomerular filtration value, adjusting the fluid-solute balance of the kidney. Regardless of the stage of this chronic disease, the most common symptom experienced by individuals is fatigue. Studies have shown that fatigue is positively associated with depressive symptoms and insomnia. Today, some complementary methods are used in the management of fatigue. It is stated that reflexology, one of these methods, relieves many symptoms, especially fatigue, and can be applied by nurses. Reflexology is defined as the massage applied to the points corresponding to the standing organs. It is a form of pressure applied to the nerve endings in the feet, which helps normalize body functions by applying pressure to the reflex points. In reflexology; Reflex areas are stimulated using fingers to transmit nerve impulses, support blood flow and maintain body homeostasis. This method; As it is an inexpensive, effective and easy-to-apply initiative, in recent years; Reflexology reduces fatigue, insomnia, stress, anxiety, depression, dyspnea, migraine pain, rheumatic muscle pain and spasm, supports general rehabilitation practices in neurological diseases such as multiple sclerosis, reduces nausea, vomiting and constipation, some urinary system problems, cancer pain and chemotherapy. It is stated that it relieves its side effects, facilitates birth, regulates sedation level and vital signs of patients. In line with this information, it is recommended to support patients with complementary methods such as reflexology in order to reduce existing fatigue, increase comfort and consequently continue their daily life activities more comfortably in patients diagnosed with end stage renal failure.

Keyword: End-Stage Renal Failure, Reflexology, Fatigue

Chronic kidney disease (CKD) is expressed as the permanent loss of kidney function, (Choudhari et al., 2017). In the later period, chronic renal failure (CRF) develops with the loss of kidney function (Ertürk, 2019). CRF is the progressive and irreversible deterioration of kidney function that results in the loss of the body's ability to maintain metabolic and electrolyte balance (Büyükbayram and Aksoy, 2021) Causes of KRG vary from race to race and country to country. Turkish Society of Nephrology (TSN) made by Turkey in Chronic Kidney Disease Prevalence research It has been reported that the prevalence of CRF in adults over the age of 18 in our country is 15.7% and 5.2% of this has advanced stage CRF. Fever,

Süleymanlar and Seyahi's (2017) in their study in Turkey renal replacement therapy (RRT) has been reported that the number of people who are diagnosed with end-stage renal failure needs to be done is the point prevalence of 933 per million population (Tayaz and Koç, 2020). While the symptoms and findings due to kidney failure are controlled with hemodialysis (HD) treatment, the treatment process and the continuation of life dependent on the HD machine cause different problems. Despite the advances in HD treatment, patients may experience fluid-electrolyte disorders, hypotension, muscle cramps, fatigue, weakness, nausea, vomiting, chest and back pain, fever, uremia, anemia, bleeding, infection tendency, uremic bone disease, uremic itching, hyperlipidemia. endocrine abnormalities, experiences many non-negligible problems such as fistula complications, thrombosis, vascular insufficiency, aneurysm, rupture, physical functioning and general health perception due to physical problems, difficulties in fulfilling responsibilities related to psychosocial and emotional problems, sleep disorders (Tuna et al., 2018). Nowadays, integrative applications are frequently used to deal with these problems caused by the disease or treatment (Erdoğan et al., 2014). Patients usually relieve the symptoms of the disease (especially fatigue, itching, anxiety, depression, cardiovascular risk factors), to control the disease in life-threatening situations, to support standard treatments, She uses integrative methods to strengthen the immune system, to feel good physically, cognitively, emotionally, socially and spiritually, to delay dialysis, to protect the kidney, to increase the quality of life in dialysis and to overcome the fear of death. Among the integrative methods that patients frequently use; Herbal products, relaxation, reflexology, hypnosis, acupuncture, acupressure, yoga, massage, music and aromatherapy (Ovayolu et al., 2015). It is stated that reflexology, which is one of these methods, relieves many symptoms, especially fatigue, and can be applied by nurses (Teng et al., 2015). Therefore, in this review, it is aimed to examine the effects of reflexology, which is an integrative method used by patients with chronic renal failure, in line with the literature.

REFLEXOLOGY

It is a traditional and complementary treatment type based on the elimination of various health problems by stimulating the reflex points in the hands, feet and ears. It is defined as the massage applied to the points corresponding to the organs of the feet. (Unal and Balci Akpinar, 2016). It is thought that reflexology was first applied in some indigenous tribes of China, Egypt and America about 5000 years ago. From past to present, it has been widely used in far Southeast Asian countries, especially in China. It has started to take place in Western medicine since the beginning of the 20th century. Its use in America started with the work of Eunice Ingham at the beginning of the 20th century and became widespread. (Toygar, 2020).

Reflexology, which is accepted as a holistic and complementary treatment method today, is an integrative application performed by applying pressure to certain points of the body, usually hands and feet, with a special pressure technique. It is widely used in maintaining and promoting health, alleviating the symptoms of chronic diseases, in order to balance the energy in the body, provide relaxation and healing. In recent years, it has become very popular among healthcare professionals all over the world. (Büyükbayram and Aksoy, 2021). (Bahar et al., 2019). In reflexology, reflex areas are stimulated using fingers to transmit nerve impulses, support blood flow, and maintain body homeostasis. (Unal and Balci Akpinar, 2016). In addition to stimulating the internal organs, the reflex points in the ear, hand and foot are also connected with important glands and nerves. The pressure applied to the reflex point generates a stimulus in the peripheral nervous system, and the cellular impulses originating

from here reach the central nervous system organized in various parts of the brain via neural transmission. A response is sent from the brain to meet the needs of the relevant organs. Thus, structural elements, hormones, enzymes that exist in our body are secreted and some cellular changes occur. (Vural Doğru et al., 2017). In a systematic review examining the experimental researches made with reflexology; In seven studies evaluating the effect of reflexology on fatigue, this practice has been shown to alleviate fatigue. (Bolsoy and Okuyan, 2019). However, although reflexology is accepted as a useful, effective and safe practice that protects health and well-being, improves the quality of life, there are some situations that should not be applied. Patients with acute infections, febrile conditions, gouty arthritis, deep vein thrombosis, uncontrolled blood pressure, heart attack, presence of pacemaker, acute surgical conditions, gall bladder-kidney stones, open and closed wounds in the application area and in the first trimester of pregnancy. should not be applied to women. Therefore, the practitioner should be a healthcare professional and reflexology should be considered as part of holistic care. (Bolsoy and Okuyan, 2019).

CONCLUSION

Reflexology application, which is one of the increasingly widespread integrative methods in recent years, is an application that is cheap, easily applicable, does not interfere with patient privacy, and does not require any equipment. It has been demonstrated in studies that it has beneficial effects in many diseases. (Özdemir et al., 2013). (Unal and Balci Akpinar, 2016). (Choudhari et al., 2017). In this direction, it is recommended to plan evidence-based studies on the effects of reflexology practice, to reflect the results of the study on patient care, to plan the necessary trainings to use these methods in care practices and to create awareness.

KAYNAKLAR

1. Bahar A, Ovayolu Ö, Ovayolu N 2019. Onkoloji Hastalarında Sık Karşılaşılan Semptomlar ve Hemşirelik Yönetimi. Erü Sağlık Bilimleri Fakültesi Dergisi, 6(1): 42-58.
2. Bolsoy N, Okuyan YÇ 2019. Türkiye'de Refleksoloji İle İlgili Yapılmış Deneysel Araştırmaların İncelenmesi: Sistematik Derleme. Life Sciences, 14(2): 48-63.
3. Büyükbayram Z, Aksoy M 2021. Hemodiyaliz Hastalarının Semptom Yönetiminde Kullanılan İntegratif Yöntemler. Nefroloji Hemşireliği Dergisi, 16(1): 30-40.
4. Büyükbayram Z, Aksoy M 2021. Hemodiyaliz Hastalarının Semptom Yönetiminde Kullanılan İntegratif Yöntemler. Nefroloji Hemşireliği Dergisi, 16(1): 30-40.
5. Choudhari KS, Potdar N, Prabhuswami H, Kharat D 2017. A Study To Assess Effectıveness Of Foot Reflexology On Anxıety Of Patıents Undergoıng Hemodıalysıs In Tertıary Care Hospıtal, Karad. Asian J. Pharmaceut. Clin. Res, 10(7):345-348
6. Erdoğan Z, Atik DÖ, Çınar S 2014. Kronik böbrek yetmezliğinde tamamlayıcı ve alternatif tıp yöntemlerinin kullanımı. Arşiv Kaynak Tarama Dergisi, 23(4): 773-789.
7. Ertürk M 2019. Kronik böbrek yetmezlikli hemodiyaliz hastalarının gastrointestinal semptomlarının, yaşam kalite düzeylerinin ve hipoalbuminemi durumlarının değerlendirilmesi. Yüksek Lisans Tezi, Başkent Üniversitesi Sağlık Bilimleri Enstitüsü.

8. Ovayolu N, Ovayolu Ö, Güngörmüş Z, Karadağ G 2015. Böbrek Yetmezliğinde Tamamlayıcı Tedaviler. Nefroloji Hemşireliği Dergisi, 10(1): 40-46.
9. Özdemir G, Ovayolu N, Ovayolu Ö 2013. The effect of reflexology applied on haemodialysis patients with fatigue, pain and cramps. International journal of nursing practice, 19(3): 265-273.
10. Tayaz E, Koç A 2020. Hemodiyaliz Tedavisi Alan Kronik Böbrek Yetmezliği Hastalarında Semptom Yönetimi ve Hemşirelik. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi, 23(1): 147-156.
11. Teng S, Zhang S, Zhang W, Lin X, Shang Y, Peng X, Liu H 2015. Symptom experience associated with immunosuppressive medications in Chinese kidney transplant recipients. Journal of Nursing Scholarship, 47(5): 425-434.
12. Toygar İ 2020. Türkiye'de Refleksoloji Alanında Gerçekleştirilen Tezlerin İncelenmesi. Hitit Üniversitesi Sağlık Bilimleri Fakültesi Dergisi, 1(1): 16-29.
13. Tuna D, Ovayolu N, Kes D 2018. Hemodiyaliz hastalarında sık karşılaşılan problemler ve çözüm önerileri. Nefroloji Hemşireliği Dergisi, 13(1): 17-25.
14. Unal KS, Balci Akpinar R 2016. The effect of foot reflexology and back massage on hemodialysis patients' fatigue and sleep quality. Complement Ther Clin Pract, 24:139-44.
15. Vural Doğru B, Yıldırım Y, Şenuzun Aykar F 2017. Kardiyovasküler; Hastalıklar; Refleksoloji; Hemşirelik. Kardiyovasküler Hemşirelik Dergisi, 8(17): 77-85.

THE USE OF POSTOPERATIVE ANTIBIOTICS AFTER APPENDECTOMY

Petar Stamov
Sylvia Stamova
MHAT"St.Anna", Varna, Bulgaria
Medical University-Varna, Bulgaria

Abstract
Acute appendicitis is the most common indication for emergency surgery in pediatrics. The appendectomy is a gold standard in treatment of acute appendicitis in Bulgaria and worldwide. However, several studies have reported the results of trials investigating non-operative management of appendicitis in different groups of patients with appendicitis. Although, the appendectomy is considered to be safety and effective, the short-term and long-term complications can be appeared. The general morbidity is variated between 5 to 30%, as higher levels are reported to complicated appendicitis. The aim of our study is the evaluation of additional antibiotic treatment and is it required after appendectomy, especially in uncomplicated forms of acute appendicitis.
We retrospectively analysed a group of patients hospitalized with the clinical diagnosis of acute appendicitis between 01.01.19-01.01.20 in Department of Pediatric Surgery-Varna. The total number of appendicitis patients were categorized in three groups: Group A-uncomplicated appendicitis, Group B-appendicitis with periapendicular abscess and Group C-appendicitis complicated with peritonitis. We compared the patients received antibiotics in each group to those with no antibiotic treatment.
The total number of evaluated patients were176: 110 of them were not complicated, 25 were presented with abscess and 41 were with peritonitis. In Group A 13 patients were medicated with antibiotic and 97 without. In Group B, 17 patients received antibiotic and 8 not received. In Group C all of 41 patients presented with peritonitis were treated by antibiotic.
The obtained data show that the uses of antibiotic is not required like routine method for limitation of infections for uncomplicated forms of acute appendicitis. It is compulsory in cases with accompanying infections of excretory organs or respiratory system. Also, we can conclude that to some patients with periapendicular abscess only the appendectomy with local remediation, leads to good results without application of antibiotics.

Keywords: appendicitis, surgery, antibiotics

INTRODUCTION

Appendicitis is one of the most common cause of abdominal pain in children. Moreover, the appendectomy is the most frequently performed emergenscy surgery state. About 20% of population may develop acute appendicitis in their lifetime (Huang L et al., 2017). The termins nonperforated appendicitis and perforated appendicitis are represent to as clean contaminated and contaminated. Several studies report the efficacy of preoperative prophylactic antibiotics in reducing postoperative infectious complications after appendectomy in children (M.R. Campbell et al., 2004). However, the antibiotic treatment in

postoperative nonperforated appendicitis for decreasing of infectious diseases is not fully established. The practice of prescribing postoperative antibiotics is different around the world and there is no united decision on whether postoperative antibiotics are beneficial for preventing infectious complications in nonperforated appendicitis. On the other hand, several studies have presented the results of their experience about non-operative management of appendicitis in different groups with appendicitis (Gonzalez DO et al., 2016, M. Abes et al., 2007, Y. Koike, et al., 2014, J. Armstrong et al., 2014). The appendectomy is safety, and effective but short-term and long-term complications may be appeared. In Bulgaria, the non-operative treatment of acute appendicitis has not been adopted yet.The aim of our study is the evaluation of additional antibiotic treatment and is it required after appendectomy, especially in uncomplicated forms of acute appendicitis.

MATERIALS AND METHODS

We retrospectively analysed a group of patients hospitalized with the clinical diagnosis of acute appendicitis between 01.01.19-01.01.20 in Department of Pediatric Surgery-Varna. The total number of appendicitis patients were categorized in three groups: Group A-uncomplicated appendicitis, Group B-appendicitis with periapendicular abscess and Group C-appendicitis complicated with peritonitis. We compared the patients received antibiotics in each group to those with no antibiotic treatment.

RESULTS

We identified a total of 176 patients aged between 3 and 18 years that were admitted with acute appendicitis in all groups. In Group A were 110 patients without complications. In Group B, 25 of children undergoing surgical treatment, a complicated form of appendicitis such as periapendicular abscess were found. Peritonitis was established to 41 patients in Group C. The obtained results for number of complicated and noncomplicated patients with acute appendicitis are presented in Table 1.

In Group A only 13 patients were admitted antibiotics. The remaining 97 patients in Group A were treated with saline solvents and painkillers. The treatment of the patients in Group B included antibiotics in 17 of them, the other 8 patients were without antibiotics. In Group C all 41 patients were treated with antibiotics.

The used antibiotics included combinations of beta lactams and beta lactamase inhibitors such as Amoxicillin/Clavulanic acid, Ampicillin/Sulbactam, cephalosporines such as Cefazoline, Cefuroxime, Ceftriaxone, carbapenems and dehydropeptidase inhibitor- Imipenem/Cilastatin, and one more antimicrobial agent-Metronidazole. The uses of antibiotics in each group are illustrated in Table 2.

Table 1. Results of total number of patients and numbers in each group.

	Number of patients	Total number
NON-COMPLICATED(GROUP A)	110	176
PERIAPPENDICULAR ABSCCES (GROUP B)	25	
PERITONITIS (GROUP C)	41	

Table 2. The number of patients treated with or without antibiotics.

	WITHOUT ANTIBIOTIC	WITH ANTIBIOTIC
GROUP A	97	13
GROUP B	8	17
GROUP C	0	41

CONCLUSION

In surgical practice, antibiotics are increasingly used postoperatively due to the risk of developing of surgical site infections. On the other hand, the use antibiotics postoperatively is not alternative to good surgical and aseptic methods. In some cases of periapendicular abscess, we observe good results only for appendectomy with local remediation of abdominal cavity without need of systematic antibiotic application. Guided by, Latin sentence “Ubi pus ibi evacua”, we can conclude that this method is sufficient to control the inflammatory process.

REFERENCES

Gonzalez DO, Deans KJ, Minneci PC. Role of non-operative management in pediatric appendicitis. Semin Pediatr Surg. 2016 Aug;25(4):204-7. doi: 10.1053/j.sempedsurg.2016.05.002. Epub 2016 May 10. PMID: 27521709.

Huang L, Yin Y, Yang L, Wang C, Li Y, Zhou Z. Comparison of Antibiotic Therapy and Appendectomy for Acute Uncomplicated Appendicitis in Children: A Meta-analysis. JAMA Pediatr. 2017 May 1;171(5):426-434. doi: 10.1001/jamapediatrics.2017.0057. PMID: 28346589; PMCID: PMC5470362.

J. Armstrong, N. Merritt, S. Jones, L. Scott, A. Butter, Non-operative management of early, acute appendicitis in children: is it safe and effective?, J Pediatr Surg, 49 (5) (2014), pp. 782-785.

M. Abes, B. Petik, S. Kazil, Nonoperative treatment of acute appendicitis in children, J Pediatr Surg, 42 (8) (2007), pp. 1439-1442.

Y. Koike, K. Uchida, K. Matsushita, et al., Intraluminal appendiceal fluid is a predictive factor for recurrent appendicitis after initial successful non-operative management of uncomplicated appendicitis in pediatric patients, J Pediatr Surg, 49 (7) (2014), pp. 1116-1121.

The Residential Rent Differentials between Town Centres and Peri-Urban In Bauchi

SANI INUSA MILALA
ORCID ID: Orcid.org/0000-00017332459
SADIQ ABBAS
Dr. BALA ISHIYAKU
Abubakar Tafawa Balewa university Bauchi, Bauchi state Nigeria

Abstract
In Bauchi Today, it is not clear on how these various mentioned determinants of housing differential influence the rental value of residential properties. Similarly, the renters' income is willing to pay for the affordable housing is not yet ascertained. Such uncertainty could have devastating effect on the investment decision of the property investors in Bauchi metropolis. This massive population creates housing problem in the area, as well as opens opportunities for real estate developers to gain profit over the price of renting the affordable housing with its increasing value over time. It is against this background that this study seeks housing affordability values in Bauchi metropolis using rent income ratio with a view to ascertain the specific influences of the housing affordability on rental value and the amount the renters are willing to pay for changes in housing affordability in order to help property investors to make sound, viable and rational property investment decision
The study use questionnaire survey to collect the data, 320 set of questionnaire was administered 311 was retrieved and 310 was use for the analysis, it was found from the study that the rental values in town centre and peri-urban areas in Bauchi showed that best rental value in values in town centre. are #71,0000/ - #150,000 p, #40,000/ - #70,000 p.a, #151, 000- #300,000p.a, and lastly #350,000 and above/p.a, #35,000 and below as well It shows that best rental value in the peri urban area, were #151, 000- #300,000p.a, #71,0000/ - #150,000 p.a, #350,000 and above/p.a, #40,000/ - #70,000 p.a, and #35,000 and below, It shows that the factors that cause spatial disparity of residential rent are location, Infrastructural facility, Economic factor, Change in test and fashion, Security factor, Geographical or natural factors, Technological factor, Social factor, Political factor.
And the **t test** result show that there is The significance level of rent differential between town centres and peri urban area the T test is .003 which is < .05 and so the variance of rent are not assume to be same in level, in conclusion there are factors behind the rent difference which is mainly behind modern factors

Keywords: Rent, Residential, Town and Location

1.0 INTRODUCTION

The provision of housing that is safe, secured, accessible, affordable, and sanitary is a fundamental right, as enshrined in United Nations habitat Agenda, the global on human settlement housing has been universally accepted as most second important human need.(

Palmer, Short, & Auch, 2020) Housing represents the most basic of human need and it has a profound impact on the health, welfare, and productivity of individuals, hierarchy of needs, it is only after we satisfy the other needs (health, clothing and shelter) that we worry about social needs. He also said that; Residential land use, among the various competing urban land uses, is the largest consumer of land in urban areas. And stated that the population and urbanization increase, demand for housing for both owner-occupancy and rental increases. Population growth has led to an increase in the intensity and density of urban living (Chelladurai, & Kerwin, 2018). This is transforming cities and accentuating the importance of underground transport infrastructure, especially underground railways or metros. The development of metros is a response to road traffic congestion, various transport negative externalities (notably carbon emissions noise and particulate matter), land shortage sand the escalating value of urban land (Kębłowski, & Bassens, 2018). However, with technological development people pushed into busy lives so that they prefer to buy already built houses. Further stated that, most of the landlords usually rented by groups such as families, professionals or students, as an alternative to buying or renting smaller spaces. Hence renting is a crucial phenomenon in any economy. (Slater, 2019)

Housing, in all ramification is more than mere shelter, since its embraces all the social services and utilities that goes to make the community or neighbourhood a liveable environment the problems of housing in Nigeria are enormous and complex, exhibiting marked regional differences furthermore, the challenges faced by the rapid rate of uncontrolled and unplanned urban growth are immense. Millions of people live in sub-standard and sub-human environment characterized by slumps, squalor and grossly inadequate social amenities. Humans yearning for affordable and satisfactory housing have relationship with their needs for security and correct socio – economic class. Despite the above-mentioned importance of housing to humans, countless numbers of people are still homeless, sufficient and affordable housing are not within the reach of many people that are living in urban areas of the less developed countries (Okesoto, 2018). Consequently, the majority of people living in the urban areas of the less developed countries are living in houses whose conditions are appalling in terms of social, economic and health standards. Providing Good and affordable housing has continuously been a thing of concern to the people and governments of developing counties (Low, Gleeson, Green, & Radovic, 2016).
Shelter is invariably the most basis of man's needs for survival after food in order of importance. Overtime, man has made use of element s in his environment skilfully to provide dwelling units for himself and his family, although the house is not a home, it exerts an enabling influence through its natural and physical location, on variety of services made available, some of which includes health, education and recreation, public utility services such as power supply, transportation, sewage disposal and economic services such as work opportunity and income. Monetary value placed on these variables is usually in form of house rent or house sales. It is therefore, expected that differences in these services as regards house to house would also result in difference in their rent (Sagar,2019).

Ratios of housing prices to income and rents are often used as indicators of overvaluation of Housing prices For example, such ratios are regularly published in The Economist and the OECD Economic Outlook. Economic commentators often express concern over high price-to-income or price-to rent ratios. The economic interpretation of these ratios is fairly straightforward. Price-to-income ratios are a measure of the affordability of housing. Increases in housing prices cannot deviate indefinitely from growth in the income of potential buyers. If housing prices outpace income growth, at some point households will no longer be able to afford buying and demand will dry up, bringing prices down. Similarly, households can choose to own or to rent their homes. This choice is affected by the relative levels of

prices and rents. High prices relative to rents should push more people into renting, alleviating pressures on housing prices and pushing rents up (Coskun, & Jadevicius, 2017)

In Bauchi Today, it is not clear on how these various mentioned determinants of housing differential influence the rental value of residential properties. Similarly, the renters' income is willing to pay for the affordable housing is not yet ascertained. Such uncertainty could have devastating effect on the investment decision of the property investors in Bauchi metropolis. This massive population creates housing problem in the area, as well as opens opportunities for real estate developers to gain profit over the price of renting the affordable housing with its increasing value over time. It is against this background that this study seeks housing affordability values in Bauchi metropolis using rent income ratio with a view to ascertain the specific influences of the housing affordability on rental value and the amount the renters are willing to pay for changes in housing affordability in order to help property investors to make sound, viable and rational property investment decision

Housing study or housing rent is a complex undertaking that a single study frame work cannot be adequately used for effective assessment. Onibokun 1971 opined that in the evaluation of housing rent the coverage should include the tenants (residents), the dwelling (housig) unit, and the environment (in which the dwelling forms a part). In Nigeria third National Development Plan (1975-1980) residential rent was regarded as a basis index in the study qualitative and quantitative deficiency in residential accommodation and also as an indication of the level of of overcrowding. It has also been one of the indices that have been used in the provision of housing units especially in urban areas where urban were rapid population growth associated with increased socio economic activities has seriousely aggravated the shortage of housing unit in Nigeria.

The responsibility for the provision and maintenance of infrastructure in these areas often lie with different municipal authorities and departments (Gabillet, 2015). The uncertainty that arises as to which institution administers which specific area explains the challenges faced in transport, water, energy, waste management and general environmental management situation in many peri-urban settlements (Jones, CHOY,& Clarke,2016). Physical boundaries of urban areas often do not coincide with their administrative boundaries, and urban and peri-urban areas often fall under separate administrative jurisdictions with different resources, capacities and political leanings (Locke, Anna, and Giles Henley.2016).. Authorities in peri-urban areas tend to be thinly spread and unable to carry out land governance and administration functions effectively in line with the transitional nature of those areas (Abdulai, M. M. Grounding Land Governance:). This undermines the capacity of the land administration to record tenure rights, undertake land use planning and enforce its results, or sustain land administration through land and property taxes. Therefore this paper seeks to study more on the residential rent differential between town center and peri-urban in the study area.

2.0 Literature Review

Definition of housing

Housing is a multidimensional good differentiated into a bundle of attributes that vary in both quantity and quality (Ajilowo & Olujimy, 2010). It is the largest single assets of most households and links the value to represent the wealth. The behaviour of house prices, therefore, influences not only business cycle dynamics, but also the performance of the financial system (Haibin, & Tsatsaronis, K (2004). Similar definition is given by Sarathchandra (2008) where it stated that housing encompasses all the auxiliary services and community facilities, that necessary for the well being of humanity.

Also Sarathchandra (2008), housing should meet four main requirements of who occupy it;

- It should provide adequate protection from intruders
- It should be secured from the dangers of fire and structural collapse

• It should be provided under conditions which promote good health including clean and adequate water supplies and the removal of various kinds of waste (sanitation)
• It should ensure that residence enjoy adequate space and privacy

According to the above descriptions it is obviously stated that house is the fundamental need of a human and housing is the major setting for family life. It should basically provide adequate space for eating, meeting, sleeping and individual activities. Better housing means not only the provision of a physical unit with floor, walls, and roof: housing fulfils one of the most fundamental human needs of shelter.

Concept of Rent

"Rent is that portion of the produce of earth which is paid to landlord for the use of original and indestructible powers of the soil." –Ricardo "Rent is the income derived from the ownership of land and other free gifts of Nature." He further called it 'Quasi Rent' which arises on the manmade equipment's and machines in the short period and tends to disappear in the long run. – Marshall "Rent is the price paid for the use of land." Carver Economic rent is also termed as surplus as it is received by landlord without any effort. Prof. Bounding termed it as "Economic Surplus."

Moreover, modern economists comprising of Mrs. Joan Robinson, Boulding etc. opined that part of the income of each factor can be rent. Income alone received by land cannot be rent. It is so because different factors have different uses. As such, each factor will be used for that purpose in which its income is maximum.

The term "rent" has several meanings. According to Chris and Somefun (2007) rent is regarded as the monthly payment that is made to a landlord, and it is also construed to be a payment to the use of the building. But to the economist point of view rent is the return to the land. Most of the landlords turning to renting out properties as an investment, therefore letting market have been seen as an attractive alternative investment for these looking for a less volatile income source. Also Rent can be simply defined 'rent' is used as a part of the produce which is paid to the owner of land for the use of his goods and services. But in economics, rent has been differently defined from time to time.

Income alone received by land cannot be rent. It is also because different factors have different uses. As such, each factor will be use for the purpose in which its income is maximum. Opportunity cost of a factor for its use in the price of the output that the factor concerned can earned by working in the next alternative use.(Padah,2014)

Types of Rent

Olayonwa (2000) enumerated some of the following types of rent to include;

i. Peppercorn Rent; this is a normal rent, usually reserved with no limitation, on either side, that it should be paid, from a common though erroneous view that the reservation of some rent is necessary to constitute a alit lease. It is common in building leases in which it is often reserved for the period of building development when rental income is yet to be received by the lessee.
ii. Rack Rent; the rack rent is the full annual rental value of a property, or close to. It is a rent representing full annual value of a property. It is determined according to the value.
iii. Equity Rent; this is a rent paid by head lease to the landlord, which varies from time to time depending on rent he receives, or ought to receive from subtenants and other occupiers of premises.

iv. Progressive Rent or Escalating Rent; Leases of business often contain rent review clauses meant to provide for periodic rent increases during the term to keep pace with inflation and rising values. A progressive rent is the one that is made to rise by amounts, and at times specified in the lease or tenancy agreement.

v. Sliding Scale/Indexed Rent; this provides for the division of profit and loss between landlord and tenant by a rent that rises or falls with the prices of the product of the property let. Rents may be made to rise or fall with cost of living as expressed in the government index of wholesale or rental value or tenants' trade, such as turnover, his net profit or gross profit.

vi. Insurance Rent; when the landlord insures the demised premises, the lessee will generally make provision for an insurance rent equal to the premium paid by the landlord. In case of a multiple occupied premises, the insurance rent for a particular lessee will be equal to the proportion of the premium payable by such lessee.

vii. Dead/Royalty Rent; Mining lease usually stipulates two (2) types of rent; the dead and a royalty rent. A dead is the rent payable by a lessee whether the mines are worked or not. A royalty rent is the payment made by lessee on the basis of the quantity of minerals mined which will vary with production.

viii. Penal Rent; this is an additional rent by a lessee for breach of covenants in the lease. Lease or tenancy agreement may stipulate that, in event of rent remaining unpaid or covenant being broken, an additional sum will forthwith be payable by the tenant.

ix. Ground Rent; this is one of the terms or conditions to be met by a holder of statutory right of occupancy in Nigeria. It is a rent payable for land in which the lessee puts up landed property or houses under the building lease.

x. Virtual Rent; it is a sum representing the rent which a tenant is paying after carrying out a capital expenditure on the property with the consent of the landlord. It is usually less than the actual rent passing in the area.

xi. Head Rent; The rent payable by a lessee to an owner as distinct from that paid to lessee by its sub-lessee also a rent paid by a lessee to the owner which is less than the rack rent(higher rent obtainable) but more than mere grand rent. In either case the recipient/owner is the head man.

xii. Corn Rent; an annual sum charged on a certain land in lieu/instead of tithes originally paid in for of corn but later commuted in to monetary payment varying with the price of the agricultural commodity.

xiii. Economic Rent; this is a break even rent for premises let to cover loan interest and sinking fund contribution plus that of maintenance repairs and management.

2.3.2 Factors affecting rental value

Babatunde (2003) suggest that;

a. Location: - Location in respect of property is the neighbourhood where a property is situated. Location as a word connotes where an object exists. It is however considered in relation to the availability of some facilities and services which includes electricity supply, water supply, well tarred road, good drainage system etc and the simplicity in accessing them. In commercial property, it is very important factor that affects rental value due to the fact that, business in general and retailing activities are done at the city centre surrounded by residential dwellings. Investment located at strategic positions were its value is often on the land rather than the building is the best form of investment, the investor can enjoy a higher value for the property or rent in such locations. Accessibility is achieved either by proximity or by a good communication channel to the property concerned.

b. Political Factor;- The policies of Government have its effect in the values of property and subsequently on the rental value. High rise in the value of property is indicative in the rise in interest rate, the government policies and its effect on monetary interest rate affects property value.

c. Social Factors: - These are factors relating to humans culture. Religious belief and government action which can invariably dictate what land is used for in the society. The change in population and the location of a property have a significant effect on the rental value of the neighbourhood. A great increase in the size of the population in area brings about an increasing demand for properties which subsequently increase the rental value of properties in the neighbourhood and vice versa.

d. Economic Factors:- The economic forces that influences value includes; per capita income, wage level, unemployment rate, gross national product, business and the real estate activities etc Thus, Value must be concerned with the economic forces which influences rent. However, when people prosper in their businesses, they tend to have a bigger taste or desire to expand the business and thus, rent increases.

e. Geographical and Natural Factors: - Here, physical factors by nature influences the rental value of a neighbourhood. This includes topography and climate, mineral resources, flood control, soil fertility and conservation to mention but a few.

f. Changes in fashion in taste: These occur as a result of civilization and new innovations. In such a situation people will develop for new and modern things existing architectural materials go out of fashion giving way to new and modern design. Every potential purchaser prefers to purchase or lease a house of modern design coupled with fashionable finishes. Property owners and investors on the other hand need to spend money on modernizing and rebuilding their houses to meet the changes taste of buyers and occupiers in the property market. Those properties which are up to date with changes in fashion and taste will attract high prices in relation to those that are far below market price.

g. Technological factors: The level of technology equally affects property in no small measure. Improved level of technology makes to possible to introduce air conditioner system, modern decoration, lift system, pumping machine, central sewage system and the likes in an office complex residential accommodation and industrial building. Any building with the presence of modern day facilities command higher value than a similar one with no such improved technologies.

Factors Affecting Determination of Rental Value of Residential Properties

Without standardization, each property is considered to be unique and thus is priced differently (Ruvio, 2010). Because each piece of property is unique, it is often difficult to identify the appropriate variables that will explain the rental prices. According to Kim and Nelson (1996), assessing the rental value of residential properties is a complex and challenging process to both practitioners and academicians because it involves analyzing the rental property, neighbourhood characteristics and market conditions. McKenzie and Betts (2006) explained these attributes include physical features such as space, age, condition and apartments. Some features can be measured by objective scale or techniques. Other amenities however are not so objective. Further, Odame (2010) clearly mentioned the a real estate asset consists of a bundle of attributes including, but not limited to location, but number of bedrooms, gross and lettable floor areas, number of storey's, type of tenure or ownership rights, plot size, quality of aesthetics and accessibility, all of which may affect its rent and price. However, Zainudeen, Senarathne, Jayasena, & Rameezdeen (2006) see the location as a key factor from customer's point of view. Chris and Somefun (2007) and Nakamura and Crone (2004) explained the attributes includes bedroom, toilet, bathroom, kitchen, open space, drainage, water supply, refuse disposal, good road net work, recreational parks, hospital and many more. Raymond (2000) further discussed that a residential property is a multi-dimensional commodity, characterized by durability, structural inflexibility as well as spatial fixity.

Based on the above justifications on rental values recent empirical work has investigated substantial lists of factors that have been employed to explain market rents for residential income property. These factors range from physical attributes to property management quality characteristics. In addition, the literature shows that market rent is affected by deviations of observed vacancy rates from natural vacancy rates and by such factors as rental concessions and length of residency discounts. Building Characteristics are subdivided into building type, size of unit, amenities, and maintenance. Building type includes the number of units in the structure and age of the building. Size of rental unit includes number of rooms, number of baths and number of bed rooms. Size is the total square footage of the building. Sirmans and Benjamin (1991); Redman and Gullet (1998) all found building size to be a significant factor affecting property values. Landlord characteristics include the investor's age, years of experience and number of properties owned. Tenant characteristics include the head of household age, race and education level. Also included are household income, number of children and length of residence. Neighbourhood characteristics include the tenant's option of the neighbourhood and whether or not crime is perceived to be a problem. Additional variables included are the presence of abandoned buildings and noticeable litter. .(Nishani Wickramaarachchi 2016) examine multifamily housing amenities and services and external factors affecting rent. This application is most applicable in this study, because some tenants included in the sample are sharing amenities and services with land owner.

Apart from the two most relevant rent models developed by Sirmans and Benjamin (1991) and Kim and Nelson (1995), Hardin & Wolverto (2000), discussed a model that explains the rent should need property specific characteristics and neighbourhood characteristics. A similar view is added by Oni (2009), whereas he discusses these factors may be intrinsic or extrinsic. The extrinsic factors include increase in demand for lettable space, location, condition of adjoining properties, nearness to park and leisure, local and national economic conditions. External factors are due to natural characteristics of the property which affect the city where the property is located.

With regard to the above discussion of applicable rent models related to the research, it is clear that the four categories adapted by Kim and Nelson is suitable which includes some of the factors considered by Sirmans and Benjamin(1991) in their study. Hence the study also adapted a combination of above two rent models by altering the components as compatible with the selected case study area.

Differential Rents for Urban Land:

In urban or building land, we find that the situation here is similar to that prevailing in respect of agricultural land. Urban land is used for the erection of dwelling houses, and industrial, office, and business premises. As people are prepared to pay the highest rents (i.e., commercial rents) for houses in the most fashionable residential parts of the town and for offices and shops in the main commercial centre, the demand for land in these parts of the town will be the highest. As the population of a town increases, competition among business men will drive up shop and office rents, and, thus, also the economic or ground rent of the land on which the buildings stand. We have noted that where the demand for agricultural produce increases, it is likely that either production will be intensified by using more labour and capital, or production will be commenced on land not used so far for agricultural purposes.

The same applies to building land. If office rents, for instance, increase, land suitable for the building of blocks of offices will be used more intensively by erecting higher buildings. This accounts for the sky scrapers in the business centre. Economic rent on land is the value of the difference in productivity between a given piece of land and the poorest [and/or most distant], most costly piece of land producing the same goods (e.g. bushels of wheat) under the same conditions (of labor, capital, technology, etc.). Productivity defined here in terms of both:

(a) The natural fertility of the soil; and the productivity of the existing technology in utilizing currently available labour and capital.
(b) And also the relative distance from the same market.
(c) Thus productivity differences reflect the cost differences in supplying grain to that one Market from that piece of land. Daek (1985) said Ricardo starts out from two basic assumptions regarding agricultural production: the undisputable assumption of diminishing returns related to the concrete conditions of production on land, and the controversial assumption of marginal return equalizing investment related to decisions of the capitalist farmer prior to the existence of rent.

Theoretical framework of rent

The work of Von Thunen, for example, had a profound influence on Alonso's bid-rent theory. In *The Isolated State*, Von Thunen made a dedicated effort to portray how agricultural uses change as a function of distance from an urban center. Von Thunen's model of agricultural production was groundbreaking in that it presented a novel way to reconsider the West-Malthus-Ricardo theory of land rent distributions (Dickinson 1969). The crux of the classical West-Malthus-Ricardo approach to rent distribution was the law of diminishing returns, which basically states that at some point in a production process, increasing inputs for production will adversely impact outputs (Stigler 1952). Yet the classical approach ignored costs of transportation and used only one variable – soil fertility – as the determination price for goods; Von Thunen introduced a situation with multiple products and variables, rightfully manipulating the preceding thought on land rent to account for multiple product variables that could contribute to both increasing and diminishing returns (Dickinson 1969). Most importantly, Von Thune's adjustments presented a new consideration of transportation costs, allowing for a rigorous analysis of the effect of these transportation costs on the distribution of agricultural uses. This paradigm shift heavily influenced later works in spatial economics, and especially built a framework that would be utilized by Alonso.

Yet in order to effectively address these transportation costs, Von Thunen had to prescribe several important assumptions to his 'isolated state'. The most central assumption to his theory was a flat, featureless plane with a single city (or market) at the centres point of the plane (Dickinson 1969; O'Kelly and Brian 1996). Concentric rings illustrating the distances from this single city center were then drawn to reveal the increasing amount of physical distance of each agricultural area from a hypothetical center. Assuming the single marketplace allowed Von Thunen to assess how proximity to the central location impacted prices. O'Kelly and Brian (1996) have noted that under this system of analysis, a system of land rents relating directly to location and transportation costs could be inferred. At locations closest to the city center, rents would be higher because of a greater proximity to the city. In addition, the transport costs at these locations would be lower. Conversely, rents would decrease and transport costs would increase as a corollary of increasing distances from the CBD.

Dickinson (1969) added that in Von Thune's model, there would be a consequential change in the use, or specialization, of land at each location due to the tradeoffs between rent and the associated transportation costs. Land farther from the central city would be purchased and used more extensively for less intensive agricultural purposes. Land closer to or within the central city's boundaries would be purposed for more intensive, specialized agricultural goods to overcome burdens associated with higher transportation costs. Peet (1970) elaborated upon this concept, arguing that some crops produced at a fixed intensity would necessitate production near the market to make up for exorbitant costs related to distance. On

the other hand, at locations farther from the city center is where less intensive crops could flourish, as there was less competition for land. Sinclair (1967) illustrated this distinction by plotting two competing agricultural uses on the same plane. The resulting graph demonstrated how more intense agricultural uses would become less feasible with increasing distance from the central city.

Von Thune's assumptions of a flat, featureless plane with a central city allowed for remarkable advancements in spatial economics, and also provided a pivotal framework for Alonso's bid-rent theory. Alonso's own assumptions were very similar; he assumed a central city existing on a flat, featureless plane, and a central business district (CBD) within the city encompassing all employment opportunities. In addition, Alonso proposed two more crucial assumptions: 1) transportation consistently available throughout the city, with transport costs calculated as a direct function of distance between places, and 2) a city populated by rational persons in an implied state of perfect competition (Alonso 1960; Knox and McCarthy 2005). Under these guidelines, Alonso was able to create a framework for assessing land markets in urban areas.

With special attention to residential patterns, Alonso (1960) showed that rational consumers would seek out locations to balance costs of commuting with the inconveniences associated with commuting. Thus consumers willing to pay for more premium land would locate closer to the CBD of a city, and would also reap the benefit of minimal transportation costs. On the contrary, consumers paying a lower rent will consequentially have to pay greater transportation costs because of an increase in distance from the CBD. Regardless of the ultimate outcome, both options would be a choice entirely of the rational consumer. Alonso (1960) illustrated this function through a bid-rent curve, or gradient, reflecting the negative relationship between rent prices and distance from the CBD of a city.

Later economists worked diligently to dissect Alonso's bid-rent theory and quickly began to produce their own extensions. Much of this work was devoted to the field of locational interdependencies, which focused upon examining the interrelated variables affecting land value not explicitly addressed by Alonso's theory (Bohland and Levy 1985),(Bochnovic, 2014). One of the most prevalent works in this respect was produced by Muth, who maintained that the Alonso model should be extended to account for other determinants of residential land-use including the age of buildings and neighbourhoods, housing preference, and racial discrimination (Muth 1969). In similar fashion, Mills (1967) argued that the bid-rent model could be used to provide explanations of congestion within cities. Both authors offered unique augmentations of the Alonso framework, yet nevertheless still assumed that the most critical determinants of residential rent and use was distance from the CBD (Muth 1969; Mills 1967). Together, the works of Alonso, Muth, and Mills formed the crux of bid-rent theory.

Other scholars soon followed the efforts of Muth and Mills by adding new dimensions to the Alonso model to try and draw out the influence of other externalities on land rent. For example, Straszheim (1973) sought to add household preferences to Alonso's model by examining how factors outside of location and distance impacted the rent that would be paid for housing. His alternative factors included the number of rooms in a structure, age of building, lot size, and structure quality, among others. By extending Alonso's model in this way, Straszheim was able to calculate price elasticities for discrete consumer choices and demonstrate how specific consumer tastes affected a household's willingness to pay for property (Pollakowski 1982). Straszheim (1973) concluded that, while *single* alternative factors were not necessarily strong enough to influence the location choice of individual households, the *compound* effect of such factors had a compelling affect upon residential

location (emphasis added). These points towards a need to also consider the more nuanced characteristics of housing services in order to fully appreciate housing demand. The study by Straszheim (1973) presents one of many examples that begin to underline the disconnection between the prominent factors influencing residential costs – distance and transportation costs – and other, independent costs. Other authors have spoken to a plethora independent factors affecting housing choice. For example, Kim et al. (2005) examined the impacts of crime rates, personal income, racial discrimination and neighbourhood preferences upon residential. What these and other studies indicate is the need to account for the endogenous and exogenous factors separate from distance and transportation that influence housing choice, and subsequently costs. As such, some competing theories and models have emerged over time.

A profound and widely cited theory by Charles Tiebout (1956) suggested that, rather than selecting residential location by rational economic decision, consumers would select their individual locations based entirely upon how local places satisfy their unique set of preferences. Under this notion, he suggested that consumers were more concerned with the local amenities, or public goods, available to them in different areas. Following this logic, distance from a CBD and transportation costs would be more of an afterthought to consumers (Tiebout 1956).

More recent scholars have worked to bridge this divide between the theories Alonso and Tiebout. For example, Epple et al. (2010) noted how Tiebout models tended to ignore spatial heterogeneity in cities, and how spatial models – notably those of Muth and Mills, who as indicated previously were strongly influenced by Alonso – have tended to ignore differences in amenities between jurisdictions. The authors suggested in their conclusion that future models joining Alonso and Tiebout theories in concert could benefit from even more fine-tuning, such as being able to account for peer effects in residential areas (Epple et al. 2010). Likewise, Hanushek and Yilmaz (2007) sought to examine the interrelatedness of housing location with the financing and quality of local schools. The authors here found that by integrating the Alonso and Tiebout models, they were able to more effectively look at factors influencing public policy decisions regarding school consolidations – something that by themselves, neither model could accomplish as successfully (Hanushek and Ylimaz 2007).

The literature thus far has revealed above all else the extensions made by other authors in attempt to more effectively describe rental distributions pursuant to factors independent of the distance from a CBD. What is most notable is the wide variety of externalities that can sway the perceived distribution of land values, be it quality of housing, access to public amenities, or a myriad of other variables. The selection of aforementioned studies begins to reveal serious disconnections between Alonso's model and real-world applications. Yet perhaps the most fundamental disconnection between the seminal bid-rent theory and modern applications is the substantial difference between Alonso's assumed monocentric form, and the more modern polycentric form of cities. Before exploring this disconnection, it is imperative to recognize the historic change in land-use theory and form.(Bochnovic ,2014)

The notion of consumer satisfaction in relation to location and transportation costs helped to expose the underlying reasons for peoples' choices in residential location. Knox and McCarthy (2005) remarked that Alonso's contention of balancing costs has been sometimes referred to as a "trade-off" model of urban rent. To clarify, persons within a city would be willing to accept trade-offs with regard to physical location and transportation costs, all in an effort to maximize their own individual levels of satisfaction. Similarly, Bohland and Levy (1985) noted that consumers under the Alonso model could be classified as utility maximizes, seeking out ideal locations catering to their individual preferences. Again, the

individual satisfaction of the consumers is determined by their own decisions regarding where to locate along the bid-rent curve. Regardless of their location on the bid-rent curve, each resident would be content with the costs associated with their individual locations.

Bertaud (2004) maintained that over time, CBD's lose their primacy as locations of heightened activity with increases in urban population. He also acknowledged that other factors, such as high rates of private car ownership, have accelerated the transformation from monocentricity to polycentricity (Bertaud 2004).

Polycentrism has been especially evident in cities within the United States. A wide body of literature describes the unique pre-conditions to polycentric growth (also known colloquially as 'sprawl') in American cities. Although some have characterized sprawl as a unique phenomenon from polycentricity involving more 'leapfrog' development (e.g. Galster et al. 2001), sprawl and polycentricity both generally encompass horizontal, low density, auto-centric urban development. Knox and McCarthy (2005) very efficiently synthesized the four major pre-conditions to sprawl in the United States;

1) the widespread use of Euclidean zoning to separate land-use functions in cities,

2) a sudden need for a more abundant housing stock immediately following World War II,

3) the passing of the Servicemen's Readjustment Act in 1994, which ushered in an incredible increase in American home-ownership, and

4) the development of the interstate freeway system via the Federal Aid Highway Act in 1956.

These four conditions worked closely in concert with one another – though perhaps unintentionally – and planted the seeds for outward, polycentric growth.
Other authors have provided to alternative explanations for the causes of sprawl. Squires (2002) asserted that some external factors such as technological advances in home amenities like air conditioning encouraged expansive, polycentric growth in the Western U.S. Racial segregation and the phenomenon of 'white-flight' have been classified as contributors to suburban migration and also the declining vitality of central cities (Frey 1980; Boustan 2010). Glaeser and Kahn (2003) also considered the causes of sprawl and developed a transportation cost hypothesis to describe the extent to which shrinking transportation costs directly influenced urban form. They found that, as transportation costs declined in place with a more monocentric form, the amount of land consumed increased and, as a result, the edge of cities expanded. From a polycentric framework, the authors also noted that the triumph of the private automobile severely reduced the costs of opening new sub-centers for developers, further adding to polycentrism (Glaeser and Kahn 2003). In fact, the amount of suburban land area has vastly eclipsed the amount of central city land area in the United States, and since the 1950's sprawl has further accelerated in many regards. For example, urban densities have continually fallen in both suburbs and central cities during this period of time – a strong indicator of outward, polycentric development (Nechyba and Walsh 2004). Von Hoffman (2005) found in his analysis of ten major U.S. metropolitan areas that in 1970, over one half of residents in each independent city lived within ten miles of the urban core; by 1990, not a single one of the same ten metropolitan areas had a majority of residents living within those same limits. These trends speak directly to the scope of polycentricity in the U.S., and as such the spatial structure of sprawling cities has forced people to seriously reconsider urban form in the modern context. Von Hoffman (2005) noted that, empirically,

suburbs experienced tremendous employment gains compared to much more modest gains – and sometimes overall losses – experienced in central cities. The redistribution of employment across polycentric extensions of central cities dramatically decreased access to work for inner-city poor, with special attention to blue-collar jobs (Von Hoffman 2005). Marginalized groups – residential location. Marginalized groups, given their socioeconomic status, have historically been renters and users of public transit. As such, these groups have been concentrated, inner-city renters near larger employment centers since they are more immobile than wealthier individuals. Access to public transit has been an important determinant of where poorer people live (Glaeser et al. 2008). Neuman (2005) noted that cities have been focused upon reconfiguring their structures to promote renaissance of growth within their boundaries, which includes attracting jobs. Birch (2009) traced a variety of methods employed by these central cities to revitalize their downtowns and bring commerce back to their cores, with special attention to the concept of 'urban renewal'.

Monocentric models

Monocentric models have been to look at the relationship between distance to city centers and observed land values. Although in the historical context it has been somewhat difficult to find appropriate data, the empirical literature has provided evidence for negative rent gradients, mostly for residential, but also for commercial land . The magnitude of these gradients has been found to diminish considerably over time, a phenomenon that is widely interpreted as urban decentralization. Based on these findings, however, it is hardly possible to draw conclusions on the origin of the spatial pull that drives firms into the centre in the first place. (Ahlfeldta and Wendland 2012). Yet the validity of the monocentric approach can be questioned from alternative perspectives.

In theoretical terms (Daniel & Fernando 2014), have challenged key assumptions of the classical model formulations. On the other hand (and more decisively from those fields concerned with public policy) the undeniable empirical experience of urbanism challenged the hegemony of Alonso monocentricity: many cities evolved into structures with multiple employment centers, exposing the stark contrast between monocentric model simplicity and the more complex continencies of a sophisticated, often confusing reality. There is an extensive empirical literature on polycentric employment structures, which we will analyze later in this study: key contributions were showcased in the special issues of Regional Science and Urbn on (Daniel & Fernando 2014), "Causes and Consequences of Changing Urban Form" and in Geographical Analysis on "The Multimodal Metropolis.

3.0 Methodology

Research design is defined as a framework of method and techniques chosen by a researcher to combine various components of research in a reasonably logical manner so that the researcher problem is efficiently handled. This study adopts survey research design based on quantitative research approach. Survey research designs are the procedures in quantitative research in which investigators administer a survey to a sample or to the entire population of the people to describe the attitudes, opinions, behaviours, or characteristics of the population. For the purpose of this research stratified simple random techniques will be adopted due to the heterogeneity nature of the population, in which the study will be categorized into high, medium, and low density area.

The population of the study is the head occupants of the residential rental houses in Bauchi town centre and the peri-urban areas, The Sample frame for this study will constitute the total number of accessible residential rental properties in Dan Amar ward and Birshi ward Therefore, the sample frame for this study is 1,870 renters in the study area. For the purpose

of this study the sample size will be obtained using Krejcie and Morgan (1970) table shows the size of two hundred and ninety one (320)

4.0 Result and Discussion

Analysis of Research Objectives in Relation to the Questions in the Questionnaire

The aim of the study would be the individual variables clearly stated and various questions that address them would be listed, analyzed and interpreted in multiple forms.

The reliability of the constructs

The reliability of the constructs was analyzed by finding Cronbach's alpha as suggested by Pallant (2011). Overall Cronbach's alpha for questionnaire was 0.868. This means that the questionnaire as a whole is reliable and acceptable. The reliability test for the field data presented in Table 3, showed that the Cronbach's alphas obtained for each of the constructs are within the same range.

Table 4.1: Reliability Results of the Field

S/N	Constructs	Cronbach's Alpha	Cronbach'sAlpha Based Standardized Items	Items
1	Rental Value	0.868	0.866	5
2	Renta value in peri	0.892	0.892	5
3	Rent factors	0.836	0.834	9

Descriptive statistics based on mean ranking was carried out to explore the rental values in town centre and peri-urban areas in Bauchi, the results showed the ranking, mean and standard deviation for each Item.

Table 4.2: Rental values in town centre.

Rental values	Mean	Standard deviation	Ranking
#71,0000/ - #150,000 p.a	4.12	0.720	1st
#40,000/ - #70,000 p.a	4.05	0.878	2nd
#151, 000- #300,000p.a	3.98	0.820	3th
#350,000 and above/p.a	3.98	0.916	4th
#35,000 and below	3.93	1.079	5th

Table 4.2: shows the Rental values in town centre in the study area. It shows that best rental value in the study area, based on five point measurement scale, were #71,0000/ - #150,000 p. with 4.12mean ranked 1st, #71,0000/ - #150,000 p.a #40,000/ - #70,000 p.a with 4.05mean ranked 2nd, #151, 000- #300,000p.a with mean of 3.98mean ranked 3rd, #350,000 and above/p.a with mean values of 3.98ranked 4th, #35,000 and below with mean value of 3.93ranked 5th, in the table above. Therefore, these results are indicating the monetary rental values in the study area.

Table 4.3: Rental values in peri-urban area.

Rental values	Mean	Standard deviation	Ranking

#151, 000- #300,000p.a	3.91	0.963	1st
#71,0000/ - #150,000 p.a	3.85	0.952	2nd
#350,000 and above/p.a	3.82	0.962	3rd
#40,000/ - #70,000 p.a	3.75	1.026	4th
#35,000 and below	3.75	0.873	5th

Table 4.3: shows the Rental values in town peri-urban area. It shows that best rental value in the peri urban area, based on five point measurement scale, were #151, 000- #300,000p.a with mean value of 3.91ranked 1st , #71,0000/ - #150,000 p.a with mean value 3.85 ranked the 2nd , #350,000 and above/p.a with mean of 3.82ranked the 3rd , #40,000/ - #70,000 p.a with mean value 3.75ranked the 4th, and #35,000 and below with mean value of 3.75ranked the 5th, in the table above. Therefore, these results are indicating the rental value in the peri uban area.
Descriptive statistics based on mean ranking was carried out to explore the factors that cause spatial disparity of residential rent in the study area, the results showed the ranking, mean and standard deviation for each Item.

Table 4.4: factors that cause spatial disparity of residential rent in the study area

factors that cause spatial disparity of residential rent	Mean	Standard deviation	Ranking
Location	2.96	1.200	1st
Infrastructural facility	2.94	1.108	2nd
Economic factor	2.89	1.144	3rd
Change in test and fashion	2.84	1.146	4th
Security factor	2.81	1.193	5th
Technological factor	2.75	1.198	6th
Geographical or natural factors	2.75	1.146	7th
Social factor	2.71	1.210	8th
Political factor	2.71	1.227	9th

Table 4.4: shows the Rental values in town peri-urban area. It shows that best rental value in the peri urban area, based on five point measurement scale, were #151, 000- #300,000p.a with mean value of 3.91ranked 1st, #71,0000/ - #150,000 p.a with mean value 3.85 ranked the 2nd , #350,000 and above/p.a with mean of 3.82ranked the 3rd , #40,000/ - #70,000 p.a with mean value 3.75ranked the 4th, and #35,000 and below with mean value of 3.75ranked the 5th, in the table above. Therefore, these results are indicating the rental value in the peri uban area. shows the Rental values in town peri-urban area. It shows that best rental value in the peri urban area, based on five point measurement scale, were #151, 000- #300,000p.a with mean value of 3.91ranked 1st , #71,0000/ - #150,000 p.a with mean value 3.85 ranked the 2nd , #350,000 and above/p.a with mean of 3.82ranked the 3rd , #40,000/ - #70,000 p.a with mean value 3.75ranked the 4th, and #35,000 and below with mean value of 3.75ranked the 5th, in the table above. Therefore, these results are indicating the rental value in the peri uban area.

Independent T-test was carry out to determine the level of rent differential between town centres and peri-urban in the study area.

Table 4.5: level of rent differential between town centres and peri-urban in the study area

The significance of the T test is .003 which is < .05 and so the variance of rent are not assume to be same in level, therefore there is significant evidence to support our study that there is significant level of rent difference between town centre and peri- urban areas with the degree of freedom of 296 and 102 respectively

Group Statistics

	TOWNCENTR	N	Mean	Std. Deviation	Std. Error Mean
PERIURBANN	TOWNCNTRE	230	1.30	.487	.032
	PERIURBAN	68	1.51	.532	.065

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TOWNCNTRE	Equal variances assumed	8.902	.003	-3.126	296	.002	-.215	.069	-.350	-.080
	Equal variances not assumed			-2.978	102.419	.004	-.215	.072	-.358	-.072

5.0 Conclusion

The aim of this study is to look at the residential rent differentials between town centres and peri-urban in Bauchi with a view to determine the causes of rent differentials in the study area. In achieving this aim, the following sub aim was developed. To help in successfully achievement of aim identifying the rental values in town centre and peri urban areas in Bauchi, Identifying the factors that cause spatial disparity of residential rent in the study area. And determining the level of rent differential between town centres and peri-urban in the study area The findings from the survey carried out indicated that the From the above findings the result obtained from the rental values in town centre and peri-urban areas in Bauchi showed that best rental value in values in town centre in the study area. It shows that best rental value in the study area, , were #71,0000/ - #150,000 p, #40,000/ - #70,000 p.a, #151, 000- #300,000p.a, and lastly #350,000 and above/p.a, #35,000 and below this result shows most of the rent in town centre are not appreciated as the peri urban as the result the peri urban show that. best rental value in the peri urban area, were #151, 000- #300,000p.a, #71,0000/ - #150,000 p.a, #350,000 and above/p.a, #40,000/ - #70,000 p.a, and #35,000 and below, and there is significant evidence to clear differences of level of rent difference between town centre and peri- urban areas with the above obtained result it would be conclude that there difference between peri urban and urban centre which are main cause mainly because of location and business factors.

6.0 REFFERENCES

Abdulai, M. M. Grounding Land Governance: Embedded Land Conflicts, Legal Pluralism, and Contestations in Peri-Urban West Africa.

Chelladurai, P., & Kerwin, S. (2018). *Human resource management in sport and recreation*. Human Kinetics.

Coskun, Y., & Jadevicius, A. (2017). Is there a housing bubble in Turkey?. *Real Estate Management and Valuation*, *25*(1), 48-73.

Fang, Y., Liu, Z., & Chen, Y. (2019). Housing Inequality in Urban China: Theoretical Debates, Empirical Evidences, and Future Directions. *Journal of Planning Literature*, 0885412219880898.

Gabillet, P. (2015). Energy supply and urban planning projects: Analysing tensions around district heating provision in a French eco-district. *Energy Policy*, *78*, 189-197.

Jones, D., CHOY, D. L., & Clarke, P. (2016). The challenge of being heard: Understanding Wadawurrung climate change vulnerability and adaptive capacity. In *Conflict and change in Australia's peri-urban landscapes* (pp. 278-298). Routledge.

Kębłowski, W., & Bassens, D. (2018). "All transport problems are essentially mathematical": The uneven resonance of academic transport and mobility knowledge in Brussels. *Urban geography*, *39*(3), 413-437.

Locke, A., & Henley, G. (2016). Urbanisation, land and property rights.

Low, N., Gleeson, B., Green, R., & Radovic, D. (2016). *The green city: sustainable homes, sustainable suburbs*. Routledge.

McClure, K. (2019). What should be the future of the Low-Income Housing Tax Credit program?. *Housing Policy Debate*, *29*(1), 65-81.

Okesoto, O. J. (2018). *Towards a Strategy for Inclusionary Inner City Housing in Lagos, Nigeria* (Doctoral dissertation, University of KwaZulu-Natal, Howard College).

Palmer, R., Short, D., & Auch, T. (2020). The Human Right to Water and Unconventional Energy. In *Regulating Water Security in Unconventional Oil and Gas* (pp. 39-67). Springer, Cham.

Sagar, P. (2019). *The Opinion of Mankind: Sociability and the Theory of the State from Hobbes to Smith*. Princeton University Press.

Singla, H. K., & Bendigiri, P. (2019). Factors affecting rentals of residential apartments in Pune, India: an empirical investigation. *International Journal of Housing Markets and Analysis*.

Slater, T. (2019). Housing Activism Against the Production of Ignorance: Some Lessons from the UK. In *Contested Cities and Urban Activism* (pp. 49-71). Palgrave Macmillan, Singapore.

Tian, L. (2019). Housing price development in Shanghai.

AVRUPA YEREL YÖNETİMLER ÖZERKLİK ŞARTI BAĞLAMINDA MALİ TEVZİN, BÜTÇE HAKKI VE TÜRKİYE'DE DURUM

Dr. Eylem Çakmaz
Erciyes University, Kayseri, Türkiye
Orcid no: https://orcid.org/0000-0003-0531-0297

Özet

Küreselleşme ile kamu hizmetlerinin yerelden yönetilmesi (subsidiarite ilkesi) hakim görüş olarak ortaya çıkmıştır. Bu kapsamda, 1985 yılında Avrupa Konsey'i tarafından kabul edilen "Avrupa Yerel Yönetimler Özerklik Şartı" 1 Eylül 1988 tarihinde Avrupa'da özerk yerel yönetimlerin oluşturulması düşüncesiyle yürürlüğe girmiştir. Hizmette yerelleşmenin sonucu olarak mali yerelleşme 1990'lardan sonra gelişme göstermiştir. 2008 yılında başlayan küresel ekonomik krizin de etkisiyle sekteye uğrayan âdem-i merkeziyetçilik fikrinde ve devletlerin bütçe hakkında değişiklikler olmuştur. Yerel idarelere daha az yetki, daha az görev ve sorumluluk ve buna bağlı olarak daha az gelir verilmiştir. Dünya'da yerel yönetimlerin katılımcılığı ve etkinliği tartışmaları başlamıştır. Yerel yönetim reformları gündeme gelmiştir. Bunun sonucu olarak, yerellerin idari ve mali özerkliğe kavuşturulmasının kamu hizmetinin etkinliğini artıracağı ve demokratik katılımın önemli bir parçası olduğu fikri ortaya çıkmıştır.

Bu çalışmada, "Avrupa Yerel Yönetimler Özerklik Şartı" bağlamında bütçe hakkı, mali tevzin kavramı ve bu bağlamda Türkiye değerlendirilmesi amaçlamıştır. İlk olarak, bütçe hakkı ve yerel özerklik üzerinde durulmuştur. Daha sonra, mali özerkliğin boyutları genel hatlarıyla ele alınarak mali tevzin konusuna ağırlık verilmiştir. Makalenin sonunda, Türkiye'deki yerel yönetimlerin mali özerkliğine ilişkin mevcut ekonomik göstergeler dikkate alınarak Yerel Özerklik Şartı ile uyumluluk göstermediği saptanmıştır. Türkiye'de mali özerkliğin sağlanamadığı ve buna bağlı olarak uygulamada yaşanan bazı sorunların mevcudiyetine ve akademik tartışmalara yer verilmiştir. Çözüm olarak, " Avrupa Yerel Özerklik Şartı" bağlamında mahalli idarelerin Şart ile uyumlaştırılması gerektiği sonucuna varılmıştır.

Anahtar Kelimeler: Avrupa Birliği (AB), Avrupa Yerel Özerklik Şartı, Yerel Yönetim, İdari ve Mali Özerklik, Mali Tevzin, Bütçe Hakkı

AS PART OF THE EUROPEAN CHARTER OF LOCAL SELF-GOVERNMENT FISCAL EQUALIZATION, POWER OF THE PURSE AND SITUATION IN TURKEY

Abstract

Local management of public services (Subsidiarity principle) has emerged dominant view as your opinion with globalization. In this context, The European Charter of Local Self-Government was accepted by the European Council in 1985 and came into force on September 1, 1988 with the idea of establishing local governments. Financial decentralization as a result of decentralization in service has shown development after the 1990s. Due to the

impact of global economic crisis in 2008, there have been changes in the idea of decentralization and power of the purse. Local administrations are less empowered, less duties and responsibilities and income less. Participation and effectiveness of local governments has started activities in the world. Local government reforms have come to the fore. As a result, locals achieving financial autonomy will increase the efficiency of the public service and It has been stated that it is an important part of participation.

In this study, “The European in the Charter of Local Self-Government” context, the concept of power of the purse, fiscal equalization and aimed Turkey's local financial situation in this context. Firstly, The concept of local self- goverment and power of the purse is emphasized. Later, the dimensions of financial autonomy were discussed in general terms and the issue of intergovernmental fiscal relations was emphasized. At the end of the article, available on the financial autonomy of local governments in Turkey and Europe are taken into account economic indicators did not show compatibility with the Charter of Local Autonomy. At the end of the article, local authorities are taken into consideration the current economic indicators related to the financial autonomy in Turkey. It has been determined that it does not comply with the European in the Charter of Local Self- Goverment. Turkey is not achieved financial autonomy and consequently the existence of some problems in practice and is given to academic debates. As a solution, it was concluded that in the context of the European in the Charter of Local Self-Government local administrations should be harmonized with the condition.

Keywords: European Union (EU), The European in the Charter of Local Self-Government, Local Administration, Administrative and Financial Autonomy, Fiscal Equalization, Power of the purse

DENETİMİN GELİŞİMİ VE YENİ TÜRK TİCARET KANUNU ÇERÇEVESİNDE DÖNEN VARLIKLAR ÖZELİNDE BİR UYGULAMA

Dr. Öğr. Üyesi Seval ELDEN ÜRGÜP
Sivas Cumhuriyet University, Sivas, Türkiye
ORCID:0000-0002-7464-3485

Özet

Küreselleşme soncunda uluslararası şirket birleşmelerinin artması ve uluslararası yatırımların gelişmekte olan ülkelere yönelmesi, ekonominin dinamosu olan işletmeleri değişen koşullara uyum sağlamaya zorlamaktadır. Şöyle ki; işletmelerin rekabet gücünü arttırmak ve gelişen sermaye piyasalarına kolayca girebilmek için mevcut muhasebe sistemlerini daha etkin hale getirip şeffaf, karşılaştırılabilir, doğru finansal tablolar hazırlanması ve bunları bağımsız denetime tabi tutularak güvenilirliğinin arttırılması gerekmektedir. Bağımsız denetim, bir işletmenin ekonomik faaliyetleri sonucunda hazırlanan yıllık finansal tablo ve diğer finansal verilerinin, önceden belirlenmiş ölçütlere uygunluğunu ve doğruluğunu sağlayabilecek yeterli ve uygun bağımsız denetim kanıtlarının elde edilmesi amacıyla uygulanır. Gerek yasal düzenlemelere uygunluk için gerekse bilgi kullanıcılarının işletme ile ilgili aldığı kararların doğruluğu ve güvenilirliği için denetim sürecinin nasıl çalıştığını öğrenmek işletme sahiplerinin yararına olacaktır.

Son yıllarda yaşanan muhasebe skandalları sonucunda denetimin yetersiz olduğu görülmüştür. Bu yetersizlik, işletmelerin ve yöneticilerin yanlış kararlar almasının önünü açmış, itibarlarını zedelemiş ve hatta işletmeleri iflasa kadar sürüklemiştir. Yaşanan bu olumsuz olaylar sonucunda işletmelerde denetim mekanizmasının ne kadar önemli olduğunu ortaya çıkarmıştır. Bu bağlamda gerek ulusal gerekse uluslararası düzenlemeler yapılmıştır. Bu kapsamda çalışmanın amacı, 6102 Sayılı Yeni Türk Ticaret Kanunu çerçevesinde bir işletmenin muhasebe kayıtlarının düzgün tutulup tutulmadığını incelemek ve dönen varlıklar hesap grubunun denetiminin işleyişi hakkında örnek alınan işletme üzerinden bilgi vermektir. Bu amaçla çalışmamızda, denetimin tarihçesi ile başlayan süreç cumhuriyet öncesi ve cumhuriyet sonrası olmak üzere ikiye ayrılmıştır. Cumhuriyet sonrası dönemde Sermaye Piyasası Kanunu, Bankacılık Kanunu, Enerji Piyasası Düzenleme Kanunu, Sigortacılık Kanunu ve 3568 Sayılı SMMM ve YMM kanunları incelenerek denetim süreçlerine etkisi hakkında bilgiler verilmiştir. Ayrıca, TÜRMOB, KGK ve 6102 Sayılı Yeni Türk Ticaret Kanunu hakkında bilgi verilerek kurumların denetimdeki rolleri üzerinde durulmuş olup, bir işletmenin dönen varlıkları üzerinde denetim süreci uygulanmıştır.

Anahtar Kelimeler: Denetim, Bağımsız Denetim, 6102 Sayılı Yeni Türk Ticaret Kanunu

DEVELOPMENT OF AUDIT AND AN APPLICATION SPECIFICALLY CURRENT ASSETS WITHIN THE FRAMEWORK OF THE NEW TURKISH COMMERCIAL LAW

Abstract

As a result of globalization, the increase in international mergers and the orientation of international investments to developing countries forces the enterprises, which are the dynamos of the economy, to adapt to changing conditions. Namely; In order to increase the competitiveness of enterprises and to easily enter the developing capital markets, it is necessary to make the existing accounting systems more effective, to prepare transparent, comparable and accurate financial statements and to increase their reliability by subjecting them to independent audit. Independent audit is applied in order to obtain sufficient and appropriate independent audit evidence that can ensure the compliance and accuracy of the annual financial statements and other financial data prepared as a result of the economic activities of an enterprise. It will be in the interest of business owners to learn how the audit process works, both for compliance with legal regulations and for the accuracy and reliability of the decisions made by information users regarding the business.

As a result of the accounting scandals experienced in recent years, it has been observed that the audit is insufficient. This inadequacy paved the way for businesses and managers to make wrong decisions, damaged their reputation and even drove businesses to bankruptcy. As a result of these adverse events, it has revealed how important the control mechanism is in enterprises. In this context, both national and international regulations have been made. In this context, the aim of the study is to examine whether the accounting records of an enterprise are kept properly within the framework of 6102 Turkish Commercial Law and to provide information about the operation of the audit of the current assets account group through the exemplary enterprise. For this purpose, in our study, the process that started with the history of control is divided into two as pre-republic and post-republic. In the post-Republic period, the Capital Market Law, Banking Law, Energy Market Regulatory Law, Insurance Law and 3568 SMMM and YMM Laws were examined and information was given about their effects on audit processes. In addition, information was given about TÜRMOB, KGK and 6102 Turkish Commercial Law and the roles of institutions in auditing were emphasized, and an audit process was applied on the current assets of an enterprise.

Keywords: Audit**,** Independent Audit, 6102 Turkish Commercial Law

GİRİŞ

Bağımsız denetim son yıllarda çok tartışılan ve sürekli gelişen bir alandır. Başta ABD ve Avrupa olmak üzere birçok ülkede denetimin etkin yürütülememesi kaynaklı birçok problem yaşanmıştır. Bu problemlerin sebebi ise mevcut yasal düzenlemelerin yetersizliği olarak görülmüştür. Bu yüzden birçok ülkede gerekli yasal düzenlemeler yapılmaya başlanmıştır.

Ülkemizde ise, Sermaye Piyasası Kanunu ile başlayan süreç Bankacılık Kanunu vd. ile devam etmiştir. Son olarak ise 6102 Sayılı Yeni Türk Ticaret Kanunu ile denetimin boyutu farklı bir noktaya taşınmış ve büyük bir gelişme kaydedilmiştir.

Çalışmanın konusu ise, Türkiye'de bağımsız denetimin gelişimi cumhuriyet öncesi dönemden ele alınarak günümüze kadar olan süreçte incelenerek yapılan tüm yasal düzenlemeler ve ilgili

kurumlar dahil edilerek incelenmiş 6102 Sayılı Türk Ticaret Kanunu çerçevesinde bir işletmede denetim süreci dönen varlıklar özelinde anlatılmıştır.
Bu çalışmada, denetimin tarihçesi ile başlayan süreç cumhuriyet öncesi ve cumhuriyet sonrası olmak üzere ikiye ayrılmıştır. Cumhuriyet sonrası dönemde Sermaye Piyasası Kanunu, Bankacılık Kanunu, Enerji Piyasası Düzenleme Kanunu, Sigortacılık Kanunu ve 3568 Sayılı SMMM ve YMM kanunları incelenerek denetim süreçlerine etkisi hakkında bilgiler verilmiştir. Ayrıca, TÜRMOB, KGK ve 6102 Sayılı Yeni Türk Ticaret Kanunu hakkında bilgi verilerek kurumların denetimdeki rolleri üzerinde durulmuş olup, bir işletmenin dönen varlıkları üzerinde denetim süreci uygulanmıştır.

1.DENETİM

Denetim, denetlenecek unsurların bu unsurlara ilişkin olarak önceden belirlenmiş kriterlere uygunluk derecesini saptamak için denetlenecek unsurlar hakkında tarafsız bir şekilde kanıt toplanması ve bu kanıtların değerlendirilmesi ve elde edilen sonuçların ilgililere raporlanması faaliyetlerinden oluşan sistematik bir süreçtir(Selimoğlu vd., 2014:8). Denetimin beş ilkesi vardır(Bozkurt,2015:29):

- Tamamlılık; bütün işlemlerin kayıtlara geçirilmiş olmasıdır.
- Gerçeklik; kaydedilen işlem ve olayların ilgili dönem içerisinde gerçekleşmiş olması gerekir.
- Doğruluk; kaydedilen işlemlerin doğru olarak hesaplanmış, değerlendirilmiş ve ölçülmüş olması gerekir.
- Kanunilik; yasal düzenlemelerim belirlediği sınırların dışına çıkılmamış olması gerekir.
- Açıklık; kaydedilen işlemlerin açık ve anlaşılır bir şekilde düzenlenip ait olduğu hesaba dahil edilmiş olması gerekir.

Geçmiş dönemlerde kamu odaklı başlayan denetimler vergi denetiminin dışına çıkmıştır. İşletmelerin büyümesi ve bu büyümenin uluslararası boyutlara ulaşması neticesinde işletmeler özelinde de yapılmaya başlanmıştır. Küreselleşme ile birlikte işletmelerin çevresi genişlemiştir. Bu çevre işletmenin müşterileri, tedarikçileri, işletmeye finansal kaynak sağlayan kurumlar ve finansal piyasaların gelişmesi sonucu ortaya çıkan yatırımcılar olarak örneklendirilebilir. Küreselleşme ile birlikte genişleyen işletme ve işletmenin çevresi karar verme sürecinde temel ve güvenilir kaynak olarak bağımsız denetimden geçmiş finansal tablolardan faydalanma ihtiyacı gütmüşlerdir. Yine işletme ve işletmenin çevresi arasında güvenin sağlanması bir zorunluluktur. Güvenin sağlanabilmesi ise finansal tabloların denetimi ile mümkündür. İşletmenin dış çevresinin yanında gelişen yönetim bilimleri çerçevesinde; değişen yönetim anlayışı ile kurumsallaşan işletmelerin sahipleri ve yöneticileri de kendi faaliyetlerini daha etkin hale getirebilmek amacı ile denetim faaliyetlerinden faydalanma yoluna gitmişlerdir. Bu süreçte de finansal tabloların denetimden geçirilmesi işlemleri yapılmıştır(Erçiçek, 2016:155).

Küreselleşme ile birlikte denetimin kapsamı genişletilerek yapılacak denetimlerin daha etkin ve verimli bir hale getirilmesi kaçınılmaz bir gerçek haline gelmiştir. Gelişen sermaye piyasaları, artan uluslar arası yatırımcı sayısı, bilgi kullanıcılarının değişen bilgi ve ihtiyaçları, ve uluslar arası boyutta ortaya çıkan ve ülke ekonomilerini olumsuz etkileyen Enron, Worldcom gibi skandallar denetim olgusunun boyutlarının değişmesi ihtiyacını hissettirmiştir. Gerek uluslararası gerek ulusal boyutta değişen kanunlar ve kurulan yeni kurumlar ile denetim süreci sürekli bir değişim içerisinde olmuştur ve olmaya devam etmektedir. (Selimoğlu ve Göktepe, 2007: 20)

2.DENETİMİN TARİHÇESİ

Muhasebe sistemi 14. Yüzyıldan sonra süreklilik arz eden bir değişim göstermiştir. Osmanlı döneminde ise özel muhasebe sistemi gelişmezken devlet kademelerinde muhasebe sistemi gelişmiştir. Sanayi devrimi ile başlayan süreçle birlikte büyük işletmeler kurulmaya başlanmış, büyümeyle birlikte ekonomik faaliyetler ve ilişkiler giderek karışmıştır. Bu süreçle birlikte kurumsallık artmış ve işletme sahipleri profesyonel yönetici istihdam etmeye başlamıştır. Böylelikle işletme sahipleri ve yöneticileri birbirinden ayrılmıştır. Bu ayrımla birlikte işletme sahipleri muhasebe kayıtlarında yapılabilecek hata ve hilelerin önüne geçmek için denetim faaliyetlerinden faydalanmıştır. Defterlerdeki kayıtlar ve bu kayıtların dayandırıldığı belgelerle karşılaştırılması yeterli görülmekteydi.

Muhasebe denetiminin tarihsel gelişimi Tablo 1'de gösterildiği gibidir:

Tablo:1 Denetimin Tarihçesi

Zaman Dilimi	Denetim Yaklaşımı	Denetim Amacı	İlgili Taraflar
Sanayi devrimi öncesi	%100'lük bir inceleme	Yanıltmaların bulunması	İşletme sahipleri
Sanayi Devrimi 1900'le	%100'lük bir inceleme	Yanıltmaların bulunması	Ortaklar ve işletmeye borç verenler
1900-1930	%100'lük bir inceleme veya örneklemeye başvurma	Bilançonun ve gelir tablosunun doğruluğunu onaylama	Ortaklar, işletemeye borç verenler ve devlet
1930'dan bugüne	Finansal verilerin örnekleme yoluyla incelenmesi	Finansal tabloların doğruluk ve dürüstlüğü hakkında görüş verme	Ortaklar, işletmeye borç verenler, devlet, sendikalar, parlamento, tüketiciler ve diğer gruplar

Kaynak: (Güredin, 2007:14)

Denetim mesleği ilk olarak İngiltere'de ortaya çıkmıştır. 1880 yılında İngiltere'de beş muhasebe topluluğunun birleşmesiyle kurulan Uzman Muhasebeciler Enstitüsünü 1900 yılında sınırlı sorumlu şirketlerin denetimi konulu yasanın çıkarılması takip etmiştir. Böylelikle İngiltere muhasebe mesleğinin ve yeminli mali müşavirliğin ortaya çıktığı ilk ülke olmuştur. ABD'de ise 1896 yılında CPA-Certified Public Accountants ile meslek yasal olarak düzenlenmiştir(Ferman, 1974:88).

2.1.Cumhuriyet Öncesi Dönemde Denetim

Osmanlı Devletinde mali denetim Maliye Nezareti kurulana kadar Başbaki Kulluğu tarafından yürütülmüştür. 1838 yılında, Maliye Nezaretinin kurulması ile birlikte vergi tahsilatında yaşanan sorunların çözülebilmesi, devletin gelir ve gider kalemlerinin ve mali konuların denetlenmesi için çeşitli komisyonlar kurulmuştur. Tanzimat'ın uygulanışını sağlamak amacıyla, merkezde mali konuları denetlemek ve karar verip, sonuca bağlamak üzere 1840 yılında Meclis-i Muhasebe-i Maliye kurulmuştur. Meclisin asıl görevi, Tanzimat'ın uygulandığı bölgelerde vergilerin yeniden tespit edilmesi, tahsiliyle ilgili problemleri ve bu konudaki yolsuzlukları ve anlaşmazlıkları yasal zemin çerçevesinde bir çözüme kavuşturmaktır. Bunun yanı sıra bütçe hesaplarının kontrolü de bu meclise verilmiş olup, Hazine-i Hassa'nın dışında kalan nezaret ve dairelerin yıl içinde yaptıkları harcamaların kesin defterlerini incelemek de meclisin görevleri arasındadır. Mali işlerde istenilen verimin alınamaması ve kurulmuş olan meclisin ihtiyaçlara cevap verememesi üzerine, mali düzenlemeleri gerçekleştirmek, bilhassa bütçe ile ilgili hesapları kontrol etmek ve bütçeyi hazırlamakla görevli Meclis-i Muhasebe adında yeni bir meclis kurulmuştur. Mali istikrarın sağlanması, gelirlerin ve giderlerin kontrol altına alınarak güçlü bir kamu maliyesinin tesisi ve sürdürülmesi yönünde çalışmalar devam etmiş olup bu doğrultuda yapılan önemli

girişimlerden biri de, batıdaki gelişmelere paralel olarak 29 Mayıs 1862 tarihinde Sultan Abdülaziz Han'ın kararı ile 29 Mayıs 1862 tarihinde, Sayıştay'ın bu günkü kurumsal alt yapısını oluşturan Divan-ı Muhasebat kurulmuştur. (www.sayıştay.gov.tr)

2.2.Cumhuriyet Sonrası Dönemde Denetim

Türkiye'de muhasebe denetçiliği mesleği mahkemelerde bilirkişilik faaliyetleri ile başlamıştır. 1926-1934 yılları arasında iyi tanınan muhasebe meslek mensuplarına, vergi kanunları gereği vergi denetimi yapma yetkisi verilmiştir. Daha sonraki süreçte bir yandan yasalaşma, bir yandan da mesleki örgütlenme çalışmaları sürdürülmüştür (Türker, 2006:5-7).

Bilirkişilik ile başlayan süreç; ekonomik gelişme, yabancı sermayeli şirketlerin gereksinimleri gibi ihtiyaçların etkisi ile muhasebe mesleğinin denetim boyutunun geliştirilmesini gündeme getirmiştir. Sonrasında ise, Türkiye'de bağımsız denetim mesleğinin başlaması ve gelişmesinde ki en önemli etken mali piyasalarda faaliyet gösteren banka ve diğer mali kuruluşların talepleri olmuştur. 1960'lardan itibaren mali piyasalarda faaliyet gösteren bankalar ile yurt dışında fon sağlayan kuruluşların isteği ile mali tabloların bağımsız denetimini yaptırmaya başlamışlardır.

Türk hukukunda işletmelerin denetimleri ise, 1987 yılına kadar Türk Ticaret Kanunu ve Vergi Usul Kanunu çerçevesinde kamu gelirlerini güvence altına almak amacıyla, kamu otoriteleri tarafından yapılan bir denetim şeklinde görülmüştür. 1987 yılından sonra kamu denetçilerinin yanında bağımsız denetçilerden de faydalanma eğilimi ortaya çıkmıştır. Böylelikle işletmelerde bağımsız denetim tekniklerinden faydalanılmaya başlanmıştır (Çelik, 2005:15).

1987 yılında bankaların denetimini kapsayan bağımsız denetimin yapılmasına ilişkin ilk zorunluluk getirilmiştir. Ancak; bağımsız denetim ilkeleri ve kuralları ilk kez 1988 yılında Sermaye Piyasası Kurulu tarafından yayınlanan tebliğler ile yasal nitelik kazanmıştır(Kutukız ve Öncü, 2009:133).

3. TÜRKİYE'DE BAĞIMSIZ DENETİM İLE İLGİLİ YASAL DÜZENLEMELER

Türkiye'de bağımsız denetim ile ilgili yapılan yasal düzenlemeler şunlardır(Selimoğlu vd.,2014:29):

- Sermaye Piyasası Kanunu
- Bankacılık Kanunu
- Enerji Piyasası Düzenleme Kanunu
- Sigortacılık Kanunu
- 3568 Sayılı Serbest Muhasebeci Mali Müşavirlik ve Yeminli Mali Müşavirlik Kanunu

3.1.Sermaye Piyasası Kanunu

Sermaye Piyasası Kurulu'nun bağımsız denetime ilişkin yaptığı ilk yasal düzenleme 13.12.1987 tarih ve 19663 sayılı Resmi Gazete'de yayımlanarak yürürlüğe giren sermaye piyasasında bağımsız dış denetim hakkındaki yönetmeliktir. 2499 sayılı Sermaye Piyasası Kanuna göre kanunda belirtilen şirketler mali tablolarını genel kabul görmüş muhasebe ilkelerine uygun bir şekilde düzenlemelidir. Bu mali tabloların bağımsız denetimden geçirilmesi zorunludur. Tabloların denetimini gerçekleştiren kuruluşlar raporlardaki yanıltıcılıklardan doğabilecek zararlardan sorumludurlar. Sermaye piyasasında bağımsız denetim faaliyetine ilişkin esasları belirlemek ve kamunun zamanında, yeterli ve doğru olarak aydınlatılmasını sağlamak amacıyla, genel ve özel nitelikte kararlar almak ve her türlü mali tablo ve raporlar ile bunların bağımsız denetimlerine ilişkin tebliğler yayımlamak Sermaye Piyasası Kurulu'nun yetkisindedir(www.spk.gov.tr).

3.2.Bankacılık Kanunu ve BDDK

Bankacılık Düzenleme ve Denetleme Kurumu 23.06.1999 tarihinde yürürlüğe giren mülga 4389 Sayılı Bankalar Kanunu ile kurulmuş, başkanı ve kurul üyeleri 23.03.2000 tarihi itibarıyla atanmış, 31.08.2000 tarihinde faaliyete başlamıştır(www.bddk.org.tr).

01.11.2005 tarih ve 25983 sayılı Resmi Gazete'de yayımlanan 5411 sayılı Bankacılık Kanununun amacı ise finansal piyasalarda güven ve istikrarın sağlanmasını, kredi sisteminin etkin bir şekilde çalışması ve tasarruf sahiplerinin hak ve menfaatlerinin korunmasına ilişkin usul ve esasları düzenlemektir. Türkiye'de kurulu mevduat bankaları, katılım bankaları, kalkınma ve yatırım bankaları, yurtdışında kurulu bu nitelikteki kuruluşların Türkiye'deki şubeleri, finansal holding şirketleri, Türkiye Bankalar Birliği, Türkiye Katılım Bankaları Birliği, Bankacılık Düzenleme ve Denetleme Kurumu, Tasarruf Mevduatı Sigorta Fonu ve bunların faaliyetleri Bankacılık Kanunu hükümlerine tâbidir(www.resmigazete.gov.tr).

3.3.Enerji Piyasası Düzenleme Kanunu ve EPDK

Kurul, ilk olarak 4628 sayılı yasa ile Elektrik Piyasası Düzenleme Kurumu adıyla kurulmuş, daha sonra 4646 sayılı Doğal Gaz Piyasası Kanunu ile de Enerji Piyasası Düzenleme Kurumu adım almıştır. Kuruma, 5015 Sayılı Petrol Piyasası Kanunu ile petrol piyasasını, 5307 Sayılı Sıvılaştırılmış Petrol Gazları (LPG) Piyasası Kanunu ile de sıvılaştırılmış petrol gazları piyasasını düzenleme ve denetleme görevleri verilmiştir. Enerji Piyasası Düzenleme Kurulu 19.11.2001 tarihinde görevine başlamıştır. Bu kanunların amacı; elektriğin, doğalgazın, petrolün ve LPG'nin yeterli, kaliteli, sürekli, düşük maliyetli ve çevreyle uyumlu bir şekilde tüketicilerin kullanımına sunulması için rekabet ortamında özel hukuk hükümlerine göre faaliyet gösterebilecek, mali açıdan güçlü, istikrarlı ve şeffaf bir enerji piyasasının oluşturulması ve bu piyasada bağımsız bir düzenleme ve denetimin sağlanmasıdır(www.epdk.gov.tr).

3.4.Sigortacılık Kanunu

14.06.2007 tarih ve 26552 sayılı Resmi Gazete'de yayınlanan bu kanunun amacı, ülkemizde sigorta sektörünün gelişimini sağlamak, sigorta sözleşmesinde yer alan tarafların haklarını ve menfaatlerini korumak ve sigortacılık sektörünün güvenli ve bir ortamda ve etkin bir şekilde çalışmasını sağlamak üzere bu kanuna tâbi kişi ve kuruluşların, faaliyete başlama, teşkilât, yönetim, çalışma esas ve usulleri ile faaliyetlerinin sona ermesi ve denetlenmesine ilişkin hususlar ve sigorta sözleşmesinden doğan uyuşmazlıkların çözümlenmesine yönelik olarak sigorta tahkim sistemi ile ilgili usul ve esasları düzenlemektir(www.resmigazete.gov.tr)

18.10.2019 tarih ve 47 sayılı Cumhurbaşkanlığı Kararnamesi ile kurulan Sigortacılık Düzenleme ve Denetleme Kurumu'nun görev ve yetkileri ise şunlardır(www.mevzuat.gov.tr):

- ''13.10.1983 tarih ve 2918 sayılı Karayolları Trafik Kanunu, 28.3.2001 tarihli ve 4632 sayılı Bireysel Emeklilik Tasarruf ve Yatırım Sistemi Kanunu, 14.06.2005 tarihli ve 5363 sayılı Tarım Sigortaları Kanunu, 03.6.2007 tarihli ve 5684 sayılı Sigortacılık Kanunu, 13.01.2011 tarihli ve 6102 sayılı Türk Ticaret Kanunu ve 09.05.2012 tarihli ve 6305 sayılı Afet Sigortaları Kanunu ile diğer mevzuatta yer alan sigortacılık ve özel emekliliğe ilişkin görev ve yetkileri yürütmek.''
- ''Sigortacılık ve özel emekliliğe ilişkin mevzuatı hazırlamak, uygulamak ve ilgililer tarafından uygulanmasını izlemek ve yönlendirmek''
- ''Ülke sigortacılığının ve özel emeklilik uygulamalarının gelişmesi, sigortalıların ve katılımcıların korunması için tedbirler almak, bu tedbirleri bizzat uygulamak veya ilgili kuruluşlara uygulatmak ve uygulanmasını izlemek.''
- ''Sigortacılık ve özel emeklilik alanında faaliyet gösteren kişi ve kuruluşlarla ilgili inceleme, denetleme ve soruşturma işlerini yürütmek.''

3.5.3568 Sayılı SMMM ve YMM Kanunu

13.06.1989 tarih ve 3568 sayılı Resmi Gazetede yayımlanan bu kanunun amacı işletmelerde faaliyetlerin sağlıklı ve güvenilir bir şekilde işleyişini sağlamak, faaliyet sonuçlarının genel kabul görmüş muhasebe ilkelerine uygunluğunu denetlemek, sonuçları ilgililere ve resmi mercilere tarafsız bir şekilde sunmaktır. Bu kanunla birlikte Serbest Muhasebeci Mali Müşavirlik" ve "Yeminli Mali Müşavirlik" meslekleri ve hizmetleri ile Serbest Muhasebeci Mali Müşavirler ve Yeminli Mali Müşavirler Odaları, Serbest Muhasebeci Mali Müşavirler ve Yeminli Mali Müşavirler Odaları Birliğinin kurulmasını, teşkilat, faaliyet ve denetimlerine, organlarının seçimlerine dair esaslar düzenlenmiştir.

10.07.2008 tarih ve 5786 sayılı yasa ile meslek Serbest Muhasebeci Mali Müşavir ve Yeminli Mali Müşavir olmak üzere ikiye ayrılmıştır. Serbest Muhasebeci Mali Müşavirlik mesleğinin konusu; işletmelerin genel kabul görmüş muhasebe ilkelerine göre defterlerini tutmak, bilanço, gelir tablosu ve beyannameleri ile diğer belgelerini düzenlemek ve bu konularda müşavirlik yapmaktır. Yeminli Mali Müşavirlik mesleğinin konusu ise denetim yapmak, malî tablo ve beyannamelerle ilgili konularda yazılı görüş vermek, rapor düzenlemek, tahkim, bilirkişilik ve benzeri işleri yapmanın yanında tasdik işlerini yapmaktır(www.mevzuat.gov.tr).

Yeminli mali müşavirler muhasebe defterlerini tutamazlar, muhasebe bürosu açamazlar ve muhasebe bürolarına ortak olamazlar(Bezirci ve Karasioğlu, 2011:578)

4. TÜRKİYE SERBEST MUHASEBECİ MALİ MÜŞAVİRLER VE YEMİNLİ MALİ MÜŞAVİRLER ODALARI BİRLİĞİ (TÜRMOB)

Ülkemizde 1942 yılında Eksper Muhasipler ve İşletme Organizatörleri Derneği, 1967 yılında Türkiye Muhasebe Uzmanları Derneği, 1974 yılında Türkiye Muhasebeciler Dernekleri Federasyonu, 1976 yılında Mali Müşavirler Muhasebeciler Birliği Derneği kurulmuştur. 13.06.1989 tarihli 3568 sayılı kanun ile mali müşavirlik mesleği yasal statüsüne kavuşmuştur. Meslek mensupları kısa sürede örgütlenerek odaları oluşturmuştur. Odalar ise, TÜRMOB çatısı altında bir araya gelmiştir(www.turmob.org.tr).

4.1.Türkiye Muhasebe ve Denetim Standartları Kurulu (TMUDESK)

3568 sayılı Serbest Muhasebeci Mali Müşavirlik ve Yeminli Mali Müşavirlik Kanunu ile muhasebe ve denetim faaliyetleri bir meslek olarak tanımlanmıştır. 1 Ocak 1994'te tek düzen muhasebe sisteminin de ülkemizde uygulanmaya başlamasıyla mali tabloların ilkeleri, hesap planı ve muhasebenin temel kavramlarında uyulması gereken genel bir çerçeve belirlenmiştir. 1994 yılında ise bu faaliyetleri desteklemek amacı ile TÜRMOB tarafından Türkiye Muhasebe ve Denetim Standartları Kurulu (TMUDESK) kurulmuştur. TMUDESK Türkiye muhasebe standartlarını uluslararası muhasebe standartlarına uygun olarak saptamayı temel ilke edinmiştir(Kavut ve Adiloğlu, 2016:51).

4.2.Türkiye Muhasebe Standartları Kurulu (TMSK)

2499 sayılı Sermaye Piyasası Kanununa 18.12.1999 tarih ve 4487 sayılı Kanunla eklenen Ek-1. Madde uyarınca denetlenmiş finansal tabloların sunumunda finansal tabloların ihtiyaca uygun, gerçek, güvenilir, dengeli karşılaştırılabilir ve anlaşılabilir nitelikte olmaları için ulusal muhasebe ilkelerinin gelişmesi ve benimsenmesini sağlayacak ve kamu yararı için uygulanacak ulusal muhasebe standartlarını saptamak ve yayınlamak üzere, kamu tüzel kişiliğini haiz, idari ve mali özerkliğe sahip Türkiye Muhasebe Standartları Kurulu kurulmuştur(www.tmsk.org.tr).

Kurulun 9 üyesi vardır. TMSK'nın kurulmasındaki amaç; finansal tabloların güvenilir, karşılaştırılabilir, ihtiyaca uygun ve anlaşılabilir olması için ulusal muhasebe ilkelerinin geliştirilip yayımlamaktır(www.resmigazete.gov.tr).

4.3. Türkiye Denetim Standartları Kurulu (TÜDESK)

Türkiye Denetim Standartları Kurulu (TÜDESK) 20.02.2003 tarihinde TÜRMOB bünyesinde oluşturulmuştur. Kurulun amacı; 3568 sayılı kanuna tabi çalışan meslek mensuplarının yetkili oldukları faaliyetleri yürütebilmeleri için Ulusal Denetim Standartları'nın belirlenmesi ve yayımlanmasıdır(Başpınar, 2005: 44-45).

5. KAMU GÖZETİMİ, MUHASEBE VE DENETİM STANDARTLARI KURUMU

Kamu Gözetimi, Muhasebe ve Denetim Standartları Kurumu kamu gözetimi ve denetim alanında uluslararası gelişmelerin gereği olarak yeni Türk Ticaret Kanunu uyarınca öngörülen bağımsız denetim alanını düzenlemek üzere 660 sayılı Kanun Hükmünde Kararname ile 02.11.2011 tarihinde kurulmuştur(www.kgk.gov.tr).

Kamu gözetimi, bağımsız denetimin mevcut yasal düzenlemelere uygunluğunun ve yürütülen faaliyetlerin standartlara uygun olup olmadığının kamu yararı güden bir kurum tarafından denetlenmesidir. KGK'nın amacı, denetim raporlarının doğru ve güvenilir bir şekilde hazırlanıp yatırımcıların çıkarlarını korumaktır. Bu amaç doğrultusunda; bankalar, sigorta şirketleri ve büyük ölçekli şirketlerin denetimlerini gözetmek için kurulmuştur(www.kgk.gov.tr).

6. 6102 SAYILI YENİ TÜRK TİCARET KANUNU

Küreselleşme ile birlikte sermaye piyasalarında ve teknolojide önemli gelişmeler yaşanmıştır. Bu gelişmelerle birlikte dünya tek bir pazar haline gelmiştir. Küreselleşmenin etkilediği uluslar arası ticaretin gelişimine Türkiye'de de bazı değişiklikler yapılarak uyum sağlanmıştır. 6102 Sayılı Türk Ticaret Kanunu bu kapsamda değiştirilmiştir. Böylelikle muhasebe, finansal tablolar ve denetim konusunda diğer ülkeler ile olan farklılıklar giderilmiştir(Güler, 2012:84-10).

1999 yılında Adalet Bakanlığı tarafından Ticaret Kanunu Komisyonu kurulmuştur. Bu komisyon Yeni Türk Ticaret Kanunu tasarısını hazırlamıştır. Bu tasarı ile Avrupa Birliği uyum mevzuatı ile birlikte, yeni ekonomik düzene uyum sağlanması ve uluslararası ticaretin geliştirilmesi hedeflenmiştir. Komisyon tarafından hazırlanan tasarı ile tüm anonim şirketler murakıplık sistemi yerine 3568 Sayılı Kanun'a göre denetim yetkisi verilmiş SMMM ve YMM unvanlı meslek mensupları tarafından Uluslar arası Denetim Standartlarına göre yapılacak olan bağımsız denetime tabi tutulmuştur(Erçiçek, 2016:76-83).

Yeni Türk Ticaret Kanunu ile şirketler hukukunda birçok yenilik meydana gelmiştir. Bu yeniliklerle beraber şirketlerin kurumsallaşması, sürdürülebilirliği ve şeffaflığı gibi birçok konuda gelişmelerinin önü açılmıştır(Uluşahin, 2012:34).

Bağımsız denetime tabi olacak şirketlerin belirlenmesine dair karar 23.01.2013 tarihinde Resmi Gazete'de yayımlanmıştır. Bu karara göre şirketlerin ve varsa bağlı ortaklıkları ve iştirakleri aşağıda belirtilen üç ölçütten en az ikisini sağlayan şirketler ile ekli (1) sayılı listede yer alan şirketler bağımsız denetime tabiidir. 26.05.2018 tarihli ve 30432 sayılı Resmi Gazetede yayımlanan 2018/11597 sayılı Bağımsız Denetime Tabi Şirketlerin Belirlenmesine Dair Karar ile 01.01.2018'den itibaren bağımsız denetime tabi olacak şirketlere ilişkin ölçütler yeniden belirlenmiştir. 16 Şubat 2019 tarihli 30688 sayılı Resmi Gazetede ise Bağımsız Denetime Tabi Şirketlerin Belirlenmesine Dair Bakanlar Kurulu Kararına İlişkin Usul ve

Esaslarda söz konusu kararın uygulanmasına yönelik usul ve esaslar yer almıştır(www.optimaldenetim.com).

7.DÖNEN VARLIKLARIN DENETİMİ ÜZERİNE UYGULAMA

7.1.Uygulamanın Amacı

Bu uygulamanın amacı, yeni Türk Ticaret Kanunu çerçevesinde bir işletmenin muhasebe kayıtlarının düzgün tutulup tutulmadığı ve dönen varlıklar hesap grubunun denetimi ile ilgili işleyiş hakkında örnek üzerinden bilgi vermektir.

7.2. Uygulamanın Sınırlılıkları

Uygulamada ele alınan işletme ticari hayatta aktif olan bir işletme olmamakla beraber kullanılan veriler değerlendirildiğinde tutarlı bir işletmedir. Çalışmada kullanılan yöntem örnek olay incelemesidir.

7.3. Uygulama Bulgularının Değerlendirilmesi

Örnek alınan işletmenin 6102 Sayılı Yeni Türk Ticaret Kanunu çerçevesinde muhasebe kayırlarının düzgün tutulup tutulmadığı incelenmiş ve dönen varlıklar hesap gurubunun denetiminin işleyişi ele alınmıştır.

Yasal Kayıtlara göre yapılan inceleme sonucunda XYZ A.Ş. ile ilgili bulgular şöyledir. Tablo 2'de işletmeye ait risk değerlendirmesi yer almaktadır.

Tablo 2. Risk Değerlendirme Tablosu

XYZ A.Ş.		
Risk Değerlendirme Tablosu		
A. Müşteri kabul sürecinde ortaya çıkan riskler		
İşletme, Sektör ve İşletmenin Faaliyet Konusunun Anlaşılması Bölümüne Referans	**Riskler**	**Denetim sürecine etkisi**
	Müşteri kabul sürecinde denetimi etkileyecek risk belirlenmemiştir.	
B. Finansal tablolar düzeyinde ortaya çıkan riskler		
İşletme, Sektör ve İşletmenin Faaliyet Konusunun Anlaşılması Bölümüne Referans	**Riskler**	**Denetim sürecine etkisi**
Yönetimin finansal performans göstergeleri bölümünde ele alınmıştır.	İşletmenin aldığı banka kredilerinin ödeneklerinin hazırlanması gerekmektedir.	Geleceğe dönük tüm finansal hareketlerin yerine getirilip getirilmediğini kontrolünün sağlanması
Şirketin 2021 hedefleri içerisinde yer almaktadır.	Üst yönetimin prim alabilmesi için belirlenen hedef operasyonel karın geçen seneye oranla % 10 düzeyinde artmasıdır, ancak ülkenin içinde bulunduğu kriz ele alındığında bu hedefin yakalanması zor görünmektedir.	Hasılatın muhasebeleştirilmesi ve yeterli düzeyde karşılık ayrılması gibi işletme tahminlerinin kullanıldığı bölümlerde detay testlerin sayısı arttırılmalı. Ayrıca muhasebe politikalarındaki olası değişiklikler incelenmeli. Bu riskin önemli hesaplara etkisi beyan düzeyinde riskler bölümünde incelenecektir.

Denetçi risk değerlendirme tablosunu oluştururken işletmenin bütün departmanlarını inceleyerek denetim planlamasını yapar. Denetçi için denetimin planlanması önem arz etmektedir. Çünkü, denetim uzun bir süreçtir ve zaman alır. Bu yüzden denetçi stratejik davranarak denetim planlamasını yapmalıdır.

Tablo 3'te işletmeye ait nakit ve nakit benzerlerinin değerlendirilmesi yer almaktadır.

Tablo 3. Nakit ve Nakit Benzerleri

Yapılması Gerekenler	Çalışma Kağıdı Referansı
1-İç kontrol sistemi aracılığıyla öğrenilen banka anlaşmaları Dönem sonunda işletmenin banka işlemleriyle büyük defterle arasında fark olup olmadığını anlamak için detaylı çalışma yapılacak.	A1.2
2-Doğrulama aracılığıyla öğrenilen banka anlaşmaları Borç alacak bakiyeleriyle birlikte hesapların tam bir listesini ilgili kredileri, kapanan hesapları için banka doğrulaması istenecek. Hesapların durumuyla alakalı bilgilendirme çalışma kağıtlarına yazılacak.	A1.3
3-Nakit değerlemesi Yabancı para ve nakit benzerlerinin doğru şekilde değerlenip değerlemediğini kontrol edilecek.	A1.4
4-Dönemsel nakit hareketleri Şirketin ilk faaliyet gününden itibaren nakit giriş çıkışlarını bankalara arası transferlerle kontrol edilecek.	A1.5

Tablo 4'te işletmenin Kasa hesabı ile başlayan Diğer Hazır Değerler hesabı ile sona eren Hazır Değer hesap grubuna ait 2019-2020 dönemine ait veriler yer almaktadır. Bu veriler denetim açısından ilgili dönemler baz alınarak gerekli karşılaştırmalar yapılmıştır.

Tablo 4. Nakit ve Nakit Benzerleri (Devam)

A.1.2

		31.12.19	31.12.20	Referans	% Değişim
100	Kasa	100.000	60.000	**A1.7**	-40%
101	Alınan Çekler	-	-		
102	Bankalar	2.350.000	520.000	**A1.3**	-78.89%
103	Verilen Çek. ve Öde. Emirleri (-)	-	-		
108	Diğer Hazır Değerler	-	-		
	Yasal Kayıtlar	**2.450.000**	**580.000**		
	Düzeltme ve Sınıflamalar				
		2.450.000	**580.000**		

Yapılan işin özeti:
Nakit ve nakit benzerlerinin detayları 31.12.2019 ile karşılaştırılmalı olarak listelendi ve göze çarpacak tutardaki değişimlerin nedenini incelendi.

Beklenti:
Beklentimiz nakit değerlerdeki düşüşün yıl içinde yükümlülükleri azaltmak için

yapılan ödemelerden kaynaklanmasıdır.

Değişim nedenleri:
CFO ile yapılan görüşmeye göre:
2019 yılı ile karşılaştırıldığında nakit değerler hesabındaki azalışın sebebi; 2020 yılı içinde şirketin geçmiş dönemden gelen kredilerinden bir kısmını geri ödemesidir.

Sonuç:
Yapmış olduğumuz çalışmalar neticesinde beklenti aşamasında kurgulanan durum geçerli olup, azalış temel olarak kredi geri ödemesinden kaynaklanmaktadır.
Finans müdürü ile yaptığımız görüşmeler ve yaptığımız incelemeler sonucunda işletmenin sabit kıymetler üzerindeki ipotek haricinde varlıkları üzerinde başka bir ipotek, temlik veya kısıtlama olmadığı bilgisi alınmıştır.

Tablo 5'te işletmenin çalışmış olduğu bankalara ait bakiyeler yer almaktadır.
Tablo 5. Banka Hesap Bakiyeleri

A1.3

XYZ A.Ş. **BANKA BAKİYELERİ** **31.12.2020** **102 Hesap Detayı**				
Açıklama	**31.12.2019**	**2020 Borç**	**2020 Alacak**	**31.12.2020**
Yapı ve Kredi Bankası	1.000.000	7.000.000	7.950.000	50.000
İNG Bank	1.170.000	11.000.000	11.800.000	370.000
Garanti Bankası	125.000	300.000	420.000	5.000
Ziraat Bankası	345.000	200.000	540.000	5.000
İş Bankası	100.000	300.000	310.000	120.000
	2.740.000			550.000

Tablo 6'da bankalara ait mutabakat listesi yer almaktadır.

Tablo 6. Banka Mutabakat Listesi

XYZ A.Ş. **BANKALAR MUTABAKAT LİSTESİ** **31.12.2020**			
Açıklama	**31.12.2020**		**Mutabakat Cevabı**
Yapı ve Kredi Bankası	50.000		50.000
ING Bank	370.000		370.000
Ziraat Bankası	5.000		5.000
İş Bankası	120.000		120.000
		TOPLAM TEST EDİLEN	**545.000**
		Mizan - Bankalar Toplamı	**550.000**
		Toplam test oranı	**99%**

Yapılan İşin Özeti: Planlanan önemlilik seviyesinin üstündeki dair bankalardan teyit mektubu istenmiştir. Bankalardan alınan yanıtlara göre kaydi durumla fiili durum arasında fark görülmemiştir.

Not: Belirlenen önemlilik tutarı 97.000 TL'dir.

Tablo 7'de Kasa hesabının detayı gösterilmektedir.

Tablo 7. Kasa Hesabı

A1.4

XYZ A.Ş.
KASA HESABI
31.12.2020
100 Kasa Hesap

Hesap no	Açıklama	Referans	31.12.2019	31.12.2020
100.01.001	TR KASASI	**A1.4**	35.000	18.000
100.10.001	USD KASASI		15.000	12.000
			50.000	30.000

Yapılan İş: Hesap bakiyeleri 31.12.2020 itibari ile gerçekleştirilen kasa sayım tutanakları ile eşleştirilmiştir. Herhangi bir farka rastlanılmamıştır.

Tablo 8'de Kasa hesabına ait sayım tutanağı yer almaktadır.

Tablo 8. Kasa Sayım Tutanağı

Tarih: 31 Aralık 2020

XYZ A.Ş.

KASA SAYIM TUTANAĞI

31 Aralık 2020 tarihinde saat 18.30 itibariyle XYZ A.Ş. Merkez ofisinde şirket yetkilileri tarafından sayılan ve yetkili bağımsız denetçi tarafından gözlemlenen kasa sayım sonucu aşağıda listelenmiştir. Tutarlar aşağıdaki gibidir.
2000 USD x 6 = 12.000 TL **A1.4**

18.000 TL **A1.4**

Tanrıkulu A.Ş.

Adına,

Kaşe, İmza

Bağımsız Denetim ve SMMM A.Ş.

Adına,

İmza

Tablo 9'da Menkul Kıymetlere ait mevcut varlıkların kontrolü ve değerlendirilmesi yer almaktadır.

Tablo 9. Menkul Kıymetler

	MENKUL KIYMETLER **31.12.2020**	**Çalışma Kağıdı Referansı**
	Yapılması gerekenler	
1	Mevcut Varlıkların Kontrolü	
	Kayıtlı işletme varlıklarının gerçekliğini banka mutabakatları yapılarak kontrolünün sağlanması gerekli	**A2.1**
2	Banka mutabakatlarının detaylı kontrolü	
	Banka mutabakatlarını incelerken varsa menkul kıymet varlığını ve üzerinde herhangi bir ipotek rehin durumu olup olmadığına ispatlayacak şekilde incelenecek	**A2.2**
3	Piyasa değerlendirmesi	
	Menkul kıymetlerin piyasa değerlerinin yabancı para cinsinden olanlar da dahil olmak üzere güncel değerleri araştırılacak	**A2.2**
4	Muhasebe politikaları doğrultusunda değerleme	
	İşletmenin menkul kıymetleri değerlerken muhasebe politikalarına dikkate alıp almadığı kontrol edilecek	**A2.2**

Tablo 10'da Menkul Kıymetler hesap grubunda yer alan her bir hesabın ayrıntılı incelemesi yer almaktadır.

Tablo 10. Menkul Kıymetler

		31.12.2019	31.12.2020	Referans	Değişim
110	Hisse Senetleri	900.000	645.000	A2.2	-34%
111	ÖKTSB	-	-	-	-
112	KKTSB	-	-	-	-
118	Diğer Menkul Kıymet	50.000	-	-	-100%
119	Menkul Kıy. Değ. Düş. Kar.	-	-	-	-
		950.000	645.000		
	Kontrol	**950.000**	**650.000**		

Yapılan İş: Yüksek değişimlerin nedeni bir önceki dönemle kıyaslanarak incelenmiştir. Banka mutabakatları ve CFO ile tapılan görüşmeler sonucunda menkul kıymetler üzerinde herhangi bir ipotek yada teminat olmadığı anlaşılmıştır.

Değişimin Nedenleri: Hesap grubundan sorumlu finansal analist ile yapılan görüşme sonucunda bulgular şunlardır;

Azalışın finansal krizden kaynaklandığı düşünülmektedir. 2020 yılı 2019 ile kıyaslandığında yaşanan 34%'lük düşüş görülmektedir. CFO ile yapılan görüşmede düşüşün sebebinin hisse senetlerinin değerindeki azalmadan ve finansal krizden dolayı yapılan satışlardan kaynaklandığı belirlenmiştir.

Tablo 11'de hisse senetlerinin birim fiyatları ve piyasa değerlerine ait veriler görülmektedir.

Tablo 11. Menkul Kıymetler

A2.2

Hisse Senedi	Adet	Birim Fiyat	Toplam	Piyasa Değeri	Toplam
A Hissesi	600	500	300.000	508,33	305.000
B Hissesi	600	575	345.000	575	345.000
Toplam			**645.000**		**650.000**

Yapılan İş: İşletmenin 110 Hisse Senetleri hesabında 31.12.2020 tarihi itibariyle 2 adet farklı tutarda hisse senedi bulunmaktadır. Hisse senetlerinin detayları banka mutabakatına eklenmiş ve şirketin hisse senetlerini maliyet bedeli üzerinden izlediği görülmüştür. Ancak TMS 39 kapsamında alım satım amaçlı elde tutulan hisse senetleri gerçeğe uygun değeriyle kaydedilmelidir. Dolayısıyla BİST 31.12.2020 fiyatları kullanılarak düzeltme kaydı yapılmalıdır

……31.12.2020…….
Kısa Vadeli Finansal Yatırımlar 5.000
Finansal Gelirler 5.000
…….

Tablo 12'de Ticari Alacaklar ile ilgili detaylı bilgilere yer verilmiştir.

Tablo 12. Ticari Alacaklar

XYZ A.Ş.
TİCARİ ALACAKLAR 31.12.2020

Yapılması gerekenler	**Çalışma Kağıdı Referansı**
1 Hesap Kırılımı:	
a Ticari alacak hesaplarının müşteri ve orijinal para biriminde borç ve alacak bakiyeleriyle birlikte bir önceki seneyle karşılaştırarak listedeki toplam ticari alacak bakiyesinin mizan bakiyesiyle aynı olup olmadığı kontrol edilecek.	**A3.2**
b Müşteriden ilişkili şirketlere ilişkin bilgileri temin edip, ticari alacak bakiyeleri arasında ilişkili şirketlere ait bakiyeler olup olmadığını kontrol edilecek. Böyle bakiyelerin olması durumunda ilişkili şirketlerden ticari alacaklar hesabına sınıflandırılacak.	**A3.3**
c Önceki yıldan bu yıla hareket görmeyen müşteri bakiyeleri muhasebe müdürüyle görüşülecek. Bunun dışında, müşteri bakiyeleri arasında eksi bakiye var ise nedenini araştırıp gerçekte durması gereken ilgili hesaba sınıflandırılacak	
2. Ticari Alacak Mutabakatları (Denetçinin 3. kişi olarak direkt ilgili müşterilerden aldıkları) :	
a Denetim prosedürlerine uygun bir yöntemle müşterilere gönderilecek mutabakat örneklerini belirleyin. Çalışma kağıtlarına mutabakat için seçilen alacak hesaplarının gerekçesini dökümante edin. Müşterinin gönderilecek olan mutabakatlarını antetli kağıdına imzalı ve kaşeli olarak hazırlayıp yolladığından emin olunarak müşteriye, mutabakat cevaplarının kendilerine değil de denetim firmamıza gelmesi gerektiği belirtilecek	**A3.4**
b Gelen mutabakat cevaplarını dökümante edip ilgili mizan bakiyesiyle karşılaştırılacak Fark çıkması durumunda mutabakat sağlayarak gerekli kanıtların dosyaya eklenmesi gerekecek.	

Tablo 13. Ticari Alacaklar (Devam)

A3.2

Hesabın Adı ve Kodu	**31.12.2019**	**31.12.2020**	**Referans**	**%Değişim**
120 Alıcılar	740.000	1.190.000	A3.3	60,81%
121 A. Senetleri	-	-	-	-
122 A. Sen. Reeskontu	-	-	-	-
127 Diğer Tic Alacaklar	-	-	-	-
Toplam	740.000	1.190.000		

Yapılan İş: Ticari alacakları geçen dönem sonu ile karşılaştırılmış olup, değişimlerin nedeni incelenmiştir.

CFO ile yapılan görüşmeler sonucunda hesaptaki artışa ilişkin saptama şu şekildedir; işletmenin tahsil edemediği alacakları artmış ve satışlarda da artış meydana gelmiştir.

Tablo 14'te Alıcılar hesabı iki yıl baz alınarak karşılaştırılması yer almaktadır.

Tablo14. Ticari Alacaklar

A.3.3

Hesap No	**31.12.2019**	**31.12.2020**
120.01	100.000	120.000
120.02	40.000	40.000
120.03	250.000	340.000
120.04	200.000	400.000
120.05	150.000	150.000
120.06	-	140.000
Toplam	**740.000**	**1.190.000**

Yapılan İş: 120 Alıcılar hesabı alt hesaplar iki yıl olarak karşılaştırmalı olarak incelenmiştir. Müşteriler tarafından gönderilen mutabakat mektupları ile eşleştirilmiştir. Gerekli düzeltme kayıtları yapılmıştır. CFO ile görüşülerek 120.02 hesabı ile 120.05 hesaplarında ki hareketsizlik ile ilgili işlem yapılarak karşılık ayrılması istenmiştir.

Tablo 15'te müşteriler ait mutabakat listeleri yer almaktadır.

Tablo 15. Mutabakat Listesi

A.3.4

XYZ AŞ. Mutabakat Listesi				
Hesap No	**Referans**	**Bakiye**	**Mutabakat**	**Fark**
120.02	A3.3	40.000	40.000	0
120.05	A3.3	150.000	150.000	0

Yapılan İşin Özeti: İşletmelerden mutabakat listeleri alınmıştır. 120.02 ve 120.05 nolu hesaplara ilişkin borçluların iflas sebebi ile ödeyemeyeceğini bildirmesi üzerine karşılık kaydı yapılmasına devamında gerekli yasal işlemlerin yapılmasına karar verilmiştir.

Tablo 16'da Stoklara ait prosdürler yer almaktadır.

Tablo 16. Stoklar

	XYZ A.Ş. **STOKLAR** **31.12.2020**	
Öncelikli esas denetim prosedürleri		
1	Stok hesaplarına ait büyük defter ekstresi alınmalı ve aşağıdaki prosedürler uygulanmalıdır:	**A5.2**
	a Hesapların matematiksel doğruluğunun testi b Hesapların büyük defter ve önceki dönem çalışma kağıtlarına bağlanması c Herhangi bir eksiklik olmasi ihtimali göz önüne alınarak özetin gözden geçirilmesi	
2	Planlanan güven seviyesine ulaşmak için stok hesaplarına analitik prosedürler uygulanmalıdır.	**A5.2**
3	Detay stok listesi alınıp aşağıdaki prosedürler uygulanmalıdır:	**A5.2**
	a Detay liste toplamının büyük defter hesaplarına bağlanması b Eğer toplamın büyük defter hesaplarına bağlanması sırasında kullanılan ara hesaplar bulunmakta ise bunları destekleyen dökümanların alınması	
4	Stokların finansal tablolar için önemlilik kavramına bağlı olarak önem arz ettiği durumlarda, bağımsız denetçi stokların mevcudiyeti ve durumuna dair yeterli ve uygun bağımsız denetim kanıtını, yapılabilir olması koşuluyla, stokların fiziki sayımına katılarak elde etmek zorundadır. Bu kapsamda denetçi sayım sırasında aşağıdaki hususları dikkate almalıdır:	**A5.2**
	a Sayım sırasında, bağımsız denetçi stokların tamlığını ve doğruluğunu, seçilen kalemler için kayıtlardan fiziki stoklara ve fiziki stoklardan da kayıtlara giderek test etmelidir. b Bağımsız denetçi, kontrol yöntemlerinin uygulanması, örneğin kullanılmış stok kartlarının toplanması, kullanılmamış stok kartlarının muhasebeleştirilmesi, sayım ve tekrar sayım yöntemleri gibi hususlardaki uygulamayı gözden geçirmelidir. c Bağımsız denetçi, ileri bir tarihte stokların muhasebe kayıtlarını kontrol edilebilmek amacıyla, stok sayımı öncesinde, sırasında ve sonrasındaki hareketler ile ilgili detayları içeren dokümanları almalıdır. d Denetçi, stok yerleri arasındaki stok hareketlerinin ve dönem sonu öncesi ve sonrasında oluşacak stok giriş ve çıkışlarına ilişkin, uygun düzenlemelerin yapılıp yapılmadığı tespit etmelidir.	
5	Stoklara ilişkin düzeltme kayıtları sebepleri de dikkate alınarak incelenmelidir ve doğruluk beyanına ilişin olarak planlanan güven seviyesine ulaşıldığından emin olunmalıdır.	**A5.2**
6	Fiziki stok sayımında elde edilen veriler detay stok listelerine bağlanmalı, varsa farklar tespit edilmelidir.	**A5.2**
7	Detay stok listesindeki maliyetler aşağıdaki hususlar gözönüne alınarak ve detay test prosedürleri uygulanması suretiyle kontrol edilmelidir:	**A5.2**
	a Maliyetlendirmede seçilen yöntemin belirlenmesi ve hesaplamaların doğru yapılıp yapılmadığının test edilmesi b Tedarikçilerden alınan faturalardaki birim maliyetlerin listeye bağlanması gibi yöntemlerle stokların maliyetlerinin doğruluğunun tespiti c Maliyetlendirmede kullanılan yöntemin önceki dönemlerle tutarlı olduğunun tespit edilmesi	
8	Modası geçmiş, hurdaya çıkmış, hasarlı ya da yavaş hareket gören stok olup olmadığı test edilmelidir.	**A5.2**
9	Stokların elde edilebilir satış değeri üzerinden tutulduklarına ilişkin denetim prosedürleri uygulanmalıdır.	**A5.2**
10	Dönem sonu öncesi ve sonrasında oluşan stok hareketleri dönemsellik ilkesi göz önüne alınarak test edilmelidir.	**A5.2**

Tablo 17'de Stoklar hesabının önceki dönemle karşılaştırması yer almaktadır.

Tablo 17. Stoklar (Devam)

A5.2

	31.12.2019	31.12.2020	%Değişim
153 Ticari Mallar	650.000	680.000	4%
157 Diğer Stoklar	-	-	
158 Stok Değer Düşüklüğü Kar.	-	-	
159 Verilen Sipariş Avansları	-	2.500	
Toplam	**650.000**	**682.500**	

Yapılan İş: Stoklar hesabı önceki dönemle karşılaştırılarak detaylı olarak incelenmiştir. Değişimlerin nedeni tespit edilmiştir. Sorumlu finansal analist artışın sebebini artan siparişlerden kaynaklı artan hammadde alımından kaynaklandığını belirtmiştir. Bunun ile ilgili olarak gerekli hesaplar incelenmiştir.

Güven seviyesine ulaşmak için stok devir hızı hesaplaması yapılmıştır. Toplam stokların %5'i üzerindeki artışlar önemli değişiklik olarak kabul edilecektir.

Tablo 18. Stok Devir Hızı

	31.12.2019	31.12.2020
Hesap No	**Bakiye**	**Bakiye**
153 Ticari Mallar	650.000	680.000
157 Diğer Stoklar	-	-
158 Stok Değ Düş Kar(-)	-	-
159 Verilen Sipariş Avansları	-	2500
621 STMM(-)	10.000	20.000

$$\text{Stok Devir Hızı} = \frac{\text{satılan mal maliyeti}}{(\text{dönem başı stok}+\text{dönem sonu stok})/2}$$

Yapılan hesaplama sonucunda stok devir hızı %3 olarak bulunmuştur. Belirlenen önemlilik seviyesinin altındadır. 31.12.2020 tarihi itibariyle fiziki depo sayımı şirket deposunda gerçekleştirilmiştir. Sayım ise şu şekildedir:

Stok Kodu	Listedeki Birim Maliyet	Stok Kartında Birim Maliyet	Fark
A10	21,20	21,20	0
A11	11,30	10,15	1,15

Tablo 19'da stok maliyetlerinin karşılaştırılması yer almaktadır.

Tablo 19. Stok Maliyet Karşılaştırması

Stok Kodu	Toplam Maliyet	Toplam Miktar	Birim Maliyet
A10	50.000	2.500	21,20
A11	71.050	7.000	10,15

İşletme ortalama maliyet yöntemini benimsemiştir. Ortalama maliyet hesaplamasının doğru yapılıp yapılmadığının test edilmek amacıyla detay liste hazırlanıp stokların ortalama maliyeti ile stok kartı birim maliyeti karşılaştırılmıştır.

SONUÇ

Gelişen ve büyüyen ekonomi ile birlikte işletme faaliyetleri de çeşitlenmeye başlamıştır. Artan rekabet ve teknolojik gelişmelerde uluslararası ticareti hızla geliştirmiştir. Bu ortam da doğru ve güvenilir bilgiye olan ihtiyacı artırmıştır. Doğru ve güvenilir bilgiye ulaşmanın en kısa yolu ise etkin bir denetim sistemidir. Bu çerçevede hem ulusal hem uluslararası denetim sistemleri gelişmeye devam etmektedir. Ülkemizde de 6102 sayılı Türk Ticaret Kanunu bu amaçla güncellenmiş ve yürürlüğe girmiştir.

Toplumda yer alan yatırımcılarda bilinçlenmiş olup, güvenilir bilgi temin etmek istemektedirler. Yatırım yapacakları işletmeleri iyi tanımak ve tasarruflarını belirli bir süre ile bağlayacakları işletmeleri yakından analiz etmektedirler. Bu açıdan bakıldığı zaman müteşebbis sahipleri de gerek muhasebe kayıtlarını tutarken gerekse de finansal tablolarını hazırlarken mevzuata uygun bir şekilde oluşturmaları ve böylece daha fazla talep toplayabilmektedirler. Bu açıdan bakıldığı zaman denetimin önemi bir kez daha ortaya çıkmaktadır. Günümüze kadar yaşanmış olan hile ve hataların işletmelerin iflaslarına sebep olması denetim alanına büyük sorumluluk yüklemiştir.

Çalışmada bir işletmenin dönen varlıklarının denetimin nasıl yapıldığı verilerle ortaya konmuştur. Ayrıca denetim faaliyetlerinin bir bölümüne yer verilerek 6102 Sayılı Yeni TTK uyarınca değerlendirmeler yapılmış olup, bu kanun çerçevesinde denetimin ne derece önemli olduğu noktalarına vurgular yapılmıştır.

Muhasebe ve denetimden beklenen faydanın elde edilebilmesi için muhasebe melek mensuplarına da büyük görevler düşmektedir. Bu açıdan bakıldığı zaman bu çalışma gerek muhasebe alanına gerekse de meslek mensuplarına katkı sağlayacağı düşünülmüştür.

KAYNAKÇA

Başpınar, Ahmet. (2005). Türkiye'de ve Dünyada Denetim Standartlarının Oluşumuna Genel Bir Bakış, Maliye Dergisi, (148).

Bozkurt, Nejat. (2015). Muhasebe Denetimi, Alfa Basım Yayım Dağıtım, İstanbul.

Bezirci, Muhammet ve Karasioğlu, Fehmi. (2011). Türkiye'de Denetimin Tarihsel Gelişimi, SÜ İİBF Sosyal ve Ekonomik Araştırmalar Dergisi

Çelik, Aytekin. (2005). Bağımsız Denetim Kuruluşlarının Sorumluluğu, Ankara: Seçkin Yayınları.

Ferman, Cumhur. (1974). ABD'de Serbest Hesap Mütehassıslığı, Türkiye'de Muhasebe Uzmanlığı, Muhasebe Uzmanları Derneği Yayın No:3, İstanbul.

Güredin, Ersin, Denetim ve Güvence Hizmetleri, 11. Basım, Arıkan Matbaası, İstanbul, Ocak-2007.

Kardeş Selimoğlu, Seval ve Göktepe, Hülya. (2007). Türk Ticaret Kanunu Tasarısındaki Bağımsız Denetimle İlgili Yeni Düzenlemeler. Mali Çözüm (81).

Kavut, Lerzan ve Adiloğlu, Burcu. (2016). Türkiye'de Bağımsız Denetimin Gelişimi: Dünden Bugüne

Kutukız, Doğan ve Öncü, M. Akif. (2009). Bağımsız Denetimin Anonim Ortaklıklarda Kurumsal Yönetimin Gelişmesine Etkisi, Muhasebe ve Finansman Dergisi, (41).

Selimoğlu Kardeş, Seval, Mehmet Özbirecikli, Şaban Uzay, Ganite Kurt, Ali Alagöz, Serap Yanık (2014). Muhasebe Denetimi, Gazi Kitabevi, Ankara.

Serbest Muhasebeci, Serbest Muhasebeci Mali Müşavir ve Yeminli Mali Müşavirlerin Çalışma Usul Ve Esasları Hakkında Yönetmelik, T.C. Resmi Gazete, 20391, 3 Ocak 1990.

Türker, Masum. (2006). Uluslararası Denetim Standartlarına Yakınsama ve Türkiye Denetim Standartlarının Oluşturulması. Muhasebe ve Denetime Bakış, (19).

Türker, Masum, (2006), "Türkiye'de Muhasebe Denetim Faaliyetlerinin Gelişimi", Dayanışma Dergisi, İzmir Serbest Muhasebeci Mali Müşavirler Odası Dergisi, Sayı:89, Şubat 2006, ss.5-7.

Uzay, Şaban ve Seval Kardeş Selimoğlu, (2007), Türkiye'de Muhasebe Denetimi Alanında Yayınlanan Araştırmalar (1995-2005) ve Seçme Yazılar, İstanbul Serbest Muhasebeci Mali Müşavirler Odası, Yayın No:82, İstanbul.

https://www.optimaldenetim.com/2020-yilinda-bagimsiz-denetime-tabi-olacak-sirketler/

https://www.pwc.com.tr/ttkya-gore-bagimsiz-denetime-tabi-sirketler

www.kgk.gov.tr

www.tmsk.org.tr

https://www.resmigazete.gov.tr/eskiler/2004/03/20040316.htm#11

https://turmob.org.tr/Kurumsal/TURMOB-Hakkinda

https://www.resmigazete.gov.tr/eskiler/2007/06/20070614-2.htm

https://www.mevzuat.gov.tr/MevzuatMetin/19.5.47.pdf

https://www.mevzuat.gov.tr/MevzuatMetin/1.5.3568.pdf

http://www.resmigazete.gov.tr/eskiler/2002/01/20020131M1.htm

http://www.tmud.org.tr/dokumanlar/MuhasebeTarihce.doc

BDDK, Çevrimiçi: (http://www.bddk.gov.tr)

Enerji Piyasası Düzenleme Kurulu (EPDK), Çevrimiçi: http://www.epdk.gov.tr

(EPDK), Çevrimiçi: http://www.resmigazete.gov.tr/eskiler/2015/03/20150325- 3.htm

Gemilerde Yangın Önleme ve Mücadeleye Yönelik Yönetim ve Organizasyon Yapısının İncelenmesi

Ümit GÜLLÜOĞLU
Asst. Prof. Murat YORULMAZ
Kocaeli Üniversity, Kocaeli, Turkey

Özet
Dünya mal ticaretinde taşımacılığın çok büyük bir kısmının düşük maliyetli ve güvenli olması sebebiyle denizyolu ile gerçekleştiriliyor olması, uluslararası alanda en yaygın kullanılan bu taşıma türünün önemini göstermektedir. Ancak yaşadığımız dünyada meydana gelen mali, teknik, siyasi değişim ve gelişimleri içeren küresel dalgalanmalar her sektörü olduğu gibi deniz taşımacılığını da etkisi altına almıştır. Buna paralel olarak sektörün kalbi olan gemilerin, denizde geçirdikleri süreleri artmış, gemi adamı sayılarında azalmalar olmuş, gemi tipine göre icra ettikleri görev ve faaliyetleri sıkılaşmış, gemilerin yönetimi ve organizasyon yapının idamesi de zorlaşmıştır. Dolayısı ile gemi mürettebat sayısının minimumda tutulması, ekipte bulunan personelin birden fazla görev ile görevlendirilebileceği anlamı taşımaktadır. Bu durumun ise gemi yangın emniyetini sekteye uğratabileceği, yangınla mücadeleyi zayıflatabileceği gerçeğine işaret etmektedir. Bu da gemiyle taşınan malın ve personelin emniyetsiz bir şekilde seyir yapacağı anlamına gelmektedir. Bunlar nedeniyle gemilerde personel sayısının azaltılması, gemi yönetim ve organizasyonunda önemli aksaklıklara yol açmaktadır. Bu kapsamda çalışmanın amacı, denizcilikte emniyetli yönetim sisteminin gereği olarak, ticaret gemilerinin yangınla mücadele organizasyon yapısının etkinliğini, yönetici düzeyindeki gemi adamlarının bakış açısına göre incelemektir. Araştırmada ticari gemilerde yangınla mücadeleye yönelik teşkil edilen organizasyon yapısını inceleyerek, gemi yönetimine, yeterliliğine ve etkinliğine nasıl katkıda bulunulur sorusuna cevap aranmaktadır. Nitel araştırma yönteminde olgu bilim modelinin kullanıldığı bu araştırmada, veriler görüşme tekniğinde "yapılandırılmış sorulardan oluşan mülakat formu'' vasıtası ile halen ticari gemilerde çalışmakta olan 12 yönetici düzeyindeki gemi adamından toplanmış ve içerik analizi tekniği kullanılarak da analiz edilmiştir. Analizler sonucunda, azaltılan personel sayısının gemilerin yangınla mücadelesine olumsuz etkileri olduğu, mevcut personel ile yangın organizasyonunda belirsizlik oluştuğu ve bu durumun gemi yönetimi açısından risk meydana getirdiği tespit edilmiştir. Tartışma ve sonuç kısmında da yangına karşı gemide mücadele eden personelin daha organize ve daha etkin olmasını sağlamak için önerilerde bulunulmuştur.
Anahtar Kelimeler: Emniyetli Yönetim Sistemi, Denizde Emniyet, Yangın Organizasyonu, Gemi Yönetimi.

EXAMINATION OF FIRE PREVENTION AND COMBAT MANAGEMENT AND ORGANIZATION IN SHIPS

Abstract
In the world goods trade is a very large and safely by sea, the international area is the most common of this type of transport. However, the economic, technological, political and global fluctuations that occurred in our world have also affected the marine transportation sector. In parallel, the time spent at sea by commercial ships, which is the heart of the sector, increased, the number of ship personnel decreased, their duties and activities carried out according to the

type of ship intensified, and the management of the ships became difficult. Therefore, keeping the number of ship crew members to a minimum means that the personnel on the team can be tasked with more than one task. This situation indicates the fact that the ship can disrupt fire safety and weaken the fight against fire. This means that the goods and personnel transported by ship will travel without safety. Due to these, reducing the number of personnel on ships causes significant disruptions in ship management and organization. In this context, the aim of the study is to examine the effectiveness of the firefighting organization structure of trade vessels from the point of view of the shipman at the executive level, as a requirement of the safe management system in maritime affairs. In the research, we examine the organizational structure for fire-fighting in commercial vessels and look for answers to the question of how to contribute to ship management, adequacy and effectiveness. In this research, which used the fact science model in qualitative research method, the data were collected from 12 executive-level ship men currently working on commercial ships through a structured question interview form in the interview technique and analyzed using content analysis technique. As a result of the analysis, it was determined that the reduced number of personnel had negative effects on the fight against fire of the ships, uncertainty occurred in the fire organization with the existing personnel and this situation carried out risks for ship management. In the discussion and conclusion section, suggestions were made to ensure that the personnel fighting against the fire on board were more organized and more effective.

Keywords: Safe Management System, Safety at Sea, Fire Organization, Ship Management

Introduction

In the world goods trade is a very large and safely by sea, the international area is the most common of this type of transport. However, the economic, technological, political and global fluctuations that occurred in our world have also affected the marine transportation sector. In parallel, the time spent at sea by commercial ships, which is the heart of the sector, increased, the number of ship personnel decreased, their duties and activities carried out according to the type of ship intensified, and the management of the ships became difficult. Therefore, keeping the number of ship crew members to a minimum means that the personnel on the team can be tasked with more than one task. This situation indicates the fact that the ship can disrupt fire safety and weaken the fight against fire. This means that the goods and personnel transported by ship will travel without safety. Due to these, reducing the number of personnel on ships causes significant disruptions in ship management and organization. In this context, the aim of the study is to examine the effectiveness of the firefighting organization structure of trade vessels from the point of view of the shipman at the executive level, as a requirement of the safe management system in maritime affairs. In the research, we examine the organizational structure for fire-fighting in commercial vessels and look for answers to the question of how to contribute to ship management, adequacy and effectiveness. In this research, which used the fact science model in qualitative research method, the data were collected from 12 executive-level ship men currently working on commercial ships through a structured question interview form in the interview technique and analyzed using content analysis technique. As a result of the analysis, it was determined that the reduced number of personnel had negative effects on the fight against fire of the ships, uncertainty occurred in the fire organization with the existing personnel and this situation carried out risks for ship management. In the discussion and conclusion section, suggestions were made to ensure that the personnel fighting against the fire on board were more organized and more effective.

Keywords: Safe Management System, Safety at Sea, Fire Organization, Ship Management.

GİRİŞ

Dünya ticaretinde nakliyenin çok büyük bir kısmının en düşük maliyetli ve güvenli olması sebebiyle denizyolu ile gerçekleştiriliyor olması, uluslararası alanda en yaygın kullanılan bu taşıma türünün önemini göstermektedir. Ancak yaşadığımız dünyada meydana gelen mali, teknik, siyasi değişim ve gelişimleri içeren küresel dalgalanmalar her sektörü olduğu gibi deniz taşımacılığını da etkisi altına almıştır. Buna paralel olarak sektörün kalbi olan gemilerin, denizde geçirdikleri süreleri artmış, gemi adamı sayılarında azalmalar olmuş, gemi tipine göre icra ettikleri görev ve faaliyetleri sıkılaşmış, gemilerin yönetimi ve organizasyon yapısının idamesi de zorlaşmıştır. (Özcan ve Baştuğ, 2020). Bu kadar öneme haiz olan deniz yolu ile taşımacılık sektörünün ana unsuru olan gemilerde, mürettebat sayılarının azalmış olması emniyetli seyr-ü sefer yapılıyor olup olmadığını, araştırılması gereken önemli bir konu haline getirmektedir.

Gemilerin seyr-ü sefer emniyetini tehdit eden ve en çok korkulan olgu yangındır. Çünkü yangının doğasından kaynaklanan yayılma özelliği vardır. Bu özelliğini bastırabilmek için geminin inşa aşamasında dizaynında uygulanması gereken minimum emniyet standartları *Uluslararası Denizcilik Örgütü (IMO)* tarafından *Denizde Can Güvenliği Uluslararası Sözleşmesi (SOLAS 74)* ve mürettebatın yangınla ilgili minimum yetkinliği *Uluslararası Gemi Adamlarının Eğitim, Belgelendirme ve Vardiya Tutma Standartları Sözleşmesi (STCW 78)'* nde belirtilmiştir. Ancak hem SOLAS 74 hem de STCW 78 Sözleşmelerinde yangın rolesinin ve talimlerinin genel hatlarını belirleyen direktifler ve ana prensipleri ile gösterilmiş; bu role ve talimlerin etkinliğini belirlemek için nasıl uygulanacağını, yangınla mücadele ekibinin genel görev dağılımının nasıl olacağını şirket/gemi idaresine ya da yetkililere bırakmıştır (MEB, 2016).

Yapılan literatür taramasında ticari gemilerin yangınla mücadele organizasyonun yapısal uygunluğuna dair bir çalışmaya rastlanılmamıştır. Bu nedenle literetürde ilk olması ve çalışmanın sonunda oluşturulmak istenen farkındalıkla maddi ve manevi kayıpların azalması hedeflenmiş olup ticari gemilerin yangınla mücadele organizasyonun yapısal durumunun yetkinliği ve etkinliği ile ilgili literaturdeki bu boşluğa katkı sağlanması umulmaktadır.

LİTERATÜR İNCELEMESİ

Yanma; İtfaiye teşkilatlarının eğitim kurumlarında öğretilen tanımına göre yanma; doğada serbest halde bulunan yanıcı maddenin, dışarıdan alevlenme sıcaklığına kadar ısınarak, havanın içindeki oksijen ile etkileşerek ısı enerjisi açığa çıkardığı zincirleme kimyasal reaksiyona denir (Erdoğan, 2014). Bu tepkimenin gerçekleşmesi için bir araya gelen yanıcı madde, oksijen ve ısı yangın üçgenini oluşturur. Yanma oluşumunun bilinen dört çeşidi vardır. *Yavaş yanma:* Doğada yanma olarak isimlendirdiğimiz kimyasal reaksiyon aslında bir maddenin oksidasyonudur (Ataman, 2008). Yeterli oksijenin olmadığı ortamda yanıcı maddenin ısı ile birleşmesi sonucu gaz ve buhar meydana getirmeden yanmasıdır. Örneğin; Demir(Fe) ve bakırın(Cu) oksitlenmesi. *Hızlı yanma:* Işıklı alev, sıcaklık ve korlaşmanın kendini gösteren yanmadır. Örneğin; Odun, kömür, kağıt, mum, akaryakıt maddelerin yanması. *Parlama ve patlama;* Parlama yanıcı maddenin hızlı oksidasyona uğraması ile oluşur. Maddelerin türüne, hacmine veya ebadına göre farklılık gösteren patlama olayı ise; yanmaya başlamış maddelerin hacminin genişlemesi sureti ile bulundukları ortamı zorlayarak ve yüksek basınçla dışarı çıkmasıdır (Erdoğan, 2014). Örneğin; doğal gaz vb. gaz halindeki yanıcıların yanması. *Kendi kendine yanma;* Maddenin tutuşma sıcaklığına kadar ısısının artmasıyla meydana gelen

yanmadır. Bu yanma türü zaman ilerledikçe hızlı yanmaya dönüşür. Katı, sıvı ve gaz halde bulunan ısıtıldığında oksijenle birleşerek yanabilen maddelere yanıcı madde denir. Doğada katı halde bulunan maddeler katı yanıcı maddelerdir. Odun, kömür, kağıt en çok bilinenleridir. Gemilerde ise katı yanıcılar; yaşam yerlerindeki mobilyalar, yataklar, yastıklar, yorganlar battaniyeler, kırtasiye malzemeleri, karton kutular, ambalajlar veya direk yükün kendi olarakda karşımıza çıkabilir. Sıvı ve akışkan halde bulunan maddeler sıvı yanıcı maddelerdir. Bu yanıcılar gemilerde; fuel oil, benzin, motorin, boya, tiner, solvetler, yağlama yağı vb. olarak veya yükün kendisi olarak bulunabilir. Doğal ve aynı zamanda sınai ürünü olarakta gemilerde; bütan, propan, oksijen ve oksi asetilen cihazlarının tüplerinde bulunan gazlar, gaz halindeki yanıcı maddelerdir.

Doğada var olan havada %21 oranında oksijen (O_2) bulunur. Bu da yanmanın gerçekleşmesi için yeterlidir. Gemilerde kullanılan merkezi havalandırmalar (fanlar), lumbuzlar, tüm kaportalar oksijen sağlayan ve mahalerin hava sirkülasyonunu gerçekleştiren açılıklardır. Isı, yanmanın oluşması için gerekli olan katalizördür. Yanan maddenin moleküllerinin yüksek hızdaki hareketlerinden meydana gelen bir enerji türüdür. Tüm maddeler moleküllerden oluştuğundan ve daima bir hareket içinde olmasından her maddenin kendisine ait belirli bir ısısı vardır. Dışarıdan bir kaynak vasıtası ile ısıtılan maddenin moleküllerinin hızı artacaktır. Böylelikle maddenin ısında da artış olur. Doğal bir sonuç olarak molekül hızının artması ile madde ısı üretecektir. Bu durum sonucunda maddenin molekülleri oksijen ile birleşecek ve yanma olayını meydana getirecektir (Şahin, 2017). Aralarında sıcaklık farkı olan iki madde arasında ısı transferi gerçekleşir. Bu transfere ısının yayılması denir. İletim ile ısı yayılması (Conduction), taşınım ile ısının yayılması (Convection) ve ışınım ile ısının yayılması (Radiation) olmak üzere 3 şekilde gerçekleşir. *İletim Yolu İle Isının Yayılması (Conduction)*: Bir iletken yardımı ile ısı kaynağından ısının yanma özelliği olan diğer bir maddeye iletilmesidir. Bu yayılma genellikle katı cisimler yolu ile gerçekleşir. Gemiler bir katı madde olan metalden imal edildiğinden yangın anında ısını yayılması potansiyel bir tehlikedir. Bu durum geminin herhangi bir güvertesinde çıkan yangının metal olan üst güverteyi ısıtması ile iletilir. Böylelikle üst güvertede bulunan yanıca maddenin tutuşmasına sebebiyet verir. Bu durum oluştuğunda üst güverte sacının ısısının kontrol altında tutulabilmesi maksadı ile soğutma yapılmalı ve ısının iletilmesi engellenmelidir. *Taşınma Yolu İle Isının Yayılması (convection)*: Isının, hava, duman veya herhangi bir akışkan vasıtası ile bir bölmeden başka bir bölmeye veya güverte iletilmesidir. Bu durum gemilerde fan klepelerinin ve dramlarının kapatılması, bölme geçişlerinin duman perdesi ile kapatılması ile izole edilebilir. *Işıma Yolu İle Isının Yayılması (Radiation)*: Isının boşlukta başka bir yanıcı maddeye doğru dik ve kırılmadan yaptığı yayılma hareketi sonucu temas ettiği her yanıcı maddeye ısısını ileterek iletimidir (MEB, 2016). Gemilerin açık güvertelerinde bulunan metal aksamın ısınması ve özellikle içinde yanıcı madde bulunduran (benzin bidonu ve boya kovası vb.) metal muhafazaların ısınarak alev alması örnek olarak verilebilir.

Yanma sonucu oluşan duman veya alevin veya her ikisinin birlikte ortama ısı vermesi sonucu karakterize edilen yanma olayıdır (Doğan, 2016). Yangın olayı; yanmanın üç ana unsurunun bir araya gelmesi ve birbirini tetikleyen zincirleme tepkimenin sonucunda oluşur. Yangın, yanmanın özel bir halidir. Yani yangın yanmanın kontrolden çıkmış halidir (Ataman, 2008). Eğer ki bir yanmayı ilk başladığında tespit edemezsek mutlaka kontrolden çıkarak yangına dönüşecektir. Yangın piramidinde, yanıcı madde, oksijen ve ısının birleşmesiyle oluşan yanmayı, ısı ve oksijenin daima beslemesiyle oluşan *zincirleme reaksiyon* neticesinde, kontrolden çıkması sonucu piramidin dördüncü yüzeyi oluşur. Kendi içinde yanıcı maddenin cinsine göre sınıflara ayrılır. Yapılan bu sınıflandırma en uygun yangın sınıflandırmasıdır. Böylece yangına müdahalede seçilecek yöntem, kullanılacak söndürücü daha etken olacaktır. Avrupa Birliği tarafından Avrupa Normlarında EN 2 olarak tanımlanan yangın sınıfları ülkemizde de TS EN 2 ve TS EN 2/A1 olarak kabul edilip Türk Standartlarına göre tarif edilmiştir. *A Sınıfı Yangınlar*: Türk Standartlarına göre; yanıcı maddenin ısı ve ışık saçarak korlaşması ile oluşan ve devam eden, ekseriyetle organik bileşime sahip katı madde yangınlarıdır (TS EN 2 ve TS EN 2/A1). Adi yangınlarda denir. Örneğin; odun, kömür, kağıt gibi katı madde yangınlarıdır. İdeal Söndürücüsü solid sudur. *B Sınıfı Yangınlar*: Türk Standartlarına göre; Sıvı veya ısının etkisi ile

sıvılaşabilen katıların sebep olduğu yangınlardır (TS EN 2 ve TS EN 2/A1). Akaryakıt yangınlarıda denir**.** Gemilerde motorin, benzin, boya, plastik gibi yanıcı sıvıların yanmasıyla oluşur. Ideal söndürücüsü köpüktür. *C Sınıfı Yangınlar*: Türk Standartlarına göre; gaz yangınlarıdır (TS EN 2 ve TS EN 2/A1). Bütan, metan, propan, asetilen, hidrojen, ve benzeri gaz yangınlarıdır. Bünyesinde daima patlama riski bulunmaktadır. Sıvı doğal gaz (Liquified Natural Gas) (LNG) taşıyan tankerler bu anlamda çok büyük risk taşımaktalar. İdeal söndürücüsü kuru kimysal tozdur (KKT). *D Sınıfı Yangınlar*: Türk Standartlarına göre; metal yangınlarıdır (TS EN 2 ve TS EN 2/A1). Örneğin; Sodyum, titanium, alüminyum, magnezyum vb. metal yangınlarıdır. Gemilerde taşınan yükten kaynaklanabileceği gibi gemilerin alabandalarının yanması sonucuda oluşabilir. *F Sınıfı Yangınlar*: Türk Standartlarına göre; Aşhane ve mutfak gibi ortamlarda kullanılan malzemelerin sebep olduğu (hayvani veya nebati yağlar) yangınlarıdır (TS EN 2 ve TS EN 2/A1). Mutfak yangınları olarakta bilinir. Genellikle kızartma tavalarında kullanılan yağların yanması sonucunda meydana gelir.

Şuan ki konjöktürde engellenemeyen teknik ve dijital gereksinimlerin ve bu gereksinimleri karşılayabilme çabasının doğurduğu teknolojik yapıya sahip gemiler dünya denizcilik taşımacılığına hızlı bir şekilde girmektedir. Teknolojik ilerlemede hızlı yol kateden gemiler emniyet ve güvenlik ile ilgili problemleri de beraberinde getirmektedir. Çözüm bekleyen problemlerin en korkulanı ise yangın riskidir. (Kır ve Büyük, 2018). Bu risk gemilerin limanda veya seyirde olmaları durmunda potansiyel etkisinde bir azalma yapmaz. Günümüz gemileri farklı mühendislik tasarımları ile farklı özelliklerde dizayn edilmekte ancak tüm tasarımlarda olmazsa olmaz benzerlik mürettebatın yaşam standartlarını suyun üzerinde de sürdürebilmesine hizmet etme gayesidir. Bundaki amaç; gemi yaşayan bir organizma olduğundan ona kumanda eden mürettebatın günlük ihtiyaçlarının su üstünde de karşılanabilmesidir. Bununla birlikte gemiler çok tehlikeli yanıcı ve patlayıcı yüklerde taşırlar ve kullanmak maksadıyla bünyelerinde bulundururlar (Gözalan, 2011). Su üstünde faaliyet gösteren gemiler de yangının kaynağı olarak insan ve taşınan yük yadsınamaz bir gerçekliktir. Onun için yangından en iyi korunma yönteminin eğitimli mürettabat olduğu tüm gemiciler tarafından kabul gören bir olgu olmuştur. Ayrıca personeli eğitmek çıkmış bir yangını söndürmek ve taşınan yükte oluşacak hasardan daha az maliyetli olacaktır. Gemilerde yangın çıkma riski yüksek olan mahaller; mutfak/aşhaneler, personel salonu ve kamaraları, ana ve yardımcı makine daireleri, gemi depo ve ambarları (boya ambarları, ikmal ambarları, yağ ambarları, yedek malzeme depoları v.b.) elektrik dağıtım panoları ve tesisatları ve kaynak kesme çalışmasının yapıldığı mahallerdir. Bu mahaller de yangına sebep olan faktörler ise (1) Yanan bir üstübü veya kağıt parçası gibi *açık alevler,* (2) Gemi genelinde bulunan *elektrik ve tesisatı*, (3) Isıl işlemlerin yapıldığı mahallerdeki *aşırı ısı,* (4) Ana makinelerin çalışmasından kaynaklı ve elektrikli pleytler gibi *kızgın yüzeyler,* (5) Havalandırılmamaktan veya sıkışmadan kaynaklı *kendi kendine tutuşma, (6)* İki metalin çarpması sonucu veya bacalar gibi yerlerden çıkan *kıvıcım, (8)* Depolanmış yüklerin birbirine sürtünmesinden kaynaklanan *statik elektrik ve ısı, (9)* Yıldırım ve güneş gibi *doğal ısı ve ısı kaynakları, (10)* Büyüteç etkisi yapabilecek *çatlak ve kırık camlardır.*

Doğada bütün maddeler her an yanmaya hazır olarak bulunur. Soluduğumuz havanın içindeki oksijen, yanıcı maddelerin büyük bir kısmı doğada serbest halde ve kendi ısıları ile bulunurlar. Mevcut bu ısının tutuşma sıcaklığına ulaşması ise insan hayatını tehdit eden ve felaketle sonuçlanabilecek olayların başındadır (İzer, 2011). Gemilerde personelin daima dinamik ve farkındalığının yüksek sevide olması için alabandalara yapıştırılan ikaz yazıları ve sistem/ cihazlar üzerinde yapılan çalışmalar esnasında asılan, yapılan çalışma sona erdiğinde kaldırılan levhalar ve daha önce belittiğimiz yangın çıkma riski yüksek olan mahallerde alınacak bazı tedbirlerde önleyici tedbirler arasına girmektedir. Klas kuruluşları denizde emniyet ve gemilerin seyir konforu için geminin inşası ile ilgili detaylı kurallar belirleyip önlemler almaktadırlar. Yangınla ilgili olarak geminin inşasında sadece kaplama yalıtım malzemelerinin kullanımı değil kullanılan gemi materyalinin ısıya mukavemeti de öne çıkmaktadır. Klas kuruluşları tarafından kontrolü yapılmamış ve onaylatılmamış materyaller gemilerin yapısal bütünlüğünde kullanılmamaktadır (İzer, 2011). SOLAS 74 gereğince

gemiler inşa edilirken yangına karşı su geçirmez perdeler ve sıcaklık izolesi presipleri doğrultusunda dizayn edilmektedirler.

Tablo 1. Yangın organizasyonu görev dağılım (MEB, 2016)

Role Bölümü	Adı, soyadı	Gemideki görevi	Yangınla mücadele rolesindeki görevi
Köprü üstü bölümü		3.Zabit	Seyirde vardiya zabiti, limanda emniyet ve kara irtibat zabiti
		Usta Gemici	Seyirde serdümen, limanda L/A nöbetçisi, harekette kıç üstü
		2.Aşçı	Seyirde pasaparola-gözcü, limanda lumbarağzı nöbetçisi
Tls.grubu		Telsiz zabiti	Seyirde telsiz başında, limanda kara irtibatı, harekette kıç üstü
1.Yangın savunma ekibi		1.Zabit	Ekip amiri
		4.Mühendis	Ekip amiri yardımcısı
		Usta Gemici	Yangın elbisesi giyer
		Yağcı	Can halatçı
		Gemici	Nozulcu-minimaxcı
		Kamarot	Hortumcu-minimaxcı
		Gemici	Nozulcu-minimaxcı limanda-harekette baş üstü
		Baş Aşçı	Hortumcu-minimaxcı limanda-harekette başüstü
		Kamarot	Sedyeci
2.Yangın savunma ekibi		2.Zabit	Ekip amiri
		3.Mühendis	Ekip amiri yardımcısı
		Usta Gemici	Yangın elbisesi giyer
		Silici	Can halatçı
		Gv. Losturo.	Nozulcu-minimaxcı limanda-harekette baş üstü
		Yağcı	Hortumcu-minimaxcı limanda-harekette başüstü
		Gemici	No 7lu minimaxcı
		Yağcı	Hortumcu-minimaxcı
Makine dairesi grubu		Başmühendis	Makine dairesi amiri
		2.Mühendis	Yangın pompası-Acil durum yangın pompası
		Elk. Zabiti	Tevzi tablosu başında limanda-harekette baş üstü
		Mak. Lostro	Makine dairesi yardımcı
		Silici	Makine dairesi yardımcı

Bu nedenle sıcaklık izolasyonu maksadı ile belli standartlarda çelik ile yatayda güverteler, dikeyde bölmeler ile ayrılmıştır. Gemiler de inşa aşamasında alınan tedbirlerlerin haricinde aşağıda belirtildiği gibi yangınla mücadele organizasyonları kurulmalıdır.

Gemiler de personelden oluşturulan yangınla mücadele organizasyonu ekiplerinin görevleri ise şöyledir; *yangına müdahale ekibi ve görevleri*, yangın mahaline girecek ve müdahale edecek ekiptir. Ekibi kaptan istediği personelden teşkil edebilir. Ancak genellikle gemi adamlarından oluşturulur. Eğer personel değişikliği yapılacaksa bu ekibin güç kaybetmesine müsade edilmemelidir. Ekip ikinci kaptanın koordinesindedir. Baş mühendisin sorumluluk alanındaki makine dairesi gibi bir mahalde yangın çıkarsa ekip amirliği görevi birinci vardiya mühendisi tarafından yapılır ve ekip makineci personelden oluşturulur. Yangına müdahale ekibi geminin boyutlarına ve taşıdığı yüke göre birden fazla da oluşturulabilir. Yangına müdahale ekibinin görevlerini şöyle sıralayabiliriz.(1) Yangının meydana geldiği mahalin yerini tam olarak tespit etmek. (2) Mahaldeki yangının sınıfını, yerini, büyüklüğünü, ölü ve yaralı durumunu tespit etmek. (3) Yangın mahalinde yada etki alanında gemi mürettebatından veya yolculardan mahsur kalanları lolup olmadığını tespit etmek.(4) Yangına müdahale için gönderilecek personelin atamak ve hazırlanmasını sağlamak, yangına sevk etmek. Duman maskesi giymesini sağlamak.(5) Yangına yaklaşma elbisesini giymek. (6) Yangına müdahale usul ve teknikleri ile yangının sınıfına göre kullanılması gereken söndürücüyü tespit etmek.(7) Yangın

mahaline komşu kompartmanlardaki durumu saptamak. Gerektiği takdirde müdale ederek buradaki yanıcı ve patlayıcı maddelerin uzaklaştırılmasını ve soğutulmasını sağlamak.(8) Yangın sorumluluk alanında bulunan ve yangına müdahale eden tüm ekip personelinin durum ve bilgilerini kaptana sürekli iletmek. Duman maskelerine ait tüplerin havasını takip etmek, yedek tüplerin temin edilmesini sağlamak. (9) Yangına müdahale edenlerle iletişimin kopmasına asla müsade etmez. Yangın mahalindeki personelin güvenliğini sağlamak. (10) Yangın alarmının çalması ile birlikte güverte lostromosu can filikalarını hazırlar. Filikalarda bulunan malzemelere ek olarak su, yiyecek, gres yağı, ilk yardım kitleri, veri fişeği ve battaniye gibi gemiyi terkte kullanılacak teçhizat ve malzemeyi getirir. Acil durum telsizini yerleştirmek.

Teknik ekip ve görevleri. yangın alarmı ile birlikte toplanma yeri olan makine dairesine gelirler. Birinci vardiya mühendisinin koordinesinde, ana makineleri köprüüstünden verilecek acil manevralara hazır bekletirken, yangınla mücalede kullanılacak sabit ve seyyar sistemleri besleyen ana yangın tulumbalarını çalıştırılmak üzere hazırlar. (1) Yedek olarak emercensi jeneratör hazırlanır. (2) Yangın mahalinin yerine göre makine dairesini yangından korumak için gerkli önlemleri alır. (3) İletişimin köprüüstü ile kopmasına asla müsade etmez ve sürekli iletişim halinde kalır.(4) Gemi dahilinde uygun gördüğü kompartman ve bölmelerin elektrik ve fan maotorlarını kapatır. *Destek ekibi ve görevleri, y*angınla mücadele devam ederken ekipte görevli olmayan personelden oluşturulur ve yangına müdale eden ekibe yardım ve destek sağlar. Eğer ekip personelinden yorulanveya yaralanan olursa onun yerine geçmek için hazır beklerler. Yangın mahalinin yan bölmelerinde bulunan yanıcı ve patlayı maddeleri emniyetli bir yere alarak çevre emniyetinide alırlar. İlk yardım ekibi bu ekibin içindedir.

ARAŞTIRMA YÖNTEMİ

Bu araştırma yapılandırılmış sorulardan oluşan görüşme tekniğiyle verilerin toplandığı nitel bir araştırmanın sonucudur. Sosyal bilimler bünyesinde incelenen bütün olgu ve olaylar kendi ortamından deney ve denemeler yapılarak sonuç alınmak istendiğinden, başka bir anlatım ile bir olgu kendi ortamında bir mana ve değer ifade ettiği için, nitel çalışmalar zorunluluk gereği vucut bulmaktadır (Topkaya, 2006). Nitel araştırma yönteminde veri toplama tekniği olarak görüşme tekniğinde yapılandırılmış soru formu belirlenmiş ve 14 tane sorudan oluşan bir mülakat formu hazırlanmıştır. Bu sorular gemilerde konunun uzmanı olan yönetici seviyesindeki gemi adamlarına yönlendirilmiştir. Elde edilen veriler olgu desen biliminde içerik analizi ile analiz edilmiş ve sonuçları raporlanmıştır.

Veri Toplanma Araçları

Ticari gemilerde yangınla mücadeleye yönelik teşkil edilen yangınla mücadele organizasyonlarının yapısını inceleyerek yeterliğine ve etkinliğine nasıl katkıda bulunulur sorusunu amaç edindiğimiz bu nitel araştırmada veri toplama tekniği olarak yapılandırılmış sorulardan mülakat tekniği seçilmiştir. Mülakat için önce beş (5) adet yapılandırılmış soru hazırlanmış ve Kocaeli Üniversitesi Denizcilik Fakültesi Denizcilik İşletmeleri Yönetimi Ana Bilim Dalı Başkanlığında alanında uzman bir öğretim üyesi ile görüşülmüştür. Ancak yapılan görüşme neticesinde beş (5) olan soru sayısı ondörde (14)' e çıkarılarak 3 bölüme ayrılmıştır. Birinci bölüm kişisel bilgiler (1., 2., 3.,4. sorular), ikinci bölüm gemi bilgileri (5., 6., 7. sorular) ve üçüncü bölüm de analizi yapılmak istenen konu (8., 9., 10., 11., 12., 13., 14. sorular) olarak onayı alınmıştır. Dünyamızın içinden geçtiği pandemi sürecinden dolayı sorular katılımcılar ile sosyal medya üzerinden paylaşılmıştır. Toplamda 12 katılımcıdan geri dönüş olmuştur. Bu geri dönüşler içerik analizine tabi tutularak analiz edilmiştir.

Katılımcılar

Çalışılan evrenler genel olarak içinde farklı elemanlar barındırır ve bu elemanlar aynı gaye etrafında toplanarak kümeleri oluştururlar. İşte o zaman çalışma bu kümeler ile yapılır (Karasar, 2019: s.152). Ticari gemilerde çalışan, bu topluluğun elemanı olan ve benzer süreçlerden geçmiş, amaçları hemen hemen aynı olan yönetici düzeyindeki gemi adamları kümesi seçilmiştir. Türkiye genelinde farklı ticari gemilerde, kuru yük, genel kargo ve kimyasal tankerde çalışan tesadüfi örneklem ile seçilmiş ve sosyal medya üzerinden ulaşılan toplamda 12 adet yönetici düzeyindeki gemi adamı küme örneklem çeşidi kullanılarak seçilmiştir. Yönetici düzeyindeki gemi adamlarına ait kişisel ve gemi verileri şöyledir:

Tablo 2. Yönetici düzeyindeki gemi adamlarına ait kişisel ve gemi verileri

	Meslekteki toplam çalışma süreleri (yıl)	Son gemilerinde toplam çalışma süreleri (yıl)	Yangınla mücadele konusunda aldıkları eğitimler	Çalıştıkları gemi sınıfı	Çalıştıkları gemi grostonu	Gemilerindeki personel sayıları
Kaptan (1)	32	6 Ay	"Temel Yangınla Mücadele Eğitimi" ve "İleri Yangınla Mücadele Eğitimi"	Genel Kargo Gemisi Kuru Yük Gemisi Kimyasal Tanker	1523-26195	Genel Kargo Gemisi, 9-21 Person Kuru Yük Gemisi 10-11 Person Kimyasal Tanker 14 Person
Baş mühendis (3)	27-35	6 Ay-6				
Zabit (8)	1,5-6	1,5-10				

Verilerin Analizi

Yapılmış olan mülakat ve literatür taramasından elde edilen veriler "içerik analizi tekniği" kullanılarak analiz edilip yorumlanmıştır. Araştırmaya katılan yönetici düzeyindeki gemi adamları gemilerde uzun yıllardır çalışmaktadır. Yangınla mücadele ve ileri yangınla mücadele eğitimlerini almıştır. Bütün yönetici düzeyindeki gemi adamları yangın organizasyonlarında görev almaktadır. Kaptan ise yangın organizasyonunun kurmaktan, yangın sürecini yönetmekten sorumludur. Bu da araştırmanın geçerliğine ve güvenirliğine katkı sağlamaktadır. Yine araştırma bulgularının iç güvenirliğini ve geçerliğini artırmak amacıyla mülakatta verilen cevaplara sıklıkla başvurulmuştur. Araştırmaya genel kargo, kuru yük ve kimyasal tankerden oluşan üç farklı sınıf ticari geminin dahil olması bu çalışmanın kısıtlamasını oluşturmaktadır.

BULGULAR

Gemi Mürettebat Sayısının Yangınla Mücadeleye Etkisi

Küresel ölçekte yaşanan ekonomik dalgalanmalar deniz ticaretini de etkisi altına almıştır. Bu dalgalanmadan minimum zararla çıkabilmek için sermayeye yön verenler maliyetleri optimimize etmek adına yeni tasarruf tedbirlerini yürürlüğe koymuşlardır. Tüm sektörlerde bu tedbirlerin en belirgini küçülmeye gitmek olmuştur. Denizcilik ticaretinde de sektörün kalbi olan gemiler de çalışan

mürettebat sayılarında ciddi düşüşler olmuştur. Yapılan bu çalışmada da kendini gösteren bu durum, gemilerin yangınla mücadele ekiplerinde görevli personelin sayısal yeterliliği yönünde soru işaretleri oluşturmaktadır. Çalışmaya katılan gemilerin mürettebat sayıları 9,10,11,13,14 ve 21'dir. Tüm gemilerde yangınla mücadele ekipleri personel sayısı 3, 4, 5 ve 9 olan 2 ekip kurulduğu tespit edilmiştir. Personel sayısı 21 olan gemide yangına müdahaleci, soğutma, iletişim kuran personel, malzeme taşıyan personel, ilk yardım, koordinatör, makina personeli ve köprüüstü personeli olmak üzere detaylı ve kapsamlı 9 kişiden oluşan 2 ekip kurulduğu görülmektedir.

Yangın Organizasyonundaki Görevlerde Standartlık Olmaması

Çalışmada genel kargo, kuru yük ve kimyasal tankerden oluşan üç sınıf ticari gemi örneklem olarak alınmıştır. Aynı sınıf, personel sayıları aynı olan gemilerde oluşturulan yangına müdahale timlerinin gerek ekip personeli sayıları gerekse personel görevleri farklılıklar göstermektedir. (1) 10 personeli bulunan gemilerde 3, 4 ve 5 kişilik ekiplerin kurulduğu, kurulan ekiplerdeki görevlendirmelerde yangın elbisesi giyen ve hortumcular sabit olmasına karşılık ekip amiri, minimaksçı, yangın elbisesi giyiminde yardımcı gibi farklı görevlendirmeler yapıldığı, (2) 11 personeli bulunan gemilerde 3 ve 4 kişilik ekiplerin kurulduğu, kurulan ekiplerdeki görevlendirmelerde yangın elbisesi giyen ve hortumcular sabit olmasına karşılık minimaksçı, yangın elbisesi giyiminde yardımcı gibi farklı görevlendirmeler yapıldığı, (3) 9, 13, 14 ve 21 personeli bulunan gemilerde 4, 5 ve 9 kişilik timlerin kurulduğu, kurulan timlerdeki görevlendirmelerde yangın elbisesi giyen ve hortumcular sabit olmasına karşılık sahne lideri, sahne lideri yardımcısı, aplikatörcü, minimaksçı, yangın elbisesi giyiminde yardımcı gibi farklı görevlendirmeler yapıldığı tespit edilmiştir.

Yangınla Mücadele Konusunda Bilgilerin Farklı Yorumlanması

Katılımcılara sorulmuş olan;

11. soruda : Geminizde teşkil ettiğiniz yangın söndürme ekibinin yangını söndürme evreleri nelerdir? Sorusuna "K1:*Teşhis, tanıma, müdahale,* K2: *Cevap vermemiştir,* K3: *Önce yangının yeri, toplanma alanı, birlikte müdahale,* K4: *Toplanma, yangın mahalini öğrenme, yangın cinsi, orada personel olup olmadığını öğrenme ve yangına müdahale, sonrasında hasar tespit ve mahali kontrol altına alma,* K5: *Cevap vermemiştir,* K6: *Yangını bildirim, ilk müdehale, detaylı müdehale, engellenemez ise gemiyi terk,* K7: *Alarm, müdahale ve tedbir,* K8: *Kontrol, müdahale, emniyet,* K9: *Toplanma alanında gerekli operasyon anlatılır. Yangın mahalli havalandırmaları kapatılır. Elektrikleri kesilir. Gerekli soğutma yapıldıktan sonra olaya müdahale edilir,* K10: *Mevcut alınması, kıyafet giyilmesi, hortum döşeme ve tüp getirme, elktrik ve fan kapatılması, yanıcı maddelerin bölgeden uzaklaştırılması, müdahaleye başlanması, gerekirse dışardan soğutma yapılması, söndürülürken sonra duman tahliyesi, hasar tespiti,* K11: *Yangın tespiti - tek kişi yeterli ise ilk müdahale değilse vardiyacıya haber - genel anons - toplanma - ekip görevlerinin yerine getirilmesi,* K12: *Tespit, yaralı var ise kurtarma, kaynak, söndürme operasyonu ve soğutma*" cevaplarını vermişlerdir.

12. soruda : Geminizde yangının yayılmasını/iletilmesini engellemek için hangi tedbirler vardır? (Bu soruyu gemi dizaynını düşünerek cevaplayınız) sorusuna gemilerinin yangın savunma dizynlarına göre; bölme ve güverte geçişlerinin kapatılması, elektrik ve fanların durdurulması, sabit sistemlerin kullanılması gibi efektif cevaplar vermişlerdir.

13. soruda: Yangın söndürme ekibinde yangının yayılması/iletilmesini engellemek için ne gibi tedbirler vardır? Kısaca açıklayınız. Sorusuna K1: *Yangın tipini teşhis etmek çok önemli ona göre müdahale edilir (CO_2 tüpleri, kimyasal söndürme köpükleri, su v.b.) gemide ki prosedüre göre sürekli nazari ve farazi eğitimler yapılır personel diri tutulur,* K2: *Yangın elbisesi, seyyar minimax,* K3: *Cevap vermemiştir,* K4: *Havalandırma damperleri kapatarak oksijenle bağını kesme, yangın*

kapılarını kapatarak yangını izole etme, bölgenin elektriğini keserek elektrik yangın ihtimalini ortadan kaldırmak, bölgeye yakın yağ, boya, tiner, kalas, bez v.s yanıcı her türlü malzemenin süratle uzaklaştırılması, K5: *Cevap vermemiştir,* K6: *Yangın bölgesinin elektriğini ve hava akışını kesme, yangın bölgesinin alabandalarının soğumasını sağlama,* K7: *cevap vermemiştir,* K8: *Söndürme soğutma*, K9: *Yangin hortumu, yangın elbisesi, minimax, yangın battaniyesi*, K10: *Müdahale tipine göre müdahale edilmesi*,K11: *Yangının yerine göre 1.ekip direkt müdahale ederken 2.ekip soğutma işlemi uygular*, K12: *Yangın tüpleri, yangın elbiseleri, yangın battaniyesi hortumlar sabit söndürme sistemleri (CO_2, sprinkler ve mist sistem)* cevaplarını vermişlerdir.

14. soruda: *Yangın söndürme ekibinden sorumlu olan personelin görev tanımı yapılmış mıdır? Sorusuna "K1: Evet yapılmıştır ve bütün konuda eğitim almıştır; gemi adamı cüzdanında da bunu görebilirsiniz,* K2: *Evet,* K3: *Yapılmıştır,* K4: *Evet,* K5: *Cevap vermemiştir,* K6: *1. Zabit, görev tanımı yapılmıştır. 1.Ekip amiridir, yangına ilk müdehalede büyük önem taşır*, K7: *Evet,* K8: *Evet,* K9: *Evet,* K10: *Röle organizasyonunda personelin görev tanımı yapılmış, her ay planlı yangın eğitimleri ile pekistirilmekte ayrıca yeni katılan personele gemi gezdirilerek yangın ekipmanlarının yerleri gösterilmekte, gemi personelinin en az % 25 değişmişse 24 saat içinde yangın talimi yapılmaktadır,* K11: *Evet,* K12: *Açık ve net şekilde görevler belirlidir"* cevaplarını vermişlerdir.

SONUÇ

Küresel konjonktürde meydana gelen dalgalanmalar, ekonomik krizler, savaşlar ve ekonomiyi etkileyen daha nice sebepler deniz taşımacılık sektörünün kalbi olan gemilerin emniyetini de etkilemektedir. Bu konuda nakliye şirketlerine fedakarlık anlamında çok iş düşmektedir. Çünkü taşıdığı malı emniyetli bir şekilde tam ve eksiksiz olarak teslim etmek taşıyanın en büyük sorumluluğudur. Bu bağlamda küresel ekonomik dalgalanmaların neticesinde maliyet optimizasyonu için küçülmeye gitmek ve gemi mürettebatı sayısını azaltmak gemiyi emniyetsiz bir durma düşürebilecektir. Uluslararası Çalışma Örgütü (ILO)' nun 1996 tarihli 180 sayılı sözleşmesinde (Dündar, 2010) belirlediği maksimum çalışma saati üzerinden yapılan hesaplamalar ile mürettebat sayısında tasarrufa gidilmiştir. Dolayısı ile gemi mürettebat sayısının tasarruf maksatlı minimumda tutulması, yangınla mücadele ekibinde görevli personelin birden fazla görev ile görevlendirilebileceği ve yangın anında personeli olumsuz etkileyeceği anlamı taşımaktadır. Yani personel yangın anında asli görevine yoğunlaşmış ve mücadeleye destek veriyorken birden farklı bir alana kayabilir. Bu durum ise gemi yangın emniyetini sekteye uğratabileceği ve yangınla mücadeleyi zayıflatabileceği gerçeğine işaret etmektedir. Bu da taşınan malın ve gemi mürettebatının emniyetsiz bir şekilde seyir yapacacağı anlamına gelmektedir. Hali hazırda "Meslekî Eğitim ve Öğretim Sisteminin Güçlendirilmesi Projesi (MEGEP)" kapsamında verilen kurslarda öğretilen ve çalışmanın "Tablo 1. Gemi Yangınla Mücadele Organizasyon Şeması" başlığı altındaki yangın organizasyonu görev dağılımı şemasının, denizcilik liselerinde, denizcilik önlisans, denizcilik lisans ve STCW kurslarında da öğretiliyor olmasına karşılık yönetici düzeyindeki gemi adamlarının konuyu farklı yorumladığı ve bu yorum farkı gemilerdeki talimlerin efektif olmadığı sonucuna bizi ulaştırmaktadır. Elde edilen bulguların analizine bakıldığı zaman aynı soruya, aynı eğitimleri almış yönetici düzeyindeki gemi adamları tarafından farklı cevaplar verildiği bir kısmının; kişisel koruyucu malzemeler, seyyar ve sabit söndürücüler, yangına müdahale usulleri gibi kavramları kullandıkları görülmektedir. Katılımcılardan dördü yan bölme kontrolü ve soğutmasından söz ederken 8 tanesi bu ifadeleri kullanmamıştır. Bu da yangının yayılmasının engellenmesi prosedürünün göz ardı edilebileceğini göstermektedir. Çünkü gemilerde yangının yayılmasının engellenebilmesi yan bölme kontrolü ile yapılır. STCW kapsamında temel sertifika eğitimleri olan "Yangınla Mücadele Eğitimi" ve "İleri Yangınla Mücadele Eğitim"lerinin daha merkezi ve daha kontrollü bir şekilde verilmesi uygulamada standartlığın yakalanmasını sağlayacaktır. Böylelikle organizasyonun farklı yorumlanmasının önüne geçilebilebilmesi umulmaktadır. Elbetteki gemiler taşıdıkları yükler, personel sayıları ve inşa özelliklerine göre farklılıklar göstermektir. Ancak ne olursa olsun yangına müdahalede çekirdek bir

yapının oluşturulması ve eğitimlerinin ulusal ve uluslararası mevzuatta hakim hükümlerle ifade edildiği şekilde yapılması yetkin personelden etkin personele doğru bir geçiş sağlayacaktır. Bu da yangınla mücadele eğitimi almış herkesin etkin bir yangına müdahaleci olmasını sağlayacaktır. Yönetici düzeyindeki gemi adamlarını yetiştiren eğitim kurumlarının, denizde emniyet ve gemi güvenlik derslerinin müfredatında bulunan yangınla mücadele konusunda verilen eğitimlerde gemilerde teşkil edilecek olan yangıla mücadele ekiplerinin çekirdek yapısı, yangın alarmının duyulmasından sonra yapılacak ve işletilecek prosedürler üzerinde durmanın önemi öğretilirse zaman içerisinde gemi yangınları ile mücadelede bir yeknesaklık sağlanacaktır. Gelecek nesil yönetici düzeyindeki gemi adamlarının gemi ve seyir emniyeti açısından daha bilgili, yetenekli olacakları ve aralarındaki yorum ve uygulama farkını minimize edilebileceği umulmaktadır.

Kaynakça

Alan BR 2008. LNG Taşımacılığı Risk Analizi ve Emniyet Yönetimi Modeli, Yüksek lisans tezi. İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü, İstanbul.

Ataman BK 2008. "Arşiv ve kütüphanelerde yangınla mücadele". *Dergipark*, 1-14.

Dündar E 2010. Uluslararası Düzenlemeler ve Avrupa Birliği Çerçevesinde Deniz İş Hukukunda Gemi Adamlarının Çalışma Süreleri. Doktora tezi, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü. İzmir.

Erdoğan ÖE 2014. Osmanlıdan Günümüze Yerel Bir Kamu Hizmeti Olarak İstanbul İtfaiyesi. Yüksek lisans tezi, İstanbul Aydın Üniversitesi, Sosyal Bilimler Entitüsü. İstanbul.

Gözalan HK 2011. Savaş Gemilerinde Makine Dairesi Yangınlarının Sayısal Olarak İncelenmesi. Yüksek lisans tezi, İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü. İstanbul.

İBB, İstanbul Büyükşehir Belediye Başkanlığı İtfaiye Daire Başkanlığı. (tarih yok). Söndürme ekipmanları. İstanbul. ttps://www.ibb.istanbul/CorporateUnit/Detail/126/12. Kasım 2020.

İBB, İstanbul Büyükşehir Belediyesi İtfaiye Daire Başkanlığı. (tarih yok). Yangın ve kazalar ile mücadele el kitabı. İstanbul. ttps://www.ibb.istanbul/CorporateUnit/Detail/126/12. Kasım 2020.

İzer C 2011. Askeri Gemilerde Isı ve Yangın Yalıtımının İncelenmesi. Yüksek lisans tezi, İstanbul Teknik Üniversitesi Fen Bilimleri Enstitüsü. İstanbul.

Karasar N 2019. *Bilimsel araştırma yöntemi: kavramlar ilkeler teknikler.* Ankara: Nobel.

Kır F, Büyük N 2018. "Gemi Yangınlarında Risk Analizi". 2018 2.Uluslararası Doğal Tehlike ve Afet Yönetimi Sempozyumu 04-06 MAYIS 2018 (ISHAD2018 Sakarya Türkiye). *Academic Platform*, (s. 512-516). Sakarya.

Kurtoğlu-Doğan GI 2016. Bir Akıllı Kamu Binasının Yangın Güvenliği Bakımından İncelenmesi. Yüksek lisans tezi, Gedik Üniversitesi Sosyal Bilimler Enstitüsü. İstanbul.

MEB, Milli Eğitim Bakanlığı, 2016. *Yangın önleme ve yangınla mücadele temel eğitimi.* Ankara.

Özcan S, Baştuğ S 2021. "Denizcilik Sektöründe Integer Platform Kontrol ve İzleme Sistemine Ait Literatür Çalışması". *Journal of Maritime Transport and Logistics, 01(01)*, 41-50.

SOLAS 74, Uluslararası Denizde Can Emniyeti Sözleşmesi. (1974).

STCW 78, Uluslararası Gemi Adamlarının Eğitim Belgelendirme ve Vardiya Tutma Standartları Sözleşmesi. (1978).

Şahin ÖF 2017. Gemilerde Yangın Riskinin Azaltılmasına Yönelik Yöntem ve Uygulamalar. Yüksek lisans tezi, Gedik Üniversitesi Sosyal Bilimler Enstitüsü. İstanbul.

Türk Standartları TS EN 2 VE TS EN 2A/1. (1998, 03 31).

CUMHURBAŞKANLIĞI HÜKÜMET SİSTEMİNİN YENİ KAMU YÖNETİMİ BAĞLAMINDA DEĞERLENDİRİLMESİ

Dr. Öğr. Üyesi İbrahim Halil GÜZEL
Siirt Üniversitesi, Siirt/Türkiye
ORCID: 0000-0003-2671-7635

Özet

Sanayi devrimi sonrasında dünyada yaşanan hızlı değişim ve dönüşüm birçok sektörü ve kurumu yakından etkilemiştir. Yirminci yüzyılın başlarında kamu hizmetlerine yönelik taleplerin artması, devletin işlevlerinin artması ile sonuçlanmıştır. Devlet birçok alana hizmet eden ve genişleyen bir yapı haline gelmiştir. Ancak ilerleyen yıllarda yaşanan ekonomik krizlerde temel sorun olarak devletin büyümesi görülmeye başlanmıştır. Bu kapsamda geleneksel kamu yönetimi eleştirilerek, farklı yaklaşımlar, farklı yöntemler aranmıştır. Özellikle 1980'lerden itibaren devletin küçültülmesi gerektiği düşüncesi ağırlık kazanmaya başlanmıştır. Yeni kamu yönetimi yaklaşımı, kamu sektöründe önemli reformların yapılmasına neden olmuştur. Yeni Kamu Yönetimi uygulamaları ile katılımcılık, şeffaflık, hesap verilebilirlik, yerinden yönetim, yönetişim, performansa dayalı yönetim kavramları ön plana çıkmıştır. Ulusal ve uluslararası alanda yapılan düzenlemeler ve uygulamalar bu kavramların hayata geçirilmesinde önemli bir yer tutmaktadır. Ayrıca bu kavramların hayata geçirilmesinde ülkelerin sahip oldukları sosyal, kültürel, siyasal, ekonomik yapıları da oldukça önem taşımaktadır. Yönetim alanında yaşanan bu gelişmeler birçok ülkeyi yakından etkilemiştir. Başta İngiltere ve Amerika Birleşik Devletleri olmak üzere birçok ülkede yeni yönetim anlayışını, ilkelerini hayata geçirmeye yönelik uygulamalara yer verilmiştir.

Bu çalışmada Türkiye'de yaşanan hükümet sistemi değişiminin, geleneksel kamu yönetiminde yeni kamu yönetimine geçiş sürecini nasıl etkilediği sorusuna cevap aranmaktadır. Hükümet sistemine yönelik tartışmalar uzun yıllardır Türkiye'nin siyasetinde ve gündeminde yer alarak, önemli gündem maddelerinden birisi olmuştur. Hükümet şekillerinin oluşumunda ve işleyişinde temel olarak yasama, yürütme ve yargı organı arasındaki ilişkiler etkili olmaktadır. Ancak bu çalışmada kuvvetler arasındaki ilişkiler değil, yeni sistemin kamusal alanda yer verdiği ilkeler, değişimler üzerinde durulmaktadır. Parlamenter sistemden Cumhurbaşkanlığı Hükümet Sistemine geçiş sonrasında yeni kamu yönetimi kapsamında öne çıkan kavram ve ilkeler Cumhurbaşkanlığı Yıllık Programı kapsamında incelenmektedir. Yeni hükümet sisteminde, katılımcılık, şeffaflık, hesap verilebilirlik gibi temel kavram ve ilkelere yer verilip verilmediği, hangi uygulamalarla bu ilkelerin hayata geçirileceği incelenmektedir.

Anahtar Kelimeler: Yeni Kamu Yönetimi, Cumhurbaşkanlığı Hükümet Sistemi, Yönetişim

EVALUATION OF PRESIDENTIAL OF GOVERNMENT IN THE CONTEXT OF NEW PUBLIC ADMINISTRATION

Abstract
The rapid change and transformation experienced in the world after the industrial revolution has closely affected many sectors and institutions. Increasing demand for public services in the early twentieth century resulted in increased functions of the state. The state has become a structure that serves and expands in many areas. However, the growth of the state began to be seen as the main problem in the economic crises in the following years. In this context, different approaches and different methods were sought for traditional public administration criticism. Especially since the 1980s, the idea that public services should be reduced has started to gain weight. The new public administration approach has led to important reforms in the public sector. With the new Public Management practices, the concepts of participation, transparency, accountability, decentralization, governance and performance-based management have come to the fore. Regulations and practices made in the national and international arena play an important role in the realization of these concepts. In addition, the social, cultural, political and economic structures of the countries are of great importance in the realization of these concepts. These developments in the field of administration have closely affected many countries. In many countries, notably the United Kingdom and the United States of America, practices aimed at realizing the new management understanding and principles have been included.
In this study, the change of the government system experienced in Turkey, affect the answer to the question of how the transition to the new public management of traditional public administration is required. Government systems for many years discussions taking place in Turkey's politics and agenda, has become one of the important agenda items. The relations between the legislature, the executive and the judiciary are mainly effective in the formation and functioning of government forms. However, this study focuses not on the relations between forces, but on the principles and changes in which the new system takes place in the public sphere. The concepts and principles that come to the fore within the scope of new public administration after the transition from the parliamentary system to the Presidential Government System are examined within the scope of the Presidential Annual Program. It is examined whether the basic concepts and principles such as participation, transparency and accountability are included in the new government system, and by which practices these principles will be implemented.

Key Words: New Public Administration, Presidential Government System, Governance

1. GİRİŞ

Yönetim alanında yaşanan değişimler sadece özel sektörü değil kamu yönetimi alanını da yakından etkilemektedir. Kamu yönetimi alanında birçok değişim yaşanmaktadır. Geleneksel kamu yönetimi birçok yönden eleştirilmektedir. Bürokratik, katı, merkeziyetçi, hiyerarşik bir yapı geleneksel kamu yönetiminin en çok eleştirilen yönleridir. Yeni kamu yönetimi ise şeffaf, saydam, hesap veren, performansa dayalı bir yönetim anlayışını önermektedir. Kamunun sadece kararları alıp uygulayan bir yapı olmadığı kararları alırken ve uygularken de kişilerin, sivil toplum kuruluşlarının alınacak olan karardan etkilenecek bütün kesimlerin sürece dahil olması gerektiği savunulmaktadır. Yeni yönetim tarzının önemli bir boyutunu da

katılımcı yönetim yaklaşımı oluşturmaktadır. Yeni kamu yönetimi yaklaşımının uygulanmasında ve hayata geçirilmesinde uluslararası kuruluşlarında önemli etkisi olmuştur. Dünya Bankası, Uluslararası Para Fonu (IMF), Ekonomik Kalkınma ve İşbirliği Örgütü (OECD) bu kurumların başında gelmektedir. Ülkeler kendi ekonomik, sosyal, siyasal yapılarını dikkate alarak yeni kamu yönetimi kapsamında politikalar belirleyerek uygulamaya geçirmeye çalışmaktadırlar. Bu süreçte kamu yönetiminde hem örgütsel alanda hem de uygulama alanında önemli değişim ve dönüşümler yaşanmaktadır. Ülkelerin uygulayacakları politikaları, üst ölçekli plan ve programlarında yer vermektedirler. Bu bağlamda çalışmada Cumhurbaşkanlığı Hükümet Sisteminde yeni kamu yönetimi yaklaşımının ve ilkelerinin nasıl yer bulduğu, yeni kamu yönetimine egemen olan ilkelere nasıl yer verildiği sorularına cevap aranmaktadır.

2. GELENEKSEL KAMU YÖNETİMİNDEN YENİ KAMU YÖNETİMİNE

Geleneksel kamu yönetimi olarak isimlendirilen model teorik anlamda Amerika Birleşik Devletlerinde Woodrow Wilson, Avrupa'da ise Max Weber'in düşünceleri esas alınarak geliştirilmiştir. Bu model özellikle 19.yüzyılın sonundan 20. yüzyılın son çeyreğine kadar başarılı bir şekilde uygulanmıştır. Geleneksel kamu yönetimi modeli, kamu sektöründe uygulanan en uzun soluklu yönetim teorisi olarak kabul edilmektedir. Günümüzde bu model bazı unsurlarını korumakla birlikte hem teorik anlamda hem de uygulamada önemli bir değişim ve dönüşüm yaşamaktadır (Hughes, 2014: 93-94).

Geleneksel yönetim yaklaşımı ile yeni yönetim yaklaşımı dört temel konuda farklılık göstermektedir. İlk olarak, kamu yönetimi örgütünün yapısı önemli ölçüde Max Weber tarafından kavramlaştırılan bürokrasi modeline dayanmaktadır. Biçimsellik, gayri şahsi kurallar, merkeziyetçi bir yapı bulunmaktadır. Weberyan bürokrasi modeli Batı'da refahın ve demokrasinin gelişmesinde önemli katkılar sunmuştur. Ancak değişen şartlar karşısında verimsizliğe, hantallığa, kırtasiyeciliğe neden olmaktadır. İkinci olarak, kamu yönetimi kamusal mal ve hizmetlerin üretiminde devletin kendi kurumları aracılığı ile doğrudan dahil olması gerekmektedir. Ancak yeni yönetim anlayışında devletin faaliyet alanlarının küçültülmesi ve piyasa mekanizmasından daha fazla yararlanılması savunulmaktadır. Üçüncü olarak, siyasi ve idari konuların birbirinden ayrılması gerektiği belirtilmektedir. Yeni yönetim anlayışında siyasi liderlik ile bürokratlar arasında bir ayrım bulunmakta ancak karşılıklı etkileşim de önem kazanmaktadır. İdare, talimatlara ve kurallara uymakla yükümlüdür. Stratejileri ve siyasaları belirleme yetkisi siyasi liderlere aittir. Siyasiler politikaları belirleyecek, yöneticiler de uygulayacaktır. Kamu yönetiminin denetimi, merkeziyetçi ve hiyerarşik bir yapılanma ile gerçekleştirilmektedir. Dördüncü olarak, kamu yönetimi ile özel sektör arasında önemli farklılıklar olduğu kabul edilmektedir. Böylece kamu yönetiminin profesyonel bir bürokrasiye ve çalışanların ömür boyu istihdamına yönelik bir düzenleme gerekmektedir (Eryılmaz, 2017:247-248).

Kamu yönetimi alanında yeni bir anlayışın yeni bir yaklaşımın ortaya çıkmasının birçok sebebi bulunmaktadır. Yeni kamu yönetimi yaklaşımının ortaya çıkmasına neden olan sebepleri şu şekilde özetleyebilir;

- 1970'lerde yaşanan petrol krizleri, bu krizlerin sebep olduğu ekonomik sorunlar ve bütçenin açık vermesinden, 2. Dünya Savaşından sonra geniş bir uygulama alanı bulan sosyal devlet anlayışının sorumlu tutulması.
- Vatandaşların kamu yönetimine yönelik beklenti ve taleplerinin artması, kamu bürokrasilerinin bu talepleri karşılamada yetersiz kalması, kamu hizmetlerinin sunumunda kalite, verimlilik, hız gibi konularda şikayetlerin giderek artması.
- Yeni sağ düşüncenin yükselişe geçerek, başta Amerika Birleşik Devletleri ve İngiltere olmak üzere devletin küçültülmesi, verimliliğin artırılması amacıyla kamu harcamalarının kısılması, özelleştirmelerin yaygınlaştırılması.
- Devlet ve bürokrasi karşıtı söylem ve uygulamalarının artması.
- Dünya Bankası, Uluslararası Para Fonu gibi uluslararası örgütlerin yeni sağ düşüncenin yayılması konusunda rol üstlenmesi.
- Bilgi iletişim teknolojilerinde yaşanan ilerlemeler.
- 1980 sonrası dönemde artan demokrasi söylemi, yönetişim yaklaşımının ve sivil toplum kuruluşlarının önem kazanması, küreselleşme ve yerelleşme eğilimlerinin artması (Genç, 2010:147).

Kamu yönetimi alanında yaşanan bu değişimin farklı sebepleri bulunmaktadır. Drucker yaşanan bu değişimin üç temel nedeni bulunduğunu belirtmektedir. İlk olarak İkinci Dünya Savaşından bugüne kadar geçen süreçte kamu yönetimi programlarının ve uygulamalarının genellikle başarısız olmasını belirtmektedir. İkinci olarak, vergilendirme ve harcama yoluyla elde edilecek gelirlerin sınırlı olmasıdır. Üçüncü olarak devletin gelir yaratma konusunda sınırlı bir yeteneğe sahip olduğunu belirtmektedir (Drucker, 1991:69).

3.YENİ KAMU YÖNETİMİNİN ÖZELLİKLERİ VE İLKELERİ

1980'li ve 1990'lı yıllarda, gelişmiş ülkelerin büyük çoğunluğunda önemli bir değişim ve dönüşüm süreci yaşanmıştır. Katı, hiyerarşik ve bürokratik mekanizmalara sahip bir kamu yönetiminden esnek ve piyasa tabanlı bir yönetimine dönüşüm başlamıştır. Bu durum yönetim tarzında basit bir değişikliğin ötesinde uzun bir sürece yayılan bir paradigma değişimi olarak kendini göstermiştir (Ömürgönülşen, 1997:517).

Yeni kamu yönetiminin ilkeleri ve özellikleri konusunda farklı sınıflandırmalar yapılmaktadır. Bu sınıflandırmalardan biri Hood tarafından yapılmıştır. Hood yeni kamu yönetimi anlayışının yedi temel özelliği olduğunu belirtmektedir. Bu özellikler;

- Kamu kuruluşlarında profesyonel bir yönetime geçmeleri ve yöneticilerin yetkilerinin artırılması. Böylece hesap verebilir yönetim sağlanmaktadır.
- Ölçülebilir performans hedefleri ve amaçlar. Böylece verimlilik ve hesap verilebilirlik artmaktadır.
- Çıktılara daha fazla vurgu yapılmalıdır. Çıktılara prosedürlerden daha fazla önem verilmesi gerekmektedir.
- Kamuda büyük yapılı birimler küçük yapılara ayrılmalıdır.
- Kamu sektöründe rekabet artırılmalıdır. Böylece daha düşük maliyet ve daha iyi standartlar sağlanacaktır.
- Kamuda özel sektör tekniklerine yer verilmelidir.

- Kaynak kullanımında disiplinli olunmasına dikkat edilmelidir (Hood, 1991:4-5).

Yeni kamu yönetimi alanında çalışmaları olan Pollitt, yeni kamu yönetiminin öne çıkan özelliklerini şu şekilde belirtmektedir. Kamu yönetiminin girdilerden çıktılara, süreçlerden sonuçlara odaklanması gerekmektedir. Performans yönetimine önem verilmelidir. Büyük ve hiyerarşik yapılı bürokrasiden, yatay ve esnek bir örgütsel yapının tercih edilmesi gerekmektedir. Hiyerarşik ilişkiler yerine sözleşmelere dayanan ilişkilere önem verilmelidir. Kamu hizmetlerinin sunumunda piyasadan daha fazla yararlanılması gerekmektedir. Diğer önceliklerden evrensellik, verimlilik, eşitlik, güvenlik ilkelerinin öne çıkması. Bu ilkeler beraber değerlendirildiği zaman birçok ülkenin kabullendiği gelecekte kamu sektörünün bir görünümünü yansıtmaktadır. Daha küçük bir kamu sektörü, sürekli verimlilik ve iyileştirmeye odaklanmış bir kamu sektörü olacaktır. Küçük ve daha özerk, uzmanlaşmış kuruluşlar ön plana çıkacaktır (Pollitt, 2002:474).

Tablo1.Yeni Kamu Yönetiminin Karakteristik Özellikleri

Tartışmasız Özellikler	**Tartışmaya Açık Özellikler**
Bütçe kesintileri	Yasalar, Bütçe ve Harcama kısıtları
Rekabet	Yetki Alanlarının Rasyonelleştirilmesi
Faturalar	Mevzuatın Geliştirilmesi
Yetkilendirme	Politika Analizi ve Değerlendirme
Performans Ölçümü	Demokratikleşme ve Vatandaş Katılımı
Esneklik	
Stratejik Plan ve Yönetim	
Personel Yönetimi	
Siyaset ve Yönetimin Ayrılması	
Değişen Yönetim Şekli	
Performans Denetimi	
Geliştirilmiş Finansal Yönetim	

Kaynak. Gruenning, 2001:2

Genel olarak bu süreçte değişimin iki etkisi olduğu ileri sürülmektedir. Bunlardan ilki bütün aktörlerin geleneksel rollerinin tekrar ele alınmasıdır. Uzun yıllar boyunca özelleştirme, yönetimi küçültme gibi konular tartışılmış, yönetimler hizmet sunumunda kar amacı gütmeyen kuruluşlara ve özel sektöre yönelmişlerdir. Geleneksel kurumlara ve süreçlere karşı çıkılmıştır. İkinci olarak bu karşı çıkmalar yönetimlerin kapasitelerini gözden geçirmelerine yüksek kalitede hizmet sunmalarını sağlamıştır (Kettl, 2000:490).

Kamu yönetimi artık sadece teknik bir olgu olarak ele alınmamaktadır. Etik değerler de kamu yönetiminde öne çıkan bir olgudur. Açıklığa, bilgi edinme hakkına, katılımcı yönetime, etik kurallara yöneten ile yönetilenler arasındaki eşitliği korumak için bilgi akışına önem verilmektedir. Verimlilik ve etkinlik sağlama arayışları, hizmeti halka yakınlaştırma ve yönetimi demokratik bir yapıya kavuşturma önem taşımaktadır (Tutum, 1994: 31-32).

4.CUMHURBAŞKANLIĞI HÜKÜMET SİSTEMİ VE YENİ KAMU YÖNETİMİ

16.04.2017 tarihinde gerçekleştirilen halk oylaması ile kabul edilerek yürürlüğe giren 6771 sayılı kanunla gerçekleştirilen anayasa değişikliği ile Türkiye'de parlamenter sistemden Cumhurbaşkanlığı Hükümet sistemine geçiş sağlanmıştır. 09 Temmuz 2018 tarihinde gerçekleştirilen Cumhurbaşkanlığı seçimi ile halk tarafından seçilen Cumhurbaşkanının göreve başlamasıyla sistem bütünüyle yürürlüğe girmiştir. Yeni sistem, devletin yapısını, yürütme güçlerinin birbirleri ile olan ilişkilerini, kamu yönetimini örgütünde önemli değişiklikleri beraberinde getirmiştir. Hükümet sisteminde yaşanan değişiklik, politikaların belirlenmesinde ve uygulanmasında da bazı değişikliklere sebep olmaktadır. Bu çalışmada yeni kamu yönetimi yaklaşımında önemli yer tutan kavramların, ilkelerin Cumhurbaşkanlığı Hükümet sisteminde nasıl ele alındığı, hangi ilkelerin öne çıktığı incelenmektedir.

Cumhurbaşkanlığı 2021 Yıllık Programı incelendiği zaman 2021 yılı hedef ve politikalarının yer aldığı ikinci bölümde Hukuk Devleti, Demokratikleşme ve İyi Yönetişim başlığı altında yeni kamu yönetiminin ilkelerine yer verildiği görülmektedir.

4.1. Cumhurbaşkanlığı Yıllık Programında Şeffaflık ve Hesap Verebilirlik

Cumhurbaşkanlığı 2021 Yıllık Programı şeffaflık ve hesap verebilirlikle ilgili olarak "*Kamu yönetiminde hesap verme sorumluluğunun yerleştirilmesi, katılımcılığın güçlendirilmesi, kamu hizmet sunumunda eşit ve adil muamele yapılmasının sağlanması ve şeffaflığın artırılması temel amaçtır"* ifadesi yer almaktadır.

Tablo2. Şeffaflık ve Hesap Verebilirlik Alanında Uygulanacak Politika ve Tedbirler

Politika/Tedbir	**Sorumlu / İşbirliği Yapılacak Kuruluşlar**	**Yürütülecek Faaliyetler ve Projeler**
Kent konseylerinin daha aktif hale getirilmesine yönelik düzenleme yapılacaktır.	Çevre ve Şehircilik Bakanlığı (S), İçişleri Bakanlığı, Yerel Yönetimler	1. Mevcut sorunlar tespit edilerek kent konseylerinin daha aktif hale getirilmesine yönelik hususlar belirlenecektir. 2. Elde edilen çıktılar doğrultusunda gerekmesi halinde mevzuat çalışması yapılacaktır.
Kamu harcamaları ile ilgili verilerin bütüncül ve kullanıcı dostu bir formatta paylaşılması amacıyla bir internet portalı açılacaktır.	Strateji ve Bütçe Başkanlığı (S), Hazine ve Maliye Bakanlığı	1. Vatandaşların bütçe okuryazarlığını artırmaya katkı sağlamak üzere bütçe ve harcama verilerinin yer aldığı bütüncül ve kullanıcı dostu bir sistem oluşturulacaktır. 2. Kamu harcamalarının daha anlaşılır şekilde takip edilmesine imkân sağlayacak program bütçe çalışmaları kapsamında gerekli altyapı oluşturulacaktır. 3. Program bütçeye geçiş takvimine bağlı olarak bir internet portalı uygulamaya geçirilecektir
CİMER'e ilişkin vatandaşların farkındalık düzeyi artırılacaktır.	İletişim Başkanlığı (S)	1. CİMER tanıtım filmi yapılacaktır. 2. Halkla ilişkiler iletişim günleri düzenlenecektir.
Bilgi ve iletişim teknolojilerine dayalı yeni iletişim kanalları geliştirilecektir	İletişim Başkanlığı (S)	CİMER yazılımının yapay zeka teknolojisiyle güncellenmesine yönelik çalışma başlatılacaktır.

Kaynak. 2021 Yılı Cumhurbaşkanlığı Yıllık Programı

Cumhurbaşkanlığı 2021 Yıllık Programında hesap verebilirlik ve şeffaflık ilkeleri kapsamında, kent konseylerinin daha aktif hale getirilmesi, kamu harcamalarının vatandaşlar tarafından daha kolay takip edilmesine yönelik uygulamaların hayata geçirileceği belirtilmektedir. Ayrıca bilgi edinme kapsamında CİMER'in farkındalığının artırılacağı görülmektedir.

4.2. Cumhurbaşkanlığı Yıllık Programında Stratejik Yönetim

Cumhurbaşkanlığı 2021 Yıllık Programında stratejik yönetimle ilgili olarak yönelik "*Kamuda stratejik yönetimin uygulama etkinliğinin artırılması ve hesap verebilirlik anlayışının, planlamadan izleme ve değerlendirmeye kadar yönetim döngüsünün tüm aşamalarında hayata geçirilmesi temel amaçtır"* ifadesine yer verilmektedir.

Tablo3. Stratejik Yönetim Alanında Uygulanacak Politika ve Tedbirler

Politika/Tedbir	**Sorumlu / İşbirliği Yapılacak Kuruluşlar**	**Yürütülecek Faaliyetler ve Projeler**
Kamu idarelerinde stratejik yönetime ilişkin idari ve beşeri kapasiteyi geliştirmeye yönelik eğitim programları tasarlanacaktır	Strateji ve Bütçe Başkanlığı (S), Hazine ve Maliye Bakanlığı, Sayıştay, İlgili Kamu Kurum ve Kuruluşları	Uzaktan eğitim sistemi kullanıma açılacaktır.
Başta kalkınma planı olmak üzere üst politika belgeleri ve kurumsal stratejik planların etkin bir biçimde raporlanmasına yönelik bir izleme ve değerlendirme sistemi oluşturulacaktır.	Strateji ve Bütçe Başkanlığı (S), Hazine ve Maliye Bakanlığı, Sayıştay, İlgili Kamu Kurum ve Kuruluşlar	Cumhurbaşkanlığı Plan Program İzleme ve Değerlendirme Sistemi (CPPİDS) vasıtasıyla kalkınma planı, Cumhurbaşkanlığı yıllık programı ve orta vadeli program izlenecek, değerlendirilecek ve raporlanacaktır.
Kamu idarelerinde, iç kontrol sistemlerinin ve iç denetim uygulamalarının etkinliğini artırmaya yönelik eğitim ve danışmanlık faaliyetleri yoluyla kapasite artışı gerçekleştirilecektir.	Hazine ve Maliye Bakanlığı (S), Sayıştay, ÖSYM, İlgili Kamu Kurum ve Kuruluşları	1. Kamu idarelerinin strateji geliştirme birim yöneticileri ile diğer yönetici ve uzmanlara yönelik bilgilendirme toplantısı düzenlenecektir. 2. Mesleki yetkinliklerinin geliştirilmesi ve sürdürülmesine yönelik 30 saatlik eğitim verilecektir.
Performans Denetimi Rehberi güncellenerek stratejik yönetimin bileşenlerine yönelik ikincil mevzuat, kılavuz ve rehberlerle uyumlu hale getirilecektir.	Sayıştay (S), Hazine ve Maliye Bakanlığı, Strateji ve Bütçe Başkanlığı, İlgili Kamu Kurum ve Kuruluşları	Performans Denetim Rehberi güncellenecektir.

Kaynak. 2021 Yılı Cumhurbaşkanlığı Yıllık Programı

Cumhurbaşkanlığı 2021 Yıllık Programında stratejik yönetim kapsamında, stratejik yönetime yönelik olarak kamu idarelerinde eğitimlerin artırılacağı, kamu kurumların iç denetim faaliyetlerinin artırılacağı belirtilmektedir. Performans denetimine yönelik çalışmaların yapılacağı görülmektedir.

4.3. Cumhurbaşkanlığı Yıllık Programında Yerel Yönetimler

Cumhurbaşkanlığı 2021 Yıllık Programında yerel yönetimlere yönelik temel amaç "*Yerel yönetimlerin etkin, hızlı ve kaliteli hizmet sunabilen; dezavantajlı kesimlerin ihtiyaçlarını gözeten; katılımcı, mali sürdürülebilirliği sağlamış, şeffaf ve hesap verebilir bir yapıya kavuşturularak vatandaş memnuniyetinin üst düzeye çıkarılması"* olarak belirtilmiştir.

Tablo4. Yerel Yönetimler Alanında Uygulanacak Politika ve Tedbirler

Politika/Tedbir	**Sorumlu / İşbirliği Yapılacak Kuruluşlar**	**Yürütülecek Faaliyetler ve Projeler**
Stratejik plan hazırlama zorunluluğu olan belediyelerde hizmet önceliklendirmesi yapmak üzere rehber geliştirilecektir.	Çevre ve Şehircilik Bakanlığı (S), Yerel Yönetimler	Nüfusu 50 binin üzerinde olan belediyeler için hizmet önceliklendirmesine ilişkin rehber hazırlanacaktır
Yerel yönetimlerin hizmetlerinin idari, mali ve teknik asgari standartları tespit edilecek; bu standartların uygulamasına yönelik mevzuat düzenlemesi yapılacaktır.	Çevre ve Şehircilik Bakanlığı (S), Yerel Yönetimler	Yerel yönetimlerin hizmetlerini vatandaşlara standart bir şekilde sunabilmeleri amacıyla çalışmalar yürütülecek ve ihtiyaç halinde mevzuat düzenlemesi yapılacaktır.
Dezavantajlı kesimlerin yerel yönetimlerdeki temsil ve karar alma süreçlerine katılım mekanizmaları güçlendirilecek, kent konseylerinde belirli bir oranda katılımı sağlanacak, alınacak önemli kararlarda halk oylamasına başvurulabilmesi sağlanacaktır.	Çevre ve Şehircilik Bakanlığı (S), Yerel Yönetimler	1. Belediyelerin karar alma ve kaynak kullanımında vatandaşların bilgilendirilmesi, görüşlerinin alınmasını temin edecek mekanizmalar geliştirilecektir. 2. Kent konseylerine dezavantajlı kesimlerin de katılımını sağlamaya yönelik mevzuatta gerekli değişiklikler yapılacaktır.
Yerel yönetimlerin kent esenliği ve güvenliğine ilişkin projeleri desteklenecektir.	Çevre ve Şehircilik Bakanlığı (S), İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler	Yerel yönetimlerin kent esenliği ve güvenliğine ilişkin dış kredili projelerinin (itfaiye aracı alımı, afet ve acil durum araç alımı vb.) öncelikli olarak Yatırım Programıyla ilişkilendirilmesi sağlanacaktır.

Kaynak. 2021 Yılı Cumhurbaşkanlığı Yıllık Programı

Yeni kamu yönetimi yaklaşımında öne çıkan konulardan biri de yerel yönetimlerdir. Cumhurbaşkanlığı 2021 Yıllık Programında yerel yönetimlere yönelik olarak belediyelere stratejik plan hazırlanırken hizmet önceliklendirmelerine yönelik rehber hazırlanması, dezavantajlı grupların yerel yönetimlerin temsil ve karar alma süreçlerine katılımlarının artırılması gerektiği belirtilmektedir.

4.4. Cumhurbaşkanlığı Yıllık Programında Sivil Toplum

Cumhurbaşkanlığı 2021 Yıllık Programında sivil topluma yönelik temel amaç; *"Sivil toplum bilincinin gelişmesi, örgütlü sivil toplumun güçlenmesi, STK'ların saydamlık ve hesap verebilirlik ilkelerine uygun bir yapıya kavuşması ve devletin karar alma süreçlerine etkin katılımının sağlanması "* şeklinde açıklanmıştır. Bu kapsamda uygulanacak politika/tedbirler, yürütülecek faaliyet ve projeler belirlenmiştir.

Tablo5. Sivil Toplum Alanında Uygulanacak Politika ve Tedbirler

Politika/Tedbir	**Sorumlu / İşbirliği Yapılacak Kuruluşlar**	**Yürütülecek Faaliyetler ve Projeler**
Sivil toplum ve gönüllülük alanını güçlendiren kapsayıcı bir çerçeve düzenleme yapılacaktır.	İçişleri Bakanlığı (S), Strateji ve Bütçe Başkanlığı, Vakıflar Genel Müdürlüğü, Avrupa Birliği Başkanlığı, İlgili Kamu Kurum ve Kuruluşları, STK'lar	Gönüllülükle ilgili mevzuat çalışmalarına devam edilerek, kamu kurumları, STK temsilcileri ve akademisyenlerin katılacağı iki çalıştay düzenlenerek yasal çerçevenin geliştirilmesine yönelik görüş alışverişi yapılacak ve öneriler geliştirilecektir.
Uluslararası standartlarla uyumlu bir STK veri tabanı oluşturulmasına yönelik çalışmalar tamamlanacak, sivil toplum alanında güvenli ve düzenli veri toplanacak ve yayımlanacaktır.	İçişleri Bakanlığı (S), TÜİK, Avrupa Birliği Başkanlığı, Vakıflar Genel Müdürlüğü, İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler, STK'lar	TÜİK ile işbirliği içinde derneklere COPNI ve NACE kodlarının verilmesine ilişkin sınıflandırma çalışmaları tamamlanacaktır.
Karar alma ve mevzuat hazırlama süreçlerinde STK'ların katılımını ve etkinliğini artıracak çalışmalar yürütülecektir.	İçişleri Bakanlığı (S), Strateji ve Bütçe Başkanlığı, Avrupa Birliği Başkanlığı, Vakıflar Genel Müdürlüğü, İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler, STK'lar	Karar alma ve mevzuat hazırlama süreçlerine STK'ların katılımının ve etkinliğinin artırılmasına yönelik TBMM Başkanlığı ve ilgili kurumlarla istişare toplantıları yapılacak, bu çerçevede ihtiyaç analizi ve bulgu değerlendirme çalışmaları tamamlanacaktır
STK'lara yönelik proje hazırlama, fon bulma gibi alanlar başta olmak üzere kapasite geliştirme eğitimleri yaygınlaştırılacaktır.	İçişleri Bakanlığı (S), Avrupa Birliği Başkanlığı, Vakıflar Genel Müdürlüğü, İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler, STK'lar	İki kapasite geliştirme eğitimi düzenlenecektir.
STK'ların görünürlüğü, başarılı faaliyetleri kamuoyuyla paylaşılarak artırılacaktır.	İçişleri Bakanlığı (S), Avrupa Birliği Başkanlığı, Vakıflar Genel Müdürlüğü, İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler, STK'lar	Sivil toplum alanının görünürlüğünü artırmak üzere kamu spotu hazırlanarak yayımlanacaktır.
Küçük yaşlardan itibaren çocukların sivil toplum faaliyetleriyle tanışması ve gönüllülük bilincinin oluşmasına yönelik olarak okullarda uygulamalar başlatılacaktır	İçişleri Bakanlığı (S), Milli Eğitim Bakanlığı (S), Gençlik ve Spor Bakanlığı, Vakıflar Genel Müdürlüğü, İlgili Kamu Kurum ve Kuruluşları, Yerel Yönetimler, STK'lar	1.Eğitimciler, akademisyenler, ilgili kamu kurumu ve STK temsilcilerinin katılımıyla bir çalıştay düzenlenecektir. 2. Okullarda gönüllülük ve sivil toplum bilinci konularında çalışmalar yapılacaktır.
Üniversite öğrencilerinin gönüllülük ve STK faaliyetlerine katılımı ile STK'larda staj imkânlarının kolaylaştırılması teşvik edilecektir.	İçişleri Bakanlığı (S), Aile, Çalışma ve Sosyal Hizmetler Bakanlığı, Gençlik ve Spor Bakanlığı, Cumhurbaşkanlığı İnsan Kaynakları Ofisi, Vakıflar Genel Müdürlüğü, Avrupa Birliği Başkanlığı, SGK, YÖK, Valilikler, Üniversiteler, Yerel Yönetimler, STK'lar	Model belirleme çalışmalarının yapılması amacıyla tüm sorumlu ve işbirliği yapılacak kurumların dahil olacağı çalışma grubu toplanacak ve çalışmalarını yürütecektir.

Kaynak. 2021 Yılı Cumhurbaşkanlığı Yıllık Programı

Cumhurbaşkanlığı 2021 Yıllık Programında sivil toplum kapsamında, sivil toplum kuruluşlarının güçlendirilmesi, karar alma süreçlerine dahil edilmeleri, çocuklarda ve gençlerde sivil topluma yönelik farkındalığın artırılmasına yönelik çalışmaların yapılacağı belirtilmektedir.

SONUÇ

1970'lerden sonra yaşanan ekonomik krizler, birçok alanda olduğu gibi kamu yönetimi alanını da yakından etkilemiştir. Kamu yönetimi alanında önemli bir değişim, dönüşüm süreci yaşanmıştır. Ülkelerin büyük çoğunluğu devleti küçülterek kamu yönetimi alanında yeniden yapılanma sürecine girmişlerdir. Bu süreçte öne çıkan kavram, ülkelerin düzenleme yaparken, kamu yönetimini yeniden yapılandırırken yeni kamu yönetimi yaklaşımından faydalanmışlardır. Yeni kamu yönetimi yaklaşımı, piyasaya öncelik veren, kamu yönetiminin özel sektör gibi hareket edebileceğini hatta özel sektör gibi örgütlenmesi gerektiğini ileri sürmektedir. Bu kapsamda, şeffaflık, hesap verebilirlik, denetim, stratejik yönetim, performansa dayalı yönetim, katılımcı yönetim, sivil toplum kuruluşları, hizmette halka yakınlık ve yerel yönetimler yeni kamu yönetimi kapsamında öne çıkan ilkelerdir. Ülkeler sahip oldukları ekonomik, siyasal, kültürel yapılarının etkileri ile yeni yönetim tarzını uygulamaya, hayata geçirmeye çalışmışlardır. Bu çalışmada, Cumhurbaşkanlığı Hükümet Sistemine geçildikten sonra yeni kamu yönetimi yaklaşımının nasıl ele alındığı, değerlendirildiği, incelenmiştir. Bu kapsamda 2021 Yılı Cumhurbaşkanlığı Yıllık Programı incelenmiştir. Programda yeni kamu yönetimi yaklaşımında önemli kavramlardan biri olan yönetişim kavramı başlığı altında, diğer ilkelere ve kavramlara yer verildiği görülmektedir. Özellikle yeni kamu yönetimi yaklaşımında öne çıkan, sivil toplum, yerel yönetimler, şeffaflık, hesap verebilirlik gibi kavramlar ayrı başlıklar halinde değerlendirilmektedir. Bu kavramların her biri ile ilgili olarak ayrı ayrı politikalar, tedbirler belirlenmiş, ilgili kurumlar belirlenmiş ayrıca bu kapsamda yapılması planlanan uygulamalara yer verilmektedir. Yeni kamu yönetimi yaklaşımı ve ilkeleri, Cumhurbaşkanlığı Hükümet Siteminde benimsenmekte ve yıllık programında da detaylı olarak düzenlenmektedir.

KAYNAKÇA

CUMHURBAŞKANLIĞI YILLIK PROGRAMI (2021). Türkiye Cumhuriyeti Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı.

ERYILMAZ, B. (2017). *Bürokrasi ve Siyaset Bürokratik Devletten Etkin Yönetim,* İstanbul: Alfa Yayıncılık

DRUCKER, P. (1991). *Yeni Gerçekler*, Ankara: İş Bankası Yayınları

GENÇ, N. F. (2010). Yeni Kamu Hizmeti Yaklaşımı, *Türk İdare Dergisi, (466)*: 145-159.

GRUENING, G. (2001). Origin and Theoretical Basis of New Public Management, *International Public Management Journal, 4,* 1-25.

HOOD, C. (1991). A Public Management For All Seasons?, *Public Administration Review, (69)*, 3- 19.
HUGHES, O.E. (2014*). Kamu İşletmeciliği ve Yönetimi*, İstanbul: BB101 Yayınları
KETTL, F.D. (2000). The Transformation of Governance: Globalization, Devolution and The Role of Government, *Public Administration Review, 60(6)*, 488-498
ÖMÜRGÖNÜLŞEN, U. (1997). The Emergence of A New Approach To The Public Sector: The New Publis Management, *Ankara Üniversitesi SBF Dergisi, 52(01),* 517-565
POLİTT C. (2002). Clarifying Convergence Striking Similarities And Durable Differences in Public Management Reform, *Public Management Review, 4 (1)*, 471–492.
TUTUM, C. (1994). *Kamu Yönetiminde Yeniden Yapılanma*, Ankara: TESAV Yayını

Effective Time Management in Business: A General Evaluation in Terms of Company Scales

Adnan Celik
ORCID: 0000-0002-8538-9937
Beyza Nur Bulburu
Medine Ciftci
ORCID: Mc25031977
Selcuk University, Konya/Turkey

Abstract
Time is an important concept in terms of past, present and future. Time is lived instantaneously and every segment is very precious. Time that is so important must be managed effectively. This phenomenon concerns organizations as well as individuals. Effective management of time applies to businesses as well as public institutions and all non-profit structures. There are different perspectives on time management. In addition to classical applications, there are also modern and post-modern approaches. The generally accepted approach is to evaluate the most suitable ones together. For this, some principles must be followed and certain conditions must be fulfilled. Implementing time management strategies helps to use time management effectively. Proper management of time can make it easier for organizations to be more efficient and effective. Therefore, company personnel at all levels should know how to manage their time well. In particular, the global environment where technology and the environment are changing rapidly has increased the importance of effective time management in businesses. This study has been prepared in order to evaluate effective time management and company scale interaction. In the study, first, time management and organizational structure and time management dimensions in terms of managers were explained separately. Then, company scales were evaluated in terms of time management. Finally, various suggestions were developed for the relevant environment.

Keywords: Time Management, Organizational Time, Business Sizes, Effective Time Management in Business

İşletmelerde Etkin Zaman Yönetimi: Şirket Ölçekleri Açısından Genel Bir Değerlendirme

Özet
Zaman geçmiş, günümüz ve gelecek açısından önemli bir kavramdır. Zaman, anlık yaşanmakta olup, her dilimi çok kıymetlidir. Bu kadar önemli olan zamanın, etkin yönetilmesi gerekir. Bu olgu, bireyler kadar, örgütleri de yakından ilgilendirir. Zamanın etkin yönetimi, işletmeler ile birlikte kamu kurumları ve kâr amacı gütmeyen tüm yapılar için de geçerlidir.

Zaman yönetimi konusunda değişik bakış açıları söz konusudur. Klasik uygulamaların yanı sıra modern ve post-modern yaklaşımlar da söz konusudur. Genel kabul gören yaklaşım, en uygun olanların birlikte değerlendirilmesidir. Bunun için bazı ilkelere uyulup, birtakım koşulların da yerine getirilmesi gerekir. Zaman yönetimi stratejilerinin uygulanması, zaman yönetiminin etkin kullanılmasına yardımcı olur. Zamanın uygun yönetilmesi, örgütlerin daha verimli ve etkin olmalarını kolaylaştırabilir. Bu yüzden her düzeydeki şirket personeli, zamanlarını iyi bir şekilde yönetmeyi bilmelidirler. Özellikle teknoloji ve çevrenin hızla değiştiği şu küresel ortam, işletmelerde etkin zaman yönetiminin önemini daha da artırmıştır. Bu çalışma, etkin zaman yönetimi ve şirket ölçekleri etkileşiminin değerlendirilmesi amacıyla hazırlanmıştır. Çalışmada önce zaman yönetimi ile örgüt yapısı ve yöneticiler açısından zaman yönetimi boyutları ayrı ayrı açıklanmıştır. Sonra zaman yönetimi açısından şirket ölçeklerinin değerlendirilmesine geçilmiştir. En sonunda ise ilgili çevrelere çeşitli öneriler geliştirilmiştir.

Anahtar Kelimeler: Zaman Yönetimi, Örgütsel Zaman, İşletme Büyüklükleri, İşletmelerde Etkin Zaman Yönetimi

INTRODUCTION

The concept of time is defined as the time in which a job, an action or a occurence elapsed time. These jobs, actions or occurrences can happen in the past, present or future (Ates vd., 2018: 105). Time management has different definitions. It is possible to define this concept as the group of skills used to control the actions that need to be done and as the best time to be evaluated. One of the most important advantages that people have with the use of planning, organization, directing, coordination and controlling functions, which are five basic functions of management, is to use time effectively (Sayan, 2016: 6).

Time management closely concerns all staff of the organization. It is an important value for business, family and social life. Some of the most important benefits of effective time management are ensuring that the most important resource of organizations, people are employed more efficiently and project costs are reduced (Ates vd., 2018: 106). The focal points of time management are goals and solutions. The meaningfulness of life takes shape with time and purpose. In order to achieve the goals, goals should be set and appropriate plans should be prepared. Setting goals is an important step towards success on the road to approaching plans. Effective time plans are equally important (Adair, 2004: 4-13).

Organizations of all sizes, especially large-scale enterprises, have to do what is necessary for this phenomenon. Today it lives in the most advanced dimensions of globalization. The positions taken by the foreign competitors of the companies, the development of close relationships with suppliers and customers, forces managers to think globally (Simşek and Celik, 2019: 21). Time management efficiency is now generally accepted as an undeniable phenomenon for success in organizational activities. This phenomenon has become even more indispensable for global companies.

This study titled "Effective Time Management in Businesses: A General Evaluation in Terms of Company Scales" consists of three separate parts. The first part is titled "Time Management". In this part, definition and importance of time management, time management approaches, process, strategies and leisure management issues are explained. In the second part titled “Organizational Time Management”, subtitles of time management in terms of organizational structure and managers are included. In the third part, "Evaluation of Company Scales in Terms of Time Management" is discussed.

1. TIME MANAGEMENT

1.1. Definition and Importance of Time Management

The concept of time, which is defined as "the time and time that a job passes, will pass or passes in a occurrence" (Turkish Language Society General Turkish Dictionary) is an abstract concept, but it is a concept that cannot be repeated, returned, sold or bought, changed, and produced (Akgemci ve Celik, 2016: 2). The concept of time is described as a rare resource in the world and is a concept that benefits as a result of its correct use (Akyuz vd., 2020: 2).

The concept of time management, on the other hand, is an important form of management that continues its service or production activities, although it has many definitions, and aims to use the concept of time efficiently and effectively in order for organizations to achieve their goals and objectives, regardless of the private sector or public institution. Especially in the developing and changing business world, with the phenomenon of globalization, effective and efficient use of time can provide companies with a significant competitive advantage. Time management involves planning what actions can be done how in the current time available. As a result of this planning, people can use their time more effectively. Time management includes all time periods spent in social and daily life at the same time, it contributes to the planned execution of all activities carried out in these time zones and to a more balanced life. It helps to strike a balance between work, family and individuality (Azeez, 2018: 20).

Time management has become important in many aspects today. Because people are continuing their lives to get many jobs done in a short time. For example, in order for a school-age child to have a good education and to be successful, it is necessary to do many activities such as going to school, going to a course, doing homework and preparing for exams. Efficient realization of these activities requires effective time management. The parents of this child are involved in business life in order to continue their lives. In this case, in order to be efficient, they need to keep both their time at work and their time at home in balance, which shows how important time management is in every field.

1.2. Time Management Approaches

Time management approaches can be listed as follows (Celik ve Akatay, 2016: 32-35; Sahin, 2020: 31-33):

1. Layout Approach: According to this approach, the cause of the management problem is considered to be irregularity, that is, lack of order. This approach is based on organizing objects, tasks, and people. Examples of those that fall within the scope of editing objects are: Editing files, organizing keys, organizing the computer desktop, etc. Arranging the tasks is based on ordering the predetermined jobs according to their complexity levels. In regulating people, there are situations such as delegation of authority, job description and establishing a monitoring system for activities (Gurbuz ve Aydin, 2012: 13).
2. The Warrior Approach: The main purpose of the warrior approach is to focus, save time and produce (Dincay, 2010: 20). This approach includes powerful techniques such as self-isolation, stand alone, and delegation (Guclu, 2001: 14).
3. Goal Approach: According to the goal approach, understanding the desired thing and trying to achieve it is based on. In this approach, techniques such as short, medium and long-term planning, motivation, goal setting and positive thinking are used to use time efficiently (Sahin, 2020: 31).
4. ABC Approach: In this approach, it is said that the desired things can be done on condition that everything is not done. In the ABC approach, the concept of sequence is important, that is, it is based on that efforts should be spent primarily on the most important jobs. Knowing what you want to achieve and giving it priority, that is, being the primary focus, has an important effect on ensuring order.
5. Magic Tool Approach: Technology is involved in the magic tool approach. It is based on the fact that time will be used effectively and efficiently thanks to the technological tools that continue to

develop rapidly today, and thus time will be saved. According to this approach, loss of time in business life can be prevented by using the right tools, and the use of these right tools provides benefits in terms of power and quality. Calendars, computer applications, planners can be given as examples of these tools. These tools help track priority tasks and ensure rapid access to information.
6. Time Management 101 Approach: The understanding that the concept of time management is a skill is essential on the basis of this approach. It is assumed that various problems may arise in subjects such as planning, goal setting and authorization in people's skill deficiencies. According to this approach, the conditions for success are (Sahin, 2020: 32): "-Keeping a planner or appointment book, -Creating a task list, -Determining goals, -Giving authority, -Planning, -Sort priorities."
7. The Drop Down Approach: This approach is based on returning to the natural rhythm of life by taking the current and has the characteristic of being an approach that opposes traditional time management (Gurbuz and Aydin, 2012: 14). In this approach, it is argued that time cannot be managed, therefore one should be free, and opportunities that may be encountered with the flow of time should not be missed instead of making permanent plans (Sahin, 2020: 33).
8. Improvement Approach: There is a positive change in the improvement approach. In this approach, it is seen that environmental factors can affect individuals psychologically, cause disruptions in time management and cause some problems. It is possible that the improvement approach helps in identifying bad time management styles and sources.

1.3. Time Management Process

The time management process includes the following stages:
1. Time Usage Analysis (Time Table): The main purpose of this stage is to determine where the time is being spent. Most of the people are not aware of how their time is used, but they imagine that they are aware of what they are doing and how long it takes. The condition for people to be able to manage their time effectively is related to finding out what and how they spend their time. Time tables are used when analyzing the time usage, which is the process of determining the jobs that individuals spend their time on and recording the information obtained as a result of this determination, classifying and evaluating this information (Celik and Akatay, 2016: 36-37).
2. Defining Time Problems: The main purpose at this stage is to identify actions that may cause time loss and to eliminate them as much as possible (Sahin, 2020: 16).
3. Self Definition: This stage is associated with people getting to know themselves. The condition for the possibility of people knowing themselves is self-evaluation. The importance of self-evaluation is that people move away from their attitudes that are the reason for the loss of their time and increase the effectiveness of their time (Ardic, 2010: 69).
4. Determining Purpose and Priorities: At this stage, goals and priorities are determined. Objectives and intermediate goals that will achieve them are important. Here the following process is followed (Celik and Akatay, 2016: 40): "-Determining the objectives, -Determining the targets to achieve the determined goals, -Determining the tasks that need to be done in order to reach the determined goals".
5. Transferring Program Objectives to Implementation Plans: In this process, orientation of the activities becomes important. Efforts are harmonisationed with plans in order to achieve goals and objectives. The sections in which this stage occurs can be listed as follows (Sahin, 2020: 17): "-List all the activities that need to be done in order to reach the goals, -Determine the resources required to realize these listed activities, -Determine the required time".
6. Preparing Daily Programs and Guides: This stage is concerned with the preparation of short-term plans and programs that are relevant to the main activities that underlie the work. These short-term plans consist of two different parts, weekly and daily plans. In the first part, the weekly plans, after the activities are determined weekly, daily activities are planned. The activities included in the prepared plans should be implemented by making a ranking by determining the priority ones (Sahin, 2020: 17).
7. Development of Time Management Techniques: At this stage, it is a matter of determining the methods that need to be developed in order to reach the solution of personal and environmental problems that cause the loss of time (Celik and Akatay, 2016: 44). The following methods to eliminate

time-consuming traps are also important at this stage (Ardic, 2010: 61): "- Postponing the work to be done, -Planning the work to be done, - Determining the priorities in the work to be done, - Using the communication tools actively, - Using the delegation, - Eliminating the problems in the works".
8. Monitoring and Re-Analysis of the Process: In this process, it comes to the fore for individuals to develop their own methods to manage their time well and to operate effectively against situations that cause or may cause loss of time, and repetition of analyzes.

1.4. Time Management Strategies

Time management strategies are used to realize factors such as efficiency, productivity, effectiveness, efficiency and success. Choosing time management strategies according to the characteristics of individuals is an important factor for effective time management (Ozkurt, 2018: 18). Basic time management strategies can be listed as follows (Cahase et al, 2013: 3-4): "1.Setting realistic and achievable goals, 2.Optimizing realistic planning, 3.Priority, 4.Effective planning, 5.Team involvement, 6.Rewarding yourself for success, 7.Identifying possible distractions, 8.Problem solving and managing obstacles, 9.Balancing life, 10.Analyzing progress and time management strategies in certain periods ".

1.5. Leisure Time Management

Leisure time is a period of time in which there are special types of activities that are essentially recreational, which can be described as entertaining, without any economic value, away from people's business responsibilities and all kinds of official organizational duties (Tabarsa, et al., 2013: 66). Leisure time is the time when individuals are free from all duties and choose what to do on their own, and it forms a part of human life. Also, leisure time is a desired state. In general, it is a time that can be beneficial for people to have a healthy life and to improve their quality of life (Kourkouta et al., 2018: 18).
In leisure time management, it is important that people work in a planned and scheduled manner in their work times so that they can evaluate these free time. There are activities applied for individuals to make use of these leisure time. Thanks to leisure activities, people's ability to enjoy life can also increase. Leisure time activities may differ due to the diversity of people's needs (Fisekcioglu and Ozsarı, 2017: 304). Leisure needs of people are categorized according to personal characteristics. These are: the need for rest and relaxation; need for balancing, emotional release and entertainment; the need for knowledge, education and training; the need for self-knowledge and experiences, social relationships and socialization, ie the need for communication; collective learning experience ie integration with the need for grouping and social aspects; the need to participate and identify with others; needs for the development of life, cultural activities and productivity (Kourkouta et al., 2018: 19).
Today, the role of human resources in organizational success is an important point. Making good use of the leisure time of the employees can help human resources managers to create entertaining and relaxing activities such as celebrations, travels, physical activities, programs in order to use their leisure time effectively, which can help increase the motivation of the people, which is one of the most important resources of the enterprise. Leisure time management consists of five main stages that are interrelated and complement each other (Tabarsa, et al., 2013: 67-68): The first of these is to set leisure time management goals. The main purpose of determining different alternatives as leisure time programs, which is the second stage, is to try to determine the different alternative programs that can be suggested and provided by the organization as recreation and entertainment activities in the leisure time of the managers of the managers in an organization. The third stage is the evaluation and suggestion of leisure time programs. At this stage, there are two factors for the selection of leisure time programs that are appropriate in situations that organizations may encounter such as special situations, requirements and limitations related to leisure time activities. One of them is organizational factors and the other is employee factors. The fourth stage, that is, the implementation of selected leisure time

programs. The last stage is the evaluation of the applied programs. There are two types of assessment here. The first of these is the management evaluations of the implemented programs and the intended results. The other is the evaluations of the employees' programs. Improvements can be made as a result of the evaluation.

2. ORGANIZATIONAL TIME MANAGEMENT

2.1. Time Management in Terms of Organizational Structure

Effective use of time, which is an important organizational resource, has an important effect on the regularity of organizations' functions and development. Here, "target, people, environment, time and knowledge" is important. Time management is an element of both individual and organizational management. How to use time effectively is up to managers and employees. There is a need to develop new ways of using time, because these improvements cause organizations to have an advantage. This improvement can be achieved by commitment to the task and organizational goals (Dogruoz, 2008: 48-49).

Planning and coordination requirement is an important factor in time management, which is the most important resource of the organization. These factors are important for the effective use of organizational time. Individuals should use their personal and organizational time effectively. The total amount of time spent by both individuals and machines for the activities required to produce the goods and services of the organization is called organizational time. As organizational time is an irreversible resource, it is the scarce resource used in all organizational processes. Therefore, it determines the limits of organizational time, effort and outputs. The good use of this factor is possible with effective time management. Thanks to the devolution of authority, which is the most important time management technique in organizational life, it is possible to extend the management time of managers (Ozer, 2012: 49, 71). In this way, managers can turn to the necessary work they can do instead of wasting time.

The performance and organizational success of individuals who use time correctly are at a satisfactory level. This satisfaction leads to job satisfaction in both managers and other employees, thus increasing the efficiency of the enterprise (Azeez, 2018: 18). In order for the time management to be carried out well, the human resources in the enterprises should be managed efficiently.

Time management is linked to the concept of strategic flexibility in organizations. From a strategic point of view, flexibility refers to the combination of managerial skills and organizational resources in a way that facilitates the development of strategies produced by businesses to protect their assets. The key element of strategic flexibility is the ability to use time effectively (Zerenler, 2016: 318-320).

2.2. Time Management From Managers Perspective

It is important of managements for managers to have time management skills. Even if the managers are faced with problems that prevent them from applying this skill, they ensure that they can use their time correctly through time management and main management functions (Azeez, 2018: 25). Since the success of the managers and the success of the subordinates interact in the right direction, the time of the employees must be managed effectively (Karaoglan and Yaman, 2009: 290). In order for time to be used effectively by managers, it is necessary to identify the problems and time traps that prevent the effective use of time and to solve these problems (Yilmaz, 2020: 9).

There are significant interactions between the basic functions of management and time management efficiency. First, a good planning system is needed. Thus, time saving in organizational activities is achieved more easily. More benefits should be obtained in less time with planning. Effective time management should be targeted in the organizing function as in planning. In the directing function, another function, there is continuity and an active process. This function is basically related to the timely and complete activities of the employees. By monitoring the actions, error corrections must be made and thus time losses must be eliminated. Time management is also important in the coordination

function. It requires coordination to get things done correctly in a certain sequence and in a specified time. It is the stage of determining what the work done in time management in the auditing, which is the last management function, is what has been achieved and where they are. When considered in the context of time management, lack of audit can cause negative effects in terms of efficiency and productivity. Managers' ability to use time management effectively is under control (Yilmaz, 2020: 41-45).

There are three types of time loaded on managers: "uploaded by the employer, uploaded by the system and installed by itself". There are some factors that affect managers' use of time. Although these differ from person to person, they can generally be listed as follows; "-Personal structure and working habits, -Manager's abilities,-Present administrative level, -Information systems". Managers effective use of time depends on determining the problems in this direction and eliminating them as much as possible. Managers' time loss can be caused by; "1.Social relationships and those arising from personal characteristics (procrastination, inefficient reading, routine and unnecessary work, etc.); 2.Losses arising from the organizational structure or management functions within" (Celik and Akatay, 2016: 57-68).

Determining and eliminating time losses by managers is possible with behaviors and methods that ensure effective use of time. Among them, the following are important (Akatay, 2016: 101): -Time plans and programs, -Time record, -Evening analysis, -Power and responsibility sharing, - Do not works let things drag, -The manager can manage himself, -To manage subordinate and superiors, -Effective meeting management, -To be able to say "no" when necessary, - Control of open door policy, -Secretariat activity, -Effective communication, -To stop doing excessive work, -The manager to spare time for himself, -To spend time to read, -Memory development and mind opening activities ".

3. EVALUATION OF COMPANY SCALES IN TERMS OF TIME MANAGEMENT

3.1. Company Scales Classification

Various criteria are used in the classification of company scales. Personnel number, production volume and sales amount are the main issues. In addition to these, the amount of capital, machine park, factory size, buildings and lands, energy used, salary or wages paid can also be taken into consideration. It may not always be realistic to use these aspects or criteria individually and independently of each other in determining the size of the firm. In other words, one, several or all of these measures can be used at the same time. On the other hand, the purpose and type of activity of the enterprise will determine which measure will be predominantly used in determining the size. For example, the size of the weaving mill is specified by the number of work or looms, while the number of rotary kilns or ton capacity in cement factories, and the number of workers employed in furniture factories is taken as the measure of the size (Celik, 2018: 64).

The "Regulation on the Definition, Qualifications and Classification of Small and Medium Sized Enterprises" provides useful information about business definitions or scale classification. The regulation has clarified the subject of small and medium sized enterprises (SMEs), excluding large-scale enterprises from the scope. The following classification has been made within the scope of SME: 1.Micro Enterprise: Businesses that employ less than ten employees per year and whose annual net sales revenue or financial balance does not exceed 3 Million Turkish Liras. 2.Small Enterprise: Those who have less than fifty annual employees and whose annual net sales revenue or financial balance does not exceed 25 Million Turkish Liras. 3.Medium-Sized Enterprise: Employing less than two hundred and fifty employees per year and whose annual net sales revenue or financial balance does not exceed 125 million Turkish Liras (SME, 2018).

Businesses that exceed the size of SMEs are called large firms. Their main feature is that they employ more than two hundred and fifty people. In addition, it is sought that any of the annual net sales revenue or financial balance sheets exceed 125 million Turkish Liras. Businesses that employ a large number of personnel and have high annual net sales revenues or financial balance sheets can

sometimes be referred to by other names. Many companies, both nationally and globally, can be seen in the “giant enterprise” group. Giant businesses can now be referred to as international, multinational and transnational businesses.

3.2. Effective Time Management and Evaluation of Company Scales Interaction

The scale of the companies is important in effective time management. Economies of scale and organizational structure interact. A lot of effort should be made for institutionalization and sustainability in small and / or medium-sized enterprises. For example, the “micro enterprises” group within the scope of SMEs continues their lives with a small number of personnel without using much machine power. “Small businesses” can also be considered in this context. They may aim to be “medium” first, then “large”. However, here, the organizational structure may not yet be fully institutionalized. There are many applications waiting for micro or small business management. Failure to do these can also bring away from effective time management. Problems may arise if issues such as exhibiting professional management, developing time management plans and programs, conducting effective time usage analysis, delegation of authority, participation of subordinates in management, meeting efficiency, appropriate bureaucracy and registration order, secretariat services, individual development cannot be achieved (Akatay, 2016: 101; Celik, 2018: 64-65).
“Medium size” enterprises, which are in the third rank of SME classification, are among the types that are gradually beginning to follow the mentioned issues. Compared to the previous ones, starting to employ a large number of personnel and the increase in their business volumes make companies of this size important. The need for departmentalization within the business appears. Specialization is preferred, albeit partially. Management bodies can use their time effectively by taking very fast and consistent decisions when necessary. Large or giant enterprises are in a more advantageous position for institutionalization and sustainability. The number of these enterprises has increased with industrialization and development. These enterprises have a great share and contribution in the social, technological and financial development of countries. These have somehow formed their organizational structures. At least the governing bodies are evident. They can transfer some applications brought by modern business to their organizations more easily. The strategies, behaviors and methods required for time management can be followed more effectively. Generally, they are aware of time planning and scheduling. They can target appropriate time management in basic functions of management. Priorities and routines can differentiate. There is a transfer of authority, albeit partially. Departments have been formed. Office order has been established and secretarial services have been separated. They need to know the concept of meeting management. They are expected to follow issues such as individual development, organizational development and organization development (Cahase et al, 2013: 3-4; Akatay, 2016: 101; Celik, 2018: 65-66).

CONCLUSION AND SUGGESTIONS

The management of time, which has an important place in human life, is an issue that stands out in the lives of people both individually and in organizations and should be given importance to each individual. Achieving effective time management in an individual sense depends on the individual's ability to manage her / his own time well. Thanks to well-managed time, individuals have free time that they can devote to themselves, and thanks to these leisure times, they increase their quality of life by feeling better both physiologically and psychologically. There are important strategies that businesses should adopt and implement in order to adapt to increasingly competitive conditions. Productivity is important for businesses in every aspect. Time is an important determinant for efficiency. Efficient implementation of time use is possible with time management and efficiency can be achieved as a result of this management based on plans. Time management in businesses becomes effective with the practices of a good manager. Thanks to the creation of an effective time management system, companies provide time advantage in achieving their determined goals. Thanks to the creation of an effective time management system, companies provide time advantage in

achieving their determined goals. With this time advantage, the human factor, which is the most important resource of enterprises, is very important.

As can be seen in the title of "evaluation of company scales in terms of time management" discussed in the last part of this study, time management is generally important for every business. Of course, the nature and scope of this may vary according to company sizes. Undoubtedly, the number of personnel employed and the increase in business volumes are important for micro and / or small enterprises being first SMEs and then large-scale enterprises. However, it is equally important to create an appropriate organizational structure and to give the necessary importance to time management. Medium-sized enterprises should also give due importance to this issue on the way to growth. Large or giant enterprises are generally aware of this phenomenon. In today's global competitive environment, environmental and technology developments continue at a dizzying pace. Every organization aiming at institutionalization and sustainability has to give due importance to time management activities. Time management plans and programs are very important. Training and practices on time management should be followed. Priorities for the organization should be determined. Electronic bureaucracy should be established. Management information systems should be used intensively in communication, meeting, stationery and document order. Authorization should be transferred. Meetings should be managed effectively. Individual and organizational development in this area should be made continuous.

Throughout this study, it is aimed to evaluate effective time management and company scale interaction. It has a theoretical dimension that has been prepared based on the generally accepted literature. This situation constitutes the main limitation of the study. The information here can be tested in the relevant businesses and more statistically significant information can be obtained.

REFERENCES

Adair, John (2004). The John Adair handbook of management and leadership (2004). Ed. Thomas, N., London: Thorogood.

Akatay, A. (2016). Zamanın etkin kullanılmasını sağlayan davranış ve yöntemler. İçinde: Şimşek, M. Ş., Çelik, A. ve Soysal, A. (eds), Zaman yönetimi: yönetsel zamanda etkinlik, 4. Baskı, Konya: Eğitim Yayınevi.

Akgemci, T. ve Çelik, A. (2016). Zaman kavramı ve kapsamı. In: Şimşek, M. Ş., Çelik, A. ve Soysal, A. (eds), Zaman yönetimi: yönetsel zamanda etkinlik, 4. Baskı, Konya: Eğitim Yayınevi.

Akyüz, M., Taşkın, Yılmaz, F. and Aldemir, K. (2020). Zaman yönetim becerilerinin akademik başarı ile ilişki. Electronic Journal of Social Sciences, 19(73):414-424.

Ardıç, C. (2010). Zaman yönetimi ve zaman yönetiminde dönüştürücü liderlerin davranışlarını belirlemeye yönelik bir araştırma. Yayınlanmamış Yüksek Lisans Tezi, Gazi Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

Ateş, S. S., Kafalı, H. and Çeliktaş, M. (2018). Analysis of internal/external factors affecting time management and the reasons of delay in aviation. journal of aviation, 2(2): 105-118.

Azeez, Z. J. (2018), The role of time management in the implementation of engineering project management. Yayımlanmamış Doktora Tezi, Bingöl Üniversitesi Sosyal Bilimler Enstitüsü, Bingöl.

Çelik, A. ve Akatay, A. (2016). Örgütlerde zaman yönetimi. İçinde: Şimşek, M. Ş., Çelik, A. ve Soysal, A. (eds), Zaman yönetimi: yönetsel zamanda etkinlik, 4. Baskı, Konya: Eğitim Yayınevi.

Çelik, A. (2018), Uygulamalı girişimcilik, Konya: Eğitim Yayınevi.

Dinçay, H. (2010). The relationship between physical activity levels and time management skills among selected univesity students. Unpublished Master Thesis, METU Graduate School of Social Sciences, Ankara. Avaiable at: http://etd.lib.metu.edu.tr/upload/3/12612086/index.pdf [14.01.2021]

Doğruöz, İ. (2008). Palanning of time management on goal setting. An application for managers in different sectors. Yyaımlanmamış Yüksek Lisans Tezi, Marmara Üniversitesi Sosyal Bilimler Enstitüsü, Erişim: https://katalog.marmara.edu.tr/eyayin/tez/T0059775.pdf [16.01.2021]

Fişekçioğlu, İ. B. and Özsarı, A. (2017). Leisure time management and the attitudes of disabled athletes. International Journal of Science Culture and Sport, 5(4): 2148-1148.

Güçlü, N. (2001). Zaman yönetimi. Kuram ve Uygulamada Eğitim Yönetimi, 25(25): 87-106.

Gürbüz, M. ve Aydın, A. H. (2012). Zaman kavramı ve yönetimi. KSÜ. Sosyal Bilimler Dergisi, 9(2): 1-20.

Karaoğlan, A. ve Yaman, R. (2009). The relationship between the success and time management of executives and a view to executives of Turkish top companies. Gazi University Journal of Science, 22(4): 287-295.

KOBİ (2018). Küçük ve Orta Büyüklükteki İşletmelerin Tanımı, Nitelikleri ve Sınıflandırılması Hakkında Yönetmelik. Erişim: https://www.kosgeb.gov.tr/Web/Genel/SSS.aspx?KatID=16 [11.02.2021]

Kourkouta, L.. et al., (2018). Leisure time and health. In: International Journal of Health Administration and Education Congress (Sanitas Magisterium), 4(2): 17-22.

Özer, M. (2012). Çalışma hayatında zaman tuzakları ve zamanı etkin yönetmek. Hak İş Uluslararası Emek ve Toplum Dergisi, 1(2): 44-75.

Özkurt, E. (2018), The role of burnout on the relatioshıp between time management and job satisfaction. Unpublished Master Thesis, Yeditepe University Graduate School of Social Sciences, İstanbul.

Sayan, G. (2016). Yöneticilerde zaman yönetiminin müşteri kazanımı üzerindeki etkileri: kargo sektöründeki uygulamalarının araştırılması. Yayımlanmamış Yüksek Lisans Tezi, İstanbul Gelişim Üniversitesi Sosyal Bilimler Enstitüsü, İstanbul.

Şahin, C. Y. (2020). The relationships between time management skills and activity participation among METU members. Unpublished Master Thesis, METU Graduate School of Social Sciences, Ankara. Avaiable at: https://etd.lib.metu.edu.tr/upload/12625197/index.pdf [16.01.2021]

Şimşek M. Ş. ve Çelik, A. (2019). İşletme bilimine giriş. 26. Baskı. Konya: Eğitim Yayınevi.

Tabarsa, G. A. et al., (2013). Leisure time management: A new approach toward employees loyalty. Journal of Management and Strategy, 4(3): 65-80.

Yılmaz, V. (2020). Üst düzey yöneticilerde etkin zaman yönetimi: Fırat üniversitesi örneği. Yayımlanmamış Yüksek Lisans Tezi, Fırat Üniversitesi SBE., Elazığ.

Zerenler, M. (2016). Örgütsel esneklik ve zaman yönetimi. İçinde: Şimşek, M. Ş., Çelik, A. ve Soysal, A. (eds), Zaman yönetimi: yönetsel zamanda etkinlik, 4. Baskı, Konya: Eğitim Yayınevi.

Effects of Thomas Cook's Bankruptcy on Turkish Tourism

Adnan Celik
ORCID: 0000-0002-8538-9937
Omer Faruk Diken
ORCID: 0000-0001-5419-0194
Esra Uysal
ORCID: 0000-0002-3931-1071
Selcuk University, Konya/Turkey

Abstract

Tourism is seen as a smokeless industry. Countries have turned their steps towards this field in order to increase their financial resistance, gain profits and provide new job opportunities. In this sense, tour operator emerges as an important function. Tour operators are service producers who gather the necessary services to provide holiday relocation and sell it to customers as a package product. These are tourism establishments that organize all kinds of tours for potential tourists. A significant amount of capital and extensive marketing knowledge are required for a global tour operator. Such companies operating on a global scale can increase their added value as long as there are no extraordinary poor conditions or pandemic problems. However, there are some who find themselves in a difficult situation as a result of unexpected situations, internal management weaknesses, environmental problems or technological problems. The bankruptcy of British Tour Firm Thomas Cook is a case in point. This firm which is considered as one of the pioneers of modern tourism has grown and developed since 1872. However, practising wrong strategies, ignoring new managerial and market methods that is necessary for the time, as well as not controlling expenses sturdily have taken Thomas Cook to bankruptcy. The firm, which officially wanted to declare bankrupt in 2019, negatively affected Italy, Greece and Turkish tourism in particular. First of all, an important actor that brought tourists to our country has pulled out of the market. The analysis of the Thomas Cook case, which is so important for tourism, constitutes the main purpose of this study. In the study, tour operators are conceptually described, the Thomas Cook firm is defined, the bankruptcy phase is described and its effect on Turkish tourism is mentioned. In addition, as a result of the study, various suggestions are made to relevant actors in order to decrease its effect at tourism in our country.

Keywords: Tour Firms, Thomas Cook, The Bankruptcy of Thomas Cook, Effects of Thomas Cook's Bankruptcy on Turkish Tourism

INTRODUCTION

Transferring tourists from a certain location to another one, providing them shelter and meeting their eating and drinking needs are useful services in terms of tourism. Tour operators undertake important functions in popularizing tourism. The contribution of the tour operators to the country's foreign currency inputs is also undeniable. However, various problems may arise in these firms as a result of

both internal administrative problems and environmental problems. In this respect, the British tour firm Thomas Cook case is significant. This firm, whose firm dates back to 1872, has become one of the leading firms in the world in the following years. However, the erroneous course of action it followed, especially in 2011, left the firm in a very difficult situation. In addition, the introduction of new actors into the market, the proliferation of institutions conducting online ticket sales, and the various problems listed below have not been that good for the firm. Thomas Cook declared bankruptcy in May 2019 as a result of the inadequacy of its efforts in the sales processes.

At a period of time, various things were said about the reasons for the bankruptcy of the firm which had 9 Billion Pounds turnover, approximately 19 million customers and approximately 22,000 employees operating in 16 countries. The answer for the question "What Went Wrong at the Vacation Firm?" is looked. There were many things in the answer list. The firm's business marriage in the past (2007) has been cited as a bad strategy. It was stated that the trade made over virtual networks could not be controlled. It was pointed out that the holiday unplannedness and the changefulness in demand reduced the market share. It was emphasized that collection and debt management was not effective. Also, Britain's Brexit decision triggered the collapse (O'Connell, 2019: 1). The state of Thomas Cook, which brings many tourists to our country every year, has also adversely affected our tourism industry and caused other companies to be stuck in a difficult situation.

This study consists of three separate parts. The first part is titled "Conceptual Framework". Here, tour firms (operators) and the development of Turkish tourism and the contribution of tour operators are discussed. In the second chapter titled "Thomas Cook Firm", the place and importance of the firm in the sector, developments in the Thomas Cook group and the bankruptcy process of Thomas Cook are explained. In the third part, the general situation of the Turkish tour industry, the duties and practices of the tour operators and the problems experienced by the Turkish tourism industry due to this process are discussed under the title of "Problems Arising in Turkish Tourism Enterprises With the Bankruptcy of Thomas Cook". The study was concluded with conclusion and suggestions.

1. CONCEPTUAL FRAMEWORK

1.1. Tour Firms (Operators)

In general, tour operators can be observed in countries with a strengthening industry, which is engaged in tourist-related activities. They carry out the process according to the rules of travel agencies from a legal perspective. They have started to differ from travel agencies in most countries economically and commercially (Hacıoğlu, 2000). Tour operators in our country could not be established because they require a lot of capital and marketing knowledge and organizational skills. Therefore, group a travel agencies carry out this process (Kozak et al., 2000).

Tour operators are producers who compile the necessary inputs to change the location for travel purposes and deliver them to the public as a whole. They organize every tour for tourists, and they act as a bridge between the real producers and consumers by carrying out various services. In addition, in order to create an integrated holiday product for the tourists, they compile agreements in a holistic manner with accompanying events such as accommodation, transportation, entertainment, and they are also firms which deliver brochures advertising these services to the target audience. World Tourism Organization (WTO) describes it as “as well as being a process of transferring access, accommodation and other tourism related activities before the demand comes; carrying out these processes on the move or for accommodation purposes, arranging trips and delivering them to the public in return for a consideration.” (Hacıoğlu, 2000; İçöz, 2003: 199).

When it comes to travel related processes, the term tour operator is used instead of wholesaler concept. This process can be thought of as a tour wholesaler in relation with other operators. The operator concept here symbolizes the task of executing and running sub-items associated with the tour. In other words, it carries out the function of taking the distribution of tour packages to the target audience. They can operate with their own facilities such as transportation and accommodation in order to deliver the activities they perform, or they can rent from other firms (WTO, 1999: 104). For instance,

performing these processes in different countries may differ. While certain tour arrangements were carried out for the purpose of sejour in Northern Europe, arrangements were directed towards Circuit in Southern Europe (Dimitrious, 2003).

Tour operators, acting collectively with touristic oragnizations, collecting the travel processes in an integrated manner and carrying out the marketing function through the distribution of travel, can create touristic outputs according to the services that can be encountered during the holiday. They can also deliver these services to consumers by pricing them directly or by using travel agencies as an intermediary (Buck, 1988; 67-74; Hacıoğlu, 2000; Holloway, 1994: 58; Sheldon, 1986: 349-365).

Services in the form of packages compiled in an integrated manner are more attractive to consumers. As, it may be more appropriate than the fee that can be paid to acquire all actors separately (Peköz and Yarcan, 1998: 23). In this way, a comfortable, safe and affordable holiday opportunity is offered to consumers, and also this makes it possible to reduce tension and use leisure time with travel options (İçöz, 2003: 151; Budeanu, 2005: 94). In addition, it can prepare an environment for the dissemination of its activities through training trips, promotions and the like for its own officers and travel agency employees. In general, operators performing a single target-oriented task can be classified according to some divisions (Tepelus, 2005: 102). These can be categorized as mass tourism operators, specialized tour operators, tour operators organizing domestic tours, and outsourcing (welcomer) tour operators (Goodal and Ashworth, 1993: 28-29). Particularly, the gain of tour operators who perform duties towards the masses in an integrated manner is higher than those who carry out alternative processes. However, the contribution of the operators involved in alternative tourism may be more in the context of the destination cost in terms of its effect in general perspective (Carey, et al., 1997: 429).

1.2. Development Processs of Turkish Tourism and the Contribution of Tour Operators

Turkish tourism has reached a remarkable place in the world with its success and progress. According to the World Tourism Organization data, in the context of hosting tourists in 2004, it ranked 12th with 2.2% market share, and 9th with 2.5% in temporary data in 2005. In terms of tourism returns, these rates were 2.6% at 8th rank in 2004, and according to temporary data in 2005, it hold its place. According to the data of the Ministry of Culture and Tourism, 198,841 people came to our country in 1963, this number was 724,784 in 1970, 1,288,060 in 1980, 5,389,308 in 1990, 10,428,153 in 2000 and this number reached to 21.124.886 in 2005. Package tours and tour operators have a serious contribution here. In this context, tour operators have promoted our country to the best seller category in the Mediterranean (Cavlek, 2002: 486). This rapid progress has other reasons as well (Ulusoy, 2002: 164):

1. The destinations in Mediterranean where consumers in Europe would like to visit reached to a saturation line.
2. Curiosity about the newly observed coastal and sun-oriented locations in our country,
3. Increasing structural investments since 1980, and transferring the competencies that companies want to produce to the market.

The fact that the accommodation firms in our country are new when compared to others in the Mediterranean increases the tendency in international context. Regarding, tourists coming in 1980-2005 and the income, it can be described that the situation in our country is higher than the indicators in the world. For instance, the increase in the number of incoming tourists between 1980-1990 is 59,1% and this amount was 76,8% in 2005 around the world, however indicators of Turkey for the same periods were 318,4% and 291,9%. On the other hand, the increase in profit for the same years are 150.6% and 157.7% in the world, while this indicator is 728.0% and 571% in Turkey. At this point, it can be argued that the progress of tourism in our country is more favorable than in the world. For the development of tourism, it is important to carry out integrated activities with international travel firms. For instance, according to the World Tourism Organization, in 2004 there were 24 tourists per 100 people in our country, while this number is 124 in Spain and 131 in Greece. It is thought that the number of tourists and profit related to this issue in the world will increase. The efficiency of tour operators and agencies in our country is higher than the world average. When it

comes to the way of visits by foreigners who came to our country in 2001; it is observed that 36.6% preferred individual, 39.6% preferred package tour and 23.8% preferred travel agencies(non-package tour). The use of travel agencies is 63.4%. Especially tour operators have contributed to the progress of touristic destinations to be visited in the last 30 years (Carey, et al., 1997: 429; WTO, 1999; Kültür ve Turizm Bakanlığı, 2006; as cited in Alaeddinoğlu and Can, 2007).

2. THOMAS COOK FIRM

2.1. Firm's Position and Importance in the Sector

When it is said holiday the first thing that comes to mind is generally summer but this is no longer considered as the only choice that there are many holiday options for the parties in every season. As a result of the situations brought by the tour firms, it is possible to go anywhere with many different options. It was an unusual event that a British businessman named Thomas Cook took nearly 500 people on a tour by train from Leicester to Loughborough on July 5, 1842. This view of Thomas Cook, who is seen as the father of modern tourism, has increased his reputation until he is the most successful tour firm in England and he is respected, and he continued his world trips that last 40 thousand kilometers, which can take 222 days. Tourism expert Prof. Jürgen Schmude from Ludwing-Maximillian University in Munich describes this unusual situation that consists travelling by train as the pioneer of tour-related processes in the modern context. Among the excursions conducted by Cook, cruises to Scotland, Ireland, Europe, Canada, the USA and the Nile River and similar ones can be mentioned. In this way, it has turned to people with advanced income of England and has achieved a high profit process (BBC, 2019/1, BBC, 2019/2).
Hasso Spode, who is engaged in tourism-related activities at the Technical University of Berlin, indicated that before Cook, train trips were carried out on a daily basis, but that this institution was the most effective, well away its rivals and became world wide famous in the 1900s. Jörn Mundt, on the other hand, told that Cook was one of the pioneers of tourism in a modern context, that it could compile, analyze and use the existing entrepreneurial processes in a good way. However, it has been explained by experts that until the 20th century, people in the world did not have the opportunity to travel a lot and have fun and that those who were performing their duties were not legally suitable to go on vacation. Jürgen Schmude, who also worked in the field of tourism at Ludwig-Maximilian University in Munich, also described that since the mid-20th century, touristic activities have become widespread, and financial adequacy, access opportunities and similar situations are on the way to improvement. Cook, the founder of one of the tour firms with the best success scale, passed away in 1892. Until 1928, the firm, which operated in the form of a family business, held a holding position in the London-based stock exchange whose share values were carried out until it went bankrupt (Bağımsız Havacılar, 2016: 1).

2.2. Developments in the Thomas Cook Group

Thomas Cook had 29 hotels in Turkey in 2018 and with an increase at a level of 70% profit in our country he has reached 347 million pounds. According to the statement made by the Mediterranean Touristic Hoteliers and Operators Association Resort Magazine in 2018, a total of 1 million 155 thousand people were hosted in our country in terms of tourism (almost 3% of those who came to our country for touristic purposes belonged to Thomas Cook) and 620 thousand of them were from Germany and 435 thousand were from England. This is the reason why Cook said "we are falling in love with Turkey again". The firm back loaded its debt of 1,1 billion pound and escaped from a big trouble, but it paid an amount of 1.2 billion dollars in the form of interest. In other words, more than a quarter of the 11 million tour packages carried out were lost again. Fosun, a high-income firm in China, followed Cook's firm and bought its first shares from Cook's firm in 2015. In August, Cook made some decisions on behalf of restructuring. Here, it is indicated that Fosun firm would take over most of the shares in return for cash of £ 450 million, the debt to banks at an amount of 1.7 billion

pounds would be written off, and the other shareholders would be removed. However, the firm declared its bankruptcy despite all these efforts. Italy and Turkey stated that they could pay the bail of 200 million pounds to British Government in order to maintain the existence of the firm. However, the government reported that this incident consisted of a commercial situation related to the firm and that the customers affected by the incident were retained in the context of civil aviation insurance (Thomas Cook, 2019; AA, 2019).

Thomas Cook has been evaluated as an important firm for the UK. When it came to the brink of bankruptcy after the II. World War, it was expropriated in 1948 and served in this way until 1972. Even with the extraordinary debt faced by the firm, the division of 20 million pounds in bonuses to the executives in the last five years has been a sign that the situation is not getting better. In 2007, it was aimed to achieve 75 million savings by merging with the firm called MyTravel, but it was exposed to a loss of 1.5 billion pounds. In 2018, almost 60 percent of the British preferred abroad for sightseeing, but they turned to a different preference by heading for city tours rather than beach and sea. These developments resulted positively for Ryanair, EasyJet and Airbnb. Because the target audience of these firms is making transactions using online networks. However, those who carried out the package sales process in the office remained in a bad situation. Cook's firm had 560 offices (BBC, 2019/2).

One in 7 of those wishing to travel in the UK did not benefit from online networks, and the beneficiaries were those over the age of 65 with lower financial and social levels. Cook's firm had ignored current developments and made the mistake of being able to carry out it with its own method. Climatic conditions played a crucial role in this negative situation. The heat wave felt in Europe in May 2018 caused a change in the preference of individuals who intend to travel. In addition, the loss of monetary value caused by Brexit has also caused individuals to postpone vacations. Tui and EasyJet, jointly run firms by the British and the Germans, which are Cook's strongest rivals, have benefited from Cook's state of necessity. Tui was not much affected by this complicated situation as he had small debts and owned hotels and ships. Our country came in second by passing Greece in terms of visitors from England. Tunisia is also making progress. According to researches, it is seen that the visitors from England preferred mostly Spain, then our country which is in the second place, then Greece as the third place, then the USA and Cyprus in 2019 summer. For Cook, the percentage of visits to our country in the context of vacation increased by 11 percent in 2019 compared to the previous one. In Greece, this indicator is 22%. Peter Fankhauser, the board chairman of the firm, described that our country is at a good level in terms of the amount paid (BBC, 2019/1).

2.3. Thomas Cook's Bankruptcy Process

The Thomas Cook firm had difficulty in meeting its debts as a result of the financial crises it faced, and the firm, which made a distinguished name for 178 years, run in debt up to 1.2 billion pounds in May 2019. In order to get out of this situation, he first asked the main partners and then the British Government for help. It was agreed that the sum of 900 billion pounds sterling under the control of the Chinese Fosun Group, which owns the largest shares of the firm, was put into effect. After the banks providing financial support asked for another 200 million pounds of collateral, a problem occurred in the negotiations, and the Fosun Group's latest proposal, which includes banks and other institutions, was rejected by the senior executives in the firm. Following the rejection of the offer, the firm requested support from the British government. The government, on the other hand, rejected this offer in order not to set a precedent for other firms that might be in a difficult situation in the future. Thereupon, the firm went completely bankrupt. The British Civil Aviation Administration has put into effect the return activities for 150 thousand Thomas Cook customers located outside of its borders. In addition, 9 thousand individuals in the UK and 20 thousand individuals worldwide got fired (AA, 2019).

3. PROBLEMS ARISING IN TURKISH TOURISM ENTERPRISES WITH THE BANKRUPTION OF THOMAS COOK

3.1. General Situation of Turkish Tour Sector

Tour operators can come to the forefront in the execution of access, accommodation, nutrition, sightseeing, organizing events and similar arrangements by determining a venue, thanks to their marketing capabilities. For this reason, they hold the largest share that can be acquired in the relevant field and can directly communicate their bargaining skills to consumers. For example, if a customer wants to arrange the service he has in an individual context, it is not possible for the operator to deliver the same price. In addition, tour operators also guarantee processes such as benefiting from advanced quality accommodation services, utilizing the services of many aircraft and other access vehicles (Mısırlı, 2002, p. 27).

They determine their profits by pulling down the prices of these processes that they offer in an integrated manner. They describe the various options they have that best suit the target audience. These packaged arrangements they create may seem more attractive to potential target audiences (Gee, et al., 1997).

Hundreds of tour operators around the world have specialized in travel. Some of them are (Body, 1989: 177; Ataberk, 2007): “Go-go Tours (USA), The World of Trade Wind Tours (USA), Brendan Tours (UK), Tauck Tours (USA), Pacific Delight Tours (USA), Westours (USA) Touropa, Hotelplan, Sunair, Sotair, Nouvelles Frontires, Unitours, Mac Kenzie Travel, Cartan and Maupintour (USA), Kuoni (Sweden), China Travel Service (China), Japan Travel Bureau (Japan) Kinki Nippon Travel (Japan), Club Med (France), TUI (Germany), Deutschesreitsburo (Germany), LTU (Germany), Airtours (UK), First Choise (UK), Thomson (UK) and Thomas Cook (UK) ”.

Some of the tour operators that bring tourists to our country and the countries they bring tourists are: Öger Tours (Germany), TUI (Germany) Thomas Cook (England), First Choice (England), Pascha Tours (France), Club Med (France), Scottravel Holidays (Scotland), Aristo Tourism (China), Sonarex (Netherlands), I'm Traveling (Czech Republic), Corendon (Netherlands, Germany, Belgium), Sultan Reizen (Netherlands, Germany, Belgium), Odeon Tours (Russia), Sidre Tours (Russia), Mostravel (Russia), Turtess Travel (Ukraine), Caviros Tours (Greece) and Tarhan Travel (Iran) (Ataberk, 2007).

3.2. Duties and Practices of Tour Operators

Tour operators, in line with the general working principles, perform the following types of duties and operations; getting ready for business, creating a tourism product, selling tourism products, making reservations, carrying out administrative transactions, carrying out after-sales services, carrying out activities related to professional development (Hacıoğlu, 2000: 86; İşkur, 2020: 56-57).

Tour operators also fulfill some of the following basic functions in tourism activities (Hacıoğlu, 2000: 86):

- They make an effort to make people benefit from accommodation and travel companies.
- They can reduce costs to make production businesses control the expences in order to sell their outputs.
- They create knowledge store related to travel source of target audience.
- They try to reduce the bargaining expenses of the intermediaries.
- They reduce the cost of the product bougt by customer mass.
- They endeavor to improve the usual competition.
- As a result of the competition in the market, it directs the holiday price and directs the target audience to buy tours in an integrated manner.

3.3. Problems Experienced by the Turkish Tourism Sector Due to This Process

Firms that are in a difficult situation in the field of tourism can be aircraft companies. However, the fact that Cook's firm remained in this situation had a shock effect in most countries dealing with tourism. This situation also caused the tourism firms in our country to encounter problems related to their receivables, even though the tourist service customers made their payments to this firm through Cook firm, the tourism firms in our country could not collect their related payments. Most of the more than 150 thousand British tourists in many countries including our country have had to give up holiday options. Cook's firm brings 2 million tourists to our country annually, and it has been described that the receivables of the hotels in our country whose bankruptcy can reach up to 350 million Euros (Thomas Cook, 2019).

The bankruptcy of Thomas Cook firm, which brought low-income tourists to our country, definitely caused various problems. Muğla, Marmaris, Dalaman, Fethiye, Manavgat, Alanya and many tourism regions have been adversely affected by this situation. Especially low-cost hotels were more affected. Helping the hotels, which cannot fulfill their receivables from the firm, to get rid of this difficult situation has become an agenda. It should also be remembered that the problem may have implications in the future. For this reason, it has become important to open up to new markets and customers in order not to encounter similar problems again (Demirciler, 2019: 1).

CONCLUSION AND SUGGESTIONS

Before moving on to suggestions within the scope of this study titled Effects of Thomas Cook's Bankruptcy on Turkish Tourism, it would be useful to summarize the concept of tour operator again. Tour operator includes the actions of visiting different places for touring, compiling and harmonizing the services required for vacation and selling them to individuals in an integrated manner. These are firms that set up tours in order to satisfy the requests of potential customers.

Thomas Cook, who is attributed to one of the pioneers of tourism in a modern context, started to engage in this business in 1872 and led serious leadership in this context. However, the firm of erroneous processes, especially in 2011, ignoring the new regulations required by the period and not controlling the expenses well forced the institution to go into bankruptcy. When the firm officially requested its bankruptcy in 2019, Turkish tourism firms, along with various countries, were adversely affected. An important actor supplying tourists to our country has withdrawn from the market. This situation has caused problems especially for tourism regions that depend on a single customer source. During that period, the number of customers decreased, and various difficulties arose in collecting receivables.

In order to eliminate the aggrievement caused by Thomas Cook's bankruptcy and to design the future more positively, the following suggestions can be made to those concerned:

- Reducing the share paid to the Tourism Development Agency from the turnover temporarily.
- Exemption from tax on invoices issued for tourists brought by the relevant firm.
- Not collecting or postponing the corporate tax, VAT and SGK premiums of hotels in difficult situation.
- Granting long-term and low-interest loans to hotels that have difficulty in paying investment loans.
- Reduction of airport taxes in tourism areas.
- Securing the contracts of tourism enterprises and expanding the insurance coverage.
- Making it easier for foreign tour operators to enter the Turkish tourism sector and to integrate with local businesses.
- Having a new definition for the travel agencies in our country and changing especially the structure of group A travel agencies into tour operators.
- Promoting effective use of management information systems, virtual networks and social media.
- Investigating the ways to minimize costs with appropriate outsourcing.
- Having market diversity in order to eliminate single market dependency.

The information constituting this study has been obtained and interpreted mostly as a result of the review of the literature. There are some limitations in this regard. First of all, the records and documents of the relevant firm could not be accessed directly. The secondary constraint is that no statistical study has been conducted on the environment experiencing victimization. However, an effort was made to produce useful information with the results obtained and suggestions developed.

REFERENCES

AA (2019). 178 yıllık Thomas Cook'un iflası. https:// www.aa.com. tr/tr/info/infografik/15594 [29.12.2019]

Alaeddinoğlu, F. ve Can, A. S. (2007). Tour operators and travel agencies in Turkish tourism sector, Ticaret ve Turizm Egitim Fakültesi Dergisi, Sayı.2.

Ataberk, E. (2007). Tur operatörlerinin paket tur organizasyonlarında hizmet kalitesi ile müşteri tatmini arasındaki ilişkileri belirleyen faktörler: İzmir ili örneği. Yayımlanmamış Yüksek Lisans Tezi, Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü, İzmir.

Bağımsız Havacılar (2016). Thomas Cook'un hikâyesi böyle başladı. Erişim: https://www.bagimsizhavacilar.com/thomas-cookun-hikayesi-boyle-basladi/ [29.12.2019]

BBC (2019/1). Thomas Cook'un iflası Türkiye turizm sektörü için ne anlama geliyor? Avaiable at: https://www.bbc.com/turkce/haberler-turkiye-49796755 [29.12.2019]

BBC (2019/2). Thomas Cook neden battı? Avaiable at: https://www.bbc.com/turkce/haberler-dunya-49748209 [29.12.2019]

Body, W. (1989). Travel agent. New York: Arco.

Buck, M. (1988), The role of travel agent and tour operator. In: Goodall, B., and Ashworth, G. (eds), Marketing in the tourism ındustry, the promotion of destination gerions, London: Croom Helm.

Budeanu, A. (2005), Impacts and responsibilities for sustainable tourism: A tour operator's perspective. Journal of Cleaner Production, (13): 89-97.

Dimitrious, B. (2003). E-tourism-information technology for strategic tourism management, Pearson: Prentice Hall.

Cavlek, N. (2002), Tour operators and destination safety. Annals of Tourism Research, 29(2): 478–496.

Carey, S., Gountas, Y. and Gilbert, D. (1997). Tour operators and destination sustainability. Tourism Management, 18(7): 425-431.

Demirciler, L. G. (2019). Thomas Cook'un iflası küçük otelleri vurdu. Erişim: https://www.ekonomist.com.tr/insaat/thomas-cookun-iflasi-kucuk-otelleri-vurdu.html [29.12.2019]

Gee, C. Y., Makens, J. C. and Choy, D. J. L. (1997). The travel industry, Third Edition, New York: John Wiley and Sons.

Goodal, B. and Ashworth G. (1993). Marketing in the tourism industry. London: Rutledge.

Hacıoğlu, N. (2000), Seyahat acentacılığı ve tur operatörlüğü. 5.Baskı, Bursa: Vipaş.

Holloway, J. C. (1994). The business of tourism. Fourth Edition, London: Pitman Publishing.

İşkur (2020). Meslek Kitapçığı. Erişim: https://media.iskur.gov.tr/17258/mbk_6.pdf [11.01.2020]

İçöz, O. (2003). Seyahat acentaları ve tur operatörlüğü yönetimi. Ankara: Turhan Kitabevi.

Kozak, N., Kozak, M. A. K. ve Kozak, M. (2000), Genel turizm, ilkeler, kavramlar. 4.Baskı, Ankara: Turhan Kitabevi.

Kültür ve Turizm Bakanlığı Yatırım ve İşletmeler Genel Müdürlüğü (2006). Turizm istatistikleri (2005). Ankara. Erişim: http://www. kulturturizm.gov.tr [29.12.2019]

Mısırlı, İrfan, (2002), Seyahat Acentacılığı ve Tur Operatörlüğü, Detay Yayınları, Ankara.

O'Connell, D. (2019). Analysis: Thomas Cook: What went wrong at the holiday firm? Avaiable at: https://www.bbc.com/news/business-46452374 [29.10.2019]

Sheldon, J. P. (1986), The tour operator industry: An analysis. Annals of Tourism Reseach, 1 (3): 349-365.

Tepelus, C. M. (2005), Aiming for sustainability in the tour operating business. Journal of Cleaner Production, (13): 99-107.

Thomas Cook (2019). Thomas Cook'un iflası Türkiye turizm sektörü için ne anlama geliyor? Erişim: https://t24.com.tr/haber/thomas-cook-un-iflasi-turkiye-turizm-sektoru-icin-ne-anlama-geliyor,840621 [29.12.2019]

Ulusoy, B. (2002), Türkiye'nin dıs turizminde 10 yıllık sayısal hedefler, planlama ve program gereksinimi. T.C. Turizm Bakanlığı II. Turizm Şurası, Ankara, 12-14 Nisan 2002, Bildiriler Kitabı, I. Cilt, 159-175.

WTO (1999), International tourism: A global perspective, world tourism education and training series. Second Edition, World Tourism Organization (WTO) Education Network, Madrid.

Peköz, M. ve Yarcan, Ş. (1998), Seyahat işletmeleri. 2.Baskı, İstanbul: Boğaziçi Üniversitesi Yayınları.

İngiliz Tur Şirketi Thomas Cook'un İflasının Türk Turizmine Etkileri

Özet

Turizm, bacası olmayan fabrika gibi görülür. Ülkeler mali dirençlerini artırmak, getirilerini yüksek hale getirmek, yeni iş kapıları açmak adına bu alana daha çok yönelir olmuşlardır. Bu anlamda tur operatörlüğü önemli bir işlev olarak karşımıza çıkmaktadır. Tur operatörleri, tatil amaçlı yer değiştirmeyi sağlamak için gerekli hizmetleri bir araya toplayan ve bunu paket bir ürün halinde müşterilere satan hizmet üreticileridir. Bunlar, potansiyel turistler için de her çeşit tur düzenleyen turizm işletmeleridir. Küresel düzeyde bir tur operatörlüğü için önemli miktarda sermaye ve kapsamlı pazarlama bilgisine ihtiyaç vardır. Dünya ölçeğinde faaliyet gösteren bu tür şirketler, olağanüstü olumsuz koşullar veya pandemik problemler olmadığı sürece katma değerlerini artırabilmektedirler. Ancak beklenmedik durumlar, şirket içi yönetim zafiyetleri, çevresel sorunlar veya teknolojik olumsuzluklar sonucu zor duruma düşenler de mevcuttur. İngiliz tur şirketi Thomas Cook'un iflası bu anlamda tipik bir örnektir. Modern turizmin öncülerinden sayılan bu şirket, 1872'lerden itibaren büyüyerek gelişmiştir. Ancak özellikle 2011 de uyguladığı yanlış stratejiler ve çağın gerektirdiği yönetsel ve pazara ilişkin yeni yöntemleri görmezden gelmesinin yanında giderlerinde sağlıklı denetim yapmaması Thomas Cook'u iflasa sürüklemiştir. 2019 yılında resmen iflasını isteyen şirket özelde İtalya, Yunanistan ve Türk turizmini olumsuz etkilemiştir. Her şeyden önce, ülkemize turist getiren önemli bir oyuncu piyasadan çekilmiştir. Turizm açısından bu derece önem taşıyan Thomas Cook olayının analizi, bu çalışmanın ana amacını oluşturmuştur. Çalışmada tur operatörleri kavramsal biçimde betimlenmiş, Thomas Cook şirketi tanımlanmış, iflas safhası betimlenmiş ve Türk turizmine tesirine değinilmiştir. Ayrıca çalışma sonucunda, ülkemiz turizminin daha az etkilenmesi adına ilgili çevrelere çeşitli önerilerde bulunulmuştur.

Anahtar Kelimeler: Tur Şirketleri, Thomas Cook, Thomas Cook'un İflası, Thomas Cook'un İflasının Türk Turizmine Etkileri

The Place and Importance of Business Model in Institutionalization of Businesses

Adnan Celik
ORCID: 0000-0002-8538-9937
Selcuk University, Turkey

Abstract
Businesses are vital for people to survive. Because needs are met through businesses. Entrepreneurs undertake this task. Businesses are economic, social, technical and financial units. It is difficult to bring together capital, raw materials, physical labor, intellectual labor, technology, buildings and land. Establishers of businesses can be motivated by being affected by various issues. Sustainable business management is important for every entrepreneur. In order for the company to be successful and to serve for many years, it must be institutionalized. Institutionalized businesses can gain various advantages. Most importantly, the life of the company is very long. There are various ways and methods for institutionalization. In this study, the business model has been highlighted. The business plan includes logical processes. It focuses on how firm value is formed and distributed. It targets efficiency in management, production, marketing, finance and human resources functions. Therefore, it interacts correctly with institutionalization and sustainability. This study basically consists of four separate sections. Firstly, the concepts of business and business administration are explained. The second chapter is separated to institutionalization. In the third section titled business model, the basic components of the business model are introduced separately. In the fourth chapter, the place and importance of the business model in the institutionalization of businesses is clarified. The study was completed with results and recommendations.

Keywords: Business, Institutionalization, Business Model, Institutionalization and Business Model Interaction

İşletmelerin Kurumsallaşmasında İş Modelinin Yeri ve Önemi

Özet
İşletmeler, insanların yaşamlarını sürdürebilmeleri için yaşamsal öneme sahiptirler. Çünkü ihtiyaçlar işletmeler aracılığı ile giderilir. Bu görevi müteşebbisler üstlenirler. İşletmeler iktisadi, sosyal, teknik ve finansal ünitelerdir. Sermaye, hammadde, fiziki emek, düşünsel emek, teknoloji, bina ve arazilerin bir araya getirilmesi zordur. İşletmeleri kuranlar, çeşitli hususlardan etkilenerek motivasyon sağlayabilirler. Her müteşebbis için, sürdürülebilir işletmecilik önemlidir. Şirketin başarılı olması ve uzun yıllar hizmet vermesi içinse, kurumsallaşmak gerekir. Kurumsallaşan işletmeler, çeşitli üstünlükler elde edebilirler. En önemlisi firmanın ömrü çok uzar. Kurumsallaşma için çeşitli yol ve yöntemler söz konusudur. Bu çalışmada, iş modeli ön plana çıkarılmıştır. İş planı mantıksal aşamalar içerir. Firma değerinin nasıl oluşturulup, nasıl dağıtıldığına odaklanır. Yönetim, üretim, pazarlama,

finansman ve insan kaynakları işlevlerinde etkinlik hedefler. Dolayısıyla kurumsallaşma ve sürdürülebilirlik ile doğru etkileşim gösterir. Bu çalışma temelde dört ayrı bölümden oluşmuştur. Önce işletme ve işletmecilik kavramları açıklanmıştır. İkinci bölüm kurumsallaşmaya ayrılmıştır. İş modeli başlığını taşıyan üçüncü bölümde, iş modelinin temel bileşenleri ayrı ayrı tanıtılmıştır. Dördüncü bölümde ise işletmelerin kurumsallaşmasında iş modelinin yeri ve önemine açıklık getirilmiştir. Çalışma sonuç ve öneriler ile bitirilmiştir.

Anahtar Kelimeler: İşletme, Kurumsallaşma, İş Modeli, Kurumsallaşma ve İş Modeli Etkileşimi

INTRODUCTION

Businesses are indispensable for human life. These structures, which were created to meet human needs, are business organizations with economic, social, technical and financial units. Businesses may have different purposes. Among these, "making a profit, making the company sustainable, continuity in employment, developing quality products, serving society, paying taxes, taking part in social responsibility projects, and so on" can be listed (Simsek, 2019: 39-41). However, sustainability and profitability are at the forefront among the unchanging main goals. However, achieving every expectation is not that easy. First of all, basic business functions should be managed effectively. Success in the basic functions of management is also essential. Those who fulfill them properly make their organizations sustainable.

Sustainability is closely related to institutionalization. Especially medium and large scale enterprises have to give the necessary importance to institutionalization in their sustainability. Effective plans are needed for this. Organizational success is facilitated by systematically structuring the enterprises within the scope of these plans. Stability is very important in institutionalization. Activities in organizations that have become institutionalized are carried out on legitimate grounds. Such businesses prioritize principles such as “fairness, transparency, responsibility and accountability”.

In this study, institutionalization and business model interaction has been highlighted. An effective business model requires analysis of the acquisition and distribution of firm values. From production to marketing; effectiveness is targeted in every activity from finance to human resources. This situation facilitates institutionalization and sustainability. One of the noteworthy works developed within the scope of the workshops for the business model is the Business Model Canvas (BMC). Through this model, the value created by an enterprise and the efforts to improve this value can be evaluated as a whole (Osterwalder and Pigneur, 2010: 11-244; Karaca, 2013: Karaca, 2017; Celik, 2018: 131-132).

This study titled “The Place and Importance of BMC in Institutionalization of Businesses” consists of four separate sections. In the first part, business and business management are included. In the second chapter, the concepts and scope of institution and institutionalization are discussed. The third part is about the business model and the BMC. In this part, sub-components such as “key partnerships, core activities, value proposition, customer relations, customer segments, basic resources, channels, cost structure and revenue stream” are emphasized. The title of place and importance of the BMC in institutionalization of businesses has been the subject of the last episode. As a result of the study, a general evaluation was made and suggestions to the relevant circles were listed.

1. BUSINESS AND BUSINESS MANAGEMENT

In order for people to survive, their needs must be met. In order to meet the needs, businesses created by entrepreneurs are needed. Entrepreneurs establish economic, social, technical and financial units by bringing together the factors of production. In this sense, capital, raw materials, physical labor, intellectual labor, technology, buildings and lands are important. Different definitions can be developed in the business context. Some of these are as follows:

-The factors necessary for production are brought together in a specific place and transformed with the help of people and technology, and goods and services that meet the needs of people are presented. This place, whose technical quality is dominant, is called the business. Therefore, business is a source of production from which goods and services are obtained (Simsek, et al, 2008: 2).

-The enterprise, "in a certain environment, by using certain information, technology and processes, the input from the external environment; expressing value for people who are their customers, transforming them into goods and services with a market and selling them at the price formed in the market and not harming the environmental elements that make up the environment while performing all these transactions, having a separate personality and unique culture, living by adapting to changing conditions it is a system or a social entity" (Kocel, 2018: 56).

-Business as a process can be defined in terms of its functions. In this sense, there are functions such as "management, procurement, production, marketing, finance, accounting, human resources, public relations and research and development". Here, the basic functions of management, "planning, organizing, directing, coordinating and controlling" are also important.

Of course, every business can have different expectations. However, these can be collected in two separate dimensions. Among the main general purposes, the following are important; "1. To make profit in the long term, 2. To fulfill the social responsibility function by serving the society, 3. To survive and grow". Among the special purposes, the following are at the forefront; "1. To provide better quality goods and / or services to customers and consumers, 2. Giving good wages to employees and improving and improving their working conditions, 3. By educating employees, to ensure that they have possibilities and opportunities to improve themselves and to advance in the profession, 4. To provide permanent employment opportunities to its employees" (Simsek, 2019: 39-41).

2. INSTITUTIONALIZATION

Institutionalization is when an organization, establishment, business or brand reaches a stable structure that enables it to continue and develop its activities without being dependent on individuals (Demir, 2019: 1). Before giving more comprehensive information about institutionalization, the concept of institution should also be clarified.

2.1. Institution

Institutions are the cornerstones of social and economic life. Institution is not just a form of organizational structure. The environment of the organization is also institutional. It is this environment that pushing organizations to institutionalize. The structures of modern societies are formed in an institutionalized environment (Jepperson, 1991: 137; Erel, 2002: 26; Scott, 2008: 14-15). Institutions are socially constructed behavioral patterns and regulated systems that give meaning and stability to society. Institutions encourage people to behave in a certain way by offering options about how to behave in which situation, on the other hand, they can also limit them. In this way, they give meaning and stability to social behavior, and help to establish and maintain order (Scott, 1995: 34-35; Ozen, 2013: 124).

Institutions are organizations of different character, which are dedicated to common values and have a common culture. In the theme of institutionalization highlighted by Philip Selznick (1949); it is stated that the structure acquires a special character with the process and has a distinctive competence.

Therefore, according to Selznick, institutionalization as a process; "from narrow technical practices that are unstable, poorly regulated; transition to smooth, stable and socially complementary models (Scott, 2003: 69; Sozen and Basim, 2015: 266-267). Institutionalization comes to the fore when institutions that have certain behavioral patterns and principles begin to evolve into another or the next situation. Institutionalization; they are the next social stops for institutions that reduce uncertainty by setting rules in daily life, determine and limit people's preferences, expectations, and serve as a guide for members' interaction (Isci, et al, 2013: 63; Daft, 2015: 153).

2.2. Institutionalization

With institutionalization, legitimacy, organizational balance, predictability, increasing resources and conformity can be gained. Unstable or loosely organized narrow structures; more organized, stable and environmentally integrated structures can be adopted. In institutionalization, actors direct social and economic behavior. Organizations can ensure the transfer of institutionalized structural elements because they are legitimate externally, rather than to increase their technical efficiency. Therefore, they rely on external or ceremonial evaluation criteria to show what they have done to the external environment. Subsequently, by relying on these institutions, they can reduce uncertainty for themselves and increase their chances of survival even if their technical performance is low (Cobanoglu, 2015: 7; Taysir, 2014: 555-556; Wang, et al, 2015: 2).
In an enterprise that has become systematic through institutionalization, the duties, goals, rules and powers that will guide the employees are, however, for an organization to be institutionalized, every employee, from the lowest level employee to the top position of the hierarchy, must be systematized. Today, businesses survive as long as they have a flexible and organic structure. Institutionalization plays a key role in the adaptation process of businesses. Institutionalization is a dynamic process that occurs as a result of the company's efforts to adapt to environmental change and develops as a result of its sensitivity to this change (Sanal and Kaya, 2018: 115; Demir, 2019: 2).
Institutionalization is of vital importance for all organizations, especially businesses. First of all, it is stated that organizations should have a system based on the structure and model, not the person. This so important phenomenon has different dimensions. Although the names and numbers vary, "formalization, organizational culture, transparency, professionalism, consistency, social responsibility" are among the generally accepted issues. There are also authors who add dimensions such as "flexibility, simplicity and differentiation" to these (Karavardar, 2011: 174; Selznick, 1996: 274; Demir, 2019: 42). The business model interacts with some of these issues directly and indirectly with others.

3. BUSINESS MODEL CANVAS

3.1. Business Model Concept

The business model is a kind of roadmap to explain how the business will be positioned in a competitive environment with a dynamic and innovative perspective (Papatya, 2015: 131). With the business model, "how an entrepreneur or enterprise creates and distributes value and how it achieves financial continuity" is expressed.
The model contains various logical processes within itself. It aims efficiency in the functions of "management, procurement, production, marketing, finance, accounting, human resources, public relations and research and development". It is also closely related to the basic functions of management.

3.2. Business Model Canvas

One of the noteworthy works developed within the scope of workshops for the business model is the Business Model Canvas (BMC). This model, developed by Alexander Osterwalder and Yves Pigneur,

contains very useful information. Through the model, the value created by an enterprise and the efforts to improve this value can be evaluated as a whole. This model, where a photograph of all of a company can be shown, consists of the following nine sub-dimensions (Osterwalder and Pigneur, 2010: 11-244; Karaca, 2013: Karaca, 2017; Celik, 2018: 131-132):

1. Key Partnerships: Some activities are outsourced or taked from other companies, there is a network of suppliers and partners. Within key partnerships, the following are important: "-Tending towards strategic collaborations, -Finding risk capital, -Creating joint ventures". Startup capital may not be sufficient sometimes. Therefore, outsourcing can be used. There are initial establishment expenses for every business. Machinery, equipment, software and office equipment require costs. Operating and fixed investment expenses can be substantial. Fixed investments may require too much expenditure, especially for manufacturing enterprises that will use technology intensively. In general terms, every business land price, survey and project, building construction, machinery-equipment, furnishings, transportation and insurance, assembly, vehicles, commissioning, etc. must cover the expenses. For these reasons, many businesses may need key partners.

2. Basic Activities: It contains the basic functions that the business has to do. The issues that should be focused on within the scope of basic activities may be; "-Production (production of goods and / or services), -Problem solving (consultancy, etc.), -Network or platform hosting (e-commerce, virtual organization, etc.)".

3. Value Proposals: The value of solving the customer's problem or meeting their needs and the reasons for choosing the products are at the forefront. In terms of value proposals (reasons for choosing our product), the following may need to be followed; "-Stunning design, -Risk reduction, -Performance". Every business should be able to effectively design and present products. The principle of credibility should be followed from the production processes to the pricing dimension. Products can be presented to customers in written / printed form with the help of catalogs. Production plans can be shared with the appropriate customers, and if possible, they can be included in the production process.

4. Customer Relations: Communication strategies with customers must be developed. Relationships should be established with each customer segment and sustainability should be targeted. In the phase of customer relationship management or communication strategies with customers, the following should be considered: "-Type and style of the interview, -Communication frequency, -Those who want a one-on-one communication, -Product development and value creation with their support". Firms with good customer relationships can be stronger in the market.

5. Customer Segments: It is closely related to the customer segments (cross-sections) to be reached. In the context of customer cross-sections, evaluations are needed in the following areas: "-Stack (mass) production for customer segments, -Niche market (serving a very special, small and narrow group of people looking for a certain benefit)". Market information and marketing plan are needed here. Regarding the size of the market and the targeted market share, "market turnover estimation" can be made and estimates of "how much share the company aims to get from this volume annually" can be made. The following question should be asked within the scope of the market profile; "Who are our potential customers?" In other words, issues such as age, income, gender, region, consumption habits of the target audience should be clarified. Competitor analysis can also be done here. Existing or potential competitors can be identified and possible measures to be taken against them can be studied.

6. Basic Resources: Includes all tangible and intangible assets of the business. Main sources can be listed as follows; "-Physical inputs (raw materials, materials, buildings, facilities, hardware, equipment, etc.), -Human resources, -Intellectual capital".

7. Channels: Ways of communicating with customers should be sought continuous. Distribution and sales channels should also be made effective while communicating value suggestions to customers. It is an important benefit for customers who are satisfied with the service policy to advertise the business. With an effective customer relationship management, continuity of customer satisfaction can be achieved during and after sales. Channels such as "actual store services, website, sales staff, wholesalers" can be used to reach the customer. The target audience can be reached through promotional materials such as catalogs and business cards. Necessary advertising purchases can be made to rank at the top of the internet search engines that are widely used today. Social media can also

be helpful. With the feedbacks that can be obtained from customers or other environment, changes in the market can be followed more effectively. Evaluations of opportunities and threats can be made easily. Unexpected situations can be minimized.

8. Cost Structure: Classifications of natural, unit and total, variable and fixed, average and marginal, real and alternative, and indirect and direct costs can be made. For the cost structure, we can focus on: "- Being cost-oriented (focusing on reducing costs with the help of processes such as automation),- Being value-oriented (prioritizing creating value)". In the financial plans, start-up costs and other operating expenses should be properly indicated.

9.Income Stream: Income items, costs, cost of goods sold, profit calculations should be made effectively. In this context, it is useful to know the following: "-Operating income (product sales, one-time payment), -Recurring revenues (such as subscription, etc.), -Use fees (the duration of our customer use our service)". Cash projections are also important. Revenues and expenses must be accurately estimated with optimal production capacity. Thus, income / expense difference can be calculated more easily. The transition point to the profit can be estimated correctly. Transparency and accountability are sought in accounting and finance functions. Internal and external stakeholders of the business (partners, managers, employees, public institutions, lenders, investors, vendors, trade unions, etc.) can prioritize finding these principles. It is also a social responsibility duty for companies to be transparent in their activities and to comply with the principle of accountability.

4. THE PLACE AND IMPORTANCE OF BUSINESS MODEL CANVAS IN INSTITUTIONALIZATION OF BUSINESSES

Undoubtedly, the existence of many principles is sought for institutionalization. Among the generally accepted principles, "fairness, transparency, responsibility and accountability" come first. Some criteria are needed for institutionalization. These include (Yazicioglu and Koc, 2009: 500); "company constitution, strategic planning process, authority and responsibility balance, decision-making style, communication efficiency". Institutionalization also develops in a process. In this context, the following points come to the fore (Ballioglu, 2012: 9); "legal recognition, continuity of existence, individual-organization goal harmony and gaining corporate identity".

Institutionalization doesn't happen on its own. It cannot be established quickly, either. It requires the cooperation and performance of every stakeholder, especially the top management. The harmony of the environment both inside and outside the organization should be aimed. This is true for any business, regardless of size. Although their legal structures (trade names) are not very prominent, large-scale businesses can be one step ahead. Because the company strategy, goals, policy, mission and vision can also be more formal. Superiority, weakness, opportunity and threat (SWOT) analysis may be more specific. A business plan for management, production, marketing, finance, human resources may have been developed. Market analysis of large-scale companies may have become more institutional. Various studies may have been conducted on potential customers, markets and consumers. It is important to provide adequate information about the market, competitors and competitive analysis, industry and lines of business. Those who do these things properly can achieve sustainable business. They can further contribute to regional development and employment while extending their own organizational life. Companies, especially large-scale enterprises, should be able to access the following information accurately; "Product, goods and / or service information; Cost types and calculation methods; -Price and pricing types; -Management and organizational effectiveness; -Financing and capital items" (Celik, 2018: 138-139).

In order for family businesses to be sustainable, institutionalization must be adapted to the business structure. In addition, negativities such as nepotism, role confusion and uncertainty, which have become one of the biggest problems of family businesses in institutionalized companies, can be eliminated (Sanal and Ozgen, 2013: 24). Institutionalization is of great importance not only in microeconomics such as family businesses, but also in macroeconomics (Onbulak, 2018: 112).

BMC can be used beneficially in institutionalization of businesses. Because each of the components that make up this model has features that can increase the efficiency of businesses. In other words,

success in issues such as “key partnerships, core activities, value proposition, customer relations, customer segments, basic resources, channels, cost structure and revenue stream” should be seen as organizational success. It should not be forgotten that the principles and principles to be applied in these areas can also facilitate institutionalization.

CONCLUSION AND AND SUGGESTIONS

Compliance with contemporary business principles is a basic condition for any business, regardless of size. Businesses established to meet human needs can undoubtedly target other purposes. Profit and the continuity of the firm are the main ones. Service to the society and the state, quality product, reasonable price, continuity in employment, social responsibility may also be purposes. Small businesses may find it sufficient to achieve one or more of these goals. Because economies of scale may not allow them all. However, all of these goals may be in question for medium and especially large companies. Institutionalization is of vital importance for this.

This study is about the place and importance of business model in institutionalization of businesses. Within the scope of the study, the interaction between Business Model Canvas (BMC) and institutionalization, which has been developed on this subject, has been clarified. Institutionalization is an important phenomenon for every organization, whether private or public. Especially enterprises have to fulfill these principles in order to achieve organizational success. Undoubtedly, many procedures, principles and techniques can be followed for institutionalization. BMC is one of the methods that can be used beneficially. Regarding this model, the following suggestions have been developed for medium and especially large-scale enterprise management:

-Above all, contemporary business principles should be followed.

-Effectiveness should be ensured in business functions and management principles.

-Environmental changes and technological developments should be compatible with the organizational structure.

-When needed, appropriate strategic partnerships should be evaluated.

-Personnel should be assigned on the basis of technical ability. Employees should be seen as internal customers. The balance of authority and responsibility is important. The principle of equality and justice should be observed in wages and social rights.

-Permanent relationships should be established with suppliers and other stakeholders.

-Customers must be reached at the appropriate place and time. Their wishes and expectations must be fulfilled swiftly. Even customers or consumers should be able to be invited to the design and / or production process.

-How, where and what the financial resources consist of should be analyzed well. In addition, where and how these are transferred should be reported under the principles of transparency and accountability.

- If possible, “maximum profit, minimum cost” should be targeted. In the supply chain efficiency; input costs should be reduced and, if possible, sales and collections should be increased. Scraps and wastrels should be recorded.

While preparing this study, some works in the literature were used. The main limitation of the study is that it contains only a theoretical dimension. In order to eliminate this deficiency, researches on institutionalization, BMC, institutionalization and BMC interaction can be conducted especially in medium and large-scale enterprises. More useful contributions can be made to the literature by comparing the research results with theoretical assumptions.

REFERENCES

Ballıoğlu, İ. B. (2012). Aile işletmeleri yönetimi ve kurumsallaşma. Erişim: http://ihsanbora.com/article/pdf/bm/0112.pdf [09.02.2018]

Çelik, A. (2018), Uygulamalı girişimcilik, Konya: Eğitim Yayınevi.

Çobanoğlu, S. (2015). Örgüt kuramı çalışmaları üzerine bir okuma: Kurumsal kuramdan yeni kurumsal kurama geçiş. 6.Uluslararası Öğrenci Kongresi, 6-8 Mart 2015, Belek, Antalya.

Daft, R. L. (2015). Örgüt kuramları ve tasarımını anlamak. 10.Baskı, Çev. Özmen T., Ankara: Nobel Yayıncılık.

Demir, F. (2019). Girişimci liderliğin kurumsallaşmaya etkisine ilişkin ülkeler arası karşılaştırmalı bir çalışma. Yayımlanmamış Doktora Tezi, Selçuk Üniversitesi Sosyal Bilimler Enstitüsü, Konya.

Erel, D. (2002). Kurumsal çevre-örgüt ilişkileri. Yayınlanmamış Doktora Tezi, Ankara Üniversitesi Sosyal Bilimler Enstitüsü, Ankara.

İşçi, E., Taştan, Bal, S. ve Kozal, M. A. (2013). Örgütlerde kurumsallaşma düzeyinin nepotizm üzerine etkisinin incelenmesi: Hastane çalışanları örneği. Siyaset, Ekonomi ve Yönetim Araştırmaları Dergisi, 1(3): 63.

Jepperson, R. L. (1991). Institutions, institutional effects, and institutionalism. In: Powel, W. W. and DiMaggio, P. J. (Eds), The new institutionalism in organizational analysis. Chicago: The University of Chicago Press.

Karaca, T. (2013). Girişimciler için kolay ve hızlı iş planı hazırlama. 2. Baskı, Ankara: Sinemis Yayınları.

Karaca, T. (2017). İş modeli (business model) iş planı değildir. Erişim: https://blog.tkaraca.com/2010/is-modeli-business-model-is-plani-degildir/ [10.07.2017]

Karavardar, G. (2011). Aile işletmelerinde kurumsallaşma, yetki devri ve belirsizliğe tolerans. Dergipark Sosyal Bilimler, 1(1): 157-179.

Koçel, Tamer (2018). İşletme yöneticiliği, 17. Baskı, İstanbul: Beta Yayınevi.

Onbulak, E. (2018), Kurumsal yönetim ve türkiye yansımaları, Journal of Social Policy Conferences, 72(1): 101-126.

Osterwalder A. and Pigneur, Y. (2010). Business model generation: a handbook for visionaries, game changers, and challengers. New Jersey: John Wiley and Sons.

Özen, Ş. (2013). Yeni kurumsal kuram. İçinde: Taşçı, D. ve Erdemir, E. (Ed), Örgüt kuramı. Eskişehir: Anadolu Üniversitesi AÖF Yayını.

Papatya, G. (2015). Temel işletmecilik bilgisi teorik düzenlemeler, entelektüel birikimler ve notlar, Isparta: Beyazıt Yayınevi.

Scott, W. R. (1995). Institutions and Organizations, Foundations For Organizational Science. London: A Sage Publication Series.

Scott, W. R. (2003). Organizations: rational, natural, and open systems. New Jersey: Prentice Hall.

Scott, W. R. (2008), Institutions and organizations: ideas and interests. Third Edition. Los Angeles, CA: Sage Publications.

Selznick, P. (1996). Institutionalizm "old" and "new". Administrative Science Quarterly, Sage Publications, 41(2): 270-277.

Sözen, C. ve Nejat Basım, N. (2015). Örgüt kuramları, 3.Baskı, İstanbul: Beta Yayınevi.

Şanal, M. ve Özgen, H. (2013), Kurumsallaşma ve kurumsal girişimcilik ilişkisi üzerine bir araştırma. Çukurova Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 22(1): 15-26.

Şanal, M. ve Kaya, A. F. (2018). Etnik girişimci işletmelerde kurumsallaşma ve belirsizlikten kaçınma ilişkisi üzerine bir araştırma. Çukurova Üniversitesi İİBF. Dergisi, 22(1): 115-126.

Şimşek, M. Ş., Çelik, A. ve Akgemci, T. (2008). İşletme becerileri grup çalışması, Ankara: Gazi Kitabevi.

Şimşek M. Ş. ve Çelik, A. (2019). İşletme bilimine giriş, 26.Baskı, Konya: Eğitim Yayınevi.

Tayşir, E. A. (2014). Kurumsal kuramın kurumsallaşması, ODTÜ Gelişme Dergisi, (41): 555-556.

Yazıcıoğlu, İ. ve Koç, H. (2009). Aile İşletmelerinin Kurumsallaşma Düzeylerinin Belirlenmesine Yönelik Karşılaştırmalı Bir Araştırma. Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, (21): 497-507.

Wang, G. G., Lamond, D. and Worm, V. (2015). It's the context all the way down! An ınstitutional theory perspective on chinese HRM research. Chinese Human Resource Management, 6(1): 2-13.

How the Small and Medium Sized Enterprises (SMEs) Develop a Country?

Adnan Celik
ORCID: 0000-0002-8538-9937
Selcuk University, Turkey

Abstract
Businesses are basically established to meet human needs. These are economic, social, technical and financial units. Entrepreneurs set up businesses by bringing resources together. Businesses serve the society with the goods or services they produce. Undoubtedly, it is important to make a profit. Quality products and affordability are important. Business life must also be sustainable. Employees should be given job guarantees. The state expects taxes. Social security institutions plan the payment of premiums. Local governments want to contribute to regional development. Non-governmental organizations expect social responsibility projects. These issues closely concern businesses of all sizes, especially large ones.
Different criteria are used when determining company sizes. Personnel number, production volume and sales amount are the main issues. In addition to these, the amount of capital, machine park, factory size, buildings and lands, energy used, salary or wages paid can also be taken into consideration. Since this study is about the Small and Medium Sized Enterprises (SMEs), the distinction here is important. According to the general SMEs literature, there are three separate types of businesses: “micro, small and medium sized”. In societies where commercial competition is adopted as an economic system, there is a close relationship between the healthy functioning of the system and the assets and powers of SMEs in the system. Most of the SMEs contribute positively to the system, as they fulfill some functions that large enterprises cannot fulfill. They keep the economy dynamic with the goods and services they produce. They provide significant added value to the national economy. They spread the property to the grassroots. They are the door to employment. It accelerates regional development. In addition to economic development, they also play important roles in social life. This study has been prepared on SMEs. In the study, "How Do SMEs Develop a Country?" The answer to the question was sought. Therefore, large-scale enterprises were excluded.

Keywords: Enterprises, The Small and Medium Sized Enterprises, SMEs and Country Development

Küçük ve Orta Ölçekli İşletmeler (KOBİ’ler) Bir Ülkeyi Nasıl Kalkındırır?

Özet
İşletmeler, temelde insan ihtiyaçlarını gidermek amacıyla kurulurlar. Bunlar iktisadi, sosyal, teknik ve finansal ünitelerdir. Müteşebbisler, kaynakları bir araya getirerek işletmeleri kurarlar. İşletmeler ürettikleri mal veya hizmetlerle topluma hizmet ederler. Şüphesiz kâr elde

etmek önemlidir. Kaliteli ürün ve uygun fiyatta önemlidir. İşletme yaşamının sürdürülebilir olması da gerekir. Çalışanlara ise iş garantisi verilmelidir. Devlet, vergi bekler. Sosyal güvenlik kurumları primlerin ödenmesini planlar. Yerel yönetimler, bölgesel kalkınmaya katlı isterler. Sivil toplum örgütleri, sosyal sorumluluk projeleri beklerler. Bu hususlar başta büyük işletmeler olmak üzere, her ölçekteki işletmeyi yakından ilgilendirir. Şirket büyüklükleri belirlenirken, farklı ölçütler kullanılır. Personel sayısı, üretim hacmi ve satış miktarı başta gelen hususlardır. Bunlara ek olarak sermaye miktarı, makine parkı, fabrika büyüklüğü, bina ve araziler, kullanılan enerji, ödenen maaş veya ücretler de değerlendirmeye alınabilir. Bu çalışma, Küçük ve Orta Ölçekli İşletmeler (KOBİ'ler) ile ilgili olduğu için, buradaki ayrım önemlidir. Genel KOBİ literatürüne göre, "mikro, küçük ve orta büyüklükte" olmak üzere üç ayrı işletme türü vardır. Ticari rekabetin ekonomik sistem olarak benimsendiği toplumlarda sistemin sağlıklı olarak işleyişiyle KOBİ'lerin sistem içindeki varlıkları ve güçleri arasında yakın bir ilişki vardır. KOBİ'lerin çoğu, büyük işletmelerin yerine getiremediği bir takım fonksiyonları yerine getirdikleri için sisteme olumlu katkıda bulunurlar. Ürettikleri mal ve hizmetler ile ekonomiyi dinamik tutarlar. Ulusal ekonomiye çok önemli katma değer sağlarlar. Mülkiyeti tabana yayarlar. İstihdam kapısıdırlar. Bölgesel kalkınmayı hızlandırılar. Ekonomik kalkınmanın yanı sıra, sosyal hayatta da önemli roller üstlenirler. Bu çalışma, KOBİ'ler üzerine hazırlanmıştır. Çalışmada "KOBİ'ler Bir Ülkeyi Nasıl Kalkındırır?" sorusuna cevap aranmıştır. Dolayısı ile büyük ölçekli işletmeler kapsam dışı bırakılmıştır.

Anahtar Kelimeler: İşletme, Küçük ve Orta Ölçekli İşletmeler, KOBİ'ler ve Ülke Kalkınması

INTRODUCTION

Businesses are primarily economic units. In other words, they aim to operate in accordance with the labour law and to make a reasonable profit as a result of their activities. They meet people's needs with the goods or services they produce. In addition to being an economic unit, it also has social, technical, and financial dimensions. These organizations, whether they produce goods or services, are established to achieve a specific set of tasks and goals. The degree of realization of efficiency, productivity, profitability, or similar business objectives in resource use is of great importance in terms of showing the extent to which the business complies with predetermined performance criteria or standards (Simsek and Celik, 2019: 26-27). Of course, these are closely related to business scale.

Different criteria are used when determining company sizes. The number of personnel, production volume, and sales amount are the main issues. In addition to these, the amount of capital, machinery, factory size, buildings and lands, energy used, salary, or wages paid can also be taken into consideration. The distinction here is important as this study is about SMEs. According to the general SME literature, there are three different types of businesses: "micro, small, and medium-sized". In societies where commercial competition is adopted as an economic system, there is a close relationship between the healthy functioning of the system and the assets and powers of SMEs in the system. Most of the SMEs contribute positively to the system as they fulfill several functions that large enterprises cannot fulfill. They keep the economy dynamic with the goods and services they produce. They provide significant added value to the national economy. They spread the property to the grassroots. They are very important for employment. They accelerate regional development. In addition to economic development, they also play important roles in social life.

In this study, "How Do SMEs Develop a Country?" The answer to the question has been sought. Therefore, large-scale enterprises have been excluded. The study consists of three separate sections. In

the first section titled SMEs, the classification of SMEs and their advantages and disadvantages have been explained. In the second part, general information about the development of the country has been given. The third chapter is about the place and importance of SMEs in-country development. As a result of the study, some suggestions have been developed for those concerned.

1. SMEs

First of all, SMEs have been classified under the title of small and medium-sized enterprises. Then, the main advantages and disadvantages of these have been explained.

1.1. Classification of SMEs

SMEs, as well as all over the world, is one of the elements of Turkey's economy that is dynamic and immersive. They are also of great importance for the socio-economic development of our country. Various studies have been carried out in this field to harmonize with the European Union (EU). In particular, it has been aimed to eliminate the problems experienced in support and cooperation. The "Regulation on the Definition, Qualifications, and Classification of Small and Medium-Sized Enterprises" updated in this sense is important. Large-scale enterprises have been excluded from this study. The following ranking is available for SMEs (Celik and Akgemci, 2010: 114-115; KOBI, 2018; Celik, 2018: 64):

1. Micro Enterprise Description: Those who employ less than 10 employees annually and whose annual net sales revenue or financial balance does not exceed 3 Million Turkish Liras (TL).
2. Small Business Description: Those who employ less than 50 employees annually and whose annual net sales revenue or financial balance does not exceed 25 Million TL.
3. Medium-Sized Business Description: Businesses employing less than 250 employees annually and whose annual net sales revenue or financial balance does not exceed 125 Million TL.

The criteria used in the classification of SMEs are as follows in terms of quantitative and qualitative (Cetin, 1996: 35-37; Muftuoglu, 1993: 43-98; Celik and Akgemci, 2010: 123-124):

- The quantitative criteria are as follows: Number of personnel, capital, total assets, energy use, machine park value, number of looms, wages paid, raw material used, dependency or independence of the management, capital belonging to one or more persons, whether the ownership and management titles are in the same person or people, capacity, the area used, number and value of orders, capacity utilization rate, number of shifts, sales, profitability, added value, taxes paid, market share, the share of exports in sales volume.
- Qualitative criteria can be listed as follows: The entrepreneur's actual work in the enterprise, the risk is collected in the entrepreneur, the entrepreneur's identification with the enterprise, the unification of the management in one hand, the limited capital, the dependency degree of the ownership, the dependency degree of the management, the market share, the market power of the enterprise, the technical competence level of the boss, the actual work of individuals from the family, the supply power of the enterprise, the perspective on the capital market, the nature of the relationship between employer and employee.

1.2. Advantages and Disadvantages of SMEs

The following explanations can be made within the scope of the advantages and disadvantages of SMEs:

1. Advantages of SMEs: Various advantages of SMEs can be listed. First of all, they are quite flexible compared to large businesses. They are easier to adapt to consumer preferences. They can make quick decisions and implement them. They can change their product type and variety more easily (Gherghina, 2020: 2). Micro or small businesses do not need a lot of capital in the beginning, as they are mostly manual. They are capable of making quick decisions. There is a low level of administrative expenses. It is easy for them to communicate one-on-one with their customers. They have flexible

structures. They undertake various duties in overcoming economic crises. In periods of economic development and growth, they can create more added value proportionally than large enterprises. SMEs can also be preferred for such benefits; "The limited market for the produced goods and services, the fact that manual labor is an important factor in the production of goods and services, the limited demand for the produced goods or services, the marketing or production of perishable goods, the necessity of close relations with the personnel, - having the ability to keep up in time with the developments, focusing more on their capital while investing, supporting them also means decreasing unemployment in the country, establishing employees in their regions or regions where they want to live, in the development of different regions within the country and the protection of the environment ".

2. Disadvantages of SMEs: There are mainly financial problems. Their principal capital may not be enough to grow. Even if they reach credit and similar supports, there is an interest burden (Worldbank, 2019; Bouri et al, 2011: 13). Of course, this situation is closely related to the development level of the relevant country. Large-scale businesses can earn more than small businesses in situations that require technology-intensive use. During the Covid-19 pandemic process, especially health, informatics, and food businesses have provided various benefits. Those who used communication technologies intensively and engaged in virtual commerce also make use of communication technologies (Grant, 2020; Celik and Nalcacıgil, 2020: 609). Some small companies have also had local success in flexibility (OECD, 2020: 1). However, large businesses have mostly made high business volumes on a national and global scale. It is also not easy for small businesses to reach new technology and digitalization (OECD, 2020: 2-3). Problems can be summarized as follows; “Lack of capital, negative competition, the indifference of financial institutions, bureaucracy, lack of product development, inadequate information systems, lack of modern marketing, small workplace, lack of experts”.

2. COUNTRY DEVELOPMENT

The concept of development has a wide meaning. First of all, it prioritizes growth and development in socio-economic terms. If poverty is prevented and unemployment is eliminated in any country, one can talk about economic development. Of course, income justice and decent living are also important. In developed countries in all aspects, the principle of equality and justice is in question. Improvement and development have spread throughout the country. Property rights and social life are preserved. Urbanization and environmental order are complete. Education is institutionalized. Women's participation in the workforce was ensured (Cambridge Dictionary, 2021; Abuiyada, 2018: 115-119).

The development has reached the present day through various phases. Different distinctions are made in terms of economic thought and management theories. In general, early periods, classics, neo-classics, modern and post-modern approaches can be listed. The subject can also be approached in terms of Industry 4.0. The period of coal and steam engines in 1776 gave birth to the 1st Industrial Revolution. The 2nd Industrial Revolution is about 1856. Here, steel, petrol, electricity, vehicles such as automobiles and aircraft are in question. After the 1960s, the 3rd Industrial Revolution was spoken. Here, computer technology and the internet have developed. Issues such as global marketing, logistics bases, virtual organization, digitalization, home offices, e-commerce, women's rights, environmentalism, social media developed the 4th Industrial Revolution. Industry 5.0 has started to be talked about today. States, which transfer inventions to social and social dimensions, have been able to achieve multi-directional development.

Underdeveloped countries need foreign aid to develop. Foreign aid is related to donations, credit, and loans that are provided to a country or an international organization to promote economic and social development, to improve democracy and human rights, social equality, to meet basic needs in emergencies, etc.

The physical capital and human capital of underdeveloped countries are insufficient. With the protocols prepared after the Second World War, it was decided to help these countries. Especially the decisions of the Bretton-Woods Conference in 1944 are important. If the developed countries kept their promise and transferred 0.7% of their national income to the relevant countries, some problems

would never have been experienced. In this sense, the World Bank and its derivatives such as IBRD, IDA, IFC, MIGA can be followed (Andersen, et al, 2005: Karatas and Vatansever, 2001: 75-76; Arslan and Kiper, 2015: 9, 22). With such assistance, the quality of human life can be increased worldwide. Economic life can be revived as well as the social structure. Economic mobilization can be achieved by supporting initiatives, especially in underdeveloped regions. However, we should not be content with just transferring funds. Working procedures and technology should also be transferred. Vocational and technical education should be institutionalized.

Development remained a fundamental problem for societies that cannot develop environmentally and technologically. Too many people still live in extreme poverty in the world. About one billion people less than $ 1.25 a day; Approximately 2.2 billion people live on 1-2 dollars a day. What can be done about it? Philosophers have sought an answer to this question for millennia. In other words, they have thought about how societies and countries would develop. They have prioritized development in all areas, especially economic growth. Of course, each country can have its dynamics. However, guidance needs to be given to the backward countries. Their access to appropriate technologies should be facilitated and production opportunities should be increased. It is not pleasant for developed countries to keep information and technology to themselves. Behaviors in this direction can disappoint other nations. Economic development alone may not be enough in a state. This must be reflected in human life. The public and private sectors should turn to net investments. There should be socio-cultural developments along with economic development. Livable urbanization and the environment are important. Equality, justice, and freedom of life must be protected. It should be ensured that generations grow in health (Goldin, 2019: 13-28).

3. THE PLACE AND IMPORTANCE OF SMEs IN COUNTRY DEVELOPMENT

While answering the question "How Can SMEs Develop a Country?", the importance of SMEs should be emphasized. SMEs are vital for the economic structure. They are crucial for the economic system. They have poverty alleviating properties. They speed up local development. They are extremely significant for national economic growth. They produce goods and services and provide employment. They create added value. Therefore, they keep the global economy alive. Most of the businesses in the world are SMEs. SMEs have an undeniable place in the added value and employment of all countries, especially OECD countries. According to the World Trade Organization data, approximately 90% of all businesses worldwide are SMEs. This rate goes up to 99% in some countries. Their rate among new businesses is on average 85%. Their rate of general employment is about 60%. They contribute up to 40% of national income in developing economies. It is estimated that 600 million jobs will be needed by 2030 to absorb the global workforce and SMEs will undertake most of this. In emerging markets, most formal jobs are produced by SMEs, which account for 7 out of 10 jobs (Fadnis and Arnold, 2018; Gherghina, 2020: 1-2; United Nations, 2020; Worldbank, 2019; OECD, 2020: 1-3; Bouri et al, 2011: 13).

The future importance of SMEs should be well understood. New companies enter the market every year. It is desirable for the smaller ones to grow up in the future. It should not be forgotten that companies on the road to growth will be dynamic and innovative. Even a few of the start-up companies should be innovative. It contributes to the development of the country's economy. Business and product variety increases. Development is a kind of crisis prevention. Thus, global shock or vulnerabilities can be overcome more easily (Bouri et al, 2011: 13).

It is important for SMEs to fulfill various performance criteria. Business performance is the ability to "reach its goals by using the scarce economic resources of the business effectively and efficiently". This situation should be perceived as the degree to which the business mission is fulfilled. These criteria, which are the basis for measuring organizational success, may differ in terms of disciplines. They may even vary according to place and time. For example, at the beginning of the Industrial Revolution, a more cost-profit relationship has been evaluated. Later, the productivity-cost-profit triangle was analyzed. New criteria such as effectiveness-competence-quality and customer satisfaction were added to these. In general terms, in businesses; Compliance with the criteria of

"efficiency, productivity, effectiveness, competence and profitability" is sought. Efficiency issue has very special importance in business. The income generated from the productivity increase is distributed to individuals in the business under a premium, dividend, or any other name, while also used in the growth of the business. Thus, employees, managers, entrepreneurs, and the whole country gain great benefits. Contemporary businesses always prioritize the issue of productivity and seek methods and wage systems that will further increase it (Simsek and Celik, 2019: 157-158). Those who fulfill these become sustainable businesses. Businesses with strong organizational life contribute to the economic and social structure. They improve employment and support regional development. They accelerate the spread of capital to the base. They enrich the socio-cultural field. They contribute to social peace.

When it comes to SME policy, broad practices are needed. Classical practices can be developed. For example, start-up incentives can be given to students. Environments can be increased for entrepreneurship. Commercial life can be carried on campus (Fadnis and Arnold, 2018). Of course, the level of development of each country is important. In developed and developing countries, it is relatively easy to develop an entrepreneurship ecosystem. SMEs need the support of the whole environment. In this context, UN SMEs Day (June 27), celebrated by the United Nations and the International Small Business Council, is noteworthy (Arnold, 2019). When SMEs develop, countries can develop more easily. A proper entrepreneurial ecosystem also stimulates the economy. Regional development and employment growth become easier. The number of people with a regular job and income increases. With the effect of this, many people can gain the right to live decently.

CONCLUSION AND SUGGESTIONS

SMEs constitute the basic dynamics of all economies. In this respect, the question "How Do SMEs Develop a Country?" can be answered easily. Whether it's big or not, every business has a variety of goals to reach. Those who reach these have a long organizational life. Being sustainable is important for businesses of all sizes. Those who provide this also support regional and national development. They develop the sectors they are in. They facilitate the spread of capital to the base and develop entrepreneurship. They make positive contributions to areas such as health, education, the environment, urbanization, human life, and industrial democracy. Within the scope of this study, the information that mostly concerns the world has been brought to the fore. For this reason, attention has been paid to ensure that the suggestions are universal. First of all, it is useful to know the activities of the following organizations:

1. EU (European Union); It provides various grants and loans for the countries concerned. For example, there is an EU Framework Programs SME support fund. The EU also supports workshops by providing training support within the scope of the Entrepreneurship Development Project. Within the scope of the "Competitiveness and Innovation Program", the EU Commission calls for "European Consultant Network for Women Entrepreneurs".
2. ILO (International Labor Organization); It provides various grants for entrepreneurship development (ILO has communication offices around the world).
3. OECD (Organization for Economic Co-operation and Development); They have support for economic growth, the development of commercial life, to alleviate poverty and spread prosperity through innovation and entrepreneurship.
4. UN (United Nations); It provides various support, grant, and consultancy services for local development entrepreneurship. In particular, UNDP (United Nations Development Program) supports the development of entrepreneurship and the elimination of barriers to entrepreneurship in cooperation with the private sector. Also, GEF (Global Environment Facility) grants to small and medium-sized projects.
5. UNESCO (United Nations Educational Scientific and Cultural); There is a "Women Entrepreneurs Project Powering Digital Creative Industries". There is also an "Increasing Women's Employment Project".

6. WB (World Bank); Through the International Development Association (IDA), International Finance Corporation (IFC), and the Multilateral Investment Guarantee Agency (MIGA), projects such as creative development ideas and women and youth entrepreneurship development are provided with credit. For example, with the We-Fi Project, women entrepreneurs of developing countries are funded. Besides, there is a "Quick Support Project for Micro and Small Enterprises".
7. WTO (World Trade Organizations); It is effective in regulating and directing foreign investments.
The entrepreneurship ecosystem is concerned with all dimensions from local to global. It requires considering every factor affecting entrepreneurship, especially the economic and social environment. In this context, the following suggestions can be listed for the environment regarding entrepreneurship in general and SMEs in particular:
- SMEs and those working in the field of entrepreneurship should have enough information about the activities of the above organizations. Public institutions, chambers of commerce and industry, or other employer associations should apply for these supports. At the same time, national support and assistance should be able to be put forward.
- The entrepreneurship pattern texture of the society should be revealed. Starting with traditional handicrafts, any help and support should be pursued to stimulate local production and trade. Tradesmen should be supported to reach micro-business ownership. With the micro ones evolving first into small enterprises and then into medium-sized companies; regional development and employment increase can be achieved.
- Legal legislation and bureaucracy should be flexible enough to support entrepreneurship. Entrepreneurship education should be institutionalized. Women and young entrepreneurship should be encouraged.
- Innovation and putting it into practice are the cornerstones of the country's development. R&D and innovation support programs should be increased. Technoparks, environments for entrepreneurship, start-ups, entrepreneurship houses, technology gardens, technology transfer offices, applied entrepreneurship campuses should be expanded. Inventors must be rewarded.
In this study, the general literature is evaluated. It is a basic limitation that it contains theoretical information. In order to eliminate this deficiency, especially global field studies can be done. For example, some developed, developing and underdeveloped countries can be selected. Their past and present entrepreneurship and SME movements can be compared. SME supports can be revealed in the development of states with success stories.

REFERENCES

Abuiyada, R. (2018). Traditional development theories have failed to address the needs of the majority of people at grassroots levels with reference to GAD. International Journal of Business and Social Science, 9(9): 115-119. doi: 10.30845/ijbss.v9n9p12

Andersen, T. B., Hansen, H. and Markussen, T. (2005). US Politics and World Bank IDA-Lending. Discussion Papers, Institute of Economics University of Copenhagen, 05(06): 1-26. Available at: https://curis.ku.dk/ws/files/32172607/0506.pdf, [19.01.2021]

Arnold, C. (2019). The foundation for economies worldwide ıs small business. Avaiable at: https://www.ifac.org/knowledge-gateway/contributing-global-economy/discussion/foundation-economies-worldwide-small-business-0 [14.01.2021]

Arslan, E. ve Kiper, K. (2015). Dış yardım nedir? Niçin yapılır? Sosyal Politika Çalışmaları Dergisi, 15(34): 9-26.

Bouri, A. et al (2011). Report on support to SMEs in developing countries through financial intermediaries. Avaiable at: dalberg_sme-briefing-paper.pdf [14.01.2021]

Cambridge Dictionary (2021). Meaning of development in English. Avaiable at: https://dictionary.cambridge.org/dictionary/english/development [28.01.2021]

Celik, A. ve Akgemci, T. (2010). Girişimcilik kültürü ve KOBİ'ler. 3.baskı, Ankara: Gazi Kitabevi.

Celik, A. (2018), Uygulamalı girişimcilik, Konya: Eğitim Yayınevi.

Celik, A. and Nalcacigil, E. (2020). Management and organization thought after corona (Covid-19). International Conference on Covid-19 Studies, June 21-23, Ankara, Turkey, 599-613.

Cetin, C. (1996). Yeniden yapılanma, girişimcilik, küçük ve orta boy işletmeler ve bunların özendirilmesi. İstanbul: Der Yayınevi.

Dobrescu, P. (2019). Introduction: Why development? In: Dobrescu, P. (ed), Development in Turbulent Times, Cham, Switzerland: Springer Open. Avaiable at: 2019_Book_DevelopmentInTurbulentTimes.pdf [21.03.2019]

Fadnis, M. and Arnold, C. (2018). Foundation for economies worldwide=Small business. Avaiable at: https://www.ifac.org/knowledge-gateway/contributing-global-economy/discussion/foundation-economies-worldwide-small-business [14.01.2021]

Gherghina, S. C. et al (2020). Small and medium-sized enterprises (SMEs): The engine of economic growth through investments and innovation. Sustainability, 12(347): 1-22. Avaiable at: sustainability-12-00347-v2.pdf [14.01.2021]

Goldin, I. (2019). Why do some countries develop and others not? In: Dobrescu, P. (ed), Development in Turbulent Times, Cham, Switzerland: Springer. Avaiable at: 2019_Book_DevelopmentInTurbulentTimes.pdf [21.03.2019]

Grant, A. (2020). "This is How COVID-19 Could Change the World of Work for Good", https://www.weforum.org/agenda/2020/04/here-s-how-coronavirus-has-changed-the-world-of-work-covid19-adam-grant/, Access: 17.05.2020.

Karatas, M. ve Vatansever, N. (2001). Uluslararası ekonomik ve mali kuruluşlar. Muğla Üniversitesi SBE Dergisi, (3): 65-90.

KOBI (2018). Küçük ve orta büyüklükteki işletmelerin tanımı, nitelikleri ve sınıflandırılması hakkında yönetmelik. Avaiable at: https://www.kosgeb.gov.tr/Web/Genel/SSS.aspx?KatID=16 [11.02.2021]

Muftuoglu, T. (1993). Türkiye'de küçük ve orta ölçekli işletmeler: Sorunlar ve öneriler. 3. Baskı. Ankara: Desen Ofset.

OECD (2020). Coronavirus (Covid-19): SME policy responses. Avaiable at: https://read.oecd-ilibrary.org/view/?ref=119_119680-di6h3qgi4x&title=Covid-19_SME_Policy_Responses [14.01.2021]

Simsek, M. S. and Celik, A. (2019). İşletme bilimine giriş. 26. Baskı, Konya: Eğitim Yayınevi.

United Nations (2020). Supporting small businesses through the COVID-19 crisis. Avaiable at: https://www.un.org/en/observances/micro-small-medium-businesses-day [14.01.2021]

Worldbank (2019). Small and medium enterprises finance. Available at: https://www.worldbank.org/en/topic/smefinance [14.01.2021]

DOĞAL AFETLERDEN KAYNAKLANAN KİMYASAL BİYOLOJİK RADYOLOJİK VE NÜKLEER AJANLARIN ÇEVRESEL ETKİLERİ

Yakup POLAT
https://orcid.org/0000-0001-9031-6428
Ayşe Handan DÖKMECİ
https://orcid.org/0000-0002-4439-4422
Tekirdağ Namık Kemal Üniversitesi, Tekirdağ, TÜRKİYE

Özet

Tarih boyunca meydana gelen doğal afetler incelendiğinde, nüfus artışı, çarpık kentleşme ve endüstriyel gelişmelerin barındırdığı risklerin afet sonuçlarını ciddi oranda artırdığı gözlemlenmiştir. Özellikle yaşadığımız yüzyılda endüstri ve enerji alanlarında kullanılan ham maddelerin üretim, depolama ve taşıma işlemleri esnasında oluşturabileceği riskler hızla artmaktadır. Doğal afet sonucu sekonder olarak meydana gelen endüstriyel afetler, endüstriyel kazalardan ayrı olarak değerlendirilmesi ve gerek hazırlık gerek ise müdahale ve iyileştirme çalışmalarının daha kapsamlı olarak incelenmesi gerekmektedir. 1999 yılında Marmara Depremi sonrası yakıt tanklarında meydana gelen yangınlar ve çevreye salınan kimyasallar olası sekonder afetlerin önemini bir kez daha gözler önüne sermiştir. Bu çalışmada, yaşanan doğal afetler nedeniyle meydana gelen kimyasal, biyolojik, radyolojik, nükleer madde salınımlarının çevresel etkileri incelenmiş, günümüzde artan endüstriyel gelişmelerin barındırdığı riskler ve alınabilecek önlemler ele alınmıştır.

Anahtar Kelimeler: Doğal Afetler, KBRN Kazalar, Çevresel Toksisite, Halk Sağlığı

ENVIRONMENTAL EFFECTS OF CHEMICAL BIOLOGICAL RADIOLOGICAL AND NUCLEAR AGENTS CAUSED BY NATURAL DISASTERS

Abstract

When the natural disasters occurring throughout history are examined, it has been observed that the risks of population growth, unplanned urbanization and industrial developments significantly increase the results of the disaster. Especially in the century we live in, the risks that raw materials used in industry and energy fields may pose during the production, storage and transportation processes are increasing rapidly. Industrial disasters that occur secondary to natural disasters should be evaluated separately from industrial accidents, and both preparation and response and recovery studies should be examined more comprehensively.

Fires that occurred in fuel tanks after the Marmara Earthquake in 1999 and chemicals released into the environment once again revealed the importance of possible secondary disasters. In this study, the environmental effects of chemical, biological, radiological and nuclear material releases caused by natural disasters were examined, and the risks of today is increasing industrial developments and the measures that can be taken were discussed.

Keywords: Natural disasters, CBRN accidents, Environmental toxicity, Public health

1. GİRİŞ

Toplumlar yüzyıllardır yaşamlarını devam ettirebilmek adına pek çok kaynak ve yenilik arayışında bulunmuş, özellikle sanayi ve teknoloji alanında oluşturdukları yenilikler ışığında hem bulundukları dönemin hem de sonraki dönemlerin gelişimine katkı sağlamışlardır. Tarih boyunca devam eden bu döngü, yaşadığımız yüzyılda önemli gelişmelerin yaşanmasına, bu gelişmeler neticesinde yeni kaynak arayışlarının artmasına, toplumların gelişmesine, rahat ve refah bir yaşama ulaşmasına yardımcı olmuştur (Ercan, 2019). Ancak bu tesislerin sağladığı katkılar dışında, doğal veya insan kaynaklı afetlerin tetiklediği kazalar ile kimyasal, biyolojik, radyolojik ve nükleer (KBRN) madde salınımları, pek çok insanın ölümüne veya sakat kalmasına, maruz kalınan etkileri nedeniyle doğum öncesi anomaliliklerine ve insanlara olan etkileri dışında pek çok çevresel soruna neden olabilmektedir. Doğal afetler sonucunda meydana gelen KBRN kazaları, endüstriyel alanlarda bulunan tehlikeli maddelerin birden ve eşzamanlı olarak salınmasına, güvenlik bariyerlerine veya sistemlere hasar vermesine, sosyal, çevresel ve ekonomik zararlar oluşturmasına neden olabilmektedir. KBRN kazalarının meydana gelmesi, endüstriyel alanlardaki hazırlık aşamalarının yetersizliği ve risk analizi uygulamalarının doğru yapılmaması ile yaşanabileceği gibi doğal afet sonucu bu hazırlıkların yapılmaması ve gerekli önlemlerin alınmamasıyla olayın büyüklüğünü artırabilmektedir. Doğal afetler nedeniyle endüstriyel tesislerde görülen sistemsel sorunlar, depo veya tankerlerde meydana gelen hasarlar, zararlı maddelerin dışarı sızmasına, patlama veya yangın gibi pek çok önemli sorunun oluşmasına zemin hazırlamaktadır. Özellikle günümüzde yaşanan nüfus artışı, yerleşim alanlarına kurulan endüstriyel tesisler, çarpık kentleşme gibi kabul edilmiş önemli sorunların varlığı acil durum planlarını ve hazırlık evrelerinin ne kadar önem arz ettiğini göstermektedir (Dökmeci, 2019) (Doğan, 2015).

KBRN madde salınımı riskleri, tehlikeli sanayi tesislerini barındıran ve sık sık doğal tehlikeye maruz kalan pek çok ülkede etkisini daha yoğun hissettirebilmektedir. Bu nedenle bu alanlarda oluşturulacak risk analizi ve müdahale aşamaları insan, doğal ve teknolojik gelişmelere doğrudan orantılı olduğu belirtilmektedir. Yeterli düzeyde hazırlık, risk analizi ve müdahale planlaması yapılamayan durumlarda, endüstriyel afetlere müdahale aşamalarının doğru ve sağlıklı yapılamayacağı öngörülmektedir. Endüstriyel sanayi alanlarında kullanılan hammaddelerin özellikleri, doğurabileceği sonuçların önceden tespit edilmesi ve bu konuda bilgilendirmelerin yapılması afet yönetim aşamalarının güçlü bir şekilde yönetilmesini sağlayacaktır (Girgin & vd., 2017).

2.DOĞAL AFETLER VE KBRN KAZALAR

Endüstriyel alanlarda yaşanan ihmal veya sabotaj nedeniyle meydana gelen kazalar ve KBRN olayları gerek risk analizi gerek ise acil müdahale çalışmaları açısından birbirlerinden farklılık göstermektedir. KBRN madde salınım olaylarını, diğer kaza sonucu meydana gelen afetlerden ayıran en önemli özellik, meydana gelebilen bir doğal afetin geniş alanlara yayılması ve aynı zamanda birden fazla tesisi etkileyebilmesi olarak belirtilmektedir. Bazen ise tek bir tesiste birden fazla hasar sonucunda KBRN madde salınımı meydana gelebilmekte ve tesislerde bulunan güvenlik mekanizmaları ve müdahale aşamalarına destek olabilecek sistemler afet nedeniyle zarar görebilmektedir. Bir diğer önemli neden ise, bölgede bulunan afet yönetim sistemlerinin, yerel yönetimlerin ve yardımcı hizmetlerin, KBRN salınımına cevap verme yeteneği ve doğal afet nedeniyle oluşabilen sekonder afetler olarak gösterilmektedir. Örneğin, Doğal afet nedeniyle hasar alan su şebekesi ve kimyasal madde ile kontamine su ile yolların taşması müdahale ekiplerinin çalışmalarını engelleyebilmektedir. Geçmişte yaşanan Kocaeli depremi, doğal bir afetin kimyasal madde salınımını tetikleyebileceği ve acil müdahaleyi nasıl zorlaştırabileceği konusunda yol göstermektedir. Yaşanan afet nedeniyle toksik etkiye sahip olan akrilonitril salınımını tetiklemiş, aynı zamanda iletişim ağları ve destek ekiplerin afet bölgesine ulaşımı engellenmiştir. Kocaeli depremi gibi Natech olayları, kimyasal salınım riskini hafifletmek adına bu gibi olayları düzenleme ve planlama ihtiyacının önemini vurgulamaktadır (WHO, 2018).

Tehlikeli madde salınımlarının oluşumuna direk veya dolaylı olarak doğal afetler neden olabilmektedir. Büyük çaplı tehlikeli madde salınımları özellikle boru hatlarının, depolama alanlarının, bağlantı sistemlerinin deprem, sel, kasırga, heyelan, tsunami gibi doğal afetlerden dolayı zarar görmesinden kaynaklanmaktadır. Genellikle rüzgâr, fırtına gibi hava olaylarına eşlik eden yıldırım düşmeleri, depolama tanklarında yangını tetikleyebilmekte veya etkisini artırabilmektedir. Taşkın nedeniyle akarsulara karışan tehlikeli maddeler içme sularına karışabilmekte, sağlık kuruluşlarının afetten etkilenmesi ve önemli hasarlar görmesi nedeniyle bu kurumlarda bulunan dezenfektan gibi kimyasal maddeler çevreye yayılabilmekte, yüksek sıcaklıklar nedeniyle veya soğuk hava nedeniyle donan boruların kırılmasıyla patlamalar meydana gelebilmektedir (WHO, 2018). Bu etkenler göz önüne alındığında, Ekvador ‘da meydana gelen 1987 depremi ve depremin sonrasında ortaya çıkan enkaz nedeniyle Ekvador Petrol Boru Hattı'nın 40 km'den fazlasının hasar alması örnek olarak gösterilmektedir. Çevreye tahmini olarak 100.000 varil petrol dökülmüş ve onarım için ciddi bir ekonomik gelir ihtiyacının yanında çevresel açıdan zarara neden olmuştur. KBRN olaylarını yalnızca fiziksel hasarın maliyetiyle değil, aynı zamanda diğer oluşan sonuçlarıyla da dikkate alarak ölçmek gerekmektedir. Bu nedenle nükleer tehlikelere benzeyen çevresel ve halk sağlığını tehdit eden toksik maddelerin oluşturacağı zararlar dikkat gerektirmektedir (Poljansek & vd., 2019).

3.KBRN MADDELERİNİN ÇEVRESEL ETKİLERİ

Tehlike ve risk oluşturan KBRN maddeler yaralanma, ölüm veya ciddi hastalıklarda artışa neden olan ve kimyasal, fiziksel veya bulaşıcı özellikleri nedeniyle insanlara veya çevreye karşı önemli tehditler oluşturan ajanlardır. Çevre ve insan, kitlesel olarak etkili olabilecek KBRN maddelerine çeşitli nedenlerden dolayı maruz kalmaktadır. Petrol salınımları, kimyasal tarım ilaçları ve aerosol haline getirilmiş radyonüklidler bir doğal afet ile ilgili hasar türleri düşünüldüğünde hemen akla gelmeyen tehlikeler olabilmektedir. Ancak bu tehditler, sel suları veya deprem sonucu hasar gören yollar, çöken binalar kadar önemli tehlikeler barındırmaktadır (Young & vd., 2004). Nehir sularının bulunduğu bölgelerde

bulunan ve tehlikeli madde taşıyan petrol ve gaz boru hatları doğal afet riskleri nedeniyle önemli tehditler oluşturmaktadır. Boru hatları genellikle kırsal kesimlerde yer aldığından dolayı hasar gören boru hatlarının tespiti gecikebilir ve bu da tehlikeli madde salınımını artırabilmektedir. Özellikle sel nedeniyle meydana gelen doğal afetlerde depolanan veya taşınan tehlikeli maddeler kolayca dağılabilir ve yüzlerce kilometre kadar çevreyi kirletebilmektedir. Deprem olması durumunda ise, zemin hareketlerinin sonucu zeminde çatlaklar oluşarak bu toksik maddeler yeraltı sularına karışarak çevre ve halk sağlığını için ciddi tehdit oluşturabilir. Endüstriyel büyüme, iklim değişikliği ve giderek daha fazla birbirine bağlanan bir toplumun artan savunmasızlığı, gelecekte bu tür olayların olasılığını ve etkisini artıracaktır (Girgin & vd., 2017).

4.SONUÇ

Doğal afet kaynaklı KBRN madde salınımları, etkilediği toplumun sosyo-ekonomik düzeyi, nüfus yapısı, konumu ve tehlikeli madde üretim tesislerinin afet yönetim çalışmaları ile doğrudan orantılıdır. Geçmiş dönemlerde meydana gelmiş afetler incelendiğinde, önemli can kayıpları, insan sağlığı, çevre sağlığı ve sosyo-ekonomik zararlar gibi pek çok hasar bıraktığı gözlenmiştir. Yaşanan bu afetler sonrasında yapılan çalışmalar, yayınlanan yönetmelikler ve mevzuatlar, pek çok koruyucu önlemlerin alınmasını, hasarlı alanların risk analizlerinin tespit edilerek iyileştirilmesini, afet öncesi eğitim ve tatbikatların gerçekleştirilmesini, afet esnasında acil müdahale çalışmalarının kesintisiz ve güvenli olarak uygulanmasını sağlamıştır. Yaşam biçimi ve şartlarının sürekli olarak değişmesi, toplum ihtiyaçlarının, nüfusun, sanayi ve teknoloji tesislerinin giderek artması nedeniyle, tehlike ve risk analizlerinin geliştirilmesi, toplumun ve tesis çalışanlarının farkındalık eğitimlerinin süreklilik içerisinde yapılması gerekmektedir. Çevre yönetimi ve acil durum ve afet yönetimi bağlamında “afet” kavramının ele alınması ve çevresel bozulmanın afet etkilerine katkıda bulunan bir faktör olmasından dolayı, çevre ve afetler değerlendirilirken aynı çatı altında düşünülmesi gerekmektedir.

KAYNAKLAR

Doğan, B. (2015). BÜYÜK ENDÜSTRİYEL TESİSLERDE KAZA RİSKLERİNİN VE KÖK NEDENLERİN TESPİTİ: ATMOSFERİK DİSTİLASYON KOLONU ÖRNEĞİ. Ankara, Ankara, Türkiye.

Dökmeci, A. H. (2019). Endüstriyel Toksik Madde ve Madencilik Kazaları. A. H. Dökmeci içinde, Toksikolojik Çevresel ve Endüstriyel Afetler (s. 167-170). İstanbul: Nobel Tıp Kitabevleri Tic. Ltd. Şti.

Ercan, M. (2019, Temmuz). BÜYÜK ENDÜSTRİYEL KAZALAR VE AFET YÖNETİMİNDE KARŞILAŞILAN SORUNLAR: ANKARA ÖRNEĞİ. Ankara, Ankara, TÜRKİYE.

Girgin, S., & vd. (2017). 9. Natech Hazard and Risk Assessment. Cenevre: United Nations Office for Disaster Risk Reduction.

Poljansek, K., & vd. (2019). Recommendations for National Risk Assessment for Disaster Risk Management in EU. European Union, Luxembourg: Publications Office of the European Union.

WHO. (2018). Chemical releases caused by natural hazard events and disasters – information for public health authorities. Cenevre: World Health Organizaiton.

Young, S., & vd. (2004). Natural and technologic hazardous material releases during and after natural disasters: a review. Science of The Total Environment, 3-20.

COOPERATE SOCIAL RESPONSIBILITY OF WOMEN AS PART OF STRATEGIC BUSINESS MANAGEMENT

IBRAHIM ALI MA'AJI
Transmission Company of Nigeria
SANI INUSA MILALA
ORCID ID: Orcid.org/0000-00017332459
Abubakar Tafawa Balewa University Bauchi, Bauchi state Nigeria

Abtract
In accordance with triple bottom line's approach, the responsibility of administrative and supervisory corporate bodies cover economic, social and environmental dimensions in a systemic way, With the globalization of research it have been of much interest to know the contribution or the achievement that women cooperate social responsibility will impact This study aimed at assessments of Cooperate social responsibility of women along as part of strategic business management, this study have the objective of exploring to the general public the extent do cooperate social responsibility of women address societal problems, revealing the possible factors influencing cooperate social responsibility of women as tool for business and exploring the extend cooperate social responsibility of women can be effectively pursued as part of strategy for business management and from the research process after the field result has been collected through the use of questionnaire and done with the analysis it was reveal from the result of the study that job creation problem, water problem, road problems etc has being the problem that CSR of women can solve also there factors that have been reveal from the study that they are possibly to influence of CSR of women such as the profitability, transparency, types of ownership, types of owners interest gender equality etc. and lastly the cooperate social responsibility of women can be effectively pursued as part of strategy for business management at very high level. It has come to conclusion that assessment of women cooperate social responsibility has been a great factor of the fact the women has great to play in the business management.

Keyword: Women, Responsibly, Business, Management

1.0 INTRODUCTION

Having female gender in the system of cooperate social responsibility along is quite impressive and it have been the subject of enquiries on how will responsible the system will be compared with the Cooperate social responsibility is about understanding and managing the relationship between our trading operations and the economy, environment and communities within which we operate (Scott, 2007). Morrisons claim that its CSR focus is on

"managing the social, ethical and environmental issues that are material to our commercial performance, through a programme of continuous improvement" (Morrisons, 2005). The notion of corporate social responsibility (CSR) is related to ethical and moral issues concerning corporate decision-making and behavior. Knowing if a company should undertake particular activities or refrain from doing so because they are beneficial or harmful to society is a central question. CSR is nowadays related to issues such as environmental protection, health and safety at work, relations with local communities and relations with consumers (Branco and Delgado, 2011). CSR is the concept Much of the prior research typically theorizes about the CSR-enhancing impact of female directors deriving predominantly from a literature on gender differences in moral and communal orientations (Ben-Amar, Chang, and McIlkenny). Yet, it is also possible that the positive influence of women board members on a firm's CSR may be driven by their reputational concerns. Further, a more nuanced understanding of the CSR-promoting role of female directors requires paying attention to the specific organizational context in which such a role is likely to be performed more (or less) effectively. Moving one step further from previous studies on the linkage between women on boards and firms' CSR, this paper offers an additional, and perhaps complementary, explanation for the impact of female directorship on the firm's CSR, exploring firm-specific conditions that affect such a relationship. There this paper is aimed at assessing cooperate social responsibility of women as part of strategic business management

2.0 LITERATURE REVIEW

Discourse on Concept of corporate social responsibility

There are opposing positions held by different groups of individuals on the role and benefits of corporate social responsibility to both companies and society. Most arguments both for and against CSR are based on how company‟s attempts to be socially responsible affect its „Bottom Line‟ agenda. In this case, Dahlsrud (2006) in Shabana and Carroll (2010), comments that arguments in favour of CSR typically began with the belief that CSR is in business Long-term self-interest. Thus, arguments for CSR practices follow from the realization of its positive impacts and benefits.

Basically, those advocates for CSR believe that business corporations have social responsibility that requires them to use some of their resources to address needs in their situate communities. Major argument for this is that, corporations are part of society and a part which has great deal of power. A large corporation has much more of ability to affect society for good or ill than any individual could. Therefore, they ought to act in ways that will benefit the society of which they are a part (Shabana and Carroll, 2010).

Furthermore, and in line with what has already been discussed in the previous sections about the usefulness of corporate social responsibility, proponents argue that corporations make long-term profits by operating with the perspective of being socially responsible. For them, sole responsibility of business is to meet triple-bottom line requirements and make more profit.

Conversely, a number of individuals have brought into questions the course and benefits of corporate social responsibility – „arguments against CSR‟.

Generally, the narrow view about CSR conceptualizes business as primarily preoccupied with profit generation and maximization. This tradition of narrow view, as put by Shabana and Carroll, typically began with the economic argument articulated most forcefully by Milton Friedman (1962). Friedman held that business has one responsibility and that is to maximize

profits of its owners or shareholders. He argues that social issues are not the concern of business people.

In attempt to illustrate Friedman‟s position, Smith (1990) itemized five principal arguments against CSR: the problem of competing claims (the role of profit); competitive disadvantage; competence disadvantage; domination by business; and legitimacy – the role of government. Smith explains that, Friedman, within the competing claims, argued that the notion of social responsibility in business shows a fundamental misconception of the character and nature of a free economy. He emphasized that, business function is economic, not social, and should be guided and judged by economic criteria alone. Action dictated by anything other than profit maximization, within the rules of the game, impairs economic efficiency. since corporate contribution to the alleviation of society‟s problems amount to double taxation, reduces profits and consequently the return on investment of shareholders, managers who make such contributions are neglecting their fiduciary responsibility to business owners and are acting in contrary to their contractual obligations.

Second on the roll is what smith called„competitive disadvantage‟. The competitive disadvantage argument against corporate social responsibility suggests that because social action will always have a price for the firm, it also jeopardizes the competitive advantage of business. For these critics, such should either be carried out by government or at least legislated for so that all corporations or industries will be subject to the same requirements. In approbation of this argument, Adam Smith was quoted by Friedman as saying: “I have never known much good done by those who affiliated to trade for the public good”.

Competence disadvantage is the third problem with CSR as identified by Friedman/Smith in the argument against the concept. In this regard, the objection for corporate social responsibility is that, business is not equipped to handle social activities. This position holds that managers are oriented towards finance and do not have the necessary expertise, i.e. social skills, to make socially oriented decisions Davis, (1973) in Shabana and Carroll (2010). According to Simmons, (2004*)* there are three ways in which a firm is said to be incompetent to deal with social issues. (i) Corporations lack the technical skills to deal with social issues;

(ii) Corporations do not know what is good for society and some institutions, as government who knows better;

(iii) Incompetent attempt to resolve social issues wastes shareholders money.

Fourth problem with CSR is the domination by Business, of which Davis and Blomstrom (1966) in Smith (1990) have observed that, combining social activities with the established economic activities of business would give business an excessive concentration of power, which would threaten the pluralistic division of powers and probably reducing the viability of our free society.

The fifth principal argument against corporate social responsibility is „Legitimacy‟ which stands to connote the role of government. This stipulates that, social issues are the concern of government. Any non-business contributions should be voluntary slack and Vogel, in Smith (1990), and government has legitimate social concern which business supports via payment of taxes. Friedman argued that, corporate expenditure for solving social problems is not the prerogative of business, rather, the prerogative and obligation of government. For him, the doctrine of CSR is a subversive one that imposes some responsibilities on corporate organizations that could best be tackled by those who occupy political offices.

Finally, some other critics regard CSR as mere strategy for avoiding regulations by business organizations; to gain uncommon legitimacy and access to decision makers; and shift ground towards privatization of public functions. Whereas, others are of the view that CSR is nothing

more than a public relation exercise, because companies often use CSR to green-wash their image. (Corporate watch, 2013).

Nature and meaning of corporate social responsibility

Several individuals, global organizations, corporate bodies and host of others have overtime given different definitions and meanings to corporate social responsibility, a situation that has rendered its nature and place in the business-society relations more or less full of obscurities. The complexity of coming up with a universally agreed characterization of CSR is partly a result of the fact that social problems differ from society to society, and this in turn tend to define the role that business has to play in a given society as well as the expectations of society on how and to what extent business should help in solving social problems.

Votaw (1972) having acknowledged this fact came up with a write up in which he attempted to summarize and give focus to the complications of creating a unanimous definition for the concept of CSR. As quoted by Carroll (1999), the term (social responsibility) is a brilliant one, which means something, but not always the same thing to everybody. To some, it conveys the idea of legal responsibility or liability; to others, it means socially responsible behaviour in an ethical sense; to still others, the meaning transmitted is that of being responsible for but in a causal mode; many simply equate it with a charitable contribution; some take it to mean being socially conscious; to others, it is a mere synonym for legitimacy mostly in the context of belonging or being proper or valid; few others regard it as art of fiduciary thereby imposing higher standards of behavior on businessmen than on citizens at large.

Among those who regard corporate social responsibility as to encompass a wide range of responsibilities, Joyner *et al.* (2002) noted that, corporate social responsibility has categories of economic, legal, and discretionary activities of business entity as adapted to the values and expectations of the business company regarding initiatives that take the form of protection to public health, public safety, and the environment.

In today‟s world, according to Coldwell (2000), CSR is multi-dimensional in that it can be defined in regards to all aspects of business behavior so that the impacts of these activities are incorporated in every corporate agenda. Coldwell could not in any way agree with corporate organizations to be selective about how they can solve social problems.

The concept of social responsibility as an important aspect of corporate organizations mission that received attention from Bowen (1953), who posits that business firms mission should not be exclusively economic, but the social implications of their decisions and activities should be taken into cognizance. In Bowen‟s views, business should look beyond economic gains, especially profit making, to protect the society and environment against the impacts of their operations. Nkanga (2007), agreed with Bowen to de-emphasize on profits as the only motivational factor for business in CSR. He posited that, the adoption of CSR policy should not be driven or motivated by increase of profit. But one can make a rejoin to Bowen and Nkang‟s view about business de-emphasizing on profits in CSR engagement. In as much as social implications of business requires adequate attention, de-emphasize on profit making might even retard the progress of corporate social responsibility. Corporate business firms must first make themselves financially strong to enable them carry out any fiduciary assignment. So if corporations can use CSR to maximize their profits, it should be considered a good thing.

A related argument posed by Davis and Frederick (1984), which has equally presented social responsiveness of corporate organizations as a non-specific concept, implies that the ability of

a corporation to relate its operations and policies to the social environment should be demonstrated in ways that are mutually beneficial to the company and to society. Slack (2006) added to this by stating that, the concept encompasses a broad range of activities that corporations may engage in with varying degree of enthusiasm to demonstrate that they are addressing important human rights, environmental needs, labour rights, and number of other issues.

The World Bank (2007) is counted among those who defined corporate social responsibility as a commitment of business to take care and manage the impacts of their operations (causal social responsibility) in the social, environmental and economic dimensions taking into consideration their local, regional, and global contexts (Marrewijk, 2003). But the problem with causal responsibility if strictly adhered to as being advocated for by the World Bank is that corporations that are into trading and service rendering whose activities do not necessarily constitute adverse effects on environment would be exempted from the practice of helping society solves it problems.

In other way, there are those few who believe that firms engage in one corporate social responsibility activity much more actively than the other. In such cases, corporate social responsibility issues and mode of engagement become specific and may suffer setback when it gets to an environment that may require more than one type of CSR approach.

Ojumu (2007) is one of those who believed in the success of corporate social responsibility through philanthropic programmes. He posits that, corporate social responsibility is about the contribution a company makes to society through its core business activities,it‟s social investment and based on philanthropic programmes. Emphatically, it is the belief of Ojumu and others within this category that corporations should not be compelled by legal means to engage into corporate social responsibility projects. But there is need for business firms to meet requirements of law. The European Union (EU)‟s Green paper on CSR, defined it as a concept whereby companies integrate social and environmental concerns in their business operations and in their interactions with stakeholders on a voluntary basis (www. corporate compliance.com). But making CSR exclusively a philanthropic programme might have an effect of reducing the seriousness givento it by companies, and would drastically encourage low quality CSR projects. That is why; Utting remarks that the only way to foster best business practice, otherwise known as corporate social responsibility, requires the provision of regulatory framework.

The World Business Council on Sustainability Development (WBCSD), described CSR on the basis of ethical mode to mean a concept of continuing commitment by business to behave ethically, to contribute to economic development, while improving the quality of life of the workforce and their families as well as of the local community and society at large (WBCSD, 2000). In essence, WBCSD happened to understand and explain the nature of CSR from the ethical stance. Similarly, Business of Social Responsibility (BSR), another Leading Global Business Partner, in a forum held in 2006, cited in Adeyanjou (2012), defined corporate social responsibility as achieving commercial success in ways that honour ethical values and respect people, communities and natural environment. But they did not completely rule off CSR as means of addressing the legal, commercial, and other expectations society has for business. In a different view, business corporations nowadays had drifted toward becoming amoral, hence, may know what is right but choose not to do it. The culture of self-absorption that is now common among both individuals and private firms in Nigeria constitutes problems to ethical value of corporate social responsibility. With the character of capital accumulation, business firms get tight-fisted in contributing towards social and economic needs of society. The result

is what prompted Egbe and Parki (2011) to have acknowledged that: corporate social responsibility undertaken by the oil companies in the Niger Delta is inadequate and not making the desired impact on the host communities. Also, Tuodolo (2009), having examined the styles of corporate social responsibility engagement of some companies in Nigeria concluded that CSR is more of public relations machinery than a tool for socio-economic development.

As part of the ways to address the nature of corporate social responsibility, some people hold the view that CSR refers mainly to legal responsibilities which a company is to undertake towards the society. As one example, McWilliams and Siegel (2001) defined corporate social responsibility as actions that appear to further social good beyond the self-interest of the firm and that which is required by law. This scope of responsibilities entails that a company should take on the adjustment of internal labour relations, as well, on the realization of the workers‟ rights and interests. With this respect, it is assumed that CSR is a term directly related to the labour law (ILO 1998). These rules are to make enterprises to carry out their CSR, and it is required of companies to work out and implement labour standards including fair wages, working time, health and safety, etc., in accordance with the international labour standards. All these are put in place in order to check the abusive use of the right of capital. In the same vein, the European Foundation for Quality Management (EFQM), in Adeyanjou, viewed CSR better within the legal scope, when they defined it as a whole range of fundamentals that organizations are expected to acknowledge and reflect in their actions. These include, among other things, respecting human rights, fair treatment of the workforce, being good corporate citizens, and conservation of natural environment.

In-depth characterization of corporate social responsibility

This section of the study intends to carry out further examination of the characteristics of corporate social responsibility (CSR). It is well recognized that CSR has complex nature. Despite its complexity and vagueness, The European Foundation for Quality Management (EFQM) presents some common characteristics for CSR which can be considered as features of a comprehensive CSR programmes, there are: meeting the needs of current stakeholders without compromising the ability of the future generations to meet their own demands; adopting CSR voluntarily, rather than as legal requirement, because it is seen to be in the long-term interest of the organization; integrating social, environmental and economic policies in day-to-day business operations; and accepting CSR as core activity that is required to be entrenched into an organization‟s management strategy (Olanrewaju,2007).

Carroll (1999) made important contribution to the debate on meanings and nature of CSR. He described a four part definition to the concept when he stated that corporate social responsibility has the characteristics of being economic, legal, ethical, and discretionary. He argues that, economic responsibility entails that corporations should engage in activities that generate profits for them, and such pursuance of the economic goal is crucial for the organization to remain in business. The legal responsibility of corporations according to Carroll ensures that corporate organizations‟ operations should conform to the legal requirements of the society in which they operate. Society expects corporations to fulfill their economic responsibility within the legal parameters set forth by the society‟s legal system.

After he had noted the inadequacies of various other definitions on corporate social responsibility, in which they only made reference to profit making and obeying the law as primary responsibilities of business, Carroll went beyond these self-interested goals to include ethical and voluntary acts of business to help society solve its problems. The ethical

responsibility implies that actions of corporate organizations must conform to the moral precepts of their host society. The fourth, being discretionary responsibility, ensures that organizations make voluntary contributions towards solving a number of ills that afflict society. Such discretionary/philanthropic responsibilities are driven by the desire of managements of corporations involved to engage in social roles, not necessarily enforced by law nor expected of corporations in the ethical sense.

Furthermore, in their comparative study of corporate social responsibility (CSR) in Europe and America, Matten and Moon (2004) highlighted some distinction between what they called „Implicit and Explicit features of CSR. Implicit corporate social responsibility involves the entirety of a country's formal and informal institutions assigning agreed share of responsibilities to corporations for society's interest and concerns. This form of CSR is by and large prescriptive and mandatory in that, it obligates corporate organizations to adopt values, norms and rules that enable them to address issues that are perceived as the responsibility of corporate organizations. The nature of, and extent to which Implicit CSR can be enforced differ from nation to nation, even so, it is a common feature of many economies. Matten and moon (ibid) identify that every country has a specific, historically grown institutional framework, which shapes and constitutes what they called „National Business System (NBS)"or „Social System of Production (SSP)". Except in few countries where such body is in absence, the National Business System contains the essential ideas that inform implicit corporate social responsibility. However, there are those who argue that CSR should not be a mandatory obligation for corporate organizations.

In explaining the explicit CSR, Matten and Moon referred to it as a practice in which organizations do conduct themselves in such a way that advances the interest of society. This involves voluntary, self-interest driven policies, programmes and strategies by corporations to addressing issues perceived as being part of their social responsibility.

Even though it is quite evident that there is wide variety of views and definitions on corporate social responsibility which stand as evidence of different perceptions from a number of scholars, organizations and societies, there are considerable common grounds among these views. As simply observed, corporate social responsibility explains how companies manage the business process to produce an overall development in society. The business was recognized, by the Bali Roundtable on Developing Countries (BRDC) in 2002, as a primary driver of development; while The World Summit for Sustainability (WSS), identified involvement of business as critical in alleviating poverty and achieving sustainable development (Adeyanju, 2012).

Hence, with the literature definitions cited so far, it can be concluded that corporate social responsibility is simply the continuing commitment taken by business organizations towards their social involvement in society. In other words, corporate social responsibility ensures an organization going out of its way to initiate actions that will impact positively on its host community, its environment and the people generally.

The Conflict between the CSR Objective and the Profit Maximizing Objective of Businesses

The business objective of maximizing profit subjects all the activities of a business to an economic rationale rather than to a moral rationale, as advocated by CSR (Dewit and Meyer, 2010). CSR requires that attention should be diverted away from the objective of shareholders wealth maximization (which is a profit motivated calculation) into the objective of societal wealth maximization (which is a morality-based calculation). From one perspective, where a

business tries to satisfy all of its stakeholders in pursuit of CSR activities, it may be forced into accepting all types of concessions which can destroy its immediate profit. There is a contention that pursuing CSR activities and conceding to the interest of all stakeholders can adversely affect the immediate profit of a business because of the cost incurred in executing CSR activities. To illustrate further, the employees need of a secured job and a higher pay; the suppliers need of a secured supply and higher purchase payments; the customers' needs of a low priced and high-quality product, and the society's need of an on-going community infrastructural development, all represent some form of a cost to a business. From another perspective, where the interest of all stakeholders is not justly served adversaries can arise, whereby customers may decide to boycott purchasing from an organization, employees may defect to competitors, suppliers may withhold supplies, and the communities may shut-down key aspects of a business operation, all of which can ultimately destroy the long-term profit of a business. All of the stakeholders may justly argue that they have some form of a moral claim on businesses simply because each of the stakeholders can be viewed as a supplier of an ingredient in the profit creation process of businesses.

A key question which may likely arise in current critical evaluation is that of whether businesses should primarily focus on maximising its immediate profit or mainly focus on pursuing CSR activities which may not produce any immediate gain but may result in long-term gain to the business from the continued support to the business by all of its stakeholders. It is noteworthy that businesses may not be able to equally satisfy the interest of all of its multiple's stakeholders. Therefore, CSR is a balancing act, which must be achieved amongst the various stakeholders (McWilliams and Siegel, 2001).

Current literature indicates that all stakeholders do not have the same equal moral claim on the organization and at such should not be equally treated. Therefore, having established that the different stakeholders have different kinds of interest and level of influence on an organization, there may be a need to give utmost priority to some stakeholders over the others, in order to strike a balance between achieving both the short-term profitability and the CSR business objectives simultaneously. A practical solution to resolving the conflicting objectives of CSR with that of maximizing immediate profit should be for businesses to merely discriminate amongst the different stakeholders rather than attempt to satisfy all of the stakeholders because an attempt to be everything to everyone may result in no one being satisfied at the end (WBCSD, 2002). This essay proposes that the business objective of maximizing profit can be balanced with the CSR objective by first identifying the most influential stakeholders and then placing a priority to their interests over that of the other stakeholders. The extent to which the various stakeholders should be rated in an organization should be based on factors such as their relative bargaining power, the legitimacy of their interest, the industry norm et al. For instance, Greggs plc's CSR report prioritized the company's stakeholders by presenting information on only the customers, the employees and the community. This implies that the company considers these 3 stakeholders to be the most influential of all of its stakeholders. The stakeholder's choice made by Greggs plc may be justified on the ground that it may be practically impossible to completely satisfy all of the companies' stakeholders and also on the grounds that the bakery industry norm focuses on these 3 key stakeholders (Greggs Plc Annual Report, 2011).

Demerits and Merits of Corporate Social Responsibility (CSR)

Having considered the reason why businesses pursue CSR activities, the next thought that is likely to prop-up in the mind of an inquisitive CSR analyst is the question of what the benefits and the disadvantages are of pursuing CSR activities. The argument against the concept of

CSRtypically begins with the classical economic argument championed by Milton Friedman. Friedman (Cited in Kaplan, 2012) contends that there is only one social responsibility of business, which is to use its resources for maximizing the profit of the shareholders. Friedman argued that if the free market cannot solve the social problems that exist, then it falls upon the government and not upon business to do the job. The antagonists to CSR argue that a key demerit of CSR is that it dilutes the primary objective of businesses because it requires businesses to sacrifice some profit in order to serve all stakeholders (Hayek 1969, Davis 1973, Bernstein 2000). The antagonist to CSR also argue that businesses are not equipped to handle social activities and at such salient demerit of CSR is that it steers businesses into an area in which they do not have the necessary expertise in (Davis 1973). There is a resonating argument that one of the demerits of CSR is that it can make businesses less competitive globally, where CSR is undertaken at such a significant cost disadvantage that can reduce business profits and impair business plans to expand its operations globally. The argument in favour of the concept of CSR starts with the belief that if businesses are to have a healthy climate in which to function in the future, then it is in their long-term selfinterest to be socially responsible. It is believed that the merit of CSR is that it can win new business, increase customer retention, develop relationships with suppliers, make an organisation an employer of choice, differentiate an organisation from its competitors, improve business reputation, reduce risk, and provide access to investment and funding opportunities (Kuruczet al., 2008. The proponents of CSR contend that proacting is more practical and less costly than reacting to social problems once they have surfaced (Carroll and Buchholtz 2009). Therefore, costly social problems such as employee turnover and customer boycott can be avoided by actively pursuing CSR activities. There is a belief that CSR activities can enhance long-term shareholder value by reducing employee turnover and absenteeism; and reducing the costs of complying with environmental regulations; and attracting tax benefits; and enhancing business efficiencies (Smith, 2005). It has been argued that a salient merit of CSR is that it can attract key customers because the public strongly supports companies that are involved in CSR activities. According to UK Small Business Consortium (2006), 88% of consumers surveyed in a CSR study, mentioned they were more likely to buy from a company that supports and engages in activities to improve the society. Today, the public believes businesses should be responsible to their workers, communities and other stakeholders, even if may require companies to sacrifice some immediate profit in doing so (Bernstein 2000). Having identified that one major merit of CSR is that it can win new businesses, the next key question that should be evaluated should be that of whether there is a scientific proof that CSR has actually won new businesses to companies that had actively pursued it. This inquisition sets the tone for evaluating the validity of the CSR concept.

Impact areas and benefits of corporate social responsibility

Issues concerning corporate social responsibility are many, and now, they are being integrated into all aspects of business operations. Definite commitment to CSR is made in the vision, mission and value statements of greater number of companies all over the world (Ofori and Hinson, 2007). The bottom line is that stakeholders‟ demands on companies have increased considerably. Sharma and Talver (2005), argue that, corporate social responsibility involves changing notions of human welfare, and emphasizes on activities that have direct concern with quality of life in society.

Corporate social responsibility is about considering and supervising the bond between the organization‟s operational procedure and the economy, environment, and communities within

which it functions (Morrison, 2005). It is adjudged that CSR focus is on controlling the social, economic and environmental problems of society. The summit is that, corporate social responsibility is a concept whereby companies integrate sustainability concerns into their business operation.

This brings into consideration the three components of sustainability (also known as the Triple Bottom Line), which have often been termed by many as CSR „Areas of Impact". Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs (World Commission on Environmental and Development, 1987); whereas the „Triple Bottom Line" is considering, as Crane and Matten (2003) believe that companies have one primary objective „profitability" but that they also have objectives of adding environmental and social valve to society.

Economic sustainability as one area of impacts in the corporate social responsibility engagement requires business organizations to be financially strong to enable them meet CSR requirements. In addition to profit making, creation of jobs and employment opportunities, reduction of poverty rate, payment of taxes and bills, respect for Labour rights, avoidance of any corrupt practices, e.t.c., can be included as ingredients of economic responsibility of business.

Companies" CSR premium can also be earned through ensuring protection of welfare, health and safety of society. As much as Business Corporations can contribute toward social development through making provisions for schools and education materials, health care system, good drinking water, building of access roads, sports and recreational facilities, and concern for crime and security (Adeyanju, 2012); businesses are equally expected to use green business practices, in which they can comply with regulations that relate to the safety of natural environment.

The practice of corporate social responsibility can have important effects and benefits, and these constitute the substances of arguments for CSR practice. Schema (2012), confirmed that CSR, as a strategic practice is key to organizational success, because it is one of the few practices that can contribute to a healthy bottom-line and long-term sustainability. For the author, effective CSR

strategy must consider alignment with organization'ss business strategy, commercial added value, and sustainability of impact. The benefits of effective CSR approach can include: stronger performance and profitability; improved relations with the investment community and access to capital; enhanced employees relations and company culture; risk management and access to social opportunities; and stronger relationship with communities and legal regulation.

Another group of scholars, Porter and Kramer (2006), admitted that CSR practice offers opportunities to companies to build positive image for themselves. In their view, if CSR is conducted in a way that effectively helps society; the main benefit that companies might gain from this is positive effect on reputation that by itself can lead to competitive advantage. CSR breeds good-will among business, communities and other stakeholders, and it Increases shareholders wealth. In addition, corporate social responsibility is capable of producing competent workforce, ensures innovations; it attracts investors and improves the welfare of host communities and society at large. It is also necessary, in justifying CSR action, to take cognizance of its important contributions toward national economies. Corporate organizations assist national governments in providing for infrastructural facilities and other developmental projects. However, there are divided opinions about the usefulness of the concept of CSR.

Challenges in Implementing Corporate Social Responsibility (CSR) in Nigeria

The challenges in implementing CSR in Nigeria will be discussed in details in the sub-headings below.

Inability of Nigeria Government to Enforce CSR into Law

Since the emergence of CRS in Nigeria, there is no law in place by the Nigeria Government in the area of CSR. CSR is still at the discretion of the companies. Companies alone cannot be said to be responsible for social responsibilities to the communities in the region. The government should traditional be responsible for the welfare of its citizens. These include ensuring law and order, security, provision of public infrastructure and other basic amenities. Thus, while companies have a social responsibility to the communities they operate, the framework within which this is to effectively work have to be provided by the government (Ijaiya, 2014).

Corruption and Selfishness

Nigeria is a country blessed with abundance of natural and human resources, as a result attracts the activities of multinational companies who explore these resources to increase the wealth of the nation as well as transform the economic and social environment for the betterment of the common. Apart from increasing the wealth of the nation, most of these companies enshrine in their policy the responsibility of providing some social services to the society they directly affect through their CSR. It is quite pathetic when the level of corruption in Nigeria poses a major challenge to these companies in implementing CSR. Without regards for morals and humanity, when the resources meant to be used for implementing CSR to improve the lives of people in the society gets to the hands of the leaders of these communities, they are siphoned and used for their selfish and personal aggrandizement. No wonder the renowned writer and Novelist Achebe (1998) stipulated that, corruption in Nigeria has passed the alarming and entered the fatal stage, and Nigeria will die if we keep pretending that she is only slightly indisposed.

Lack of Interest in Implementing CSR

Foreign and Local companies in Nigeria lack the necessary drive and impetus to effectively carryout CSR because they are not mandated by the laws of the Nigeria to do so, as a result, these companies see CSR as not a responsibility or obligatory which they must implement, but do it out of their own volition. It is only when CSR is backed by the laws of Nigeria that companies that tap its resources will then see it as obligatory, or otherwise faces the consequences of the law.

Negligible or Non-Existent Benefits

Social responsibility should result in positive outcomes for both the business and the community. However, often the results fall heavily in favour of the business involved. Businesses invest a comparatively small amount into community projects and then use their effort to promote their brand and gain access to markets all around the country. The public relations and brand building they receive far outweighs their investment in socially responsible projects.

Political and Social Insecurity

One of the fundamental factors that motivate companies (whether a foreign or local) to do business in Nigeria is the availability of political as well as social security. Suffice to state that the rate of social and political insecurity in the country manifested in the BokoHaram insurgency has done more damage than good to the economy of the nation. In fact the insurgence has eaten so deep into the fabrics of the society to the extent that fear of bombing and kidnap has become the other of the day. Foreigners doing business in Nigeria sleep with one eyes open and do their business with fear, while does who intend coming into the country have totally jettisoned the idea into thin air. With this pathetic and horrible situation on ground, companies will find it very challenging to engage in CSR for fear of not maximizing profit which is to the detriment of its stakeholders and the organization as a whole.

2.0 METHODOLOGY

Research design is the plan of scientific research that guides the researcher in collecting, analyzing and interpreting observed facts (Bless and Smith 1995). The choice of the research design reflects the decision about priority given to a range of dimension of the research process. Creswell also stated that accurate research designs are essential because they guide the methods and decisions that researches must take during the study and determine the logic by which interpretation are at the end of the study, he study adopted quantitative study Krecie And Morgan table was used to determined the sample strategy where it uses questionnaire, in the process of selecting the respondent simple random sampling is adopted where analysis was done using SPSS.

4.0 Result and Discussions

Field survey results

The field survey questionnaire (Appendix C) was administered after restructuring the questions in the PRE construct and DEMOGRAPHY as required by field survey results. The questionnaire was administered and retrieved in 2 weeks time as in Chacón (2009). The sets 120 of questionnaires were administered to the people of general public (Table 6) A total number of 105 questionnaires with 87% response rate were retrieved. A total number of 103 were used in the analyses after removing incomplete ones and data screening for outliers. The overall response rate after data screening was 85%.

Table 4.1: Questionnaire Administration

Questionnaire	Number	Response rate
Administered	120	-
Collected	105	87%
Screened	103	85%

4.4 Coding, Entering and Editing

After collecting the data the questionnaires were coded and posted into SPSS accordingly. Analysis was carried out using frequency to identify missing data and wrong postings. Five wrong posting was identified where fifty five (55) was posted instead of five (5) and this was

corrected by reviewing the particular questionnaire, identified the place of wrong posting and corrected it. There are also missing values in which data mean method in SPSS was used to fill in the missing values as Coakes (2006) suggested it as accepted method. The data outliers were identified using box plot in SPSS, therefore the extreme values in the box plot were removed.

Normality test

Prior to the multiple regression analysis to answer the research questions, a descriptive analysis was carried out to explore the normality of the data. Normality test was carried out in the study to meet the assumption of multiple regression and correlation in Pallant (2011). This is to show that the data is normally distributed, hence acceptable for the analyses. It showed that the data did not skew too much to the right or left, which can affect the mean and the results for inference. The result for Appendix E shows that the data distribution ranges from -9.11 to 1.738, which is within the acceptable range of +/-2 in Malley (2013).

Demography

The demographic information of the respondents was collected. The frequency and percentage analysis were carried out and the results presented to explore the respondents' profile.

Table 4.2: Demography Results

Variables	Options	Frequency	Percentages
Gender	Male	79	76.7
	Female	24	23.3
Age	Under 30 years	26	25
	30 to 60 years	60	58.2
	Above 60 years	17	16.5
Educational Qualification	Informal/primary education	15	14.5
	Secondary cert	42	40.8
	Diploma	21	20.3
	Degree	25	24.3
	Master and above	0	0
Marital status.	Single	30	29.1
	Married	42	40.8
	Divorce	31	30.1

Table 4.2 shows that the majority of the respondents are male representing 76.7% while female represented 23.3% This means that male respondents have dominated the study area.
The age 30-60yrs has the highest percentage of 58.2.% followed by age under 30yrs with 25.%, then age above 60yrs with 16.5%. This indicates that age 30-60yrs dominated the age of the responded and above 60yrs is the least age in the study area.
in the educational qualification of the respondent secondary certificate has the highest percentage with 40.8% followed by degree 24.3%, diploma 20.3%, informal /primary 14.5%

and 0.% of masters and above while the marital, married 40.8%, divorce 30.1%, and the least percentage 29.1%.

The reliability of the constructs

The reliability of the constructs was analysed by finding Cronbach's alpha as suggested by Pallant (2011). Overall Cronbach's alpha for questionnaire was 0.89. This means that the questionnaire as a whole is reliable and acceptable. The reliability test for the field data presented in Table 3, showed that the Cronbach's alphas obtained for each of the constructs are within the same range.

Table 4.3: Reliability Statistics

Cronbach's Alpha	N of Items
.895	21

Analysis of Results

To what extend can cooperate social responsibility address society problem?

Descriptive statistics based on mean ranking was carried out to explore the extend cooperate social responsibility can address society problems The results showed the ranking, mean and standard deviation for each Item.

Table 4.4: *Extend Can Cooperate Social Responsibility Address Society Problem*

Society needs	Mean	Std. Deviation	Ranking
job creation problem	3.70	1.450	1st
water problem	3.35	1.463	2nd
Electricity problem	3.31	1.393	3th
Road problem	3.21	1.382	4th
Hospitals problem	3.21	1.375	5th
Social development problem	3.20	1.501	6th

Table 4.4: shows the It shows the Extend Cooperate Social Responsibility can Address Society Problem, based on five point measurement scale, were job creation with 3.70 mean ranked 1st, water with 3.35 mean ranked 2nd, Electricity provision with 3.31 mean ranked 3rd, Road with mean values of 3.21 ranked 4th, hospitals with mean value of 3.21 ranked 5th, social development with mean value of 3.20 ranked 6th, Therefore, these results are indicating the It shows to some societal problems Cooperate Social Responsibility can Address among Society Problem.

What are the possible factors that influence cooperate social responsibility as a tool for business?

Descriptive statistics based on mean ranking was carried out to explore the possible factors that influence cooperate social responsibility as a tool for business the results showed the possible factors that influence cooperate social responsibility as a tool for business using ranking, mean and standard deviation for each Item.

Table 4.5: *the possible factors that influence cooperate social responsibility as a tool for business?*

FACTOR	Mean	Std. Deviation	Ranking
Profitability	3.50	1.450	1st
Issue of transparency	3.45	1.463	2nd
Types of owner	3.31	1.393	3th

Owner interest	3.21	1.382	4th
Company age	3.20	1.375	5th
Gearing	3.20	1.501	6th
Civil society strength	3.13	1.383	7th
Lack of transparency	2.90	1.532	8th
Lack of consideration	2.44	1.310	9th
Lack of consensus	2.40	1.301	10th
Social impact management	2.16	1.338	11th
Lack of community participating in CSR	1.89	1.035	12th

Table 4.5: Shows the possible factors that influence cooperate social responsibility as a tool for business in the study area, It shows The possible factors that influence cooperate social responsibility as a tool for business?, based on five point measurement scale, were profitability, with 3.50 mean ranked 1st, issues of transparency skills with 3.45 mean ranked 2nd, types of owner with 3.31 mean ranked 3rd, owners interest with mean values of 3.21 ranked 4th, company age with mean value of 3.20 ranked 5th, gearing with mean value of 3.20 ranked 6th, civil society strength 3.13 ranked the 7th, lack of transparency with mean of 2.90 ranked the 8th lack of consideration with mean value of 2.44 ranked 9th, lack of consensus with mean value of 2.40 ranked 10th , social impact management with mean of 2.16 ranked 11th and Lack of community participating in CSR the 12th in the table above. Therefore, these results are indicating most of the possible factors that influence cooperate social responsibility as a tool for business.

To *what* extend can cooperate social responsibility be effectively pursued as strategy for business management?

Descriptive statistics based on mean ranking was carried out to explore the extend cooperate social responsibility can be effectively pursued as strategy for business management. The results showed using the ranking, mean and standard deviation for each Item.

Table 4.6: The extend cooperate social responsibility can be effectively pursued as strategy for business management

Tasks significance	Mean	Std. Deviation	Ranking
Very high level	3.36	1.572	1st
High level	3.36	1.572	2nd
Low level	3.27	1.659	3th
Very low level	3.17	1.236	4th

Table 4.6: shows the extend cooperate social responsibility can be effectively pursued as strategy for business management, based on five point measurement scale, were cooperate social responsibility can be effectively pursued as strategy for business management at Very high level with 3.36 mean ranked 1st, cooperate social responsibility can be effectively pursued as strategy for business management at high level with 3.36 mean ranked 2nd, cooperate social responsibility can be effectively pursued as strategy for business management at low level with 3.27 mean ranked 3rd, cooperate social responsibility can be effectively pursued as strategy for business management at very low level with mean of 3.17 Therefore, these results are the extend cooperate social responsibility can be effectively pursued as strategy for business management,

5. Conclusion

The aim of the study is to determine the extent and the thrust of social responsibility require for business with the view maximize the achievement of its goals, the research clearly show that cooperate social responsibility can solve many of the societal problem such as the problem of employments and may other problems. Also factors such as profitability of the company, transparency, ownership type,. Interest, and age of the company can influence the cooperate social responsibility as a tool for strategic management and cooperate social responsibility can be effectively pursued as strategy for business management.

6. Recommendations

Based on the findings from the responds obtained from the field survey and information reviewed in literature, it is essential to make some viable recommendations on the way of improving the job characteristic management Hence, the following recommendations were also made:

1. That awareness programme has to be given much emphasis on the subject cooperate social responsibility
   There should be adequate space provision of workshop opportunity for the work
2. There should be standard to be stipulate for the king development a cooperate social responsibility can lead to.
3. Government should also set a monitoring team to observe the effect of CSR on the general public.

7.0 References

Ben-Amar, W.; Chang, M.; Mcllkenny, P. (**2015)** Board gender diversity and corporate response to sustainability initiatives: Evidence from the carbon disclosure project.

Gardberg, N.A.; Fombrun, C.J. (**2006)** Corporate citizenship: Creating intangible assets across institutional environments. Acad. Manag. R, 31, 329–346.

A Feminist Critical Discourse Analysis of the Tropes of (Sexually) Objectified or/and Oppressed Men in Selected Contemporary African Prose Works

Ayodele Adebayo Allagbé
Yacoubou Alou
Université de Zinder (UZ), Zinder, Niger
Ibrahim Sanusi Chinade
Federal University Dutse, Jigawa State, Nigeria

Abstract
This paper aims to examine the tropes of (sexually) objectified or/and oppressed men in selected contemporary African prose works. Drawing on Feminist Critical Discourse Analysis (henceforth FCDA) (Lazar, 2005; 2007) for theoretical underpinnings, Systemic Functional Linguistics (henceforth SFL) (Eggins, 2004; Halliday & Webster, 2009; Fontaine, 2013) for grammatical tools and qualitative method, this study seeks to analyze how contemporary feminist writers like Amma Darko, Daniel Mengara, and Lola Shoneyin employ language in their fictional texts The Housemaid (1998), Mema (2003) and The Secret Lives of Baba Segi's Wives (2015) respectively to represent the phenomenon of (sexually) objectified or/and oppressed male characters. This article cogently argues that the tropes of (sexually) objectified or/and oppressed men, as enacted in the aforementioned prose works, encode a form of gendered experience which irrefutably has a given recondite function or meaning which only a critical linguistic analysis of the writers' language can uncover. The findings reveal that the three authors intentionally use language to depict their male personae as (sexually) objectified or/and oppressed individuals with a view to challenging the established social order in social life and establishing a certain balance in the representation of gender or/and power relations in African literature.

Keywords: Contemporary African literature, feminist critical discourse analysis, gendered experience, objectified men, representation

INFLUENCE OF EMPLOYEES PARTICIPATION ON MANAGERIAL DECISION FOR ORGANIZATIONAL PERFORMANCE

Abdulgaffar Muhammad
Postgraduate Student National Open University of Nigeria. Nigeria
Abbas Hamisu
Federal College of Education Zaria, Nigeria
Umar Hamisu
Zainab Sani Sambo
Nigerian Institute of Transport Technology

Abstract
This study on "Evaluation of employees' participation in managerial decision making for organizational performance in Flour Mill Nigeria Plc" is to determine the impact of employees' participation in managerial decision making for organizational performance. The study seeks to identify the impact of consultative management and collective bargaining in managerial decision making for organizational performance in Flour Mills Nigeria Plc. The theoretical framework upon which this research was built upon is leader-member exchange theory as the theoretical framework which sees the employees' participation in decision making as an essential component of the organization that both employees and employers must cooperate and work harmonious if there must be improved performance of the organization. The research used survey method using structured questionnaires which were administered to 116 staff of the Flour Mills Nigeria Plc, Kaduna State out of which 80 were validly returned upon which analysis were made. The data obtained were presented and analysed using both descriptive (tables) and inferential (regression) tools of statistics. The regression analysis shows $p<0.05$ level reveals that there is significant impact of consultative management and collective bargaining in managerial decision making for organizational performance. This study concludes that employees' participation in managerial decision making improve organizational performance in organizations. The research therefore recommends that government the management of Flour Mills Nigeria Plc and other stakeholders should establish means and channels of communication and collaborations for effective participation of the employees in the organization through sharing ideas, circulars, internal memos and regular meetings.

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INTRODUCTION

All stakeholders, employees, employers, clients, among others in any organization are important assets to the organizations (Samad & Shapour, 2017). However the relationships

between management and subordinates are sometimes in crisis because both parties have their own interests. For example management needs maximum efficiency and effectiveness, while subordinates need higher wages and more benefits from their work. So, that management usually implements the management decision making pattern to achieve the efficiency and effectiveness. In the process to achieve organizational efficiency and effectiveness, management sometimes implement maximum capacity in participative management styles, where they get employees participation in all aspects of the organization (Parasuraman & Goodjik, 2018). Employee participation is creating an environment in which people have an impact on decisions and actions that affect their jobs. Rather, employee involvement as a management and leadership philosophy is about how people are most enabled to contribute to continuous improvement and the ongoing success of their work organization. Employees' participation in decision making in the organization could be through consultative management, collective bargaining, formation of work committees, group discussion, briefing groups, joint consultation among others.

Employees' participation in management has attracted quite a number of researches in recent times, though its development can be viewed slow but increased employees demand for job satisfaction and the need for recognition of employees relevant in the structure of an organisation, the concept has become a major topic for first line growth. The desire for economic and industrial freedom that is believed to be attained when political democracy is achieved is a prompter to the growth of employee's participation in organisations (Rathnakar, 2016). It is also pertinent that workers of any organisation be given the free hand to take active and strategic role in decision making that affects the existence and growth of the organisation. This belief is borne out of the perception that the organisation is likened to a system or a state, and there is need to bring democracy into the organisation as the world has moved away from the dictatorial or totalitarian style of state control.

Public organizations such as Flour Mills Nigeria Plc need to achieve high performance which is mainly through improved productivity in terms of quality and quantity. In this regard employees' participation in managerial decision making which are based on consultative management, and collective bargaining needs to be considered by the management to guarantee the required performance.

Objectives of the Study

The central objective of the study is to determine the impact of employees' participation in managerial decision making for organizational performance in Flour Mills Nigeria Plc. However, the specific objectives of the study are as follows:

i) To investigate the effects of consultative management on the organizational performance of Flour Mills Nigeria Plc
ii) To evaluate the extent to which collective bargaining between employers and employees has affected the organizational performance of Flour Mills Nigeria Plc

Hypotheses of the Study

The statements of hypotheses of the study are stated in null form as follow:

H_{01}: There is no significant effect of consultative management on the organizational performance of Flour Mills Nigeria Plc.

H_{02}: Collective bargaining between employers and employees has no significant effect on the organizational performance of Flour Mills Nigeria Plc.

LITERATURE REVIEW

Concept of Employees' Participation

Employee involvement in decision making, sometimes referred to as participative decision-making (PDM) or employees' involvement is concerned with shared decision making in the work situation (Mitchell, 2015). This means that employee participation in the planning process surrounding the potential innovations may facilitate opportunity recognition throughout the organisation (Kemelgor, 2016). The attitudes that organizational results come from the top, that effective cultures are derived from the upper echelon, often tend to ignore the power and the contributions of those at lower levels (Woodworth, 2016). Employee involvement practice as defined by Lawler, Mohrman and Ledford (2015) is "Creating High Performance Organizations." According to the authors, employee involvement can be characterized by the use of sharing power, sharing information, rewards and knowledge.

According to Price (2014) the involvement of employees in the organizational operations not only motives them but also enables them to contribute more effectively and efficiently. Further, Price (2014) explains that employee as a process involving participation, communication and decision-making leads to industrial democracy and employee motivation. Employees with high level of involvement could be described as one whose job is the center of his/her life. As such, many theorists have hypothesized that employees with high level of involvement will put forth substantial effort towards the achievement of organizational objectives and less likely to lead to turnover (Kemelgor, 2016). Lawler, Mohrman and Ledford (2015) provide what many writers describe as a consensus definition of employee involvement which explains practices including job rotation, quality circles, self-directed teams, and most implementations of total quality management.

Concept of Decision Making

Decision-making makes it possible to adopt the best course of action in carrying out a given task. It becomes necessary to find out the best way when there are different ways of performing a task and the action finally selected should produce the best results and should be acceptable to both the workers and management. Involving employees in organizations implies soliciting for their views during decision making. There are several views on what decision making imply. According to Lawler, Mohrman and Ledford (2015), decision making in its narrowest sense, is the process of choosing from among various alternatives.

In the same vein Rathnakar (2016) defines decision making as a process by which several possibilities are considered and prioritized, resulting in clear choice of one option over others. Samad and Shapour, (2017) also defines decision making as the process of choosing among the available alternatives in order to solve a specific problem. The term decision making and problem solving are often confused and, need to be clarified. Problem solving is the process

of determining the appropriate responses or actions necessary to alleviate a problem. Problem solving necessarily involves decision making since all problems can be attacked in numerous ways and the problem solver must decide which is best. On the other hand, all decisions do not involve problems (such as the person sorting fruits or vegetables). Wu and Lee, (2016) explain decision-making as the essence of management. Even though other organizational participants might take decisions, the decision-making capability of the manager will play a major role in the success of the organization.

Concept of Consultative Management

Manager's prime responsibility is to get things done through people, however sound ones' ideas or well reasoned ones' decision are, they become effective only as they are transmitted to others and achieve action or re-action, consultative management is specifically needed to establish and distribute or spread widely the goals of an organization, develop and appraise members of the organizational and control performance. It is important for information to flow freely between management and labour. The purpose of consultative management in an organization is to effect change, to influence action towards the welfare of the organization. Consultative management is needed to establish and disseminate goals, develop plans for their achievements, organize human and other resources in the most effective and efficient way, select, develop and appraise members of the organization and control performance (Sharma and Kumar, 2018).

In a consultative management, communication flows in various directions, downwards, upwards and crosswise. Traditionally downwards communication was emphasized but if communication flows only downwards, problems will develop, in fact one could argue that effective communication has to start with the subordinate and this means primarily upward communication, communication also flows horizontally, that is between people on the same or similar organizational levels and diagonally involving persons forms different levels who are not in direct reporting relationship with one another (Huang, 2017). Maintenance of effective communication rest squarely with the management, also labour should try as much as possible to communicative its position with management at all times.

Concept of Collective Bargaining

Chidi, (2015) posits that collective bargaining has contributed to the economic development of Nigeria through increased productivity and peaceful conflict resolutions in organizations. It is on similar note that Onah, (2018), opines that collective bargaining performs three functions targeted towards organizational performance; as a means of contracting for sale of labour (marketing concept); as a form of industrial government (governmental theory); and a method of management (industrial management concept). Onah, (2018) further explained that collective bargaining is a means of buying labour in the labour market with the use of employment contract, having rule making process that governs trade unions and management relationship especially in the areas of reaching decision on matters of interest to all social partners.

While Anyim, Ikemuefuna and Ogunyomi (2016), on their part opined that in all industrial relations systems there are disagreements and disputes among various contending interests and collective bargaining democratic principles are required to resolve the disagreement and disputes as to have industrial harmony and peace that will increase the performance of the organization. Anyim, Ikemuefuna and Ogunyomi (2016), saw collective bargaining as the process of resolving industrial conflicts in every industrial relations system for the purpose of increased organizational performance.

Concept of Organizational Performance

Appah and Emeh (2015) state that organizational performance is the sum of accomplishment attained by all businesses/departments involved with an organizational goal during a determined period of time, with the goals either meant for a specific stage or on the overall extent. Organizational performance is a process that promotes the changes. The process of these changes can be considered as an instrument of improving the sales of any organization. Organizational performance is a main technology driven which can change the quality of working relationship among the workers. In many cases, staff are under-utilized and are capable, if given the opportunity, of taking on more responsibility for the work they do and of contributing further to the achievement of objectives.

All business processes eventually revolve around the target of contributing to the success of the company in one way or another. While the term success describes the positive effective overall turnout of a company´s activities, the term financial and non-financial performance. Conceptually, organizational performance has been defined as the comparison of the value produced by a company with the value owners expected to receive from the company (Anyim, Ikemefuna & Ogunyomi 2017).

Review of Related Empirical Studies

Florence (2019) carried out a study on the relationship between employee's participation in decision making process and job satisfaction among university academic staff. The objective of the study was to determine whether consulting employees in decision making affects their satisfaction. The study used primary source of data by administering questionnaires to the academic staff, the data obtained were analysed using correlation analyses. The study discovered that there is a positively strong correlation between consultative management in decision-making and job satisfaction in relation to general working conditions; pay and promotion potential; use of skills and abilities; job design; and job feedback. The study therefore concludes that for any organization to survive, grow and compete, the employees of such organization must be involved at all stages in the decision making process.

In a similar study by Omobude and Igbudu (2018), they investigated the influence of teachers' participation in decision making process and its impact on their job performances. In the study, questionnaires which were administered to participating samples were retrieved and analysed using regression analysis. The study therefore found out that consulting teacher in decision making influence performance as teachers who are consulted in decision making performed better. The study concludes that the relationship between consultative management and performance varies on certain demographical factors and availed equal participatory opportunities in decision making.

Akhaukwa (2018) conducted a study to establish the effect of collective bargaining process on industrial relations environment in public universities in Kenya. The study employed the use of primary data using questionnaire as the instrument of data collection which was analysed using linear regression analysis. The study found that academic staff felt that union and management did not cooperate well neither did they have mutual regard of each other nor were they willing to confer. Besides, management did not facilitate union's operation and its attitude to the union was not favorable. The study therefore concludes that the industrial relations environment, that is, collective bargaining in the three public universities where the study was conducted was found to be poor which has affected the performance of the universities. The study further revealed that collective bargaining process had a significant effect on organizational performance in Kenya. Also, collective bargaining made a significant (and positive) contribution to industrial relations environment.

All over the world as noted by Anyim, Chidi and Ogunyomi (2014) in their study on trade disputes and settlement mechanisms in Nigeria: A critical analysis seeks to measure the effects of collective bargaining on disputes and settlement in organizations. The study used secondary data obtained from journals and periodicals that were analysed using content analysis. The study questioned the effectiveness of collective bargaining in the Nigerian public sector. This is because, according to them, collective bargaining in the public sector in Nigeria merely modified bargaining relationship, the structure and scope of collective bargaining. The study concludes that government pays only lip-service to the use of collective bargaining machinery, because at all levels, they have continued to set aside the use of collective bargaining in favour of wage commissions in granting wage awards. Therefore, the use of fiat in the Nigeria Public sector is a mockery to collective bargaining machinery and hence not in line with the ILO Convention (2015).

Theoretical Framework

Leader-Member Exchange Theory

The Leader-Member Exchange (LMX) theory suggests that leaders may develop different types of relations from different members of the same work group. The theory depicts superior - subordinate relations as existing in a continuum ranging from high to low quality. As such, subordinates should be asked to participate in decisions affecting the work units in situations where they experience the reciprocal trust characteristic of high-quality changes with their immediate supervisors (Armstrong, 2008).
Finally, this study uses leader-member exchange as a theoretical framework that underpins the study. This is because the leader-member exchange simply focused on a leadership style that inspires employees by empowering them to take decisions and actions that affect their existence of the organisation. The theory suggests that leaders, aside other human relations approach, also seek to empower employees to take decisions and actions that will enhance their growth and the performance of the organisation.

METHODOLOGY

The research study is a survey research study. Survey method is applicable to this research since it seeks to measure the effect of employees' participation in managerial decision making on organizational performance. The population of this research consists of the staff in the Flour Mills Nigeria Plc. This comprises 116 personnel consisting of the staff in administration, finance and accounts, personnel, audits operations and field officers (Flour Mills Nigeria Plc monthly payroll, 2020). However, 80 respondents returned the questionnaire validly filled upon which the analysis was carried out.

The instrument of the data collection is a primary instrument which is questionnaire. The questions were structure and administered to the selected samples. Statistical analysis was carried out using linear regression model to find out whether the employees' participation components available and used by the Flour Mills Nigeria Plc. in Kaduna State have resulted in increase organizational performance and the extent of their effects. The simple regression analysis of the ordinary least square (OLS) is the estimation technique that is being employed in this study in functional form, is expressed as:

$$OP = f(CM, CB) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

In equation for, it is expressed as:

$$OP = \beta_o + \beta_1 CM + \beta_2 CB + \varepsilon \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2$$

Where: OP = Organizational Performance CM = Consultative Mgt CB = Collective Bargaining β_o = intercept, β_1 and β_2, = slopes for CM and CB. ε = error of estimate

RESULTS AND DATA ANALYSIS

The hypotheses for the study are tested using linear regression analysis. This was done using Statistical Package for Social Scientist (SPSS).

Table 1: Model Analysis for Hypotheses

Variables	Coefficient	Std. Error	t stat
Constant	0. 3661	2.271	9.832
R	0.542		
R-squared	0.449		
Adj R-squared	0.309		
Sig (p-value): CM	0.004		
Sig (p-value): CB	0.000		
Df	79		
Durbin-Watson	1.956		
f- stat	3.648		

Source: SPSS output (Research Survey, 2020)

From table above, the value of R = 0.542 shows that there is an average (54.4%) relationship between employees' participation in managerial decision making and organizational performance. Also R square = 0.449 indicates that 44.9% variability of organizational performance is due to employees' participation in managerial decision making. The coefficient reveals that for every unit increase in employees' participation in managerial decision making there is a corresponding 0.3661 unit increase in organizational performance.

From the p-value of 0.004 ($p < 0.05$) means that the null hypothesis which states "There is no significant effect of consultative management on the organizational performance of Flour Mills Nigeria Plc" is therefore rejected. Also, the p-value which is 0.000 ($p < 0.05$) indicates that the null hypothesis which states "Collective bargaining between employers and employees has no significant effect on the organizational performance of Flour Mills Nigeria Plc." is therefore rejected.

SUMMARY AND DISCUSSION OF FINDINGS

Firstly, the study reveals that there is a significant effect of consultative management on the organizational performance of Flour Mills Nigeria Plc. This is to say that consultative management affects organizational performance positively. This finding agrees with the findings of Florence (2019) who concludes that for any organization to survive, grow and compete, the employees of such organization must be involved at all stages in the decision making process.

Secondly, the study reveals that collective bargaining between employers and employees has significant effect on the organizational performance of Flour Mills Nigeria Plc. This is an indication that collective bargaining provides a significant opportunity for the organizational performance in the organization. This findings partly agrees with Akhaukwa (2018) that posits that collective bargaining in the three public universities under review was found to be poor which has affected the performance of the universities. Therefore indicates that collective bargaining process had a significant effect on organizational performance and collective bargaining made a significant (and positive) contribution to industrial relations environment.

CONCLUSION AND RECOMMENDATIONS

It is believed that the effectiveness and efficiency in performing these roles may inter-alia depend largely on employee involvement in decision making of the firms. However, the findings of the study reveal that on the average, the employee involvement in decision making of participating firms was low. This implies the possibility of managers of the firms not being critical about employee involvement in decision making, probably because of their practice of high power distance culture. In which case the employees are expected to be seen and not heard.

The collective bargaining between employers and employees according to the study has significant effect on the organizational performance of Flour Mills Nigeria Plc. The findings of this study indicate a significant relationship between employee involvement in decision making and organizational performance. The results also reveal that organizations with high employee involvement in decision making outperform firms with low employee involvement in decision making.

In the course of the study on evaluation of employees' participation in managerial decision making for organizational performance in Flour Mill Nigeria Plc, certain recommendations were given which are as follows: Firstly, the consultative management of the organization should be strengthened through joint meetings between the employees and the employers regularly in order to ensure shared ideas. Secondly, the collective bargaining between employers and employees of organization should be made completely from the point of recruitment, to the employees stay in the organization.

REFERENCES

Aborisade F. (2019). Industrial Relations: Ideological perspectives. Theories of industrial relations, Paper delivered at the conference organized by the World Federation of Trade Union (WFTU) in collaboration with ASSBIFI, NUATE, ATSSAN, NACOISAN and NUHPSW of Nigeria at Lagos Airport Hotel, 14-15th November 2008.

Akhaukwa, J. R., Maru L., and Byaruhang J. (2013). Effect of Collective Bargaining Process on Industrial Relations environment in Public Universities in Kenya, Mediterranean Journal of Social Sciences, Vol.4 No. 2, May 2013, MCSER-CEMAS-Sapienza University of Rome.

Akhaukwa, S. (2018) 'Collective Bargaining', the Nigerian Perspective; Adamawa Journal of Management and Decision Analysis Vol. 1 No, 2 July, 2008

Altenburg, T. (2010). Industrial Policy in Ethiopia. Discussion Paper 2010/12. German Development Institute.

Anyim F. C., Elegbede F. and Gbajumo M. A. (2016), 'Collective Bargaining Dynamics in the Nigerian Public and Private Sectors' Australian Journal of Business and Management Research, Vol.1 (5) pp63-70

Anyim, F. Ikemefuna, C and Ogunyomi P. (2017) 'Collective Bargaining and its Metamorphosis in the Workplace in Nigeria' British Journal of Economics, Finance and Management Sciences Vol. 2 (1) pp. 63- 70.

Anyim, F.C., Chidi, O.C. and Ogunyomi, O.P. (2014), Trade Disputes and Settlement Mechanisms in Nigeria: A Critical Analysis, Interdisciplinary Journal of Research in Business. Vol. 2, (2), pp1-8.

Appah, E and Emeh, S. (2015), 'Employee Reporting and Collective Bargaining in Organization: A need for disclosure', Chapter of Arabian Journal of Business and Management. Vol. 1 No. 8 April, Pg 23-36.

Armstrong, M (2008). A Handbook of Human Resource Management Practice, London, Kogan Page Limited.

Chidi, O. C. (2015). "Managing Industrial Conflict for Sustainable Development in Nigeria: An Inclusive Stakeholders' Approach". Nigerian Journal of Management Studies .Vol.10, N02, pp.46- 68

Florence, G (2019) A comparative overview of terms and notions on employee participation, Labour Administration and Inspection Programme LAB/ADMIN, Working Document Number 8, International Labour Organization-Geneva,

Huang, T.C. (2017). The Effect of participative management on organizational performance: The case of Taiwan. The International Journal of Human Resource Management,8(5):677-690.

Kemelgor, G. (2016) "Communication as Instrument for Change and Conflict Management in Formal Organisation", in International Journal of Communication, 8, 374-386.

Lawler, O. Mohrman, K. and Ledford, N. (2015). Participative Management. Addision-Wesley Publishing Company, Incorporated, USA

Mitchell, S. (2015). Conflict and Conflict Management in Nigeria: The Search for a National Strategy. Confluence Journal of Management, 2(1), 36 – 39.

Omobude, S. and Igbudu, H. (2018). The effect of participative decision making on perceived organizational support and organizational commitment. M.A Thesis, California State University.

Onabanjo I. (2016),'Collective Bargaining: Received Orthodoxy Discarded in Public Sector Wage Determination', European Journal of Business and Management, Volume 5. (12)

Onah, F. O. (2018), Human Resource Management (2nd ed). Enugu: John Jacob's Classic Publishers Ltd.

Parasuraman, B. (2018) An Examination of Employee Participation in the privae sector: Malaysian Case Studies. Unpublished Doctor of Philosophy, University of Wollongong, Australia.

Price, L. (2014). The Impact of Participative Management Perception on Customer Service, Medical Errors, Burnout, and Turnover Intentions. Journal of Healthcare Management, 54:2 March/April, 128-141.

Rathnakar, S. (2016), "Business Administration," Precision Printers and Publishers.

Samad, R.A. & Shapour,A.S. (2017). Relationship between Participative Management and Personnel Productivity: A Survey in Gachsaran Gas and Oil Company, World Applied Sciences Journal 15(9):1319-1324.

Sharma, R.D. and Kumar, K. (2018), Strikes and Lockout as a Method of Collective Bargaining. International Journal of Research in Economics and Social Science, Vol. 4 (6), pp pp118-123

Woodworth, N. (2016). A Cross-Cultural Analysis of Participative Decision-Making in Organization. Human Relations,56 (4):453-474.

Wu, P.W. & Lee,Y.D. (2016). Participatory management and Industrial relations climate: a study of Chinese, Japanese and US firms in Taiwan. International Journal of Human Resource Management, 12,5:827-844.

Appendix

Questionnaire

Questions related to the Hypotheses (Use these keys as guide to respond to the questions)
Key: 1= strongly agree; 2= agree; 3= disagree; 4= strongly disagree 5= undecided

II. Organizational Performance

S/N	Items on Dependent Variable (Organizational Performance)	1	2	3	4	5
1.	Productivity of Flour Mills Nigeria Plc has increased as a result of employees' participation on managerial decision making					
2.	Processes of productivity is more effective as a result of employees' participation on managerial decision making					

III. Consultative Management

S/N	Items on Independent Variable (Consultative Management)	1	2	3	4	5
3.	There are consultative management style of authorities in Flour Mills Nigeria Plc					
4.	There is an effective ways of consultation with employees during decision making in Flour Mills Nigeria Plc					
5	Employees' interests are always considered with the employees by the management during decision making					
6	Employees are involved and participate in decision making process in Flour Mills Nigeria Plc					
7	Employees' involvement in decision making has led to improved productivity for the organization					

IV. Collective Bargaining

S/N	Items on Independent Variable (Collective Bargaining)	1	2	3	4	5
8.	There is an existing collective bargaining system between employees and management in Flour Mills Nigeria Plc					
9.	Collective bargaining processes in decision making processes are observed in Flour Mills Nigeria Plc					
10.	Collective bargaining in decision making can affect the productivity of the employees in Flour Mills Nigeria Plc					
11.	Collective bargaining in Flour Mills Nigeria Plc has led to improved productivity for the organization					

SPSS output for Hypotheses

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.542(a)	.449	.309	2.271

a Predictors: (Constant), Consultative management collective bargaining

ANOVA(b)

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	33.748	1	21.108	3.648	.000(a)
	Residual	189.875	78	1.329		
	Total	223.623	79			

a Predictors: (Constant), Consultative management, collective bargaining
b Dependent Variable: organizational performance

Coefficients(a)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta	B	Std. Error
1	(Constant)	0. 3661	.113		9.832	.000
	Consultative management	.345	.025	.337	5.902	0.004
	collective bargaining	.214	.054	.208	3.985	.000

a Dependent Variable: organizational performance

CARACTERISATION DES SERVICES ECOSYSTEMIQUES RENDUS PAR LES ARBRES AUX POPULATIONS DANS LA VILLE DE PARAKOU AU CENTRE-BENIN

Prucelle Elisée ZOHOUN
David M. BALOUBI
Emilia M. AZALOU-TINGBE
Ibouraïma YABI
Université d'Abomey-Calavi, Bénin

Resume
La ville de Parakou à l'instar des villes des pays en développement connait une urbanisation rapide avec pour conséquences la destruction du tissu arboré et la perte progressive des connaissances culturelles qui y sont liées. Mais dans cette ville, des espèces d'arbres sont épargnées ou plantées pour plusieurs raisons. Le présent article vise à caractériser les services écosystémiques associés à ces arbres selon différentes catégories sociales des citadins. Un échantillon de 370 habitants déterminé par la formule de Dagnelie est utilisé pour collecter les informations. Le taux d'identification des types de services écosystémiques a été évalué. L'analyse de covariance (ANCOVA) a permis d'analyser l'influence des groupes sociaux sur le taux d'identification des services. La caractérisation des services écosystémiques selon les différents groupes a été faite à partir de l'Analyse Factorielle de Correspondance (AFC). Au total, 30 services écosystémiques regroupés en 24 types classés dans 4 catégories à savoir les services d'approvisionnement, les services de régulation, les services culturels, les services de soutien ont été relevés. Il ressort que les services les plus cités sont respectivement par ordre décroissant la régulation de l'air (90%), la nourriture (86%), le plaisir esthétique (40%) et les vertus médicinales (36%). La catégorie de service ayant la plus grande valeur d'importance est le service de régulation (0,95), ensuite le service d'approvisionnement (0,91), puis le service culturel (0,41) et le service de soutien (0,12). Le groupe socio-culturel et le niveau d'instruction influencent fortement le taux d'identification des services écosystémiques. L'intérêt porté par chaque groupe social aux services écosystémiques dépend des bénéfices qu'il tire de l'arbre. Ces résultats suggèrent que les projets, programmes et politiques d'aménagement urbain prennent en compte la promotion des arbres avec l'implication des différents groupes socio-culturels.

Mots clés : Ville de Parakou, arbre, services écosystémiques, groupes socio-culturels, politique d'urbanisme

DROIT PÉNAL DES AFFAIRES OHADA ET SON EFFECTIVITE EN RD CONGO. REGARD SUR L'ACTION PÉNALE DU TRIBUNAL DE COMMERCE DE BUKAVU

Valéry Iragi Ntwali
Université Paris-Est Créteil (Paris-12)
Bienvenu Mulindwa
Université du Cinquantenaire de Lwiro

Résumé
Cette étude montre que le juge pénal du Tribunal de commerce de Bukavu ne joue pas pleinement son rôle dans la mise en œuvre du droit pénal OHADA et n'aboutit pas à la sécurisation du climat des affaires dans cette partie de la République démocratique du Congo. Ce juge se trouve limité par les murs du principe de légalité des délits et des peines, et celui de l'interprétation stricte de la loi pénale. Ce qui explique que la jurisprudence que ce tribunal développe en matière du droit pénal économique, reste dominée par le droit pénal national de la RD Congo, à l'absence d'une loi pénale de répression des infractions contenues dans les actes uniformes. Pour ces dernières, aucune répression n'est envisageable à ces jours en RD Congo, et tout acte infractionnel y relatif, demeure impuni. Cette impunité est confirmée par les statistiques du Tribunal de Commerce de Bukavu, dans la répression des infractions contenues dans les actes uniformes de l'OHADA, qui démontrent que depuis son installation en 2014, jusqu'en 2018, sur les 44 infractions que ce tribunal a eu à connaitre, seule une infraction est reprise par un acte uniforme. Il s'agit de l'infraction de Banqueroute.
Par cette inertie législative, le législateur congolais, entretien un véritable climat d'insécurité et d'impunité dans le secteur économique en RD Congo. Le climat des affaires est dans une situation de précarité, et n'accorde pas une protection conséquente aux investisseurs, les opérateurs économiques, leurs partenaires et même les consommateurs. En s'appuyant sur la théorie des droits de l'homme, cette étude démontre que l'État congolais peut engager sa responsabilité civile pour carence législative dans le domaine du droit pénal OHADA.

Mots clés : Droit pénal, Ohada, effectivité, RDC, action pénale, juge du commerce, Bukavu

OHADA CRIMINAL BUSINESS LAW AND ITS EFFECTIVENESS IN DEMOCRATIC REPUBLIC OF CONGO: AN EVALUATION OF THE CRIMINAL ACTION OF THE BUKAVU COMMERCIAL COURT

Abstract
This study demonstrates that the criminal judge of the Commercial Court of Bukavu, does not fully play their role in the implementation of the Organisation for the Harmonization of

Business Law in Africa (OHADA) criminal law. This state of affairs does not provide a propitious environment for the security of businesses in Bukavu, eastern Democratic Republic of Congo (DRC). Limitations to judges' actions including the strict observance of principles of the legality of offences and penalties, and that of the strict interpretation of criminal legislation. This explains why the case law that this court is developing in the area of economic criminal law remains dominated by the DRC national criminal law in the absence of a criminal law for the repression of continuous offences in OHADA Uniform Acts. For the latter, no repression is conceivable these days in DRC, and any related offence remains unpunished. This impunity is confirmed by the statistics of the Commercial Court of Bukavu in the repression of offences contained in OHADA's uniform acts, which show that since its establishment in 2014, until 2018, out of the 44 offences that this court has had to deal with, only one offence is covered by a Uniform Act. This is the bankruptcy offence. Through this legislative inertia, the Congolese legislator maintains a real climate of business insecurity and impunity in the DRC economic sector. The business climate is in a precarious situation and does not grant any significant protection to investors, economic operators, their partners and even consumers. Based on human rights theory, this study shows that the Congolese state can incur civil liability for legislative deficiencies in the area of OHADA criminal law.

Keywords: Criminal law, OHADA, effectiveness, DRC, criminal action, commercial judge, Bukavu

Introduction

Il sied de noter d'entrée de jeu que « l'Organisation pour l'harmonisation du droit des affaires en Afrique est une organisation mise en place par le Traité de Port-Louis signé le 17 octobre 1993. Elle regroupe en son sein 17 États dont le Benin, le Burkina-Faso, le Cameroun, la République Centrafricaine, les Comores, le Congo, la Côte d'Ivoire, le Gabon, la Guinée Conakry, la Guinée Équatoriale, la Guinée Bissau, le Mali, le Niger, le Sénégal, le Tchad, le Togo et la RD Congo [1] ». L'Objectif principal de cette organisation est de favoriser l'intégration régionale passant par l'amélioration de l'environnement des affaires en misant sur la sécurité juridique et judiciaire[2]. De ce fait, elle harmonise le droit des affaires par des règles simples, modernes et adaptées à la situation des économies des États parties, dans la mesure où l'ensemble des États membres de l'OHADA été caractérisé par une législation vétuste dans le domaine du droit des affaires, législation datant des années 1960, qui du reste n'était plus adaptée à la réalité du monde des affaires dans les États membres de l'OHADA. Elle encourage dans le même esprit l'arbitrage comme mode de règlement des différends

[1] ECONOMISTI ASSOCIATION et ECOPA, "Evaluation de l'impact des réformes OHADA*", in Programme IFC sur le climat d'investissement-OHADA en Afrique*, Rapport, Décembre 2018, p. 6.
[2] Banque Mondiale et SFI, Doing business dans les Etats membres de l'OHADA 2012. Comparaison de la règlementation des affaires dans les 16 Etats membres de l'OHADA et à travers le Monde, Rapport, 2012, p.7.

contractuels. Elle dispose, à cet effet, d'une Cour commune qui a notamment dans ses attributions l'arbitrage[3].

Au plan économique, la Société financière internationale en sigle (SFI) note que « l'OHADA a pour objectif de générer des économies d'échelle dans l'effort de réforme de la région tout en contribuant à l'intégration économique[4] ». Il s'agit donc aujourd'hui d'un vaste territoire contenant 17 pays, favorable aux investissements avec une législation d'affaires harmonisée[5]. Pour son efficacité, l'article 10 du Traité OHADA consacre une suprématie du droit communautaire sur le droit interne des États en ces termes « les actes uniformes sont directement applicables et obligatoires dans les États parties nonobstant toute disposition contraire de droit interne, antérieure ou postérieure[6] ». Cette disposition prévoit la suprématie du droit communautaire OHADA sur le droit interne des États membres en consacrant l'application immédiate du droit de l'OHADA dans les États parties sans qu'il y ait au préalable adoption d'une loi de mise en œuvre. Cette application immédiate des actes uniformes est encore plus facilitée par les États à tradition moniste tel que la République démocratique du Congo, dont leurs constitutions donnent primauté au droit international sur le droit interne. Pour le cas de la RD Congo, l'article 215 prévoit que « les traités et accords internationaux régulièrement conclus ont, dès leur publication, une autorité supérieure à celle des lois, sous réserve pour chaque traité ou accord, de son application par l'autre partie[7] ». La question reste d'actualité dans la situation où, cette primauté consacrée par l'article 10 précité, se heurterait à un système dualiste. Dans une large mesure, l'on trouverait des États qui limiteraient l'influence du droit de l'OHADA sur leurs territoires, en s'empêchant d'adopter des lois d'application interne.

Cette situation n'est pas loin de ce que l'on observe sur le comportement des États membres de l'OHADA dans le domaine du droit pénal des affaires où, le législateur OHADA à travers l'article 5 du Traité, a consacré une dérogation à l'application immédiate des actes uniformes, en optant pour un renvoi législatif aux parlements nationaux dans l'adoption des peines aux infractions prévues dans les actes uniformes en ces termes « les actes pris pour l'adoption des règles communes prévues à l'article 1 du traité, sont qualifiés d'actes uniformes. Les actes uniformes peuvent inclure des dispositions d'incrimination pénale. Les États-parties s'engagent à déterminer les sanctions encourues[8] ». Il ressort alors logiquement de cet article que les incriminations prévues dans les actes uniformes ne sont pas applicables

[3] Voir J. LOHOUES-OBLE, « Traité OHADA et Règlement de procédure de la CCJA », *in Traité et Actes uniformes commentés*, Juriscope 1999, p. 33.
[4] ECONOMISTI ASSOCIATION et ECOPA, *Op.cit*, p. 16.
[5] L'on doit préciser que le Traité OHADA continue a attiré d'autres pays potentiels États membres à travers l'ensemble du Continent Africain. C'est le cas du Maroc qui a manifesté son intérêt, le Burundi qui est aujourd'hui en plein processus pour l'adhésion, processus auquel nous participons dans la sensibilisation des différents acteurs clés de la vie juridique au Burundi, à travers les actions de l'association UNIDA dans la région des grands. Les intérêts d'adhésion se font sentir petit à petit dans le milieu judiciaire et d'affaire Rwandais, étant donné que ce pays effectue un grand nombre d'échange avec la RD Congo, qui est déjà membre de l'OHADA depuis 2012.
[6] Art. 10 du Traité portant révision du traité relatif à l'harmonisation du droit des affaires en Afrique, signé à Port-Louis, le 17 octobre 1993.

[7] Art. 215 de la Constitution de la RD Congo, in J.O/RDC, 47émé année, Numéro spécial du 18 février 2006.
[8] Art. 5 du Traité portant révision du traité relatif à l'harmonisation du droit des affaires en Afrique, signé à Port-Louis, le 17 octobre 1993.

immédiatement, et leur application, est conditionnée à l'adoption par les États des législations pénales nationales de répression, prévoyant des peines à ces infractions.

Notons relativement à cette exigence, qu'à ce jour, seuls neuf pays, sur les dix-sept pays membres de l'OHADA, ont déjà un tant soit peu, parfait à cette obligation. Il s'agit du Cameroun, du Congo Brazzaville, du Niger, le Benin, du Sénégal, du Tchad, de la République centrafricaine, le Gabon, la Guinée[9]. L'on doit même préciser que les législations intervenues dans certains de ces États, ne couvrent pas toutes les infractions prévues dans les actes uniformes, ce qui donne toujours lieu à une législation inachevée dans le domaine de droit pénal OHADA, et l'uniformisation est loin d'être trouvée entre législations nationales par rapport à la peine pour telle ou telle autre infraction prévue dans l'un ou l'autre des actes uniformes de l'OHADA[10]. La rencontre entre droit pénal OHADA et droit pénal des États parties reste donc douloureuse en pratique et entretient un sentiment d'insécurité pour les investisseurs.

Face à cette situation, Mevoungou Nsana soutient que « le principe d'une théorie générale du système pénal OHADA se traduit d'abord par la volonté d'uniformiser l'assiette d'agissements punissables dans le périmètre OHADA. D'abord, à la rencontre difficile l'un de l'autre, le droit OHADA et le droit pénal des États Parties avancent dans des principes peu conciliables : l'un est enveloppé dans sa primauté, fortement affirmée et l'autre est à l'abri de la souveraineté nationale car les Traités n'ont pas donné à la Communauté de compétence proprement répressive[11] ».

Le climat des investissements se trouve encore plus menacé dans les pays membres de l'OHAD qui n'ont pas encore adopté les lois pénales de répression des infractions prévues par les Actes uniformes. Cela constitue une difficulté par rapport au principe constitutionnel de la légalité des peines[12]. Le juge dans ces derniers États, est donc en difficulté voire dans l'impossibilité de réprimer les infractions, sans porter atteinte à ce principe sacrosaint de la légalité des peines. Le principe de la légalité signifie avant tout qu'un texte est exigé pour définir en des termes généraux et par avance l'incrimination et la sanction encourue[13]. Ce

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[9] "9 États membres de l'OHADA ont déjà adopté les lois pénales de repression des infractions contenues dans les actes uniformes en respect à l'alinéa 2 de l'article 5 du Traité OHADA", disponible sur https://www.actualitesdudroit.fr/browse/afrique/droits-nationaux/8659/mali-adoption-du-projet-de-loi-portant-repression-des-infractions-prevues-par-les-actes-uniformes-de-l-ohada. Consulté le 16/11/2019.

[10] Pour l'infraction liée à la constitution des sociétés, infraction prévue à l'article 887 de l'acte uniforme sur les sociétés commerciales et groupement d'intérêt économique, les peines applicables sont largement différentes dans les Etats membres de l'OHADA. De ce fait, MOUKALA MOUKOKO note que la « loi sénégalaise punie ce délit d'une peine de 1 ou à 5 ans d'emprisonnement et une amende allant de 100.000 à 1.000.000 Fcfa ou l'une des peines. Les peines prévues au Cameroun vont le 3 mois d'emprisonnement à 3 ans et d'une amende de 500.000 à 5.000.000 de Fcfa ou l'une de ces deux peines seulement. En République Centrafricaine, la peine de prison varie entre 1 an et 5ans et l'amende de 1.000.000 à 5.000.000 francs cfa. La loi Béninoise punit cette infraction des peines de 3 ans à 10 ans d'emprisonnement et d'une amende de 2.000.000 à 10.000.000 Cfa. La loi congolaise fixe le quantum de la peine de 6 mois à 2 ans d'emprisonnement et l'amende de 100.000 à 10.000.000 FCFA ou l'une de ces deux peines ». Pour plus d'information, lire à ce sujet C. MOUKALA MOUKOKO, « Le fondement juridique de la responsabilité pénale du dirigeant social : incidences entre droit pénal interne et droit pénal des affaires OHADA », *in ERSUMA*, 20 mars 2015, p. 18.

[11] R. MEVOUNGOU NSANA, " La problématique d'un droit pénal des affaires OHADA", *in Revue de l'ERSUMA*, Porto-Novo, Ohadata D-15-02, Benin, 2012, p. 12.

[12] B. DE LAMY, « Le principe de la légalité criminelle dans la jurisprudence du Conseil Constitutionnel », *in Cahiers du Conseil Constitutionnel*, n^0 26, août 2009, p. 1.

[13] *Ibid*.

principe s'adresse donc en premier au législateur chargé de la production des textes pénaux. Mais il s'adresse également au juge, appelé à appliquer la loi pénale. Le principe de légalité lui « interdit tout rôle créateur et sa fonction interprétative est encadrée par le principe d'interprétation stricte de la loi pénale[14] ». Cette situation favorise également une insécurité juridique pour les investisseurs investissant dans les pays en retard de législation pénale dans la répression des infractions prévues par les actes uniformes.

Rappelons que le législateur congolais n'a à ce jour pas encore adopté une législation consacrant les peines aux infractions prévues dans les actes uniformes. En effet l'article 17 alinéas 3 et 4 de la Constitution congolaise dispose que « nul ne peut être poursuivi pour une action ou une omission qui ne constitue pas une infraction au moment où elle est commise et au moment des poursuites. Nul ne peut être condamné pour une action ou une omission qui ne constitue pas une infraction à la fois au moment où elle est commise et au moment de la condamnation[15] ». Il s'agit donc d'un principe directeur du droit pénal et dont le juge est « esclave dans l'interprétation et l'application ». Cette configuration actuelle du droit pénal OHADA suscite un intérêt de jeter un regard analytique sur les démarches qu'adopte le juge du tribunal de commerce de Bukavu/RD Congo, dans l'application du droit pénal OHADA :

- Quelle perception peut-on faire de l'application du droit pénal OHADA par le juge du tribunal de commerce de Bukavu ?
- L'action répressive actuelle du juge de commerce de Bukavu est-elle de nature à garantir une sécurité judiciaire des investissements dans la province du Sud-Kivu et en RD Congo de manière générale ?

Face à ces questions, il est judicieux de démontrer en premier que le juge du tribunal de commerce de Bukavu se trouve dans certaines situations bloqué par les murs du principe de la légalité des peines dans l'application du droit pénal OHADA (I) et du coup, il tombe dans une situation de déni de justice sans qu'il ne puisse être reproché. Par contre pour les infractions contenues dans les actes uniformes et dont les peines existent dans le code pénal congolais, il dira le droit et appliquera la peine prévue à ce sujet. En outre, les statistiques du registre pénal du tribunal de commerce de Bukavu démontrent que la sécurisation des affaires est loin d'être atteinte par l'action répressive du juge de commerce de Bukavu (II).

I. Le juge de commerce de Bukavu face au principe de la légalité des peines dans l'application du droit pénal OHADA

Il est important d'évoquer dans le cadre de cette étude, les autres principes qui concourent à une bonne application du droit pénal, dont le juge du tribunal de commerce de Bukavu ne peut s'en passer dans l'application du droit pénal OHADA et qui, permettent la réalisation des garanties d'un procès équitable.

I.1. L'absence d'une égale protection des lois pénales pour les investisseurs dans l'espace OHADA

Le principe de l'égalité de tous devant la loi a valeur constitutionnelle dans plusieurs pays membre de l'OHADA. Pour le cas de la RD Congo, l'article 12 de la Constitution prévoit que « tous les Congolais sont égaux devant la loi et ont droit à une égale protection des lois[16] ». Cet article semble etre inspiré de l'article 26 du Pacte international relatif aux droits civils et

[14] H. RENOUT, *Droit pénal général*, Ed. Larcier, Bruxelles, 1999, p. 29.
[15] Art. 17 al. 3 et 4 de la Constitution de la RD Congo, in J.O/RDC, 47émé année, Numéro spécial du 18 février 2006.
[16] Art. 12 de la Constitution de la RDC du 18 février 2006 telle que révisée en 2011.

politiques, que tous les États membres de l'OHADA sans exception, ont ratifié. Selon cet article 26 précité, « toutes les personnes sont égales devant la loi et ont droit sans discrimination à une égale protection de la loi. À cet égard, la loi doit interdire toute discrimination et garantir à toutes les personnes une protection égale et efficace contre toute discrimination, notamment de race, de couleur, de sexe, de langue, de religion, d'opinion politique et toute autre opinion, d'origine nationale ou sociale, de fortune, de naissance ou de toute autre situation[17] ».

Le Comité des droits de l'homme de l'ONU note dans son observation numéro 18 sur l'article 26 précité que « la non-discrimination est un principe fondamental et général en matière de protection des droits de l'homme, au même titre que l'égalité devant la loi et l'égale protection de la loi. De ce fait, conformément au paragraphe 1 de l'article 2 du Pacte international relatif aux droits civils et politiques, les États parties sont tenus de respecter et de garantir à tous les individus se trouvant sur leur territoire et relevant de leur compétence les droits reconnus dans le Pacte, sans distinction aucune, notamment de race, de couleur, de sexe, de langue, de religion, d'opinion politique ou de toute autre opinion, d'origine nationale ou sociale, de fortune, de naissance ou de toute autre situation[18] ». Nous constatons que le comportement de certains États membres de l'OHADA ne permet pas une égalité de tous devant la loi dans l'espace OHADA.
Ce qui fait logiquement que le droit pénal OHADA, dans sa conjoncture actuelle viole le principe d'égalité de tous devant la loi dans l'espace OHADA. Pratiquement, dans certains États membres de l'OHADA, les infractions contenues dans les actes uniformes, n'ont pas encore des peines applicables, c'est le cas de la RD Congo, où les infractions d'abus des biens sociaux, la distribution des dividendes fictifs, n'ont pas des peines y correspondantes et bien d'autres infractions contenues dans les actes uniformes. Cette situation met le juge dans l'espace OHADA dans une situation délicate, dans la mesure où, dans certaines situations, il n'a pas des peines à appliquer à une infraction commise et là, c'est l'impunité qui est au rendez-vous, dans d'autres cas, pour la même infraction, l'on assiste à des condamnations différentes dans un même espace, alors que c'est le même droit de l'OHADA qui est censé etre appliqué.

Il est donc à constater que les peines retenues par les États membres de l'OHADA, qui ont déjà adopté des lois pénales de répression, ne sont pas les mêmes pour les infractions identiques contenues dans les actes uniformes. Cette réalité s'explique même par la formulation de l'article 5 qui fait le renvoi législatif, et qui laisse la liberté aux États de fixer les peines aux infractions prévues dans les actes uniformes, sans aucune indication préalable sur le seuil à respecter ou à ne pas dépasser, et en plus, d'autres États, en raison de la liberté leur accordée par l'article 5 du Traité OHADA précité, vont même s'empêcher librement de ne pas légiférer et prévoir les peines. Notons que dans toutes ces situations, aucune solution communautaire n'est prévue à l'état actuel du droit pénal OHADA.

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[17] Art. 26 du Pacte international relatif aux droits civils et politiques du 19 décembre 1966, in M. CIFENDE et S. SMISS, *Code de droit international africain*, Ed. Larcier, Bruxelles, 2011, p. 214.
[18] COMITE DES DROITS DE L'HOMME DE L'ONU, *Observation n°18 sur l'article 26 du PIDCP*, 37émé session, 10 novembre 1989, p.2.

Les mêmes causes produisant les mêmes effets, l'on trouve par exemple que pour l'infraction liée à la constitution des sociétés, « la loi sénégalaise punie ce délit d'une peine de 1 ou à 5 ans d'emprisonnement et une amende allant de 100.000 à 1.000.000 FCFA ou l'une des peines. Alors que les peines prévues au Cameroun vont de 3 mois d'emprisonnement à 3 ans et d'une amende de 500.000 à 5.000.000 de FCFA[19] ». Cette démarcation dans certains cas et l'absence des peines dans d'autres cas, fait que les investisseurs dans l'espace OHADA n'ont pas une égale protection des lois pénales et se trouvent confrontés à une insécurité juridique et judiciaire dans leurs affaires. Nous verrons dans les lignes qui suivent, si la théorie de la responsabilité de l'État en matière des droits de l'homme pourrait apporter une réponse au silence du droit pénal OHADA.

I.2. L'impossible activation de la loi pénale plus sévère dans certaines situations

Il est impensable voire même illogique dans « un État de droit, de punir une personne sur le fondement d'une règle qu'elle ne pouvait pas connaître[20] ». La logique du principe de la non rétroactivité, voudrait que la loi pénale ne puisse s'applique que pour l'avenir, la seule exception admise est d'une loi pénale douce. Il s'agit d'un principe absolu et de valeur constitutionnelle. Pour la constitution congolaise, l'article 17 al.3 dispose que « nul ne peut être poursuivi pour une action ou une omission qui ne constitue pas une infraction au moment où elle est commise et au moment des poursuites ». Les effets de ce principe sur le droit pénal des affaires OHADA font que les lois internes de répression des infractions contenues dans les actes uniformes auront du mal à rétroagir à moins qu'elles soient plus douces que les anciennes lois pénales. Ce qui est même plus compliqué, est que dans cette matière, il n'y aura presque pas des lois anciennes qui soient plus sévères, pour que la nouvelle plus douce puisse rétroagir. Le principe de légalité comme relevé précédemment s'oppose de manière absolue à l'application rétroactive des lois pénales de fond qui aggravent la répression[21]. Ce qui pose déjà problème au niveau du droit pénal OHADA dans la mesure où, ces lois pénales nationales de répression, sont des lois pénales de fond qui aggravent la répression, dans la mesure où, à l'absence de celle-ci, l'infraction était prévue, mais ne connaissait aucune répression.

Pratiquement, il sera difficile d'apprécier le caractère douce ou plus sévère de la nouvelle loi, étant donné que l'ancienne en cette matière, n'a jamais existé. La plupart d'infractions prévues dans les actes uniformes n'ont jamais connues une législation pénale à l'avance dans la majorité des États, c'est d'ailleurs le caractère vétuste des législations des États parties dans le domaine de droit des affaires que l'OHADA est venue résoudre par une législation adaptée à l'évolution du monde des affaires et harmonisée au sein de l'ensemble de ses États membres. L'on doit préciser en plus, que certaines infractions prévues dans les actes uniformes et commises 7 ans, 10 ans etc… dans un État membre, avant l'avènement de ladite loi pénale de répression auront du mal à connaître une répression. Soient que leurs auteurs ne seraient plus en vie, ou ils auraient du coup changer de pays, ou encore que les faits seront tombés dans la prescription, ou encore que les preuves seront totalement indisponibles pour établir la responsabilité pénale des auteurs.

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[19] C. MOUKALA MOUKOKO, *op.ct*, p. 18.
[20] J. FORTIN et L. VIALI, *op.cit*, p. 34.
[21] F. DESPORTES et F. LE GUNEHEC, *Droit pénal général*, Ed. Economica, Paris, 2002, p. 265.

La situation d'un investisseur victime d'une telle infraction sera très difficile à réparer et celui-ci, peut tomber en faillite du fait de cette inertie et légèreté législative des États membres de l'OHADA. Raison pour laquelle, les infractions consommées avant l'adoption des lois pénales de répression des infractions économiques contenues dans les actes uniformes, resteront impunies, malgré l'avènement de ladite loi pénale, dans la mesure où le droit pénal ordinaire, ne s'appliquera qu'aux infractions qu'il prévoit, économiques ou de droit commun. Dans pareille situation, il serait même difficile de saisir le juge, pour faire rétroagir une loi pénale plus sévère.

F. SAWADOGO note que « le problème du non rétroactivité se pose aussi bien pour les Actes uniformes que pour les normes juridiques internes dans la mesure où les Actes uniformes ne contiennent pas d'indications précises en cette matière [22]. À supposer que la norme communautaire prévoit une peine plus sévère que la norme pénale nationale, le juge est-il fondé à appliquer la norme nationale ou bien doit-il l'écarter au profit de la norme communautaire en vertu de la primauté du droit communautaire sur le droit national ? Il semble que dans le silence des Actes uniformes, il faille régler le problème selon le principe général du droit commun[23] tel qu'il est exposé à l'article de 2 du Code civil français : « la loi ne dispose que pour l'avenir ; elle n'est point rétroactive ». Bien que l'Ohada s'est soit fixer comme objectif de sécuriser les affaires en instaurant dans l'espace qu'elle régit un droit unifié, simple et qui répond aux besoins de l'investissement et du développement de l'entreprise, bon nombre des situations infractionnelles prévues, auront du mal à être saisie par l'architecture pénal OHADA. Il est donc une réalité que pour réaliser son objectif, le législateur de l'Ohada a prévu la possibilité pour les Actes uniformes d'insérer dans leurs dispositions des normes pénales. Si cette option est susceptible de renforcer la sécurité juridique, il n'en demeure pas moins vrai que celle-ci passe nécessairement par la cohérence des textes qui y concourent[24], ce qui n'est pas encore le cas dans cet espace OHADA.

I.3. Portée du principe de légalité en droit congolais et l'impossibilité pour le juge de commerce de Bukavu de poursuivre certaines infractions économiques

Il est totalement admis en matière des droits de l'homme que le principe de la légalité des délits et des peines est la garantie fondamentale des droits de la personne devant les juridictions répressives [25]. Pour la Cour Européenne des droits de l'homme, « il faut l'existence d'une base légale pour l'infliction d'une condamnation et d'une peine. La tâche qui incombe à la Cour est de s'assurer que, au moment où un accusé a commis l'acte qui a donné lieu aux poursuites et à la condamnation, il existait une disposition légale rendant l'acte punissable et que la peine imposée n'a pas excédé les limites fixées par cette disposition[26] ». Elle poursuit en précisant que « le principe de la légalité des délits et des peines implique que les infractions et les peines qui les répriment doivent être clairement définies par la loi[27] ». Ce

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[22] F. SAWADOGO, « Les Actes uniformes de l'Ohada : aspects généraux », *op.cit*, p. 48.
[23] *Ibid*.
[24] E. YAO KOUAKOU, « Uniformisation et droit pénal : esquisse d'un droit pénal des affaires dans l'espace Ohada », *In Revue internationale de droit comparé*. Vol. 63 n°3,2011, p. 667.
[25] B. DE LAMY, "Dérives et évolution du principe de la légalité en droit penal français: contribution à l'étude des sources du droit penal Francais", *in les Cahiers de droit*, Volume 50, n^0 3-4, Décembre 2009, p. 3.
[26] CEDH, *Aff. Coëme et autres c. Belgique*, § 145 ; *Del Río Prada c. Espagne,* dans *Guide sur l'article 7 de la Convention européenne des droits de l'homme,* CEDH, 2019, p. 11.
[27] CEDH, *Aff. Cantoni c. France*, § 29 ; *Kafkaris c. Chypre, Idem,* p. 12.

qui est loin d'être une réalité pour le cas du droit pénal des affaires OHADA, où les infractions existent, à l'absence des peines dans la grande partie des États membres.

Le principe de légalité des délits et des peines s'énonce par l'adage nullum crimen, nulla poena sine lege : il n'y a pas de crime, il n'y a pas de peine sans une loi qui les prévoit. Énoncé dans la Déclaration des droits de l'homme et du citoyen, ce principe se retrouve dans la Déclaration universelle des droits de l'homme et dans la Constitution du 4 octobre 1958 qui y renvoie[28]. L'article 4 de l'ancien Code pénal français disposait lui-même : « Nulle contravention, nul délit, nul crime ne peuvent être punis des peines qui n'étaient pas prononcées par la loi avant qu'ils fussent commis. » L'article 111-3 du Code de 1993 reformule le même principe : « Nul ne peut être puni pour un crime ou pour un délit dont les éléments ne sont pas définis par la loi, ou pour une contravention dont les éléments ne sont pas définis par le règlement. »

Le principe de la légalité appelle un certain nombre de précisions : le terme loi est un terme générique qui comprend aussi bien les lois proprement dites, c'est-à-dire votées par le pouvoir législatif, que les actes du pouvoir exécutif (décrets, ordonnances, arrêtés et décisions prises par le président de la République en vertu des pouvoirs conférés par l'art. 16 de la Constitution). Le principe de la légalité s'applique à l'incrimination des infractions, à celle de l'état dangereux et à celle des infractions politiques (haute trahison, atteintes à la sûreté de l'État). Par contre, il ne s'applique pas aux infractions disciplinaires[29].

Le principe de la légalité ne concerne pas seulement les incriminations ; il régit en effet aussi la détermination des peines et des mesures de sûreté : nulla poena sine lege. Appliqué aux peines, le principe de la légalité a été maintes fois battu en brèche : par les dictatures, dans le sens de l'atténuation des garanties attachées aux droits de la personne ; par le jeu des circonstances atténuantes ; par les pouvoirs impartis à l'administration, qui peut modifier une sanction prononcée. Ce principe est affirmé par l'article 17 de la Constitution congolaise en ces termes « nul ne peut être poursuivi pour une action ou une omission qui ne constitue pas une infraction au moment où elle est commise et au moment des poursuites. Nul ne peut être condamné pour une action ou une omission qui ne constitue pas une infraction à la fois au moment où elle est commise et au moment de la condamnation[30] ».

I.4. Conséquences du principe de la légalité

La grande conséquence du principe de légalité des délits et des peines est que ce principe en fixant des limites très strictes, en imposant un cadre rigoureux au droit pénal, ce principe de légalité assure une protection contre l'arbitraire. Cela fait qu'aucune peine ne peut être prononcée, tout comme aucune infraction, ne peut être poursuivie, si au préalable, elle n'est pas prévue par la loi[31]. Le grand problème dans la réalisation de cette conséquence en droit pénal OHADA, est que, les délits ont été prévus au préalable sans que les peines puissent s'en suivre. Il s'agit là d'un vrai problème dans l'effectivité du droit pénal OHADA.

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[28] J. GREGOGNA, « Légalité des délits et des peines », ENCYCLOPÆDIA UNIVERSALIS [en ligne], consulté le 9 août 2018. URL : http://www.universalis.fr/encyclopedie/legalite-des-delits-et-des-peines/. Consulté le 22/11/2019.
[29] J. GREGOGNA, *Op.cit*, p. 12.
[30] Art. 17 de la Constitution de la RD Congo, in J.O/RDC, 47émé année, numéro spécial du 18 février 2006.
[31] J. GREGOGNA, *Op.cit*, p. 13.

L'exigence logique de sa fonction normative en matière pénale, « dicte au législateur la rédaction de textes définissant sans ambiguïté les comportements qu'il érige en infractions et les sanctions qui y sont attachées. La loi criminelle doit déterminer avec soin les limites du permis et de l'interdit[32]». Une incrimination trop large viole le principe de légalité criminelle comme l'absence de texte. Si le législateur français utilise des termes trop vagues sans les définir, il peut encourir le grief d'imprécision [33]. Il est possible de saisir le conseil constitutionnel pour ce motif. C'est ainsi que celui-ci a prononcé le 23 janvier 1985 l'inconstitutionnalité du délit de «malversation». Toutefois, il n'est pas interdit d'utiliser des termes équivoques. En effet, une trop grande précision pourrait amener à multiplier les textes et à brider le système répressif. Il faut donc trouver un compromis. Le problème est que l'on va parfois aller trop loin dans les compromis. La CEDH va considérer que les termes «par tout moyen» ou «de quelque manière que ce soit» ne sont pas contraires au principe de légalité[34]. La réalité est qu'en RD Congo, certaines infractions prévues dans les actes uniformes ne connaissent pas à ce jour de répression, cette situation se manifeste par le fait qu'au niveau du tribunal de commerce de Bukavu, seules les infractions d'émission de chèque sans provision, d'abus de confiance, sont couramment concernées et sanctionnées par l'action pénale du juge précité, par contre, les infractions liées à la constitution des sociétés ne sont jamais réprimées et bien d'autres plus spécifiques au monde des affaires[35].

II. Action répressive limitée du juge de commerce de Bukavu : danger pour la sécurisation du climat des affaires au Sud-Kivu et en RD Congo

Il est important de noter que les statistiques du registre pénal du tribunal de commerce de Bukavu démontrent que la sécurisation des affaires est loin d'être atteinte par l'action répressive du juge de commerce de Bukavu. Bizarrement, cet état de choses n'est pas lié à l'inertie du juge de commerce de Bukavu, mais aux moyens pénaux qui sont à sa disposition pour exercer son action répressive. La configuration actuelle du droit pénal OHADA et le retard de sa mise en œuvre en RD Congo, font que ce juge pourtant courageux, se trouve coincé dans les murs du principe de légalité des délits et des peines.

D'ailleurs précisons-le, « le juge pénal est sous l'emprise de la loi, ce qui signifie que tout rôle créateur du juge pénal est interdit. En effet, cette prohibition du rôle créateur du juge concerne les incriminations et la fixation des peines. En effet, il ne peut prononcer que des peines prévues par la loi. Les peines fixées par les juridictions pénales sont censurées lorsqu'elles prononcent une peine existant dans l'échelle générale des peines, mais n'existant pas pour l'infraction pour laquelle la juridiction pénale a été saisie[36] ». Le principe d'interprétation stricte de la loi pénale, est le corollaire et le prolongement du principe de légalité des délits et des peines. Ce principe encadre l'action du juge, qui se doit de se soumettre à la loi. Ce principe peut être interprété comme « la loi, uniquement la loi, mais toute la loi ». Ce principe

[32] J. GREGOGNA, *Op.cit*, p. 13.
[33] *Ibid*.
[34] *Idem*, p. 14.
[35] Situation constatée lors de notre descente au greffe du Tribunal de commerce de Bukavu, en date du 13/08/2018.
[36] "Principe de légalité des délits et des peines disponible" sur http://avocat-gc.com/permis/articles/le-principe-de-legalite-des-delits-et-des-peines/ Consulté le 21/11/2019.

a pour objectif d'interdire l'interprétation par analogie, c'est-à-dire l'application de la loi pénale à un comportement qu'elle ne vise pas directement mais qui présente certaines analogies[37]. Face à cette réalité, le juge pénal du tribunal de commerce de Bukavu, se trouve limité dans son action et ne réprime que les infractions économiques pour lesquelles il y'a des peines.

Il est alors intéressant à travers ce point, de donner en premier un tableau récapitulatif des infractions économiques qui sont couramment réprimées par le juge de commerce de Bukavu et celles qui échappent à son action répressive, pour comprendre combien le climat des affaires est en situation de précarité dans cette partie de la RD Congo (II.1), en deuxième lieu, les limites de son action répressive et une possible responsabilité de l'État Congolais pour carence législative et législation défectueuse (II.2), dans le domaine de droit pénal des affaires.

II.1. Les infractions connaissant la répression du juge de commerce de Bukavu et celles échappant à son action pénale

À travers deux tableaux, nous allons illustrer les deux catégories d'infractions économiques, l'une connaissant régulièrement une répression pénale du juge de commerce de Bukavu (1), et l'autre échappant (2) catégoriquement à son action pénale, et qui reste une épineuse question pour la sécurisation des affaires dans la province du Sud-Kivu et dans toute la RD Congo.

1. Infractions économiques couramment réprimées par le juge de commerce de Bukavu[38]

Infractions économiques prévues déjà en droit pénal congolais	Correspondant dans les actes uniformes de l'OHADA	Peine existante en droit interne
1. Abus de confiance	---------	Art. 95 C.P (3 mois à 5ans SP ou une amende)
2. Abus des biens sociaux	L'abus des biens et du crédit de la société	Assimilée à l'abus de confiance (3 mois à 5ans SP ou amende)
3. Banqueroute frauduleuse	La banqueroute frauduleuse	Art. 86 CP (3 à 5ans + amende)
4. Banqueroute simple	banqueroute simple	Art 87 à 90 CP (8jrs à 1 an et une amende)
5. Concurrence déloyale	-------	Art.2 et 3 de la loi n^{0}41-63du 24 février 1950, (peine d'amende)
6. Contrefaçon	------	Art. 125 et 126 de l'ord.N^{0}89/173(6mois SP ou une amande)

[37] *Ibid*.

[38] Tableau fait par SAFI BULEMBO, Application du droit penal OHADA en RD Congo: mythe ou réalité, Mémoire, Fac. Droit, UCB, 2017-2018, p.26, s'inspirant de l'ouvrage de B. CIZUNGU NYANGEZI, *Les infractions de A à Z*, Ed. Nyangezi, Kinshasa, pp. 65 et suivants, cet ouvrage de B. CIZUNGU examine presque la totalité des infractions et leurs peines du droit positif congolais. Notre gymnastique, permet alors à travers ce tableau, de faire un regard pour voir si ces infractions ont des correspondants dans les actes uniformes. Également en raison du principe de légalité des délits et des peines, nous verrons dans le point II.2 que l'action répressive en RD Congo, se limite à ces infractions et laisse logiquement de côté beaucoup d'infractions contenus dans les actes uniformes.

7. Contrefaçon des dénominations commerciales	------	Art. 165 CP(6 mois ou une amende)
8. Défaut de qualité pour exercer la qualité de commerçant	0bligation d'immatriculation au RCCM	----------
9. Emission de chèque sans provision	----------	5 à 20 ans SP (Art. 1 et 2 de l'ord-loi n^0 68-195 du 3/05/1968
10. Escroquerie		
11. Exercice du commerce sans être immatriculé au registre de commerce	Obligation d'immatriculation au registre de commerce (Art.69 AUDCG)	----------
12. Fausses déclarations dans une demande d'immatriculation au registre de commerce	Infractions liées à la constitution des sociétés (Art. 887 de l'AUSCGIE)	----------
13. Publicité des prix	----------	
14. Tromperie en matière commerciale	----------	Art. 99 CP(1 an et une amende)

Ce tableau donne le visage de l'état actuel de la législation congolaise dans la répression de la criminalité économique. Visiblement, bon nombre des situations infractionnelles prévues par les actes uniformes ne sont pas concernées par cette législation, ce qui fait logiquement qu'elles ne connaissent aucune répression depuis l'adhésion de la RD Congo à l'OHADA en 2012. Le juge en pareille situation aura du mal à dire le droit, il est même difficile qu'il soit saisi si une infraction sans peine se commettait.

2. Infractions économiques échappant totalement à l'action du juge de commerce de Bukavu[39]

Infractions au début de l'activité économique	Infractions dans le fonctionnement	Infraction relatives à la cessation de l'activité économique
1. Défaut et/ou fraude aux formalités par le commerçant ou l'entreprenant art. 69 AUDCG	6. Défaut de publicité du locataire gérant art. 140 AUDCG	21. Abaissement de capital Art. 901 AUPC
2. Manquements d'immatriculation Art. 886 AUSCGIE	7. Inscriptions frauduleuses de sûretés mobilières art. 65 AUS	22. Non publication de décision Art. 901 AUPC
3. Simulation de souscriptions et de versements Art. 887, 3°, 4° AUSCGIE	8. Défaut d'établissement ou de présentation de documents comptables art.111 AUDC	23. Abus de biens et de crédit sociaux Art. 904 AUPC
4. La publication de faits faux Art. 887, 2°, 4° AUSCGIE	9. Faux bilans art.111 AUDC ; art. 890 AUSCGIE	24. Cession d'actifs interdits Art.904 AUPC
5. La surévaluation des apports en nature Art. 887, 4° AUSCGIE	10. Abus de biens et de crédit sociaux Art. 891 AUSCGIE Art. 387 AUSC	25. Banqueroute simple et Infractions assimilées Art. 227,228, 230 et s. AUPC
	11. Distribution de dividendes fictifs Art. 889 AUSCGIE Art. 387 AUSC	26. Banqueroute frauduleux et Infractions assimilées Art. 227, 229, 230 et s. AUPC
	12. Variations irrégulières de capital Art. 893, 896 AUSCGIE Art. 387 AUSC	27. Non publication de l'acte de nomination du liquidateur art. 902 (2) AUPC.
	13. Entrave à la participation à une AGE Art. 896 AUSCGIE	28. Manque d'informations et entrave aux droits des associes

[39] Tableau fait par nous-même, en fouinant les actes uniformes en vigueur à ce jour dans l'espace OHADA. Nous faisons une classification, selon qu'il s'agit des infractions liées au début de l'activité économique, celles liées au fonctionnement, et enfin, celles relatives à la cessation de l'activité économique.

	Art. 387 AUSC	art. 903 (2) AUPC
	14. Atteintes au droit préférentiel des associés Art. 894, 895 AUSCGIE Art. 387 AUSC	29. Clôture occulte de la liquidation art. 902 (2) AUPC.
	15. Défaut de commissaire aux comptes Art. 897 AUSCGIE Art. 387 AUSC	30. Les délits du syndic Art. 243 AUPC
	16. Entrave aux fonctions du commissaire aux comptes Art. 900 AUSCGIE Art. 387 AUSC	31. Infractions de créanciers
	17. Violation des incompatibilités Art. 898 AUSCGIE	32. Infractions de proches du débiteur Art. 241 AUPC
	18. Informations mensongères et non révélation Art. 899 AUSCGIE Art. 387 AUSC	33. Infractions de tiers Art. 240 AUPC
	20. Usurpation d'appellation de sociétés coopératives Art. 386 AUSC	

Toutes ces infractions retenues dans les actes uniformes et qui ne connaissent pas jusqu'aujourd'hui une loi pénale de répression en RD Congo, n'ont jamais fait logiquement objet de poursuite par le Tribunal de commerce de Bukavu. Au regard de cet état des choses, nous ne pouvons pas affirmer que depuis 2012, année de l'adhésion de la RD Congo à l'OHADA, ces infractions ou certaines d'entre elles, n'ont jamais été commises en RD Congo. Il est donc vrai qu'elles se commettent du jour au jour, mais il manque des matériaux pénaux (des peines applicables), pour pouvoir mobiliser le tribunal de commerce et arriver à leur répression.

II.2. Les limites de l'action répressive du juge de commerce de Bukavu et la possible responsabilité de l'État Congolais pour carence législative

Une statistique faite à la suite des registres pénaux du tribunal de commerce de Bukavu, permet de comprendre les limites que connaissent les juges de commerce congolais dans l'application du droit pénal OHADA. Ces limites font que la jurisprudence congolaise en droit pénal des affaires ne s'inspire aucunement ou elle le fait à quelques exceptions réduites du droit pénal OHADA, à cause de l'absence d'une loi pénale de répression des infractions prévues par les actes uniformes. Il est alors judicieux, de présenter l'état de lieu de la répression des infractions économiques par le tribunal de commerce de Bukavu (1), et voir à la suite de cette situation noire de répression, si l'État congolais peut engager sa responsabilité pour carence législative (2).

1. L'état de lieu de la répression des infractions économiques par le Tribunal de commerce de Bukavu depuis son installation[40]

N^0 Ordre	Date d'enrôlement	Prévention
1. RPE 001	3/07/2014	- Faux en écriture, - usage de faux, - usurpation de fonction, - escroquerie
2. RPE 002	7/7/2014	Abus de confiance (Art. 95 CPLII)
3. RPE 003	25/7/2014	Abus de Confiance
4. RPE 004	19/8/2014	- Faux et usage de faux - Détournement des biens saisis
5. RPE 005	11/09/2014	Abus de confiance
6. RPE006	22/09/2014	Emission de chèque sans provision (Art. 2 du décret du 12/3/1923 modifié par l'Ord 68/195 du 3/5/2014
7. RPE 007	16/09/2014	- Escroquerie - Faux et usage de faux
8. RPE008	06/10/2014	Emission de chèque sans provision
9. RPE009	16/10/2014	Vol qualifié des effets de commerce
10. RPE 010	23/12/2014	- Abus de confiance (Art. 95 CPLII) - Faux et usage de faux (Art. 125 CPLII)
11. RPE 011	14/01/2015	Abus de confiance
12. RPE 012	25/02/2015	Emission de chèque sans provision
13. RPE013	28/03/2015	Escroquerie
14. RPE 014	7/05/2015	Emission de chèque sans provision
15. RPE015	18/07/2015	Infraction d'usure (Art. 96 bis CPLII)
16. RPE 016	24/09/2015	Rétention illicite des minerais (ord-loi n^0 21/84 du 14/2/1959
17. RPE 017	16/12/2015	Abus de confiance
18. RPE 018	28/12/2015	Emission de chèque sans provision
19. RPE 019	30/12/2015	Faux et usage de faux
20. RPE 020	7/01/2016	A bus de confiance
21. RPE 021	18/01/2016	Emission de chèque sans provision
22. RPE 022	18/01/2016	Emission de chèque sans provision
23. RPE 023	15/03/2016	Abus de confiance et faux et usage de faux
24. RPE 024	1/06/2016	Emission de chèque sans provision
25. RPE 025	13/06/2016	Emission de chèque sans provision
26. RPE026	21/06/2016	Usure
27. RPE 027	24/06/2016	Banqueroute
28. RPE 028	27/07/2016	Emission de chèque sans provision
29. RPE 029	27/08/2016	Banqueroute
30. RPE 030	07/9/2016	Faux commis en écriture et son usage
31. RPE 031	23/11/2016	La rétention illicite des documents et d'usure
32. RPE 032	25/11/2016	Emission de chèque sans provision
33. RPE 033	09/12/2016	Abus de confiance
34. RPE 034	22/12/2016	Emission de chèque sans provision
35. RPE 035	24/03/2017	Abus de confiance
36. RPE 036	29/05/2017	Tentative d'escroquerie et Extorsion

[40] Tableau construit par SIFA BULEMBO, *op.cit*, p. 40.

37. RPE 037	30/05/2017	Contrefaçon (ord 86-0335 avril 1986
38. RPE 038	10/06/2017	Faux en écriture et son usage et extorsion de signature
39. RPE 039	14/07/2017	Extorsion de signature
40. RPE 040	04/09/2017	Faux en écriture et son usage
41. RPE 041	19/10/2017	Achat, détention illicite des substances minérales (Art. 300 code minier)
42. RPE 042	19/10/2017	Contravention à l'arrêté du ministre de mines (Art. 311 du code minier)
43. RPE 043	09/08/2018	Émission de chèque sans provision
44. RPE 044	09/08/2018	Abus de confiance et émission de chèque sans provision

Ce tableau fait état de la répression des infractions économiques, effectuée par le Tribunal de commerce de Bukavu depuis son installation en 2014, jusqu'en 2018. Sur ce tableau, ce sont les infractions d'abus de confiance, l'émission de chèque sans provision, la banqueroute, escroquerie, de contrefaçon, faux en écriture qui sont couramment réprimées par les juges congolais de commerce, et cela, en raison l'absence d'une loi pénale de répression des infractions contenues dans les actes uniformes. Logiquement, la jurisprudence du tribunal de commerce de Bukavu, reste dominée par les décisions en rapport uniquement avec ces infractions, dont il est possible d'actionner les poursuites pénales à l'état actuel du droit pénal congolais. L'on note alors un véritable silence pour les infractions contenues dans les actes uniformes, alors qu'elles se commettent sûrement en RD Congo et dans la ville de Bukavu en particulier. Cette inertie de l'État Congolais, dans la mise en œuvre du droit pénal OHADA, tombe dans l'hypothèse d'une carence législative, et met en péril, le climat des affaires en RD Congo. Est-il alors possible que les victimes d'infractions économiques en RDC, prévues par les actes uniformes, puissent dans une certaine mesure, poursuivre l'État congolais pour carence législative et législation défectueuse ?.

2. Possible responsabilité de l'État Congolais pour carence législative et législation défectueuse pour la mise en œuvre de l'article 5 du Traité OHADA

Pour rappel, le droit pénal des affaires de l'OHADA est marqué par une option qui, même si elle paraît assez originale, n'en recèle pas moins quelques incohérences du point de vue de la politique criminelle. Citant Marc ANCEL, Gérard Pougoue note que « si la politique criminelle apparaît, comme une stratégie méthodique de réaction anticriminelle, il est difficilement concevable de soumettre les deux éléments de sa structure que sont le phénomène criminel et la réponse de politique criminelle à une logique différente[41] ». Telle est cependant la stratégie qui a été adoptée par le législateur de l'OHADA pour venir à bout de la délinquance d'affaires. Celle-ci a consisté à harmoniser les infractions d'affaires dans l'espace communautaire et à laisser le soin aux États parties de déterminer librement les sanctions qui leur sont applicables. De cette option pourrait résulter une certaine hétérogénéité des sanctions qui seront déterminées par les États[42].

Mais il faut reconnaître que l'unité des textes d'incrimination n'est pas achevée. Le législateur africain n'a pas érigé en infractions un certain nombre de prescriptions parfois visées par les Actes uniformes eux-mêmes. Dès lors, il est permis de se demander si, à côté des

[41] M. ANCEL cité par P.G. POUGOUE *et* alii, *Le droit des sociétés commerciales et du G.I.E. OHADA*, Bruxelles, édition Larcier, p. 64.
[42] P.G. POUGOUE *et* alii, op.cit, p.65.

incriminations prévues, les législateurs nationaux pourront en consacrer d'autres ? La réponse affirmative semble ne pas faire de doute. À ce sujet, l'alinéa 2 de l'article 5 du Traité OHADA dispose seulement que *«Les Actes uniformes peuvent inclure des dispositions d'incriminations pénales»*[43]. Ce qui signifie qu'ils peuvent ne pas en inclure et chaque législateur national en aurait institué. Du moment où l'Acte uniforme en contient, ces dispositions doivent être comprises comme le *«minimum commun»* aux États parties qu'aucun législateur national ne saurait entamer en dépénalisant sur son territoire des comportements saisis par l'Acte uniforme[44].

Par rapport à une possible responsabilité de l'État, il convient de rappeler que la conception classique excluait l'éventualité de la responsabilité de l'État en cas de législation défectueuse ou d'absence de législation. En 1876, F. Laurent « se bornait par exemple à affirmer que le législateur était tout bonnement irresponsable. Son commentaire de l'arrêt de cassation du 27 juin 1845 [45] s'énonçait en effet comme suit: «*le pouvoir législatif est irresponsable. Obéissance est due à la loi, alors même qu'elle léserait des droits individuels*[46]». La plupart des autres systèmes juridiques consacraient également l'immunité du législateur. Comme en droit belge qui est l'origine du droit écrit congolais, une législation défectueuse ou absence de législation ne conférait ni en droit allemand, ni en droit anglais, ni en droit français, encore moins en droit congolais issu de la colonisation belge, un fondement légal suffisant pour une action en dédommagement contre l'État[47]. « La seule exception en droit français concernait le cas où le législateur avait lui-même prévu une indemnité, cette hypothèse semble essentiellement théorique selon la littérature juridique française[48] ». Cette irresponsabilité du législateur pour législation défectueuse et ou absence de législation est largement dépassée à travers les acquis de la jurisprudence et un souci d'une réelle protection des droits de l'homme. L'analyse des obligations classiques de l'État en matière des droits de l'homme permettra de situer la responsabilité de l'État congolais dans l'absence de législation sur la répression des infractions contenues dans les actes uniformes de l'OHADA.

- **L'obligation de protéger les investisseurs et leurs partenaires**

L'on s'accorde que le rôle de l'État en matière de protection des investisseurs et leurs partenaires ne peut être nié. Pour le Professeur Arnold Nyaluma, « les droits de l'homme, comme droits subjectifs supposent un titulaire et un débiteur. De ce fait, il est admis à ce jour que tout individu, personne humaine est titulaire des droits de l'homme mais ces droits resteraient des simples vœux si les obligations de l'État, débiteur ne sont d'une part précisées et si d'autre part les voies de leur justiciabilité ne sont pas connues et mises en œuvre. Les droits de l'homme peuvent être menacés non seulement par des interventions de l'État, mais aussi par les agissements de particuliers. En plus, les États sont tenus par les droits de

[43] M. KOM KAMSU, *Le droit pénal des sociétés dans l'Acte uniforme OHADA*, Mémoire de DEA, Université de Dschang, 1999, p. 135.
[44] P.G.POUGOUE et alii, *op.cit*, p.225.
[45] Cour de Cassation Belge, 27 juin 1845, *Pas.* 1845, I, p. 392.
[46] F. LAURENT, *Principes de droit civil*, t. XX, Bruxelles, Bruylant, 1876, p. 438, n° 418.
[47] LAFFERIERE, *Traité de la juridiction administrative*, cité par P. SENKOVIC, *L'évolution de la responsabilité de l'Etat législateur sous l'influence du droit communautaire*, Bruxelles, Bruylant, 2000, p. 190.
[48]Conseil d'Etat Français, Aff. Duchatelier, Arrêt du 11 janvier 1831, in *Rec. Leb.* 1831, p. 7.

l'homme de protéger les individus contre les violations de leurs droits par des tiers, au moyen notamment de la loi ou des forces de police. Les personnes concernées peuvent prétendre à être protégées par l'État[49] ». Nous devons préciser que les droits de l'homme dont question dans cette étude, sont les droits économiques, dans lesquels, l'on trouve les droits relatifs à l'exercice de l'activité économique et la liberté d'entreprendre.

L'obligation de protection incombe à l'État uniquement lorsque, dans un cas concret, il a tant connaissance de l'atteinte portée à un droit que la capacité de l'empêcher. « Elle peut avoir soit un caractère préventif, lorsqu'il s'agit d'écarter la menace d'une violation, soit un effet curatif, lorsque l'État prête assistance à une victime ou prend des mesures contre les auteurs des violations[50] ». Protéger les droits[51], c'est empêcher les violations par d'autres intervenants. L'obligation de protéger implique que l'État doit prendre des mesures raisonnables, cette obligation est violée si le résultat n'est pas atteint et les mesures adoptées ne sont pas suffisantes. C'est alors, une obligation de moyens.

Tel que démontré précédemment, le secteur économique de la RD Congo reste dominé par l'absence d'une loi pénale de répression des infractions contenues dans les actes uniformes, alors que lesdites infractions se commettent du jour au lendemain dans ce pays. Leur répression par le juge congolais demeure de ce fait impossible en raison de l'absence des peines qui leurs seront applicables. Bien que l'obligation de protéger les droits de l'homme soit une obligation de moyen, cela ne dédoine pas l'État congolais de sa responsabilité de légiférer pour la répression des infractions contenues dans les actes uniformes, qui reste une obligation pour les États membres de l'OHADA pour arriver à une meilleure sécurisation du climat des affaires dans l'espace OHADA. L'État congolais en s'abstenant de légiférer jusqu'à ce jour pour la répression des infractions contenues dans les actes uniformes ne protège pas les droits des investisseurs, leurs investissements, mais aussi, leurs partenaires et les consommateurs. Par son inertie législative, l'État Congolais occasionne une situation de non-droit, où, les victimes des infractions contenues dans les actes uniformes, n'ont aucun moyen aussi bien légal qu'institutionnel pour obtenir justice et réparation.

- **L'obligation de respecter les droits des investisseurs, leurs investissements, les droits de leurs partenaires et ceux des consommateurs**

Notons que l'obligation de respecter les droits de l'homme contraint l'État à adopter une attitude passive et à ne pas intervenir. Le principe de la liberté de commerce étant consacrée en droit congolais, l'État doit pouvoir laisser aux commerçants, les investisseurs la liberté de faire leur commerce et d'entreprendre, il doit s'abstenir de faire trop d'interventionnisme dans le secteur économique au risque d'enfreindre ledit secteur par des taxes sans fondement juridique, et de n'intervenir qu'en cas de non-respect de la règlementation en vigueur. En ce qui concerne les consommateurs, l'État doit les laisser la liberté de consommer les aliments de leur choix, selon leur pouvoir d'achat et de n'intervenir, que lorsqu'il constate que les

[49] A. NYALUMA, Cours des droits liés à l'autonomie de la personne, UCB-CERDHO, Fac. Droit, D.E.S en Droits de l'homme et DIH, 2015-2017, p. 6. Inédit.
[50] Observation générale 3, Cinquième session, 1990, Citée par A. NYALUMA, Cours des droits humains, op.cit, p.6.
[51] O. DE SCHUTTER cité par A. NYALUMA, Idem, p. 8.

consommateurs seraient en danger, suite au non-respect par les commerçants et opérateurs économiques de la législation en vigueur, il serait même difficile dans le cas des infractions prévues dans les actes uniformes, que l'État congolais sanctionne les opérateurs économiques, alors qu'il s'abstient lui-même à ce jour de prévoir des peines aux infractions prévues dans les actes uniformes de l'OHADA. Le devoir de respect donne aux titulaires du droit la possibilité de se défendre contre l'État. « Le devoir de non intervention découle automatiquement des droits de l'homme, c'est-à-dire sans autres conditions[52] ». De ce fait, il est possible qu'une victime d'une infraction économique, prévue par un des actes uniformes, puisse aujourd'hui se retourner contre l'État congolais, pour absence de législation dans la répression des infractions contenues dans les actes uniformes.

- **L'obligation de réaliser les droits des investisseurs, les droits de leurs partenaires et ceux des consommateurs**

La philosophie législative du droit pénal OHADA accorde une place de choix aux États dans la production des normes pénales relatives à la répression des infractions à l'avance prévues par le droit communautaire[53]. En prévoyant ces peines, les États garantissent en quelques sortes les droits des investisseurs, opérateurs économiques, les partenaires et les consommateurs. De ce fait, le droit pénal OHADA ne sera effectif que si les États dans leur ensemble prévoyaient les peines à toutes les infractions contenues dans les actes uniformes. Ce qui nécessite, selon les circonstances, des mesures légales ou administratives qui créent les conditions juridiques, institutionnelles et procédurales nécessaires pour que le droit puisse être pleinement réalisé[54]. Il s'agit par contre aujourd'hui, d'une absence totale de législation dans le domaine du droit pénal de l'OHADA en RD Congo.

- **La carence législative dans la répression des infractions contenues dans les actes uniformes**

Il est de plus en plus admis, que l'État peut engager sa responsabilité pour carence législative. Pour Arnold Nyaluma, « la carence législative ne consiste pas seulement à l'absence de législation dans un domaine donné, mais aussi à l'existence d'une législation défectueuse[55] ». Comme démontré précédemment, la RD Congo n'a pas jusqu'à ces jours mise en œuvre l'alinéa 2 de l'article 5 du Traité OHADA, ce qui fait que les infractions contenues dans les actes uniformes se commettent régulièrement en RD Congo est la poursuite demeure impossible en raison de l'absence des peines à appliquer auxdites infractions. Cette carence expose les victimes de la commission de ces infractions à une situation de précarité dans la mesure où, les auteurs de ces infractions économiques ne sont jamais inquiétés.

- **L'étendue de la responsabilité de l'État congolais dans le secteur économique**

L'état actuel de la mise en œuvre du droit pénal OHADA en RDC permet d'affirmer que le secteur économique en RDC reste caractérisé par une carence législative dans la répression des infractions contenues dans les actes uniformes. Ce qui explique que ce secteur soit un des secteurs où, il y'a un grand nombre des violations des droits de consommateurs, des opérateurs économiques et ceux de leurs partenaires. L'État congolais étant un débiteur en

[52] Observation générale 3, Cinquième session, 1990, citée par A. NYALUMA, *op.cit,* p.8.
[53] Art. 5 al. 2 du Traité OHADA.
[54] Observation générale 3, Cinquième session, 1990, citée par A. NYALUMA, *op.cit,* p.8.
[55] A. NYALUMA, Cours de droit lié à l'autonomie de la personne, *op.cit*, p. 17. Inédit.

matière des droits de l'homme, sa responsabilité serait engagée. Pour la jurisprudence Belge citée par Arnold Nyaluma, « la faute qui entraine la responsabilité de l'administration désigne un comportement qui, ou bien s'analyse en une erreur de conduite devant être appréciée suivant le critère de l'autorité normalement soigneuse et prudente, placée dans les mêmes conditions, ou bien, sous réserve d'une erreur civile ou d'une autre cause de justification, viole une norme de droit national ou d'un traite international ayant des effets dans l'ordre interne[56]». Il en découle que la responsabilité ne se limite pas uniquement à la faute mais elle s'étend au risque jusqu'à la garantie d'indemnisation.

En effet, « celui qui, par son activité, crée un risque, doit supporter la réparation du dommage qui en résulte surtout s'il en tire un profit, la preuve de l'absence de faute ne peut exonérer le défendeur de sa responsabilité[57] ». Il est à déduire que l'État congolais en s'abstenant de prévoir les peines pour les infractions contenues dans les actes uniformes de l'OHADA, ledit État engagerait sa responsabilité. Cette responsabilité de l'État congolais pour carence législative, serait engagée sur pied de l'article 260 alinéa 3 du Code civil congolais livre III, qui dispose que « les maître et les commettants sont responsables des dommages causés par leurs domestiques et préposés dans l'exercice des fonctions auxquelles ils sont employés[58] ».

De ce fait, les investisseurs, les opérateurs économiques dans toutes leurs diversités, les consommateurs, victimes des infractions contenues dans les actes uniformes, et commises sur le territoire congolais, peuvent saisir le Tribunal de Grande Instance du lieu où, ils sont installés, et arriver à la condamnation de l'État Congolais pour carence législative, et parvenir à obtenir réparation.

Conclusion

Cette étude démontre que le juge pénal du Tribunal de commerce de Bukavu ne joue pas pleinement son rôle dans la mise en œuvre du droit pénal OHADA, et n'aboutit pas à la sécurisation du climat des affaires dans cette partie de la République démocratique du Congo. Ce juge se trouve limité par les murs du principe de légalité des délits et des peines, et celui de l'interprétation stricte de la loi pénale. De ce fait, la jurisprudence que ce tribunal développe en matière du droit pénal économique, reste dominée par le droit pénal national de la RD Congo, à l'absence d'une loi pénale de répression des infractions continues dans les actes uniformes. Pour ces dernières, aucune répression n'est envisageable à ces jours en RD Congo, et tout acte infractionnel y relatif, demeure impuni.

Cette impunité est confirmée par les statistiques du Tribunal de Commerce de Bukavu, dans la répression des infractions contenues dans les actes uniformes de l'OHADA, qui démontrent que depuis son installation en 2014, jusqu'en 2018, sur les 44 infractions que ce tribunal a eu à connaitre, seule une infraction est reprise par un acte uniforme. Il s'agit de l'infraction de Banqueroute. Cela s'expliquerait par le respect par ce juge, du principe de légalité de délits et des peines, en raison de l'absence d'une loi adoptée par le législateur congolais dans la mise en œuvre de l'article 5 du Traité OHADA.

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[56] A. NYALUMA MULAGANO, *Les modes alternatifs de règlement des conflits, une clé d'accès à la justice administrative congolaises*, Ed. Bruylant, Bruxelles, 2016, p. 105.
[57] M. FONTAINE et alii, *Notions fondamentales de droit*, Ed. Fachier, Paris, 1995, p. 145.
[58] Art. 260 al. 3 du décret du 30 juillet 1888, des contrats ou des obligations conventionnelles, *In B.O.*, 1888.

Il sera de ce fait même difficile, lorsque cette loi pénale de répression interviendra en RD Congo, d'envisager la poursuite des infractions prévues par les actes uniformes, commises avant son avènement, en raison du principe de la non-rétroactivité de la loi pénale, et même lorsque celle-ci, c'est-à-dire la loi pénale de répression serait plus douce, l'on ne saurait, apprécier son caractère doux, à l'absence d'une loi pénale antérieure réprimant les mêmes faits infractionnels. En outre, la constitution des éléments de preuve sera difficile en raison des années qui se seront écoulées, mais aussi, la question de la prescription, du déplacement dans un autre pays, ou de la mort des présumés auteurs desdites infractions économiques.
De manière générale aussi, il est à noter que l'objectif de l'harmonisation visé par l'OHADA n'a pas été atteint dans le domaine du droit pénal, étant donné que dans l'espace OHADA, l'on assiste à l'émergence d'une législation pénale totalement empiétée par les influences de la souveraineté de chaque État-partie. Ce qui fait que, certaines de ces lois des États membres, retiennent une peine d'amende pour telle ou telle autre infraction contenue dans un acte uniforme, alors que pour une autre loi pénale d'un autre État, c'est la peine d'emprisonnement qui se trouve retenue, où même l'absence d'une répression carrément. Cette situation de démarcation est presque totale dans la répression des infractions contenues dans les actes uniformes par les États-parties à travers l'image que donnent les lois pénales nationales de répression.

Il est donc aujourd'hui admis, que le législateur congolais en s'empêchant d'adopter une loi pénale de répression des infractions contenues dans les actes uniformes, entretient un véritable climat d'insécurité et d'impunité dans le secteur économique en RD Congo. Le climat des affaires est dans une situation de précarité, et n'accorde pas une protection conséquente aux investisseurs, les opérateurs économiques, leurs partenaires et même les consommateurs. C'est ainsi, que cette étude démontre clairement s'appuyant sur la théorie des droits de l'homme, que l'État congolais peut engager sa responsabilité civile pour carence législative dans le domaine du droit pénal OHADA. Par le fait que, les actes uniformes s'appliquent directement sur son territoire depuis 2012, jusqu'à ce jour, et les infractions qui sont prévues par ces actes uniformes, s'y commettent du jour au lendemain, sans la moindre répression. Par son silence législatif, l'État congolais entretient un climat d'impunité et d'insécurité, et mérite une action en responsabilité civile sur pied de l'article 260 alinéa 3 de son Code civil congolais livre III.

Références Bibliographiques

1. **Instruments Juridiques**

- Traité portant révision du traité relatif à l'harmonisation du droit des affaires en Afrique, signé à Port-Louis, le 17 octobre 1993.
- Pacte international relatif aux droits civils et politiques du 19 décembre 1966.
- Constitution de la RD Congo, in J.O/RDC, 47émé année, Numéro spécial du 18 février 2006.
- Décret du 30 juillet 1888, des contrats ou des obligations conventionnelles, In B.O., 1888.

2. **Jurisprudence**

- CEDH, *Aff. Coëme et autres c. Belgique*, § 145 ; *Del Río Prada c. Espagne,* dans *Guide sur l'article 7 de la Convention européenne des droits de l'homme,* CEDH, 2019.

- CEDH, *Aff. Cantoni c. France*, § 29 ; *Kafkaris c. Chypre, 2019.*
- Cour de Cassation Belge, 27 juin 1845, *Pas.* 1845.
- Conseil d'Etat Français, Aff. Duchatelier, Arrêt du 11 janvier 1831, in *Rec. Leb.* 1831.
- COMITE DES DROITS DE L'HOMME, Observation générale 3, Cinquième session, 1990.
- COMITE DES DROITS DE L'HOMME DE L'ONU, *Observation n^{0}18 sur l'article 26 du PIDCP*, 37^{émé} session, 10 novembre 1989.

3. Doctrine

- CIZUNGU NYANGEZI B., *Les infractions de A à Z*, Ed. Nyangezi, Kinshasa, 2011.
- CIFENDE M et S. SMISS, *Code de droit international africain*, Ed. Larcier, Bruxelles, 2011.
- DE LAMY B., « Le principe de la légalité criminelle dans la jurisprudence du Conseil Constitutionnel », *in Cahiers du Conseil Constitutionnel*, n^{0} 26, août 2009.
- DE LAMY B., "Dérives et évolution du principe de la légalité en droit pénal français: contribution à l'étude des sources du droit pénal Francais", *in les Cahiers de droit*, Volume 50, n^{0} 3-4, Décembre 2009.
- DESPORTES F et LE GUNEHEC F., *Droit pénal général*, Ed. Economica, Paris, 2002.
- ECONOMISTI ASSOCIATION et ECOPA, "Evaluation de l'impact des réformes OHADA*", in Programme IFC sur le climat d'investissement-OHADA en Afrique*, Rapport, Décembre 2018.
- GREGOGNA J., « Légalité des délits et des peines », *Encyclopædia Universalis* [en ligne], consulté le 9 août 2018. URL : http://www.universalis.fr/encyclopedie/legalite-des-delits-et-des-peines/.
- FONTAINE M et alii, *Notions fondamentales de droit*, Ed. Fachier, Paris, 1995.
- LOHOUES-OBLE J., « Traité OHADA et Règlement de procédure de la CCJA », *in Traité et Actes uniformes commentés*, Juriscope 1999.
- LAURENT F., *Principes de droit civil*, t. XX, Bruxelles, Bruylant, 1876.
- MEVOUNGOU NSANA R., " La problématique d'un droit pénal des affaires OHADA", *in Revue de l'ERSUMA*, Porto-Novo, Ohadata D-15-02, Benin, 2012.
- MOUKALA MOUKOKO C., « Le fondement juridique de la responsabilité pénale du dirigeant social : incidences entre droit pénal interne et droit pénal des affaires OHADA », *in ERSUMA*, 20 mars 2015.
- NYALUMA MULAGANO A., *Les modes alternatifs de règlement des conflits, une clé d'accès à la justice administrative congolaises*, Ed. Bruylant, Bruxelles, 2016.
- POUGOUE P-G. et alii, *Le droit des sociétés commerciales et du G.I.E. OHADA*, Bruxelles, édition Larcier, 1998.
- RENOUT H., *Droit pénal général*, Ed. Larcier, Bruxelles, 1999.
- SENKOVIC P., *L'évolution de la responsabilité de l'Etat législateur sous l'influence du droit communautaire*, Bruxelles, Bruylant, 2000.
- YAO KOUAKOU E., « Uniformisation et droit pénal : esquisse d'un droit pénal des affaires dans l'espace Ohada », *In Revue internationale de droit comparé*. Vol. 63 n°3,2011.

4. Autres documents

- Banque Mondiale et SFI, Doing business dans les Etats membres de l'OHADA 2012. Comparaison de la règlementation des affaires dans les 16 Etats membres de l'OHADA et à travers le Monde, Rapport, 2012.
- KOM KAMSU M., Le droit pénal des sociétés dans l'Acte uniforme OHADA, Mémoire de DEA, Université de Dschang, 1999.
- NYALUMA A., Cours des droits liés à l'autonomie de la personne, UCB-CERDHO, Fac. Droit, D.E.S en Droits de l'homme et DIH, 2015-2017.
- SAFI BULEMBO, Application du droit pénal OHADA en RD Congo: mythe ou réalité, Mémoire, Fac. Droit, UCB, 2017-2018.

Critères d'occupation des bambous-pièges par les mâchoirons du genre *Chrysichthys* Bleeker, 1858 pour leur reproduction dans la lagune Aghien (Côte d'Ivoire)

OUATTARA Nahoua Issa
BERTE Siaka
KAMAGATE Bakagnan

Affiliations : [1] Université Félix HOUPHOUET-BOIGNY, Abidjan, (Côte d'Ivoire) / UFR Biosciences / Laboratoire des Milieux Naturels et de Conservation de la Biodiversité / Unité Pédagogiques et de Recherche en Hydrobiologie et d'Eco-technologie des Eaux

Contexte : Dans le milieu naturel, les mâchoirons du genre *Chrysichthys* sont connus pour se reproduire dans les anfractuosités. Ce qui explique que les bambous-pièges utilisés par les pêcheurs soient si efficaces pour capturer les couples en périodes de reproduction.

Objectif général : La présente étude a donc été initiée pour établir la relation entre la taille des couples et le diamètre des bambous-pièges en vue d'utiliser cette préférence pour la production de juvéniles *Chrysichthys* en milieu contrôlé.

Matériel et Méthodes : Cent-trente (130) bambous-pièges de fabrication locale de longueur 1,20 – 1,30 m et de diamètre 45 – 70 mm ont été mis à l'eau et visités tous les 14 jours pendant 02 mois.

Résultats : Au total, 222 spécimens de *Chrysichthys* ont été capturés. Les résultats montrent qu'il n'y a pas de relation ($p > 0,05$) entre la longueur standard des poissons capturés et le diamètre des bambous-pièges. Toutefois, quelle que soit l'espèce, les couples de *Chrysichthys* préfèrent à 69,34 % les bambous-pièges de diamètres compris entre [50-60 mm[. Des couples composés de *C. nigrodigitatus* femelle et de *C. maurus* mâle ou vis-versa ont été observés dans certains bambous-pièges, ce qui laisse entrevoir des possibilités d'hybridation entre ces deux espèces. En somme, des bambous de longueur 1,20-1,30 m et de diamètre compris entre 50 et 60 mm pourraient être utilisés pour la reproduction en milieu contrôlé.

Mots clés : *Chrysichthys*, bambous-pièges, diamètre, lagune Aghien, Côte d'Ivoire

Effets de l'Anisotropie Hydrodynamique et du Champ Magnétique sur la Convection Thermosolutale dans une cavité poreuse

Faras ISSIAKO
Christian AKOWANOU
Macaire AGBOMAHENAN
Gérard DEGAN
Université Nationale des Sciences, Technologies, Ingénierie et Mathématiques (UNSTIM)/Abomey/Bénin

Résumé

On étudie analytiquement les effets de l'anisotropie en perméabilité et celui d'un champ magnétique transversal sur le transfert combiné de chaleur et de masse dans un milieu poreux confiné dans une cavité rectangulaire. Les parois horizontales de la cavité sont soumises à des flux uniformes de chaleur q′ et d'espèce j' tandis que les parois verticales sont considérées adiabatiques et imperméables. Les axes du tenseur de perméabilité sont orientés obliquement par rapport au champ gravitationnel. Sur la base d'une analyse d'échelle, les champs de vitesse, de température et les taux de transfert de chaleur et de masse ont été déterminés. Il ressort de cette étude que les paramètres d'anisotropie influencent grandement l'écoulement convectif. De même, l'application du champ magnétique transversal réduit significativement la vitesse de l'écoulement et affecte de ce fait le champ de température et les taux de transfert de chaleur et de masse.

Mots clés : Milieu poreux-Transfert de chaleur-Transfert de masse-Anisotropie -champ magnétique

Abstract

An analytical method is carried out to investigate both hydrodynamic anisotropy and magnetic field effects on the combined transfer of heat and mass in a rectangular cavity filled with a porous medium. The horizontal walls of the cavity are subjected to uniform heat fluxes q ′ and species j ' while the vertical one are considered adiabatic and impermeable. The porous medium is anisotropic in permeability with its principal axes oriented in a direction that is oblique to the gravity vector. Based on a scale analysis, the velocity, temperature, heat and mass transfer rates and fields were determined. It is found that the effects of anisotropic parameters on the heat and mass transfer are strongly significant. Also, temperature and velocity fields, rates of heat and mass transfer are significantly modified, when applying the transverse magnetic field.

Keywords: Porous Medium-Heat transfer-Mass Transfer-Anisotropy -Magnetic field

Seasonal variation in fish species diversity of a tropical wetland : The Tanoe-Ehy swamp forest (South-Eastern Côte d'Ivoire)

KONAN Yao Aristide
MONNEY Attoube Ida
KAMELAN Tanoh Marius
KONE Inza
Koné Tidiani
Université Félix Houphouët-Boigny, Côte d'Ivoire
Université Jean Lorougnon Guédé, Côte d'Ivoire
Centre Suisse de recherche scientifique, Côte d'Ivoire

Abstract

Although tropical wetlands are known to benefit to human populations, they are seriously threatened by many activities that have an impact on biodiversity. The Tanoe-Ehy swamp forest (TESF), located in south eastern Côte d'Ivoire and is a good example of such threatened habitat. This research aimed to evaluate the composition, the degree of dominance and constancy of fish species, along with diversity, and similarity indices in TESF. Environmental parameters were measured using a multiparameter, and fish were collected using gillnets and fyke nets during one year. The aquatic environment exhibited low values of depth (0.88 ± 0.41 m), dissolved oxygen (18.59 ± 8.44%) and pH (5.64 ± 0.44) during the dry periods compared to flooded periods and the differences were significant ($p<0.05$). Thirty-three species of fish belonging to 18 families were collected, among which the three species *Elops lacerta*, *Sarotherodon melanotheron*, *Neochelon falcipinnis* are estuarine and the other are freshwater species. Ten species were categorised as constant, twelve as accessory and eleven accidentals. The most abundant species *Clarias buettikoferi* (31.14%), *Thysochromis ansorgii* (20.33%), *Papyrocranus afer* (6.68%) and *Parachana obscura* (5.80%) are constant species. The specific richness varied significantly with seasons, from 12 and 33 species during the dry and rainy periods, respectively. The cluster analysis showed a similarity in species richness, abundance and diversity of flood and dry periods. Fish collected during dry periods are negatively correlated with depth, dissolved oxygen and pH. The ichthyofauna of TESF was predominantly composed by accessory and accidentel species and fish diversity increased significantly during the rainy season depending on environmental parameters. The TESF represents a migration area for several fish species to meet biological and physiological needs probably and deserved to be protected human pressure.

Key words: flooded, dry, season, abundance, estuarine, freshwater, accessory, accidental

LA CRISE DU MODELE POLITIQUE DANS L'ETAT EN AFRIQUE OCCIDENTALE FRANCOPHONE

BADJI Kpatchine Tinimbé
Université de Szeged, Szeged, Hongrie

Résumé
Si l'on s'en tient à la définition communement admise de l'Etat dans ses éléments constitutifs, il ne fait alors aucun doute que celui-ci soit connu des socétés africaines avant la conférence de Berlin (1884-1885) ou encore la décennie des indépendances. Contrairement donc à ce qu'affirment nombre d'écrits et dits sur l'Etat en Afrique. Alors il convient de les reconsidérer dans leurs approches pour comprendre que, ce qui est en cause dans ces théories de l'Etat en afrique ce n'est point l'Etat en tant qu'ordre politique, mais l'Etat en tant que système politique. Vu sous cet angle, notre article aborde la question de la crise de l'Etat en Afrique occidentale francophone comme une perpétuation des erreurs du colonialisme qui est à la base du modèle politique actuel dudit Etat. Une crise dont les origines remontent au fait colonial et son système politique importé. Mais dont il importe pour en sortir, de remonter le temps, d'examiner les fondements sociaux et politiques de l'Etat, et les influences culturelles et la normativité du nouvel ordre mondial, pour dégager un système de valeurs au fondement d'un système politique qui garantit la liberté de chacun et l'égalité de tous. Dans ce nouvel Etat démocratique, l'intégration sociale et culturelle des communautés permettrait la stabilité politique nécéssaire au développement.

Keywords: Etat, Afrique occidentale francophone, colonialisme, système politique, liberté, égalité, développement

Introduction

La deuxième guerre mondiale en affaiblissant les puissances coloniales a stimulé dans les territoires coloniaux d'Afrique une lutte de libération de laquelle vont naitre les Etats dit modernes ; comparaison faite des sociétés précoloniales dites traditionnelles. Mais l'Etat moderne en Afrique est loin d'incarné les attributs qui sont les siens. Construction inachevée et mal développement sont caractéristiques des fragilités induites. Le destin voilé à l'horizon par l'étendard de la liberté et la myopie des élites nouvelles, portes-flambeau des aspirations du peuple aux sentiments excités et à la raison éprouvée, aurait mener la communauté entière dans une caverne obscure, où la liberté luit comme un rayon de soleil, éclaireur mais inaccessible.
Une chose est plus ou moins certaine, l'ombre du colon plane encore, et en tant que telle la hantise de la violence d'Etat qui a remplacé l'oppression du colonisateur ; force à constater la surpuissance de l'Etat qui n'en est pourtant pas un, du moins pas encore accompli. Si la notion d'Etat fait encore cours aujourd'hui pour désigner les espaces politiques nationaux, la

théorie politique dans sa bonne foi n'a pas pu s'empêcher de constater l'échec de la construction nationale (P. Gonidec, 1995, p. 6-17). Pire la défaillance des systèmes politiques qui se portent en bourreaux pour les sujets qui les subissent et à qui ils dépouillent de leurs libertés, installe les inégalités, les cultive et les exploitent pour des fins partisanes et corporatistes (F. Thual, 1995, p.155)

L'Afrique occidentale francophone offre une curieuse expérience de son parcours, pas si différent des autres Etats d'Afrique, mais d'une histoire politique particulièrement inédites depuis les sociétés anciennes jusqu'à l'Etat moderne importé, encore indéfinissable comme communauté politique en dépit des attributs qui s'y attachent (Badie & Hermet, 2001, 207)
La décolonisation comme la marque de la rupture a ouvert la voie des incertitudes, et la marche en confiance vers une destination pourtant inconnue. Nombre sont les études politiques s'intéressant à l'Afrique, qui encore aujourd'hui exaltent la nostalgie d'un passé au présent postcolonial comme un éden souillé par l'aventure coloniale. Et si J. Cabot fait remarquer que "*La configuration actuelle de l'Afrique est le fruit d'une Europe conflictuelle*", ce n'est pas seulement pour relever les délimitations territoriales mais aussi le rapport au territoire en tant qu'espace politique et l'exercice de l'autorité.
Dans les nouveaux Etats dits modernes, hérités de la colonisation l'exercice de cette autorité a fait l'objet de délires et de controverses sociales, politiques et même du monde scientifique, qui se heurtent bien souvent à l'incomplétude des études qui tentent de cerner l'objet d'étude Etat moderne en Afrique de l'Ouest francophone.
Si la notion d'Etat peut servir à désigner les sociétés précoloniales en tant que communautés de destin, la contestation de l'Afrique sauvage et particulièrement féodale par son organisation sociale n'est pas que l'afrocrentrisme. Bien de communauté en Afrique précoloniale et Afrique de l'Ouest en présentaient toutes les caractériques (J. Lombard, 1967, p.10-31). Au souvenir du passé lointain l'Egypte a connu la toute première organisation étatique au monde.
Cependant le modèle de l'Etat hérité de la colonisation dans ses délimitations territoriales arbitraires (B. Badie, 1992), devenu le socle de la communauté politique à laquelle se pose en défi la construction d'un espace national viable et d'une collectivité de destin partagée. Sa structure politique et son parcours à ce jour soulève encore des questionnements auxquels, nous proposons de contribuer par notre analyse, modeste et synoptique, sans être exhaustive, à la variété de vue pour en cerner les enjeux.
Très clairement nous postulons pour la cause un problème du système politique qui tire son fondement de l'histoire politique de ces Etats, c'est sans perdre de vue la dynamique sociale elle-même, et l'influence du facteur externe qui forcent le comportement politique des acteurs et structures, le contexte sociale et culturel, mais aussi politique.
Pour une clarté épistémique, nous distinguons le système politique des notions voisines de régime politique et ou de système institutionnel qui concourent à la théorisation de l'Etat en science politique et en droit constitutionnel. Le système politique s'entend selon Georges HERMET comme "*un mode de représentation conceptuelle des interactions politiques et des institutions qui, dans un pays donné, déterminent les décisions auxquelles se soumettent la plupart des personnes ou entités collectives incluses dans ce pays ou ce cadre*."
En tant que mode d'organisation de l'Etat, il se rapport à l'ensemble organisé des institutions politiques, des acteurs politiques, des normes et des croyances politiques et des rapports politiques. On comprend alors que la notion de système politique est bien plus large que celle de régime politique qui se rapporte à la concentration du pouvoir, aux relations entre pouvoirs

institués et aux modalités de légitimation du pouvoir. Ce qui impliquerait alors de voir dans les crises qui affectent les sociétés de l'Afrique de l'Ouest une question de gouvernementalité et de contrôle de pouvoir d'Etat. Or, les manifestations des crises dans les Etats modernes en Afrique de l'Ouest dépassent de loin la sphère politique et publique et se constate même à des niveaux plus bas, or structure institutionnel défini par les normes fondamentales des républiques ouest africaines. En ce sens la distinction se mesure au degré d'emprise politique (F Coulon,1972, p 1049-1073).

En vrai, tout par du politique et revient à lui comme dans un cercle fermé. Mais c'est son emprise sur le territoire national et les structures sociales qui détermine la stabilité de l'Etat. La prééminence du phénomène politique parmi les facteurs qui influent sur la dynamique de la construction de l'Etat moderne ainsi qu'il en ressort dans la littérature sur la crise de l'Etat en Afrique est de la nature même de l'Etat importé qui se démarque ainsi de la culture traditionnelle dans les sociétés précoloniales. Par ailleurs, l'indétermination du projet politique national et l'échec de l'inculturation semble aliéner les enchantements de liberté acquise au prix de sacrifices peut-on dire, mais trahi par la forme concessionnaire des indépendances.

La typologie des crises dans les Etats modernes en Afrique de l'Ouest francophone confirmera cette hypothèse tout autant que les contradictions du système politique bien plutôt que son incompatibilité défendue par certains. Partant d'une lecture autre des théories sur la construction de l'Etat moderne en Afrique de l'Ouest francophone, nous procédons d'une analyse des dynamiques sociales dans le rapport au territoire et à l'exercice du pouvoir pour déduire d'un dualisme du système qui traduit une certaine concurrence dans le rapport au pouvoir et au territoire. Laquelle concurrence quand elle souffre de l'ineffectivité du contrôle politique sur l'espace territoriale présage un déclin politique qui se manifeste dans des Etats comme le Mali. On peut à juste titre poser ici la question de la mort inconcevable de l'Etat, du moins politiquement. Même illusoire, cette question selon nous mériterait d'être posé dans d'autres études tout au moins. Au demeurant, la crise du système politique dont nous faisons mention résulterait moins de la dualité du système en elle-même, mais plus de la carence relationnelle entre système politique et société. Nous empruntons tant à la théorie du développement politique qu'à la théorie structuro-fonctionnaliste, car nous pensons comme Christian COULON (1972) qu'aucune des deux ne suffit à elle seule à cerner le sujet.

I. La typologie des conflits dans les Etats modernes en Afrique occidentale francophone

GUIPIE Gérard Eddie (2016) définit la crise comme le substantif galvaudé de la mutation lexicologique et ontologique du terme guerre. Pour lui, la fin de la guerre telle que le monde en connu dans le passé change de visage avec l'effondrement de l'Union Soviétique. La mutation dont il est question s'opère alors dans le contexte plutôt interne des nouveaux conflits qui affectent les Etats dans leur ordre interne. Si on peut à juste titre convenir avec lui de ce que la guerre qui oppose deux Etats soit de plus en plus rare dans le nouvel ordre mondial, il n'est pas pour autant aussi aisé de circonscrire territorialement les conflits qui affectent aujourd'hui les Etats. Aussi bien par leurs effets, leur dimension que leurs acteurs quoiqu'infra étatiques.

Dans le contexte purement ouest africains, ces crises, ont à travers le temps pris diverses formes au malheur des populations qui souffre le martyr des dirigeants autocrates-dictateurs et la persécution des groupes armés défiant l'autorité de l'Etat et l'ordre politique établi. La typologie des crises qui affectent les Etats modernes d'Afrique de l'Ouest francophone épouse

donc cette double logique de contraintes opposées aux populations (. La difficulté de spécification de ces crises nous pousse à les envisager sous la double réplication de la crise de l'Etat et de la crise dans l'Etat.

Celles-ci remontent, pour l'Etat moderne en Afrique, à ses origines dans l'opposition entre panafricanisme fédératif et panafricanisme associatif qui a opposé au départ de l'aventure de construction des sociétés étatiques sous le label westphalien, les leaders indépendantistes à la tête des nouveaux Etats. La complexité de la question de l'intangibilité des frontières admise comme acquis, s'en trouvait dès ce départ alors estropier de la caractéristique essentielle, facteur de stabilité et promotrice d'un état de développement sociale et économique : l'unité nationale. Mais, il serait trop réducteur de ne voir que les divisions sociales, et laisser de côté l'appareil de l'Etat lui-même. En effet, un Etat ne fonction que par l'appareil administratif qui en assure les fonctions. Or dans les nouveaux Etats, le seul corps organisé au moment de leur accession à l'autodétermination semble n'être autre que le même qui a servi de canal à l'oppression du colon: l'armée. Bien que celle-ci n'en soit véritablement une, car limitée à quelques hommes, formées à l'imposition de la contrainte légitime, et moins à la défense du territoire. D'ailleurs Dominique Bangoura (1996) le souligne si bien

> *"l'armée postcoloniale n'est pas une armée nationale. Non seulement elle ne revêt pas les traits d'une armée au sens classique du terme, mais de plus et surtout, elle ne reflète pas la société. Toute armée normalement constituée se conçoit comme une organisation d'hommes élaborée conjointement à un système d'armes en vue d'assurer la défense de l'intégrité territoriale, des institutions librement choisies ainsi que la vie et la survie des populations. Or, cette simple évocation du rôle spécifique de l'armée est à elle seule sujette à caution en Afrique"*

Elle ne manque cependant pas à s'absoudre dans l'arène politique dans laquelle, par sa manière forte de persuasion et de violence physique elle s'impose par ses hommes qui se réclament providentiels, forçant l'unité nationale par le bannissement du pluralisme politique, prétextant de la politique comme davantage facteur de division sociale contre l'objectif d'intégration nationale qui devrait permettre de forger une communauté politique (Kipré 2005). Alors même que cette armée était fortement imbu de tribalité comme d'ailleurs il en est encore question aujourd'hui dans certains Etats comme le Togo, cette incursion des officiers en armes dans la sphère politique, à la charge de l'exercice du pouvoir qui touche la quasi-totalité des Etats de notre sphère d'étude, à l'exception du Sénégal. Au total, pas moins de 24 coups d'Etat depuis les indépendances sont dénombrés. Caractéristique fondamentale à prendre en considération dans l'analyse politique des Etats postcoloniaux en Afrique, notamment dans le rapport à la structure politique institutionnelle de ces Etats, plonger dans le cercle vicieux de crises et conflits, cela va sans dire que Fustel de Coulanges a vu juste d'affirmer que "L'état social et politique d'une nation est toujours en rapport avec la nature et la composition de ses armées." Par ailleurs, la deuxième vague de démocratisation n'aura au bilan fait qu'accentuer à la fragilité du système institutionnel, une fragilité de l'ordre social de plus en plus révenditif et exigeant face aux pouvoirs politiques de plus en plus illégitimes et contestés, incapables de satisfaire les besoins sociaux de leurs citoyens et à qui le contrôle du territoire national échappe.

İci se cristallise alors les crises multiples dans les Etats qui ne souffrent plus seulement de la défaillance de l'appareil institutionnel mais aussi de la complexification de la situation de crise de développement économique qui rend de plus bel impopulaires les régimes militaro-civils. On peut à ce titre relever que les premières révoltes se manifestent sous l'argument

d'émeutes contre la faim en Haute Volta en 1966 (Guipié 2016). La fragmentation de la société nationale accentue l'ethnocentrisme et les replis identitaires qui marquent à suffisance l'état de délitement de la situation politique et sociale inadéquatement au processus de développement. Pire encore, la sectarisation qui semblait peiner à prendre corps se formalise de plus en plus en groupe d'autodétermination et de revendications territoriales, prenant appui sur ce qu'il y a de plus noble à fédérer une communauté mais aussi à la diviser : la religion. Ainsi qu'il en ressort chez nombre de politistes et spécialistes de la politique en Afrique subsaharienne (McCormack, 2005, p.12)

> "*L'idéologie wahhabite et l'injection massive d'argent saoudien sont en train de transformer rapidement l'islam subsaharien d'inspiration soufie, jadis syncrétique et pacifique, en un islamisme militant. […] Les nombreux groupes islamistes en arrivent à voir les désaccords qui existent entre eux comme moins menaçants que la montée de l'opposition à l'islam politique chez les non musulmans et les forces politiques du sud. L'impératif de l'unité des musulmans semble donc l'emporter sur les controverses doctrinales".*

Cette nouvelle forme de crise, qui n'en est vraiment pas une puisqu'antérieur à la colonisation européenne, vient assombrir encore plus l'horizon déjà orageux des cycles électoraux conflictogènes. L'erreur fréquente dans la lecture discursive de ces nouveaux conflits est l'amalgame syntaxique ou axiologique entre terrorisme et djihadisme. Sans plus de profondeur d'analyse de ces termes, leur simple définition permet de lever l'équivoque et la confusion qui participe à la cristallisation de la situation belliqueuse imposée par les nébuleuses qui en font cause de légitimité de leur lutte contre les pouvoirs publics établis défaillants.

Quoique le terme renvoie à une qualification subjective et donc discutable sur le fond, il est d'évidence quasi unanime que le terrorisme est *"un mode opératoire qui consiste à user d'une violence extrême et indifférenciée afin d'attendre un but politique" (*McCormack, 2005, p.12). A l'opposé, nous le savons maintenant avec Tariq Ramadan (2004), le djihad consiste en l'effort et la lutte personnelle du croyant pour se parfaire ; et ne saurait alors convenir à l'exaltation de la violence agressive que drainent les terroristes prenant pour mobile et finalité l'Islam. Par contre le takfirisme pourrait bien convenir pour caractériser l'idéologie qui anime les terroristes en ce sens que cela renvoie à une croyance qui

> *"repose sur la conviction que l'affaiblissement de l'Oumma (la communauté des croyants) est le résultat de déviations des musulmans eux-mêmes, de leur éloignement de la religion. Tout musulman non pratiquant serait un infidèle. Ceux qui adhèrent à cette doctrine sont appelés à quitter les sociétés musulmanes existantes, à former des communautés autonomes et à faire la guerre aux musulmans infidèles*."

Au demeurant, la fragilité de l'Etat, facteurs et conséquences de ces crises multifacettes ne sont pas que la résultante d'un processus de construction de l'Etat à partir du modèle imposé de l'ordre colonial dans une société encore fortement attachée à ses normes et institutions traditionnelles.

II. Le dualisme du système politique dans l'Etat moderne en Afrique de l'Ouest

C'est de loin l'une des toutes premières illustrations de la crise de l'Etat qui apparait dans les études politiques sur les Etats postcoloniaux en Afrique. Les raisons qui le justifient sont d'une accointance telle que celles-ci sont la clé pour comprendre le fonctionnement de la société africaine encore en marge du développement politique mais aussi économique et ce malgré les proclamations constitutionnelles de la forme républicaine de l'Etat, des valeurs de

la démocratie et la consécration des institutions modernes. En effet, on découvre en observant le jeu politique en Afrique de l'Ouest, et d'ailleurs le constat est bien valable pour la plupart des pays africains, que les institutions de l'Etat moderne souffrent à bien des égard d'une légitimité effective. Le concubinage avec les institutions traditionnelles ne forme pas un couple harmonieux encore moins heureux ; la logique du pouvoir s'interprétant différemment (comp. Coulon, 1972). Ceci force à voire alors des institutions modernes totalement formalistes animées par des normes purement traditionnelle, empreintes de tribalisme et d'aristocratie clanique.

Le système de l'Etat moderne est fortement marqué par le la centralité du pouvoir politique. Il est vrai que cela revient dans la plupart des écrits sur la société précoloniale de l'Afrique que le roi y exerçait un pouvoir absolu de type despotique. Néanmoins, cela mérite modération. Car de toute évidence et par la stratification même de la société, on constate plutôt un système que ressemble plus à la féodalité et un pouvoir collégial plutôt que l'image du souverain despote qui est parfois présentée. De ce fait on comprend très parfaitement alors, le problème que pose la dualité du système politique dans l'Etat moderne en Afrique de l'Ouest francophone (D. Bach, 2013, p. 153-169), où pendant des siècles d'histoire humaine, se sont succédées plusieurs formes de communautés humaines. C'est peut-être à notre avis là qu'il convient de relever l'incompatibilité de l'ordre étatique nouveau à l'habitus commun des sociétés traditionnelles. La nouvelle logique du pouvoir politique qui cherche à soumettre les pouvoirs politiques infraétattiques, se confronte à l'inacceptation de la subordination. Et même lorsqu'elle semble être acceptée, elle manque d'effectivité. Dans la réalité l'autorité du chef local est plus respectée que celle du pouvoir central de l'Etat; lequel conçoit son autorité dans l'ordre hiérarchique propre à l'Etat jacobin. Ainsi face à l'ordre politique de pouvoir hiérarchisé, centraliste et concentrateur du pouvoir, dont le problème de la légitimité s'était déjà posée dans la période coloniale, s'entretient une autre logique de pouvoir et d'exercice de l'autorité plus commode pour le citoyen qui s'y épanoui bien mieux. Cette logique est celle de l'horizontalité et des structures de pouvoir de forme pyramidale qui fonctionnent sur la base d'une coexistence de plusieurs centres de pouvoirs périphériques relativement autonomes gravitant autour d'une souveraineté reconnue par tous (Coulon, 1972). Ceci est plus remarquable dans la mesure où

> *"L'État moderne, qui s'est affirmé en tant qu'unique pouvoir souverain et a ainsi, sans aucun doute, fidèlement reflété la nouvelle structure sociale, s'est rapidement montré parfaitement incapable de réguler les groupements sociaux, ne parvenant pas même à reconnaître l'existence de ces groupements pourtant nécessaires dans toute société ayant atteint un niveau élevé de développement. On comprend alors que la vie sociale, qui n'est jamais dominée par les règles juridiques, ait continué à évoluer seule, jusqu'à entrer en contradiction avec un système inadapté, accentuant peut-être au-delà du nécessaire, comme cela arrive souvent, le conflit entre la vie sociale et le système institutionnel."* (S. Romano, 2015, http://juspoliticum.com/numero/peut-on-penser-juridiquement-l-empire-comme-forme-politique-64.html)

Cette dualité de système en manque de dialogue est entretenu par les clivages qui se lisent dans les formes et compositions des institutions modernes en une sorte de différentiation sociale subjective.

Nous entendons alors évoquer la question fondamentale de la gouvernance dans son acception la plus large qui inclut à la fois les institutions, leur mode de fonctionnement notamment des

services publics et le rapport avec l'individu citoyen. Dans cette logique il s'agit donc de considérer

> "*l'ensemble des processus de traitement et de délivrance de biens et services publics, par les appareils d'État officiels certes, mais aussi par d'autres opérateurs, tels que les institutions de développement, les mécènes ou le monde associatif, qui parfois suppléent l'État, parfois se substituent à lui, ou parfois le soutiennent par des « perfusions » sectorielles".* (Olivier de Sardan, 2004, p. 139-162)

La synthèse des analyses des différents doctrinaires se rejoignent sans équivoque. Et la réalité ne s'y démarque guère. La logique de prédation fait partie de l'héritage colonial. Les élites qui prennent place et fonction au départ du colon exercent un pouvoir qui fait sien tant de vices qui sapent la cohésion sociale et la dynamique constructiviste de la nation dans un Etat inachevé. Plusieurs caractéristiques se retrouvent dans tous les Etats de l'espace francophone ouest africains, et de loin aussi communs à une majorité des Etats. Alors même que certaines institutions fondamentales sont prévues par les constitutions, leur mise en place réelle fait défaut comme c'est le cas au Togo du Conseil économique et social ou encore du Sénat. Et dans certains cas où elles existent dans les faits, elles manquent d'une effectivité fonctionnelle, ou dominées par l'esprit partisan et le corporatisme. Il est évident et de constat général pour Olivier de Sardan (2004)

> *"qu'aucune administration n'est monolithique et que les fonctionnaires n'ont rien d'homogène dans leur profil comme dans leurs fonctions. Certains services accomplissent des tâches procédurales et d'autres délivrent des services techniques, certains appareils d'État ont surtout des rôles répressifs ou de contrôle, alors que d'autres mettent en œuvre des savoir-faire pédagogiques, thérapeutiques ou gestionnaires".*

Le problème dans les Etats postcoloniaux en Afrique de l'Ouest francophone est que ceci sert de point d'ancrage de la prédation et de la corruption, du clientélisme, du favoritisme, l'impunité. Des marqueurs qui crédibilisent la culture de l'individualité de nouvel ordre politique qui cherche à s'acculturer du communautarisme intrinsèque à la vie sociale des communautés africaines. La forte emprise du tribalisme dans la sphère administrative. La conséquence est que dans la plupart des Etats, nous observons une pléthorique de personnels avec une productivité médiocre ; une diffusion des valeurs traditionnelles au détriment du professionnalisme pratique et de la culture du résultat. Plusieurs sources de données peuvent en témoigner, notamment les masses salariales dans les budgets des Etats par rapport au ressources mobilisables.

Au-delà de toutes ces ambivalences qui caractérisent l'Etat en Afrique de l'Ouest francophone, l'on doit aussi relever la difficile conciliation de ces deux systèmes. L'inefficacité de l'Etat se mesure également dans son emprise sur la société.

III. Système politique et contrôle sociale

En évoquant la question de l'impasse dans laquelle se trouve aujourd'hui encore les politiques de construction de l'Etat-nation Pierre KIPRE fait constater que

> *"La configuration des relations de pouvoir issue de la colonisation, encore aiguisée par les péripéties de la « décolonisation », les idéologies du territoire associées, enfin l'articulation de la question des frontières avec la pratique économique et institutionnelle post-coloniale ont, en Afrique contemporaine, investi les frontières et*

les mécanismes d'identités collectives de significations que celles-ci n'avaient pas pour l'essentiel des populations".

Mais cet effort de contrôle sur la vie de la société reste encore ineffectif. L'indifférence à l'égard de l'individu citoyen, et le néo patrimonialisme emprunte comme voie de gouvernance la redistribution particulariste opérant comme un moyen de contrôle et de régulation politique en jouant sur l'art de la faveur. Ainsi on remarque que dans le style de gouvernance qui fait cours dans les Etats postcoloniaux l'art politique se joue du patronage et l'Etat devient un Etat clientéliste (Gazibo, 2001). Alors que les régimes sont en perte de légitimité et en proie aux contestations se joue de ce clientélisme surtout à l'endroit des élites et cadres intellectuels comme elle se le joue des processus électoraux par les faveurs et la philanthropie. Ceux-ci se complaisent en échange de postes dans l'appareil administratif de l'Etat, où il se trouve que la loyauté impose un silence complice. Il fonctionne alors bien de plus en plus comme un moyen d'intégrer une élite relativement restreinte que selon une logique de parti clientéliste de masse. Dans ce schéma, les liens politiques entre le citoyen et l'élite politique qui le représente sont dénaturés (A. Mbembé & C. Toulabor,1992). Aussi ces liens politiques les plus forts entre les élites politiques et les citoyens se fondent plutôt au travers des liens moins tangibles de l'identité ethnique. La question de l'ethnie est très fondamentale pour comprendre également la société africaine et son fonctionnement. Les institutions de l'Etat moderne sont toute édulcorées de celle-ci qui marque à suffisance les points de clivage socialement perceptibles par la composition des personnels administratifs des services publics (Médard, 1998, p.55-68). La domination d'une ethnie qui monopolise le pouvoir est exacerbée par un repli identitaire et une crise d'intégration qui se remarque dans les difficultés du pouvoir central à faire respecter ses normes et conventions dans l'au-delà des villes urbaines et quelques fois même au sein de ces villes qui sont relativement sous contrôle administratif grâce à l'appareil sécuritaire (Médard, 1990, p.25-36).

Ceci pose le problème de la maitrise de l'espace territoriale par le politique. La centralité du système politique de l'Etat moderne, a emprunté à la tradition jacobine, la place prépondérante du président de la république et les pouvoirs étendu dont jouit l'individu-institution dans le schéma de la patrimonialisation dont nous avons fait mention plus haut semble incompatible avec la coexistence des centres de pouvoirs périphériques qui ne sont pas prêt de disparaitre quoique manipulés aujourd'hui notamment dans les processus électoraux.

D'autre part l'opacité et la complexification du système politique moderne plus formaliste et institutionnaliste s'accompagne d'une rigidité des cadres institutionnels qui sont très peu perméable aux réalités sociales et donc caractérise la dualité du système tel qu'il ressort de l'analyse (B. Badie, 1992). Par ce fait on note une faible pénétration des valeurs et institutions moderne dans la société.

Références

BAYART Jean-François, MBEMBE Achille, TOULABOR Comi, Le politique par le bas en Afrique noire. Contributions à une problématique de la démocratie, Paris, Karthala, 1992.

B. Badie, L'État importé, Paris, Fayard, 1992.

Bach, D. (2013). Régimes politiques, pratiques systémiques et dynamiques de l'émergence dans les États africains et post-soviétiques. Revue internationale de politique comparée, 3(3), 153-169. https://doi.org/10.3917/ripc.203.0153

Coulon Christian. Système politique et société dans les États d'Afrique noire. In: Revue française de science politique, 22e année, n°5, 1972. pp. 1049-1073; doi : https://doi.org/10.3406/rfsp.1972.418948 https://www.persee.fr/doc/rfsp_0035-2950_1972_num_22_5_418948

J.-F. Médard, « La crise de l'État patrimonial et l'évolution de la corruption en Afrique subsaharienne », in J. Cartier-Bresson (dir.), Mondes en développement, 26 (102), 1998, p. 55-68.

J.-F. Médard, « L'État patrimonial », Politique africaine, n° 39, septembre 1990, p. 25-36.

Kipré, P. (2005). La crise de l'État-nation en Afrique de l'Ouest. Outre-Terre, 2(2), 19-32. https://doi.org/10.3917/oute.011.0019

Lombard, J. (1967). Pensée politique et démocratie dans l'Afrique noire traditionnelle. Présence Africaine, (63), nouvelle série, 10-31. Retrieved March 5, 2021, from http://www.jstor.org/stable/24348947

McCormack, « An African vortex : Islamism in Sub-Saharan Africa », Center for Security Policy Occasional Paper Series, n° 4, janvier 2005, p. 12

Olivier de Sardan, J. (2004). État, bureaucratie et gouvernance en Afrique de l'Ouest francophone: Un diagnostic empirique, une perspective historique. Politique africaine, 4(4), 139-162. https://doi.org/10.3917/polaf.096.0139

Ramadan, T. sous la direction de Lelièvre H. (2004). Reconnaître la légitimité de la foi et de la conviction de l'autre in Terrorisme : questions, p.116. 20

Santi Romano «L'État moderne et sa crise », Jus Politicum, n° 14 [http://juspoliticum.com/article/L-Etat-moderne-et-sa-crise-968.html

Shahzad Syed Saleem, « Une idéologie messianique, le Takfirisme » in Le Monde Diplomatique, juillet 2013, p.13. (https://www.monde-diplomatique.fr/2007/07/SHAHZAD/14907 consulté le 23 février à 1h13)

HUMAN SLAVERY DURING THE DUTCH COLONIAL PERIOD: INDONESIA AND SOUTH AFRICA EXPERIENCE.

Manotar Tampubolon
Christian University of Indonesia

Abstract
This study aims to compare human slavery in Indonesia and South Africa during Dutch colonialism. The Dutch experienced human slavery in the two colonized countries for quite a long time. This study looks to both traditional and modern models of human slavery. The authors compare human slavery in Indonesia with Slavery in South Africa, where both types of slavery were both carried out by the Dutch (colonialists), using the Forced Labor Model (Rodi) in Indonesia and the Slavery and Forced Labor Model in South Africa. The Petit concept inspires the author that slavery is essentially characterized by domination, not by actual interference: even if the slave's master proves entirely benign and permissive, he or she continues to dominate the slave. These models are consistent with the Dutch way of practicing slavery both in Indonesia and in South Africa. Following the two experiences in these two countries, the author discusses the international community's efforts by analyzing human rights legal instruments. This section emphasizes the need for greater international attention so that human slavery does not happen again.

Keywords: Human slavery, Indonesia; South Africa; Dutch colonization

The role of total quality management in improving the performance of human resources

Abdulhadi Masoud Alsanousi Aljadi
Mohammed Nusari
Lincoln University College, Kuala lumbur, Malaysia

Abstract

Total quality management has emerged and is concerned with developing the comprehensive aspects of organizations. This study aims to investigate the role of total quality management in improving the performance of human resources and the intermediate role of innovation performance. The analytical descriptive method used in this study, and the study population consists of all employees in the Libyan government departments, and a random sample of 300 study population was taken. The study was limited to the year 2018-2019. The questionnaire was adopted as the main tool for collecting data in the current study for quantitative analysis, the pilot study was conducted by distributing the questionnaire model to a sample of employees in the Libyan government departments who were randomly chosen so that the number of the pilot sample was (35) from the study community, .the statistical Packages Program (SPSS) were used to answer the study questions. The findings of hypotheses testing indicated that TQM has an effect on Innovation performance. The effects of innovation between TQM and human resource performance as a mediator had a role, where the strength of the influence of TQM on the human Resource Performance increased with the presence of the innovation performance. The study recommended enhancing the role of innovation performance in government departments in Libya and mainstreaming the role of innovation to all governmental institutions in Libya.

Chloroquine and hydroxychloroquine: Current evidence for their effectiveness in treating COVID-19

Hamza Khaliha
Ibrahim M Bendalla
Abdulfatah Saed
Samira Daw
Abdulhadi Masoud Alsanousi Aljadi
Higher Institute of Medical Technology - Bani Waleed

Abstract
COVID-19 virus infection is spreading quickly, and researchers are trying to find drugs for its proper treatment in the world. Chloroquine phosphate, an ancient drug for the treatment of malaria, appears to have a clear and safe biological viability against COVID-19 in a multi-center clinical scenario directed in China. The drug is prescribed for remembering in connection with the following presentation of the guidelines for the prevention, diagnosis and treatment of pneumonia due to COVID-19 presented by the National Health Committee of the People's Republic of China for treatment of COVID-19 in larger cases later.

IMPACT OF ANTHROPOGENIC ACTIVITIES ON FISH FAUNA OF THE BANDAMA RIVER ESTUARY (CÔTE D'IVOIRE)

Kamelan Tanoh Marius
Koné Touplé Sibiri
Yao Koffi Marcellin
Kouamelan Essetchi Paul
University Felix Houphouët-Boigny
Research Center of Oceanology, Abidjan, Côte d'Ivoire

Abstrat
The Bandama River is the only river entirely located in the territory of Côte d'Ivoire. Its lower course is connected to a lagoon complex in the peripheral area of Azagny National Park. This aquatic complex represents the hydrosystem of this protected area inscribed on the lists of Ramsar sites and Important Bird and Biodiversity Areas (IBAs). In addition, the Bandama River lower is a Key Biodiversity Area (KBA) according to International Union for Conservation Nature (IUCN). However, in spite of its special ecological status, the Bandama estuary is under strong anthropogenic pressure due to agricultural and mining activities carried out mainly upstream and in the peripheral area of the Bandama river. These threats inevitably cause water contamination with chemical pollution (heavy metals and pesticides). The aim of this work is to determine the level of heavy metal contamination of the waters of the Bandama estuary and to assess its impact on the fish fauna. To do this, three sampling sites were visited from March 2019 to February 2020. In each site, physico-chemical parameters were measured. The water, sediment and fish samples were collected for laboratory analysis. The collected data were statistically processed. The water variables showed a homogeneous level of salinity for all sites and a significant difference in electrical conductivity. The environmental indices (Igeo, EF) showed a manganese and mercury pollution of anthropogenic origin. The bioaccumulation index showed a high level of mercury and lead in the flesh of *Distichodus rostratus* and *Sarotherodon melanotheron*. An onset of ecological stress in the estuarine area was determined with negative allometric growth of some fish species of economic interest. These relevant results require a monitoring of the water quality of the Bandama estuary as well as a strong sensitization of the population on the use of phytosanitary products in the Bandama River watershed.

Keywords: Assessment, Heavy metals, water quality, fisherie, ecological risk

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THE EFFECT OF A DOUBLE SUBSTITUTION ON THE STRUCTURAL PROPERTIES OF THE $NiMn_2O_4$ SPINEL

Narjes A. Ben Brahim Aouani
Taif University, Taif, Kingdom of Saudi Arabia
Fatma Al Hadj Ibrahim
Al-Neelain University, Khartoum, Sudan
University of Tunis El Manar, Tunis, Tunisia

Abstract
Five samples of substituted $NiMn_2O_4$ by magnesium and iron have been synthesized by conventional ceramic route. The samples have been characterized by the X-ray diffraction and the refinement software Fullprof. The XRD profiles show that all samples crystallize in face centered cubic spinel structure. Very important physical and chemical properties of spinels depend closely on the crystalline parameters [1-2], the composition of samples and the nature of atomic dopant [3]. In order to control the physical and chemical properties of $NiMn_2O_4$, an adequate proportion of magnesium and iron will be added. For now, our study will be limited to the crystallographic parameters and physical properties will be soon published. After refinement, we obtained the lattice parameter in good agreement with published results for $NiMn_2O_4$ [5]. The cation distribution in tetrahedral and octahedral sites is determined and the effect of the addition of iron and magnesium is at the expense of the cation Mn^{3+}. The inversion parameter increases from 0.55 to 0.7 when the proportion of iron and magnesium increases from 0 to 0.5. The lattice and the oxygen parameters are used to evaluate the tetrahedral and octahedral average cation radius, hopping and bond lengths for all doping concentration x (0, 0.125, 0.25, 0.375 and 0.5). We find that the lattice parameter depends linearly on the concentration of dopants, the concentration of Mn^{2+} and the inversion parameter. Tolerance factor, packing coefficients in two sites, fulfillment factor and vacancy parameter are also evaluated.

Keywords: Nikel manganite – XRD - structural properties- magnesium and iron doping

ANTIBACTERIAL ACTIVITIES OF LACTIC ACID BACTERIA ON POTENTIAL MULTIDRUG- RESISTANT PATHOGENS ISOLATED FROM RABBIT

Checkfaith I. Aizebeoje
Temitope O. Lawal
Bolanle A. Adeniyi
University of Ibadan, Nigeria
University of Ibadan, Nigeria

Abstract

Rabbits are raised as food animal in Nigeria; and the possibility of transfer of infection(s) to humans cannot be ruled out. The overuse and abuse of antibiotics in treating zoonotic infections in humans and opportunistic infections in rabbit has contributed to the increase in antimicrobial drug resistance, therefore, an alternative to antibiotics is needed in treating these infections. The study was carried out to determine the antimicrobial activity of lactic acid bacteria (LAB) isolated from rabbit's faeces against multidrug-resistant (MDR) pathogens isolated from the same rabbit.

Twelve (12) faecal samples and twelve swabs from fur samples were randomly collected aseptically from apparently healthy rabbits from Ajibode, Ibadan and University of Ibadan research farm in Ibadan, Oyo state, Nigeria. Lactic acid bacteria and multidrug-resistant pathogens were isolated using appropriate agar media and identified by partial sequencing of the 16SrRNA gene. Antibiotic susceptibility pattern of isolated bacteria and LAB were determined by the agar diffusion method. The antibacterial activity of the LAB against the test pathogens was determined using the agar overlay and agar diffusion methods.

The pathogens *Myroides gitamensis, Citrobacter rodentium, Acinetobacter johnsonii, Enterobacter oryzendophyticus* and *Serratia marcescens* as well as twenty-eight (28) species of LAB belonging to Acetobacter and Lactobacillus genera were identified and characterized. *Lactobacillus plantarum* had the highest (60.71%) occurrence of the LAB. Viable cells and cell free supernatant (CFS) of isolated LAB inhibited the growth of the test organisms with the largest zone of inhibition (40 mm) produced by *Lactobacillus plantarum* against *Citrobacter rodentium.*

This study showed that LAB from rabbit possess considerable antibacterial activity against multidrug-resistant bacteria from the same environment. Thus, lactic acid bacteria can be suitable alternatives to antibiotics without the fear of transferring and/or development of resistance in human.

Keywords: Rabbits' faeces; Lactic acid bacteria; Cell-free supernatant; Multidrug-resistant pathogens; Antibacterial activities

Novel Sm +3 activated NaCdPO4 phosphors for red emitting material

Marwa Enneffati
Mohammed Rasheed
BassemLouati
Kamel Guidara
Régis Barillé
University of Sfax, Sfax-Tunisia
Taif University, Saudi Arabia
MOLTECH-Anjou, photonics Laboratory, Angers University, France
University of Technology, Baghdad, Iraq

Abstract
In the present work, we chose as a luminescent host, the $NaCdPO_4$ which has a space group of Pmnb and a lattice parameter varying with concentration of sammarium. Sm3+ -activated NaCdPO4 phosphors were successfully prepared by conventional solid-solid technique. The structure is determined by X-ray (XRD) and confirmed EDX. The morphology is observed using SEM. The CIE chromaticity coordinates of the obtained phosphors suggest that can be used as red-emitting phosphor for white LEDs applications.

Keywords: Luminescence, , Sammaruim,$NaCdPO_4$, w-LEDs, CIE

Investigating the influence of crease resistant finishing of cotton fabric on its color shades and other physical properties

Tehmina iqbal
Dr. **Assad Farooq**
Zafar iqbal
University Of Agriculture Faisalabad

Abstract
In Pakistan cotton is used extensively for apparel purpose. But one of the drawbacks associated with cotton fibre is its low elasticity and low resiliency which creates wrinkles. Most reliable method to introduce the wrinkle resistance into cotton fabrics is, through finishing. Finishes are applied on yarn or fabric to improve the appearance, performance, or feel of the finished textile or clothing. Wrinkle resistant finish is applied on various textile products to make them wrinkle free. Crease resistant finish influenced the color shades and other properties of dyed finished fabric. Therefore, the present research work was planned to investigate the effect of crease-resistant finish on physical & color related properties of cotton finished fabric. Results showed that application of crease-resistant finish improved the crease recovery angle of dyed finished fabric. Crease resistant finish has significant effect on shades of colors and high concentration of crease-resistant finish also affected the strength of fabric.

Phase relationships in the Gd-Fe-Cr ternary system at 1073K

Mosbah Jemmali
Marwa Saidi
Siwar Walha
Lotfi Bessais
University of Sfax, Faculty of Science, Sfax, Tunisia
University Paris Est Creteil, Thiais, France
College of Science and Arts, Ar-rass, Qassim University, Saudi Arabia

Abstract

In order to understand the intrinsic properties of intermetallic phases and the relationship between structure and physical properties, we have focused our efforts on the study of iron-based ternary phase diagram: Gd-Fe-Cr. Within this system, an exploratory study was carried out in order to identify and characterize all the phases.

The isothermal section of the Gd-Fe-Cr system at 1073 K was constructed by X-ray powder diffraction (XRD) and scanning electron microscopy (SEM) with energy dispersive spectroscopy (EDS) in this work. It consists of eight single-phase regions, eight two-phase regions and seven three-phase regions. The binary compounds $GdFe_2$, $GdFe_3$, Gd_2Fe_{17}, α(FeCr) and the ternary compound $GdFe_{10}Cr_2$ were confirmed. Conversely, the binary compound Gd_6Fe_{23} was unstable at the level of 1073 K. We have shown that the substitution of iron by chromium stabilized the $ThMn_{12}$ type structure in a small domain of the intermediate solid solution Gd (FeCr) $_{12}$. The compound $GdFe_{12-x}Cr_x$ with the $ThMn_{12}$-type structure (space group I4/mmm) has a broad solubility ranging from 15.4 to 23.1 at. % Cr. After identifying areas of equilibrium near this extension, we succeeded in constructing a partial isothermal section of the Gd-Fe-Gr diagram stable at 1073 K (Figure 1). We will study the influence of chromium on the structural properties of the $GdFe_{2-x}Cr_x$ and $Gd_2Fe_{17-x}Cr_x$ extensions. This study has enabled the determination of three solid solutions, and the characterization of divers equilibrium areas. All binary phases of the Gd-Fe binary system extended into the ternary, except $GdFe_3$. The maximum solid solubilities of Cr in $GdFe_2$ and Gd_2Fe_{17} were about 11.7 and 13.2 at. % Cr, respectively.

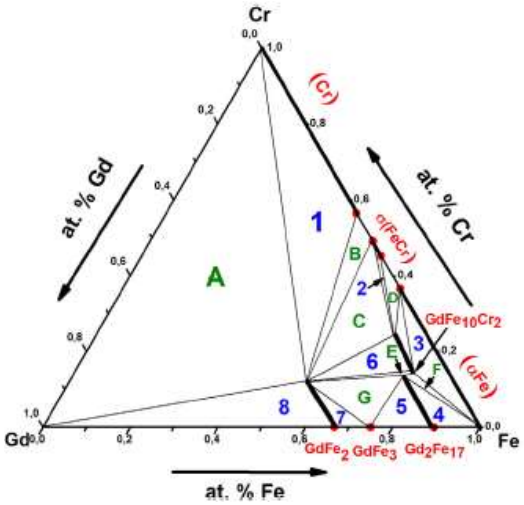

Fig.1. Isothermal section at 1073 K of the Gd-Fe-Cr phase diagram.

Keywords: Intermetallic, Phase diagram, Rare earth

Genetic advance, heterosis and heritability estimation in maize hybrids, Iwo, Nigeria

Ishola V. Esan
OluwafemiOyeniyi Omilan
Bowen University, Iwo, Nigeria
Oregon State University, USA

Abstract
Genetic variation, generally considered a key component in broadening gene pools in any given crop population, is critical to the success of yield improvement programs. Therefore, the objectives of this study were to evaluate hybrid efficiency compared to white and yellow parents and to estimate genetic variability and herterosis between hybrids and parental lines. Two parental maize varieties and 2 hybrids were evaluated at the Teaching and Research farm, Bowen University, Iwo Nigeria. The experiment was laid out in complete randomized block design with four blocks. Genetic parameters of established parental lines and hybrids were measured. The findings indicate that for the characters analyzed, substantial variations were found ($p< 0.05$). The highest number of rows per cob was recorded in hybrid1 (12.38), while the lowest number was recorded in white. Compared to their parental lines, the longest cobs were recorded in hybrid1 (16.63cm) and hybrid2 (16.50cm). In comparison with their parents, the widest cob was observed in hybrid1 (75cm) and followed by hybrid2 (70.63cm). The grain yield MPH ranged from 14.73 to 44.54 percent, from 14.1 to 43.95 percent for BPH. The two hybrids developed from the crossing between yellow and white, and between white and yellow showed higher performance than the parents. Hybrid 1 reported the highest rate of MPH and BPH. Hybrid1 and Hybrid2 recorded the highest plant height, yields and yield components over their parents.

Key words: Hybrids, Maize, heterosis, performance, genetic advance, phenotypic variance, genotypic variance and heritability

Construction of a novel Z-scheme F/AP@Sep nanocomposite heterojunction with a superb enhanced visible-light photocatalytic activity toward hazardous dye

Redouane Haounati
Hassan Ouachtak
Diogo M. F. Santos
Abdelaziz AIT ADDI
Ibn Zohr University, BP 806 Dakhla, Agadir, Morocco
Universidade de Lisboa, 1049-001 Lisbon, Portugal

Abstract
F/AP@Sep was successfully synthesized by co-precipitation method. The nanocomposite was characterized by X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM), and energy dispersive X-rayon spectroscopy (EDS), and then used for the photocatalytic degradation of Malachite green and Rhodamine B dye under simulated solar irradiation in aqueous solution. The enhanced photocatalytic activity and stability were achieved. The effects of some operating parameters, such as solution pH, catalyst dosage, initial dye concentration, H_2O_2 concentration were also investigated. The nanocomposite was found to be highly efficient and reusable photocatalyst for the dyes degradation.

Keywords: nanocomposite; degradation; photocatalyst; Malachite green; Rhodamine B

Le régime congolais de propriété foncière : un mal développement pour le peuple congolais ?

KALUMUNA BASIMANE Steeve
Université Catholique de Bukavu (UCB) en République Démocratique du Congo (RDC)

Abstract
Dans nombre d'Etats africains, les législateurs restreignent le droit de propriété dans le but de réaliser le développement. Or, dans les faits, ce développement ne suit toujours pas. A l'instar du Bénin, de la Tanzanie, de l'Ethiopie et du Nigeria, la République Démocratique du Congo (ci-après RDC) opte pour une approche restrictive de la propriété. En matière foncière, la propriété exclusive de l'Etat est consacrée. Il résulte de l'article 53 de la loi foncière congolaise de 1973 que « le sol constitue une propriété exclusive, inaliénable et imprescriptible de l'Etat congolais ». Cette même conception de la propriété est réaffirmée dans les secteurs forestiers, minier et agricole. Ceci étant, les particuliers se voient accorder des droits de jouissance foncière dénommés « concessions foncières ». Celles-ci n'emportent que l'usage et la jouissance du fonds et précarisent, par ricochet, les droits fonciers des particuliers. Car, les concessions perpétuelles octroyées aux Congolais peuvent leur être retirées dans les conditions que le législateur détermine. En revanche, les concessions ordinaires auxquelles peuvent prétendre les étrangers sont limitées dans le temps (à 25 ans renouvelables). Ces considérations soulèvent un questionnement. Il s'agit d'une part de la conformité de cette appropriation du sol par l'Etat au droit de propriété et d'autre part de l'incidence de ce cadre normatif sur le développement économique du pays. Avec un indice de développement humain qui s'établit à 0.459, qui place la RDC dans la catégorie « développement humain faible », le développement est un besoin pressant pour les Congolais. A cet effet, les investissements non seulement nationaux mais aussi et surtout étrangers sont une voie indéniable pour y parvenir. Certes, les investisseurs sont principalement attirés par les opportunités d'investissement qu'il y a sur le territoire d'un État. Toutefois, leur implantation est subordonnée à d'autres facteurs dont le contexte politique et juridique, en plus des avantages spéciaux. Ainsi, le problème posé par la législation foncière congolaise quant au droit d'accès à la terre des particuliers congolais et étrangers, peut être un frein à l'attractivité économique de la RDC et paralyser son développement.

INTRODUCTION GÉNÉRALE

Les droits humains sont des prérogatives inhérentes à la personne humaine. A côté des droits civils et politiques, rattachés à la qualité des citoyens, sont également garantis les droits

économiques et sociaux, considérés comme des créances des pouvoirs publics et établies au profit d'un individu[1].

En effet, la reconnaissance et la protection internationale des droits humains en matière économique et sociale, en plus de garantir des droits, s'inscrit dans la dynamique de la mondialisation dont la protection des droits humains constitue un pilier essentiel[2]. Ainsi, outre la protection de la personne humaine, les droits humains visent également un intérêt d'ordre socio-économique. Les droits économiques et sociaux visent donc à assurer la prospérité individuelle des citoyens, réduire les inégalités sociales[3] et partant à provoquer le développement des États.

Parmi les droits économiques et sociaux les plus importants, l'on retrouve la propriété que l'on peut entendre comme étant le droit d'user, de jouir et de disposer d'une chose[4].

Au nombre des types de propriété, celle foncière fait depuis toujours l'objet d'un intérêt économique et juridique particulier[5].

Nonobstant le fait qu'il ne soit pas repris dans les deux Pactes de 1966(le Pacte international relatif aux droits civils et politiques ainsi que celui relatif aux droits économiques, sociaux et culturels),le droit de propriété fait l'objet de reconnaissance et de protection dans de nombreux instruments juridiques internationaux[6] auxquels la République Démocratique du Congo(ci-après RDC) est partie. Ainsi, la Déclaration universelle des droits de l'homme prévoit que toute personne a droit à la propriété aussi bien individuelle que collective[7]. Elle stipule par la suite que nul ne peut être privé injustement de sa propriété[8]. La Charte africaine des droits de l'homme et des peuples prévoit également que la propriété est garantie et que seules les conditions de l'intérêt général ou la nécessité publique de la collectivité permettent qu'il y soit porté atteinte[9].

C'est dans le même sens que le Constituant congolais du 18 février 2006 abonde. Pour marquer son attachement à la question des droits humains et du droit de propriété, le Constituant opte pour la stratégie de la constitutionnalisation[10] du droit de propriété en

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[1] Diane ROMAN, « L'opposabilité des droits sociaux », in *Informations sociales,* 2013, no 179, p.33.
[2] Voir Woyo KONATE, *Universalité des droits de l'homme et mondialisation,* Thèse de Doctorat, Université de Montpellier 3,2011, Inédit, p.3.
[3] Diane ROMAN, *op.cit.*, p.33.
[4] Art 14 de la loi ° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.
[5] Dieter GOSEWINKEL, « Introduction. Histoire et fonctions de la propriété », *Revue d'histoire moderne et contemporaine,* 2014/1, no 61-1, p.7.
[6] A côté des instruments juridiques auxquels la RDC est partie, l'on retrouve également la protection du droit de propriété dans d'autres instruments juridiques. L'on peut à titre illustratif faire mention de la Convention européenne des droits de l'homme (Art 1 du protocole additionnel1à la Convention européenne des droits de l'homme).
[7] Art.17, al.1er de la Déclaration universelle des droits de l'homme du 10 décembre 1948.
[8] *Ibidem,* al.2.
[9] Art 14 de la Charte africaine des droits de l'homme et des peuples de 1981.
[10] La constitutionnalisation des droits de l'homme est une technique par laquelle le constituant marque la supériorité ou encore le caractère fondamental de ceux-ci. Dans la hiérarchie des normes, la

l'érigeant en droit sacré que l'Etat garantit[11]. Bien plus, il dispose qu'excepté l'hypothèse de l'expropriation pour cause d'utilité publique et moyennant une indemnité juste et équitable, nul ne peut être privé de sa propriété[12].

Cependant, en fixant les modalités d'exercice du droit de propriété en matière foncière, la législation congolaise prévoit que « le sol est la propriété exclusive, inaliénable, et imprescriptible de l'Etat »[13]. Ce droit implique que ne peuvent cohabiter sur le même sol, le droit de propriété de l'Etat et un autre droit de même nature[14].Aussi, la jurisprudence de la Cour Suprême de Justice l'a affirmé en jugeant une décision judiciaire attaquée en cassation et qui reconnaît la propriété d'un fonds à un particulier d'illégale dans la mesure où, avec l'adoption de la loi foncière ci-haut évoquée, la propriété foncière appartient à seul l'Etat[15].

Conséquemment, la propriété du sol étant exclusive à l'Etat congolais, il a été institué des régimes des concessions qui sont des droits de jouissance foncière au profit des particuliers. Ce sont les concessions perpétuelles et ordinaires. Les premières sont uniquement réservées aux personnes physiques congolaises qui peuvent en jouir indéfiniment dans les conditions de la loi.[16] En revanche, les concessions ordinaires peuvent être accordées aux personnes physiques ou morales congolaises ou étrangères et ont une durée de 25 ans renouvelables. Il s'agit de l'emphytéose, la superficie, l'usufruit, la location et l'usage.[17] Ces droits sont précaires[18]en ce qu'ils n'offrent pas suffisamment de sécurité juridique à l'instar de la propriété[19]et ne confèrent à leurs titulaires aucun droit sur les ressources du sous-sol qui reviennent aussi à l'Etat[20].

Ce travail porte sur deux points essentiels. Le premier va examiner la conformité du régime congolais de la propriété foncière aux instruments juridiques de protection des droits humains. Le second va traiter de l'incidence de cette réglementation sur l'attractivité de la République

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constitutionnalisation d'un droit implique donc que l'ensemble des normes inférieures, en vertu du contrôle de constitutionnalité, lui soit conforme. (Voir Mame NDIAGE WADE, *L'accès au juge et la constitutionnalisation du droit,* Thèse de doctorat, Université d'Aix-Marseille, 2015, p.23 et s.)

[11] Art 34, al1er et 2 de la Constitution de la RDC du 18 février 2006 telle que modifiée et complétée par la loi no 11/002 du 20janvier 2011 portant révisions de certains articles de la Constitution du 18 février 2006, *J.O. RDC.,* 52ème année, no spécial, 5 février 2011.

[12] *Ibidem,* alinéa 4.

[13] *Ibidem,* art 53.

[14] Jean-Pierre KIFWABALA, *Droit Civil : les biens,* Tome 1, *Les droits réels fonciers,* PUL, Lubumbashi, 2004, p.172.

[15] Cour Suprême de Justice, RC 299 du 23 Juillet 1982, in *Bulletin des arrêts,* Kinshasa, 2001, p.315.

[16] Arts 80 à 108 de la loi n° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.

[17] *Ibidem,* arts 109 et suivants.

[18] Il ressort de l'Exposé des motifs de cette loi foncière que ces concessions non seulement qu'elles ne sont pas des droits de propriété mais aussi elles n'en constituent pas les démembrements. La propriété de l'Etat sur le fonds étant exclusive, elle ne peut faire objet des démembrements. Ces concessions perpétuelles et ordinaires sont donc des droits réels autonomes que l'Etat congolais reconnait aux particuliers à défaut de la propriété.

[19] La loi foncière détermine les conditions de cessation de l'exercice des concessions perpétuelles et ordinaires.

[20] Le code minier détermine les modalités d'exploitation des ressources minières par les particuliers en République Démocratique du Congo.

Démocratique du Congo dans le secteur des investissements en vue de la réalisation du droit du peuple congolais au développement.

I. DE LA CONFORMITE DU REGIME CONGOLAIS DE PROPRIETE FONCIERE AUX INSTRUMENTS JURIDIQUES DE PROTECTION DES DROITS HUMAINS

L'examen de la conformité du régime congolais de la propriété foncière aux instruments juridiques de protection des droits humains suppose la connaissance de l'appréhension qu'ont ces différents instruments juridiques par rapport à la portée du droit de propriété (A) avant d'en faire une démarcation avec la législation congolaise y afférente (B).

A. Le droit de propriété dans les instruments juridiques de protection des droits humains

Le droit de propriété est un droit contesté dans sa nature même : droit économique pour les uns (avec l'obligation pour les États de le réaliser), droit civil pour d'autres (avec l'obligation pour les États de le respecter et le protéger). Son caractère même de droit humain prête à discussion selon que l'on considère, ou non, que la propriété privée est essentielle à l'existence de l'individu. Le sort du droit de propriété dans le corpus international reflète cette incertitude.[21]

Sur le plan universel, le droit de propriété, après avoir été reconnu par la Déclaration universelle des droits de l'homme qui prévoit que toute personne a droit à la propriété aussi bien individuelle que collective [22]et que nul ne peut être privé injustement de sa propriété[23] ; ce droit ne figure pas dans la proclamation conventionnelle opérée par les deux Pactes de 1966.

Le Pacte international relatif aux droits civils et politiques, quoique ne reprenant pas le droit de propriété dans le catalogue des droits consacrés, peut toutefois conduire à la protection de ce droit. Telle a été la position du Comité des droits de l'homme à l'occasion de *l'affaire Blanco contre le Nicaragua*.

Dans sa décision, le Comité fait savoir que même si le Pacte ne consacre pas ce droit, à partir du moment où il existe au Nicaragua une loi qui reconnaît ce droit aux citoyens, il ne doit y avoir de discrimination dans sa jouissance. Le Comité s'est fondé sur l'article 26 du Pacte qui comporte la clause de non-discrimination et qui, en l'espèce, a une portée accessoire, car rattaché au droit de propriété (paragraphe 10.1 des constatations).[24]

Au niveau régional, le Protocole additionnel I à la Convention européenne des droits de l'homme reconnaît à toute personne physique ou morale le droit au respect de ses biens et que nul ne peut être privé de sa propriété que pour cause d'utilité publique et dans les conditions prévues par la loi et les principes généraux du droit international.[25] Il découle de cette disposition que la Convention européenne des droits de l'homme protège le droit de propriété

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[21] Frédéric SUDRE, *Droit européen et international des droits de l'homme*, PUF, Paris, 13ème Ed 2016, p.579.
[22] Art.17, al.1er de la Déclaration Universelle des Droits de l'Homme du 10 Décembre 1948.
[23] *Ibidem*, al.2.
[24] Comité des droits de l'homme des Nations Unies, *Affaire Blanco C/Le Nicaragua*(1994), Communication n°328/1988.
[25] Art 1 du Protocole additionnel I à la Convention européenne des droits de l'homme.

en mettant un accent particulier sur le respect à accorder aux biens de l'individu. Interprétant cette disposition, la Cour européenne des droits de l'homme confirme que les terres constituent également un bien au sens de sa jurisprudence.[26]

Pareille approche semble être adoptée par la Convention américaine des droits de l'homme lorsqu'elle consacre le droit à la propriété privée. Il en résulte que toute personne a droit à l'usage et à la jouissance de ses biens et que nul ne peut être privé de ses biens, sauf sur paiement d'une juste indemnité, pour raisons d'intérêt public ou d'intérêt social, et dans les cas et selon les formes prévues par la loi.[27]

La Charte africaine des droits de l'homme et des peuples prévoit également que la propriété est garantie et que seules les conditions de l'intérêt général ou la nécessité publique de la collectivité permettent d'y porter atteinte[28]. La propriété foncière n'est pas mise à l'écart. C'est dans ce sens que faisant application de ces prescrits de la Charte, la Commission africaine des droits de l'homme et des peuples a estimé, lors de *l'affaire des peuples autochtones Ogieks contre le Kenya*, que la propriété des terres déjà consacrée par la Constitution de la République du Kenya devait être reconnue aux *Ogieks.*[29]

Le droit de propriété ainsi consacré n'est pas absolu, il admet des ingérences. La protection de l'intérêt général peut justifier une atteinte au droit du propriétaire. La réglementation de l'usage d'un bien est régie en fonction de l'intérêt général.[30]La Cour européenne des droits de l'homme valide d'ailleurs les atteintes au droit de propriété, dès lors qu'elles sont justifiées par la protection de l'intérêt général. Dans *l'affaire Handyside contre le Royaume-Uni*, la Cour considère que l'atteinte au droit de propriété d'un éditeur est légitime dès lors qu'il s'agit de protéger l'intérêt général et plus particulièrement la morale publique[31].

D'autres ingérences au droit de propriété peuvent être conventionnelles. Conformément au principe de l'autonomie de la volonté, le propriétaire d'un bien peut décider librement de s'imposer des restrictions à la pleine jouissance de son droit de propriété en s'engageant de concéder à un tiers un autre droit de jouissance sur son propre bien.[32]

Le propriétaire est tenu également au respect du droit de propriété d'autrui. À ce titre, il ne doit abuser de son droit en portant atteinte de manière disproportionnée au droit d'autrui, ce qui serait constitutif d'une faute civile. Il ne doit non plus poser des actes constitutifs des troubles de voisinage. La jouissance de la chose doit se faire dans le respect d'un juste équilibre avec le droit de jouissance identique des autres propriétaires.[33]

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[26] Jean-François ROMAIN, *Droits réels, chronique de jurisprudence2006-2015*, Larcier, Bruxelles, 2017, p.15.
[27] Art 21 de la Convention américaine des droits de l'homme du 29 novembre 1969.
[28] Art14 de la Charte africaine des droits de l'homme et des peuples.
[29] Lire la requête №006/2012, Commission africaine des Droits de l'Homme et des Peuples, les peuples autochtones *Ogieks* C/La République du Kenya.
[30] Nicolas BERNARD, *Précis de Droit des biens,* Limal, Anthémis, 2013, p.186.
[31] Cour européenne des droits de l'homme, 7 Décembre 1976, *Affaire Handyside C /Le Royaume Uni*, n°5393/72.
[32] Nathalie MASSAGER, *Les bases du droit civil, Tome II. Droit des biens, droits réels, théorie des suretés*, Précis de la Faculté de Droit et de criminologie de l'ULB, Limal, Anthémis, 2013, p.79
[33] *Ibidem*, pp. 80-82.

B. L'acception de la propriété en droit congolais

À la différence des instruments juridiques relatifs aux droits humains, le droit congolais opte pour une conception restrictive de la propriété avec une propriété foncière reconnue au seul État (1), et qui concède aux particuliers des droits réels fonciers qui leur permettent uniquement une jouissance foncière (2).

1. Une conception restrictive de la propriété : propriété exclusive de l'État en matière foncière et dans les secteurs connexes au foncier

L'État congolais abolit la propriété privée foncière, à travers notamment l'Ordonnance-Loi n° 66-343 du 7 juin 1966, dite communément Loi Bakajika[34], qui dispose à son article premier que « la RDC reprend la pleine et libre disposition de tous ses droits fonciers cédés avant le 30 juin 1960 en propriété ou en participation à des tierces personnes physiques ou morales »[35]. La motivation est qu'il faut rompre avec la main-d'œuvre étrangère et que l'indépendance politique doit aller de pair avec celle économique. Nous devons toutefois noter que cette volonté d'avoir une indépendance complète, c'est-à-dire l'indépendance politique accompagnée d'une indépendance économique avait des raisons politiques qui la justifiaient, mais elle a privé à la longue et jusqu'aujourd'hui le pays, d'une masse des investissements directs étrangers dans le domaine foncier congolais. Ce qui est encore grave, est que l'État congolais, n'a pas pu investir dans son domaine foncier pour impulser le développement du pays, et amener le peuple congolais à bénéficier du droit au développement. Au contraire, le pays n'a fait que reculer dans le domaine des investissements fonciers.

La Constitution de la RDC du 24 juin 1967 va également réaffirmer cette appropriation du sol et du sous-sol par l'État.[36]Inspirée de ces textes, la loi foncière de1973, actuellement en vigueur, va consacrer ce qui suit : « Le droit de propriété dans son acception générale a été maintenu en tant que droit d'user, de jouir et de disposer d'une chose pourvue qu'on n'en fasse pas un usage prohibé par la loi et les règlements. Il y a néanmoins lieu de considérer que son champ d'application a été réduit. En effet, en matière foncière, l'appropriation privative du sol a été abolie, car le sol est devenu, suite à l'option du Bureau politique, propriété inaliénable de l'État »[37]. C'est dans le même ordre d'idées que l'article 53 de la loi foncière précitée va disposer que « le sol est la propriété exclusive, inaliénable, et imprescriptible de l'État »[38]. Par cette disposition, l'État congolais a nationalisé le sol en supprimant la propriété privée foncière.[39]

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[34] Du nom de son initiateur Isaac Gérard BAKAJIKA-KANGOMBE, auteur de la loi qui porte son nom.
[35] Art 1 de l'Ordonnance- Loi n°66-343 du 7 juin 1966 sus évoquée.
[36] Lire l'art 14 bis de la Constitution de la République Démocratique du Congo du 24 juin1967 *(Journal officiel de la République, 8ème année, n°14 du 15 juillet 1967 pp.564-576).*
[37] Lire l'Exposé des motifs de la loi n° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.
[38] *Ibidem,* art 53.
[39] Innocent UTSHUDI, « La gestion domaniale des terres rurales et des aires protégés au Sud-Kivu : Aspects juridiques et pratiques d'acteurs », *L'Afrique de Grands Lacs*, Annuaire, 2007-2008, P.416.

Cette situation a des implications sur d'autres textes en lien étroit avec le secteur foncier, les codes minier, forestier et agricole notamment. C'est dans cet ordre d'idées qu'il ressort de l'article 3 alinéa1er du code minier congolais que les gîtes des substances minérales, y compris les gîtes artificiels, les eaux souterraines et les gîtes géothermiques se trouvant sur la surface du sol ou renfermés dans le sous-sol ou dans les cours d'eau du territoire national sont la propriété exclusive, inaliénable et imprescriptible de l'État, fondée sur sa souveraineté sur les ressources naturelles.[40]

De même, l'article 7 du code forestier dispose que les forêts constituent la propriété de l'État congolais.[41] Leur exploitation et leur utilisation par les personnes physiques ou morales sont subordonnées à l'obtention des concessions forestières après avoir prouvé que l'on est domicilié sur le territoire congolais ou que l'on y a le siège social s'agissant des personnes morales.[42]

Comme relevé tantôt, le libellé de cet article a été inspiré par les dispositions de l'article 53 de la loi foncière sus évoquée, une traduction logique de l'article 14bis de la Constitution de 1967 proclamant que l'État exerce une souveraineté permanente sur le sol, le sous-sol, les eaux et les forêts, sur les espaces aérien, fluvial, lacustre et maritime ainsi que sur la mer territoriale congolaise et sur le plateau continental [43] ; et de l'Ordonnance-Loi Bakajika de1966.[44]

Aussi, la loi portant principes fondamentaux relatifs à l'agriculture en RDC dispose à son article 4 que l'État exerce une souveraineté permanente sur les ressources naturelles et les ressources phytogénétiques pour l'alimentation et l'agriculture.[45] Il en ressort qu'un individu ne saurait être propriétaire de ces ressources et ne doit se contenter que des concessions des terres agricoles lui accordées par l'État. Contrairement aux textes précédents, celui-ci prive les étrangers d'un quelconque droit sur les terres agricoles. L'article 16 de ce texte fait de la nationalité congolaise une condition sine qua non pour requérir une concession sur les terres agricoles. Les personnes morales, les sociétés en l'occurrence, doivent également être de droit congolais.[46]

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[40] Art 3 al.1er de la loi n°18/001 modifiant et complétant la Loi n° 007/2002 du 11 juillet 2002 portant Code minier.
[41] Art 7 de la loi n°2002-11 du 29 aout 2002 portant Code Forestier congolais.
[42] *Ibidem,* art 82.
[43] Masamba VUNDU et Kalambay LUMPUNGU, *Code forestier commenté et annoté,* Kinshasa, Mai 2013, Inédit, P.18.
[44] Par cette loi, l'Etat reprend la pleine et libre disposition de tous ses droits fonciers cédés avant le 30 juin 1960 c'est-à-dire toutes les propriétés privées reconnues et protégées par les textes législatifs antérieurs notamment le livre II du Code civil qui disposait : «La propriété est le droit d'user d'une chose d'une manière exclusive et absolue. »Aucune distinction n'était faite entre la propriété foncière et les autres formes de propriété. Lire à ce propos Kalambay LUMPUNGU*, Le Régime foncier et immobilier,* PUZ, Kinshasa, 1985, pp.43-47.
[45] Art 4 de la loi de 2011 portant principes fondamentaux relatifs à l'agriculture en République Démocratique du Congo.
[46] L'article 16 du code agricole énonce en son litera a que « les terres agricoles sont concédées aux exploitants et mises en valeur dans les conditions définies par la loi. Toutefois, le requérant remplit en outre les conditions suivantes :

2. De la nature des droits réels fonciers concédés aux particuliers

Ne pouvant prétendre acquérir des droits de propriété foncière au regard de la législation a, les particuliers se voient accorder des droits des concessions. Ces concessions sont entre autres les concessions perpétuelles et les concessions ordinaires. Les concessions perpétuelles sont reconnues aux seules personnes physiques de nationalité congolaise et couvertes par un certificat d'enregistrement. Ce dernier constitue le moyen de preuve péremptoire de ces droits.[47] Deux ans après son établissement par le conservateur des titres immobiliers, il devient inattaquable sauf s'il est entaché de faux ou a été établi sur base d'un faux, ou bien s'il a été établi sur un bien du domaine public de l'Etat.[48]De leur côté, les concessions ordinaires sont reconnues aux personnes physiques de nationalité étrangère et aux personnes morales. Ces concessions sont couvertes par des contrats spécifiques et sont conclues pour une durée de 25 ans renouvelables. Il s'agit de l'emphytéose, la superficie, l'usufruit, la location et l'usage.

L'emphytéose accorde le droit de jouissance sur un terrain inculte qu'il faut mettre en valeur. Elle peut être accordée aussi bien à titre gratuit qu'à titre onéreux. A la fin du contrat, les constructions, plantations et ouvrages deviennent la propriété de l'État sous réserve du paiement d'une indemnité qui représente le ¾ de la valeur actuelle et intrinsèque des incorporations.[49]La superficie est accordée sur un bien déjà mis en valeur et permet au superficiaire de jouir des fruits naturels, civils ou industriels. Il peut disposer des incorporations faites sur le terrain.[50] L'usufruit concède à un tiers le droit d'user et de jouir d'un fonds, mais à charge de la conserver dans son état c'est-à-dire en respectant la destination faite par l'État.[51]

La location est, quant à elle, un contrat par lequel l'État s'oblige à faire jouir une personne d'un terrain et moyennant un certain prix que celle-ci s'oblige à payer.[52]Enfin, l'usage est le droit que l'État reconnaît à une personne de jouir d'un fonds soi-même avec sa famille, soit en y habitant, soit en y créant des entrepôts pour soi-même.[53]

Comme relevé ci-haut, dans la logique de cette loi, ces concessions ne confèrent que l'usage et la jouissance de la terre et non sa disposition (sa vente) ; d'où l'inexistence de la « propriété

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a) Être une personne physique de nationalité congolaise ou une personne morale de Droit congolais dont les parts sociales ou les actions, selon le cas, sont majoritairement détenues par l'Etat congolais et/ou par les nationaux… ».

[47] Arts 59 et 219 de la loi n° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.

[48] *Ibidem,* Art 227.

[49] Francis HAUMONT*, Les instruments juridiques de la politique foncière, Bruxelles*, E. Story-Scientia, 1990, pp 283-284.

[50] Art 123 de la loi n° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.

[51] *Ibidem,* art132.

[52] *Ibidem,* art144.

[53] *Ibidem,* art141.

privée sur le sol en droit congolais ».[54] Cette conception restrictive de la propriété va à l'encontre de l'esprit des instruments juridiques internationaux relatifs aux droits humains. Ces derniers, a-t-on vu, ont une vision large du droit de propriété étant donné qu'ils n'établissent pas de distinction entre la propriété foncière et les autres types de propriété.

De même, il s'observe une précarisation du droit de jouissance du sol. Les personnes physiques voient substituer d'office à leur certificat de propriété, un titre de concession perpétuelle à savoir le certificat d'enregistrement. Les étrangers et les personnes morales voient également leur droit de propriété converti en un droit de concession ordinaire d'une durée de 25 ans renouvelables ;[55] et ne peuvent prétendre acquérir aucun droit sur les terres agricoles. Cet état de choses ne peut rester sans incidence sur l'attractivité du pays dans le secteur des investissements.

Or, la RDC a, à l'heure actuelle, non seulement besoin des investissements nationaux mais aussi et surtout étrangers pour son développement.

II. DE L'INCIDENCE DE LA REGLEMENTATION CONGOLAISE EN MATIERE FONCIERE SUR LE DEVELOPPEMENT ECONOMIQUE ET SOCIAL DE LA RDC

Avec un indice de développement humain qui s'établit à 0.459, ce qui place le pays dans la catégorie « développement humain faible » et au 179ème rang parmi 189 pays et territoires,[56]la RDC a tout intérêt à être attractive à l'endroit des investisseurs à travers notamment la mise en place d'un cadre législatif qui s'inscrit dans cette perspective (A). Car, les investissements qui sont bien encadrés, favorisent la croissance économique au sein d'un État, ce qui pourra permettre la réalisation du droit du peuple congolais au développement qui ne doit demeurer théorique et illusoire (B).

A. Bref aperçu sur l'attractivité de la RDC en matière des investissements

Il ne fait l'ombre d'aucun doute que les investisseurs sont principalement attirés par les opportunités d'investissement qu'il y a sur le territoire d'un État. Toutefois, avant leur implantation, d'autres facteurs entrent en ligne de compte notamment le contexte politique et juridique, en plus des avantages spéciaux (1); d'où le problème posé par la législation foncière congolaise et d'autres textes connexes au foncier quant au droit des étrangers d'accès à la terre, la loi agricole notamment, peut être un frein à l'attractivité des investissements étrangers dans le pays (2).

1. Des facteurs pris en compte par les investisseurs

[54] Joël BARAKA, An Ansoms, *Territoire et Foncier en Afrique contemporaine :De la marchandisation des droits fonciers vers la redéfinition des dynamiques territoriales à Idjwi(RDC*), Faculté des sciences sociales, politiques et de communication, UCL, 2017,p.61.

[55] Expobeton RDC, « problématique foncière en République Démocratique du Congo », Inédit, SD, p.2 disponible sur www.expobetonrdc.com.

[56] PNUD, « Rapport sur le développement humain au XXIème siècle, « Note d'information à l'intention des pays concernant le développement humain 2019, Congo (République démocratique du) », 2019, p.3, Inédit.

Tel que susmentionné, les critères déterminants du des investissements directs étrangers (FDI ou Foreign direct investments) sont le cadre juridique et politique, les déterminants économiques et la facilitation des affaires.

Le cadre juridique et politique comprend le traitement garanti aux investisseurs étrangers par le biais de la législation nationale et par les traités d'investissement. La succession des faits est telle qu'une fois le cadre juridique et politique établi, les investisseurs s'installeront dans le pays s'il existe des incitations économiques pour ce faire et cela peut être davantage encouragé par des mesures visant à améliorer le climat des affaires : il semblerait que, dans une large mesure, un cadre juridique et ouvert à l'investissement direct étranger (IED), même s'il est à certains égards une condition nécessaire aux entrées d'IED, n'est pas nécessairement une condition suffisante quand les autres déterminants ne sont pas présents.[57]

Cependant, les frontières entre ces déterminants sont fluides. Faisons savoir à juste titre que bien que faisant partie du cadre juridique et politique, les accords d'investissement peuvent fournir certaines incitations financières, à l'instar des avantages fiscaux ou garantir le rapatriement des bénéfices; et au nom de la création d'un climat des affaires convivial, les agences de promotion des investissements peuvent réduire les coûts d'entrée ou subventionner l'investisseur étranger. En outre, la qualité des institutions (mesures efficaces pour réduire la corruption et garantir la livraison de biens publics et l'entretien des infrastructures) joue un rôle important dans la décision d'investissement aux trois niveaux. Toutefois, cette typologie est utile pour classer les différentes considérations qui doivent guider le choix de l'investisseur d'entrer ou non dans un pays.[58]

Les études montrent que les déterminants majeurs des FDI sont les facteurs économiques comme la taille du marché et l'ouverture commerciale, mesurés par les importations et exportations en relation avec l'ensemble du Produit intérieur brut, l'accent étant mis sur ce dernier déterminant dans les années récentes comme le résultat de la mondialisation. Néanmoins, la relation n'est en aucun cas automatique, comme l'illustre la situation des pays de l'Afrique Sub-Saharienne qui sont ouverts aux échanges mais qui n'attirent pas les FDI. Pour les autres variables, il y a moins de consensus dans la littérature. En général, les études montrent que les facteurs économiques et politiques comme la taille du marché, le travail qualifié et les politiques commerciales sont plus importants pour la décision de localisation des investissements étrangers que la structure juridique de la protection des droits des investisseurs et la capacité d'éviter la double imposition.[59]

Dans la même optique, Sofiane TOUMI note que « les investissements directs étrangers sont généralement attirés par les caractéristiques économiques fondamentales des pays d'accueil : l'existence et la taille du marché, la stabilité politique et économique, la libéralisation des politiques commerciales, l'état des infrastructures et des institutions, etc. ».[60]Néanmoins, il

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[57] Olivier De Schutter, Jo Swinner and Jan Wouters,"Introduction: Liberalization of investment and Human Development", CRIDHO Working paper, UCL, 2012/4, p.11.
[58] *Idem*, p.12.
[59] *Ibidem*.
[60] Sofiane TOUMI, « Facteurs d'attractivité des investissements directs étrangers en Tunisie », in *L'actualité économique*, 85 (2), pp. 209-237, https://www.erudit.org/fr/revues/ae/2009-v85-n2-ae3892/044254ar.pdf. Consulté le 06/08/2020.

renchérit en disant qu'il est logique et fondé d'affirmer que « les déterminants des flux d'investissements directs étrangers ne sont pas qu'économiques, il s'agit aussi des facteurs qui relèvent de la gouvernance au sein des pays d'accueil, à savoir la lutte active contre la corruption et l'amélioration des cadres politiques et règlementaires ».[61]

En outre, dans la mesure où les investisseurs du secteur des industries extractives exploitent les ressources naturelles, il est possible que le gouvernement hôte invoque les raisons de souveraineté, la souveraineté permanente de son peuple sur les ressources naturelles notamment, afin de justifier les mesures de nationalisation ou la négociation forcée des termes de l'accord avec les investisseurs étrangers présents. Il n'est donc pas surprenant que certaines études montrent que ce secteur est peut-être le plus sensible à l'expropriation, causant ainsi des pertes énormes à l'investisseur.[62]
C'est dans cet ordre d'idées que vers les années 1973-1974, le maréchal Mobutu, dans une tentative de dégager l'économie congolaise des influences extérieures, nationalisa la plupart des entreprises détenues par des étrangers. Les secteurs concernés étaient des plus divers : mines, construction, construction métallique, pétrole, plantations, élevage.[63]
Ces actifs furent d'abord repris par l'État ou par des organismes étatiques pour être ensuite attribués à des personnes privées congolaises. Ce fut un coup dur pour les investisseurs étrangers, les capitaux belges principalement.
Au regard des éléments précités, il importe d'affirmer que non seulement le cadre juridique de la RDC à savoir la législation foncière et agricole comporte des faiblesses qui ne favorisent pas l'attractivité des investissements directs étrangers, mais aussi le pays est totalement enclavé, et ne dispose pas des infrastructures de base pour faciliter le transport et la circulation des marchandises. À cela s'ajoute une gouvernance chancelante, caractérisée par la kleptocratie et la corruption. Ceci étant, la RDC est loin de réunir les facteurs attractifs des investissements directs étrangers, le défi devant être relevé.

2. Le problème posé par la législation foncière congolaise et d'autres textes connexes au foncier (le code agricole)

En reconnaissant le droit de propriété foncière au seul État, la législation foncière congolaise précarise les droits de jouissance des particuliers. De même, le problème du droit des étrangers d'accès à la terre en RDC se pose avec acuité. Ainsi donc, en limitant dans le temps (à 25 ans) les concessions ordinaires à octroyer aux étrangers, l'État crée une entrave à la présence des étrangers dans le secteur immobilier au pays, pourtant indispensable pour son développement économique.

En exerçant une souveraineté permanente sur les ressources phytogénétiques pour l'alimentation et l'agriculture et en privant les étrangers de tout droit de quelle que nature que ce soit sur les terres agricoles, l'État ne favorise pas la mise en valeur durable des potentialités et de l'espace agricole en excluant les étrangers d'une activité aussi importante que l'agriculture, capitale pour son développement. Avec 80 millions d'hectares de terres arables,

[61] *Ibidem*.
[62] *Idem*, p.13.
[63] Jean-Louis MOREAU, « De la décolonisation à la Zaïrianisation. Le sort des capitaux belges au Congo » *in Cahiers Irice*, 2010/2(n°6), p.74.

dont moins de 10 pour cent seulement exploitées, [64] les investissements étrangers sont nécessaires à côté de ceux nationaux pour booster ce secteur. L'intervention de l'étranger dans l'exploitation agricole profite au pays à plusieurs égards. Tout d'abord, il est facile aux étrangers d'obtenir le financement des activités agricoles par les banques étrangères. Ensuite, parmi les étrangers, certains ont évolué dans le domaine agricole, par tradition ou par formation; à ce titre ils maitrisent les méandres de l'exploitation agricole mieux que quiconque et leur expérience ne peut que profiter aux Congolais. Enfin, sur le plan international, l'accès libre à l'exploitation agricole est un facteur important d'intégration de la RDC dans la sous-région de l'Afrique voire dans le monde.[65]

En effet, cette loi agricole de 2011 fait que les investisseurs étrangers, comme les Russes appelés aujourd'hui à la rescousse soient refroidis en ce qu'elle exige que toutes les entreprises agricoles appartiennent à des citoyens congolais. Depuis lors, les étrangers n'investissent plus dans un projet agricole au Congo.[66]

De ce qui précède, par quel mécanisme alors un étranger peut subitement redevenir congolais pour être éligible à l'usage des terres agricoles qu'il exploitait déjà ? Relevons que le législateur congolais n'a pas prévu de mécanisme ni moins encore indiquer la procédure à suivre par le concessionnaire étranger pour accéder aux terres agricoles. Cela étant, nous pouvons admettre que l'unique alternative qui permettrait aux étrangers de pratiquer l'agriculture en RDC serait d'être associés dans les sociétés de droit congolais et dont les parts sont majoritairement détenues par l'Etat congolais et/ou les nationaux tel qu'il résulte de l'esprit du code agricole congolais. Toutefois, ceci demeure difficilement envisageable étant donné qu'il n'est pas aisé pour un investisseur d'aller placer son argent dans une société, dont un autre que lui serait patron et dans un pays qui traine derrière lui l'expérience malheureuse de la nationalisation des entreprises étrangères vers les années 1973-1974 et n'en a pas tiré leçon. Dans ce contexte, la réalisation du droit du peuple congolais au développement demeure préoccupante.

B. De la réalisation du développement économique et social de la RDC

Le développement en tant que droit reconnu à tous les peuples et à toute personne humaine (1), un système de propriété inadapté, à l'instar de celui de la RDC, peut être un frein à sa concrétisation(2).Ainsi donc, une réforme législative s'avère importante pour juguler cette situation(3).

1. Le développement en tant que droit des peuples

La République Démocratique du Congo est partie à la Déclaration sur le droit au développement. Et celle-ci réaffirme que le droit au développement est un droit inaliénable de l'homme en vertu duquel toute personne humaine et tous les peuples ont le droit de participer

[64] Commodafrica, « La RD Congo, 2ème pays au monde en terres arables », 5ème édition de l'Agribusiness Forum, Kinshasa, 2015.
[65] Adolphe BAMBI, « La loi agricole congolaise et ses faiblesses », 21 mai 2012, p.6, Inédit.
[66] Marie-France Cross, « RDC : Pourquoi les dans l'agriculture ne viennent pas en RDC *in République Démocratique du Congo*, 25 Octobre, 2019.

et de contribuer à un développement économique, social, culturel et politique dans lequel tous les droits de l'homme et toutes les libertés fondamentales puissent être pleinement réalisés et bénéficier par la suite de ce développement et que les États ont la responsabilité première de la création des conditions nationales et internationales favorables à la réalisation du droit au développement.[67] De même, la Charte africaine des droits de l'homme et des peuples stipule que tous les peuples ont droit au développement économique, social et culturel, dans le respect strict de leur liberté et de leur identité.[68] Le développement est un objectif dont la réalisation mérite d'inspirer l'activité politique et normative d'un État.[69]

Il convient de préciser au préalable qu'on ne peut réduire le droit au développement à la satisfaction des besoins matériels et qu'il n'existe pas un modèle de développement applicable à tous les pays, tenant compte de leur situation et besoins particuliers. Cependant, toutes les politiques de développement doivent respecter les termes de la Déclaration sur le droit au développement et promouvoir tous les droits humains (sociaux, politiques, civils, culturels et économiques)[70]. Et parmi ces droits, figure le droit de propriété quelle qu'en soit la forme.

2. Le système congolais de propriété comme obstacle à la concrétisation du droit au développement

Il découle de ce qui précède que l'État congolais se réserve à lui seul le droit de propriété dans des secteurs clés pour le développement de tout un peuple, en l'occurrence le secteur foncier et d'autres connexes au premier. Disons que cette appropriation du droit de propriété foncière par l'État congolais prive le pays d'une importante source des financements à savoir les investissements directs étrangers. Par conséquent, depuis son accession à l'indépendance et l'adoption de son régime de nationalisation de la propriété foncière juste après l'indépendance, l'État congolais n'est pas parvenu à améliorer le revenu par habitant du peuple congolais vers une tranche intermédiaire. Son économie n'a jusqu'à présent connu de transformation structurelle et de diversification à cause de l'absence des investissements directs étrangers dans le secteur agricole qui pouvaient développer le secteur manufacturier. Son économie n'est toujours pas ouverte au reste du monde, d'où sa difficulté à s'insérer dans les chaines de valeur mondiales, étant donné que le pays ne produit presque rien et importe presque tout.[71] Le peuple congolais vit donc dans l'environnement précité et il est difficile aujourd'hui pour l'État congolais de réaliser le droit au développement de son peuple avec la configuration actuelle de son cadre juridique relatif au foncier et au secteur agricole.

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[67] Arts 1.1et 3.1 de la Déclaration sur le droit au développement adoptée par l'Assemblée générale des Nations-Unies dans sa résolution 41 /128 du 4 Décembre1986.
[68] Art22 paragraphe premier de la Charte africaine des droits de l'Homme et des Peuples.
[69] Sébastien Van DROOGHENBROECK, *Les dimensions collectives des droits de l'Homme, Les droits de la solidarité,* syllabus, Université Saint-Louis/Bruxelles, 2018, p.3, Inédit.
[70] Melik OZDEN, *Le droit au développement : Etat des débats tenus à l'ONU sur la « mise en œuvre » de la Déclaration historique adoptée à ce propos par l'Assemblée générale des Nations Unies, le 4 décembre 1986*, Une collection du programme Droits humains du Centre Europe-Tiers Monde(CETIM), 9 février 2006,p.22.
[71] Olivier CADOT, « industrialisation et transformation structurelle : l'Afrique subsaharienne peut-elle se développer sans usine ?» *In Revue d'économie du développement 24*(2) :19, janvier 2016, p 7.

Nous devons aussi relever que l'État congolais a des sérieux problèmes dans la mobilisation des recettes. Les principales recettes qui contribuent plus à son budget proviennent du secteur minier en premier, les régies financières et sociétés de l'État en second lieu, et une grande partie vient des bailleurs de fonds à travers les aides publiques au développement (APD) qui constituent d'ailleurs des endettements pour les générations futures[72]. Le secteur agricole n'étant pas développé ni par l'État encore moins par les particuliers nationaux, et étant donné qu'il est exclu aux étrangers. Dans pareille circonstance, l'État congolais a rétréci son assiette fiscale, alors qu'il tirerait beaucoup de recettes d'impôts et taxes qui proviendraient de ce secteur à travers les investissements étrangers et le développement de la manufacture.

Notons en plus que cette exclusion des étrangers dans le secteur agricole et leur privation du droit de propriété dans le foncier constituent un véritable manque à gagner pour le peuple congolais en termes d'emplois qui seraient créés dans ce secteur. Il est un secret de polichinelle que l'État congolais fait face à un chômage exagéré avec une population trop jeune. Les investissements directs étrangers dans le foncier et le secteur agricole pouvaient également participer si pas absorber le chômage en créant plusieurs emplois dans la production, la transformation et la commercialisation des produits agricoles[73].

Le droit de propriété détenu uniquement par l'État congolais dans le foncier et dans le secteur agricole pousse celui-ci, à accorder aux particuliers des droits que lui-même détermine et dans certains cas à n'accorder aucun droit à certaines catégories d'individus, les étrangers notamment alors que leur présence est nécessaire pour l'émergence du secteur concerné. Cette inadaptation du système juridique de propriété est une entrave au développement économique dans les États du Sud[74] et en RDC notamment. Car, là où les droits de propriété ne sont pas respectés, il y a un manque général d'incitation à préserver la terre, la propriété ou ses ressources. Dans ce cas, l'individu ne voit pas l'intérêt de rationnaliser sa gestion de la terre ou de créer de la valeur, car justement il n'a pas le droit de propriété sur les fruits de ses efforts.[75]

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[72] Selon une enquête de l'OCDE menée en 2008, « 25.2% du RNB avait été consenti par l'APD au Budget de l'Etat congolais en 2006 », voir OCDE, Enquête 2008 de suivi de la mise en œuvre de la Déclaration de Paris : rendre l'aide publique plus efficace d'ici 2010, OCDE, 2008, p. 3. La loi de finances de 2018 note également dans son exposé des motifs que la contribution de l'APD est de 25,2 % au budget général de l'Etat, voir loi de finances pour l'exercice 2018 en RDC, disponible sur https://www.leganet.cd/Legislation/JO/2017/loi%20des%20finances%202018.pdf . Consulté le 05/08/2020.

[73] Voir Claire MAINGUY, « L'impact des investissements directs étrangers sur les économies en développement », in *Revue Région et Développement* n^0 20-2004, pp. 66-89, http://bibliotheque.pssfp.net/livres/L_IMPACT_DES_INVESTISSEMENTS_DIRECTS_ETRANGERS_SUR_LES_ECONOMIES_EN_DEVELOPPEMENT.pdf. Consulté le 05/08/2020. Voir aussi Naouel RASOURI-KOUIDER, L'impact des investissements directs étrangers (IDE) sur la dynamique industrielle de la République Tchèque, Thèse de doctorat en sciences économiques, Université de Strasbourg, 2015, p. 75, https://tel.archives-ouvertes.fr/tel-01256135/document. Consulté le 05/08/2020.

[74] Hernando De Soto, *Le mystère du capital : Pourquoi le capitalisme triomphe en Occident et échoue partout ailleurs*, Flammarion, Mars 2005, P.2.

[75] Oyinkan, « Nigeria, Les droits de propriété pour stimuler la croissance, Pour que le Nigeria atteigne un état où la liberté est à l'ordre du jour, les droits de propriété ne peuvent et ne doivent pas être ignorés », Libre Afrique, 2017.

Cette vue est étayée par les résultats de l'indice international de droit de propriété (IPRI). Selon l'IPRI, les pays ayant un score IPRI élevé enregistrent des niveaux élevés de revenu par habitant, reçoivent plus d'investissements directs étrangers et affichent des taux supérieurs de croissance du PIB par rapport aux pays à faible score. Malheureusement, les pays africains ont un faible score et la RDC se trouve parmi les six derniers du classement 2018, à côté du Pakistan, du Bangladesh, du Venezuela, du Yémen et de l'Haïti.[76]

Dans son rapport de mars 2018 sur les priorités des politiques pour réduire la pauvreté et promouvoir la prospérité dans un pays fragile sortant d'un conflit à l'instar de la RDC, la Banque mondiale note que la précarité des droits fonciers au Congo affecte les moyens de subsistance et entrave la planification urbaine et les investissements dans l'agriculture et dans d'autres secteurs. Ainsi, elle soutient que si les pays africains peuvent simplifier les procédures entourant la propriété et la gestion des terres sur le continent, il y aura une augmentation significative de la quantité de la nourriture produite dans la région et une transformation structurelle vers le développement.[77]

3. La réforme foncière : un palliatif à la situation

Depuis 2012, la RDC est dans un processus de réforme foncière qui, nous le pensons, dotera le pays d'un cadre législatif qui puisse répondre à cette problématique. Encore que la nationalisation du sol et la précarisation des droits des particuliers qui en résulte, constitue l'un des défis de cette réforme.[78] Cette réforme est nécessaire en vue de stimuler les investissements et renflouer les caisses de l'État. Le développement pourra en résulter. Néanmoins, une attention particulière devra être accordée à la protection des droits des communautés locales et éviter ainsi de revivre ces situations désastreuses où l'État a pu délocaliser les communautés locales en vue de l'installation des investisseurs étrangers.

La délocalisation de la population de Luhwindja et l'installation corrélative de la société d'exploitation minière Banro Twangiza Mining, avec la détérioration des conditions de vie de cette population qui s'en est suivie, en est une preuve éloquente.[79]La réforme projetée devra concilier ces intérêts à savoir l'attractivité des investissements et la protection des droits des communautés locales.

Pour rendre pratique la réforme précitée, deux solutions majeures nous paraissent envisageables. En outre, ces solutions ont l'avantage de trouver un équilibre entre

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[76] Voir le récent classement IPRI 2018.

[77] Priorité des politiques pour réduire la pauvreté et promouvoir la prospérité dans un pays fragile sortant d'un conflit, Rapport de la Banque mondiale, République Démocratique du Congo, Diagnostic systématique pays, Mars 2018, p.61.

[78] Réforme foncière et protection des droits des communautés ,Rapport du séminaire sur le processus de la réforme foncière et la protection des droits des communautés dans la mise en œuvre des politiques forestières et des initiatives climatiques en RDC, Kinshasa ,République Démocratique du Congo, Mars 2016, p.16.

[79] Voir Maison des mines du Kivu, Evaluation des impacts des investissements miniers de Banro Corporation sur les droits humains en République Démocratique du Congo : Cas de la délocalisation des communautés locales par Twangiza Mining dans la chefferie de Luhwindja au Sud-Kivu, Bukavu, Mai 2015, p.28, Inédit.

l'appropriation du sol par l'État congolais, l'attractivité des investissements directs étrangers et le droit au développement du peuple congolais, sans pour autant entraver les droits des communautés locales. Il s'agit en premier de conformer le code agricole congolais de 2011 à l'Acte uniforme de l'OHADA relatif au droit des sociétés commerciales et groupements d'intérêt économique. Nous devons noter que la loi agricole de 2011 est intervenue avant l'adhésion définitive de la RDC à l'OHADA, l'adhésion qui s'est matérialisée en 2012. Il est alors important de préciser que les dispositions de l'article 16 du code agricole de 2011 qui prévoient que « les terres agricoles sont concédées aux exploitants et mises en valeur dans les conditions définies par la loi et que toutefois, le requérant remplit en outre les conditions ci-après : a) être une personne physique de nationalité congolaise ou une personne morale de droit congolais dont les parts sociales ou les actions, selon le cas, sont majoritairement détenues par l'Etat congolais et/ou par les nationaux. b) avoir une résidence, un domicile ou un siège social connu en République Démocratique du Congo ; c) présenter la preuve de son inscription au registre de commerce, s'il s'agit d'une personne exerçant le commerce[80] » ; ne sont pas en harmonie avec l'Acte uniforme de l'OHADA sur les sociétés commerciales. Selon l'article 3 de cet Acte uniforme, « toutes personnes, quelle que soit leur nationalité, désirant exercer en société, une activité commerciale sur le territoire de l'un des États parties, doivent choisir l'une des formes de société qui convient à l'activité envisagée, parmi celles prévues par le présent Acte uniforme[81] ». Il sied alors de relever qu'actuellement toute société en RDC doit se constituer non pas selon le droit congolais des sociétés qui du reste est dépassé, mais selon le droit de l'OHADA à savoir l'Acte uniforme sur le droit des sociétés commerciales. Dans les critères fixés à l'article 3 précité et pour les formes de sociétés prévues par cet Acte uniforme, nulle part il est exigé que la société soit constituée avec des parts qui soient majoritairement détenues par un État partie, ou les nationaux de cet État.

Notons toutefois que même si l'article 1 al. 3 de l'Acte uniforme précité prévoit que « les sociétés commerciales et les groupements d'intérêt économique demeurent soumis aux lois non contraires au présent Acte uniforme qui sont applicables dans l'État partie où se situe leur siège social[82] », la loi agricole congolaise limite le champ de l'Acte uniforme précité, et devient contraire à audit Acte, car celui-ci, est devenu le droit commun des sociétés dans l'espace OHADA, et ce dernier, ne fait pas de spécification de la taille des parts sociales par rapport à leurs détenteurs et leurs nationalités pour exercer l'activité commerciale dans un secteur déterminé. Il y a donc lieu d'adapter cette loi à cet Acte uniforme. Et ce, pour permettre aux sociétés constituées selon le droit de l'OHADA d'intervenir dans le secteur agricole sans considération de la nationalité des associés par rapport à leurs parts sociales dans la participation au capital de la société.

En effet, l'article 10 du traité de l'OHADA pose déjà le principe de la suprématie des Actes uniformes, de leur application directe et de l'effet abrogatoire. Cette disposition occupe une place d'importance indéniable de par son objet puisqu'elle régit les rapports entre les Actes uniformes et les ordres juridiques des États membres. A sa qualité de disposition charnière,

[80] Article 16 de la loi de 2011 portant principes fondamentaux relatifs à l'agriculture en République Démocratique du Congo.
[81] Voir article 3 al. 1 de l'Acte uniforme de 2014 sur le droit des sociétés commerciales et groupements d'intérêt économique.
[82] Article 1 al. 3 *Ibidem.*

s'est greffée celle de disposition controversée.[83]Il en résulte que : "Les Actes uniformes sont directement applicables et obligatoires dans les Etats parties nonobstant toute disposition contraire de droit interne, antérieure ou postérieure[84]". Cette disposition est alors perçue par une partie de la doctrine comme la seule disposition du Traité qui est susceptible de fonder la supériorité sur un plan hiérarchique et la valeur abrogatoire des Actes uniformes vis-à-vis des dispositions de droit interne des Etats membres.[85]A ce propos, Abarchi fait savoir qu' « En ce qui concerne le problème du choix entre l'application de la norme communautaire et la norme législative nationale, c'est-à-dire entre le Traité de l'OHADA et la loi de différents Etats membres, il suffira aux membres du pouvoir judiciaire d'appliquer le Traité et d'écarter la législation nationale qui lui est contraire ».[86]

De ce fait, l'on peut en tout état de cause admettre que cette disposition abroge directement l'article 16 du code agricole congolais, qui est totalement contraire à l'esprit et aux objectifs visés par l'Acte uniforme de l'OHADA sur le droit des sociétés commerciales. Une personne morale constituée d'après le droit de l'OHADA des sociétés peut donc se prévaloir de cette disposition et obtenir des concessions agricoles en RDC, sans que son capital ne soit majoritairement détenu par les Congolais. L'harmonisation de l'article 16 précité avec le droit supranational par le législateur congolais, garantirait plus de sécurité juridique pour les investissements étrangers.

S'agissant du problème posé par la loi foncière, disons qu'il n'est pas évident que l'État congolais puisse aujourd'hui abandonner son droit de propriété exclusive sur le sol et le sous-sol. Certaines raisons peuvent justifier cette position de l'État congolais. Le sol et le sous-sol congolais au regard d'énormes richesses qu'ils regorgent, font l'objet de plusieurs convoitises de la part des pays voisins de la RDC. Il n'est pas donc exclu que par ce mécanisme d'achat et vente, les étrangers en quête des terres s'accaparent de la majeure partie du territoire

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[83] Parfait DIEDHIOU, « L'article 10 du Traité de l'OHADA : quelle portée abrogatoire et supranationale ? », *Revue de droit uniforme,* 2007, pp. 265-283, https://watermark.silverchair.com/12-2-265.pdf?token=AQECAHi208BE49Ooan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAArIwggKuBgkqhkiG9w0BBwagggKfMIICmwIBADCCApQGCSqGSIb3DQEHATAeBglghkgBZQMEAS4wEQQMBnJkdfjd3pO_jpM6AgEQgIICZT-mPXtB4rcvszIwYkzVDGkMWs_nk9D8NOshzza0gOp-U-c2oC-scGH1DAIwZMq9drVMgT1rGqZ8A7HaEN5QEGb-Yyt6-UHVAfxG9trLkBJRAVndZRgbHltxiKIIEKnKOvfCPdZFEnp6WZdmR-aQYRKczoVXaVMU-d02_QSwu19ijCgG919NfDgapw0VYN-OlSr1PV4SVEqXMwkCKCq1gJToks7is0eVW0oKQaORhSWXbRJ3RCWjRpw0WGsdQRs3tVIz98AS5gL8kOAMjlTIGxrfCgSYzOYocQukrbbayjDBWRaQHlKyKPoAdxmcK3fABlHSm8BaOGMrs5UWS2Shei1NGBF6RZaTkO1FsDunoW9wsaDMRJdh6p8BnAWeHkQflzMRBGqQrvU3KflGcCSiy_-07N1wCTmIqx_GmPB0lO_41K91ao6a5XKUw1F8D3zYPnzCtP1rNEeL9JSfiukN5C2PQ8tyo8uDLtYVhLY6du08hziF4wiFMR7kDL4Qp05LwEbaI06edoj3TshqyWRA8AlgeKy5aBXPaBZvTeEoykR2HWv292Vdoeq61v4wYi_Y2eJ2F2tUAHBs5M1-t0375FupzcXrRjuMJJLuFngzXPyZRcc8Kb5NPtSxP9Ed4bdqAnSGOnf6O8xeob9jMMZm4KK2aGD7Pw8Usx0mW7kfCwHCl4Gwb0OmHgX5oYkaVcHGUa40CrQ7jD9pr_Y4e3XnpeTCF7suGG96CpH6-mx8YINqjuVPpeR5CsManWtTU1SGpy_YrUMmAmoKX1d6w2dwRvLSKWLdCMmSIQh1Wb8dge-UyMmdJEs. Consulté le 06/08/2020.

[84] Art10 du Traité OHADA.

[85] Jean JISSA-SAYEGH, « La portée abrogatoire des actes uniformes de l'OHADA sur le droit interne des Etats-Parties », *Revue burkinabé de Droit*, n° 39-40, n° spécial (2001), 57.

[86] D.Abarchi, « La supranationalité de l'OHADA », *Revue burkinabé de droit*, n°37 1er trimestre 2000, p.23.

congolais. Les conflits fonciers entre les Banyamulenges et les Bembe au Sud-Kivu et l'implication des pays voisins qui s'en est suivi, démontrent éloquemment le danger précité.

La solution serait alors de réviser l'article 80 de la loi foncière congolaise dans le but de permettre aux étrangers d'avoir accès au droit de concession perpétuelle en RDC. Cet article dispose que « la concession perpétuelle est le droit que l'Etat reconnaît à une personne physique de nationalité congolaise, de jouir indéfiniment de son fonds aussi longtemps que sont remplies les conditions de fonds et de forme prévues par la présente loi[87] ». La révision de cette disposition à travers la suppression de cette condition de la détention de la nationalité congolaise pour être éligible au droit de concession perpétuelle, permettrait aux étrangers désirant investir au Congo, de conclure des contrats de concession perpétuelle dans le foncier avec l'État congolais. Contrairement aux concessions ordinaires leur reconnues et d'une durée bien précise (limitées à 25 ans), les concessions perpétuelles, rappelons-le, confèrent à leurs titulaires des droits de jouissance foncière indéfinie aussi longtemps que sont respectées les autres conditions requises à ce effet. Ce mécanisme accorderait plus de sécurité juridique aux investissements étrangers. Il pourra même impulser le développement de l'industrialisation et la transformation structurelle de l'économie congolaise par le transfert de la technologie et les capitaux étrangers.

Cela aura sans doute de conséquence positive sur la création des emplois et l'élargissement de l'assiette fiscale congolaise sur les secteurs foncier et le agricole. Il est donc aujourd'hui une nécessité de revoir ce cadre juridique congolais relatif au foncier et au secteur agricole, si l'on veut amener le Congo sur la voie de l'émergence. Cela étant fait, le droit du peuple congolais au développement pourra connaître sa réalisation.

CONCLUSION

La présente étude a porté sur le cadre juridique congolais de la propriété foncière au regard des instruments juridiques internationaux relatifs aux droits de l'homme avec un objectif de voir la façon dont l'État congolais peut réaliser le droit au développement de son peuple.

La problématique de ce travail a suscité les questions suivantes :

- ✓ L'article 53 de la foncière congolaise et le régime des concessions qui en découlent, est-il conforme aux instruments juridiques de protection des droits humains ?
- ✓ La propriété exclusive de l'Etat congolais dans le secteur foncier, est-elle compatible avec les objectifs de développement pour permettre l'attractivité des investissements en RDC, et rendre par voie de conséquence effectif le droit du peuple congolais au développement ?

[87] Voir l'art 80 de la loi n° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in *JO.RDC,* Kinshasa, no spécial, 1er décembre 2004.

L'examen de ces questions a abouti aux résultats selon lesquels, le droit de propriété est consacré dans certains instruments internationaux auxquels la RDC est partie. Ces instruments juridiques ne font pas une distinction selon qu'il s'agirait de la propriété foncière ou d'une autre propriété. Le cadre juridique congolais reconnait la propriété exclusive de l'État sur le sol et le sous-sol à travers la loi foncière. Seul le droit de jouissance à travers des contrats de concession est reconnu aux particuliers. Ce cadre juridique n'offre pas une sécurité juridique aux investisseurs et isole le secteur foncier et agricole du champ des investissements en RDC. La conséquence en est que le budget de l'État congolais est largement tributaire du secteur minier et des aides publiques au développement. La conséquence est que le pays ne produit rien par manque d'industrialisation et de transfert de technologie. Le chômage est alors élevé et le droit au développement du peuple congolais reste chimérique et impossible à réaliser par l'État congolais du fait d'une assiette fiscale limitée au secteur minier. Le foncier et le secteur agricole ne sont donc pas mis à profit pour l'émergence du pays, encore que le pays fait face à d'autres problèmes dont la mauvaise gouvernance, la corruption et la kleptocratie.

Ce cadre juridique congolais relatif au foncier et au secteur agricole doit être reformé. Il faudra harmoniser l'article 16 du code agricole de 2011 avec l'Acte uniforme de l'OHADA relatif au droit des sociétés commerciales, celui-ci étant devenu le droit commun des sociétés et écarter l'exigence des associés majoritaires uniquement congolais. Cela accroitra les investissements dans ce secteur et permettra de créer des emplois et de réaliser le droit au développement. En ce qui concerne la loi foncière, la solution serait d'ouvrir l'acquisition des concessions perpétuelles aux étrangers. Ce qui aboutira au développement des investissements dans le secteur foncier et l'élargissement de l'assiette fiscale congolaise. L'État aura alors des recettes suffisantes pour réaliser le droit au développement du peuple congolais. Toutefois, il subsiste des préoccupations sur la manière de concilier les intérêts poursuivis par les IDE, la souveraineté de l'État sur ses ressources naturelles et les droits des communautés locales dans les États à gouvernance fragile comme la RDC. Ces aspects n'ont pas été suffisamment développés dans cette étude et mériteraient d'être abordées dans des recherches ultérieures.

BIBLIOGRAPHIE

I. Instruments juridiques

A. Législation internationale

- Déclaration universelle des droits de l'homme du 10 décembre 1948.
- Charte africaine des droits de l'homme et des peuples de 1981.
- Protocole additionnel I à la Convention européenne des droits de l'homme.
- Convention américaine des droits de l'homme du 29 novembre 1969.
- Acte uniforme de 2014 sur le droit des sociétés commerciales et groupements d'intérêt économique.
- Déclaration sur le droit au développement adoptée par l'Assemblée générale des Nations-Unies dans sa résolution 41 /128 du 4 Décembre1986.

B. Législation nationale

- Constitution de la RDC du 18 février 2006 telle que modifiée et complétée par la loi no 11/002 du 20janvier 2011 portant révisions de certains articles de la Constitution du 18 février 2006, *J.O. RDC.*, 52ème année, no spécial, 5 février 2011. (Ci-après Constitution de la RDC).
- Loi n°2002-11 du 29 aout 2002 portant Code Forestier congolais.
- Loi ° 73-021 du 20 juillet 1973 portant régime général des biens, régime foncier et immobilier et régime des suretés telle que modifiée et complétée par la loi n° 80-008 du 18 juillet 1980, in JO.RDC, Kinshasa, no spécial, 1er décembre 2004.
- Loi n°18/001 modifiant et complétant la Loi n° 007/2002 du 11 juillet 2002 portant Code minier.
- Loi de 2011 portant principes fondamentaux relatifs à l'agriculture en République Démocratique du Congo.
- Loi de finances de 2018 note également dans son exposé des motifs que la contribution de l'APD est de 25,2 % au budget général de l'Etat, voir loi de finances pour l'exercice 2018 en RDC, disponible sur https://www.leganet.cd/Legislation/JO/2017/loi%20des%20finances%202018.pdf.

II. Jurisprudence

- Cour européenne des droits de l'homme, 7 Décembre 1976, Affaire Handyside C /Le Royaume Uni, n°5393/72.
- Comité des droits de l'homme des Nations Unies, Affaire Blanco C/Le Nicaragua(1994), Communication n°328/1988. Commission africaine des Droits de l'Homme et des Peuples, les peuples autochtones Ogiek C/La République du Kenya, Requête N° 006/2012.
- Cour Suprême de Justice, RC 299 du 23 Juillet 1982, in *Bulletin des arrêts,* Kinshasa, 2001.

III. Doctrine

- Joël BARAKA et An ANSOMS, *Territoire et Foncier en Afrique contemporaine :De la marchandisation des droits fonciers vers la redéfinition des dynamiques territoriales à Idjwi(RDC*), Faculté des sciences sociales, politiques et de communication, UCL, 2017.
- Nicolas BERNARD*, Précis de Droit des biens,* Limal, Anthemis, 2013.
- Cadot Olivier, « industrialisation et transformation structurelle : l'Afrique subsaharienne peut-elle se développer sans usine ?» *In Revue d'économie du développement 24*(2) :19, janvier 2016.
- Olivier De Schutter, Jo Swinner and Jan Wouters, "Introduction: Liberalization of investment and Human Development", CRIDHO Working paper, UCL, 2012/4.
- Hernando De Soto, *Le mystère du capital : Pourquoi le capitalisme triomphe en Occident et échoue partout ailleurs*, Flammarion, Mars 2005.

- Diedhiou PARFAIT, « L'article 10 du Traité de l'OHADA : quelle portée abrogatoire et supranationale ? », *Revue de droit uniforme*, 2007.
- Dieter GOSEWINKEL, « Introduction. Histoire et fonctions de la propriété », *Revue d'histoire moderne et contemporaine,* 2014/1, no 61-1.
- Jean ISSA-SAYEGH, "La portée abrogatoire des Actes uniformes de l'OHADA sur le droit interne des Etats-Parties*", Revue Burkinabé de droit*, n° 39-40, n° spécial (2001), 57.
- Francis HAUMONT, *Les instruments juridiques de la politique foncière*, Bruxelles, E. Story-Scientia, 1990.
- Jean-Pierre LANGELLIER, *Mobutu,* Paris, Editions Perrin, 2017.
- Kalambay LUMPUNGU Gaston, *Le Régime foncier et immobilier*, PUZ, Kinshasa, 1985
- Jean-Pierre KIFWABALA, *Droit Civil : les biens*, Tome 1, *Les droits réels fonciers,* PUL, Lubumbashi, 2004.
- Nathalie MASSAGER, *Les bases du droit civil, Tome II. Droit des biens, droits réels, théorie des suretés*, Précis de la Faculté de Droit et de criminologie de l'ULB, Limal,Anthemis, 2013.
- Claire MAINGUY, « L'impact des investissements directs étrangers sur les économies en développement », in *Revue Région et Développement* n^{0} 20-2004, pp. 66-89, http://bibliotheque.pssfp.net/livres/L_IMPACT_DES_INVESTISSEMENTS_DIRECTS_ETRANGERS_SUR_LES_ECONOMIES_EN_DEVELOPPEMENT.pdf.
- D. ABARCHI, « La supranationalité de l'OHADA », *Revue burkinabé de droit*, n°37 1er trimestre 2000.
- Jean-Louis MOREAU, « De la décolonisation à la Zaïrianisation. Le sort des capitaux belges au Congo » in *Cahiers Irice,* 2010/2(n°6).
- Zoe MOODY, *Les Droits de l'enfant : Genèse, institutionnalisation et diffusion (1924-1989)*, Neuchâtel, Editions Alphil-Presses Universitaires Suisses, 2016.
- Aymar NYENYEZI et An ANSOMS, « Droit et Conflits fonciers à Bukavu : Vers une anthropologie de mécanismes juridictionnels de résolution des conflits », *in Conjonctures congolaises*, 2015.
- Melik OZDEN, *Le droit au développement : Etat des débats tenus à l'ONU sur la « mise en œuvre » de la Déclaration historique adoptée à ce propos par l'Assemblée générale des Nations Unies, le 4 décembre 1986*, Une collection du programme Droits humains du Centre Europe-Tiers Monde(CETIM), 9 février 2006.
- Oyinkan, « Nigeria, Les droits de propriété pour stimuler la croissance, Pour que le Nigeria atteigne un état où la liberté est à l'ordre du jour, les droits de propriété ne peuvent et ne doivent pas être ignorés », *Libre Afrique*, 2017.
- Frédéric SUDRE, *Droit européen et international des droits de l'homme*, PUF, Paris, 13ème Ed 2016.
- Jean-François ROMAIN, *Droits réels, chronique de jurisprudence2006-2015*, Larcier, Bruxelles, 2017.
- Sofiane TOUM, « Facteurs d'attractivité des investissements directs étrangers en Tunisie », in *L'actualité économique*, 85 (2), pp. 209-237, https://www.erudit.org/fr/revues/ae/2009-v85-n2-ae3892/044254ar.pdf

- Innocent UTSHUDI, « La gestion domaniale des terres rurales et des aires protégés au Sud-Kivu : Aspects juridiques et pratiques d'acteurs », *L'Afrique de Grands Lacs*, Annuaire, 2007-2008.
- David Van REYBROUCK, *Congo Une histoire,* Bruxelles, Actes Sud, 2014.
- Diane ROMAN, « L'opposabilité des droits sociaux », in *Informations sociales,* 2013, no 179.

IV. Thèses de doctorat

- Woyo KONATE, *Universalité des droits de l'homme et mondialisation,* Thèse de Doctorat, Université de Montpellier 3, 2011.
- Mame NDIAGE WADE, *L'accès au juge et la constitutionnalisation du droit,* Thèse de doctorat, Université d'Aix-Marseille, 2015.
- Nauel RASOURI-KOUIDER , *L'impact des investissements directs étrangers (IDE) sur la dynamique industrielle de la République Tchèque*, Thèse de doctorat en sciences économiques, Université de Strasbourg, 2015, p. 75, https://tel.archives-ouvertes.fr/tel-01256135/document.

V. Syllabus de Cours, Rapport et autres documents

- BANQUE MONDIALE, Congo, Democratic of Urban Development project(PDU):Technical implementation Support Mission-October 28 to November 8, 2019.
- BANQUE MONDIALE, République Démocratique du Congo, Diagnostic systématique pays, Rapport Mars 2018.
- Adolphe BAMBI, « La loi agricole congolaise et ses faiblesses », 21 mai 2012, Inédit.
- Marie-France CROSS, « RDC : Pourquoi les dans l'agriculture ne viennent pas en RDC in République Démocratique du Congo, 25 Octobre, 2019
- Commodafrica, « La RD Congo, 2ème pays au monde en terres arables », 5ème édition de l'Agribusiness Forum, Kinshasa, 2015.
- Expobeton RDC, « problématique foncière en République Démocratique du Congo », Inédit, SD, www.expobetonrdc.com.
- Haut-Commissariat des Nations-Unies aux Droits de l'homme, Rapport du Projet Mapping concernant les violations les plus graves des droits de l'homme et du Droit International Humanitaire commises entre mars 1993 et juin 2003 sur le territoire de la République Démocratique du Congo, New-York, Août 2010.
- MASAMBA VUNDU et KALAMBAY LUMPUNGU, *Code forestier commenté et annoté,* Kinshasa, Mai 2013, Inédit.
- PNUD, « Rapport sur le développement humain au XXIème siècle, « Note d'information à l'intention des pays concernant le développement humain 2019, Congo (République démocratique du) »,2019.
- Sébastien Van DROOGHENBROECK, *Les dimensions collectives des droits de l'Homme, Les droits de la solidarité,* syllabus, Université Saint-Louis/Bruxelles, 2018, Inédit.

NOVEL THIOSEMICARBAZONES-BASED BENZENESULFONAMIDE hCAII INHIBITORS: SYNTHESIS, BIOLOGICAL EVALUATION AND DOCKING STUDIES

Muhammed Trawally
0000-0002-0041-4612
Kübra Demir-Yazıcı
0000-0001-9928-4733
Özlen Güzel-Akdemir
0000-0003-3680-1945
Atilla Akdemir
0000-0001-8416-0471
Istanbul University, Istanbul, Turkey
Bezmialem Vakif University, Istanbul, Turkey

Abstract
Among the reported human carbonic anhydrase enzymes, human carbonic anhydrase II (hCAII) is the most prevalent and active isoenzyme present in the eye. It is the highly targeted enzyme that plays a paramount function in elevating the intraocular pressure in the eye by catalyzing the interconversion of carbon dioxide and bicarbonate and eventually leads to glaucoma. The present clinically used antiglaucoma carbonic anhydrase inhibitors are either systematic agents that cause unwanted side effects by inhibiting extra-ocular hCAII or other isoforms, or water-soluble topical agents that irritate the site of administration as a result of increased acidification caused by their HCl salts. To prevent these undesired effects, we designed novel benzenesulfonamides incorporating thiosemicarbazone moiety that inhibit hCAII at low nanomolar concentration and possess sufficient physiochemical properties to be applied topically without forming a salt with HCl acid.

Keywords: Antiglaucoma, thiosemicarbazone, carbonic anhydrase, benzenesulfonamide

SYNTHESIS OF NOVEL 2,5-DIKETOPIPERAZINE AND 2,6-DIKETOPIPERAZINE DERIVATIVES DEPLOYING AN INTRAMOLECULAR C-N CYCLIZATION METHOD AND A MULTICOMPONENT UGI FIVE-CENTER, FOUR-COMPONENT REACTION

Muhammed Trawally
0000-0002-0041-4612
Istanbul University, Istanbul, Turkey
Maciej Dawidowski
0000-0002-7262-5718
Medical University of Warsaw, Warsaw, Poland

Abstract
In this study, new 2,5-diketopiperazines and 2,6-diketopiperazines were synthesized and characterized. The synthetic pathway comprises two different methods: intramolecular C-N cyclization method and multicomponent Ugi five-center, four-component reaction. The intramolecular C-N cyclization method is a sequence of three steps of dipeptide formation, N-Boc-deprotection, and cyclization. The second method is also three sequential steps of Ugi five-center, four-component reaction (U-5C-4CR) followed by amide N-de*tert*butylation and cyclization. The structures of the synthesized compounds were corroborated with IR and NMR spectral analysis.

Keywords: Multicomponent reaction, Ugi reaction, Diketopiperazine, dipeptide formation, U-5C-4CR

The Problem and the Prospects of Management of Abubakar Tafawa Balewa Teaching Hospital's Staff Quarters

SANI INUSA MILALA
ORCID ID: Orcid.org/0000-00017332459
Dr. BALA ISHIYAKU
ADAMU ABDULLAHI
Abubakar Tafawa Balewa University Bauchi, Bauchi state Nigeria

Abstract
The in-ability of any of the parts building to perform fully or in part its design to perform some specific functions but fail to render the required function brings about management problems. A management problem hinders effective operations of property management activities. Depending on the magnitude of the problems, ineffective service delivery could bring about client dissatisfaction as well as prevent the achievement of the owners' investment objective(s).This paper aimed at examining the problem and the prospects of management of Abubakar Tafawa Balewa teaching hospital's staff quarters with view to identify the problem and provide solutions. The study adopted the use of mixed approach that is descriptive and exploratory design because it will use objective methods to uncover facts about its background and problems. The study approach considered most appropriate for this study is quantitative, as numerical data and qualitative will be collected and analyzed. Through the use of questionnaire survey and SPSS software respectively, 82 set of questionnaire survey was administered to staff in the quarters of ATBU Teaching hospital (study population) and 80 was retrieved and use for the analysis. It was also discover from the study that the factors affecting the management of ATBU teaching hospital's staff quarters are Maintenance budgeting, Tenant behaviors, Social cultural factors, Technological factors, Maintenance, Over use of property, Remittance of rent, Building characteristics, Lack of supervision, Lack of maintenance resources Lack of terms of contract, Maintenance schedule, Inappropriate management and Structure Rental charges, it also uncover that factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters has 60% strong size effect on the performance of the staff And strategy / policies use in the management of ATBU teaching hospital's staff quarters. , were Reactive management strategy, Proactive management strategy, Landlord tenant objective strategy, Lack of performance monitoring strategy, and Inadequate information management strategy. It was concluded that generally, governments do not practice current conventional methods of property management. It is only lately that some of the developed countries governments started revolutionizing the approaches to property management. Therefore, there is need for working department of property management department.

Keywords: Managements, Property, Maintenance and problems

1.0 Introductions

Property management is an act of intermediation between owners and occupies on issues affecting the parties arising from ownership and occupation of buildings. It is a conscious process of guiding and tailoring an investment in land into profitable venture. Its main concern is the optimization of the owners' investment (Scarrett, 1995).
Property management seeks to advice on the establishment of an appropriate framework within which to achieve the set out objectives of the property owner and particularly to have regard to the purpose for which the estate is held. It may be said to be twofold: to maintain the investments in the property and to maintain the physical aspects of the property at a point of optimum efficiency and economy.

The Abubakar Tafawa Balewa University has constructed a quarters for the staff of Abubakar Tafawa Balewa teaching hospital a civil-servants dwelling houses. This in itself requires that proper maintenance of the existing housing pool be a priority to the university management board or otherwise the result would be a substantial loss of habitable pool of structures for the university teaching hospital employees, and in due course, significant staff housing shortage. This could as well lead to very sensitive political problems. There will come a time when the university would not be able to house its valued personnel which translates into slow expected and or required production, disincentive to expatriates and local elite, brain drain, or even worse, having to house these people on private properties at rents not maintainable. It may even be found out that the university would be expending more money towards rents than the worth of the affected personnel, if thus measured.
There is a conspicuous existence of continuing deterioration of the Abubakar Tafawa Balewa teaching hospital staff quarters dwelling structures. These housing structures are noticeably ill maintained, more so by way of comparison to houses in government residential and surrounding areas houses that previously belonged to the government and later sold to individuals. The impact of the current and arguably unhealthy continuing situation will be the excessive losses in terms of asset capital values of these structures, substantial civil servants and solicited expatriates housing deficit, and the worst case scenario being that where the government ends up without any housing structures pool for its important personnel. This would call for unnecessary expenditure on privately owned houses at unsustainable rentals so as to maintain and attract the aspired expertise. It is very possible that the dissatisfaction of the Abubakar Tafawa Balewa university teaching hospital staff may possibly undermine the output of their work as health personnel's and housing management stability and assurance in the study area.

Therefore, against the background the research to be undertaken herein is aimed at examining the problem and the prospects of management of Abubakar Tafawa Balewa teaching hospital's staff quarters with view to identify the problem and provide solutions, critically analyzing the staff housing/property management framework. As the needs indicates Optimistically, the findings would help in coming up with a solution to the persistent problem that triggered this research, which is the apparent deterioration of the Abubakar Tafawa Balewa university teaching hospital staff housing afforded to the staff. By being able to determine where the problem lies, and specific sub-problems established and identified in this respect, it is believed that it would be possible to come up with appropriate solutions and recommendations to the problem.

2.0 literature review

Property Management

Successful property management is a demanding activity which requires relevant understanding, ability and appropriate technical and organizational skills as well as resources to successfully maintain and improve property value through to its obsolescence. Property assets, which include land and buildings, are a key resource for all types of organizations, including local authorities and central governments.

In the same way as other resources - human, financial and information – contribute to the success of these organizations, and so does the property resource.

According to Scarrett (1995) "property management seeks to advice the establishment of an appropriate framework within which to oversee property holdings to achieve the agreed short and long-term objectives of the estate owner and particularly to have regard to the purpose for which the estate is held. The basic needs will be to carry out such tasks as negotiating lettings on suitable terms; initiating and negotiating rent reviews and lease renewals, overseeing physical maintenance and the enforcement of lease covenants as mentioned in chapter one.

These activities will take place within an agreed strategic framework where there is a need to be mindful of the necessity of upgrading and merging interests where possible, recognizing other opportunities for the development of potential and fulfilling the owner's legal and social duties to the community". Not only is a large amount of capital devoted to these assets, they can also add value to an organization through effective and often creative management.

Two of the major criticisms of inadequate management practices are the lack of a strategic approach to property management and the limited recognition of the value of these assets by property users and operational decision makers, resulting in potential asset becoming a major liability. But many organizations, internally and externally, have responded to the challenges and introduced a number of measures in order to improve their management practices related to operational property.

Initiatives among others including internal rental systems (asset rents), planned maintenance programmes, co-ordinate occupier audits, and valuations of the portfolio have all become much more widespread. Organizations have become increasingly aware of both the problems and opportunities with regard to their operational property. This has had a direct impact on their occupational requirements both in terms of the amount of space required and the cost of occupancy.

A case study done in Queensland Australia shows that state and local governments "typically have a more rigid administrative structure (a.k.a. bureaucracy) and are not required to generate a profit. Historically, the primary focus of asset management by governments has been to defend against loss. This defensive position stems from the desire to protect the taxpayer investment in government assets and, not so coincidentally, avoid negative publicity. As a result, countless activities have evolved over time within governments that are intended to assure stewardship of state and local government property. Auditing, inventory, and financial recovery of losses due to theft or negligence have been the primary focuses of governments regarding property management. Little attention has been given to managing assets during the utilization phase to assure their highest and best use. Additionally, governments have often made decisions related to purchasing or disposing of assets based upon budgetary rather than business considerations. As a result, reliable asset information and property management standards are solely lacking." (www.build.qld.gov.au)

Property has been increasingly recognized as a key resource which, if well managed, contributes to an organization's success. For local authorities, property is the environment in which people work and from which services are delivered. In this sense its suitability has an impact on both employees and clients, and therefore an influence on the efficiency and effectiveness of all the organization's activities.

With the pressure on organizations, not least local government, to deliver ever- higher quality services at an even lower cost, property must be considered as a significant element on both sides of the formula, quality and cost.

Elected members and senior managers need to identify and evaluate if and how property is contributing to value for money. This can only be achieved if both groups are clear about how property contributes to the authorities' objectives.

Essential is a broad framework for considering property at the most strategic level so that the senior management team are able to understand the costs and benefits of their decisions and the impact on the property resource. Property management of a large group of buildings held for the principal purpose of taking full advantage of financial returns on the best terms available is usually referred to as property portfolio management. On the other hand, if the buildings are held for operational purposes, it is termed property asset management. Operational property is that property which an organization uses and/or owns in order to undertake its main function (BUQS 524 Class notes). It may be office and residential accommodation to house the management and administrative staff; specialist property for a distinct activity such as sports centres, schools, and day centres; retail space for services; or property held for future use. More often than not, the overall objectives of property management would be maximisation of income (total returns) and capital.

Effectiveness therefore must be based on the contribution property makes towards an organization's overall objectives. Nonetheless, only when an organization knows why it has a property will it be able to assess its contribution. Even with a clear view on why a property is owned or occupied, it is often difficult to identify precisely this contribution. In some cases it may be a straightforward financial benefit from a property that has been sold, redeveloped or let to another organization.

In most cases though, the contribution of operational property is imbedded in the performance of the main activities. For example, by having the most appropriate property for the purpose, students' learning experience can be enhanced by an upgraded school environment, clients can be better served in a job centre, efficiency can be improved within an administrative centre, and employees can be motivated by a high-quality office and residential environment. The benefit gained from property in these cases is difficult to quantify but that does not undermine the necessity to understand the links.

2.1.1 A Strategic Framework for Property Management

Gibson and Orchard-Lisle (1994) state that if the aim is to ensure that operational property is managed on a par with all other significant resources, property should be part of an organization's strategic planning process. Property should be actively managed, changing to meet the future needs of the organization. Specific targets should be set and measures of performance established as well as monitoring and control system. To implement this it is necessary to have appropriate management information, which combines operational information with property information.

They argue that the detail of effective operational property management is therefore different for every organization because their goals, property requirements and methods of working are unique. The similarity is the broad management process: “defining strategic property objectives; determining how to achieve those objectives; monitoring both the property performance and its management; and collecting appropriate information to support the process. All organizations should be going through this process: planning the future direction of property and having a clear understanding of what activities need to be accomplished and when. Action should be planned and potential problems anticipated before the crisis emerges.

This is the essence of proactive management.” Clearly what the authors are trying to show here is the fact that as much as the needs of property management of different organisations may differ, overall, the process towards good property management follows a similar approach on a wider scale. There are however fundamental general requirements that need to be fulfilled towards achieving the goal and hence practising of good property management.

Gibson and Orchard-Lisle (1994) come up with the following requirements; appropriate quantity and quality of information. They assert that information that is to be used at the strategic level needs to be a summary of much of the detailed information held in each property. Senior managers, besides being concerned with the general, need to be aware of how this detailed information has been defined in order that they are able to interpret the resulting strategic measures; understanding of the way property interacts with the other resources in order to deliver wider aims of management is of importance to the

leaders of the organisations and; since the senior managers are responsible for the performance of the organisation, they need to ensure that all their resources are being managed in an efficient and effective manner. This calls for a series of measures that act as indicators of good or bad performance. It is argued that these indicators are not well developed in the property, but if a strategic approach is to be adopted, there needs to be a set of relevant measures in order to point the senior management team in the appropriate direction. Bond and Dent (1998) attest that accountability must relate not only to the financial resources, but also to the administrative/legal processes of government as well as the overall net benefits of owning and occupying assets. Therefore on the basis of accountability alone, there appears to be clear grounds for authorities to set up systems to manage their property assets effectively and efficiently. Further, the availability of adequate support systems should also be highly rated to the ability to manage property efficiently and this also means that there will be continuing need for a cadre of effective professional staff.

Types of management

There are different techniques by which management of property is done. The in- house management as could be induced from the name is where the management is undertaken within the company itself by the employees of the company.

Nonetheless, in-house managers often have to supplement their skills and abilities by employment of the private property management practitioners for special tasks or for certain limited management functions.

Another technique, which is quite popular, is appointing an agent/company to manage the property. It is advantageous to employ this technique for these companies engage in a wide range of activities related to property and maintain highly experienced and motivated teams (Scarrett; 1995). But since these firms would be having a number of clients, confidentiality is threatened for the simple reason that in property information is very valuable to the extent that a company would go to great lengths to protect its information, as it could be used to its detriment by other competing companies.

The third technique is a combination of the first two and all that is required from the agent and the in-house manager is to work as a team towards efficient management of the company's property.

Lastly, the final technique is not very different from the previous, but in this case, the agent is given specialised and limited tasks to attend to.

Gibson and Orchard-Lisle (1994), in a study towards effective operational property management, found out the main weaknesses, which tended to be related to the management process and the attitude towards property within the organizations, were as follows;

a. Reactive management:

Operational property assets were often managed in a reactive manner. The work was driven either by the short- term requirements of the operations or by the property itself. Operational managers asked for work to be undertaken on a property on an ad hoc basis, with little thought or understanding of how the "improvement" would affect the value of the property. The requirements of the property itself such as an impending rent review or a leaking roof would be the driving force behind the establishment of priorities. In many instances there was little concern for the long term. The objective for property, if one existed, tended to be related to minimizing costs in the short term rather than assessing and enhancing the added value property could bring to an organization.

b. Landlord versus tenant objectives.

Allied to the short-term view was the lack of understanding of the difference between the objectives of a landlord and those of a tenant. A landlord is concerned with maintaining and enhancing the value of the asset while the tenant is concerned with minimizing the cost of occupancy and obligations. This issue was often not addressed by organizations and the property managers found that they had to balance the conflicting objectives with little or no guidance from the senior management team.

c. Lack of performance monitoring.

The lack of explicit property objectives led to little monitoring of the performance of property or its management. There was often no awareness of the opportunity cost of property. Operational managers were not charged for the property which they occupied, especially if it was owned freehold by the organization.

The effect of this was twofold. First, there was no incentive for managers to use the space efficiently. Second, the true cost or performance of the operations was not known because property was effectively a free resource. Property was subsidizing the operation but the level of subsidy was not quantified.

d. Inadequate information.

The information required in order to make informed decisions was often lacking. Although most organizations had a basic property inventory, it was often incomplete and inaccessible. It was also difficult to integrate operational with property information. This deficiency was often the missing cornerstone which made effective property management impossible."

They further explain that if the aim is to make certain operational property is managed on a par with all other significant resources, property should be part of an organization's strategic planning process. It should be actively managed, changing to meet the future needs of the establishment in question. Specific targets should be set and measures of performance established as well as monitoring and control system. To implement this, it is necessary to have appropriate management information which combines operational information with property information. The detail of effective operational property management is therefore different for every organization because their goals, property requirements and methods of working are different. The similarity is the broad management process: defining strategic property objectives; determining how to achieve those objectives; monitoring both the property performance and its management; and collecting appropriate information to support the process as mentioned in the previous paragraphs. The essence of proactive management is planning the future direction of property and having a clear understanding of what activities need to be accomplished how and when. Action should be planned and potential problems anticipated before the crisis emerges. A strategic approach should be developed and a proper identification of the causes of management shortcomings made.

In professional property management that is commercialised, the primary function of the property manager is to generate income while achieving the owner's objectives, always preserving the value of the property. In this regard, property can be divided into four major classifications: residential, commercial, industrial and special-purpose property, and all these classes individually command a different combination of knowledge and skills from the property manager.

Residential property comprises the privately owned residences, government houses and institutional housing. It satisfies the basic shelter needs of the population. These could be single-family homes which do not require professional property management though they could at times be used as rental properties, multifamily residences where due to increased demand for space in prime areas, these developments dominate through maximum utilisation of space and also the fact that construction costs are relatively cheaper. There may also be mobile home parks and facilities for the elderly under the residential property category.

Commercial property is made of properties that are meant for generating income, among others; shopping centres, office buildings, petrol garages and so forth.

There is also the industrial property, whether light or heavy. This is where raw materials are converted into finished products, comprising all activities involved in the production, storage and distribution of goods.

Lastly, the special purpose property includes properties such as hotels, resorts, schools, motels, government institutions and churches. All these properties would require some form of management, especially the maintenance part of the building fabrics. Poor maintenance has proven to be one of the most prominent drawbacks of good property management.

Factors impacting on Maintenance of a structure

Every structure is ultimately subject to dilapidation, and yet the rate at which the dilapidation process occurs is a result of a range of factors at work during the life of the building. Olubodun (2000) identifies these factors as; Dwelling external influence where he mentions that, as an example, a defective unattended fence subconsciously impacts negatively on the concern towards the well being of the building structure. Climatic exposure is also one of the external influencing factors;

"Design integrity standard of a dwelling and this basically concerns itself with the effectiveness of the design as some are more resilient than others in terms of wearing out of the structure-the method of construction plays an important role as well;

Tenant's lack of care as some would not respond as soon as the defect occurs or ever at all, therefore leaving the defect intensifying to the detriment of the structure;

Influence of changing and evolving standards such as the heating systems and the type of concrete as compared to those that were used decades ago;

Ageing influence which may sometimes be catalysed by some of the mentioned factors;

Vandalism-sometimes tenants or their close ones may vandalise properties leading to the premature dilapidation of the structures;

Accidental damage may also play a role towards the early deterioration of a building structure; Dwelling orientation and soil condition. These may be observed by fracturing bricks and wall cracking".

From the point of view of a property or maintenance manager, each of these factors represents strategic influence, an understanding of which property inspectors must acquire in order to afford sound remedies to the defects encountered in the inspection of dwellings. The set of component factors for housing maintenance needs give an insight into the criteria available for those involved in determining maintenance budgets. But before the tenant occupies the building structure, there is usually a contract that gives the tenant the right to occupy the building and this contract would usually have applicable conditions both to the landlord and the tenant (occupant), and these are usually referred to as tenancy agreements and or leases.

The scope of work of a property maintenance department include amongst others; maintaining the property, including all buildings and all machinery efficiently and economically; budgeting for annual expenses and endeavouring to operate within the budget; controlling the maintenance workshops and building inspectors; ensuring that planned maintenance procedures are adhered to and; controlling the cleaning of the buildings (Cloete, 1994).

Tenancy Agreements/Leases

Tenancy in property is guided by a contract between the landlord and the tenant, and usually the contract is referred to as the lease. According to Delport (2001) "a lease is an agreement between one person (the landlord or lessor) and another person (the tenant or lessee) in terms of which the landlord binds himself to give the tenant the temporary use and enjoyment of property, wholly or in part, in return for a payment called rent". A contract is an agreement entered into by two or more persons, with the intention of establishing a legal obligation between them. Now, the lease agreement conveys the rights of possession of the leased premises to the tenant. In general, for conclusion of legal contracts, it is required that the parties should be in consensus, that is, agreeing on all aspects of the contract; the parties must have the legal capacity to enter into a contract where distinction is made on married persons, unmarried persons and minors; the contract must be lawful (all agreements are lawful unless their conclusion is prohibited by legislation or common law); initial performance under the contract must be possible and; the prescribed formalities must be complied with, more in written contracts (Delport,2001).

Ring (1967) argues that for the tenant and landlord relationship to be created, it is essential that: (a) The lessor and the lessee should have contractual capacity;

(b) There should be an agreement to let and take;

(c) The concerned premises should be sufficiently described;

(d) There should be a specified term of occupation;
(e) There has to be an amount of consideration;
(f) An execution such as required by statute and;
(g) A delivery and acceptance.

Other important provisions of a lease agreement comprise the precise identification of the premise, its extent and location. The date of commencement and term of the lease should be fixed or be ascertainable at the time when the lease takes effect. Still on the lease, Scarrett (1995) states "the law will imply the following covenants in the absence of any express provisions on the part of the tenant:

• To pay the rent, in arrears unless otherwise provided: rent continues to be payable even if the property is destroyed unless there is express provision to the contrary;
• To pay the usual rates and taxes;
• To use the premises in a tenant-like manner; • to deliver up possession at the end of the term in the same condition, fair wear and tear expected.

And on the part of the landlord:

• To allow quiet enjoyment;
• Not to derogate from his grant
• To give possession;
• To pay landlord's taxes;
• In the case of a furnished house, to ensure that it is fit for human habitation at the commencement of tenancy."

These are nonetheless usually provided in the lease contract and or by legislation such as the Rental Housing Act of the Republic of South Africa. Also, they are not necessarily similar to the above provisions in every case-they may differ from one country to another. For example, rates and taxes can be payable by either the landlord or the tenant depending on the agreed terms.

There exist different kinds of tenancies between the tenant and the landlord, amongst others, the monthly tenancies where letting is made for one month only.

Here if at the end of the month, the tenant holds over and pays rent and the landlord accepts it, there is by implication renewal of letting for one month and so on. Or, tenancy for a term of year(s), where the tenancy is basically dependent on the agreed term, at which the tenancy ends. It could nonetheless have the option of renewal.

In Queensland Australia, "all government employees occupying government employee housing are required to sign a General Tenancy Agreement in accordance with the Residential Tenancies Act 1994 as amended by the Residential Tenancies Amendment Act 1998. Private tenants will be normally required to sign a fixed-term lease and pay the prescribed bond.

All government employees who wish to be allocated a government house will be required to sign an acknowledgment covering the following provisions.

• If the employee and/or spouse/partner purchases a residence in the same location, they must advise DPW with the full understanding that they will be required to show cause why their tenancy should not be terminated at 30 day's notice.
• The term of the tenancy is not expected to exceed five years and, if the tenant is still occupying the house after this time, the tenant may be asked to show because why the tenancy should not be terminated upon six months notice.

Departments should periodically review the allocation of residences and rental structures to maximize assistance to employees who have been subject to recent appointment or transfer to a centre from another location.

The administration of tenants is to be conducted in a fair and reasonable way and in accordance with the Act and other established protocols and procedures incorporated in the relevant Statutes of Queensland.

All departments are required to comply with the provisions of the Act.

Where one department agrees to place one of its employees in a house owned by another department, a fee equal to market or economic rent as appropriate is to be paid by the one department to the other,

unless the owner department determines otherwise. Unless otherwise determined by the Government, subsidized rental rates for government employees will continue under the salary base structure approved by the Government in 1984.
Private tenants who rent a government employee house from the Scheme are to pay full market rent.
Unless excluded by the Government decisions in 1984 (which apply to unmarried employees in shared accommodation), tenants are to pay for all energy consumption." www.build.qld.gov.au.

METHODOLOGY

The study adopted the use of mixed approach that is descriptive and exploratory design because it will use objective methods to uncover facts about its background and problems. The study approach considered most appropriate for this study is quantitative, as numerical data and qualitative will be collected and analyzed. Survey research strategy which uses questionnaire as instrument of data collection was adopted in this research. Hence, in consistence with a study by Inuwa (2014), this research design is mainly quantitative (exploratory and descriptive) in nature. The staff of Abubakar Tafawa Balewa teaching hospital in bauchi state formed the Population of a study, where the sample size for this study was determined using Krejcie and Morgan table (1970). The population is 150 where 108 will be use to represent the population according rule of thumb. Sampling random technique. Are use in the process of selecting the respondents to give every respondent equal chance of been selected and in the process of analysis The data obtained using questionnaire survey will be thoroughly screened, analyzed and sorted out for analysis depicting the information responses from the respondent, as the study contained descriptive, and inferential and mean ranking and multiple regression will be carried out using SPSS.

4.0 RESULT AND DISCUSSION

Descriptive statistics based on mean ranking was carried out to explore the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters. The results showed the ranking, mean and standard deviation for each Item.

Table 3: the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters

the factors affecting the management of ATBU teaching hospital's staff quarters	Mean	Std. Deviation	Ranking
Maintenance budgeting	5.00	.000	1st
Tenant behaviors	3.22	1.314	2nd
Social cultural factors	3.00	.000	3th
Technological factors	2.72	1.246	4th
Maintenance	2.58	1.295	5th
Over use of property	2.58	1.295	6th
Remittance of rent	2.54	1.289	7th
Building characteristics	2.52	1.286	8th
Lack of supervision	2.51	1.280	9th
Lack of maintenance resources	2.50	1.278	10th
Lack of terms of contract	2.48	1.275	11th
Maintenance schedule	2.46	1.272	12th
Inappropriate management	2.44	1.270	13th
Structure Rental charges	2.40	1.270	14th

Table 3: Shows. It shows most of the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters, based on five point measurement scale, were Maintenance budgeting

with 5.00 mean ranked 1st, Tenant behaviors with 3.22 mean ranked 2nd, Social cultural factors with 3.00 mean ranked 3rd, Technological factors with mean values of 2.72 ranked 4th, Maintenance with mean value of 2.58 ranked 5th, Over use of property with mean value of 2.58 ranked 6th, Remittance of rent with mean value 2.54 ranked the 7th, Building characteristics with mean of 2.52 ranked the 8th , Lack of supervision with mean of 2.51 rank the 9th , Lack of maintenance resources with the mean of 2.50 ranked the 10th Lack of terms of contract with mean values of 2.48 ranked 11th, Maintenance schedule with mean values of 2.46 ranked 12th, Inappropriate management with mean values of 2.44 ranked 13th and Structure Rental charges with mean values of 2.40 ranked 14th in the table above. Therefore, these results are indicating the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters.

REGRESSION: The effects of the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters on the performance of the staff quarters

Regression analysis was carried out, to assess **the influence of the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters** on **the performance of the staff quarters** The r^2 value in table below shows how much of the variance in the dependent variable **the performance of the staff quarters** is explained by the independent variable of Mast the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters. In this case, the value was $r^2 = .684$, $f\ (1756) = 102.434$, $p < .001$. This means that the independent variable the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters explained 58.% strong effect size in **the performance of the staff quarters** with significance at p<0.001.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.254[a]	.684	.338	.41404

a. Predictors: (Constant), FACAFFECTING MGT OF ATBUHOSSTAFQTRS

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.560	1	17.560	102.434	.000[b]
	Residual	33.942	198	.171		
	Total	51.502	199			

a. Dependent Variable: NIEGHBORHOOD QUALITY
B. Predictors: (Constant), FACAFFECTING MGT OF ATBUHOSSTAFQTRS

Descriptive statistics based on mean ranking was carried out to explore the strategy / policies use in the management of Abubakar Tafawa Balewa teaching hospital's staff quarters the results showed the ranking, mean and standard deviation for each Item.

Table 5: the strategy / policies use in the management of ATBU teaching hospital's staff quarters

the strategy / policies	Mean	Std. Deviation	Ranking
Reactive management strategy	3.55	1.441	1st
Proactive management strategy	3.50	1.411	2nd
Landlord tenant objective strategy	3.48	1.401	3th
Lack of performance monitoring strategy	3.35	1.389	4th
Inadequate information management strategy	3.24	1.380	5th

Table 5: shows the strategy / policies use in the management of Abubakar Tafawa Balewa teaching hospital's staff quarters. It shows the preferred measures to take to curb uncontrolled change in land uses, based on five point measurement scale, were Reactive management strategy with 5.00 mean ranked 1st, Proactive management strategy with 3.00 mean ranked 2nd, Landlord tenant objective strategy with 3.00 mean ranked 3rd, Lack of performance monitoring strategy with mean values of 2.66 ranked 4th, Inadequate information management strategy with mean value of 2.66 ranked 5th, Therefore, these results are indicating the strategy / policies use in the management of Abubakar Tafawa Balewa teaching hospital's staff quarters

Conclusion

The studies aimed at examining the problem and the prospects of management of Abubakar Tafawa Balewa teaching hospital's staff quarters with view to identify the problem and provide solutions. Considering the findings it shows the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters, were Maintenance budgeting, Tenant behaviors, Social cultural factors, Technological factors, Maintenance, Over use of property, Remittance of rent, Building characteristics, Lack of supervision, Lack of maintenance resources Lack of terms of contract, Maintenance schedule, the effects of the factors affecting the management of Abubakar Tafawa Balewa teaching hospital's staff quarters on the performance of the staff and the strategy and the policy the strategy / policies use in the management of Abubakar Tafawa Balewa teaching hospital's staff quarters. , were Reactive management strategy, Proactive management strategy , Landlord tenant objective strategy, Lack of performance monitoring strategy, Inadequate information management strategy, with that it should be concluded that strategic and working property management department is needed to address the above mentioned deficiencies as it clearly evidence from the study that there lack of property management services.

References

Andrew, A., Donald G., Pitt M., and Tucker M., (2008), Collaboration in Property and Facilities Management: The Experience of the Grampian Public Sector Property Group, *Property Management*. 26 (5), 310-318.

Baldwin, G., (1994), Property Management in Hong Kong: An Overview. *Property Management.* 12(4), 18-23. MCB University Press, 0263-7472.

Blackwell, M., (2007), The Relationship of Geographical Indications with Property Valuation and Management. *Property Management*. 25(2), 193-203. Booth, Philip and Matysiak,

George (1996), Commercial Property Investment and the Pensions Act 1995, *Journal of Property Finance*, Vol. 7, Issue 3,

Christudason, A. (2008), Legislations Affecting Common Property Management in Singapore, Confusion or Solution through Fragmentation. *Property Management.* 26(3), 207-219.

Chin, L. and Poh, L. K., (1999). Implementing Quality in property Management; The Case of Singapore. *Property Management*. 17(4) 310-321.

Colorado State (2008): Real Estate Manual[Online]. Available from: www.dora.co.us/realstate/manual/manu al _2008/ch 21 property management_leases. (accessed To examine the problem and the prospects of management of Abubakar Tafawa Balewa teaching hospital's staff quarters with view to identify the problem and provide solutions January, 2009).

Dant, M.J. and Laves, A.P. (1993), "Duties of Commercial Property Managing Agents", *Property Management*, Vol. 3 Iss: 4, pp.27 – 31.

Heather Tarbert (1996), Is Commercial Property a Hedge Against Inflation?: A Cointegration Approach, *Journal of Property Finance*, Vol. 7, Issue:1

Han, S.S. and Lim, L.Y., (2001), Computers in Property Management Companies, A Case Study of Singapore. *Property Management.* 19(5), 433-441. Institute of Real Estate Management (1991) *Principles of Real Estate Management*. IREM, Chicago, IL.

Lai, L.W. (2006), Private Property Rights, Culture, Property Management and Sustainable development. *Property Management.* 24(2), 71-96.

Li, L. H. (1997), Property Management in China: Opportunities and problems. *Property Management.* 15(1), 6- 11.

Okoro, R.C., 2005. Proper Terminologies in Use for Describing Different Residential Properties that can be Managed by an Estate Surveyor and Valuer. *The Nigerian Institution of Estate Surveyor and Valuer Journal*. 28(2), 45-47.

Oladokun, T.T. (2010), Sustainable Property Management Practice in Nigeria. In Rameezdeen, R., Senaratne, S., and Sandanayake, Y.G., ed. *International Research Conference on Sustainability in Built Environment*, Colombo, Sri Lanka, pp157-165.

Scarret, D. (1995), *Property Asset Management*, E & FN SPON, London. Touche Ross (1993), Profiting from Opportunities – A New Market for Tourism. Touche Ross, London.

Thoncroft, M. (1976), *Principles of Estate Management*, London: The Estate gazette Ltd, London.

Yiu, C., Wong, S.K., Yau, Y. (2006), Property Management as Property Rights Government: Exclusion and Internal Conflict Resolution. *Property Management*. 24 (2), 87-97.

Abrams, C. (1964) Housing in the Modern World: Man's Struggle for Shelter in the Urbanizing World. Faber and Faber, London.

Arias, G.E. ed. (1993). The Meaning of and Use of Housing: International Perspectives, Approaches and their Applications. Averbury, Aldershot.

Bond S. and Dent P. (1998). Efficient management of public sector assets; the call for correct evaluation criteria and techniques. Journal of Property Valuation and Investment Vol. 16 No. 4: pp 369-385.

Bratt, R.G., Hartman, C. and Meyerson A. (eds). (1986) Critical perspectives on Housing. Temple University Press, Philadelphia.

Cloete C.E. (1994). Property Management Part I. Property Education Series. Volume 2, No. 1. Technikon SA.

Cloete C.E. (ed) (2001). Principles of Property Maintenance. South African Property Trust. 2nd ED. Business Print Centre, Pretoria.

Croal G. et al (2003). Building Quality Housing Services; a case study of quality improvement in local authority building services. Journal of Property Management, Vol. 21 No. 4, pp 230-241.

De Freese L. & Coleman D.S. (1998). Final Draft paper on Rapid assessment of the Housing and Urban Management Sector in Lesotho.

Delport, H.J. (2001) South African Property Practice and the Law; A practical manual for property practitioners. Juta and Co. ltd, Cape Town.

Downs, J.C. (1970) Principles of Real Estate Management. Institute of real estate management, Chicago.

Downs, J.C. (1991). Principles of Real Estate Management. 13th ed. Institute of Real estate Management, Chicago.

Du Plessis, T. (1995). The Role of Maintenance in Improving the Income Generated during the Life cycle of an Office Building. MSc Degree Thesis. Wits University. South Africa.

Edington, G. (1997). Property Management-A Customer Focused Approach, Macmillan Press Ltd. London.

El-Haram M. A. and Horner M. W. (2002). Factors affecting maintenance costs. Journal of Quality in Maintenance Engineering. Vol. 8 No. 2, pp. 115-123.

Fisher, R.M. (1959) 20 Years of Public Housing: Economic Aspects of the Federal Program. Harper & Brothers, New York.

Ghersi, S.B. (1986) Commercial Property Leases: A Financial Analysis. BSc Degree in Building Discourse, Faculty of Architecture, Wits University.

Gibson V. and Orchard-Lisle A. (1994). Strategic Property Management. Journal of Property Management. Vol. 12 No. 3. Pp 9-14.

Hoagland, H.E. (1955) Real Estate Principles. McGraw-Hill Book Company, Inc., New York.

Horner R.M.W. El-Haram M.A. and Munns A.K. (1997). Building maintenance strategy: a new management approach. Journal of Quality in Maintenance Engineering. Vol.3 No. 4, pp 273-280.

Hughees, J.W. ed. (1977) Methods of Housing Analysis: Techniques and case studies. Centre for Urban Policy Research, New Jersey.

Hutchinson, B.D., Barton J. and Ellis N. (1975) Maintenance and Repair of Buildings. The Butterworth Group, South Africa.

Kau, B.J. And Sirmans, C.F. (1985) Real Estate. McGraw-Hill Book Company, New York.

Kit-fai P., Kwai-Sang C., Henry C. W. L. and Man-Fai C. (2002). An effectiveness-centred approach to maintenance management: A case study. Journal of Quality in Maintenance Engineering, Vol. 8 No. 4, pp 346-368.

Kyle R. C. (2000). Property Management. 6th ed. Dearborn Real Estate Education; United States of America.

Lee, R. (1976) Building Maintenance Management. Crosby Lockwood Staples, London.

Ling H.L. & Sui A. (2001). Privatising Management Services in Subsidised Housing in Hong Kong, Journal of Property Management, Vol. 19, No. 1, pp 37-49.

Maboee T. (1998). The Environment and Housing in Lesotho's Urban Areas. BA Degree in Urban and Regional Planning research, Faculty of Social Sciences, National University of Lesotho.

Milne, R.D. (1985) Building Estate Maintenance Administration. E. & N. Spon, New York.

Olubodun F. (2000). A factor approach to the analysis of components' defects in housing stock. Journal of Structural Survey Vol. 18, No. 1, pp 46-48.

Reid, M. (1962) Housing and Income. The University of Chicago Press, Chicago.

Rennison, A. and Claxton M. (1978) Housing the People: State housing in Australia. New South Wales University Press Limited, Australia.

Ring, A.A. and North, N.L. (1967) Real Estate: Principles and Practices. 6th ed. Prentice Hall Inc., London.

Scarrett D. (1995). Property Asset management. 2nd ed. E and FN SPON; London.

Seeley, I.H. (1976) Building Maintenance. The Macmillan press ltd., Great Britain.

Thomas, S.P. (1999) Rental Houses for the Successful Small Investor. Gemstone House Publishing, United States.

Varady, P.D., Preiser W.F.E. and Russel P.F. eds. (1998) New Directions in Urban Public Housing. Centre for Urban Policy Research, New Jersey.

Wordsworth, P. (2001) Lee's Building maintenance Management. 4th ed. Blackwell Science Inc., USA

Oxford English Dictionary (2004) INTERNET. http://dictionary.oed.com. Cited 4th September 2004.

THE INFLUENCE OF TOURISM SERVICEABILITY ON TOURIST SATISFACTION CASE OF YANKARI GAMES RESERVE BAUCHI STATE NIGERIA

SANI INUSA MILALA
ORCID ID: Orcid.org/0000-00017332459
Dr. BALA ISHIYAKU
Abubakar Tafawa Balewa University Bauchi, Bauchi state Nigeria
Shuaibu H Manga
Federal Polytechnic Mubi, Adamawa state, Nigeria

Abstract

It is evident that quality is related to the value of an offer, which could evoke satisfaction or dissatisfaction on the part of the user. Service quality in the management and marketing literature is the extent to which customers' perception of service meets and/or exceeds their expectations, delivering quality service to customers is a must for success and survival in today's competitive banking and other businesses. When a consumer/customer is contented with either the product or services it is termed satisfaction. Satisfaction can also be a person's feelings of pleasure or disappointment that results from comparing a product's perceived performance or outcome with their expectations.This study encompassed the primary objectives of assessing the influence of tourism serviceability on tourist satisfaction case of Yankari games reserve bauchi state Nigeria, the study employ quantitative research approach where the purpose of this qualitative research is to explore the primary objective of the study Through a critical review of the literature about service quality, and infrastructural provision, this research uses question survey to collect data in the study are, 302 questionnaire was administered and 217 were retrieved and 200 was used for the analysis and it was found that the tourist serviceability has influence on the tourist satisfaction with 69.8 size effect.

Keywords: Service Tourism and Satisfaction

INNOVATIONS MADE IN AFRICA TO COMBAT THE COVID-19 PANDEMIC DURING THE EARLY PERIOD OF OUTBREAK

Emmanuel LAMPTEY
University, University of Ibadan, Nigeria
htpps//orcid.org/0000-0002-7822-7593

Abstract
Coronaviruses are a group of viruses with spiky projections on their surface similar to crowns which cause respiratory illness and are spread by respiratory droplets from an infected person. The family include SARS, MERS and COVID-19, however, unlike the SARS AND MERS which are limited to Asia and the Middle East, COVID-19 has affected all regions of the globe and the Africa Continent is not an exception. As the number of confirmed cases reached more than a million, innovators on the continent have to find a way of confronting the challenge with creative inventions. This paper analyses some of these key inventions and how they related to controlling the pandemic.

Keyword: Innovations, Africa, COVID-19

A CROSS SECTIONAL ANALYSIS OF THE IMPACT OF THE ADOPTION OF TREASURY SINGLE ACCOUNT ON THE PERFORMANCE OF DEPOSIT MONEY BANKS IN NIGERIA: A COMPARATIVE

Abdulgaffar Muhammad
Postgraduate Student National Open University of Nigeria. Nigeria
Abbas Hamisu
Federal College of Education Zaria, Nigeria
Umar Hamisu
Zainab Sani Sambo
Nigerian Institute of Transport Technology

Abstract
Treasury single account was introduced in Nigeria to checkmate financial leakages and mitigate misappropriation of government fund/revenue. The treasury single account no doubt has brought about a paradighm shift and changed the status-quo of deposit money banks being the custodian of public money. This paradigm shift has saddled the responsibility of custody of public fund on the Apex bank of Nigeria. This change in the status-quo when observed from a distance seems to affect the financial posit on and liquidity of the deposit money banks. This recent development of the adoption of the TSA will go to a very large extent in exposing banks with liquidity problems. This follows that banks with intense liquidity problem will not be able stand the storm impacted by the adoption of the TSA compared with their counterpart with no liquidity issues. This study examines the impact of the TSA on deposit money banks in Nigeria. The justification of the study is it will put to a settle discrepancy of various findings and conspiracy theories. The study is underpinned by the incremental and the stakeholder theory. The population of the study was the total deposit money banks in Nigeria. Purposive sampling was used to identify 14 banks for the purpose of the study. The data was collected and analyzed on the basis of three indicators of performance which were return on asset, earnings per share and profit before tax for the period of 2010-2019. This span of period is dichotomized between pre and post adoption of the TSA being 2010-2014 as pre-TSA while 2015-2019 as post-TSA periods respectively. The result of the study presented showed that the adoption of the TSA to a very large extent exert an insignificant influence on the performance profitability variables. The analysis was carried out using the unpaired sample T-Test. It is recommended that deposit money banks should but to place modulation that will be engaged in cash drive and collection from deposition and over reliance on government deposit should be discourage.

Keywords: TSA, Return on Asset Profit before Tax, Earnings per share and Deposit Money Banks

EXAMINING THE RELATIONSHIP BETWEEN EFL LEARNERS' LEVEL OF ICT USE AND THEIR LEVEL OF AUTONOMY

Said Oussou
University of Moulay Ismail, Meknes, Morocco

Abstract
Learner autonomy has received its due amount of attention in the literature of English as a foreign
language teaching (EFL). The concept has come to life since the 1980s. Learner autonomy has been considered as a goal of education, which information communication and technology (ICT, henceforth), when used appropriately, may help in fostering. Previous research has shown that the use of ICT has a number of affordances in promoting learner autonomy. These studies also found that ICT and learner autonomy are positively correlated. In this respect, the purpose of the present study has continued that very focus by investigating the degree of autonomy that Moulay Ismail University English as a foreign language student enjoy and the extent to which they use ICT for their learning. In essence, the study at hands aimed at investigating how the use of ICT and the level of learner autonomy are correlated. To do fulfill this, a cross-sectional quantitative design underpinned the study. Thus, a self-completion questionnaire was employed as an instrument to collect the data. As such, a total of 109 Moroccan English as a foreign language (MEFL) university students took part in the study. Mainly, the questionnaire was administered to the respondents to find out their level of use of ICT as well as their level of autonomy. Results of the study revealed that the students used ICT to a large extent. It was also found out that their level of autonomy was shown to be high. Therefore, reflecting on and discussing the findings, it was concluded that their use of ICT level and autonomy were significantly related. Finally, several implications have been summarized from the study.

Keywords: affordances, EFL, ICT use, learner autonomy, self-directed learning

A PRELIMINARY INVESTIGATION OF 12-MONTH EGG PRODUCTION OF MALLARD DUCKS

Abel Olusegun OGUNTUNJI
Foluke Abimbola ADEREMI
Tunde Ezekiel LAWAL
Olufemi Mobolaji ALABI
Mathew Oluseyi AYOOLA
Opeyemi Adetola OLADEJO
Bowen University, Iwo, Osun State, Nigeria

Abstract
Ducks are integral part of rural poultry production in Nigeria and their products contribute to the daily menu of resource-limited peasant folks. The present study reports a 12-month egg production record of 99 intensively-reared female Mallard ducks. The production period was divided into 3 phases on 4-month basis (Phase I: August - November; Phase II: December - March and Phase III: April - July). Through out the experimental period, monthly meteorological indices {Ambient temperature AT, (°C), relative humidity (RH, %) and rainfall (RF, mm)} records were taken. The result of analysis of variance revealed that AT, RH and RF significantly ($P<0.05$) influenced egg production at different production phases. It is noteworthy that highest egg production (33.47%) coincided with phase III period with lowest AT (29.35°C), moderate RH (78.60%), and highest RF (216.05mm), compared with intermediate egg production (29.28%) in phase I {AT (30.75°C), RH (84.88%), and RF (163.64mm)} and phase 2 {(AT (34.60°C), RH (31.63%) and RF (31.63mm)} with least egg production (19.55%). The trend of egg production whereby highest and least egg production was recorded in the coolest and hottest production phase, respectively was indicative that climatic factors wield significant influence on egg production mechanism of Mallard ducks in the study area. This is suggestive that adequate management practices must be put in place to mitigate adverse effect of climatic factors, most especially AT on egg production of Mallard ducks.

Key words: Ambient temperature, Mallard duck, Meteorological indices, Production phases, Rural poultry

INTRODUCTION

Poultry production in Nigeria and Africa at large irrespective of the scale of production or management system adopted is synonymous with chicken while other available native species such as guinea fowl, duck and pigeon are utterly neglected and seldomly exploited for economic or nutritional purposes (Oguntunji, 2013). Ducks are found in all agro-ecological zones of Nigeria (Oguntunji and Ayorinde, 2015a) and have been domesticated in this country since time immemorial and contribute significantly to the socio-cultural, menu and also serve as 'living bank', most especially to rural keepers (Oguntunji *et al*., 2020).

Mallard ducks are found mostly in Northern Nigeria and are among the class of duck classified as exotic duck. At present, this waterfowl is reared basically for meat production and has neither been exploited for commercial egg production nor were empirical reports on its egg production available in tropical environment. The advent of commercial fast-growing and egg-laying strains of chickens has relegated to the background the relevance and relative contribution of indigenous poultry species such as chicken, duck, guinea fowl and pigeon to the internal animal protein production in Nigeria (Oguntunji and Ayorinde, 2015b). Against this background, the present study was conducted to investigate 12-month egg production performance of Mallard ducks in tropical environment.

MATERIALS AND METHODS

Study area, Experimental birds and Management

The study was conducted in Iwo, Osun State, Nigeria. Ninety nine (99) adult female Mallard ducks were sourced from Shasha Poultry market, Ibadan, Oyo State, Nigeria. The birds were intensively-reared on deep litter covered with wood shavings. They were provided water and commercial layer feed ad libitum. Besides, appropriate medications were applied as at when due.

Throughout the experimental period, monthly data on meteorological indices {Ambient Temperature (AT, ^{o}C) and Relative humidity (RH, %)} were taken. 12-month record of egg production was taken and production period was divided into three phases on four month basis:

Phase I: August to November;
Phase II: December to March and
Phase III: April to July.

Data collected on egg production, ambient temperature and relative humidity were analysed using one way anova:

$Yij = \mu + Pi + eij$

Yíj= individual observation
μ= fixed overall mean
Pí= effect of production phase (1….3)
eíjk = experimental error

Significant differences between production phases were separated with Duncan Multiple Range Test at 5% probability level.

All data were analysed using SPSS version 16 (2001).

Results and Discussion

The result of the analysis (Figure 1) revealed no significant ($P<0.05$) difference in the egg production between the production phases. However, highest egg production was recorded in phase 3 (33.47%) followed by phase II (29.29%) and least in phase II (19.55%). Contrarily, there were significant ($P<0.05$) differences in AT and RH between phases. Similar to the egg production record, highest RH was recorded in phase III (63.69%) intermediate in phase I (61.50%) but least in phase II (33.21%). In contrast, highest AT was recorded in phase II (34.81^{o}C) intermediate in phase 1 (32.00^{o}C) but least in phase 3 (30.40^{o}C).

It is noteworthy that egg production performance record of Mallard duck under investigation was higher than the values recorded for Muscovy ducks in northern (Ogah *et al*., 2011) and

southern (Oguntunji *et al*., 2015) Nigeria. This possibly suggests superior genetic potential of this waterfowl over indigenous Muscovy duck.

Though there was no significant difference in egg production between phases, however; highest egg production recorded in phase III coincided with production phase with the most conducive environmental conditions having lowest AT and highest RH. The trend of egg production across production phases whereby highest and least egg production was recorded in hottest and coolest production phases, respectively was similar to the report of a related study (Oguntunji *et al*., 2015) on egg production of local Muscovy ducks in Nigeria. Similarly, least egg production recorded in phase II with highest AT and least RH is in agreement the reports of Nickolova (2004) on Muscovy ducks and Ma *et al.* (2014) on egg-laying Fujian ducks in China.

Conclusion

The population under study performed best when least stressed in production phase III with least AT and highest RH. It could be inferred that climatic factors (AT and RH) wield significant influence on egg production mechanism of Mallard ducks in tropical environment. Therefore, concerted effort must be geared towards mitigation of their adverse effects, most especially AT so as to enhance optimal egg production of Mallard ducks.

References

Ma, X., Lin, Y., Zhang, H., Chen, W., Wang, S., Ruan, D. & Jiang, Z. 2014. Heat stress impairs the nutritional metabolism and reduces the productivity of egg laying ducks. Animal Reproduction Science. 145, 182–190.

Nickolova, M. 2004. Study on egg laying characteristics of Muscovy duck (*Cairina moschata*) depending on the breeding method. Journal of Central European Agriculture. 5 (4): 359 -365.

Oguntunji, A.O. 2013. Phenotypic and Biochemical characterization of the Nigerian Muscovy duck (*Cairina moschata*). Ph. D. Thesis, Bowen University, Iwo, Osun State, Nigeria. 371pp.

Oguntunji, A.O., Oladejo, O.A. & Ayorinde, K.L. 2015. Seasonal variation in egg production and mortality of Muscovy ducks (*Cairina moschata*). Biotechnology in Animal Husbandary. 31(2):181-192.

Oguntunji, A.O. & Ayorinde, K.L. 2015a. Duck production in Nigeria: Flock characteristics, management and mortality. Archiva Zootechnica 18 (1): 27-40.

Oguntunji, A.O. & Ayorinde, K.L. 2015b. Health management practices and reproductive performance of ducks in Nigeria. Journal of Agricultural Sciences. 60 (3): 325-337.

Ogah, D.M., DIM, N.I. & MOMOH, O.M. 2011. Laying performance of Nigerian indigenous Muscovy duck from two agro-ecological zones. Proceedings of 36th Conference of Nigerian Society for Animal Production. 13-16, March, 2011. University of Abuja, Nigeria.

Oguntunji, A.O, Ayandiji, A., Adeola, A.C., Makram, A. & Oriye, L.O. 2020. Multivariate analyses of determinants of exotic duck adoption in south-west Nigeria: implication on indigenous duck genetic resources. Agricultura. (113-114)1-2: 227 - 240.

SPSS 2001. Statistical Package for Social Sciences. SPSS Inc., 444 Michigan

Avenue, Chicago, IL60611.

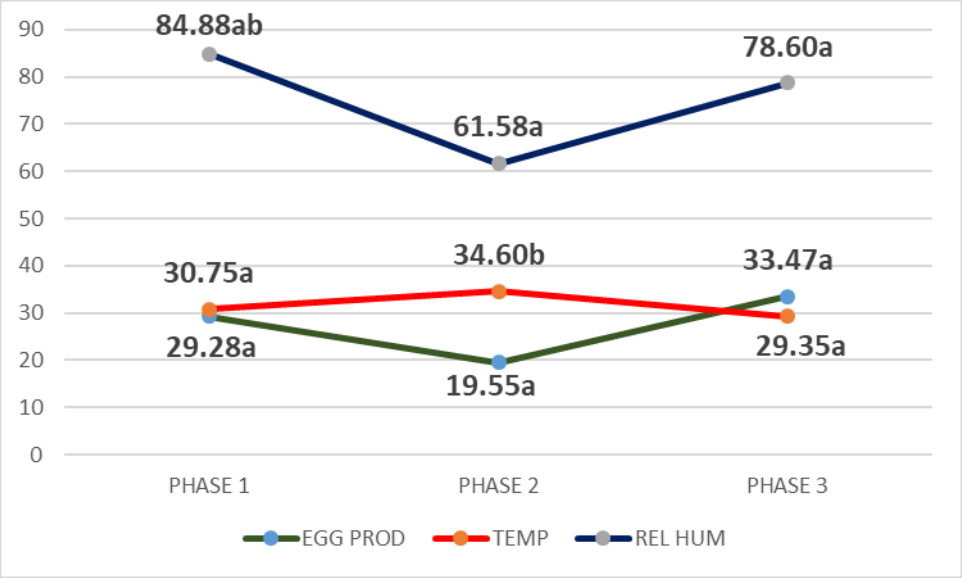


Figure 1: Egg production performance of Mallard duck across production phases
[ab]Means across production phases with different superscripts are significantly ($P < 0.05$) different

Making Sense of the Current Covid 19 Situation and Suggesting a tailored Release Strategy through Modeling And Simulation- Case Study: Casablanca, Morocco

Mohamed-Amine Chadi
Hajar Mousannif
Cadi Ayyad University, Marrakech, Morocco

Abstract
Since the very first days of announcing Covid 19 as a global pandemic, researchers around the world from different backgrounds and organizations including national governments and the World Health Organization (WHO) have extensively begun using Modeling and Simulation (M&S) techniques in deciding on the optimal strategies in order to mitigate the public health and economical effects of Covid-19. In this paper, we present our results from applying M&S on the city of Casablanca, Morocco to comprehend (i): How it can be relatively easy or difficult for such pandemic to penetrate to the studied region (country, city, district, etc.). (ii): How it can spread relatively fast or slow within that region. And finally (iii): What is the optimal strategy for containing and mitigating the propagation of the disease while still keeping the economy as near to normal as possible.

Keywords: Covid-19; Modeling and simulation; Lockdown-release strategy; Morocco, Casablanca

Le *"Ay ne há"* entre promotion du vivre ensemble et la paix en Afrique

Adamou SIDDO
Yacouba GARBA
Université de Zinder (UZ), Zinder, Niger

Le présent article vise à étudier en s'inscrivant dans la démarche de la méta-herméneutique à partir de l'Ethos, le pathos et le logos, le Ay ne há, considéré comme une expression à travers laquelle, tout locuteur de la langue Zarma-Songhoy est désigné. Définissant à la fois, la langue, l'identité et la mêmeté d'un groupe majoritairement ancré géographiquement dans l'Ouest du Niger, et une importante partie du Mali et du Burkina Faso, le Zarma-Songhoy en tant que langue devient un facteur d'unité et un agent de promotion du vivre ensemble en Afrique. La philosophie de vie ainsi développée par la culture de ce groupe a des principes dont les fondements s'enracinent dans le bien-dire, l'altruisme, le don de soi et la promotion de la cohésion sociale entre les différentes composantes sociétales. Pour le Zarma-Songhoy, le Ay ne há va donc au-delà du simple fait de langage. Il devient une école de vie pour tous les locuteurs éduqués à la construction d'un monde où l'altérité doit s'épanouir sans heurts. Dans ces conditions, cette langue se propose d'être une vectrice de paix à travers la parole bien dite et la culture d'une valorisation perpétuelle du bien-être collectif. Boubou Hama propose L'Essence du verbe comme une démarche de concrétisation de cette théorie à partir du Ay ne há en préconisant sa prise en compte dans l'enseignement et l'éducation des jeunes au Niger et ailleurs. Il conditionne la promotion des langues africaines et particulièrement le Ay ne há pour une revalorisation des cultures et valeurs civilisationnelles africaines. Cette œuvre écrite en deux Tomes, procède à une analyse critique des principes ontologiques et gnomiques qui sous-tendent la philosophie du Zarma-Songhoy. Nous nous intéressons ici au Tome 2.

Mots clés : Ay ne há-vivre ensemble en Afrique- philosophie de vie-éducation des jeunes-l'altruisme

INDIRECT SPEECH ACTS IN FRENCH REQUESTS

Nathalie DJIGUIMKOUDRE
Université Joseph KI-ZERBO, Ouagadougou, Burkina Faso

Abstract
It is noticeable that people in their daily conversation use speech acts that may be direct or indirect. According to Searle's typology of speech acts, a direct speech occurs when there is a "direct match between a sentence type and an illocutionary force;" and when there is no relationship between a sentence type and an illocutionary force" this sentence is known as indirect speech act (Hung 2007: 110). In the same vein, indirect speech acts "have two illocutionary forces, on literal or direct, and the other non-literal or indirect" (Hung 2007:112). The current research investigates the types of common speech acts used in French requests (that is direct or indirect speech act in requests). Since (Dufon et at. 1994) states that indirect speech acts is in general associated with politeness cross-culturally, the goal of this study is to examine whether indirect speech acts are associated with politeness in French culture in general and requests in particular. For that purpose, this work examined many sources that involve French people or French speakers' conversations in their daily routines. The sources include, first of all, a conversation in a French restaurant where the server and the client are exchanging in French. In addition, this study considered a typical conversation in a family setting, among friends, and between a professor and students. Finally, the speech act of characters in a French movie called *les liaisons dangereuses* (The dangerous link) is analyzed. The findings of the current study have proven that indirect speech acts are, in general, associated with politeness cross-culturally as supported by the conversation in the French restaurant. In addition, interaction between the instructor and students as well as the family lunch and the movie prove that those indirect speech acts are common in French requests. Therefore, the direct and indirect speech acts in terms of requests are commonly used in French people's conversations. The choice of either one depends on the context, the setting or the environment.

Key Words: Speech acts, indirect and direct requests, French, politeness

INTRODUCTION

The question of how to abide by social conventions via utterances has recently been the concern of many researhers. Austin (1962) develops a theory called speech act theory to address the issue. The concept has been used in the 1930's by the author during his lectures before being published posthumously in 1962 by his student Searle in *How to do things with words.* For the author, a speech act theory refers to an utterance as "part of an action within the framework of social institutions and conventions" (cited in Huang 2007:93). Saying so, Austin elaborates three types of speech acts, including locutionary, illocutionary, and

perlocutionary speech acts. Locutionary speech act is referred to as the linguistic expression; the illocutionary speech act as the intention the speaker wants to fulfill while making an utterance; and the perlocutionary act as the effect such linguistic expression may have on the addressee (Austin, 1962, Justova 2006). An Illocultionary force, which appears to be the core of speech act theory since it focuses on the type of utterance and the corresponding illocutionary force of that utterance, is the concern of our study. Searle (1969), being inspired by his teacher, Austin, develops five types of speech acts, namely Assertives, directives, commissive, expressives, and declaratives, along with their corresponding illocutionary forces. Each illocutionary force or point or act, may involve direct or indirect speech acts. The former occurs when there is a direct match between a sentence type and an illocutionary force. When there is no direct match between a sentence type and an illocutionary force, it is called indirect speech act (Hung 2007). Indirect speech acts, in general, are believed to be associated with politeness cross-culturally (DuFon et al. 1994). With this in mind, the current study seeks to verify if indirect speech acts are associated with politeness in French culture, in general, and requests in particular. This study remains relevant in the sense that the author, being part of the French culture, would like to assess DuFon et al. (1994). Therefore, by the end of this investigation followed by the obtained results, this research would like to prove that indirect speech acts in general are associated with politeness in French culture as well. To effectively and efficiently achieve this goal, the following research questions are formulated:

1. How are indirect speech acts associated with politeness in French request?
2. How may direct speech acts too be associated with politeness in French request?

These research questions gave rise to the following hypotheses:

1. Indirect speech acts are associated with politeness in French request.
2. Direct speech acts too may be associated with politeness in French request.

1. LITTERATURE REVIEW

1.1.The speech act theory

The study of indirect speech acts' processes requires an overview of the origin of speech act theory. As stated earlier, the indirect speech act theory originated from the lecture of Austin in the 1930'S that has been published poshumously by his student Searle in 1962. The key principle of the speech act theory as developed by Austin (1962) supports that an utterance is "part of an action within the framework of social institutions and conventions" (cited in Huang 2007:93). This implies that speech act theory deals with communication with respect to the social norms and conventions. Austin's speech act theory mainly constitutes a response, in the 1930's, to logical positivism, an influential school of thought in philosophy at that time developed by a body of philosophers and mathematicians. Logical positivism posits that the function of language consists in making true and false statements only. For this principle, a sentence that cannot be verified for its truth or false condition was considered to be meaningless. To react against this philosophy, Austin speech act theory proves that some ordinary language sentences cannot be tested true or false, case of statements and declarative sentences. As stated in Huang (2007: 95) " The point of uttering such sentences [declaratives] is not just to say things, but also actively to do things". In this logic, Austin distinguishes performatives (case of declaratives) from constatives (case of statements and assertions) that he later on fuses together in a more general theory made of three branches, namely, locutionary, illocutionary, and perlocutionary speech acts. Locutionary speech acts are referred to as basic statements or linguistic expressions, illoluctionary ones focus on what the

speaker intends to achieved while making a statement or linguistic expression, and the perlocutionary ones are the effects of such statement or linguistic expression on the addressee. Leech (1983:199) simply refers to the three types of speech acts as follows:

- Locutionary act: performing an act of saying something
- Illocutionary act: performing an act in saying something
- Perlocutionary act: performing an act of saying something

The illocutionary speech act which appears to be the core of speech act theory is the focus of the current study. By saying so, an illocutionary speech act which is based on a speaker's intention includes the following: stating, questioning, promising, making commands, giving advice, making requests, and so on. With regards to the following intentions, this study mainly addresses requests in French culture.

1.2. Searle typology of speech act

Being inspired by his teacher, Austin, Searle (1975 a) develops 5 types of speech acts namely Assertives, directives, commissive, expressives, and declaratives. Assertives involve speech acts "that commit the speaker to the truth of the expressed proposition, and that carry a truth-value" (Huang (2007: 106). In other words, assertives "express the speaker's belief" of the world he/ she believes it, such as making assertion, claims, reports, and statements" (Huang 2007: 106). Directives aim at getting the addressees or listeners behave in a certain way. These include commands, orders, and requests. Commissives, as their name suggest, commit the speaker to a future action such as promises, offers, and threats. Expressives express speakers' state of being, including joy, sorrow, likes and dislikes while declaratives can make changes in the course of the world such as, declaring a union, a war or nominating a candidate for instance. Each of the five types of speech acts is associated with a corresponding illocutionary force often referred to as illocutionary point or act, with an illocutionary point being defined as what the speaker intends to fulfill while producing a discourse (Huang 2007). Yet, each type of illocutionary force could be used directly or indirectly depending on the context. When there is a match between the sentence type and its illocutionary force it is referred to as a direct speech act. This is the case of using interrogative sentences to ask questions in order to get information; or using affirmative sentences to make statements. However, when there is no match between the sentence type and its illocutionary force, it is referred to as indirect speech. This is the case of using an interrogative sentence to make a request as in the following examples taken from (Huang 2007: 111).

(4.37) I request you to pass the salt.

(4.38) Pass the salt.

(4.39) Can you pass the salt?

These three sentences share a common illocutionary force, here, a request. Yet, these three sentences are structured differently. In (4.37), for instance, the performative verb " to request" is used the make a request. In this case there is direct match between the sentence type and the illocutionary force. Therefore, it is an direct speech speech. This is the case with (4.38), where an imperative is used to give an order or make a command. However, in (4.39) a interrogative sentence is used to make a request. It is obvious, here, that there is no match

between the sentence type and the illocutionary force. This is an example of indirect speech act. Yet, the question is to know why using indirect speech acts in such contexts instead of their direct counterparts.

It is said that an indirect speech act is commonly used as a conversational strategy since it appears to be related to politeness. Leech (1983: 108) supports that people tend to use indirect speech acts mainly in connection with politeness. It is obvious that indirect speech acts help lessen unpleasant messages that may result in requests and commands. In the same logic, DuFon et al. (1994) state that indirect speech acts are, in general, associated with politeness cross-culturally. Thus, the goal of this paper is to investigate whether indirect speech acts are associated with politeness in French culture in general, and requests in particular. To acheive that, the current study examines many sources that involve French people or French speakers' conversations in their daily routines. The sources include a conversation in a French restaurant where the server and the client are exchanging in French; also a typical conversation in a family setting, among friends, between a teacher and students, and a French movie called *les liaisons dangereuses* (The dangerous link) are considered.

2. THEORETICAL FRAMEWORK

2.1.The developmental approach of speech act theory

As stated earlier, Searle's (1975: 344-69) taxonomy of speech acts are universally grouped into five types along with four dimensions in the following terms: "Representatives (or assertives) are the kinds of speech acts that commit the speaker to the truth of the expressed proposition, and thus carry a truth-value; directives are those kind of speech acts that represent attempts by the speaker to get the addressee to do something; commissives are the types of speech acts that commit the speaker to some future course of action; expressives express a psychological attitude or state in the speaker such as joy, sorrow, and likes/dislikes; and declaratives effect immediate changes in some current state of affairs." These terms that are also called illocutionary acts (that is the type of intention the speaker intends to fulfill) or illocutionary forces are grouped in three main groups namely asserting/stating, asking/questioning, and ordering/requesting (Huang 2007: 110). Each illocutionary force, above mentioned, has a corresponding type of sentence including declarative, interrogative, and imperative sentences, respectively. According to Searle, in case of direct speech act, the illocutionary force needs to correspond to the sentence type. For instance, an assertion needs to match with a declarative sentence as in the following example, Barack Obama is the 44th president of the United States, is a direct speech act. But in case there is "no direct relationship between a sentence type and an illocutionary force, it is an indirect speech act" (110). Using a request in an interrogative sentence would be an indirect speech act as in: Could you please past me the salt? Since (DuFon et al. 1994) state that indirect speech acts are, in general, associated with politeness cross-culturally, it is also important to know what indirectness and politeness are. In regard to the framework of indirectness in speech act, Grice (1975) demonstrates that conversational implicature plays an important role in people's personal interactions. In conversation, we usually understand what others are saying even when people do not express their intentions straightforwardly. Grice provides a theory which explains how we correctly interpret what others are implying by universal conventions in human interaction which are called cooperative principles. It is generally believed that when

people are involved in interaction they most of the time use indirect speech act. The question is to know why so?

Brown and Levinson (1987: 13) explain that indirect speech act is better used in conversation for many reasons: to be polite and to preserve the hearer's face. "Face is defined as an individual's self esteem. It has two aspects, namely negative and positive face. Negative face is 'the desire to be unimpeded in one's actions' and positive face is 'the desire (in some respects) to be approved of."

2.2.The implication of Indirect speech act in the current study

The concept 'politeness' is multi-dimensional. Politeness is defined by Scandell-Vidal (1998: 46); for her, the concept of politeness or being polite in the standard sense has at least three dimensions: "polite as civil or socially correct; 2) polite as kind of friendly; 3) and polite as tactful or diplomatic "The author continues that a quick look at the literature easily show that different researchers have favored different sense." For instance, according to Leech (1983), being polite involves making the hearer to 'feel good' (polite as friendly); to Brown and Levinson(1987), it means to make him not 'feel bad' (polite as diplomatic); for Fraser himself, it is the 'expected' state (polite as socially correct). Scandell-Vidal's definition of polite shows that both Leech and Brown & Levinson approaches of politeness share a crucial property, that is they put emphasis on the functional nature of politeness as opposed to politeness as socially correct. Based on the authors' definitions of politeness, this study will be considering Leech and Brown & Levinson approaches of politeness during the analysis of French people's conversations in terms of requests.

With regards to the theories of indirectness and politeness, it is obvious that indirectness is most of the time associated with politeness in speech act. Huang (2007:115) supports that "indirect speech act are usually considered to be more polite than their direct counterparts. The more indirect a speech act, the more polite it is." The question in this study is to know if this is true across cultures, especially in French requests. This triggers, the current research to analyze series of conversations.

3. METHODOLOGY

The current study uses qualitative approach namely descriptive qualitative methods for many reasons. First, qualitative research is based on the analysis of data based on descriptive narration (Gass and Selinker 2008). Qualitative data collection or research seeks to make observation on small sample sizes. Questionnaires and interviews are also used in qualitative research. It is supported that qualitative research is better when you want to look at the underlying reasons for something – maybe you want to know about why a certain group holds certain rituals, or why when placed in certain situations, people tend towards a certain kind of action. Roberts (2010:142-143) puts that qualitative research is based on a principle referred to as *phenomenology* with a focus on people's personnel experience and begins with broad questions. With regards to the descriptive approach of the qualitative approach, the current study fits in. In other terms, the qualitative aspect of the current research resides in the fact that it examines and analyzes many sources involving French speakers' conversations in their daily routines as follows:

- Conversations
  - in a French restaurant
  - in family setting,
  - between a professor and students
  - by Blom Kulka & olshtain (1984)
  - characters in les liaisons dangereuses (The dangerous link)
  - Others

3.1. Conversation in a French restaurant

The conversation in the restaurant as taken from *Beginning French* by Anderson et al. (2012:132) includes the following:

1.Serveuse/waitress: Bonjour! (Good morning!);
2.Gabriel/client: Bonjour! Bonjour! (Good morning! Good morning!)
3.Serveuse: Est-ce que je peux avoir votre commande? (Can I take your order ?)
4.Gabriel: Oui, je vais prendre un café au lait, s'il vous plaît. (Yes, I am going to take a coffee with milk, please.)
5.Serveuse: Un café au lait. Un petit ou un grand ? (a coffee with milk. Small or large?)
6.Gabriel: Euh, un grand, s'il vous plaît (Euh, large, please.)
7.Serveuse : Est-ce que vous allez prendre autre chose avec ça ? (are you going to get something else with it/anything else ?)
8.Gabriel: Euh, est-ce que vous avez des desserts? (Euh, do you have desserts ?)
9.Serveuse: Oui, on a des…des gateaux au chocolat ou des gateaux aux carottes (Yes, we haves some…some chocolate cake and some carrot cakes)
10.Gabriel: Je pense [que] je vais prendre un gâteau of chocolat, s'il vous plaît (I think [that] I am going to take a chocolate cake, please)
11.Serveuse: Ce ne sera pas bien long (It won't take too long)
12.Gabriel: Parfait, merci (perfect, thanks.)
13.Serveuse : Voilà, (Here it is)
14.Gabriel: Merci. Est-ce que je pourrais avoir une serviette avec ça, s'il vous plaît (Thanks, could I have a napkin, please ?)
15.Serveuse : Oui, pas de problème. (Yes, no problem)
16.Gabriel: Et je vais prendre l'addition aussi (and I am also going to take the check/bill)
17.Serveuse: L'addition? Oui, je reviens dans une seconde (the bill? I will be back in a seconde)
18.Gabriel: Merci. (Thanks)

3.2. Conversation- lecture in a classroom setting (a teacher addressing his students)

-est-ce que je peux avoir un volontaire pour corriger l'exercice un au tableau? (May/can I have a volunteer to correct exercise one on the board, please?)
- *peux- tu faire une phrase complete*? (Could you do a complete sentence?)
- *Un autre volontaire, s'il vous plaît!* (Another volunteer please!).
- *repetez après moi, s'il vous plaît! (*repeat after me please!)

3.3. Conversation in a family setting,

Mrs. Kafando: *Pouvez vous me passez le plat de riz s'il vous plaît?* (could you please pass me the rice bowl rice please?)
Visitor(me)*:* Biensur madame! Avec plaisir madame! Tenez!-> sure madam! By pleasure! Take!
Mrs. Kafando (to her daughter): Marie*! apporte nous de l'eau*! (Mary! Bring us some water).
Mrs. Kafando (to her son): *Rene! Passe moi le piment devant toi*! (Rene! Pass me the salt in front of you).

3.4. Conversation- in a movie: les liaisons dangereuses (The dangerous link)

The speeches observed include: *C'est bien honnête à elle de me l'avoir dit!* -> 'It is honest of her to have told me!' *Qu'est-ce que tu me conseilles*? -> 'what do you advice me'. *Si tu trouves que j'ai tort, dis-le-moi; mais je ne crois pas*-> 'If you found me guilty, tell me ; but I do not think so,' *Quoi! que dites-vous? M. de Valmont est mort?-*

3.5. Others

It is also noticeable, that in people's daily conversation with others, they generally use politeness triggers such as "*s'il vous/te plaît* (please!*)*, *est-ce que vous pouvez*---, *pouvez-vous*--- *(*could you---*)*, and *si (*if*)*" to request something or have the hearer/ addressee perform an act. For instance, the following passages that Blom-Kulka and Olshtain (1984) elaborated:
- *Excusez-moi Madame, pourriez-vous déplacer votre voiture?* 'Excuse me, Madam, could you move your car?' *Accepterais-tu de me préter tes notes de cour ? J'étais absente hier (*will you be willing to lend me your notes from the course. I was absent yesterday).
I also observe two of my classmates that were discussing about one of their paper assignments. Speaker A says: *Si je pouvais avoir quelqu'un pour relire mon travail je serais* satisfait 'If I could have somebody to proofread my work I would be satisfied' and speaker B replies: *Ben*! *Je peux le faire pour toi avec plaisir*-> 'well, I can do it for you by pleasure.' Speaker A continues: *Ah bon! Merci enormement! Je suis sauvée*! 'Really ! Thank you very much! I am relieved!' while speaker B replies: *Pas de quoi, je t'en prie*-> 'you are welcome.'

4. RESULTS AND DISCUSSION

4.1.Conversation in a French restaurant

In the restaurant conversation, many types of speech acts are used. In lines 1 and 2, the speakers use a declarative sentence to greet each other. This statement is an example of a direct speech act since the speaker use a declarative to assert their greeting. The conversation is dominated by many indirect speech acts. In line 3 [*Serveuse/*waitress*: Est-ce que je peux avoir votre commande*? (Can/may I take your order ?)] and in line 4 [*Gabriel/*client*: Oui, je vais prendre un café au lait, s'il vous plait* (Yes, I am going to take a coffee with milk, please.)]. The waitress/server uses an indirect speech act to request the order from the client. It is an indirect speech act because the waitress uses a request in an interrogative sentence instead of an imperative sentence. Since the illocutionary force of the statement that is a request does not match with the type of sentence, therefore, it is an indirect speech act. For a direct speech act to occur, the speaker might have said: *Donnez moi votre commande!* (Give me your order!). If the server uses a direct speech act in this situation, the client might be hurt and may eventually leave the restaurant. Thus, direct speech act is not appropriate in certain

conversational contexts, such as restaurants. In order to be polite and preserve face, the server or waitress preferred the indirect speech acts to address the customer. The customer in return states the order of the food by using a declarative sentence (*Oui, je vais prendre un café au lait s'il vous plaît* /Yes, I am going to take a coffee with milk please!) using a politeness marker, *s'il vous plait*! / please! The client also uses indirect speech act while ordering the food.

Other indirect speech acts, noticed during the conversation, include line 7: *Serveuse : Est-ce que vous allez prendre autre chose avec ça ?* (Are you going to get something else with it/anything else?). This statement is a request used in an interrogative sentence. Yet, the client uses a direct speech act to make his point. He uses an interrogative sentence to ask whether there are desserts available for order as follows, *Gabriel: Euh, est-ce que vous avez des dessert?* (Euh, do you have desserts?). The waitress reciprocates with a direct speech act that is an assertion in a declarative sentence: *Oui, on a des…des gateaux au chocolat ou des gateaux aux carottes* (Yes, we haves some…some chocolate cakes and some carrot cakes). In line 10, the client continues in indirect speech act as he orders the dessert using a declarative sentence: Je *pense [que] je vais prendre un gâteau of chocolat, s'il vous plaît* (I think [that] I am going to take a chocolate cake, please!). Additional indirect speech acts, such as making a request while using an interrogative sentence, Grabriel, the client, uses are: lines 14.Gabriel: *Merci. Est-ce que je pourrais avoir une serviette avec ça, s'il vous plaît* (Thanks, could I have a napkin, please ?). As a result of this conversation, it is obvious that both server/waitress and client use indirect speech acts to make the requests. Thus, this study may agree with (DuFon et al. 1994), to some extent, that indirect speech acts that are viewed as mark of politeness are commonly used in requests cross-culturally. Yet, since the sample used is too small to be too conclusive about DuFon et al. statement, further investigations on series of conversions between students and a professor in a French class as well as others are considered.

3.2. Conversation- lecture in a classroom setting (a teacher addressing his students)

I observed one of the Graduate teacher assistants in fall 2012 during her lecture time. I notice that the instructor uses most of the time indirect speech act when she requests information from students. For instance, to request a student to correct an exercise on the board, she states: *est-ce que je peux avoir un volontaire pour corriger l'exercice un au tableau?,* translated in English as: May/can I have a volunteer to correct exercise 1 on the board, please? Instead of using a direct speech act that might be threatening to students, the instructor uses the indirect request that is more polite. Other indirect speech acts include the following statements: *peux-tu faire une phrase complete*? (Could you do a complete sentence?). To have another student correct the next exercise, she did not repeat the same statement. Instead, she says: *Un autre volontaire, s'il vous plait*! (-> Another volunteer please!). In this statement the instructor uses a direct speech act but in a polite way that is through the use of the French politeness marker *s'il vous plait*! (Please!). Another request she makes through the use of a direct speech act is: *repetez après moi, s'il vous plaît /*repeat after me please! As a result of this statement, it is obvious that a direct speech act is not always threating the listener's face; indirect speech act could be used with a politeness marker, such as *s'il vous plaît* / please!, to politely make a request.

3.3. Conversation in a family setting,

I also observed how typical French families interact in terms of requests. I was invited for a lunch with a French family at Fort Lauderdale. I was with the lady, Mrs.Kafando, her daughter and son. While we were having lunch, Mrs. Kafando used an indirect speech act, through an interrogative sentence, to have me perform the act of passing the rice bowl as follows: *Pouvez vous me passez le plat de riz s'il vous plait?* => 'could you please pass me the rice bowl please?' Then I replied: *Biensur madame! Avec plaisir! Tenez*!-> sure madam! By pleasure! Take! However, still when we were having the lunch, I noticed that she used direct speech act to address her children. For instance, she asked her daughter to bring us some water as: *Marie! apporte nous de l'eau*! (Mary! Bring us some water). This statement is a request used in an imperative sentence. Thus, it is a direct speech act. In the same vein, he asked her son, Rene, to pass her the salt using a direct speech act as follows: *Rene! Passe moi le piment devant toi*! I was really surprised that she uses indirect request to address me while using direct requests to address her children. I assumed that since I am a visitor, she prefers the polite or the formal way to address me. Therefore, I concluded that request among family members are made through direct speech acts. In this case, I would say that people may use direct or indirect speech act to make some requests depending on the setting and the context. Family members tend to request things directly, whereas using indirect requests with others or outside the house.

3.4. Conversation- in a movie: les liaisons dangereuses (The dangerous link)

The French movie, called *les liaisons dangereuses* (The dangerous link) is involved in the current investigation. The goal of the current study in this movie is to investigate whether the characters use indirect speech act to make some requests. The speeches observed include: *C'est bien honnête à elle de me l'avoir dit!* -> 'It is honest of her to have told me!' *Qu'est-ce que tu me conseilles*? -> 'what do you advice me'. *Si tu trouves que j'ai tort, dis-le-moi; mais je ne crois pas*-> 'If you found me guilty, tell me ; but I do not think so,' *Quoi! que dites-vous? M. de Valmont est mort?*-> 'What ! What do you say? Is Mr. De Valmont dead?' In this movie, most requests formulated are in direct speech acts. For instance, *Quoi! que dites-vous? M. de Valmont est mort?*-=> 'What ! What do you say? Is Mr. De Valmont dead?' is a direct speech act since the character is asking a question using an interrogative sentence. The types of indirect speech acts, though few, include: *C'est bien honnête à elle de me l'avoir dit!* -> 'It is honest of her to have told me!' *Qu'est-ce que tu me conseilles*? -> 'What do you advise me?'

3.5. Others

In people's daily conversations the following politeness triggers are used: "*s'il vous/te plaît!* (please!*)*, *est-ce que vous pouvez*---, *pouvez-vous (*could you*)*, and *si (*if*)*" to request something or to have the hearer perform an act. For instance, I observed two of my classmates that were discussing about one of their paper assignments. For example, speaker A says: *Si je pouvais avoir quelqu'un pour relire mon travail je serais satisfait* 'If I could have somebody to proofread my work I would be satisfied' and speaker B replies: *Ben*! *Je peux le faire pour toi avec plaisir*-> 'well, I can do it for you by pleasure.' Speaker A continues: *Ah bon! Merci enormement! Je suis sauvée*! while speaker B replies : *Pas de quoi, je t'en prie*-> 'you are welcome.'

With regards to their conversation, speaker A expressed herself indirectly through the use of the condition "si/ if" to have the listener perform the act of proofreading without asking speaker B directly to proofread her work.

Next, I analyzed a passage that Blom Kulka & olshtain (1984) elaborated. In this passage, I analyzed the following expressions: *Excusez-moi Madame, pourriez-vous déplacer votre voiture?* 'Excuse me, Madam, could you move your car?' *Accepterais-tu de me préter tes notes de cours ? J'étais absente hier.* 'will you be willing to lend me your notes from the course? I was absent yesterday.' Based on Searle's taxonomy of indirect speech act, it is obvious that both requests, above mentioned, are indirect speech acts since the speaker is making a request by using an interrogative sentence instead of an imperative. Therefore, the findings of this analysis support that indirect speech acts are common in French request.

After analyzing the different conversions involved in this research, namely the conversation in the restaurant, family setting, classroom, movie, and others we would say both direct and indirect speech act are common in French requests. Therefore, hypothesis 1 and 2 are supported by the findings of the current study.

CONCLUSION

In conclusion, to the question of whether indirect speech acts are associated with politeness cross-culturally, and in French requests particularly, the current study supports DuFon's et al. (1994) statement according to which indirect speech acts are, in general, associated with politeness cross culturally. Most of the sources investigated proved it. For instance, the conversation in the French restaurant demonstrates that French speakers prefer using indirect speech acts to be more polite and to make the listener feel more comfortable. Also, the interaction between the instructor and students as well as the family lunch, the movie, and others proved that those indirect speech acts are common in French requests. However, this study also notices that French speakers also use direct speech acts with the politeness marker *s'il vous plaît* to make requests in a polite way. Thus, direct speech acts may also be used in French requests. The case of the family conversation setting, above mentioned, shows that family member are likely to use direct speech act to make request to one another even without using politeness markers. Yet, it does not mean that they are being impolite to one another, but maybe indirect requests are not necessary in a family setting, where people are accustomed to one another. Hence, direct and indirect speech acts in terms of requests are commonly used in French people's conversations. The choice of either one depends on the context, the setting or the environment. In this logic, these findings necessarily support hypotheses 1 and 2.

REFERENCES

Anderson, Bruce et al. 2012. *En Avant beginning French.* New York: McGraw Hill.

Austin, J.L. 1962. *How to do things with words*? Oxford: Oxford University Press.

Blum-Kulka, S. & Olshtain, E. 1984 The Center for Advanced Research on Language Acquisition (CARLA). 10 Av. 2012.http://www.carla.umn.edu/speechacts/requests/australian.html>.

Brown, Penelope and Levinson, Stephen C. 1987. *Politeness: some universals in language usage*. Cambridge. Cambridge University Press.

DuFon et al. 1994. Bibliography on linguistic politeness. *Journal of pragmatics* 21: 527-78

Gass, Susan. M., and Selinker, Larry. 2008. *Second Language Acquisition: An Introduction*. Taylor and Francis (eds.), New York: Routledge.

Grice, H.P. 1975. Logic and Conversation. In Cole, P. and Morgan, J. (eds.) 41-58

Huang, Yan. *Pragmatics*. 2007. New York: Oxford University Press.

Justova, Veronika. 2006. Direct and Indirect Speech Acts in English. Bachelor's Thesis.Masaryk University in Brno.

Leech, Geoffrey N. 1983. *Principle of pragmatics*. London: longman.

Levinson, Stephen. C. 1987b. *Pragmatic*s and the grammar of anaphora. *Journal of linguistics* 23: 379-434.

Laclos, Pierre Choderlos. 1782. Les liaisons dangereuses. http://www.worldnet.fr/~maretv/> 15 Av. 2012

Personal observations1: "Instructor and students conversation," Fev. 2012

Personal observation 2 "family member interactions" 2012

Roberts, Carol. M. 2010. *The Dissertation Journey: A Practical and Comprehensive Guide to Planning, Writing, and Defending your Dissertation.* (2nd ed.). USA: Library of congress cataloging in publication data.

Scandell-Vidal, Victoria. 1998. Politeness: A Relevant Issue for Relevance Theory5. *Revista Alicantina de Estudios Ingleses* 11: 45-57.

Searle, John. R. 1975a. Indirect speech acts. In Cole, P. and Morgan, J,L. (eds), 59-82

Searle, John. R. 1975b. A taxonomy of speech acts. In Gunderson, K. (ed.) *Minnesota studies in the philosophy of language*. 344-69

THE EMERGING TRACKS OF THEATRE DESIGN AND TECHNOLOGY IN NIGERIA

ORISAREMI, ALPHONSUS SHIREKU
University Of Ibadan

Abstract
Entertainment support companies are constantly emerging in Nigeria. However, the procedurals of the endeavours of design and the technology of the stage, lighting, sound and screen installation are never highlighted among African Scholars and professionals.

This paper shall therefore highlight Theatre/Entertainment technology issues and procedures in Nigeria. Thus, using the first hand analytical together with institutional field experience in the university pedagogy and professional practice systems, I intend to discuss Theatre Design and Technology from the various training perspective to the field practice. The Nigerian University system pedagogy and training of young designers and theatre technologist shall be examined alongside the response of these trained designers to their changing environment. The Artistic and technology components will be highlighted as it merges science and arts in stagecraft. In doing this, there will be a clear distinction to highlight artistic aspect from technological aspects. Then the merger of arts and technology in the finished products on stage will be portrayed with aid of photographs and probably short moving picture footages.

Training process involves teaching aspects of Chemistry, physics and technology of installation added to the general knowledge of the Arts of the theatre. Today, from relatively scantily lit concerts we have gravitated to world class stage and lighting design presentations in a highly constrained environment in Nigeria. The Nigerian designer/technologist is part of the local and international contents production processes in and outside our environment as is manifest in our outputs in our local and satellite channels.

Arts and technology from the installation arts to theatre lighting and sound have always complemented each other. My citations shall include both stage and television instances which is in line with the fact that my perspective shall be more from the inter-disciplinary point of view.

Key Words: Theatre Design and Technology; Pedagogy; Stage and lighting

ARTIFICIAL MODEL CHARACTERIZING THE BENDING BEHAVIOR OF A 3D PRINTED PLA SAMPLE AND COMPARISON WITH THE EXPERIMENTAL MODEL

Prof. HAMOUTI Lahcen
Prof. Dr. EL FARISSI Omar
Prof. OUTEMSAA Omar
Prof. Dr. HILALI Elmokkhtar
Université Ibn Zohr– Agadir - Moroc

Abstract
Additive manufacturing (AM) technologies are one of the most innovative fields in the manufacturing of components, they allow the manufacture of ranges of prototypes or functional components with complex geometries. Due to the layer-by-layer printing process, 3D printed samples exhibit anisotropic behavior.
The mechanical bending tests at 3 points were carried out according to the standard. The experimental data were processed following the recommendations of the standard.
The objective of this study is to draw a smooth rounded curve characterizing the influence of the three parameters: the feed rate, the layer thickness and the orientation of the construction on the flexural strength.

All the results measured on the test machine do not allow an ideal plotting of a curve. Artificial intelligence tools shows its great power of recognition and learning, which can find better results from these parameters.

The set of results measured on the test machine a makes it possible to build an artificial model using a performance neural network, this model a allows, after learning from this limited set of results, to draw a curve roundness characterizing the response of a test piece printed with a PLA material to the bending test.

Keywords: 3D printer, Additive manufacturing, artificial intelligence, FDM

L'utilisation de l'approche neuro-floues pour la coopération des robots manipulateurs dans une application de manipulation d'un objet

Mr. BAHANI Abderrahim
Prof. Dr. ECH-CHHIBAT My El Houssine
Prof. Dr. SAMRI Hassan
Mr. AIT ELATAR Hicham
Université Hassan II– Casablanca - Maroc

Résumé
La coopération multi-robots est un sujet très reconnu en robotique moderne et couvre un grand nombre de domaines et d'approches. Un groupe de robots peut coopérer pour exécuter un travail commun en étant localisé dans un même espace mobile ou pas.

En effet une extension naturelle des robots manipulateurs consiste à les utiliser dans un mode coopératif pour mener à bien des taches qui ne peuvent être effectuées par un seul robot manipulateur comme dans certain cas de la prise, le transport, et la manipulation d'objets. Une telle situation a été envisagée depuis les deux dernières décennies.

Les problèmes de coopération des robots résident dans la topologie de l'ensemble (objet à manipulé ou son environnement qu'il est généralement variable), aussi bien que modèle dynamique imprécis vu les bruits externes agissant sur les robots coopératifs, et les incertitudes paramétriques décrivant les propriétés dynamiques.

Pour cette raison, nous cherchions à développer une méthodologie de commande en utilisant les techniques de l'intelligence artificielle, plus précisément le contrôleur intelligent hybride appelé ANFIS (Adaptive Neuro Fuzzy Inference System). Ce dernier sera utilisé dans un premier temps, pour la commande deux bras manipulateurs à 6 ddl coopérants pour la manipulation d'un objet, et dans un deuxième nous généraliserons la méthode pour plusieurs robots.

Keywords: logique floue, réseaux de neurones, ANFIS, coopération multi-robots. Distribution Optimale d'effort

FEUILLE DE ROUTE POUR LA PRODUCTION DES BIOCARBURANTS À PARTIR DES ALGUES DU SAHARA MAROCAINE

Abrouki Younes
Anouzla Abdelkader
Loukili Hayat
Mohammed V University in Rabat, Rabat, Morocco
University of Hassan II - Casablanca, Morocco

Abstract
La zone atlantique sud couvrant la région du Sahara Marocaine est caractérisée par la diversité des espèces halieutiques dont la composition et l'abondance sont conditionnées en grande partie par les facteurs hydro-climatiques qui règnent sur la côte ouest africaine. L'exploitation de cette biodiversité a été à l'origine de l'émergence d'une dynamique d'investissement public et privé dans les provinces du Sahara Marocaine dans le domaine maritime depuis leur retour à la mère patrie.
A cet égard, et dès la récupération par le Maroc de ses provinces du sud, le secteur aquaculture a connu un développement exponentiel via l'élaboration de trois Plans Régionaux d'Aménagement Aquacole au sud du Maroc par l'Agence Nationale pour le Développement de l'Aquaculture; le premier au niveau de la région de Dakhla Oued-Ed Dahab, le deuxième au niveau de la zone s'étendant d'Imessouane à Sidi Ifni et le troisième au niveau de la zone délimitée entre Guelmim et Boujdour, y compris les Sebkhas.
En effet, devant l'augmentation des émissions de gaz à effet de serre et l'augmentation de la facture énergétique, le Maroc a initié sa transition énergétique en s'engageant dans une ambitieuse politique de développement des énergies renouvelables à savoir ; l'énergie solaire, l'énergie éolienne et l'énergie hydraulique. Or, la 4ème source d'énergie renouvelable et la plus prometteuse mais non exploitable au Maroc, c'est la biomasse marine algale.
Dans ce contexte, cette étude met le point sur l'intérêt de la production des biocarburants à partir de la biomasse marine algale du Sahara marocaine.

Keywords: Sahara Marocaine, Algale, Biocarburant, Biomasse Marine

Carboxylated cellulose nanocrystals reinforced sodium alginate: Novel environmentally friendly superabsorbent hydrogels

A.EL IDRISSI
Y.ESSAMLALI
M. ZAHOUILY
University Hassan II, Casablanca, Morocco.
MAScIR Foundation, INANOTECH, VARENA Center, Rabat Design, Rabat, Morocco

Abstract

Superabsorbent hydrogels are a class of materials having a cross-linked three-dimensional polymeric network that can absorb and retain large quantities of water without dissolving or losing their own structural integrity[1]. High swelling capacity, good water retention capacity and biodegradability are superior properties of superabsorbent hydrogels, which allow them to have potential applications in various fields such as agriculture and horticulture drug delivery, wastewater treatment and hygiene products[2].

In this study, a novel superabsorbent nanocomposite hydrogel was prepared via free radical polymerization between sodium alginate, acrylic acid, acrylamide using carboxylated cellulose as a hydrophilic nano-reinforcing agent. The maximum swelling degree of the hydrogels and the swelling rate constant were optimized as a function of the hydrogel's composition (the % of grafting of acrylic acid, acrylamide in the polymer mixture and the amount of crosslinking agent), the crosslinking reaction conditions and the amount of the nano-reinforcing agent. Superabsorbent hydrogels were fully characterized by various techniques including FTIR, TGA-DTG and DSC. The effects of crosslinker, neutralization degree of acrylic acid and cellulose nanocrystals content on water absorbency of the superabsorbent were also studied and optimized. The swelling behavior of hydrogels in aqueous solutions at various pH (2-12) and different saline solutions such as NaCl, $CaCl_2$ and $FeCl_3$ as well as swelling kinetics were investigated. Superabsorbent nanocomposite showed greater equilibrium swelling capacity (316 ±10 g/g) compared with neat hydrogel (260 ± 8 g/g). Superabsorbent nanocomposite exhibited high water retention capability, making it more efficient water-saving material for agricultural and horticultural applications.

Keywords: Sodium alginate, Cellulose nanocrystals, Superabsorbent, Nanocomposite, Water absorbency; Swelling kinetics

Bio-based polyurethane for coating controlled release fertilizers

Abdelouahed El gharrak
Younes Essamlali
Mohamed Zahouily
Moroccan Foundation for Advanced Science, Rabat. Morocco
Université Hassan II, Mohammedia, Morocco

Abstract
To meet the ever-increasing food commodities needs of a constantly rising human population, farmers worldwide will need to increase crop production, either by increasing the amount of agricultural land to grow crops or by enhancing crop yields through the use of mineral fertilizers [1,2]. In this context, fertilizers are the most important vital input materials for crop production. They are applied to the soil in order to provide nutrients to the plants and to increase or sustain an optimal crop yield. The most reliable and effective way to make the availability of nutrients coincide with plant requirements is by controlling their release into the soil solution by using a water insoluble semi-permeable coating material. Goals for these outer coating is to supply nutrients gradually and synchronize nutrients (N, P, K…) availability with crop requirement, thus improving nutrient use efficiency, improving crop yields, and decreasing nutrient losses through leaching and volatilization.
In the present study, a novel bio-based coating formulations for NPK fertilizer mainly consisting bio-resourced elastic polyurethane (PU) were successfully developed using low-cost, biodegradable, and renewable resources. PU formulations were formulated from a vegetable oil polyol and oxpropylated lignin through a condensation reaction using toluene diisocyanate (TDI) as a source of isocyanate. Formulations were firstly casted into Petri dish to yield the corresponding PU film and then differently characterized using various physicochemical techniques (TGA-DTG, DSC, WCA, SEM, moisture uptake, water uptake, and WVP) to determine their physicochemical properties and to determine whether the chosen polymers are appropriate as a coating material. The results showed that the bio-based polyurethane (PU) coating efficiently delayed the nutrient release in water and contribute to hold water by improving the water holding capacity of the soil.

Keywords: Bio-based elastic polyurethane, lignin polyol, vegetable oil polyol, coating formulation, controlled release fertilizer, sustained nutrient release

Experimental and theoretical study of the corrosion inhibition of 3003 aluminum alloy in alkaline medium

Adam NID-BELLA
Lahcen BAMMOU
M'hammed BELKHAOUDA
Rachid SALGHI
Ibn Zohr University Agadir, Morocco

Abstract
The effect of an organic compound based on triazine in the passivation and corrosion inhibition behavior of 3003 aluminum alloy (3003AA) in alkaline medium in the presence of chloride ions was been studied using electrochemical techniques and a computational approach based on DFT/B3LYP methods out was investigated to understand the mechanism of corrosion inhibition. The tested compound showed an excellent inhibition of aluminum alloy and its efficiency reached 90 % for optimum concentration of 1.0 mmol/L. The polarization measurements results indicate that the compound is mixed-type inhibitor. Spectroscopic studies confirmed chemical interactions between 3003 AA and our inhibitor and the adsorption results of tested molecule obeyed to Langmuir adsorption isotherm. Finally, physical adsorption mechanism has been proposed for the adsorption of the inhibitor from the trend of the inhibition efficiency with temperature and the values of some kinetic and thermodynamic parameters obtained. The obtained results of quantum chemical calculations were in a good agreement with experimental observations.

Keywords: Corrosion; triazine; 3003 aluminum alloy; EIS

Sensitivity enhancement of a biosensor using surface plasmon resonance

A. Guerinik
F. Tayeboun
University of Sidi Bel Abbes, Algeria
Univérsité Djillali Liabes, Algerie

Abstract
In recent years, thousands of publications have been realized in plasmonic physics, and especially in the field of sensors, for their miniaturizations, and their high and precise sensitivities. The present study aims to theoretically design a plasmonic biosensor based on the surface plasmon resonance (SPR) in the Kretschmann configuration, a structure that is simple to achieve experimentally because it only contains a noble metal, gold, deposited on a glass prism, and a semiconductor which was previously developed by several techniques of physical (PVD) and chemical (CVD) deposition. This technique is based on detecting the change in the refractive index of the analyte. In comparison with other works on SPR sensors, our simulation showed that our biosensor exhibited a very low minimum reflectance, which shifted to larger angles. The addition of this semiconductor on the gold layer improved the angular sensitivity of the biosensor which reached 240 ° / RIU, in the visible range, an excellent value for a simple and economical structure. Other factors qualify the performance of a biosensor, which have been studied such as, full width at half maximum (FWHM), detection accuracy (DA). Numerical results were realized using the transfer matrix (TMM) method. This type of biosensor can be very useful in agriculture, biology, and even in the medical field.

Keywords Surface plasmon resonance, biosensors, sensitivity

Virtual screening by the establishment of 3D-QSAR models and molecular docking: Case of novel anti-cancer heterocyclic drugs, targeted for CDK2

R. Kasmi
M. Bouachrine
A. Ouammou
Sidi Mohamed Ben Abdellah University, Fez, Morocco
University Moulay Ismail, Meknes, Morocco
Sultan Moulay Sliman University, Morocco

Abstract
The cause of cancer involves multiple pathways. Cyclin-dependent kinase (CDK) pathways as an important therapeutic target for the treatment of cancer have been well established. To design new bioactive molecules and study their interactions with the CDK2 enzyme, we used two virtual screening methods: 3D-QSAR modeling and molecular docking on a series of 28 heterocyclyc derivatives.

To develop models (3D QSAR) we used CoMFA and CoMSIA techniques using SYBYL-X2.0 molecular modeling software. The statistical parameters reveal that the good CoMFA model displays (Q^2= 0.587; R^2= 0.895) and that of CoMSIA displays (Q^2= 0.552; R^2= 0.768) which are considered to be very good internal prediction values, while an external validation of a test series of 5 compounds not included in the model development series gives R^2test values of 0.56 for CoMFA and R^2test values of 0.51 for CoMSIA. Then, the molecular docking approach with AutoDockTools-1.5.6 is added in this work to enrich the interpretations extracted from the CoMFA and CoMSIA contour maps, to search in silico the most favorable mode of interaction of an inhibitor within its receptor (CDK2) which helps to predict new more powerful molecules in a limited time.

Key-words: CDK2, CoMFA, CoMSIA, 3D-QSAR, docking approach

ETHNOBOTANY AND VARIETAL DIVERSITY OF SESAMUM INDICUM L. IN NORTH-WEST BENIN

Vincent EZIN
Gazali B. SANNI
University of Abomey-calavi, Abomey-calavi, Benin

Abstract
Sesame (sesamum indicum L.) is an important crop cultivated for its grains of which the world demand is constantly increasing. Sesame, with low ecological requirements, has a vital advantage because it can be grown at relatively high temperatures, with a low water supply (up to 300 mm of water) and low levels of other inputs. In Benin, sesame is mainly produced in the northeastern and northwestern regions on a small area and is relegated to the background despite its strong economic potential. With the aim of improving and conserving sesame plant genetic resources, a survey was conducted. The general objective of this study was to make an inventory of the *sesamum indicum* germplasm available in North-West Benin. A total of 301 producers were interviewed. The snowball technique was used to identify potential sesame producers in the localities. Data were collected through a semi-structured interview questionnaire. The results show that 77.4% respondents were male from Berba ethnic groups (30.02%). Cultivation techniques remain relatively the same within the communes. Sowing is carried out in August (61.12%) and harvesting in October (61.79%). No form of fertilization was applied by farmers and the harvested sesame (83.38%) were for sale. A total of 186 accessions were collected in 24 villages investigated. Based on local classification criteria (color of the seed coat and seed size), the accessions were grouped into 6 morphotypes. The Ses_3 morphotype was the most cultivated (47.03% of respondents) in the areas. Low sesame processing rate was observed. Sesame production is of economic importance to people and is done at the end of the cycle of other crops and generally intended for sale. This study also made it possible to constitute the genetic diversity of existing sesame accessions.

Keywords: Benin, sesame, genetic diversity, collection prospecting, cultivation system

Comparative study on the adsorption of cationic and anionic dyes on diatomite in single dye system

Fadwa Largo
Redouane Haounati
Hassan Ouachtak
Naima Hafid
Abdelaziz Ait Addi
Ibn Zohr University, Agadir, Morocco
Centre Régional des Métiers de l'Education et de la Formation Souss Massa, Morocco

Abstract
In this study the adsorption of methylen blue (MB) and direct red 23 (DR23) onto diatomite was investigated. The effect of influential adsorption parameters (pH, contact time, temperature and initial concentration) on the adsorption of MB and DR23 onto diatomite were examined in batch experiments. Adsorption behavior of MB and DR23 dyes on the surfaces of diatomite was evaluated by applying different isotherm models (Langmuir, Freundlich, and temkin) on equilibrium data. The adsorption kinetics was studied by using pseudo-first-order and pseudo-second-order model. The MB adsorption followed the pseudo-second-order rate kinetics. On the other hand the adsorption of DR23 followed the pseudo-first-order. The maximum adsorption capacities at 25°C were 68 and 77 mg/g for MB and DR23, respectively.

Keywords: Adsorption, methylen blue, direct red 23, diatomite, adsorption kinetics, isotherm

Knowledge Status and Potential Impact of Socio-Economic Factors on the Spreading of COVID-19 in West African Countries

Esther Deguenon
Victorien Dougnon
Lamine Baba-Moussa
Jacques Dougnon
Abomey-Calavi, University of Abomey-Calavi, Benin

Abstract

The COVID-19 epidemic that has been going on since December 2019 and caused by the SARS-CoV-2 coronavirus has spread rapidly around the world and has been classified as a pandemic. The health systems of African countries, especially those of West Africa, are still primitive and there is growing concern about the care of infected people. The present study to assess the knowledge and socio-economic impacts related to the spread of COVID-19 in West Africa.

This study was carried out in March 2020, through a descriptive observation and the collection of information by means of an online survey sheet

throughout West African Countries. Total confidentiality was assured to the responders who participated at this study and data collected were coded and analyzed by using Microsoft Excel 2019.

A total of 1158 answers were collected. The results showed that, the most representative countries were Benin (38.5%), Ivory Coast (25.2%), Togo (12.8%), and Nigeria (10.9%). Concerning the status of people's knowledge of COVID-19, all respondents claim to be aware of this disease. The study carried out the importance of hands washing as a way to limit the virus spreading in west African population. Certain gestures which were ingrained in habits such as traveling with public transport have suffered a regression. **Conclusion:** Non-compliance with hygiene and sanitary measures may lead to the spread of the virus in West Africa and these countries may then be surprised by this pandemic.

Keywords : West Africa, COVID-19, Pandemic, Knowledge, Socio-economic factors

Toxicological and phhithchemical Characterization of ten Plants of the Beninese Flora Used in the Treatment of Diarreal Diseases in Traditional Medicine Beninese (West Africa)

Dougnon Victorien
Hounsa Edna
Agbodjento Eric
Fabiyi Kafayath
Afaton Anny
Sintondji Kevin
Akpode Bénoit
Tchobo Fidèle
Dougnon Jacques
University of Abomey-Calavi

Abstract

Recent studies have shown that several medicinal plants are used in the treatment of infectious diarrhoea in West Africa, but little scientific data exists on the toxicological study. However, this unregulated or poorly rational use may present a dose-dependent risk of toxicity to humans. This study aimed to explore the phytochemical and toxicological characteristics of ten 10 plants used in traditional African medicine in the treatment of infectious diarrhoea. The acute toxicity of aqueous and hydro-ethanolic extracts of *Khaya senegalensis, Daniella oliveri, Rauvoflia vomitora, Vernonia amygdalina, Manihot esculenta, Ocimum gratissimum, Senna italica, Diospyros mespiliformis, Pterocarpus erinaceus, Anacardium occidentale* was evaluated following the OECD 423 protocol at a single dose of 2000 mg/kg. This safety test was complemented by a larval cytotoxicity test by determination of The mean lethal concentration (LC50). Hematological and biochemical examinations as well as a histological study on the liver and kidneys were performed. The detection tests of chemical compounds were carried out.

- The qualitative phytochemical screening of the plants studied revealed in variable the presence of catechic tannins, gallic tannins, flavonoids, anthocyanins and sterol-terpenes, alkaloids, saponosides and reducing compounds. Acute toxicity data indic ated that there was no mortality, However, there was a significant difference in the level of ASAT in rats treated with the aqueous extract of *Ocimum gratissimum* ($p<0.05$). Any structural and functional alterations of the liver and kidneys in of treated animals. Larval cytotoxicity data suggest that the plants studied are not cytotoxic ($LC50 \geq 0.1$ mg/mL).

These observations reflect the safety of these plants and justify their use in traditional medicine in the treatment of many diseases including diarrheal infections.

Keywords: Acute toxicity, Medicinal plants, infectious diarrhoea, Benin

ETUDE SOCIO-ECONOMIQUE DE PRODUCTION DU «KOM » : PATE TRADICTIONNELLE FERMENTEE FABRIQUEE A BASE DE MAÏS AU BENIN

Aziana Reine ZINSOU
Fidéle Paul TCHOBO
Adriano Jospin DJOSSOU
Mazou MOAÏMINE
University of Abomey-Calavi, Benin

Résumé
Kom est une pâte fermentée obtenue à base de maïs trempé. Il s'apparente à certains aliments identifiés dans la variété culinaire des ghanéens et des togolais dont « *Kenkey » et « banku »*. Le substantif *kom* dérive de l'appellation *« komi »* que la tribu des *Ga* accorde au *Kenkey*. L'essor exponentiel de ce secteur d'activité de nos jours est pourvoyeur d'emplois. Mais les conditions de production restent toujours traditionnelles et très peu étudier. La présente étude a consisté à faire ressortie l'intérêt du développement de la production du *kom* au Bénin. Pour atteindre cette objectif, une enquête a été effectuée dans les communes d'Abomey-Calavi, de Comé et de Lokossa dans les départements de l'Atlantique et du Mono. Fortement urbanisées, ces communes sont considérées comme des zones à forte production, de vente et de consommation du *kom* au Sud du Bénin. Les enquêtes ont permis d'identifier, de caractériser les technologies traditionnelles de fabrications du *kom* des producteurs-vendeurs et de connaître les raisons de commercialisation et de consommation du produit. Les résultats obtenus à l'issu de ces travaux montrent que : il y a des similitudes entre les technologies de production utilisées à Comè et à Lokossa contrairement aux technologies de production utilisées à Abomey-Calavi dont les étapes unitaires varient à quelques opérations unitaires près. L'appréciation des consommateurs du produit fini varie d'une commune à une autre et le coût est la même dans toutes ces commune (50 FCFA).

Mot clés : *kom*, pâte, maïs, production, consommation

Summary
Kom is fermented dough obtained from soaked corn. It is related to certain foods identified in the culinary variety of Ghanaians and Togolese including "Kenkey" and "banku". The noun kom derives from the name "komi" that the tribe of Ga gives to the Kenkey. The exponential growth of this industry today is a source of jobs. But the production conditions are still traditional and very little study. The present study consisted in highlighting the interest of the development of kom production in Benin. To achieve this goal, a survey was carried out in the communes of Abomey-Calavi, Comé and Lokossa in the departments of Atlantique and Mono. Highly urbanized, these communes are considered to be areas with high production, sale and consumption of kom in southern Benin. The surveys made it possible to identify and characterize the traditional kom-making technologies of the producers-sellers and to know the reasons for the marketing and consumption of the product. The results obtained from this work show that: there are similarities between the production technologies used at Comè and Lokossa, unlike the production technologies used at Abomey-Calavi whose unit steps vary

except for a few unit operations. Consumer appreciation of the finished product varies from one commune to another and the cost is the same in all these communes (50 FCFA).

Keywords: kom, dough, corn, production, consumption

Effect of *Moringa oleifera* root decoction in controlling Newcastle disease in ISA Brown cockerel

J.S. ADOUKO
S. SYLLA ALADJI-BONI
V.T. DOUGNON
I. YOUSSAO ABDOU KARIM
University of Abomey Calavi, Bénin

Abstract
Newcastle disease remain one of the main avian pathologies which causes high mortality even the vaccine is available. In order to find an alternative solution through endogenous recipe, we evaluate the effect of *Moringa oleifera* root decoction, a plant recognize with its immunomodulatory properties on ISA Brown cockerel for the control of Newcastle disease. In total, one hundred and eight cockerel chicks divided into six batches of eighteen chicks were used, four of which are experimental (batch 3, 4, 5 and 6) and two were used as control batches (batch 1 and 2). Among the experimental batches, the chicks of batches 3 and 4 were inoculated with 1 ml of viral broth and treated for 7 days before inoculation and 7 days after with this decoction at the respective doses of 5 and 10 ml / l of drinking water. Those of batches 5 and 6 were inoculated and treated for 14 days before inoculation and 7 days afterwards with this decoction at the respective doses of 5 and 10 ml / l. Batches 1 and 2 represented the negative and positive control batches. Biological parameters, visceral weights, immune response, hematological and biochemical constants were evaluated. It appears that the decoction administrated over a period of two weeks to the cockerels before inoculation with the Newcastle disease virus reduces the morbidity, mortality and helps to regulate blood constants. However the decoction gave better results when administrated at a dose of 5 ml/l. This dose helped regulate respiratory rate, temperature, consumption index and measurements of certain viscera. Thus, it appears that the root decoction of *Moringa oleifera* provides better results in the control of Newcastle disease in ISA Brown cockerels when administered at low dose (5ml) and over two weeks before inoculation and during one week after.

Keywords: *Moringa oleifera*; chicken; Newcastle disease; Benin

Evaluation of the infectious risk in the Maternity Ward of the Besthesa Hospital in Cotonou: Molecular characterization of the Gram-negative bacilli involved

Fabiyi K., Dougnon T.V.
Déguenon E.
Koudokpon H.
University of Abomey-Calavi, Benin

Abstract

Health care institutions play an important role in preventing disease and improving the health of populations. Unfortunately, health care professionals are sometimes exposed to occupational risks, including infectious risks. Among the infectious risks related to the hospital environment and the care provided by the healthcare professional are nosocomial infections. Nosocomial infections are present throughout the world, in both developed and developing countries, and are a major cause of death and increased morbidity among patients and constitute a real public health problem due to the involvement of multi-resistant bacteria in these infections. Enterobacteriaceae resistance to antibiotics is now a global concern. The objective of this study was to assess the risk of infection in the maternity ward of Bethesda Hospital.

Twenty-four (24) samples were collected from the hands of the healthcare workers, their cell phones and the maternity environment of Bethesda Hospital. Conventional microbiology techniques were used for the identification of Enterobacteriaceae. Resistance profiling of the isolated bacilli was carried out according to the recommendations of the SFM. Eleven resistance genes were searched for by classical PCR. Virulence was sought by searching for certain virulence factors.

The results obtained revealed that out of the 24 samples collected, 14 were positive after culture. Several bacteria were isolated, the predominant ones being *Klebsiella pneumoniae (40%), Enterobacter cloacae (20%), and Chryseomonas luteola* (15%). Almost all of the isolated Enterobacteriaceae (75%) were resistant to the antibiotics used.

Only imipenem and amikacin were fully active on these bacteria. As for virulence factors, 60% of the strains were hemolysis-inducing, 20% lipase and protease producing and 15% capable of inducing hemagglutination. Of the eleven resistance genes sought, only the CTX-M15 and SHV genes were present for 2 strains of Klebsiella pneumoniae and 4 strains of *Enterobacter cloacae* respectively.

The presence of virulence factors in most strains represents a high risk of nosocomial infections for patients admitted and newborns in the maternity ward. These results demonstrate an urgent need to apply infection prevention and control rules to reduce the risks associated with hospitalization in the maternity ward.

Key words: infectious risk, maternity services, Gram-negative bacilli, virulence factors, resistance genes

IN VITRO AND *IN VIVO* EFFICACY OF AQUEOUS EXTRACTS OF *UVARIA CHAMAE* AGAINST MULTI-RESISTANT STRAINS OF *SALMONELLA SPP.* ISOLATED IN BENIN

Brice Boris Lègba
Victorien Dougnon
Honoré Bankolé
Lamine Baba-Moussa
Abomey-Calavi, Abomey-Calavi, Benin

Abstract
Multiresistance of *Salmonella spp* handicaps the management of salmonellosis in Africa. *U. chamae* is one of the most widely used plants in Southern Benin for the management of salmonellosis. This work was aimed to evaluate the efficacy of aqueous extracts of *U. chamae* against multiresistant strains of *Salmonella spp.* isolated in Benin. The antibacterial activities of aqueous and ethanol extracts of *U. chamae* were evaluated on ten (10) multi-resistant strains of *Salmonella spp*. isolated from animals intended for human consumption in Benin and *Salmonella* Typhimurium ATCC 14028 (reference strain), using the well diffusion technique, coupled with microdilution determination of the Minimum Inhibitory Concentration (MIC) and Bactericidal Concentration (BMC). Three-day-old Isa brown cockerels were orally infected with 9.0 108 CFU/ml of S. Typhimurium ATCC 14028 and *Salmonella sp*. (P19) and then subjected to a 7-day treatment with the aqueous extract of the leaves of *Uvaria chamae* and Colistin to measure the rate of reduction of the bacterial load. The results showed that the aqueous extract of *Uvaria chamae* leaves was active *in vitro* on 90% of the multi-resistant *Salmonella* strains. At the end of the *in vivo* test, the rates of reduction of the bacterial load at 100 mg/L, 200 mg/L and 400 mg/L of this extract were respectively 0%, 98.66% and 99.33% in chicks infected with *Salmonella sp*. (P19). These data should be valorized in the management of salmonellosis in Benin and Africa.

Keywords: *Uvaria chamae, Salmonella spp., in vivo*

URINARY TRACT INFECTIONS IN BENIN: EXPLORING THE VIRULENCE FACTORS AND ANTIBIOTIC RESISTANCE GENES AND VIRULENCE GENES AMONG BACTERIA ISOLATES

Assogba Phénix
Dougnon Victorien
Deguenon Esther
Koudokpon Hornel
Abomey-Calavi, Abomey-Calavi, Benin

Abstract

Objective: The emergence and increasing spread of uropathogenic Enterobacteriaceae resistance to antibiotics worldwide is a huge public health problem and compromises our ability to treat these infections. This situation has significantly increased the morbidity and mortality rate related to UTIs. The objective of this study was to produce scientific data on the virulence and level of resistance of these bacteria in Benin.

Methods and Results: This study was conducted on 230 strains of enterobacteria isolated from patients with urinary tract infections. These were *Escherichia coli* (75), *Klebsiella pneumoniae* (60), *Enterobacter cloacae* (58), *Klebsiella oxytoca* (18), *Enterobacter aerogenes* (15), *Citrobacter diversus* (2) and *Morganella morganii* (2). These strains preserved in the freezer in glycerol were transplanted onto Mueller Hinton agar for the various tests. These virulence factors sought were hemolysis, haemagglutination, serum resistance, biofilm formation, lipase production, protease production and lecithinase production. DNA extraction was the first step in the molecular characterization of the virulence and antibiotic resistance genes followed by PCR according to the different conditions for each gene. The study shows that these bacteria possessed several types of virulence factors such as hemagglutination (28.26%), lipase production (23.92%) and hemolysin production (17.83%). Genotyping of virulence factors revealed the presence of FimH (74.79%), PapC (30.44%), Iss (11.34%) and Biofilm (3.92%) genes. The resistance genes such as Bla-SHV (49.56%), Bla-CTX-M15and Bla-CTX-M2 (33.92%), Bla-CTX-M9 (19.13%) and bla-CTX-M1 (11.74%) were also detected. These results filled the national gap related to virulence and antimicrobial resistance of enterobacteria responsible of urinary tract infection. The result must use to improve the management of patients in Benin.

Keywords: Virulence factors, resistance gene, enterobacteria, urinary tract infections

FORMULATION OF AN IMPROVED TRADITIONAL DRUG BASED ON THE LEAVES OF *ROUREA COCCINEA* TO CORRECT MALE FERTILITY DISORDERS

Agbodjento Eric
Klotoé Jean Robert
Dougnon Tamègnon Victorien
Atègbo Jean-Marc Abstract
Abomey-Calavi, Abomey-Calavi, Benin

Abtract
Infertility is a major public health problem that addressed in traditional medicine African with medicinal plants. In Benin, one of the most plants used in the traditional treatment of male infertility is *Rourea coccinea.* The objective of this study was to develop an improved traditional drug from the leaves of *Rourea coccinea* to correct male fertility disorders. For this purpose, the chemical composition of different extracts (aqueous, ethanolic, and hydro-ethanolic) of the leaves of the plant was determined by the quantification of total polyphenols and flavonoids (bioactive molecules) using spectrophotometric methods. The antioxidant power of these extracts was assessed by DPPH and FRAP methods. The degree of safety of the leaves of the plant was achieved by the larval cytotoxicity and sub-acute oral toxicity tests according to OECD Protocol 407. Two spermatogenic efficacy tests conducted using different animal models (normal Wistar rats and ethanol-treated Wistar rats) and focused on the most antioxidant extract and the richest bioactive molecule. The results showed antioxidant activity and a richness of total polyphenols and flavonoids that varied according to the type of extract with a better potential for hydro-ethanolic extract. This extract induced a dose-dependent improvement of the various reproductive parameters evaluated (concentration, mobility, viability and sperm morphology) according to the model consisting of normal Wistar rats. On the model of experienced male infertility (ethanol-treated rats), this hydro-ethanolic extract of *Rourea coccinea* like the reference drug (clomiphene Citrate) restored the toxic effects induced by ethanol on reproductive organs, sperm profile and testosteronemia. The data obtained from the toxicological analysis of this extract indicate a lack of toxicity on *Artemia salina* larvae and Wistar rats (at doses of 200, 400 and 800 mg/kg). These data were used as scientific documentation for the development of a Class 2 Enhanced Traditional Drug (ProFerMas) for the treatment of male fertility disorders.

Keywords: Male Infertility, Traditional Treatment, *Rourea coccinea*, Southern Benin

Metallic composition of *Labeo coubie* from River Oli, Kainji Lake National Park, Nigeria

Adelakun Kehinde Moruff
Abdul-Azeez Folorunsho Ishaq
Ibrahim Azeez Olalekan
Joshua, Deji Abiodun
Sulyman Abdul-Wahhab
Ojo Samson Babatunde
Federal College of Wildlife Management of Forestry Research Institute of Nigeria
Forestry Research Institute of Nigeria, Nigeria

Abstract
This study assesses heavy metals distribution in body parts of *Labeo coubie* (African carp) from River Oli, in Kainji Lake National Park as pollution index of the ecosystem. Fish parts samples (gills, muscles and vertebra bone) were prepared and specifically analysed for the levels of Pb, Cr, Zn, Cu, Fe and Cd using Atomic absorption spectrophotometry. The concentration of metals in the samples at different concentrations ranged from 0.001±0.000 µg/g for Cd to 224.87±4.07 µg/g of Fe in the fish gill. There is significant ($p<0.05$) differences in the Pb, Zn, Cu and Fe concentrations across the different fish parts with gills accumulated the highest levels metals while Cr levels significantly ($p<0.05$) differed in the fish body parts and accumulated more in the muscles (10.75±0.15 µg/g). The mean concentrations of metal elements in the fish parts had shown some distinguish connection in its distributions with Pb and Cu; Gills > Muscles > Vertebra bones, Fe and Zinc; Gills > Vertebra bones > Muscles while Cr was distributed in Muscles > Gill > Vertebra bones. However, it is revealed that *Labeo coubie*, an euryphagus fish probably absorb these metals through ingestion of contaminated food or absorption by the gills and bioaccumulate in different fish parts. It is therefore established that River Oli is contaminated with heavy metals as presence of these metals in fish is an indication of its immediate environment

Keywords: absorption, bioaccumulation, fish parts, heavy metals, pollution

INTRODUCTION

In different water bodies, heavy metal pollution results from direct atmospheric deposition, geologic weathering or through the discharge of agricultural, municipal, residential or industrial waste products (Dhanakumar *et al.*, 2015; Garcia *et al.*, 2015 and Demirak *et al.*, 2006) and they can have a negative impact on aquatic ecosystems, the food chain and human health (Arantes *et al.*, 2016).

Heavy metals can be taken up into fish either from ingestion of contaminated food via the alimentary tract or through the gills and skin (Sfankianakis *et al.*, 2015 and Drevnick *et al.*, 2006). The quantification of potential contaminants in fish tissues can be an important part of water quality assessment programs (Oliveira-Ribeiro *et al.*, 2005) because it can reflect levels

found in sediment and water and its distribution in the particular aquatic environment from which they are sourced (Nhiwatiwa *et al.*, 2011).

Heavy metals have been reported to change the genetic, physiological, biochemical and behavioral parameters of aquatic organisms including fish (Mahboob *et al*., 2016). Fish have been the most popular choice as test organisms for heavy metals because they are presumably the best understood organisms in the aquatic environment and are an important source of protein to man (Murtala *et al.*, 2012). Accumulated heavy metals may lead to morphological alterations in the tissues of fish (Monteiro *et al*., 2005) and many cause death or sub-lethal pathology of liver, kidneys, reproductive system, respiratory system or nervous system in both invertebrate and vertebrate aquatic animals (Mahboob *et al.*, 2016).

Concentrations of these heavy metals in the fish tissues are a critical issue that needs to be addressed as levels of metals in fish usually reflects its presence in water and sediment of the particular water body. There is need for a better understanding of heavy metals composition in different body parts of fish. Therefore, this study assesses distribution of heavy metals in *Labeo coubie* (African carp) parts (muscles, gills and vertebra bones) from Kainji Lake National Park. This research is essential if wildlife ecological balance of the park is to be sustained from the metals adverse effects especially with regard to water dependent species.

MATERIALS AND METHOD

Study location: Kainji Lake National Park is located in the North West-central part of Nigeria between latitude $9^0$45'N and $10^0$23'N and longitude $3^0$4'E and $5^0$47'E. It is made up of two sectors (Borgu and Zugurma) situated in Borgu and Kaima/Baruten Local Government Areas of Niger and Kwara State, respectively. It covers a total land area of 5,340.825 Km^2 (Ayeni, 2007). Kainji Lake National Park was established in 1979 by the amalgamation of two formal game reserves Borgu and Zugurma under decree 46 of 29th July 1997, thereby making Kainji Lake National Park the premier National Park in Nigeria (Ayeni, 2007). River Oli is the major river in the Park that supports the lives of aquatic and terrestrial wildlife species and domestic animals. The farmers and their families in the villages that share boundaries with the Park also depend on the river for their livelihood both in the dry and wet seasons.

Fish sampling and processing: Five sub-adult specimen of *Labeo coubie* (African carp) were caught weekly using gill nets for ten weeks from River Oli and transported to the laboratory. A clean-washed high-quality corrosion-resistant stainless knife was used to cut 1g wet weight of the fish tissue (muscles) along the lateral line. The operculum of each fish sample was opened and the gill removed while whole fish was dissected to remove vertebra bone. After dissection, all the samples were labeled accordingly. The entire samples (gills, muscles and vertebra bone) of each fish species were separately dried in a laboratory oven at 175^0C for 3 hours.

The dried samples were each ground with laboratory ceramic mortar and pestle to powder and sieved with 2mm sieve. After being ground, the samples were heated at the temperature of 45^0C in a muffle furnace till the aroma of the sample disappeared. The powdered samples were digested according to procedures described by Novozamsky *et al.* (1983). The digested samples were diluted with de-ionized distilled water appropriately and filtered using a 0.5 micron filter membrane. The digested samples were poured into auto analyser cups and concentration of Lead (Pb), Cadmium (Cd), Iron (Fe), Chromium **(**Cr), Zinc (Zn) and Copper (Cu) in each sample (µg/g) were determined with Atomic Absorption Spectrophotometry

(AAS) Perkin-Elmer spectrophotometer (AAnalyst 200 model) using their respective lamps and wavelengths in the laboratory. Operational conditions (such as lamp selection and wavelength) were adjusted to yield optimal determination. The machine was standardized by aspirating distilled water to obtain zero absorbance. The samples were aspirated into the machine and absorbance value was read and recorded.

Data analysis: Data obtained were statistically analysed using ANOVA in SPSS 18 and $p<0.05$ were considered to indicate statistical significance while the means were compared and separated using Duncan's Multiple Range Test (DMRT) as a post-hoc test (Steele and Torrie, 1980).

RESULTS AND DISCUSSION

Heavy metals concentrations in different body parts (muscles, gills and vertebra bones) of Labeo coubie: The mean concentration of heavy metals in the fish body parts were presented in table 1. The results show that there are metals bioaccumulated in the samples at different concentrations ranged from below detectable level (BDL) of Cd to 224.87±4.07 µg/g of Fe in the fish gills.

There is significant ($p<0.05$) differences in the Pb concentrations in the different fish parts with gills accumulated the highest level (3.20±0.16 µg/g). Chromium levels significantly ($p<0.05$) differed in the fish body parts and accumulated more in the muscles (10.75±0.15 µg/g) where Zn concentration is relatively lower (14.75±0.04 µg/g) compares to 29±l0.87 µg/g and 30.60±2.49 µg/g found in vertebra bones and gills respectively.

Cu accumulation in muscles (27.35±0.23 µg/g) and vertebra bone (25.65±5.54 µg/g) demonstrate no significant difference ($p>0.05$) but the concentration is significantly higher ($p<0.05$) in the gills with 53.55±3.23 µg/g. Fe in all fish parts are relatively high and ranged from 180.33±4.19 µg/g in fish muscles to a significant high value of 224.87±4.07 µg/g in the gills. There are low levels of Cd in the fish samples where concentration in gill is below detectable level while 0.001±0.000 and0.001±0.001 were recorded for muscles and vertebra bones respectively.

Figure 2 depicted the mean concentrations of heavy metals in different body parts of the fish against the maximum tolerable level as recommended by World Health Orgainsation, 2008.

Pb levels in muscles and bones are lower but its concentration of 3.20±0.16 µg/g in the gills is exceed 2 µg/g maximum tolerable level recommended.

Cr levels that ranged from 0.35±0.04 µg/g and 10.75±0.15 µg/g, Zn (14.75±0.04 µg/g and 30.60±2.49 µg/g) and Cd (0.001 µg/g) are below tolerable level of 50 µg/g (Cr), 75 µg/g (Zn) and <1 (Cd) recommended for corresponding elements. More also Fe concentrations in all fish parts are considerably above the allowable limit of 100 µg/g while only Cu level of 53.55±3.23 µg/g in gills exceeded the acceptable level of 30 µg/g . Presence of some these metals at high concentrations are considered as a dangerous source of water pollution, because of its consequential effects on the aquatic resources. These metals are known to induce oxidative stress and/or carcinogenesis by mediating free radicals/reactive oxygen species (Javed *et al.*, 2015).

At trace levels, some heavy metals (e.g. Cu, Fe, Zn and Cr) are essential to maintain important biological roles including metabolism of the biological organism such as fish (Abadi *et al.*, 2014) while inadequate supply of these micronutrients could results in a variety of deficiency diseases or syndromes (Kennedy, 2011). However, toxicity could also occur at excessive concentration of these metals (Sivaperumal *et al.*, 2007) leading to a variety of adverse effects and fish diseases. On the other hand, non-essential metals such as Cd and Pb have no proven

biological function and their toxicity rises with increasing concentrations (Sfakianakis, 2015) and therefore can lead to poisoning (Binkowski, 2012).

From the study, the presence of heavy metals in the different body parts of *Labeo coubie* confirmed the report that heavy metals entering the water bodies can be deposited into aquatic organisms through the effects of bioconcentration, bioaccumulation and the food chain process (Abdel-Baki *et al*., 2011). It is further evident that heavy metals accumulate in the fish muscles, internal organs and bones as earlier reported in various studies (Kehinde and Adelakun, 2019; Agbon and Omoniyi, 2010; Golonova, 2008 and Dural *et al.*, 2007).

Presence of Pb in all fish parts examined in the study agreed with Omwenga, (2003) that Pb accumulates in the bones and soft tissues of fish. Aquatic organisms bio accumulate Pb from water and diet, although there is evidence that Pb accumulation in fish, is most probably originated from contaminated water rather than diet (Creti *et al.,* 2010). Although Pb is a naturally occurring substance, its environmental concentrations are significantly increased by anthropogenic sources including lead containing pesticides, through precipitation, fallout of lead dust, road runoff, and community wastewater (Sepe, 2003). Lead (Pb) concentrations recorded in the study (table 1) are comparatively higher to the findings of Okafo *et al.,* (2018), who reported range of 0.30±0.15 µg/g and 0.39±0.18 µg/g for *Labeo species* from River Kaduna. Similarly, lower concentrations ranges between 0.002±0.001 µg/g to 0.024±0.004 µg/g in gills and 0.002±0.000 µg/g to 0.004±0.001 µg/g in muscles of economic important fishes of Aiba reservoir, Nigeria has been documented (Atobatele and Olutona, 2015). However, even at low levels, Pb pollution could cause some adverse effects on fish health and reproduction (Delistry and Stone, 2007).

Highest accumulation of Pb found in gills from the study affirmed its deposition in various fish organs including fish gills (Jezierska and Witeska, 2006), leading to disorders in fish body.

The characteristic symptoms of chronic Pb toxicity include changes in the blood parameters with severe damage to erythrocytes and leucocytes and damage in the nervous system (El Badawi, 2005).

The concentration of Cr significantly varied in all samples and below the tolerable level of 50µg/g (WHO, 2008), though higher than the concentrations of 0.02±0.01 µg/g to 0.40±0.13 µg/g in the different organs of the six species of fishes from Lake Chad in Doron Buhari, Maiduguri, Borno State, Nigeria (Akan *et al.*, 2009). Chromium is an essential nutrient metal, necessary for metabolism of carbohydrates (Farag *et al.*, 2006). Fish assimilate Cr by ingestion or by the gill uptake tract and accumulation in fish tissues, mainly liver, occurs at higher concentrations than those found in the environment (Pacheco *et al.*, 2013 and Ahmed *et al.*, 2013). The overall toxic impact on organs like gill, kidney and liver may seriously affect the metabolic, physiological activities and could impair the growth and behavior of fish (Vinodhini and Narayanan, 2008). Toxic effects of Cr in fish include: hematological, histological and morphological alterations, inhibition/reduction of growth, production of reactive oxygen species (ROS) and impaired immune function (Reid, 2011 and Vera-Candioti *et al.*, 2011).

The mean levels of Zn in this study fall within 14.56±0.48 µg/g and 51.82±2.75 µg/g reported for *Chrysichthys nigrodigitaus* in the same study area (Adelakun and Kehinde, 2019), much higher than 2.19±0.39 µg/g reported for *Labeo species* from River Kaduna (Okafo *et al.*, 2018) but lower than 65.33 µg/g documented for *Tilapia Zilli* from the lower reaches of River Niger (Obodo, 2002). Zn plays a vital role in the physiological and metabolic process of many organisms (Rajappa *et al.*, 2010). It is essential element in animal diet because it helps in

protein synthesis (Amundsen *et al.,* 1997) but may be become toxic to fish at concentration above 75 µg/g (WHO, 2008) and could result to mortality, growth retardation, and reproductive impairment (Giardina *et al.,* 2008). However, Zinc does not appear to present a contaminant hazard to *Labeo coubie* within the River Oli catchment of Kainji Lake National Park.

For Cu, which can get into aquatic ecosystems from diverse sources for example, from Cu compounds used in agro chemicals, wood preservatives, tie and dye manufacture (Akan *et al.,* 2010). Also, from Cu compounds added in fertilizers and animal feeds as a nutrient to support plant and animal growth. Cu recorded in the study is higher than 7.04±0.03 µg/g in *Chrysichthys nigrodigitatus* and 9.51±0.10 µg/g in *Parachanna obscura* from Ibiekuma stream, Ekpoma, Nigeria (Erhabor *et al.,* 2010) as well as 1.57±0.26 µg/g in *Cynothrissa mento* from Ologe Lagoon, Lagos, Nigeria (Kumolu-Johnson *et al.,* 2010) but is lower than the range of 860-1620 µg/g reported by Anetekhai *et al*. (2007) in *M. vollenhovenii* (a non-fin fish) from the same Ologe Lagoon. This has been associated to greater metal load in Ologe Lagoon because of the presence of Agbara Industrial Estate, which discharges its waste into the lagoon (Kusemiju *et al*., 2001). However, Cu concentration in gills of the fish in the present study exceeded maximum tolerable level of 30 µg kg-1 (WHO, 2008) and high doses of Cu may cause anaemia, liver and kidney damage, stomach and intestinal irritation (Tirkey *et al.,* 2012).

The high Cu levels in *Labeo coubie* in the study could be attributed to agricultural activities in the catchment especially the use fertilizers and agro chemicals. The River Oli catchment is a high potential area for agricultural practices including crops farming and animal husbandry, therefore Cu compounds added in fertilizers and animal feeds get into river through surface runoff especially during the rainy season.

This study show that Iron (Fe) is the most bioaccumulated of all metals in the fish body parts (Table 1), though fall within 126.23 ± 0.06 µg/g and 560.63 ± 0.03 µg/g reported for different body parts of *Chrysichthys nigrodogitatus* and *Parachanna obscura* from Ibiekum stream, Nigeria (Erhabor *et al.,* 2010). However, the values reported for Fe in the study exceed maximum tolerable level of 100µg/g (WHO, 2008). High concentration of Fe in fish gills as evident in the study could cause respiratory distress in fish due to physical clogging of the gills (Dalzell and Macfarlane, 1999) because the precipitated Fe compounds could reduce the gills area available for respiration causing damage to the respiratory epithelium and eventual suffocation of the fish (Abbas *et al.,* 2002).

This investigation revealed that Cd values obtained in this study fall within 0.002 ± 0.000µg/g reported for muscles of *Labeo species* in Aiba reservoir, Nigeria (Atobatele and Olutona, 2015). However, small quantities of cadmium could interfere with fish enzymes and cause diseases (Rajappa *et al.,* 2010) including bone defects in animals (Tirkey *et al.,* 2012). Cd was practically less bioaccumulated by the sampled fish species in this study. This could be attributed to the fact that the fishes were conceivably able to excrete the metal at a rate that exceeded the uptake of the metal (Wangboje *et al*., 2013).

Patterns of heavy metals accumulation in body parts (muscles, gills and vertebra bones) of Labeo coubie*:** The mean concentrations of metal elements in the fish parts had shown some connection in its bioaccumulation patterns. Pb and Cu had similar bioaccumulation forms of Gills > Muscles > Vertebra bones. Fe and Zinc, which are important essential metals exhibited Gills > Vertebra bones > Muscles accumulation pattern while Cr differed with all other metals forms with Muscles > Gill > Vertebra bones order of bioaccumulation in ***Labeo coubie (see table 2).

It is apparent from the study that gill samples accumulated highest level of Pb, Cu, Zn and Fe, thus corroborated Storelli *et al.* (2006) and Rashed (2001); that gill is the centre of metal accumulation in fish as a results of its important role in interface with the environment in performing its functions in gas exchange, ion regulation, acid balance and waste excretion (Bajc *et al.*, 2005; Filazi *et al.*, 2003; Shukla *et al.*, 2007). The distribution pattern (gills < muscles < bones) of most metals in the study conformed closely with the work done by (Golonova, 2008) this could be as a result of gills direct metal uptake from water (Storelli *et al.*, 2006) which can be influenced by absorption of metals on to the gill surface (Erdogrul and Erbilir, 2007; Dural *et al.*, 2006) while muscles (Uysal *et al.* 2009; Bervoets and Blust, 2003) and bones (Akan *et al.*, 2009) comparably considered to have weak accumulation potential.

Table 1. Mean (±) concentration of heavy metals in muscles, gills and vertebra bones of *Labeo coubie* from the study area (µg/g dry weight).

Fish parts	The mean concentration of heavy metals in fish flesh (µg/g)					
	Pb	**Cr**	**Zn**	**Cu**	**Fe**	**Cd**
Muscles	1.50 ± 0.02^{b}	10.75 ± 0.15^{c}	14.75 ± 0.04^{a}	27.35 ± 0.23^{a}	180.33 ± 4.19^{a}	0.001 ± 0.000
Gills	3.20 ± 0.16^{c}	3.80 ± 0.22^{b}	30.60 ± 2.49^{b}	53.55 ± 3.23^{b}	224.87 ± 4.07^{b}	BDL
Bones	0.45 ± 0.02^{a}	0.35 ± 0.04^{a}	29 ± 10.87^{b}	25.65 ± 5.54^{a}	196.30 ± 21.00^{a}	0.001 ± 0.001

Note: Values are mean values ± standard error

Mean with different superscript within the same column are significantly different ($p<0.05$)

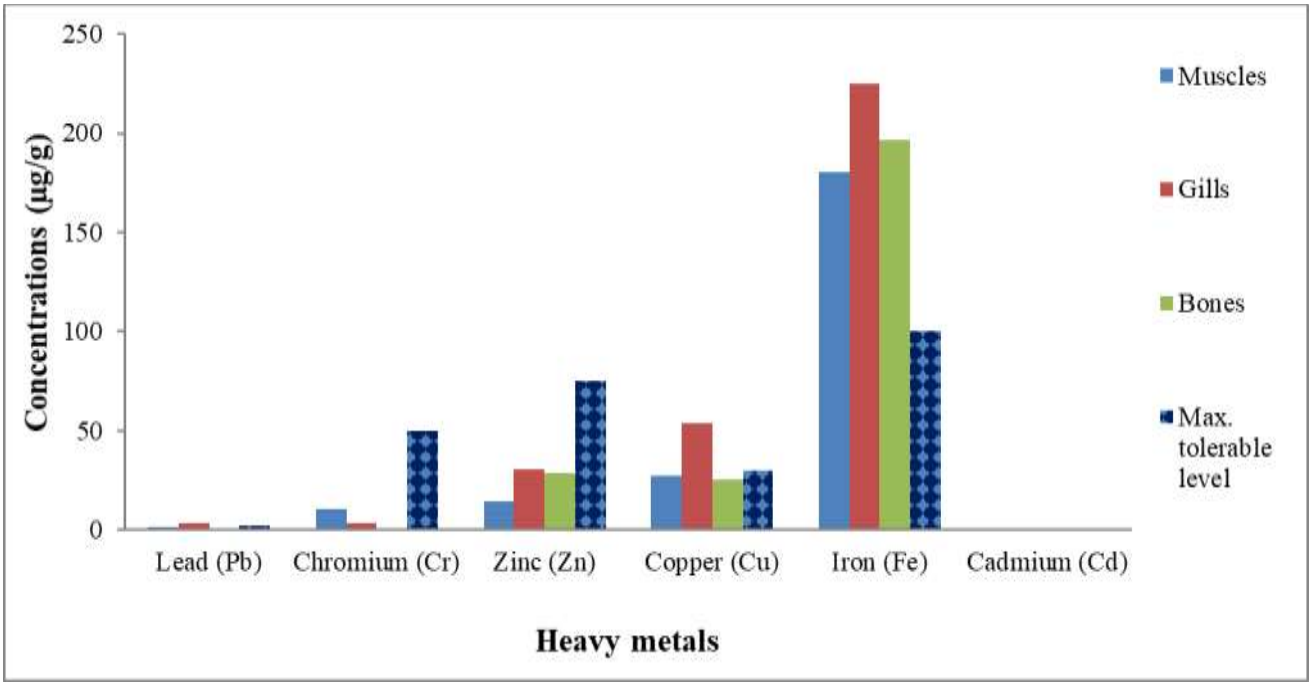


Figure 2. Mean concentrations of heavy metals in the muscles, gills and vertebra bones of *Labeo coubie* from the study area against WHO (2008) maximum tolerable level.

Table 2. Bioaccumulation patterns of heavy metals in body parts (muscles, gills and vertebra bones) of *Labeo coubie*

Metal elements	Pattern of the bioaccumulation of heavy metal fish parts
Pb	Gills > Muscles> Vertebra bones
Cr	Muscles > Gill > Vertebra bones
Zn	Gills > Vertebra bones > Muscles
Cu	Gills > Muscles > Vertebra bones
Fe	Gills > Vertebra bones > Muscles

CONCLUSION

There is the possibility of the heavy metals originating from the chemical fertilizers and all forms of pesticides being utilized by the farmers in the surrounding communities of the Kainji Lake National Park possibly being washed down into the river through runoff. Hence, *Labeo coubie*, an euryphagus fish probably absorb these metals through ingestion of contaminated food or by absorption by the gills and bioaccumulate in different body parts.

Though, Zinc and Cr appear not to present a contaminant hazard to fish within the River Oli catchment of Kainji Lake National Park. Also, Cd was also probably less bioavailable to the fish species compared to the other heavy metals in the study area. However it is pertinent to facilitates appropriate action towards protection and sustainable environment for wildlife conservation in the Park and its surrounding communities.

REFERENCES

Abadi, DRV; Dobaradaran, S; Nabipour, I; Lamani, X; Ravanipour, M; (2014). Comparative investigation of heavy metal, trace, and macro element contents in commercially valuable fish species harvested off from the Persian Gulf. *Environ Sci Pollut Res.*

Abbas, HH; Zaghloul, KH; Mousa, MA (2002). Effect of some heavy metal pollutants on some biochemical and histopathological changes in Blue tilapia, *Oreochromis aureus*. *Egypt. J. Agric. Res.*, 80: 1395-1411.

Adelakun, KM; Kehinde, AS (2019). Heavy metals bioaccumulations in *Chrysichthys nigrodigitatus* (Silver catfish) from River Oli, Kainji Lake National Park, Nigeria. Egyptian Journal of Aquatic Biology & Fisheries 23(5): 253 – 259. www.ejabf.journals.ekb.eg

Agbon, AO; Omoniyi, IT (2010). Heavy metals in some Fish species of Oyan lake, Southwest Nigeria. *Nig. Journal of Fisheries*. Vol.7 No1 and 2: 91 - 99.

Ahmed, MK; Kundu, GK; Al-Mamun, MH; Sarkar, SK; Akter, MS; Khan, MS (2013). Chromium (VI) induced acute toxicity and genotoxicity in freshwater stinging catfish, *Heteropneustes fossilis. Ecotoxicol. Environ. Saf.* 92: 64-70.

Akan, JC; Abdulrahman, FI; Sodipo, OA; Akandu, PI (2009). Bioaccumulation of Some Heavy Metals of Six Fresh Water Fishes Caught from Lake Chad in Doron Buhari, Maiduguri, Borno State, Nigeria. *Journal of Applied Sciences in Environmental Sanitation*, 4 (2): 103-114.

Akan, JC; Abdulrahman, FI; Sodipo, OA; Chiroma, YA (2010). Distribution of Heavy Metals in the Liver, Kidney and Meat of Beef, Mutton, Caprine and Chicken from Kasuwan

Shanu Market in Maiduguri Metropolis, Borno State, *Research Journal of Applied Sciences, Engineering and Technol.* 2(8): 743-748.

Amundsen, PA; Staldvilk, FJ; Lukin, A; Kashulin, N; Popova, O; Restetnikov, Y (1997). Heavy metals contaminations in fresh water fish form the border region between Norway and Russia. *Science of the Total Environment.* 201:211-4.

Anderson, RA (2005). Essentiality of Chromium in Humans. *Science of the Total Environment* 86; 75-81

Anetekhai, MA; Akin-Oriola, GA; Aderinola, OJ; Akintola, SL (2007). Trace metal concentration in *Macrobrachium vollenhovenii* from Ologe Lagoon, Lagos, Nigeria. *J. Afrotrop. Zool.*, Special Issue: 25-29.

Arantes, FP; Savassi, LA; Santos, HB; Gomes, MVT; Bazzoli, N (2016). Bioaccumulation of mercury, cadmium, zinc, chromium, and lead in muscle, liver and spleen tissues of a large commercially valuable catfish species from Brazil. *Annals of the Brazilian Academy of Sciences, doi.org/10.1590/0001-3765201620140434*

Atobatele, OE; Olutona, GO; (2015). Distribution of three non-essential trace metals (Cadmium, Mercury and Lead) in the organs of fish from Aiba Reservoir, Iwo, Nigeria. *Toxicology Reports* 2 (2015) 896–903.

Ayeni, JSO (2007). Participatory management plan in Kainji Lake National Park. *ENVIRON-CONSULT:* Lagos. 156p.

Bajc, Z; Gacnik, KS; Jenci, V; Doganoc, DZ (2005). The Content of Cu, Zn and Mn in Slovenian freshwater fish. *Slov. Vet. Res.*, 42, 15-21.

Bervoets, L; Blust, R (2003). Metal concentrations in water sediment and gudgeon (*Gobiogobio*) from a pollution gradient: relationship with fish condition factor. *Environ. Pollut.* 126: 9-19.

Binkowski, MN (2012). Preliminary results of cadmium and lead concentration in pectoral muscles of mallards and coots shot in 2006 in southern Poland, *J. Microbiol. Biotech. Food Sci.* 1: 120-1128.

Cretì, P; Trinchella, F; Scudiero, R (2010). Heavy metal bioaccumulation and metallothionein content in tissues of the sea bream *Sparus aurata* from three different fish farming systems. *Environ. Monit. Assess.* 165: 321-329.

Dalzell, DJB; Macfarlane, NAA (1999). The toxicity of iron to brown trout and effects on the gills: a comparison of two grades of iron sulphate. *J. Fish Biol*. 55: 301-315.

Delistraty, D; Stone, A (2007). Dioxins, metals, and fish toxicity in ash residue from space heaters burning used motor oil. *Chemosphere* 68(5): 907-914.

Demirak, A; Yilmaz, F; Levent-Tuna, A; Ozdemir, N (2006). Heavy metals in water, sediment and tissues of *Leuciscus cephlaus* from a stream in southwestern Turkey. *Chemosphere* 63: 1451-1458.

Dhanakumar, S; Solaraj, G; Mohanraj; R (2015). Heavy metal partitioning in sediments and bioaccumulation in commercial fish species of three major reservoirs of river Cauvery delta region, India. *Ecotoxicol. Environ. Saf.* 113: 145-151.

Drevnick, PE; Sandheinrich, MB; Oris, JT (2006). Increased ovarian follicular apoptosis in fathead minnows *(Pimephales promelas)* exposed to dietary methylmercury. *Aquat Toxicol* 79: 49-54.

Dural, DA; Bakare, OK; Ayodele, IA (2007). Trade in the wild mammalian Species for Traditional medicine in Ogun State, *Nigeria Global J. Med. Res.* 12 (3): 6-21.

Dural, M; Goksu, MZI; Ozak, AA; Derici, B (2006) Bioaccumulation of some heavy metals in different tissues of *Cicentrarchus labrax* L., 1758, *Sparus aurata* L.,1758 and *Mugli*

cephalus L., 1758 from the Camlik Lagoon of the Eastern Coast of Mediterranean (Turkey). *Environ. Monit. Assess.* 118: 66-74.

El-Badawi, AA (2005). Effect of lead toxicity on some physiological aspects of Nile tilapia fish, *Oreochromis niloticus.* In: *Inter. Conf. Vet. Res. Div.*, 2005, NRC, Cairo, Egypt.

Erdogrul, O; Erbilir, F (2007). Heavy metals and trace elements in various fish samples from Sir Dam Lake, Kahramanmaras, Turkey. *Environ. Monit. Assess.* 130 373-379.

Erhabor, CU; Obasohan, EE; Eguavoen, OI (2010). Ecotoxicological studies: Heavy metals contaminating water and fishes from Ibiekuma Stream, Ekpoma, Edo State, Nigeria. *Nigerian Journal of Fisheries*, 7(1&2): 81-90.

Farag, AM; May, T; Marty, GD; Easton, M; Harper, DD; *et al.* (2006). The effect of chronic chromium exposure on the health of Chinook salmon *(Oncorhynchus tshawytscha). Aquat. Toxicol.* 76: 246-257.

Filazi, A; Baskaya, R; Kum, C; Hismiogullar, SE (2003) Metal concentration in tissues of the Black sea fish *Mugil auratus* from Sinop –Icliman, Turkey. *Human Exp. Toxicol.* 22, 85-87.

Garcia, JC; Martinez, DST; Alves, OL; Leonardo, AFG; Barbieri, E (2015). Ecotoxicological effects of carbofuran and oxidized multiwalled carbon nanotubes on the freshwater fish Nile tilapia: Nanotubes enhance pesticide ecotoxicity. *Ecotoxicol. Environ. Saf.*, 111: 131-137.

Giardina A; Larson BE; Wisner B; Wheeler J; Chao M (2008) Long-term and acute effects of Zinc contamination of a stream on fish mortality and physiology. *Environmental Toxicology and Chemistry*, 28(2): 287-295.

Golovanova, IL (2008). Effects of heavy metals on the physiological and biochemical status of fishes and aquatic invertebrates. *Inland Water Biology* 1(1):93-101

Javed, M; Usmani, N; Ahmad, I; Ahmad, M (2015). Studies on the oxidative stress and gill histopathology in *Channa punctatus* of the canal receiving heavy metalloaded effluent of Kasimpur Thermal Power Plant. *Environ. Monit. Assess.* 187: 4179.

Jezierska, B; Witeska, M (2006). The metal uptake and accumulation in fish living in polluted waters. *NATO Science Series*, Netherlands: Springer.

Kehinde, AS; Adelakun, KM (2019). Occurrence of heavy metals in selected fish species of River Oli, Kainji Lake National Park, Nigeria. *SINET: Ethiop. J. Sci*., 42(1):18-24.

Kennedy, CJ; (2011). The toxicology of metals in fishes. Academic Press, San Diego, California, USA.

Kumolu-Johnson, CA; Ndimele, PE; Akintola, SL; Jibuike, CC (2010). Copper, zinc and iron concentrations in water, sediment and *Cynothrissa mento* (Regan, 1917) from Ologe Lagoon, Nigeria: a preliminary survey. *Afr. J. Aquat. Sci.*, 35(1): 87-94.

Kusemiju, V; Fadiya, AA; Aderinola, OJ; Akintola, SL (2001). Comparative analysis of heavy metals in water, sediments and tissues of *Lumbricus violaceus* from Agbara and Iba streams. *Nig. J. Res. Rev. Sci.*, 2: 114-117.

Mahboob, S; Al-Ghanim, KA; Al- Balawi, HFA; Al-Misned, F; Ahmed, Z (2016). Heavy metals in *Clarias gariepinus* (Burchell, 1822) from Wadi-Hanefah, Saudi Arabia. *Pakistan Journal of Zoology.* 48 (3): 875-880.

Monteiro, SM; Mancera, JM; Fontainhas-Fernandes, A; Sousa, M (2005). Copper induced alterations of biochemical parameter in the gill and plasma of *Oreochromis niloticus*. *Comp. Biochem. Physiol C.* 141: 375- 383.

Murtala, BA; Abdul, WA; Oyebanjo, W; Akinyemi, AA (2012). Bioaccumulation of heavy metals in fish (*Hydrocynus forskahlii, Hyperopisus bebe occidentalis* and *Clarias*

gariepinus) organs in downstream Ogun coastal water, Nigeria. *Transnational Journal of Science and Technology*. 2 (5): 119-133.

Nhiwatiwa, T; Barson, M; Harrison, AP; Utete, B; and Cooper, RG (2011). Metalconcentrations in water, sediment and sharptooth catfish Clarias gariepinusfrom three peri-urban rivers in the upper Manyame catchment, Zimbabwe. *Afr. J. Aquat. Sci.* 36: 243–252.

Novozamsky, I; Houba, VJG; van Eck, R; van Vark, W (1983). A novel digestion technique for multi-element plant analysis. *Communications in Soil Science and Plant Analysis*,14: 239-248.

Obodo, GA (2002). The bioaccumulation of heavy metals in fish from the lower reaches of River Niger. *Journal of Chemical Society of Nigeria*, 27(2):173–176.

Okafo, CN; Yakubu, SE; Ameh, JB; Okuofu, CA (2018). Heavy metal levels in some fish species harvested from River Kaduna, Nigeria. *African Journal of Natural Sciences* 21: 9-16.

Oliveira-Ribeiro, CA; Vollaire, Y; Sanchez-Chardi, A; Roche, H (2005). Bioaccumulation and the effects of organochlorine pesticides, PAH and heavymetals in the eel (Anguilla anguilla) at the Camargue Nature Reserve, France. *Aquat. Toxicol.* 74: 53–69.

Omwenga, JM (2003). Heavy metals and nutrient retention in the Kerenga Wetland, Kericho, Kenya. Unpublished M.Sc. Thesis.

Pacheco, M; Santos, MA; Pereira, P; Martínez, JI; Alonso, PJ; Soares, MJ; Lopes, JC (2013). EPR detection of paramagnetic chromium in liver of fish *(Anguilla anguilla)* treated with dichromate (VI) and associated oxidative stress responses-Contribution to elucidation of toxicity mechanisms. *Comp. Biochem. Physiol. C.* 157: 132-140.

Rajappa, B; Manjappa, S; Puttaiah, ET (2010). Monitoring of Heavy metal in groundwater of Hakinaka TaluK, India. *Contemporary Engineering Sciences*, 3(4): 183 – 190.

Rashed, MN; (2001). Monitoring of environmental heavy metals in fish from Nasser Lake. *Environ. Int.* 27: 27-33.

Reid, SD (2011). Molybdenum and chromium. Academic Press, New York, USA.

Sepe, A; Ciaralli, L; Ciprotti, M; Giordano, R; Fumari, E; Costantini, S; (2003). Determination of cadmium, chromium, lead and vanadium in six fish species from the Adriatic Sea. *Food Addit. Contam.* 20: 543-552.

Sfakianakis, DG; Renieri, E; Kentouri, M; Tsatsakis, AM (2015). Effect of heavy metals on fish larvae deformities: A review. *Enviro. Res.* 137: 246-255.

Shukla, V; Dhankhar, M; Prakash, J; Sastry, KV (2007) Bioaccumulation of Zn, Cu, and Cd in *Channa puntatus. J. Environ. Biol.*, 28, 395-397.

Sivaperumal, P; Sankar, TV; Viswanathan-Nair, PG (2007). Heavy metal concentrations in fish, shellfish and fish products from internal markets of India vis-a-vis international standards. *Food Chem* 102: 612-620.

Steel, RGD; Torrie, J.H (1980). *Principle and procedures of statistics*. McGraw-Hill New York, USA, pp 633.

Storelli, MM; Barone, G; Storelli, A; Marcotrigiano, GO (2006). Trace metals in tissues of Mugilids (*Mugil auratus, Mugil capito* and*Mugil labrosus*) from the Mediterranean Sea. *Bull. Environ. Contam. Toxicol.* 77: 43-50.

Tirkey, A; Shrivastava, P; Saxena, A (2012). Bioaccumulation of heavy metals in different components of two Lakes ecosystem. *Current World Environment*. 7(2), 293-297.

Uysal, K; Kose, E; Bulbul, M; Donmez, M; Erdogan, Y; Koyun, M; Omeroglu, C; Ozmal, F (2009). The comparison of heavy metal accumulation ratios of some fish species in EnneDarne Lake (Kutahya, Turkey). *Environ. Monit. Assess*. 157: 355-362.

Vera-Candioti, J; Soloneski, S; Larramendy, ML; (2011). Acute toxicity of chromium on *Cnesterodon decemmaculatus* (Pisces: Poeciliidae). *Theoria* 20: 81-88.

Vinodhini, R; Narayanan, M (2008). Bioaccumulations of heavy metals in organs of fresh water fish *Cyprinus carpio* (Common carp). *Int J Environ Sci Tech*. 5: 179-182.

Wangboje, OM; Ekundayo, OT; Iwu, HU (2013). Heavy metal concentrations in two economically important fish species and water of Ovia River, Southern Nigeria. *African Journal of Environmental Pollution and Health*, 10:26-32.

World Health Organisation, WHO (2008). Guidelines for Drinking Water Quality. 3rd Edn. Health Criteria and Supporting Information. WHO, Geneva, pp: 668. Retrieved from: *http://www.who.int/water_sanitation_health/dwq/fulltext.pdf*.

Synthesis Characterization and Antioxidant Activity of Mn(II) and Cu(II) Complexes with Schiff base N-naphthalidene-p-methoxyaniline

Ibrahim A.K
Haruna A
Sambo B.U
Sadiq A.I
Bayero University Kano Nigeria

Abstract

The Metal Complexes of Mn(II) and Cu(II) with Schiff base N-naphthalidene-p-methoxyaniline were synthesized and characterized via conductivity measurement, magnetic susceptibility, infrared spectral analysis, elemental analysis and solubility test. The Schiff base and its corresponding metal complexes were evaluated for antioxidant activity. The low molar conductance values range (2.06 - 4.49$\Omega^{-1}cm^2mol^{-1}$) indicated that all the complexes are non electrolytes. The magnetic susceptibility revealed that Mn(II) and Cu(II) complexes are paramagnetic. The infrared spectra analysis suggested that the Schiff base behave as a bidentate ligand. The elemental analysis result revealed slight differences between observed and calculated percentage of C, H, and N in the Schiff base and metal complexes, the metal-ligand ratio was found to be 1:2 in all the complexes. The antioxidant activity of Schiff base and its complexes were measured on the basis of the radical scavenging effect of 1, 1-diphenyl-2-picryl-hydrazyl (DPPH)-free radical activity. The results revealed that the Schiff base and its metal complexes exhibited excellent antioxidant properties.

Keywords: 2-hydroxy-1-naphthaldehyde, p-methoxyaniline, Schiff base, Complexes, Antioxidant activity

Valorization of Moroccan phosphogypsum into value products

Amine Idboufrade
Brahim Bouargane
Said Mançour Billah
Ali Atbir
Ibn Zohr University, B.P.: 8106, Agadir, Morocco

Abstract
Phosphogypsum (PG) is a solid waste from the industry of phosphoric acid fertilizer. The production of this waste from Morocco estimated in 15 Mt every year, most of this by-product approximately 85% generated into oceans or like storage in slag heaps. The main objective of this work is to develop a new approach of recycling and valorization of this waste solid into chemicals products with a value in various industrials sectors. According to the results, the PG converted into $CaCO_3$ and Na_2SO4 in combination with CO_2 capture.

Keywords: Phosphogypsum, Valorization, CO_2 capture, $CaCO_3$ & Na_2SO4

Electrochemical elaboration of thin films composites semiconductors: $Cu_2Co_xZn_{(1-x)}SnS_4$ and $(Ag_xCu_{(1-x)})_2ZnSnS_4$ on transparent conductive oxides for photovoltaic application

O. AIT LAYACHI
S. AZMI
A. MOUJIB
A. EL BROUZI
M. NOHAIR
EL. KHOUMRI
University Hassan II, 20000, Casablanca, Morocco

Abstract
CZTS is a semiconductor metal chalcogenide material known by kesterite, with the structural formula Cu_2ZnSnS_4[1]. Unlike the quaternary semiconductor CIGS ($CuInGa(S/Se)_2$), which is an efficient material but whose toxicity and the scarcity of the elements gallium, indium and selenium which constitute it are slowing down its development and its industrialization. Kesterite and thanks to its harmlessness and the simplicity of its components has acquired great importance in energy slides and photovoltaic applications and has attracted the attention of several researchers.
Much research has been done on the development of the CZTS composite by various synthetic methods. However, the efficiency of the CZTS-Se solar cell (~12.6%) is much lower than that of the CIGS solar cell (~22.6%), contrary to what is theoretically predicted by the Shockley-Queisser limit (SQ) which postulates that the effectiveness of CZTS can be as high as 32.2%. Many studies conclude that the deficit in Voc (open circuit potential) is the main problem which prevents the achievement of the greatest efficiency, this obstacle comes mainly from the non-radiative recombination of charge carriers photo-generated in the secondary phases (intrinsic faults: Zn_{Cu}, Cu_{Zn})[2,3].

In order to minimize the defects of anti-sites (Cu_{Zn}, Zn_{Cu}) in CZTS, we opted for elaboration by partial and total substitution of Cobalt (Co) with Zinc (Zn), and of Silver (Ag) with Copper (Cu) in CZTS; $\mathbf{Cu_2Co_xZn_{(1-x)}SnS_4}$ (CCZTS) and $\mathbf{(Ag_xCu_{(1-x)})_2ZnSnS_4}$ (ACZTS). The electroplating method has been chosen and successfully used to prepare these quaternary chalcogenide materials due to the low temperature involved, its simplicity and its ability to study electrochemical behaviours, in order to understand the mechanisms of co-electrodeposition between the elements to be deposited.

Keywords: Cu_2ZnSnS_4 thin film, Electrodeposition, Substitution, Absorber layer, Applied potential

EXPLOITATION OF ROSEMARY IN MOROCCO: LOSS OF ENERGY AND ORGANIC MATTER

NOUIOURA Ghizlane
TOURABI Maryem
LOUASTE Bouchra
DERWICH El houssine
Université sidi Mohammed ben Abdellah, Fès, Maroc

Abstract
Morocco produces an annual yield of more than 60 tons of rosemary (*Rosmarinus Officinalis*) essential oil for export. These essential oils have antimicrobial properties, antioxidant and anti-inflammatory activities. They have been used in aromatherapy for various properties and in the pharmaceutical, therapeutic, cosmetic and food industries. But Moroccan people have an ancestral know-how, which has been preserved over the centuries: herbal medicine, flavoring and food preservation, the extraction of aromatic principles intended for the family perfumery or the market. The aromatic and medicinal plants (MAP) sector creates employment in rural areas. In the most underprivileged areas where economic activity is potentially very low. The problem is based on the extensive and uncontrolled use of MAP by associations and cooperatives, which threatens the sustainability of several species in Morocco.
The aim of this work is to evaluate the losses of energy and organic matter at the level of associations and cooperatives.

Keywords: Rosmarinus Officinalis, aromatic and medicinal plants, associations and cooperatives

A COMBINED METHOD BASED ON BIOCOAGULATION BY MUSA ACUMINATA AND INFILTRATION-PERCOLATION TO TREAT INDUSTRIAL WASTEWATER

Nisrine Nouj
Mustapha Andam
Naima Hafid et Noureddine El Alem
IBN ZOHR University, Agadir, Morocco

Abstract
The main objective of our study is to treat industrial wastewater (fish canning industry), from the industrial zone located in Agadir city (Morocco), by combining two techniques: bio-coagulation and infiltration-percolation. The combination of bio-coagulation and infiltration-percolation on sand developed in this study has enabled the valuation of natural and ecological local products to treat industrial wastewater. In addition, preserve the environment by treating industrial wastewater using less chemical coagulant and replacing it with a natural coagulant to improve natural resources. The coagulation capacity of "*Musa acuminata*" banana stem juice as an extracted natural coagulant was evaluated. Infiltration-percolation known as simple and inexpensive wastewater treatment technique has been tested on effluents after biocoagulation. The filter material used was titaniferous sand. The "*Musa acuminate*" banana stem juice has given interesting results in terms of reduction of suspended solids, COD and BOD_5. The optimal dosage/pH found was 50 ml/l at pH 10. The initial turbidity, COD, BOD_5 of industrial wastewater were reduced by 88%, 84%, 87% respectively after biocoagulation. Reduction rates of 97.3%, 90% and 96.2% are respectively noted for turbidity, COD and BOD_5 after sand filtration.

Keywords: biocoagulant; banana stem; industrial effluents; infiltration-percolation; Morocco

SCREENING AND OPTIMIZATION OF THE FACTORS ACTING ON THE MICROWAVE HYDRODISTILLATION OF ROSMARINUS OFFICINALIS

NOUIOURA Ghizlane
TOURABI Maryem
LOUASTE Bouchra
DERWICH El houssine
Université sidi Mohammed ben Abdellah, Fès, Maroc

Abstract
Morocco produces an annual yield of over 60 tonnes of rosemary essential oil for export. These essential oils have antimicrobial properties, antioxidant and anti-inflammatory activities. They have been used in aromatherapy for different properties and in the pharmaceutical, therapeutic, cosmetic and food industries.

This work is interested in a qualitative and quantitative comparison of the major compound of the essential oils of rosemary extracted by three different extraction methods: artisanal method by steam training in a cooperative, clevenger type hydrodistillation, and assisted hydrodistillation by microwave. And the screening and optimization of the factors that act on the hydrodistillation process of the *R. officinalis* plant in order to maximize the yield of essential oils, by the surface plans.

Mot clés : *R. officinalis, clevenger type hydrodistillation, microwave assisted hydrodistillation,* surface plans

EFFECT OF MESH TYPE ON FINITE ELEMENT MODELING OF A SPREADER: MESHING QUALITY AND STATIC STRESS

Hamza MALAHAKCH
Aziz HRAIBA
Moha AROUCH
University Hassan I, Settat, Morocco

Abstract
The Aeronautics is one of the most demanding industrial field at all levels [1], whose players are in direct interaction with the most imposing machines and very complex designs [2], [3]. As a result, being the safest means of transports in the world is not a coincidence. An impact on an airplane wing, a malfunction of the turbojet engine, a small technical problem and the consequences can be catastrophic. Thus any calculation made during the study phase must be in line with the constraints imposed by the aeronautical authorities. Each part, even the smallest and each screw of the aircraft must be dimensioned in such a way that it withstands the cases of most severe loads.

The aim of this study is to develop a new meshing type in order to minimize elements number, nodes, time analysis and consequently the quality and cost. Different models of aircraft seat were studied by finite element modeling. Geometrical modeling of aeronautical and automotive parts using ANSA mesh software was carried out. The fatigue of the studied spreader was calculated and analyzed in order to determine the critical areas. Two modeling types have been investigated trough this study: Hexa-Penta and tetra meshing, the Hexa-Penta type showed superior advantages compared to tetra type, in term of costumer's specification, time analysis, elements number, quality and cost. It was found that the production performance can significantly increase by decreasing analysis time and the minimizing elements number. Geometric modifications were elaborated and technical solutions were investigated. This study showed the importance and the impact of the spreader in the seat, as one of the essential tools for the safety of the passengers.

Keywords:finite element modeling, meshing, software, spreader

Study of the combined effect of the essential oil of *Thymus satureioides*, water activity and temperature on fungal growth of the strain *Aspergillus.S2*

TOURABI Meryem
NOUIOURA Ghizlane
HAJJAJI Abdelouahed
HALOTI Said
DERWICH El houssine
Sidi Mohammed ben Abdellah University, Fez, Morocco

Abstract
The objective of this work is to study the influence of the interaction of the essential oil of *Thymus satureioides* at different concentration, temperature and water activity on fungal growth by the isolate of *Aspergillus* (LASSA S2).
The inhibitory effect of the essential oil showed dose-dependent activity on the fungus tested. Inhibition rates increase with water activity and temperature. The highest inhibition rate was observed for the 100 µl / l concentration, reaching 75.44% at 0.93aw and at 25 ° C. Complete inhibition of fungal growth was observed at an applied dose of 500 µl / l at 25 and 30 ° C, at 0.93aw and 0.99aw. Our results also showed that the reduction of fungal growth in the presence of EO is very significantly dependent on the applied dose. This study indicates that the essential oil from *Thymus satureioides* plant possesses significant antifungal activities.

Keywords: Toxinogenic molds; Water activity; *Thymus satureioides*. Moisissures toxinogènes

NÜKLEER ENERJİ TEKNOLOJİSİ VE TÜRKİYE

Yüksek İç Mimar Aysu SARI ÇETİN
ORCİD: https://orcid.org/0000-0003-3616-785X

Özet
Gelişen dünyada nükleer enerji kullanımı arayışı içine giren ülkeler bu kaynağı gelecekteki enerji ihtiyacına çözüm olabilir mi düşüncesiyle üzerinde durmaktadırlar. Petrol ve doğalgazın sürekli kullanılması dünyayı enerji politikaları üzerinde farklı alana yönlendirmiştir. Kullanım alanının geniş olması tıp ve endüstrinin birçok alanında uygulanması, ekonomik bir alternatif olması nükleer enerjiye yönelimi arttırmaktadır. Nükleer enerjinin hammaddesi olan toyum ve uranyumun reaktörün merkezine konularak fisyon tepkimesine girmesi sayesinde ortaya çıkan enerjinin su buharını yüksek sıcaklıklara getirmesiyle elektrik türbinleri sayesinde alternatörlerde elektrik üretimi elde edilen nükleer enerjinin avantaj ve dezavantajlarıyla ele alınarak dünya politikası üzerinde ekonomik olarak var olmayı hedefleyen ülkelerin ilerleme hızı göz önünde bulundurulup, Türkiye'de uygulanan proje de yer alan Akkuyu Nükleer Enerji Santralinin geleceğe yön verip veremeyeceği detaylarla sentezlenerek çevre kirliliği bakımından da incelenmektedir.

Anahtar kelimeler: Nükleer enerji, uranyum, enerji verimliliği

NUCLEAR ENERGY TECHNOLOGY AND TURKEY

Abstract
Countries that are in search of using nuclear energy in the developing world emphasize whether this resource can be a solution to their future energy needs. Continuous use of oil and natural gas has directed the world to a different field on energy policies. Its wide usage area, its application in many fields of medicine and industry and its being an economical alternative increase the tendency towards nuclear energy. By putting the raw materials of nuclear energy in the center of the reactor and entering the fission reaction, the energy generated by bringing the water vapor to high temperatures, the power generation in alternators thanks to the advantages and disadvantages of the nuclear energy obtained in the alternators is taken into consideration, and the progress rate of the countries aiming to exist economically on the world policy. bulundurulup, located in the projects implemented in Turkey Akkuyu Nuclear Power Plant can not give direction to the future are examined in terms of whether synthesized with details of environmental pollution.

Keywords: Nuclear energy, uranium, energy efficiency

TOPLU KONUT MİMARİ TASARIMINDA YAPI TİPOLOJİSİ

Yüksek İç Mimar Aysu SARI ÇETİN
ORCİD: https://orcid.org/0000-0003-3616-785X

Özet
Gelişen ve çevre şartlarının hızla değiştiği dünyada ihtiyaçlar doğrultsunda ortaya çıkan konutlar zamanla değişerek toplu konut halini almıştır. Kullanıcıların ihtiyaçlarına cevap vermek amacıyla bir çok sosyal imkanı içinde barındıran konutların büyük ve küçük ölçekli tasarımları karşımıza çıkmaktadır. Hemen hemen her ilde yapılması tasarlanan toplu konut binaların bulunduğu ile göre farklılık taşıyıp taşımadığı, tekil ve çoğul yapıların mekan organizasyon dağılımının ve tip projelerinin aynı olup olmadığı, kullanılan malzemenin birebir olarak uygulanıp uygulanmadığı, vaziyet planlarının her bölgeye göre farklılık taşıyıp taşımadığı teknik şartnameler incelenerek ortaya konulmaktadır. Toplu konutların şehir yapılaşmasında etkisi büyüktür ve tasarıma etki eden faktörlerin başında kullanıcının taleplerine göre şekil aldığı görülmektedir. Fiziksel, sosyal ve ekonomik boyutların yapılaşmadaki yeri incelenerek ortaya konulmaktadır.

Anahtar kelimeler: Toplu konut, tip projeler, konut ölçeği, yapı tipolojisi

BUILDING TYPOLOGY IN CORPORATE HOUSING DESIGN

Abstract
In the developing world where environmental conditions are changing rapidly, the houses that emerged in line with the needs have changed over time and become collective housing. In order to meet the needs of the users, we come across large and small-scale designs of the houses, which contain many social facilities. Whether the collective housing buildings designed to be built in almost every province differ according to their location, whether the spatial organization distribution of singular and plural structures and type projects are the same, whether the materials used are applied exactly, whether the site plans differ according to each region or not are revealed by examining the technical specifications. . Mass housing has a great impact on urban development and it is seen that the main factor affecting the design is shaped according to the demands of the user. The place of physical, social and economic dimensions in construction is revealed by examining.

Keywords: Corporate housing, type projects, housing scale, building typology

THE POSSIBILITY TO USE THREE PORTABLE CHLOROPHYLL METERS TO ESTIMATE GRAIN YIELD IN RAIN-FED CONDITIONS

Assoc. Prof. Ferhat KIZILGEÇİ
Mardin Artuklu University, Mardin, Turkey
Prof. Mehmet YILDIRIM
Dicle University, Diyarbakır, Turkey

Abstract
Handheld spectroradiometers are used to estimate the canopy's reflective properties, the condition of the plants. In this study, the potential use of three devices (SPAD, Greenseeker and CM 1000 chlorophyll meter) was compared that can estimate indirect the chlorophyll content of the leaves. The present research was established in four replications according to the randomized complete block design in the rain-fed conditions of Diyarbakir in the growing season of 2019. Seven barley cultivars were used as plant material. Chlorophyll measurements from leaves were taken in 2 different plant growth periods (anthesis and milky stage). Greenseeker showed changes between 0.51-0.75 in anthesis and 0.43-0.6 at milk stage. SPAD varied between 30-47.3 in anthesis and 27.6-46.7 in milk stage. CM1000 ranged from 217-548 in anthesis, 121-370 in milk. It was observed that the amount of chlorophyll in the leaf decreased in the milk period compared to the anthesis period. Significant regression relationships were determined with SPAD and greenseeker during anthesis R^2 = 0.194* and greenseeker and grain yield at anthesis period R^2 = 0.151*. As a result of the study, a significant relationship was found between only grain yield and greenseeker during the anthesis period under rain-based conditions. It has been observed that there is no relationship between other measuring portable devices and grain yield.

Keywords: NDVI, SPAD, CM 1000, Regression analysis, grain yield

YAĞMURA DAYALI KOŞULLARDA TANE VERİMİNİ TAHMİN ETMEK İÇİN ÜÇ FARKLI KLOROFİL METRENİN KULLANILABİLME OLANAĞI

Özet
Elde taşınan spektroradyometreler, bitki örtüsünün yansıtıcı özelliklerini, bitkilerin durumunu tahmin etmek için kullanmaktadır. Bu çalışmada, bitki yapraklarının klorofil içeriğini dolaylı olarak tahmin edebilen üç cihazın (SPAD, Greenseeker ve CM 1000 klorofil ölçer) kullanımı potansiyel karşılaştırılmıştır. Bu araştırma, 2019 yılı yetiştirme sezonunda Diyarbakır da yağışa dayalı koşullarda tesadüf bloklar deneme desenine göre dört tekerrürlü olarak kurulmuştur. Bitki materyali olarak yedi arpa çeşidi kullanılmıştır. Yapraklardan klorofil ölçümleri 2 farklı bitki büyüme periyodunda (çiçeklenme ve süt olum dönemi) alınmıştır. Greenseeker, çiçeklenmede 0.51-0.75 ve süt olum döneminde 0.43-0.60 arasında değişim gösterdi. SPAD, çiçeklenmede 30-47.3, süt olum döneminde 27.6-46.7 arasında değer almıştır. CM1000, çiçeklenmede 217-548, süt olum döneminde 121-370 arasında değişim göstermiştir. Her üç ölçüm aletiyle elde edilen yapraktaki klorofil miktarının değerleri süt

olum döneminde çiçeklenme dönemine göre azaldığı görülmüştür. Çiçeklenme döneminde SPAD ve greenseeker arasında R2 = 0.194* ve çiçeklenme döneminde greenseeker ve tane verimi sırasında R2 = 0.151* önemli regresyon ilişkileri belirlenmiştir. Çalışma sonucunda yağmura dayalı koşullarda çiçeklenme döneminde sadece tane verimi ile greenseeker arasında olumlu ve önemli bir ilişki bulunmuştur. Diğer taşınabilir ölçüm cihazları ile tane verimi arasında önemli bir ilişki olmadığı görülmüştür.

Anahtar Kelimeler: NDVI, SPAD, CM 1000, regresyon analizi, tane verimi

Introduction

Plant analysis is usually used as the standard method to evaluate nutritional status of plants. However, laboratory plant analysis is costly and time-consuming. Tissue testing, such as petiole nitrate concentration, assessed by selective electrodes (Sims et al. 1995) or test strips (Rodrigues et al. 2005) and also measurements of chlorophyll via portable tools (Rodrigues et al. 2006; Kızılgeçi and Yıldırım, 2019) may be valuable alternatives. The reflectance characteristics of the canopy, evaluated by handheld spectroradiometers (Dunn et al., 2016), imagery from satellite sensors (Gitelson et al., 2014) or digital cameras (Lopez-Bellido et al. 2012) have also been used to estimate nutritional status of plants. Portable sensors have opened up a new technique to the acquisition of information on plant growth in a fast and non-invasive manner. They are especially significant in annual crops in which the delay in diagnosing, as is common in standard plant analysis, is not helpful in making in-season fertilization adjustments (Rodrigues et al. 2005). Chlorophyll meters are quicker than tissue testing for nitrogen. Samples can be taken frequently and repeated if the results are questionable. The meters are used to evaluate leaf greenness, which is significantly related to the chlorophyll content of leaf. Study shows a close correlation between chlorophyll content of leaf and nitrogen content of leaf because a lot of the leaf nitrogen is contain in the chlorophyll. There are at least two types of handheld chlorophyll meters available to measure chlorophyll content of plant. One type (SPAD 502) uses thumb pressure to close a chamber and measure light transmittance/absorbance (T/A) to determine chlorophyll content (Chen et al., 2007). The SPAD-502 chlorophyll meter (Minolta Camera Co. Ltd., Japan), which measures the transmittance of light through the leaf, has been widely used. Several researches have shown a significant linear relationship between SPAD measurements and the laboratory determination of the density of leaf chlorophyll. (Ibrahim and Jaafar 2013). The FieldScout CM 1000 meter, more recently manufactured, evaluates by remote sensing the chlorophyll content in the leaves based on the chlorophyll reflectance. Based on a point-and-shoot technology, the FieldScout CM 1000 senses the light at different wavelengths displaying a chlorophyll meter, which is proportional to the leaf chlorophyll content. The FieldScout CM 1000 chlorophyll meter was used to define the actual amount of N needed to optimize playability and aesthetic quality in creeping bentgrass on golf greens by Lopez-Bellido et al. (2012). Mahajan et al. (2014) have also found a strong association between FieldScout CM-1000 chlorophyll meter and nitrogen concentration of leaf in the aromatic rice hybrid PRH-10 in India. The NDVI is successful in predicting photosynthetic activity, because this vegetation index includes both near infrared and red light. Photosynthetic activity of the plant is evaluated by chlorophyll content and activity. The relationship between leaf N and leaf

chlorophyll has been demonstrated for maize (Chapman and Barreto, 1997) and wheat (Evans, 1989).

In this study, the potential use of three devices to estimate the chlorophyll content of the leaves was compared.

Material and Method

Field experiment was conducted during wheat seasons (2018/2019) at Diyarbakir, Turkey (37°55' N, 40°15' E). Seven barley genotypes were used in the study. In this research, three portable devices were used to estimate the leaf chlorophyll content: the SPAD-502 Minolta chlorophyll meter, the FieldScout CM-1000 chlorophyll meter and Greenseeker (normalized differences vegetation index). SPAD-502 measures the transmittance of light throughout the leaf in two different wavelengths, 650 nm (red light, absorbed by chlorophyll pigments) and 940 nm (infrared light, not absorbed by chlorophyll). The FieldScout CM 1000 meter senses light at wavelengths of 700 nm and 840 nm, measuring the ambient and reflected light at each of those wavelengths. The GreenSeeker active optical sensor was used to determine spectral reflectance from canopy expressed as NDVI. The sensor has self-illumination system in red (656 nm) and near infrared (774 nm) wavelengths. The NDVI value (-1 to 1) is calculated from the measured ambient and reflected light [(%Near Infrared - %Red) / (%Near Infrared + %Red)] where NIR and Red are the fractions of near infrared and red radiation reflected back from the crop canopy to the sensor, respectively. The NDVI values were measured by passing the sensor above the canopy at 1 m height at slow walking speed. Leaf measurements were taken during anthesis and milk stage. The relationship between the measured variables was subjected to analysis of variance. When a significant correlation was found ($p<0.05$), the coefficients of determinations were also estimated. Regression analyses were performed following linear, on the pooled data of both growing stage using JMP 10.

Result and Discussion

Values of chlorophyll content of leaf measured with three chlorophyll measuring devices at anthesis and milk stage of barley and analysis of variance are given in table 1.NDVI, SPAD and CM-1000 readings mean values and the mean squares from analysis of variance given in Table.1. Genotypic differences were significant ($P\leq0.05$and $P\leq0.01$) for all the parameters studied except NDVI-M.

Maximum values of NDVI were observed in Kendal (0.58) and minimum values were showed in Onder (0.69) at anthesis stages. The NDVI measured during the milk stage period varied between 0.43 and 0.69. During the anthesis stage the SPAD readings varied between 30-47.3 values. SPAD reading values varied from 27.6 to 46.7 in the milk stage. The chlorophyll value measured with CM-1000 at the anthesis stage had values in the range of 217 to 548. The amount of chlorophyll in the leaf, measured by CM-1000 chlorophyll meter, varied between 121-370 values during the milk stage. In the study, it was observed that as the plant growth stage improved, a decrease occurred in the chlorophyll content measured with all three measuring instruments.

Table 1.Analysis of variance and NDVI, SPAD and CM-1000 readings the mean values in seven barley genotypes during anthesis and milk stage

Genotypes	NDVI-(A)	NDVI-(M)	SPAD-(A)	SPAD-(M)	CM-1000(A)	CM-1000(M)
Altıkat	0.67ab	0.61	45.5a	39.65ab	339b	302a
DZ12-1	0.61bc	0.54	39.8b	35.875abc	357.25ab	214.25bc
Kendal	0.58c	0.53	33.3c	31.275c	283.75b	305.25a
Önder	0.69a	0.55	37.1bc	37.65ab	438.75a	238.25abc
TBT16-13	0.68a	0.57	38.8b	34.625bc	298.75b	184c
TBT16-14	0.62abc	0.53	38.7b	41.25a	324.75b	273.25ab
TBT16-15	0.68a	0.60	38.3b	34.95bc	309.5b	209bc
Means	0.65	0.56	38.8	36.5	336.0	246.6
Min. - Max.	0.51-0.75	0.43-0.69	30-47.3	27.6-46.7	217-548	121-370
Mean Square (ANOVA)	*		**	*	*	*

A:Anthesis, M: Milk stage *,** $p < 0.05$ $p < 0.01$ significant respectively

It was determined that there was a positive relationship between SPAD and NDVI, CM-1000 and NDVI, and SPAD and CM-1000 with chlorophyll measuring devices at anthesis stage (Figure 1).

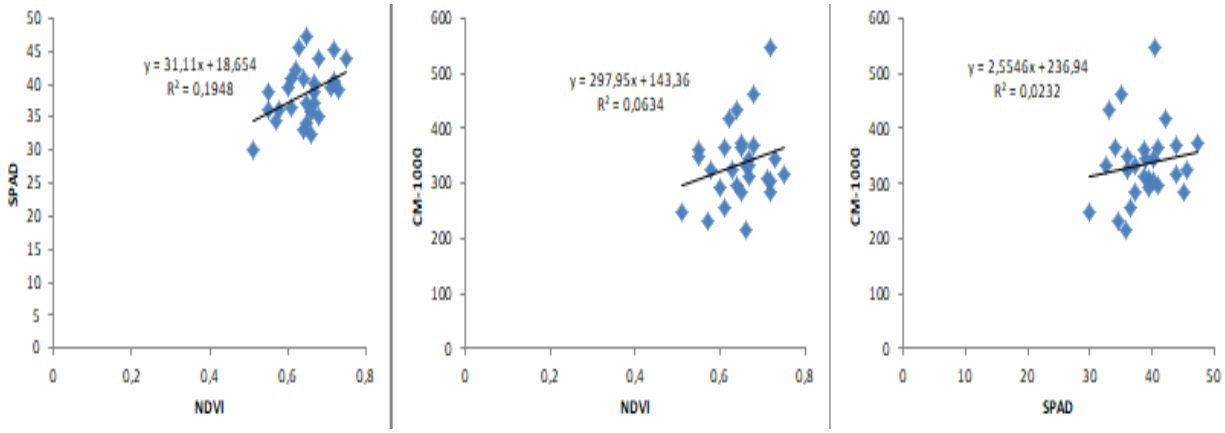


Figure 1. Relationship between NDVI, CM-1000 and SPAD readings in leaf samples taken from anthesis stage of barley genotypes.

It was determined that there was a positive relationship between SPAD and NDVI, CM-1000 and NDVI, and SPAD and CM-1000 with chlorophyll measuring devices at milk stage (Figure 2).

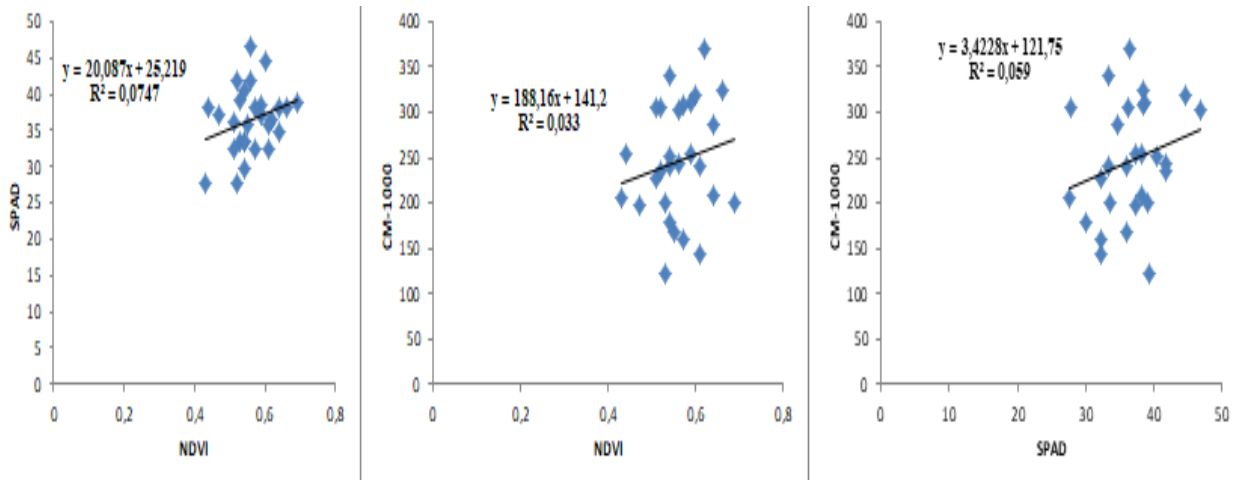


Figure 2. Relationship between NDVI, CM-1000 and SPAD readings in leaf samples taken from milk stage stage of barley genotypes.

The relationship between NDVI measurements at anthesis and milk stage of barley measured using GreenSeeker and grain yield followed exponential function with R^2valueof 0.15and 0.06 (Figure 3). The function was significant ($P<0.05$) and GreenSeeker measurements could explain 15% of variation in the grain yield. Grain yield of barley could be predicted from NDVI measurements at anthesis stage. Raun et al. (2001) reported that relationships between NDVI and grain yield of wheat were the highest at Zadoks 30-31 stages.

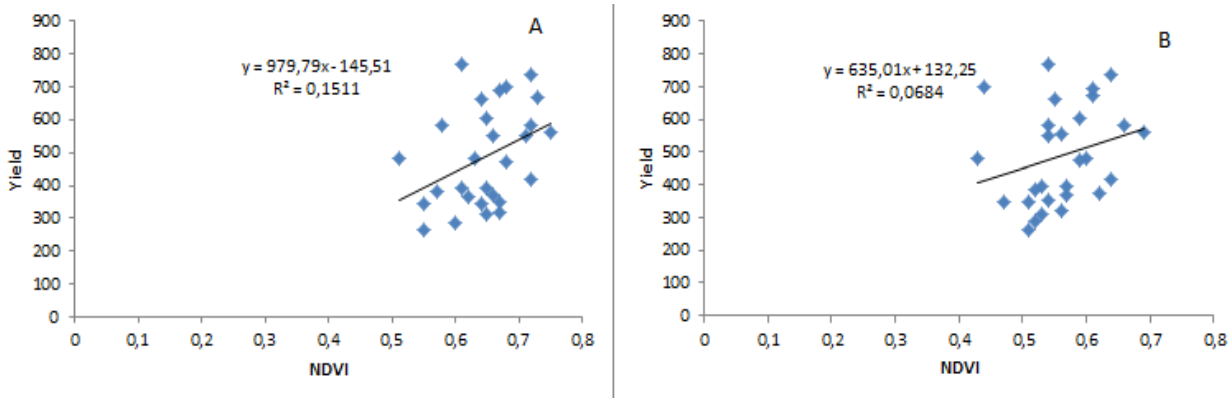


Figure 3. Relationships between grain yield and NDVI readings from leaf samples of seven barley genotypes taken in anthesis stage (A) and milk stage (B)

The relationship between chlorophyll measurements at anthesis and milk stage of barley measured using SPAD 502and grain yield followed exponential function with R^2 valueof 0.0001and 0.029 (Figure 4).

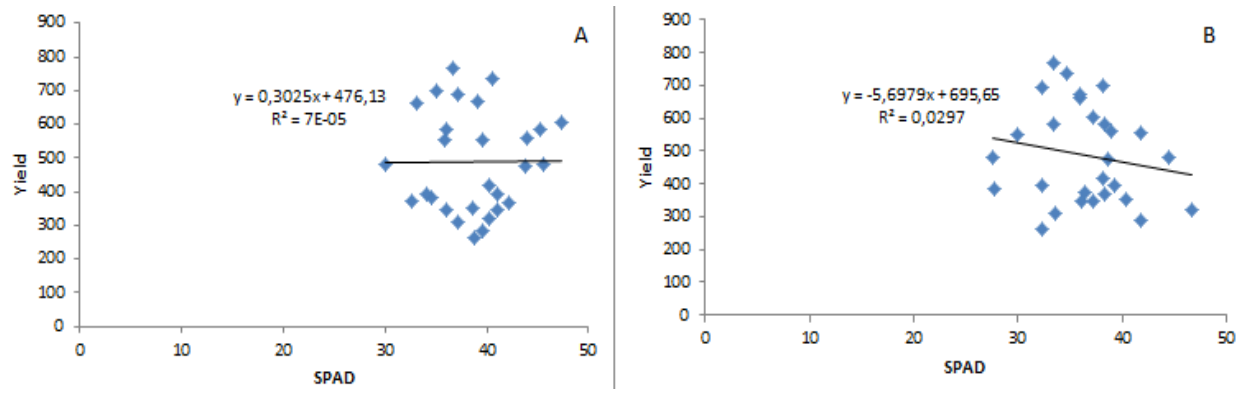


Figure 4. Relationships between grain yield and SPAD readings from leaf samples of seven barley genotypes taken in anthesis stage (A) and milk stage (B)

The relationship between chlorophyll measurements at anthesis and milk stage of barley measured using CM 1000and grain yield followed exponential function with R^2 value of 0.005and 0.078 (Figure 5).

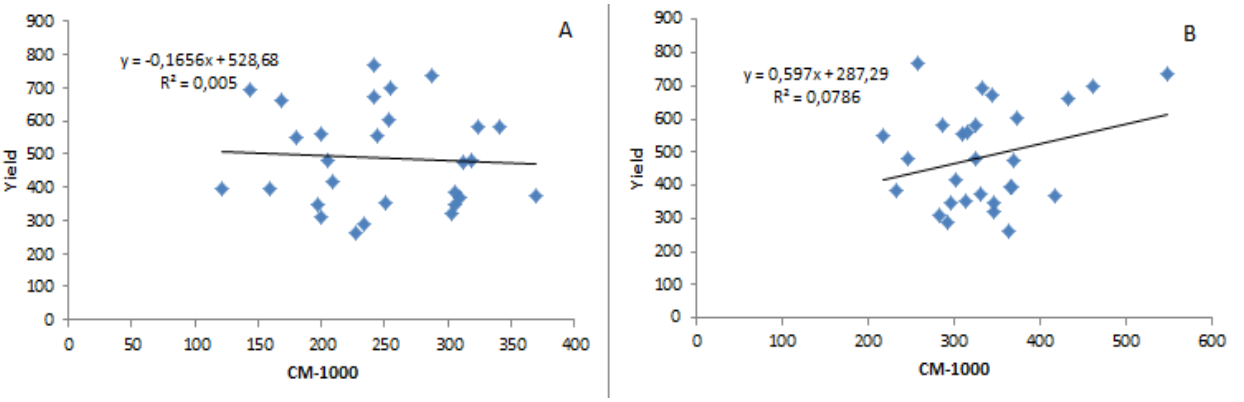


Figure 5. Relationships between grain yield and CM-1000 readings from leaf samples of seven barley genotypes taken in anthesis stage (A) and milk stage (B)

NDVI-A had positive and significant relationship with NDVI-M, SPAD-A and grain yield. NDVI-M was positively and strongly associated with SPAD-A. SPAD-A had significant correlation with SPAD-A (Table 2).

Table 2. Correlation coefficient among NDVI, SPAD, CM-1000 and grain yield in barley genotypes in anthesis and milk stage.

	NDVI(A)	NDVI(M)	SPAD(A)	SPAD(M)	CM-1000(A)	CM-1000(M)
NDVI(Anthesis stage)	1					
NDVI(Milk stage)	0.707***	1				
SPAD(Anthesis stage)	0.441**	0.523**	1			
SPAD(Milk stage)	0.416	0,273	0.603**	1		
CM-1000(Anthesis stage)	0.251	0.152	0.152	0.246	1	
CM-1000(Milk stage)	-0.031	0.181	0.171	0.242	0.09	1
Grain Yield	0.388*	0.261	0.008	-0.172	0.28	-0.07

A:Anthesis, M: Milk stage *,** $p < 0.05$ $p < 0.01$ significant respectively

Conclusion

It was observed that the amount of chlorophyll in the leaf decreased in the milk period compared to the anthesis period. Significant regression relationships were determined with SPAD and GreenSeeker during anthesis R^2 = 0.194* and GreenSeeker and grain yield at anthesis period R^2 = 0.151*. As a result of the study, a significant relationship was found between only grain yield and GreenSeeker during the anthesis period under rain-based conditions. It has been observed that there is no relationship between other measuring portable devices and grain yield.

References

Chapman, S. C., & Barreto, H. J. (1997). Using a chlorophyll meter to estimate specific leaf nitrogen of tropical maize during vegetative growth. *Agronomy Journal*, *89*(4), 557-562.

Chen, J. C., Yang, C. M., Wu, S. T., Chung, Y. L., Charles, A. L., & Chen, C. T. (2007). Leaf chlorophyll content and surface spectral reflectance of tree species along a terrain gradient in Taiwan's Kenting National Park. *Stud*, *48*, 71-77.

Dunn, B., Shrestha, A., & Goad, C. (2016). Use of nondestructive sensors to quantify ornamental kale nitrogen status. *Journal of Plant Nutrition*, *39*(8), 1123-1130.

Evans, J. R. (1989). Photosynthesis and nitrogen relationships in leaves of C 3 plants. *Oecologia*, *78*(1), 9-19.

Gitelson, A. A., Peng, Y., & Huemmrich, K. F. (2014). Relationship between fraction of radiation absorbed by photosynthesizing maize and soybean canopies and NDVI from remotely sensed data taken at close range and from MODIS 250 m resolution data. *Remote Sensing of Environment*, *147*, 108-120.

Ibrahim, M. H., & Jaafar, H. Z. E. (2013). Relationship between extractable chlorophyll content and SPAD values in three varieties of kacip fatimah under greenhouse conditions. *Journal of plant nutrition*, *36*(9), 1366-1372.

Kızılgeçi, F., & Yıldırım, M. (2019). Durum Buğdayın Başaklanma Dönemine ait Bazı Fizyolojik Ölçümlerin Verim ve Kalite Özellikleriyle İlişkilerinin Belirlenmesi. *Türk Tarım ve Doğa Bilimleri Dergisi*, *6*(4), 777-785.

López-Bellido, R. J., López-Bellido, L., Fernández-García, P., López-Bellido, J. M., Muñoz-Romero, V., López-Bellido, P. J., & Calvache, S. (2012). Nitrogen remote diagnosis in a creeping bentgrass golf green. *European Journal of Agronomy*, *37*(1), 23-30.

Mahajan, G. R., Pandey, R. N., Kumar, D., Datta, S. C., Sahoo, R. N., & Parsad, R. (2014). Development of critical values for the leaf color chart, SPAD and FieldScout CM 1000 for fixed time adjustable nitrogen management in aromatic hybrid rice (Oryza sativa L.). *Communications in soil science and plant analysis*, *45*(14), 1877-1893.

Raun, W. R., Solie, J. B., Johnson, G. V., Stone, M. L., Lukina, E. V., Thomason, W. E., & Schepers, J. S. (2001). In-season prediction of potential grain yield in winter wheat using canopy reflectance. *Agronomy Journal*, *93*(1), 131-138.

Rodrigues, M. A., Coutinho, J., Martins, F., & Arrobas, M. (2005). Quantitative sidedress nitrogen recommendations for potatoes based upon crop nutritional indices. *European Journal of Agronomy*, *23*(1), 79-88.

Rodrigues, M. A., Pereira, A., Cabanas, J. E., Dias, L., Pires, J., & Arrobas, M. (2006). Crops use-efficiency of nitrogen from manures permitted in organic farming. *European journal of agronomy*, *25*(4), 328-335.

Sims, J. T., Vasilas, B. L., Gartley, K. L., Milliken, B., & Green, V. (1995). Evaluation of soil and plant nitrogen tests for maize on manured soils of the Atlantic Coastal Plain. *Agronomy Journal*, *87*(2), 213-222.

3D-QSAR MODELING AND MOLECULAR DOCKING STUDIES OF NOVEL TRIAZOLES-QUININE DERIVATIVES AS ANTIMALARIAL AGENTS

Ayoub Khaldan
Soukaina Bouamrane
Reda El-mernissi
Abdelouahid Sbai
Mohammed Bouachrine
Tahar Lakhlifi
Moulay Ismail University of Meknes, Morocco
EST Khenifra, Sultan Moulay Sliman University, Benimellal, Morocco

Abstract
In this study, three-dimensional quantitative structure–activity relationship (3D-QSAR) using comparative -molecular field analysis (CoMFA) and comparative molecular similarity indices analysis (CoMSIA) models were carried out on a series of thirty -two of novel triazoles quinine derivatives as antimalarial agents having pIC_{50} ranging from 7.568 to 4.387 (IC_{50} in nM). The CoMFA and CoMSIA models were employed to predict biological activity of twenty-six compounds used as training set, they give a significant coefficient of determination R^2 (0.98 and 0.95, respectively) as well as a high values of leave-one-out cross validation coefficient Q^2 (0.61 and 0.76, respectively). The predictive ability of these models was determined using a test set of 6 molecules with predicted determination coefficients $Rtest^2$ values 0.92 and 0.85 respectively. Based on these results and contour maps produced by the CoMFA and CoMSIA, we proposed new compounds with high predicted activities. Furthermore, surflex-docking as carried out to confirm the stability of predicted molecules in the receptor with PDB code: 1J3K.

Keywords: Antimalarial, CoMFA, CoMSIA, Molecular docking, quinine- triazole

Molecular docking and ADMET studies on flavonoids derivatives as potential inhibitors of Sars-Cov-2

Reda EL-Mernissi
Khalil EL Khatabi
Ayoub Khaldan
Larbi ElMchichi
Moulay Ismail University of Meknes, Morocco
Sultan Moulay Sliman University, Benimellal, Morocco

Abstract
In December 2019, a pneumonia outbreak of unknown etiology has been erupted in the city of Wuhan (China). The new coronavirus firstly known as 2019-nCoV, then officially identified as sars-cov-2 still exponentially spreading and growing in all over the world. The virus reaches the lungs through the receptors of angiotensin-converting enzyme 2 (ACE2). Among all proposed treatment related to infections of coronavirus, the flavonoid derivatives are suggested to be alternative therapies in the fight against Covid-19. This research aims to determine the components of natural origin can prevent infection with coronavirus. The molecular docking is applied to explore the binding mode between 54 flavonoids and chloroquine (who used as a treatment in some country) with the (ACE2) receptor, five among 54 components have showed high total score. Afterward, the binding mode of the five selected molecules were further analysed and detailed. Moreover, these five inhibitors were tested for their ADMET properties and drug-like properties. These findings could be useful for searching new inhibitors against the coronavirus.

Keywords: Flavonoids compounds, Molecular docking, Angiotensin-converting enzyme 2(ACE2), Sars-Cov, ADMET

ANTI-WAR STANCE IN STEPHEN CRANE'S "A MYSTERY OF HEROISM" AND MARK TWAIN'S "WAR PRAYER"

Doç. Dr. F. Gül Koçsoy
Firat University, Elazig, Turkey
Orcid: 0000-0002-7813-8961

Abstract
This study deals with Stephen Crane's "A Mystery of Heroism" (1895) and Mark Twain's "The War Prayer" (1923) in the light of the writers' anti-war stances. While Crane questions and debunks the myth of heroism, Twain criticizes patriotism, nationalism and the spiritual/religious foundations of the support for war. They find the people's motivation for war without prudence, because they accept what they have been taught blindly. The writers, in indirect ways criticize the governments' encouragements of war, too.

For Crane, people fight with each other with the effect and imposition of a wrong perception of heroism; it is misunderstood and practiced in wrong ways. This myth must be deconstructed and comprehended appropriately, because the soldiers may not be heroic in the real sense; for instance, they are indifferent to others' suffering and they risk their lives foolishly. They find themselves having right to kill and destroy everything, including nature. According to Twain, Christianity provides people with the justification of occupying the land of the enemy and it allows the soldiers to kill the people of the opposite side and make them miserable without mercy. In this frame, this study through the two short stories explores the fact that the notion of heroism and patriotic/religious foundations and causes of war must be revised. The writers prescribe that the moral and ethical grounds of war must also be illustrated and its futility should be proven. It is an illusion that wars are noble and glorious; on the contrary, they cause devastations.

Keywords: Anti-war Stance, Stephen Crane, "A Mystery of Heroism", Mark Twain, "War Prayer"

In the name of 'the right', countries fight in order to establish, preserve or consolidate their power and to prove their exceptionalism. Politicians' desires to expand their countries and to provide citizens with security may lead them to practice their political power on the war field. They make and promote myths based on the common man's sensibilities like honor, courage and noble deeds to actualize their aims. The citizens adopting and pursuing these myths and their components like to show them in warfare. In this process, nationalism, heroism and religious fervor play the main role as the components of mythic wars. "Whether in the form of initiation, metamorphosis, purification, sacrifice, or death and rebirth, the war experience is made up of other mythic patterns, sometimes in a powerful form;…" (Brosman, 1992:95) Stephen Crane (1871-1900) and Mark Twain (1835-1910) in their anti-war fictions, draw attention to heroism and religion as the cores of the justification of wars.

Crane is famous for his realist/naturalist mode and in his several short stories, he deals with martial subjects in terms of wars' unreasonable causes and their mythic nature. He also deals with man's psychology in war. "Crane had of course always been interested in the complementary ideas of what constitutes heroism or cowardice" (Monteiro, 1995:67). He introduces characters oscillating between heroism and cowardice. Hero means " a person admired for achievements and noble qualities" (Merriam-Webster, 2021) and Crane discusses what hero and heroism means in his "A Mystery of Heroism: A Detail of an American Battle" (1895). As his first story about war, it highlights moral and psychological issues more than war scenes. It opens with the descriptions of a violent war scene in summer. There is a desolate house near the war area: "the gray form of a house half torn to pieces by shells and by the busy axes of soldiers who had pursued firewood" (Crane, 2020). Crane, with this collapsing lonely house image implies the negative effects of war on families and communities, because it is obvious that there was a village there. Nature is harmed or destructed, too. "Some curious fortune of the battle had made this gentle little meadow the object of the red hate of the shells, and each one as it exploded seemed like an imprecation in the face of a maiden" (Crane, 2020). Crane juxtaposes the 'gentle' nature with 'the red hate' illustrating how the latter is threatening the first. By doing this, he from the beginning, reveals his attitude toward wars; nature and settlements are harmed under the shadow of war.

Fred Collins, a foolish infantry soldier of A Company, which is retreating, wishes to drink water but it is scarce. An artillery officer is wounded by the arm, but hides his wound smiling; in fact, he wishes to seem heroic. His horse dies with a second shot, and falls upon his leg; but soldiers, as a code of heroism, hide their wounds and behave as if they are well. Collins, taking the risk of being shot, goes to the well near the house to get water. "…he had no full appreciation of anything excepting that he was actually conscious of being dazed. He could feel his dulled mind groping after the form and color of this incident. He wondered why he did not feel some keen agony of fear cutting his sense like a knife" (Crane, 2020). With the encouragement and provocation of his friends, who do not regard his life important, he feels obliged to dash for water. His colonel permits him unwillingly. "he exposes himself to enemy fire, finds the well, and becomes a hero" (Gargano, 1959: 22). His idea of heroism is so simple: to behave without fear and without thinking twice. He thinks himself a hero, but then thinks he is not, because he had cheated a friend by not paying back his debt and did not help his mother, who is now dead. Bringing water will be a remedy for these irresponsible or unethical deeds and he will be able to prove himself both to himself and to the others. He is aware that he is not a hero, though he is courageous and is not respected by his friends.

He finds himself not virtuous. "He saw that, in this matter of the well, the canteens, the shells, he was an intruder in the land of fine deeds" (Crane, 2020). He subconsciously perceives the idea that heroism must include virtues, ethic and noble thoughts and deeds. While the regiment is watching him, beyond in the forest, there is a severe fight between two groups. He proceeds to the well and "[i]n the air, little pieces of shell howled and the earthquake explosions drove him insane with the menace of their roar" (Crane, 2020). He hauls water with a bucket nearby and begins running to the company. While returning he meets the artillery officer who had been shot and making groans with agony under his horse. " 'Say, young man, give me a drink of water, will you?' " (Crane, 2020) he implores. The dying officer asks water from him; he at first refuses to give because he is under fire but then he decides to help. The wounded officer cannot drink water, but he is beholden to Collins. In a humanitarian motive, he gives him water, splashing some onto his face, then runs to the

regiment leaving him there. He runs " in the manner of a farmer chased out of a dairy by a bull" (Crane, 2020), in a comical way which also shows that he is a careless and thoughtless character. Crane here implies that heroism needs rationality, seriousness and prudence. The regiment welcomes him congratulating but at the same time ridicules him. “Suddenly there was an oath, the thud of wood on the ground, and a swift murmur of astonishment from the ranks. The two lieutenants glared at each other. The bucket lay on the ground empty” (Crane, 2020). Empty bucket symbolizes the futility of his action. They do not feel respect to his fearless action. His friends laugh at him, the lieutenants spill the water, which he brings under difficult conditions.

Crane trivializes the concept of heroism by both Collins’ bringing a half bucket of water and by the lieutenants’ playing with and spilling it. He ironically employs the water which serves to no one and to nothing. Thus, Collins’ effort to be heroic comes to nothing and it is mock-heroic. He goes to the well only to be accepted by the society as respectable and as a hero. In fact, he is aware that his action is inept. “ "After all, heroes were not much" (Crane, 2020). It is clear that Crane takes the side of Collins’ ‘kind’ deed in helping the wounded officer instead of his foolish dash for water. Mariani comments: **“**Collins becomes a hero not thanks to some decisive contribution he makes to the ‘duel’ of war with which the story opens but by virtue of the courage and humanity he displays in attending to the wounded officer” (2015:79). In fact, his heroism is not complete, because he leaves him dying.

In the story, the myth of heroism is debunked. Collins is not a hero as he thinks himself rightly. Moreover, he is an egoist and a mean one in not helping the officer appropriately. The other soldiers are also mean, because they only want to drink water and entertain themselves. Here, in this frame, Crane invalidates the widely accepted notion that soldiers are virtuous and chivalric and questions if heroism means one’s risking his life. **“**Collins' inability to square his present heroism and his previous moral failures towards his mother and a friend suggests that Crane does not regard physical courage as heroism” (Gargano,23). His aid to the dying officer may be regarded more heroic than his risking his life imprudently. Shaw interprets the story “as a satiric attack on the traditional notion of heroism, and the isolated incident … as a dramatic manifestation of Crane's personal concept of heroism” (1995:94). Reward of respect and approval is given to him only by the dying officer, with his smile.

Crane deals with the romantic ideals of war and heroism scathingly and showing them ludicrous not manly, he deconstructs and opens them to discussion. He says that soldiers are human beings and they can fear, escape and be unable to stick to the traditional senseless heroic codes. The story ends in Crane showing what heroism is not. ‘The mystery of heroism’ for Crane is that it is a pointless conception even in the war and he illustrates the concept of traditional heroism as a myth and an illusion.

Mark Twain’s "The War Prayer" deals with religious discourse as the augmentative force for the persuasion of people for wars. It was written in 1905 but not published until 1923 posthumously because Twain may be anxious about how his message will be received by the readers. Until 1899, Twain defended imperialism, however as time goes by, he changed his views and became an anti-imperialist. He states in *New York Herald* in 1900: “I wanted the American eagle to go screaming into the Pacific…I thought it would be a real good thing to do…. It should, it seems to me, be our pleasure and duty to make those people free, and let them deal with their own domestic questions in their own way” (Twain, 1900).

The story opens with a parade of enthusiastic people, on their way to support a war. It passes when the war is continuing and the excitement of patriotism is clear. Even the children have the thrill of war; they have toy pistols and pop them. There are flags on the balconies and "…daily the young volunteers marched down the wide avenue gay and fine in their new uniforms, the proud fathers and mothers and sisters and sweethearts cheering them with voices choked with happy emotion as they swung by…" (Twain, 2021) with tears and applause. With herd mentality, the people do not wonder why they are so happy, do not think about the causes and results of war. They feel devoted to the idea of war without knowing who urges them and who the enemy is. They do not think that innocent people will be killed and perhaps their sons, brothers and husbands will be dead. They even do not think that they will be deprived of the young soldiers in their future lives and how it will feel. They are so blind that they cannot empathize with the opposite side and the harm their soldiers will give to them and to nature.

They slavishly believe the religious tenets, too. The patriotic illusions and thrill of people are supported and nurtured by religion and the church. They do not question if the church directs them to goodness or not. Religious meetings augment the fervor for war and hatred against the enemy;

> "…in the churches the pastors preached devotion to flag and country, and invoked the God of Battles, beseeching His aid in our good cause in outpouring of fervid eloquence which moved every listener. It was indeed a glad and gracious time, and the half dozen rash spirits that ventured to disapprove of the war and cast a doubt upon its righteousness straightway got such a stern and angry warning that for their personal safety's sake they quickly shrank out of sight and offended no more in that way" (Twain, 2021).

Here, it can be deduced that the church promotes the political practices of the government employing nationalistic sentiments. It is obvious that Twain associates the fervor of the church with current politics. The people do not see that the church is used by the politicians as a means to realize their aims. The dissenters are silenced and threatened; so they are afraid to express their objective views on war and its nature for their personal security. It is clear that the supporters' moral values are degenerated, because they cannot think war is a corrupt idea and what they are devoted to is futile.

On the other hand, "…the volunteers were there, their young faces alight with martial dreams — …bronzed heroes, welcomed, adored, submerged in golden seas of glory!... there to win for the flag, or, failing, die the noblest of noble deaths" (Twain, 2021). The chosen soldiers are also unaware of the deed they will perform; they will share with the politicians a conspiracy in killing or injuring innocent people. The hymns in the church enliven the war enthusiasm. With the preacher's prayer, they come to believe in a childish naivety that God will protect their soldiers and the victory is certain.

A man who is thought to be a minister starts speaking in an ironical tone: " 'If you pray for the blessing of rain upon your crop which needs it, by that act you are possibly praying for a curse upon some neighbor's crop which may not need rain and can be injured by it' " (Twain, 2021). He likes to say that the victory and the happiness of one side mean the opposite side's devastation and suffering. The stranger is Twain's voice of criticism and attack of war. "It

was believed afterward that the man was a lunatic, because there was no sense in what he said" (Twain, 2021). Perhaps they understand that he mocks the religious discourse on war, but for their cast of mind is rooted they do not pay attention to it. The people who are against war are either threatened or ignored and thought as lunatic in such narrow-minded and ignorant societies.

The clergymen are merciless and make the people merciless, too. While praying for their soldiers, they carry a wicked intention at the same time: the plea that the enemy is ruined. The preacher amplifies the people's eagerness for praying; with their prayer, God will make the enemy destroyed mercilessly. It is paradoxical that they wish devastation for the people they do not know. They lack the imaginative power to visualize their plight; if they had, perhaps they would be more merciful, but with this imposed psychology they cannot think healthily. The preacher recites:

> "…help us to cover their smiling fields with the pale forms of their patriot dead; help us to drown the thunder of the guns with the shrieks of their wounded, writhing in pain; help us to lay waste their humble homes with a hurricane of fire;… We ask it, in the spirit of love, of Him Who is the Source of Love, and Who is the ever-faithful refuge and friend of all that are sore beset and seek His aid with humble and contrite hearts" (Twain, 2021).

The preacher and the people disregard the fact that God is everybody's God and religions are for peace. Twain thinks that the Bible is interpreted partially and contradictorily; because in many cases, the sides share the same religion and book, Christianity and the Bible. "Christians, Mark Twain suggests, are all too often heedless of their religion's most significant teachings" (Ensor, 1970-71:539). "The War Prayer" demonstrates that patriotism and religion are intertwined. Although the name 'politicians' are not mentioned, Twain refers implicitly to them as directing both clergymen and their countrymen to warfare. He points out that dissent from the established view of the war as noble and glorious was unacceptable in strictly patriotic and pious communities. No one will listen to other perspectives; to express disapproval of the war or raise doubts about its righteousness will be sharply rebuked. Few people who disapprove of the war are anxious about their security and they might be thought as lunatics. In this context, Lease explains: "Religions thus become the most finely tuned examples of *power structures*, patterns of force which control human lives and dictate how they are to be conducted. Make no mistake about it: religions are about power, about the power to be given you and about the power which controls you" (1994:474). In the church scene, the religion plays the role of a power element to direct the people to where the government likes them to go. Thus, it is safe to say that governments and religions behave together. Twain draws attention to this point, but it seems in the story that religion and state are separate. He skillfully hides his message: the effect of war and politics are reciprocal and people should be aware that governments and political thought direct religion and vice versa. As a result, "…the role of religion in shaping attitudes toward war" (Eastman, 2016:87) cannot be denied.

Crane and Twain bring a new tone of cynicism to American literature in their anti-war works. They attack the moral and ethical grounds of war and show its intricate nature composed of political and religious roots. They show how the politicians abuse the concepts of heroism and religion while victimizing the innocent people of both sides: their people and the people of the enemy. They "…manifest[s] how it corrupts all human beings' moral values

and their psychological states,…" (Köseman, 2016:877) for the people's cast of mind is shaped by wrong points of view. Both are satirical and critical about wars, their foundations and results and they urge people to think about war more critically.

References

1.Brosman, Catharine Savage (1992). "The Functions of War Literature". *South Central Review*. Vol.9, No.1, Historicizing Literary Contexts (Spring), pp. 85-98 https://www.jstor.org/stable/3189388 02 January 2021.

2.Crane, Stephen "A Mystery of Heroism" http://cw.routledge.com/textbooks/9780415537070/data/section2/crane-mystery.pdf 23.12.2020.

3.Eastman, Susan Lyn (2016). "Mark Twain's 'The War Prayer' in Film and Social Media". *The Mark Twain Annual*. Vol.14, No.1, pp.78-92 https://www.jstor.org/stable/10.5325/marktwaij.14.1.0078 29 January 2021.

4.Ensor, Allison (1970-71). "Mark Twain's 'The War Prayer': Its Ties To Howells and to Hymnology". *Modern Fiction Studies*. 1970-1971, Vol. 16, No. 4 (Winter), pp. 535-539 https://www.jstor.org/stable/26279237 29 January 2021.

5.Gargano, James W. (1959). "Crane's 'A Mystery of Heroism': A Possible Source" Modern Language Notes, Vol. 74, No. 1 (January), pp. 22-23 https://www.jstor.org/stable/3040100 29 January 2021.

6.Köseman, Zennure (2016). "Psychoanalitical Outlook for Orwell's *Coming Up for Air*, *Animal Farm* and *Nineteen Eighty-Four*". Gaziantep University Journal of Social Sciences (http://jss.gantep.edu.tr) 15(3):867-880 https://dergipark.org.tr/en/download/article-file/223084 30 December 2020.

7.Lease, Gary (1994). "The History of 'Religious' Consciousness and the Diffusion of Culture: Strategies for Surviving Dissolution". *Historical Reflections/Reflexions Historiques*. Vol. 20, No. 3, History, Historiography and the History of Religions (Fall), pp. 453-479 https://www.jstor.org/stable/41299009 15 February 2021

8.Mariani, Giorgio (2015). "The Rhetorical Equivalent of War: William James, Kenneth Burke, Stephen Crane". *Waging War on War: Peacefighting in American Literature.* (ed. Jane C. Desmond and Virginia R. Dominguez) Urbana: University of Illinois Press. https://www.jstor.org/stable/10.5406/j.ctt18z4h61.7 29 January 2021.

9.Merriam-Webster (5 February 2021) https://www.merriam-webster.com/

10.Monteiro, George (1995). "After the 'Red Badge': Mysteries of Heroism, Death, and Burial in Stephen Crane's Fiction". American Literary Realism, 1870-1910. Vol. 28, No. 1, Special Issue on Stephen Crane (Fall), pp. 66-79 https://www.jstor.org/stable/27746641 29 January 2021

11.Shaw, Mary N. (1995). “Apprehending the Mystery in Stephen Crane’s ‘A Mystery of Heroism’ " CLA Journal, Vol. 39, No. 1 (September), pp. 94-103 https://www.jstor.org/stable/44322930 29 January 2021.

12.Twain, Mark (1900). https://www.loc.gov/rr/hispanic/1898/twain.html 26 February 2021

13.Twain, Mark (1923). “War Prayer” http://www.people.vcu.edu/~toggel/prayer.pdf 23.12.2020.

ECO-FRIENDLY SOLUTIONS FOR FLEXIBLE PACKAGING

Nildeniz ADMAN
BurçinYALÇIN ÖZKAN
Bak Ambalaj, R&D Center, İzmir, Turkey

Abstract
Flexible packaging is steadily growing in the world, whereas 359 million metric tons used only in the food sector. While highly resource-efficient, flexible packaging is generally showing a lower recycling performance than other packaging groups. However, the recycling performance can be dramatically increased only by enabling a better understanding of recycling through proper guidance. Bak Ambalaj understands the market, gives design guidelines, and provides sustainable solutions for customers in order to become a part of the circular flexible packaging process. In this project, we evaluate the market needs and find Eco-Friendly solutions in accordance with country conditions. The project focused on four main available eco-friendly solutions. These are 100% recyclable, recycled content, biodegradable & compostable and bio-based / green polymers.

Keywords: Flexible packaging, Sustainability, Eco-Friendly, Polymers, Recyclable, Food Packaging

SELECTION OF MATERIALS AND APPLICATION IN THREE AREA

Prof. Dr. Fehim Findik
Sakarya Applied Sciences University, Sakarya, Turkey
https://orcid.org/0000-0003-2537-1951

Abstract
A technical personnel or engineer who does not have sufficient knowledge about the structure and properties of the materials cannot select the most suitable material for the area of use. Errors can reach large dimensions; this can make the selection of materials and other related units difficult. Understanding the materials has led to advances in design since ancient times. Nowadays, the process of replacing old materials with new ones occurred from time to time because there are more materials than they used to be. The importance of material selection as part of the design process is increasing, especially due to industrial competition. Therefore, design and materials engineering and scientists work closely for the design and selection of economical materials that will best respond to desired service conditions. More than one hundred and fifty thousand materials used in the industry are used. These materials should be selected according to their usage areas. Incorrect selection of materials causes loss of life and property. In this study, firstly, the fundamentals of material selection and the factors to be taken into account when choosing a material are examined. Secondly, about twenty diagrams used in material selection developed by Ashby are introduced. Finally, by using the aforementioned material selection diagrams and the computer element selection (CES) package program developed by Ashby, the application of material selection for automobile bumper, pressure vessel and a dental prosthesis was performed and their results were compared with the CES method. Of course, only material selection in production is necessary but not sufficient. In order to reach the target here, a process selection must also be made. This issue has not been studied in the current study. However, Ashby has also developed about ten process selection diagrams on this subject and they also can be successfully used in the area.

Keywords: Materials Selection, Property charts, Strength, Modulus & density

Introduction

The use of each material requires some selection elements. Any feature can be improved through research, experimentation or use; however, this should not be overestimated and it is not possible to select a material for only one feature. Each of the more than one hundred and fifty thousand different materials, which are said to be used today, actually undergoes a day-to-day evolution process both to solve problems and basically serve humanity. Various household appliances such as telephones, vacuum cleaners, hair dryers that facilitate people's lives have gone through many different material evolutions. While heavy materials such as

steel and zinc were used in the past, we see that light materials such as plastic, aluminum and titanium were used later. We can also add that the use of plastics adds aesthetics to the system.

Importance of Material Selection

Material selection is an important issue. Today, there is a wide spectrum of materials used in more than one hundred thousand iron-based materials (especially steel). In addition, many parts can be used in vehicles that we encounter in daily life and are frequently used. When we count each part used separately, there are 15-20 thousand parts in a tractor, 20-25 thousand in an automobile, 40 thousand in a military tank, 120 thousand in a submarine and 2-6 million in an airplane. Each of these complex systems, where many parts are put together, perform important tasks. Therefore, it is very important that these materials are selected correctly and in accordance with the conditions in which they are located. If this is not done, the said part of the system may break during operation and cause loss of life and property. Property loss is important because it can lead to both resource depletion and labor loss. Loss of life is undoubtedly very important and it is not possible to compensate. It would be very wrong to use an aluminum material instead of choosing the steel material to be used on the axle of a car with an average weight of 1200 kg. Because the aluminum car does not have sufficient strength during its walking, it will get tired after a while due to the bending force and will cause the vehicle to be damaged. This event may also end with injury or death of the driver and / or passengers.

Material Selection Steps

Like many engineering studies, material selection is problem solving. Many things have been written on problem solving, the main steps related to the subject have been expressed and defined in many different ways. However, it is generally accepted that the main steps are as follows:

1- Problem analysis

2- Formulation of alternative solutions

3- Development of alternatives

4- Decision

These steps applied to the material selection process turn into (Crane and Charles, 1999):

1- Analysis of required properties of materials

2- Selection of candidate materials

3- Development of candidates

4- Selection of the material that best suits the required properties

Many engineers choose material for two wrong reasons:

1- This material is always used in such applications.

2- Just for some features.

In the first of these erroneous reasons, the choice is made when each application has the preferred material and each material has safe markets. In other words, tradition and good technology don't mix properly. The second reason is wrong because it shows that the properties of the material are mysteriously almost metaphysically related to the material, without resorting to the specific uses of the material.

With an experiment, it is only possible to change the conditions of the environment of the material and to describe its reaction to this change. The results of the tests are an indicator of the performance of the material. The performance of the material is determined by testing in an environment suitable for operating conditions. The four procedures outlined here can be reviewed as follows:

1) The material engineer carefully lists the working and environmental conditions under which the product is produced:

2) Lists the necessary answers to the conditions and conditions to withstand changes in service time:

3) The sought-after properties are compared with more than 160 thousand engineering properties in today's material spectrum:

4) Chooses the material that gives the best result or the best possible compromise, in the light of intuition, experience and judgment.

Factors Considered in Material Selection

There are general characteristics to consider in material selection (Table 1). As can be seen from the table, many applications do not require all these factors. In some applications, there may be situations that need to be considered in additional factors.

Table 1. General approach for material selection (Ashby, 2011; Farag, 2013)

Mechanical strength
Ductility
Stability
Manufacturability
Availability
Corrosion resistance
Thermal transfer properties
Special features
Cost

The first step in material selection for a particular application is the development of working conditions. The characteristics of the different materials have been developed to select the most necessary materials.

These sometimes require a variety of simulated service tests for good predictions. The main test is of course in real operating conditions. Knowing the behavior of the material in other applications should aid in applying safe judgment for a new application whose performance is similar or more varied than a known situation.

Unless you know and understand the manufacturing and operating conditions, including temperature, environmental conditions, the degree of applied stress, and other factors, there is little hope of choosing the appropriate material. If we have a clear understanding of the operating conditions and properties of different materials, past experience shows us that we will work between difficulties and hazards to achieve a satisfactory working life.

Strength, a question that is often asked in material selection is whether the material can withstand the stresses applied during operation. Generally, while the first selection criterion is strength, it may be hardness, corrosion resistance, electrical conductivity, magnetic characteristics, thermal conductivity, specific gravity-strength-to-weight ratio or other properties.

Ductility problem depends on the strength problem. Sufficient ductility is usually achieved by spreading the sacrifice of strength.

The design is strictly dependent on strength and ductility in material selection. At the same time, it was understood that most of the disruptions during operation were caused by fatigue. Most of the damage is due to improper design.

A working material must be stable; The stability of the material is directly dependent on temperature, fluctuations in temperature and the length of time in temperature. In some applications, exposure to radiation can also be an important condition. Temperature not only directly affects the strength and causes creep, but also causes changes in the microstructure of the material.

The material should be readily available from domestic sources; If the material is not readily available it is illogical to make a design. The availability mentioned here is that the material can be obtained, priced and shaped as desired.

Manufacturability is closely linked with availability. A material may not be obtained commercially in the desired manufacturing type, but it can be given the desired form by going through sequential development-type processes in small sizes. This, of course, requires a considerable expenditure.

A material can be corrosion resistant or non-resistant depending on the desired operating conditions. In some cases, it may be more convenient to use a worse material that requires periodic replacements.

Cost requires making the final decision in material selection. In some applications there are special conditions that force us to choose from relatively few materials. So there is even a trade-off between the conflicting factors discussed earlier. Compromises made in almost all cases and the final decision in the choice require consideration of economic reasons. The initial cost of a piece of equipment includes raw material, production and transportation costs.

Responsibility for Material Selection

Considered, the designer is responsible for material selection. When making this choice, one should not only rely on manual information, but consult material experts. This expert, too, must know everything about the sources of obtaining in return, the conditions of production and prices. Thus, it is seen that the selection of on-site materials concerns not only the material design engineers, but also the production engineers and the trading department.

Material Selection Diagrams

Material properties limit performance. However, it rarely happens that the performance of a component depends solely on one feature. It is one (or more) combination of properties that always matters: strength / density or stiffness / density ratio, for example, is considered to be important in the design of lightweight products. The idea of plotting one feature versus another proposes sub-areas controlled by individual materials and mapping the feature-location area occupied by each material class. Results diagrams are useful in several ways. In the diagrams a lot of information is concentrated in an accessible way to a small area, they show similarities between material properties that help control and predict data, and they aid a performance-optimization technique that is the basis of the selection procedure (Crane and Charles, 1999; Ashby and Jones, 2012).

Demonstration of Material Properties

Each property of an engineering material has a characteristic range of values. The values traditionally shown in material selection diagrams are exhibited in Figure 1.

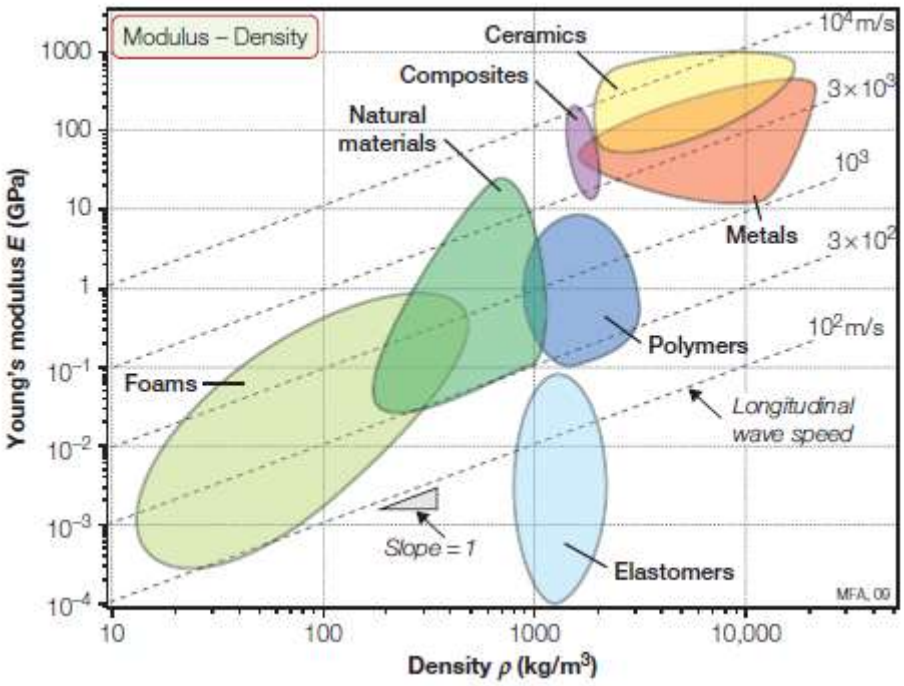


Figure 1. Material property diagram idea: Elastic modulus E is plotted against density (ρ) in logarithmic scale. Each class of material occupies a characteristic part of the diagram. The logarithmic scale allows the longitudinal elastic wave velocity ($\upsilon = (E / \rho)^{1/2}$) to be composed of parallel lines (Ashby and Jones, 2012).

A property (elastic modulus E in this case) is plotted against the other property (density, ρ) on a logarithmic scale. In the area of the axes, all materials from the lightest foams to the heaviest metals have been selected including. For a given group of materials (e.g. polymers) an aggregation was found at the values in the diagram; in all cases the subgroup for a material class is smaller than the entire area of this property. Data for a class can be added to a property field as shown in Figure 1. This area includes all members of the class (William and Callister, 2010; Farag 2013).

This is a fairly easy way to plot data. With it, more is added by choosing the axes and dimensions appropriately. For example, the sound velocity in a solid depends on the modulus E, the density ρ, and the longitudinal wave velocity υ.

$$\upsilon = (E / \rho)^{1/2} \quad (1)$$

or (taking logarithms)

$$\log E = \log \rho + 2 \log \upsilon \quad (2)$$

For a constant value of υ, this equation can be drawn as a straight line of slope 1 in Figure 1. This allows for lines of a constant wave velocity in the diagram. They are a family of parallel diagonal lines attached to the material, where longitudinal waves travel at the same speed. All of the diagram allows for additional basic relationships that are exhibited of this type.

Many mechanical and thermal properties characterize a material and cause it to be used in engineering design; These include density, modulus, strength, toughness, damping coefficient, thermal conductivity, diffusivity and expansion properties. The diagrams show data for nine classes of engineering alloys, plastics, composites and ceramics, as well as porous ceramics, glasses, elastomers, polymeric foams and woods. The data in each group is plotted for a representative group of materials chosen to include the very general and widely used members of the group behavior that span the whole area. The diagrams show an order of values for each property of each material. Sometimes the space is narrow; For example, the modulus of copper changes only a few percent from the average value, based on its purity, texture and similar properties. Sometimes the field is wide; The strength of alumina ceramic changes 100 times or more by being affected by porosity, grain size etc. Heat treatment or mechanical treatment has a profound effect on yield strength, damping and toughness of metals. The crystallinity and degree of crosslinking greatly affect the modulus of polymers. Properties sensitive to this structure appear in the diagram as elongated bubbles in the envelope. A bubble includes a typical area for the property value of a single material (see Figure 2). The thick lines cover the bubbles for a group (Ashby and Cebon, 2006).

Material Property Diagram Types

Material selection diagrams are basically divided into material property diagrams and material process diagrams. While selecting the most suitable materials for the properties given in the material property diagrams, information is obtained about the method by which materials will be manufactured in material process diagrams. Material property diagrams will be mentioned in this section. The data shown in the diagrams are from a variety of sources and the most accessible sources (Metals Handbook, 1992; Materials Selector, 1996; CSM Software, 2005; Drogby, 2014).

Module-Density Diagram

Modulus and density are known properties. Steel is rigid and rubber is soft: these are modulus effects. Lead is heavy, cork floats: these are density effects. Figure 2 shows the whole area of elasticity modulus E and density ρ for engineering materials.

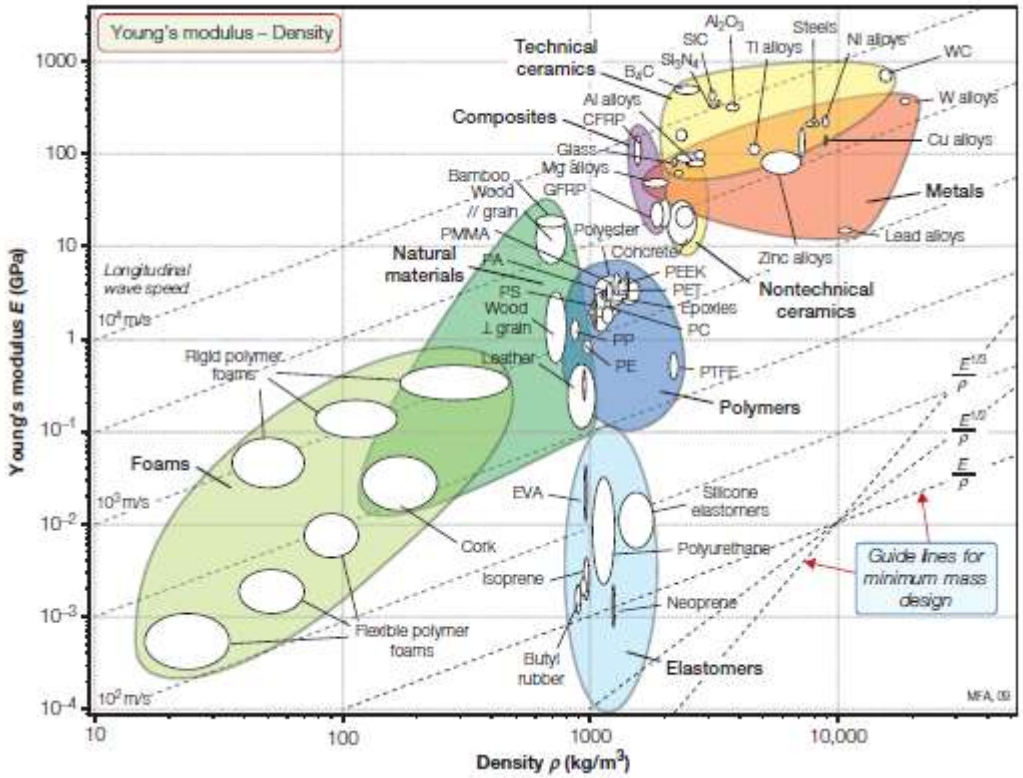


Figure 2. Plot of elastic modulus E versus ρ density for various engineering materials. The bold lines cover the data for a group of material. Diagonal lines show longitudinal wave velocity. The guiding lines of constant E / ρ, $E^{1/2}$ / ρ, and $E^{1/3}$ / ρ allow minimum weight, limited deflection, material selection for design (Ashby, 2011).

The density of a solid depends on three factors: the atomic weight of the atoms or ions, their size, and the way they are packed. Metals are heavy because they are made of heavy atoms, tightly packed; Polymers are low density because they are made largely of carbon (atomic weight 12) and a 2 or 3-dimensional linear hydrogen network. Many parts of ceramics are lighter than metals because they contain light oxygen, nitrogen and carbon atoms. The lightest atoms packed very clearly form solids with a density around 1 Mg/m^3. Materials with a density smaller than this value are foams and these are materials composed of cells with large pores.

The modulus of elasticity of many materials depends on two factors: bond stiffness and density of bonds per unit area. The inter-atomic bond is like a spring: it has a spring coefficient S (unit: N / m). Elastic modulus E is roughly expressed as:

$$E = S / r_o \quad (3)$$

Where r_o is the atomic size (average atomic or ionic volume). The large area of the module is intended broadly with the range of S values. The covalent bond is rigid (S = 20-200 N / m); metallic and ionic bonds are slightly smaller (S = 15 to 100 N / m). Diamond has very high modulus because its carbon atom is small (gives a high bond density), and its atoms are bonded by very firm arcs (S = 200 N / m). Metals have a high modulus because the tight packing gives a high bond density and the bonds are strong even if not as strong as diamonds. Polymers have both strong diamond-like bonds and weak hydrogen or Van der Waals (S =

0.5-2 N / m) bonds; they are weak bonds and the stretched weakly bonded polymer deforms showing low modulus (Metals Handbook, 1992). But even large atoms ($r_0 = 3.10^{-10}$ m) bonded by weak bonds (S = 0.5 N / m) have a modulus of about:

$$E = 0.5 / 3.10^{-10} = 1 \text{ GPa} \quad (4)$$

This is the lower limit for true solids. The diagram shows that many materials have a smaller modulus than this, but these are not true solids; they are either elastomers or foams. Elastomers have a low E because secondary bonds melt leaving only a very weak uneven return force associated with complex long chain molecules (their glass transition temperature Tg is below room temperature). Foams have low modulus because the cell walls bend (providing large displacements) when the material is loaded.

The diagram shows that the engineering material modules are divided into five tens between 0.01 GPa (low density foams) and 1000 GPa (diamond); For values less than 0.1-20 Mg / m^3, the density changes with a factor of 2000. When examining the shear modulus G, 3E / 8 and the mass modulus K, E for all materials except elastomers (for G = E / 3 and K »E) (for the need to show the relationship between the properties of the material classes), G-ρ and The K-ρ graph is almost identical.

Logarithmic scale allows a lot of information to be displayed. The speed of elastic waves of a material and the natural vibration frequency (E / ρ) of the composition from which it is made is proportional to 1/2; The amount of $(E / \rho)^{1/2}$ is the velocity of longitudinal waves in a thin rod of material. Constant $(E/\rho)^{1/2}$ lines are plotted in the diagram, these lines are named as longitudinal wave velocity and they range from 50 m / s (soft elastomers) to 10^4 m / s (fine ceramics). Due to their low density, aluminum and glass transmit waves rapidly despite their low modulus. Due to its low modulus, the speed of sound in foams is expected to be low; however, low density is always compensated. The velocity of sound in wood is low throughout the grain, but high throughout the grain — roughly the same as steel — used in the design of musical instruments (CSM Software, 2005; Ashby, 2011).

The module-density diagram helps the general problem for material selection applications where weight should be minimal. Guidelines for the three known geometries of the loading are drawn in the diagram.

Strength Density Diagram

The modulus of a solid is a well-defined quantity with a net value. Strength is not like that. The word strength needs to be defined. For example, for metals and polymers the yield strength is important, but since the area of the materials is included in the processes, the area is extended from the initial yield strength to the maximum strength; Tensile and compression strengths are the same for many practical purposes. For fragile ceramics, the breaking strength at compression is important, negligible as the tensile strength is about 15 times less; For fragile materials, the circular area is shown with dashed lines to remind this. For elastomers, the strength is tear strength. For composites, damage stress in tensile (compressive strength may be less due to fiber bending) is important (Metals Handbook, 1992).

Figure 3 shows the stresses drawn against the density (ρ) using the σ_f symbol, despite the different damage mechanisms required. The large vertical extension of the strength bubble for

an individual material, the degree of alloying, deformation hardening, grain size, porosity and so on reflect its wide area. As before, members of a group cluster together and lie in a thick line. Each group occupies a characteristic area of the diagram.

Similar to the modulus of engineering materials, the strength area includes five tens from 0.1 MPa (used in foams, packaging and energy absorption systems) to 10^4 MPa (strength of diamond used in diamond backing press). The only important concept in understanding this large area is the lattice resistance or Peierls stress, which is the required resistance of the structure to plastic shear. Plastic gliding in a crystal requires the movement of dislocations. Metals are soft because the non-local metallic bond prevents dislocation movement little, whereas ceramics are hard because their local covalent and ionic bonds are more local and they must break and reshape where the dislocations lock when the structure shifts. On the other hand, it relates to the unit step of the energy flow process in non-crystalline solids: the relative shift of two parts of a polymer chain or the shift of a small molecule cluster in a glass mesh. Their strength has the same basis as the lattice resistance: if the unit pitch strong bonds (as in inorganic glass) retard fracture, the materials will be strong; If it requires breaking only weak bonds (e.g. Van der Waals bonds in polymers), it will be weak. Materials damaged by fracture also do so because the lattice resistance, or its amorphous equivalent, is so great that the fracture is in the first (Ashby and Cebon, 2006).

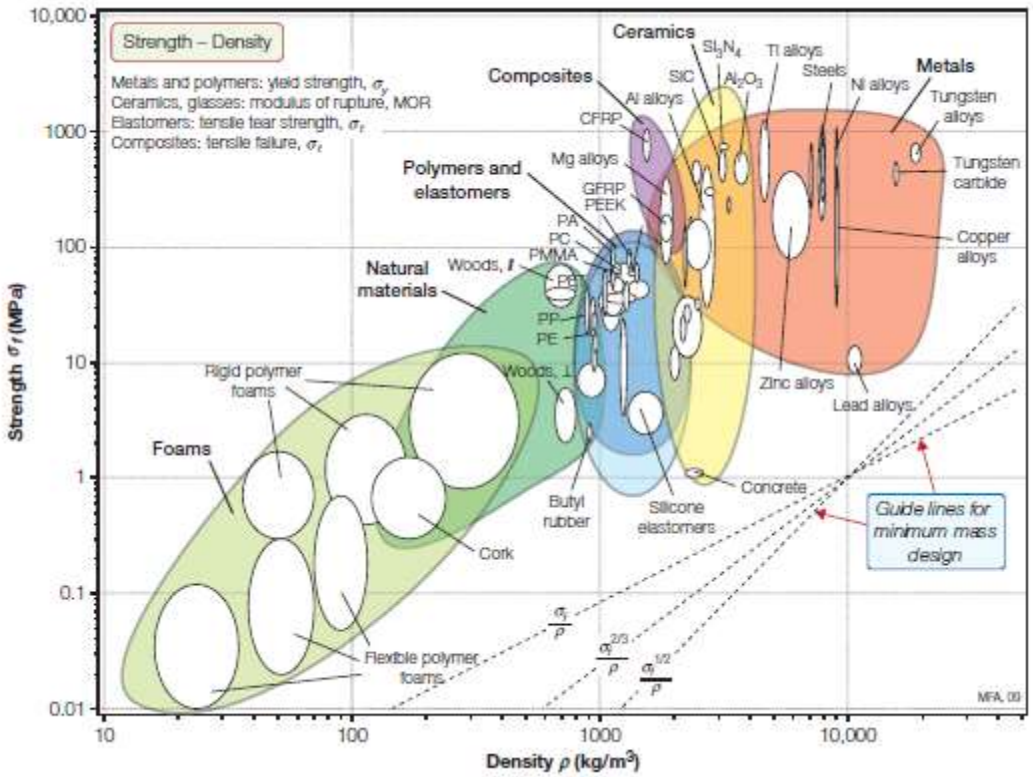


Figure 3. Drawing strength (σ_f) versus density (ρ) diagram for various engineering materials. For metals and polymers, yield strength is important, compression strength for ceramics, tear strength for elastomers, and tensile strength for composites. σ_f / ρ, $\sigma_f^{2/3} / \rho$ and $\sigma_f^{1/2} / \rho$ fixed guiding lines are used in minimum weight, limited yield and design (Ashby, 2011).

When the mesh resistance is low, the material can be strengthened by preventing shear: by adding alloying elements in metals, by particles, grain sizes and other dislocations (deformation hardening); and by crosslinking in polymers or by orientation of chains, strong covalent and weak Van der Waals bonds are broken. On the other hand, when the lattice resistance is high, additional hardening is unnecessary - problems arise by stopping the fracture (see Figure 4).

Fracture Toughness-Density Diagram

Increasing the plastic strength of a material is beneficial as long as it remains plastic and is not damaged by rapid breaking. Crack propagation resistance and fracture toughness are measured by Kc.

Figure 4 shows the density versus fracture toughness relationship. The area is large, from 0.01 to 100 MPa. At the lower end of this area are fragile materials that remain elastic until they break when a load is applied. Linear elastic fracture mechanics works well for these materials and fracture toughness is a well-defined property. On the upper end, there are super tough materials that show significant plasticity (permanent deformation) before breaking. The Kic values for these are approximate, derived from the critical J-integral and the critical crack-to-open distance (dc) measurements [eg by typing Kic = (EJc) 1/2]. They are useful for classifying materials, but should only be used as an indicator. One of the reasons for the superiority of metals in engineering is that almost all of them have a Kic value above 20 MPa, which is a minimum value in traditional design (Ashby, 2011).

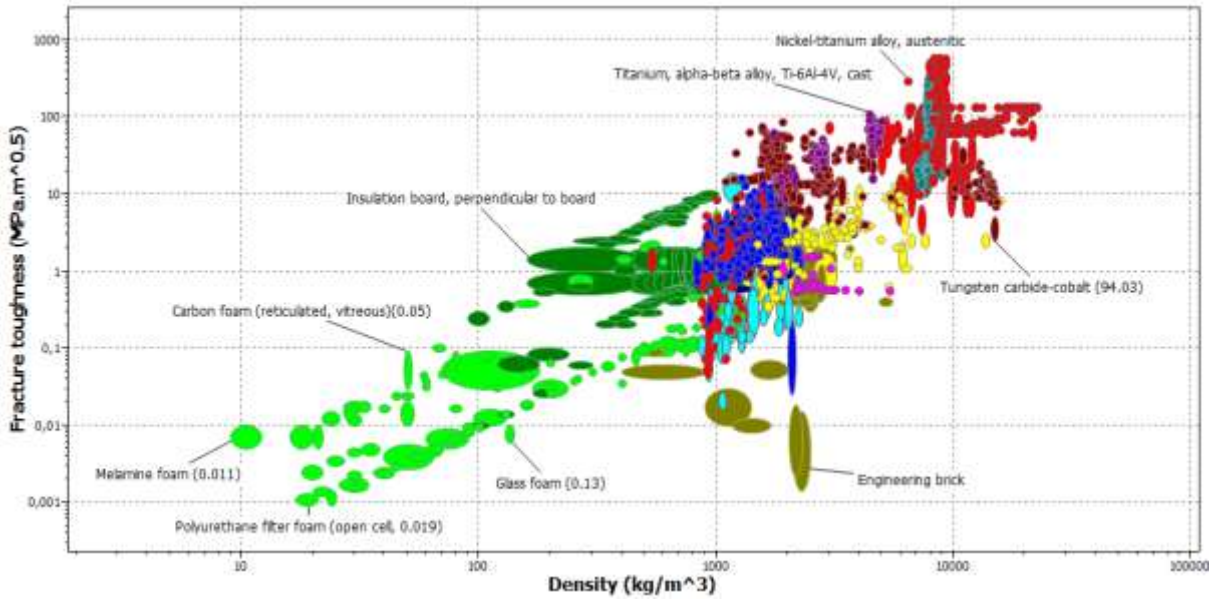


Figure 4. Fracture toughness, density against Kc, ρ relationship. Constant $K_{1c}^{2/3}/\rho$, and $K_{1c}^{1/2}/\rho$ etc. The break-limited design helps with minimum weight. The data for the butt are valid for less than 10 MPa; Data above 10 MPa is only for classification (Ashby, 2011).

An important use of the strength-density diagram is in material selection in lightweight plastic design. For limited yield design in moving components of inertial forces, guiding lined (guided line) performance indices are important for material selection in minimum weight design of ties, columns, beams and plates (Metals Handbook, 1992). For example, aspects of the fatigue-endurance limit can be represented in a similar way. Diagrams regarding fatigue can be found in the reference of (Fleck et al., 1994).

Using Material Property Diagrams

Engineering properties of materials are shown useful in material selection diagrams. These diagrams summarize information heavily, have an easily accessible method, and show the area of any accessible feature given to the designer, and determine the material class for the parts of this area. When the axes are sensibly selected, more information can be shown: The density relation diagram ρ plotted against the E modulus shows the vertical wave velocity $(E / \rho)^{1/2}$; E modulus fracture surface energy GIc against fracture toughness KIc; the radiation a versus thermal conductivity λ indicates the specific heat ρCv; The σ_t / E normalized strength against α expansion also indicates the thermal shock resistance ΔTs.

The most striking feature of the diagrams is the clustering of the members in a material group. Despite the wide area of density and strength, metals, for example, occupy a separate space from polymers or ceramics or composites. The same is true for strength, toughness, thermal conductivity, and so on. Fields sometimes overlap, but materials always occupy a characteristic place in the entire diagram.

The position and relationship of the fields can be understood in simple physical terms: the nature of the bonds, packing density, lattice resistance, and vibration modes of the structure (their binding and packing function), and the like. It may seem odd that there is little reference to microstructure in determining properties. However, the diagrams clearly show that the first difference between the properties of materials is the origin of the atoms in mass, the nature of the inter-atomic forces, and the packing geometry. Alloying, heat treatment and mechanical hardening affect the microstructure and longitudinal areas are formed in many diagrams within these properties; however, the effect of these properties is 10 times smaller than the bonding and structural properties (Metals Handbook, 1992).

These diagrams have many applications: data control, composite design, and determination of applications for new materials (Ashby, 2011). But the most important of these is that these diagrams form the basis of the material selection procedure. Other diagrams used in material selection are shown in the appendix.

Case Studies

Automobile Bumper

The bumper is a layer that absorbs impacts and shocks in the rear and front of a car. Let's apply the material selection steps mentioned in the first part of the book to select the appropriate material for the car bumper (Ashby, 2011; William and Callister, 2010; Maleque and Salit, 2013; Ashby and Johnson, 2014).

1- Analysis of required properties of materials:

The features required from the car bumper, or the features that the bumper must perform when used in the car, can be listed as follows:

-The impact strength (fracture toughness) must be high

should be light (low density)

-should be easy to shape

-Must have high corrosion resistance (not rust)

must be cheap

2- Selection of candidate materials:

Considering the above mentioned properties, we can nominate the following materials for the car bumper:

-plastic (PMMA, HDPE, PP)

-metal (steels, Al alloys)

composite (CFRP, GFRP)

3- Development of candidates

Now, let's evaluate these candidate materials by scoring under the light of the features requested from the car bumper. After writing the candidate materials on the columns and the desired properties on the rows, let's find the values of the candidate materials using the material selection diagrams. The results are shown in Table 2.

Table 2. Automobile bumper candidate materials and scoring.

Feature / Material	PMMA	HDPE	PP	Stainless steel	Al alloys	CFRP	GFRP
Fracture toughness (MPa $m^{1/2}$)	1.5 (1p)	3.5 (1p)	3 (1p)	50 (10p)	25 (7p)	20 (6p)	30 (8p)
Density (Mg/m^3)	1.2 (10p)	1 (10p)	0.9 (10p)	7.8 (2p)	2.8 (5p)	1.7 (8p)	1.8 (8p)
Formability	+++ (10p)	+++ (10p)	+++ (10p)	++ (8p)	++ (8p)	+ (6p)	+ (6p)
Corrosion resistance	Excellent (10p)	Excellent (10p)	Excellent (10p)	Good (7p)	Good (7p)	Good (7p)	Good (7p)
Price/Unit volume (Mg/m^3)	15 (8p)	2.5 (10p)	2.5 (10p)	60 (4p)	15 (8p)	400 (1p)	35 (6p)
Total Score	39p	41p	41p	31p	35p	28p	35p

4- Selection of the material that best suits the required properties

When Table 2 is examined, two types of polymer materials that best meet the requirements of automobile bumper materials and therefore receive the highest score (41p) stand out; These are HDPE (high density polyethylene) and PP (poly propylene). PMMA

(polymethylmethacrylate) comes next with 39 points. These polymer materials are the best choice due to their low price, low density, easy shaping and excellent corrosion resistance. Next, GFRP (glass fiber reinforced plastic) and Al-alloys (35p) take the highest score (36p), respectively. These two materials fall behind the polymers in terms of both cost and other properties. Following these, we see stainless steel with 31 points. Although it has good anti-corrosion property and high fracture toughness, it falls behind in terms of material selection due to its high density, that is, it is a heavy material and its cost is higher than other candidates. In summary, polymer materials such as PP, HDPE or PMMA can be chosen as the most suitable material for an automobile bumper.

Material Selection for a (Computer-Assisted) Car Bumper with CES

CES (Cambridge Engineering Selector) is a material selection package program developed by M. F. Ashby et al. Turkey has also got to do the sales representative of a private company at CES, more than 50 universities, public institutions and private companies to use for this package the material and process selection and other work.

Since the car bumper is bulky and a large material (bulk), "**All bulk materials**" is selected as the candidate material type in the program. Then, the following possible features given below, shown in various standards or requested from the manufacturer by the customer are written in the appropriate places after clicking the "**Limit**" command in the CES material selection package program:

Price $\Rightarrow$ 2.5 - 400 TRY/kg

Density $\Rightarrow$ 900 – 8000 kg/m^3

Young's modulus $\Rightarrow$2 - 15 GPa

Compressive strength $\Rightarrow$ 10 - 100 MPa

Fracture toughness $\Rightarrow$ 1.5 - 50 MPa m$^{0.5}$

Glass temperature $\Rightarrow$ -14 ile -6 ^{o}C

Service temperature $\Rightarrow$ -17 ^{o}C ile 140 ^{o}C

Corrosion resistance (durability):

Water (fresh) $\Rightarrow$ excellent

Water (salt) $\Rightarrow$ excellent

Weak acids $\Rightarrow$ excellent

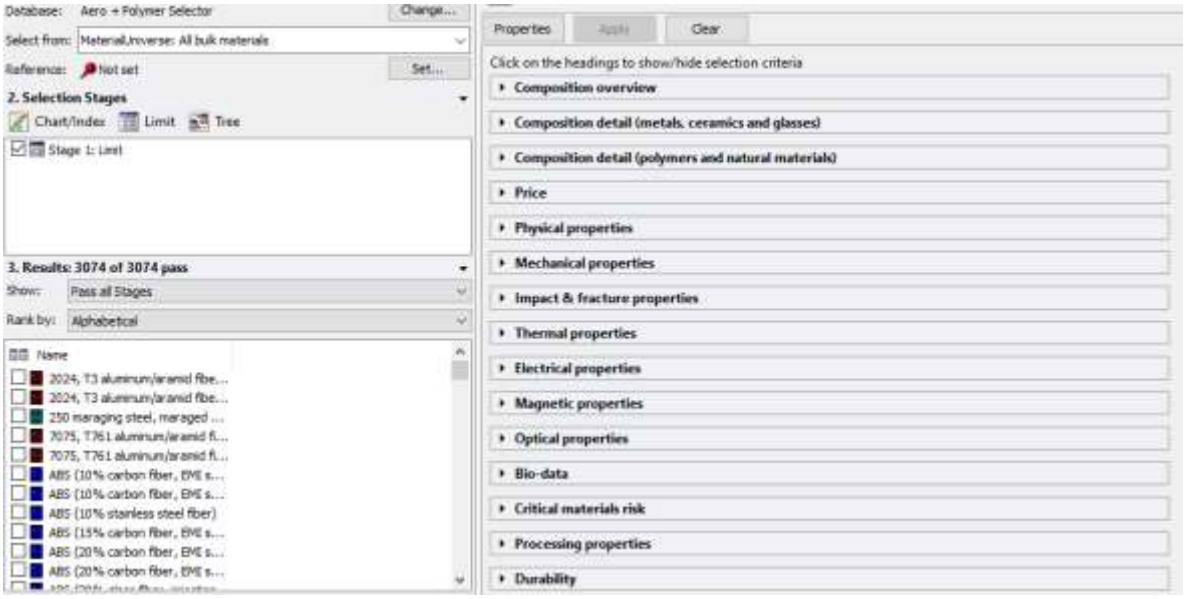
Strong acids $\Rightarrow$ excellent

Weak alkalis $\Rightarrow$ excellent

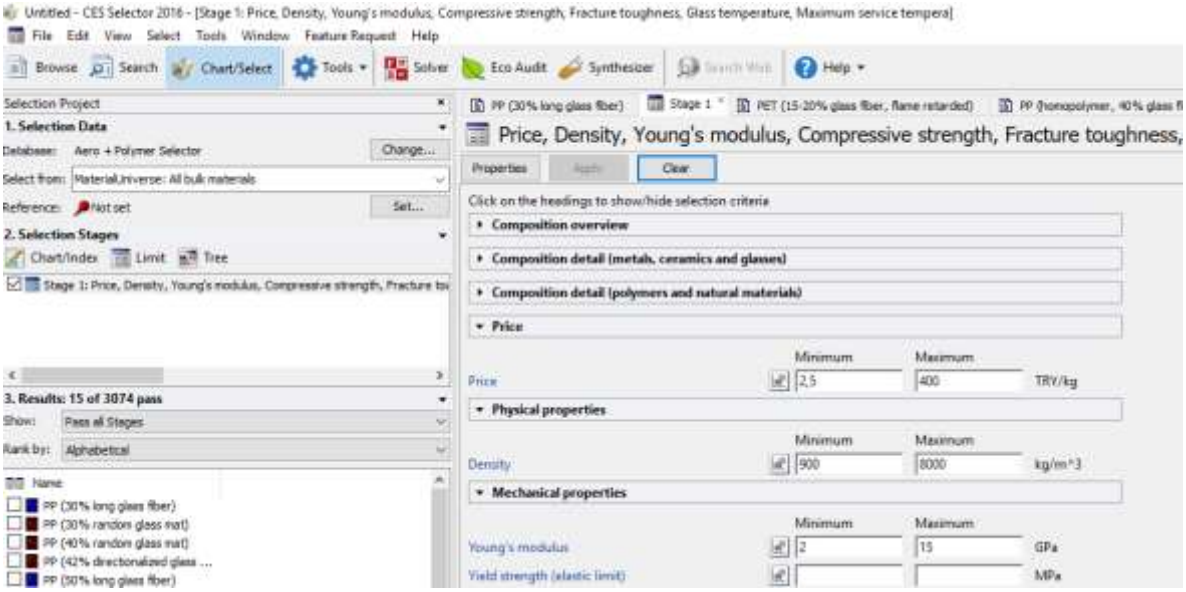
Strong alkalis $\Rightarrow$ excellent

Organic solvents $\Rightarrow$ excellent

Below is the screenshot of the CES material selection program after entering the "**MaterialUniverse: All bulk materials**" option as the candidate material type. Then the relevant specifications requested from the automobile bumper above are written in the appropriate places.



As a result, CES contains polypropylene (polypropylene) as the most suitable material to be used for automobile bumper. Then, looking at the typical uses of the polypropylene found, it will be seen that they are used in automobile bumpers and the answer is confirmed.



Pressure Vessel

A pressure vessel is a stationary or mobile vessel or tank designed or developed on gas, steam or liquid fluids that apply an effective pressure of more than 0.5 bar. Let's apply the material selection steps specified in the first part to select the appropriate material for the pressure vessel (Ashby, 2011; William and Callister, 2010; Maleque and Salit, 2013; Ashby and Johnson, 2014).

1- Analysis of required properties of materials:

The properties required from pressure vessels, or the properties that pressure vessels must achieve when used, can be listed as follows:

-Fracture toughness should be high

Its strength should be medium

-should be easy to shape

must be cheap

2- Selection of candidate materials:

Considering the above-mentioned properties, we can nominate the following materials for pressure vessels:

Stock steels

- stock copper alloys

-Stock Al alloys

-Ti alloys

-high strength Al alloys

-GFRP / CFRP

3- Development of candidates

Now let's evaluate these candidate materials by scoring in the light of the properties required from pressure vessels. After writing the candidate materials on the columns and the desired properties on the rows, let's find the values of the candidate materials using the material selection diagrams. The results are shown in Table 3.

Table 3. Pressure vessel candidate materials and scoring.

Feature / Material	Tough steel	Tough Cu alloy	Tough Al alloy	Ti alloy	High strength Al alloy	GFRP	CFRP
Medium Strength (MPa)	400 (10p)	300 (8p)	150 (5p)	750 (5p)	500 (8p)	400 (10p)	350 (9p)
Easy to form	+++ (10p)	+++ (10p)	+++ (10p)	+ (3)	+++ (10p)	+ (3)	+ (3)
Price/Unit volume (Mg/m^3)	10 (10p)	40 (7p)	10 (10p)	200 (3p)	20 (9p)	30 (8p)	300 (1p)
Total Score	30p	25p	25p	11p	27p	21p	13p

4- Selection of the material that best suits the required properties

When Table 3 is examined, tough steel, which provides the most desired properties and gets the most points with 30 points, is the most suitable pressure vessel material. Tough steel is both high strength, easy to shape and cheap. For this reason, he got the highest score among the candidate materials. Next are high-strength Al-alloys and tough Cu-alloys (hard drawn) and Al-alloys (1000 and 3000 series). Although Ti-alloys considered among candidate materials have high yield strength, they have low safety limits and are expensive. Again, high strength Al-alloys and GFRP (glass fiber reinforced plastic) and CFRP (carbon fiber reinforced plastic) composites are good for light pressure vessels. In summary, among the pressure vessel candidate materials, steel, Cu-alloys and Al-alloys provide the best flow before breaking. In addition, it allows a high yield strength and a high working pressure. As a result, tough steel is the best choice for high pressure vessels, while high strength Al-alloys and GFRP and CFRP composites are for low pressure vessels.

Material Selection for Pressure Vessel (Computer Aided) with CES

Since the pressure vessel is a bulky and large material, "**All bulk materials**" is selected as the candidate material type in the program. Then, the following possible features, which are given below, shown in various standards or requested from the manufacturer by the customer, are written in the appropriate places after clicking the "**Limit**" command in CES material selection package program:

Price $\Rightarrow$ 1,5 - 300 TRY/kg

Young's Modulus $\Rightarrow$ 70 – 250 GPa

Fracture toughness $\Rightarrow$ 1 – 120 MPa $m^{0.5}$

Production Features:

Metal cold forming $\Rightarrow$ excellent

Metal hot forming ⇒ excellent

Metal press forming ⇒ excellent

Metal deep drawing ⇒ limited use

Corrosion resistance (durability):

Water (fresh) ⇒ acceptable

Water (salt) ⇒ limited use

Weak acids ⇒ limited use

Weak alkalis ⇒ acceptable

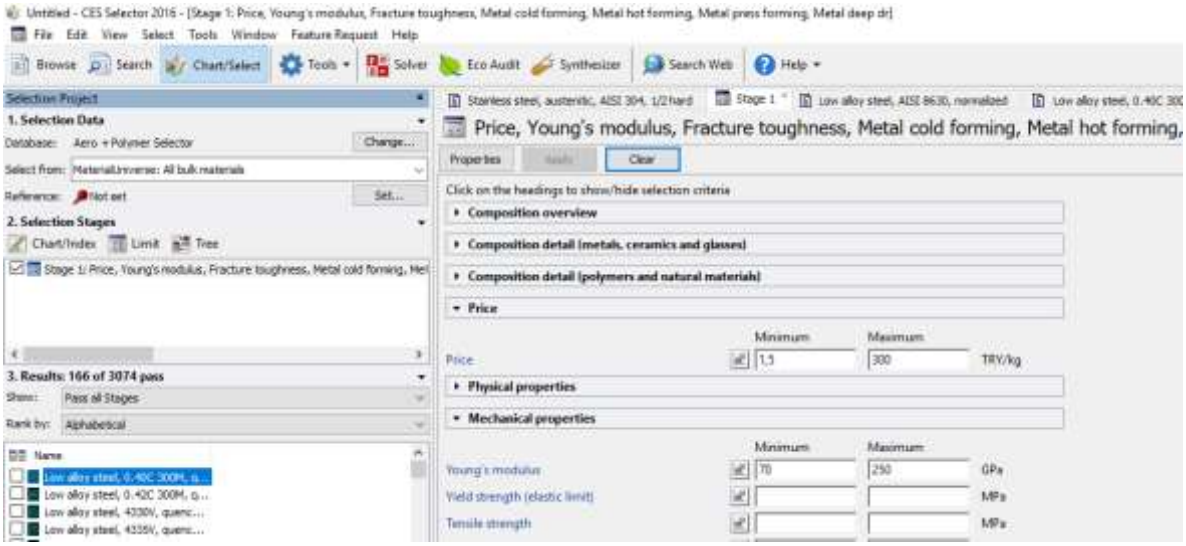
Strong alkalis ⇒ limited use

Organic solvents ⇒ excellent

UV radiation ⇒ excellent

Below is the screenshot of the CES material selection program after entering the "**MaterialUniverse: All bulk materials**" option as the candidate material type. Then the relevant specifications requested from the pressure vessel above are written in the appropriate places.

As a result, CES has low alloy steels as the most suitable material to be used for pressure vessel material. Looking at the typical uses of **low alloy steels** found here, it is seen that they are used for various pressured vessels and the answer is confirmed.



Organ Prosthesis

Prosthesis is the general name of devices that are made to imitate missing body parts. The damaged organ is removed to protect the health of the rest of the body as a result of injury, tumor surgeries, gangrene, inflammation and similar organ damage. Prostheses imitating this organ function and shape are attached to the remaining body cavity from this organ using auxiliary materials. Here, material selection steps for organ prostheses will be mentioned. Let's apply the material selection steps stated in the first part to select suitable materials for organ prostheses (Ashby, 2011; William and Callister, 2010; Maleque and Salit, 2013; Ashby and Johnson, 2014).

1- Analysis of required properties of materials:

The features required from the organ prosthesis, or the features that the organ must perform when used in the human body can be listed as follows:

must have high strength

-should be easy to shape

-Must have high corrosion resistance (not rust)

-bio must be compatible

must be cheap

2- Selection of candidate materials:

Considering the above-mentioned features, we can nominate the following materials for organ prostheses:

-plastic (PVC, PMMA, PE)

-metal (stainless steels, Ti-alloys, Co-alloys)

3- Development of candidates

Now, let's evaluate these candidate materials by scoring under the light of the characteristics required from the organ prosthesis. After writing the candidate materials on the columns and the desired properties on the rows, let's find the values of the candidate materials using the material selection diagrams. The results are shown in Table 4.

Table 4. Organ prosthesis candidate materials and scoring

Feature/Material	PVC	PMMA	PE	Ti-alloys	Co- alloys	Stainless Steel
Strength (MPa)	50 (2p)	80 (2p)	20 (1p)	700 (8p)	600 (7p)	1000 (10p)
Formability	+++(10p)	+++(10p)	+++(10p)	+(3p)	++(6p)	++(6p)
Corrosion resistance	Excellent(10p)	Good (7p)	Excellent(10p)	Excellent (10p)	Good (7p)	Excellent (10p)
Biocompatibility	Good (7p)	Good (7p)	Good (7p)	Excellent (10p)	Excellent (10p)	Excellent (10p)
Price/Unit volume (Mg/m^3)	2 (10p)	15 (8p)	2.5 (10p)	200 (1p)	150 (4p)	30 (7p)
Total Score	39p	34p	38p	32p	34p	43p

4- Selection of the material that best suits the required properties

As can be seen from Table 4, stainless steels which provide the expected performance best and thus get the highest score (43p) for organ prostheses are the most suitable materials. Stainless steels earned the highest points due to their high strength, easy formability and high corrosion resistance. In second place comes polymer materials such as PVC (polyvinyl chloride) and PE (poly ethylene). In addition, Co-alloys Ti-alloys from metallic materials can also be considered as material selection for organ prostheses. However, the disadvantage of these materials is that these materials are expensive and are difficult to shape compared to others. In addition, the compatibility of all materials, especially polymer materials, to the human body should be taken into consideration. In summary, stainless steel can be chosen as the most suitable material for organ prostheses.

Material Selection for Organ Prosthetic Material with CES (Computer Aided)

Since the organ prosthesis material is a bulky and large material, "**All bulk materials**" is selected as the candidate material type in the program. Then, the following possible features given below, shown in various standards or requested from the manufacturer by the customer are written in the appropriate places after clicking the "**Limit**" command in the CES material selection package program:

Price ⇒ 2 - 200 TRY/kg

Young's modulus ⇒ 5 – 120 GPa

Tensile strength ⇒ 20 – 1000 MPa

Fatigue strength ⇒ 500 – 650 MPa

RoHS (EU) complaint grades ⇒ √

Food contact ⇒ yes

Corrosion resistance (durability):

Water (fresh) ⇒ excellent

Water (salt) ⇒ excellent

Weak acids ⇒ excellent

Strong acids ⇒ acceptable

Weak alkalis ⇒ excellent

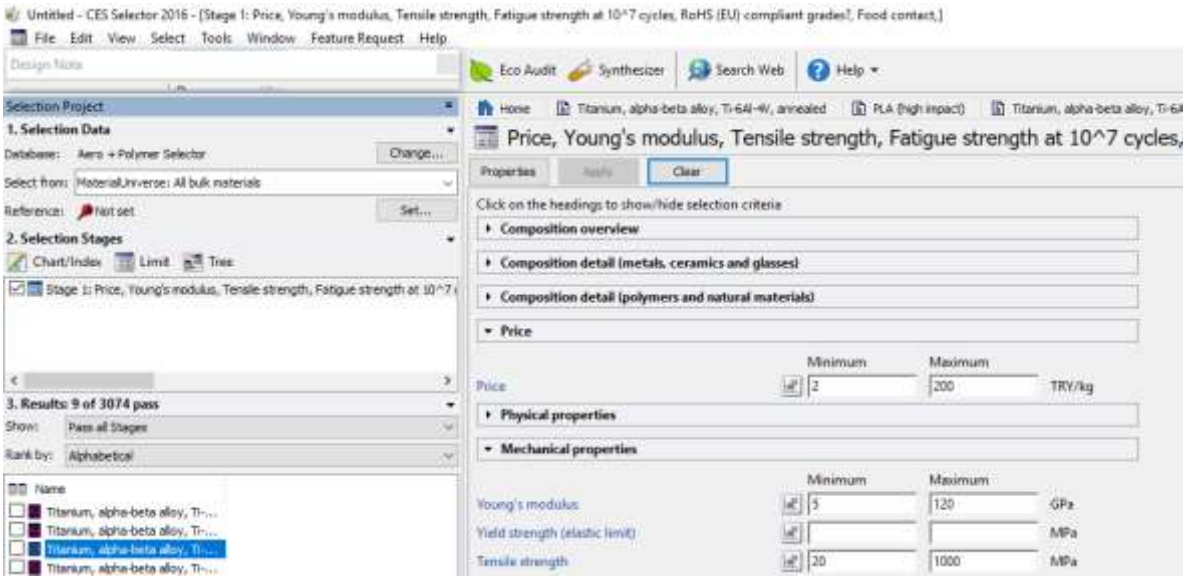
Weak alkalis ⇒ acceptable

UV radiation ⇒ excellent

Adhesive wear ⇒ acceptable

Below is the screenshot of the CES material selection program after entering the "**MaterialUniverse: All bulk materials**" option as the candidate material type. Then, the relevant specifications for the above required organ prosthesis material are written in the appropriate places.

As a result, titanium alpha-beta alloys (**titanium alpha-beta alloys**) are available as the most suitable material for organ prosthesis material in CES. Considering the typical uses of titanium alloys, it is seen that they are used for various organ prosthetic materials (surgical implants) and the answer is confirmed.



Conclusions

Material selection is an important issue. Today, there is a wide spectrum of materials used in more than one hundred thousand iron-based materials (especially steel). In addition, many parts can be used in vehicles that we encounter in daily life and are frequently used. Therefore, it is very important that these materials are selected correctly and in accordance with the conditions in which they are located. If this is not done, the said part of the system may break during operation and cause loss of life and property. Property loss is important

because it can lead to both resource depletion and labor loss. Loss of life is undoubtedly very important and it is not possible to compensate. The following conclusions can be drawn from this study:

a) Material selection steps contain four issues, including analysis of the problem, formulation of alternative solutions, development of alternatives and decision.
b) Factors considered in material selection can be mentioned as mechanical strength, ductility, stability, manufacturability, availability, corrosion resistance, thermal transfer properties, special features and cost.
c) The selection of on-site materials concerns not only the material design engineers, but also the production engineers and the trading department.
d) Many mechanical and thermal properties characterize a material and cause it to be used in engineering design; These include density, modulus, strength, toughness, damping coefficient, thermal conductivity, diffusivity and expansion properties. The diagrams show data for nine classes of engineering alloys, plastics, composites and ceramics, as well as porous ceramics, glasses, elastomers, polymeric foams and woods.
e) Material selection diagrams are basically divided into material property diagrams and material process diagrams. While selecting the most suitable materials for the properties given in the material property diagrams, information is obtained about the method by which materials will be manufactured in material process diagrams.
f) Engineering properties of materials are shown useful in material selection diagrams. These diagrams summarize information heavily, have an easily accessible method, and show the area of any accessible feature given to the designer, and determine the material class for the parts of this area.
g) The bumper is a layer that absorbs impacts and shocks in the rear and front of a car. The material selection steps are applied to the bumper and selected the suitable materials such as PP, HDPE or PMMA can be chosen as the most suitable material for an automobile bumper.
h) A pressure vessel is a stationary or mobile vessel or tank designed or developed on gas, steam or liquid fluids that apply an effective pressure of more than 0.5 bar. The material selection steps are applied to pressure vessel and selected the suitable materials such as tough steel is the best choice for high pressure vessels, while high strength Al-alloys and GFRP and CFRP composites are for low pressure vessels.
i) Prosthesis is the general name of devices that are made to imitate missing body parts. The damaged organ is removed to protect the health of the rest of the body as a result of injury, tumor surgeries, gangrene, inflammation and similar organ damage. The material selection steps are applied to organ prostheses and selected the suitable materials such as stainless steel, Ti-alloys, Co-alloys, PVC and PE.

References

Maleque A and Salit MS 2013. **Materials Selection and Design**. Springer-Verlag.

Ashby FM 2005. **CMS Software and Handbooks**. Granta Design.

William D, Callister JR 2010. **Fundamentals of Materials Science and Engineering**, John and Wiley, New York.

Crane FAA, Charles JA 1999. **Selection and Use of Engineering Materials**, The Butterworths.

J. G. Drogby, Ed., 2014. **Handbook of Thermoplastic Elastomers**, William Andrew Publ, pp. 33-93

Ashby MF and Cebon D 2006. **Case Studies in Material Selection**, Granta Design.

Ashby MF 2011. **Materials Selection in Mechanical Design**, Elsevier.

Ashby MF and Jones ORH 2012. Engineering Materials I: An Introduction to Their Properties and Applications, Butterworth-Heinemann, Oxford.

Farag M 2013. **Selection of Materials and Manufacturing Processes for Engineering Design**, CRC Press.

Ashby MF and Johnson K 2014. **Materials and Design**, Butterworth-Heinemann.

Metals Handbook 1992. **ASM Handbook**, v. 20, ASM International.

Materials Selector 1996. **Materials Engineering**, Penton Publishing.

Fleck NA, Kang KJ, and Ashby MF 1994. **The Cyclic Properties of Engineering Materials**, Acta Metall. Mater., 42: 365-381

METALLURGY AND GLASS PROCESSING IN THE EARLY MIDDLE AGES IN AZERBAIJAN

Shahriyar Guliyev
Ganja State University, Ganja/Azerbaijan
Orcid.org/0000-0001-5228-4154

Summary
Metallurgytakes a specific place among the fields of craftsmanship in early Middle Ages. Natural resources which Azerbaijan was rich in, have been a good base for the development of metallurgy since ancient times and later on. The products produced by people who worked in workshops in Nakchivan related to the art of metal melting and metalworking in the first Middle Ages are fundamentally grouped as follows:

1. household-oriented labor tools: vases, filters, knife blades, locks, scissors etc.
2. agriculture-oriented labor tools: metal ploughs, spades, rakes, sickle and so on.
3. arms and weapons: sword, arrows, and spear points, axes and so on.

Whether in the prehistoric times or in the Middle Ages, more decorative items and their parts than glass, samples of household plates were used in the preparation of dishes for valuable perfume or cosmetic oils in non-airborne small-sized containers for the protection of medicines prepared for the wounded in battles. The stage bof preparing glass containers were made in glass workshops which were well-equipped with relevant devices passing the following steps:

1. Preparing the raw material and its mixing
2. Making the glass substance
3. The formation of plates
4. Passing the cold processing

Genarally in the early Middle ages there were 2 forms of making glass-1) using forms templates, 2) blowing

Keywords: archeology, metallurgy, glass processing, history, medieval

Özet
Metalişləmə İlk orta əsrlərdə Azərbaycanda sənətkarlıq sahələri içərisində spesifik yer tutur. Faydalı qazıntıları bol olan Azərbaycanda qədim zamanlardan başlayaraq, bütün orta əsr və sonrakı dövrlərdə metallurgiyanın inkişafı üçün zəmin olmuşdur.
İlk orta əsrlərdə Naxçıvanın emalatxanalarında metal əritmə və metalişləmə sənəti ilə əlaqəli çalışmış insanların istehsal etdikləri məmulatlar əsaslı olaraq aşağıdakı şəkildə qruplaşdırılır:
1. Məişət yönümlü əmək alətlərindən: vazalar, süzgəclər, bıçaq tiyələri, qıfıllar, qayçılar və s.
2. Təsərrüfat yönümlü əmək alətləri: dəmir kotan, bel, dırmıqlar, kərəntilər, dərhələr və s.
3. Silahlardan: qılınclar, ox və nizə ucluqları, baltalar və s.

İstər eradan əvvəlki dövrlərdə, istərsə də orta əsrlərdə şüşədən daha çox bəzək əşyaları və onların hissələri, məişətdə istifadə edilən qab nümunələri, döyüşlərdə yaralananlar üçün hazırlanan dərmanların mühafizəsi üçün hava keçirməyn kiçik ölçülü qablar, qiymətli ətir qiymətli ətir yaxud kosmetoloji yaxud kosmetoloji yağlar üçün qablar hazırlanmasında istifadə olunur.

Şüşə qablar, lazımi avadanlıqlarla təmin olunmuş şüşə emalatxanalarında aşağıdakı mərhələlərdən keçməklə düzəldilir:

1. Xammalın hazırlanması və qarışdırılması;
2. Şüşə kütləsinin bişirilməsi;
3. Qablara forma verilməsi;
4. Soyuq işləmədən keçirilməsi.

Ümumiyyətlə orta əsrlərdə şüşə qabların hazırlanmasında iki üsuldan – 1) qəlibə basma və 2) üfürmə üsullarından istifadə edilmişdir.

Açar sözlər: Arxeologiya, Metalişləmə, Şüşə istehsalı, Tarix, Orta əsrlər

Giriş

Azərbaycan arxeologiyasının əhəmiyyətli tədqiqat obyektlərindən olan orta əsr dövrü abidələrinin öyrənilməsi öz aktuallığı ilə seçilir. Respublikamız müstəqillik qazandıqdan sonra da tarixin müxtəlif mərhələləri üzrə olduğu kimi orta əsrlər dövrü abidələrinin tədqiqi də intensiv forma almışdır.

Bərdə, Qəbələ, Şamaxı, Şabran, Ağsu, Ərəş, Mingəçevir, Şətəl, Gəncə, Şəmkir, Naxçıvan və digər şəhər yerlərinin tədqiqinin son dövr mərhələsi orta əsr şəhər mədəniyyətinin bir sıra xüsusiyyətlərinin tədqiqi baxımından böyük əhəmiyyət daşıyır.

Arxeoloji qazıntılar zamanı yaşayış yerləri və qəbir abidələrindən, dini xüsusiyyətli tikililərdən əldə olunmuş maddi mədəniyyət nümunələrinin təhlili nəticəsində orta əsrlərdə şəhər və kənd əhalisinin məşğuliyyətinin tədqiqi baxımından təqdirəlayiqdir. Bu baxımdan aşkar olunmuş arxeoloji materialların öyrənilməsi ayrıca bir fəsildə öz əksini tapmışdır.

Bu tədqiqat işində həmin dövrə aid metalişləmə və şüşə məmulatı istehsalı araşdırılmışdır.

Metalişləmə

Tədqiq etdiyimiz dövrdə Azərbaycanda sənətkarlıq sahələri içərisində metalişləmə spesifik yer tutur. Bu haqda həm arxeoloji materiallardan **(Уваров, 1910: 131-139; Филиманов, 1978: 26-33; Иессен и Деген-Ковалевеский, 1935: 120; Джидди, 1981: 58-59; Bəşirov, 2002: 33: Bəşirov, 2006: 164; İbarhimov, 1988),** həm də yazılı qaynaqlarda kifayət qədər məlumatlar vardır **(Kalankatuklu, 1993: 143; Qəzvini, 1945: 20).**

Təbii sərvətləti və faydalı qazıntıları bol olan Azərbaycanda qədim zamanlardan başlayaraq bütün orta əsrlər və sonrakı dövrlərdə metallurgiyanın inkişafı üçün zəmin olmuşdur.

Bizim tədqiqatın mövzusu müstəqillik illərində Azərbaycanın orta əsr arxeoloji abidələrinin tədqiqi olduğundan bu yarımfəsildə daha çox orta əsrlər dövründə sənətkarlığın metalişləmə sahəsindən bəhs edəcəyik.

Şərqi Gəncəbasarda arxeoloji tədqiqat işləri aparan A.Məmmədov metalişləmə sənətkarlığının aparıcı ahələrindən olan dəmirçilikdən bəhs edərkən bildirir ki, bu ərazilərdən əldə edilən və ilk orta əsrlərə aid metal qırıqları korroziyaya uğradığından onların hansı məqsədə xidmət

etdiyini müəyyənləşdirmək çətindir. İnkişaf etmiş orta əsr təbəqələrindən isə bıçaqlar, sancaqlar vəs. məmulatlar əldə edilmişdir ki, bunlar da XI-XIII əsrin əvvəllərində Şətəldə metalişləmə sənətinin inkişaf etdiyini təsdiqləyir **(Məmmədov, 1993: 76-77).**

Sənətkarlığın metalişləmə sahəsindən bəhs edərkən 2007-2008-ci illərdə Naxçıvan ərazisində arxeoloji tədqiqat işləri aparmış V.A.Qasımlı göstərir ki, "İlk orta əsr Naxçıvan emalarxanalarında metal əritmə və metalişləmə sənəti ilə əlaqəli çalışmış insanların istehsal etdikləri məhsullar əsaslı olaraq aşağıdakı şəkildə qruplaşdırılır.

1.Məişət yönümlü əmək alətlərindən: vazalar, süzgəclər (aşsüzənlər), bıçaq tiyələri, qıfıllar, qayçılar vəs.

2.Təsərrüfat yönümlü əmək alətlərindən: dəmir kotan, bel, dırmıqlar, kələntilər, dəhrələr, oraqlar, rəzələr, mıxlar, kərkilər, yavalar, at əsləhəsinin bəzi hissələri, ticarət avadanlıqları və s.

3.Silahlardan: qılınclar, ox və nizə ucluqları, baltalar, zəncirlər vəs.

4.Bəzək əşyalarından: sırğalar, boyunbağılar, üzüklər, baş daraqları və s. daha önəmli yer tutmuşdular" **(Qasımlı, 2013: 132)**.

Sənətkarlıqda metalişləmənin əhəmiyyətli sahəsi olan dəmirçilik məmulatlarının böyük əksəriyyətini kənd təsərrüfatı alətləri təşkil edir. Bu alətlərin istifadə olunduqları istiqamətlərdən asılı olaraq 3 qrupa ayıran V.A.Qasımlı bildirir ki, "1-ci qrup əmək alətlərini şum, 2-ci qrup əmək alətlərini biçin, 3-cü qrup əmək alətləri isə bağ və bostan alətləri təşkil edir" **(Qasımlı, 2013: 134-135)**.

Naxçıvanın Yurdcu, Püsyan və Yeycə kimi ilk orta əsr kənd tipli yaşayış yerlərində arxeoloji qazıntılar aparan tədqiqatçı əldə edilən materiallara əsasən bu qənaətə gəlmişdir ki, tədqiq olunan dövrdə torpaq dəmir gavahınlı xış və kotanla şumlanmışdır **(Qasımlı, 2013: 134)**. Nəzərə çatdıraq ki, belə gavahın qalıqlarına həm də dövr etibarı ilə Mingəçevir 2 №li yaşayış yerindən **(Vahidov, 1961: 68),** Beyləqan **(Ямпольский, 1956: 104),** Qəbələ **(Babayev və Əhmədov, 1981: 46-47)** arxeoloji qazıntılar zamanı rast gəlinmişdir.

Naxçıvandan tapılan biçin alətlərindən bəhs edərkən nəzərə çatdıraq ki, bu oraqların forma quruluşlarını və ölçü standartlarının müasir oraq nümunələrinə yaxınlığını qeyd edən tədqiqatçı V.A. Qasımlı uzun müddət torpaq altında qaldığından bu alətlərin korroziyaya uğradığını bildirir. Arxeoloji mənbələrdən məlumdur ki, bu oraq nümunləri müasir oraqlara yaxındır və onların analoji nümunələrinə Nyüdi **(Osmanov, 1982: 64)** və Mingəçevir (**Vahidov, 1961: 68-69)** qazıntıları zamanı rast gəlinmişdir.

Naxçıvanın orta əsr yaşayış yerlərindən – Albantəpədən, Püsyandan, Lojaladan,Yurdcu, Yeycədən aşkar edilən dəryaz nümunələrindən bəhs edən tədqiqatçı V.A.Qasımlı bildirir ki, bu dəryazlar müasir dəryazlardan fərqli olaraq tiyələrinin uzunluğu 4-5,2 sm-dir **(Qasımlı, 2013: 135)**.

Bu dəryazların oxşar nümunələrinin Mingəçevirdən **(Vahidov, 1961: 69)**, Qəbələdən **(Osmanov, 1966: 36)**, Örənqaladan (**Насирли, 1959: 163).** da aşkar edilməsi orta əsrlərdə bütün Azərbaycan ərazisindəki dəryazların eyni formada olmasını əsaslandırır.

Məişət yönümlü əmək alətlərindən bəhs edən V.A.Qaımlı bidirir ki, bu alətlər əsasən Naxçıvanın ilk orta əsr yaşayış yerlərindən olan Albantəpə, Yurdcı, Yeycə, II Bayəhməd və Püsyan kənd tipli yaşayış yerlərindən əldə olunmuşdur.

Müxtəlif forma və ölçülərə malik olan bıçaqların analoji nümunələrinə Qəbələ **(Babayev və Əhmədov, 1981: 47),** Bakı **(İbrahimov, 1995: 16)**, həmçinin Şimal ŞərqiAzərbaycanın Şabran, Canaxır, Sərkərtəpə və Salmanbulağından əldə edilmiş materiallar arasında təsadüf edilmişdir **(Dostiyev, 2001: 131-132).**

İlk müstəqillik illərində Gəncəbasar ərazidə arxeoloji tədqiqatlar aparmış alim A.Məmmədov yazır ki, "... Bu bıçaqların tiyələri hər iki tərfədən uca doğru getdikcə sivriləşir.Onların uzunluğu 12 sm, tiyəsi 30 sm olub, 1.8 metr dərinlikdən tapılmışdır". Alim bu məişət əşyalarını XI-XIII əsrlərə aid olduğunun bildirir **(Məmmədov, 1993: 79).**

Xüsusi əhəmiyyət kəsb edən silah istehsalı hər zaman dövlətin və dövlət başçılarının diqqət mərkəzində olmuşdur. Müharibələrin intensiv xarakter daşıdığı orta əsrlər dövründə metalişləmənin xüsusi bir sahəsi olan dəmirçiliklə məşğul olan sənətkarlara məsxusi hörmət edilmiş, onlar hətta cəmiyyətion yüksək zümrəsinə daxil olmuş, nüfuzlu din xadimləri ilə bir səviyyədə dayanmışlar **(Quliyev və Tağızadə, 1964: 83).**

Azərbaycan ərazisində aşkar edilmiş silhalar daşıdıqları vəzifələrə görə əsasən uzaqvuran və hücum silahlarına bölünürlər. A.M.Məmmədov bildirir ki, cidalar əsasən yarpaqvari və uzadılmış konus formasındadır. Onların sap geydirilən hissəsi iki formada- küplü və tiyəli hazırlanırdı. Ölçüləri müxtəlifdir **(Məmmədov, 1993: 78).**

Naxçıvan ərazisində tapılmış cidalar haqqında V.A.Qasımlı isə qeyd edir ki, "aşkarlanmış cidalardan birinin tiyəsi konusvari, uc hissədən gövdəyə doğru genələn bir formada olub, uzunluğu 6 sm, digərinin tiyəsi isə üçbucaq şəkili bir formada olub, ümumi uzunluğu 11,6 sm-dir" **(Qasımlı, 2013: 141-142)**.

V.Blavatckiyi əsərinə istinad edən Ə.Əliyev vurğulayır ki, Azərbaycan ərazisindən əldə olunmuş bu növ cidalar daha çox Roma cidaları (pilum) ilə uyğunluq təşkil edir **(Əliyev, 2008: 86).**

1992-ci ildə Şərqi Gəncəbasarda arxeoloji tədqiqatların yekunlaşdıran arxeoloq A.M.Məmmədov buradakı aşkar edilmiş nizə ucluqları barədə yazır ki, "Şətəl şəhər yerindən əldə edilən nizə ucluqlarından ikisi yarpaqvari formada olub birinin uzunluğu 23 sm, o birisii siə 21 sm-dir. Digər isə konusvari formada olub, uzunluğu 16 sm-dir. Birinci qrup nizələrin yalnız sulğuncunun, ikincilərdə isə həm sulguncunun, həm də gövdənin en kəsiyi dairəvi formadadır **(Məmmədov, 1993: 78).**

Naxçıvan ərazisidən aşkar edilən nizə ucluqlarını V.A.Qasımlı 3 tipğ bölür: " 1-ci tip nizə ucluqlarının tiyələri ensiz, dəfnə yarpaığ formasında, uc hissəsi isə az miqdarda qövsvari və şişşəkilli olub, bizlərinin tıxacı boruşəkilli vəziyyətdə ümumi uzunluğunun yarısının təşkil edərək, bir tərəfi açıq şəkildə düzəldilmişdir. Bu tip nizə ucluqlarının tiysəinin uzunluğu 18-33sm, qanadlarının ümumi ölçüsü 3,5-4 sm, tıxaclarının uzunluğu 9-11 sm, diametrləri isə 2-2,5 sm arasında dəyişir" **(Qasımlı, 2013: 142)**. Vurğulayaq ki, bu tip nizə ucluqları Nüyidinin torpaq qəbirlərindən aşkar edilmiş nizə ucluqları ilə oxşarlıq təşkil eidr" **(Osmanov, 1972: 20-21).**

Üst –Labinskidəki Meot-Sarmat qəbirstanlığından (**Атаев, 1959: 182**) aşkar edilən nizə ucluqları ilə tamamilə eynidir. 2-ci tipə aid edilən nizə ucluqların 4 ədəddir. Arxeoloqlar yazır ki, bu tipdəki nizə ucluqlarının tiyələrinin qanadları iri formada olub, uca doğru getdikcə daha da incəlmiş şəkil alır". Aşkarlanmış nizə ucluqlarının ümumi uzunluğu 26,7 - 28,2 sm tıxacların uzunluğu isə 11-13,8 sm arasında dəyişir **(Qasımlı, 2013: 142-143)**.

V.A.Qasımlı 3-cü qrupa aid etdiyi nizə ucluqları barədə yazır ki, "Nizələrin tiyə hissələri döymə üsulu ilə yastılanaraq bıçaq tiyəsi formasına salınmış şəkildə olub aşağı hissəsi enli və qövsvari şəkildə tıcxaca birləşmiş formadadırlar" **(Qasımlı, 2013: 143)**.

Nəzərə çatdıraq ki, bu tip nizə uçluqlarına Mingəçevirin **(Əliyev, 2008: 59)** qəbir abidələrində də rast gəlinmişdir.

Gəncəbasarda aparılmş arxeoloji qazıntılar zamanı əldə edilmiş ox ucluqları haqqında ətraflı məlumat verən arxeoloq alim A.M.Məmmədov 1993-cü ildə nəşr olunan "Gəncəbasar IV-XIII əsrlərdə" adlı tarixi-arxeoloji tədqiqat əsərində yazır ki, "Gəncəbasardan tapılmış silahlar

içərisində en kəsiyi rombvari dairəvi və oval formasında olan ox icluqları əksəriyyət təşkil edir. Onlar çoxu ikiqulaq tökmə üsulu ilə hazırlanıb, ucu yumuru yarpaqvari formadadırlar". Qeyd etməliyik ki, həmin silahların kütləvi istehsala əlaqədar olaraq onlar tökmə üsulu ilə hazırlamışlar **(Məmmədov, 1993: 78)**. Diqqətçəkəndir ki, belə ox ucluqlarına Beyləqan (**Əhmədov, 1979: 53**), Bərdə (**Nuriyev, 1985: 18**) şəhərlərində aparılan arxeoloji qazıntıları zamanı da təsadüf edilmişdir.

2007-2008-ci illərdə Naxçıvan MR-nın ərazisində arxeoloji qazıntı işləri aparan arxeoloq V.A.Qasımlı Püsyan,Yurdcu kimi kənd tipli yaşayış yerlərindən və Gavurqala istehkam abidəsinin qazıntı sahələrindən aşkarlanmış dəmir ox uicluqlarının pərli başlıqlı, 3 qanadlı, 3 tipli və sulguclu olduğunu vurğulayır" **(Qasımlı, 2013: 143-144).**

Maraqlıdır ki, bu tip ox ucluqlarına Mingəçevirdən **(Aslanov, 1962: 139)** Qasımxan qalası ərazisidən **(Babayev və Əhmədov, 1981: 46)**, Xınıslının ilk orta əsr quyu qəbirlərindən **(Xəlilov, 1961: 334)** aşkar edilən maddi mədəniyyət nümunələri arasında rast gəlinmişdir.

2003-cü ildə Şabranda aparılan arxeoloji qazıntı işləri zamanı aşkar edilən materialları öyrənən tədqiqatçı F.Ə.Abbasova ərazidən əldə edilən və orta əsrlərə məxsus ox ucluqları haqda bunları bildirir: " 1.Dəmir ox ucluğu. Həddən çox korroziyaya uğrayıb. Yarpaq vari formalıdır. Uzunluğu 4,8 sm, eni 3 sm -dir. 2.Dəmir ox ucluğu. İkiqanadlı olub, bir hissəsi sınıb, uzunluğu 5,5 sm-dir. 3. Dəmir ox ucluğu. Orta hissədən uzunboyu simmetrik olaraq sınb. 4.Dəmir oxucluğu. Orta hissədən sınıb, ikiqanadlıdır. Uzunluğu 6 sm-dir. Qanad hissəsinin çıxıntıyadək uzunluğu 3 sm-dir (**Abbasova, 2003: 111).**

2006-2011-ci illərdə orta əsr Şəmkir şəhərindən aşkar edilmiş ox ucluqlarını tədqiqata cəlb edən T.M.Dostiyev bildirir ki, oxun gövdəsi və lələk hissəsi ağacdan olduğundan dövrümüzədək gəlib çatmamışdı, lakin ucluqları metaldan və sümükdən hazırlandığı üçün nisbətən yaxşı mühafizə olunmuşdur. Ox uzaq məsafədən hədəfi sıradan çıxarmaq məqsədilə yaydan atılan döyüş ləvazimatı olub iki səciyyəvi əlamətə malikdir. Birincisi qısa zaman kəsiyində hədəfə doğru böyük bir məsafəni qət edə bilməsini, havada sabit uçuşunu təmin edən aerodinamikliyi, iknicisi isə hədəfin daxilinə girərək onu məhv etməsi" **(Dostiyev, 2013: 76).**

Ox ucluqları Orta əsr Şəmkir şəhər yerində aparılmış arxeoloji qazıntılar zamanı II qazıntı sahəsi istisna olmaqla bütün qazıntı sahələrindən aşkarlanmışdır. Buradan aşkar edilmiş ox uçluqlarının hamısı metaldan hazırlanmış və sulguncludur.

T.Dostiyev orta əsr Şəmkir şəhər yerindən aşkarlanmış ox ucluqlarını pərin en kəsiyinə görə yastı, dairəvi, kvadrat, dördtilli, yastı-dördtilli, yastı üçtilli olmaqla aşağıdakı kimi qruplaşdırır.

1.En kəsiyi dairəsvi ox ucluqları – bunlar iki tiplə təmsil olunub.

2.Pərinin en kəsiyi kvadrat formalı ox ucluqları- bunlar doqquz tiplə təmsil olunub.

3.Pərinin en kəsiyi dördtilli olan ox ucluqları- bunlar dörd tiplə təmsil olunub.

4.Pərinin en kəsiyi yastılaşdırılmış dördtilli formalı ox ucluqları- bunlar dörd tiplə təmsil olunub.

5.Pərinin en kəsiyi yastı-üçtilli ox ucluqları- bunlar iki tiplə təmsil olunub.

6.Pərinin enkəsiyi yastı ox ucluqları – bunlar isə on tiplə təmsil olunmuşdur. **(Dostiyev, 2013: 77-78).**

Orta əsr Şəmkir yerindən açkar edilmiş oxucluqları barədə tədqiqatın yekunlaşdıran alim T.Dostiyev yazır ki, "Şəmkir şəhər yerindən tapılmış ox ucluqlarının yaxın oxşarları Aərbaycanın digər orta əsr şəhərlərinin arxeoloji qazıntılarından tapılmış ox ucluqları arasında eləcə də müsəlman şərqində və türk xalqlarının ox ucluqları arasında vardır **(Dostiyev, 2013: 79).**

Şüşə məmulatı istehsalı

Öncə qeyd etməyi məqsədəuyğun hesab edirik ki, Azərbaycanda şüşə istehsalı üçün ən qədim çağlardan hər cür təbii imkanlar mövcud olmuşdur. Hətta bəzi tədqiqatçılar şüşə istehsalnın ilkin vətəni hesab edilən ərazilərin sırasına Misir, Finikiya, Suriya, Orta Asiya ilə birlikdə Qafqazı da aid edirlər **(Nuriyev, 1981: 3; Nuriyev və Babayev, 2001: 99; Əhmədov, 2006: 127-132).**

İstər eradan əvvəlki dövrlərdə, istrəsədə orta əsrlərdə şüşədən daha çox bəzək əşyaları və onların hissələri, məişətdə istifadə edilən qab nümunələri, döyüşlərdə yaralananlar üçün hazırlanan dərmanların mühafizəsi üçün havakeçirməyən kiçik ölçülü qablar, qiymətli ətir, yaxud kosmetoloji yağlar üşün qablar hazırlanmasında istifadə olunmuşdur.

Naxçıvan ərazisində arxeoloji tədqiqat işləri aparmış V.A.Qasımlı bildirir ki, "Tarixən Azərbaycan ən böyük iqtisadi bölgələrindən biri kimi tanınan Naxçıvan ərazisinin zəngin təbii-coğrafi mövqeyi, onun sıx çay şəbəkələri ilə əhatələnməsi, bol sayda şüşə qumu və soda yataqlarına malik olması digər bölgələrdə olduğu kimi burada da şüşə istehsalı üçün lazımi şərait yaratmışdır" **(Qasımlı, 2013: 149).**

Tədqiqatçı arxeoloji qazıntılardan əldə edilmiş şüşə tapıntılarının müasir şüşə məmulatları ilə müqayisəli analizlərini apararaq göstərir ki, şüşə qabların hazırlanması mərhələsi lazımi avadanlıqlarla təmin olunmuş şüşə emalatxanalarında aşağıdakı mərhələdən keçməklə düzəldilmişdir.

1.Xammalın hazırlanması və qarışdırılması.
2.Şüşə kütləsinin bişirilməsi.
3.Qabların formalaşdırılması
4.Soyuq işlənilmədən keçməklə **(Qasımlı, 2013: 150)**.

Bildirək ki, ümumiyyətlə orta əsrlərdə şüşə qabların hazırlanmasında iki üsuldan- qəlibə basma və üfürmə üsullarından istifadə edimişdir.

Orta əsr Naxçıvan ərazsiisndə şüşə məmulatı istehsalı haqqında arxeoloji tapıntılardan da bəhs edən gənc tədqiqatçısı V.A.Qasımlı son olaraq yazır ki, "Naxçıvanın III-IX əsrlərdə yaşayış yerlərindən aşkarlanmış şüşə məmulatları əsasən müxtəlif quruluşlu piyalələrdən, kuzə formalı qablardan, həmçinin ətir və ya dərman qabları olması ehtimal edilən, şüşə məmulatlarından ibarət olub, nəticələrə görə yerli istehsala məxsus olduqları aydınlaşmışdır" **(Qasımlı, 2013: 150)**.

Şüşə nümunələrinin əldə edildiyiv yerlərdən biri də Şərqi Gəncəbasarda yerləşən Şətəl şəhər yeridir. Buradan aşkarlanan şüşə məmulatı əsasən bir neçə ədəd məişət və dərman qabı ehtimal edilən parçalardan ibarətdir. Şərqi Gəncəbasarda uzun illər arxeoloji tədqiqat işləri aparan A.Məmmədov 1993-cü ildə nəşr etdirdiyi tarixi arxeoloji tədqiqat əsərində yazır ki, "Şətəldə və bütövlükdə Gəncəbasarda aparılan tədqiqatlar bu ərazisə şüşə istehaslının ilk orta əsrlər dövründən mövucd olması fikrinin irəli sürməyə əsas veir. Qazıntılar zaman əldə edilmiş şüşə ərintiləri və çıxdaşları da fikrimizi bir daha əsaslandırır" **(Məmmədov, 1993: 82)**.

Şüşə qabların hazırlanmasında istifadə edilən iki texniki üsul- tökmə üsulu və üfürmə üsulundan bəhs edərkən A.Məmmədov bildirir ki, "Bu üsullardan birincisi daha qədim olsa da ,ilk orta və inkişaf etmiş orta əsrlər dövründə onların hər ikisondən istifadə edilmişdir **(Məmmədov, 1993: 82)**.

Alim diqqətə çardırır ki, Şətəlin IX-X əsr təbəqəsindən yaşıl, qara və cəhrayı rəngli, həmçinin qulplu və lüləli şüşə qab hissələrinə də təsadüf olunmuşdur.

A.M.Məmmədov yazdığına görə belə şüşə qab nümunələrinin oxşarlarına Bərdə, Gəncə, Beyləqan, Migəçevir və qunşu dövlətlərin orta əsr yaşayış yerlərində rast gəlinmişdir **(Məmmədov, 1993: 83)**. İnkişaf etmiş orta əsrlərdə Gəncəbasardakı şüşə istehsalına texniki

cəhətdən inkişafını arxeoloq alim belə xarakterziə edir "X-XIII əsrin əvvəlləri Gəncəbasarda şüşə istehsalının inkişafında texniki cəhətdən irəliləyişlə xarakterizə olunur. Rəngli şüşələr tətbiq edilir, üfürmə üsulu ilə qab istehaslı genişləndirirlir, badə, dərman, bərni bəzək şeyləri kimi əşyalr hazırlanan məhsulların əsasını təşkil edirdi. Bu dövrdə artıq oturacaqlı, qulplu uzun boğaz şüşə qablar istehsalına başlanılır. Ən çox yaşıl, cəhrayı, ağ, göy, mavi və s. rəngli şüşələrdən istifadə edilir **(Məmmədov, 1993: 83)**.

Bilgəhdə aşkar olunan abidələri tədqiq etmək üçün 1995-ci ildə AMEA-nın Arxeologiya və Etnoqrfiya İnstitutunnun təşəbbüsüs ilə yaradılan "Bilgəh kompleks arxeoloji ekspedisiyası" buradan arxeoloji materiallarla birlikdə unikal şüşə məmulatları da aşkar etmişdir. Əldə edilən şüşə məmulatının tədqiqi ilə məşğul olan arxeoloqlar A.B.Nuriyev və Ə.H.Babayev bildirirlər ki, aşkar edilmiş bu şüşə məmulatlarının əksəriyyəti şəffaf, yasımtıl və qəhvəyi rəngdə olub, əsasən üfürmə və qismən də tökmə üsulu ilə hazırlanmışdır **(Nuriyev, Babayev, 2003: 149).**

Tədqiqatçılar Bilgəhdən əldə edilmiş şüşə məmulatlarını məişət, mətbəx qablarına və inşaatda işlənən şüşə məmulatına bölməklə aşağıdakı kimi qruplaşdırır:

"Gülabdan formalı qabın gövdəsinin bir hissəsi. Məişət qabları silsiləsinə daxil olan gülabdan formalı qabın gövdəsindən bir hissə qazıntı sahəsinin IV kvadratında 1 metr dərinlikdən aşkar edilmişdir. Yastı aturacağa malik açıq bənövşəyi rəngdə olan bu nümunə qəlibə tökmə üsulu ilə hazırlanmışdır. Gövdəsinin üstü konilur formalı bəzəklə naxışlanmışdır. Gülabdan farmalı bu qabın oturacağının diametri 4,5 sm olub, dairəvi formada zövqlə hazırlanmışdır... Abşeron üçün sırf səciyyəvi olan bu nümunə VIII-XI əsrlərə aiddir.

Piyalə tipli qabın bir hissəsi:

Səthini irrizasiya təbəqəsi örtmüş yaşımtıl rəngdə olan bu şüşə qəlibdə, tökmə üsulu ilə hazırlanmışdır. Tədriscən soyuma prosesindən sora qabın səthi usta tərəfindən hamarlanmış və ona heç bir bəzək vurulmamışdır.Saya piyalə nümunələri tipinə daxil olan belə piyalə nümunələrinə Mingəçevir, Şamaxı, Torpaqqala, Bərdə, Bakı və digər orta əsr şəhərlərində aparılan arxeoloji qazıntılar zamanı təsadüf edilmişdir.

Qəhvəyi rəngli, yastı oturacaqlı şüşə qədəh.

Dairəvi oturacağa malik olan qəhvəyi rəngli bu qədəh qəlibə üfürmə üsulu ilə hazırlanmışdır. Şüşə qədəh tədrici soyuma prosesindən sonra səthi oyma naxışlarla bəzədilmişdir. Alınan dairəvi oymalar gilas dənələrinin və onun budaqlarını xatırladır... Nümunənin oturacağının diametri 5 sm-dir.

Daxili və xarici səthini güclü irrizasiya təbəqəsi örtmüş yastı formalı pəncərə şüşəsinin qırığı. Ən nadir tapıntılardan olan bu nümunə öz böyük elmi əhəmiyyətinə görə Azərbaycanda ilk pəncərə şüşəsi tapıntısıdır. O, açıq yaşımtıl rəngə malik olub, hər iki tərəfi hamardır.

Analoji və mədəni təbələrin elmi müqayisəsinə əsasən arxeoloji materialları VII-IX əsrlərə aid etmək olar" **(Nuriyev, Babayev, 2003: 149-151).**

Nəticə

Azərbaycanın orta əsr abidələrində aparılmış arxeoloji tədqiqatlar bir sıra problemlərinin həllinə yardımçı olmaqla yanaşı, müəyyən məsələlərin, xüsusilə, mədəniyyətlə bağlı məsələlərin çözülməsi işinə əvəzsiz töhfələr bəxş etmişdir. Bu baxımdan müstəqillik illəri məhsuldar olmuşdur. Arxeoloji tədqiqatların nəticələrinin yazılı qaynaqların məlumatları ilə müqayisəli təhlili Azərbaycanın bir sıra şəhərlərinin yerinin dəqiqləşdirilməsinə imkan vermişdir.

İstər yaşayış yerlərində, istərsə də qəbir abidələrində zəngin materiallar aşkar edilmişdir. Bunların sırasında keramika, şüşə məmulatı, torevtika, qliptika, bəzək əşyaları, daş heykəllər

xüsusi monoqrafiyalarda ayrıca tədqiqat obyektinə çevrilmişlər. Təqdim edilən dissertasiya işində isə onların ümumi və fərqli xüsusiyyətləri araşdırılmışdır.
İlk orta əsr və klassik orta əsr arxeoloji materialları içərisində epiqrafika nümunələri Azərbaycanın müvafiq dövr mədəniyyətinin inkişaf səviyyəsinin müəyyənləşdirilməsində xüsusi rol oynayır. Azərbaycanda alban, pəhləvi, ərəb yazı nümunələrinin oxunuşunda müəyyən nailiyyətlər qazanılmışdır.
Azərbaycanın orta əsr abidələrində aparılmış arxeoloji qazıntı işləri nəticəsində əldə edilmiş zəngin materiallar ölkənin həmin dövrdə güclü təsərrüfata malik olduğunu göstərir.

Ədəbiyyat siyahısı

Abbasova, F.Ə. (2003). Şabranda Dəmirçilik (2003-cü Ilin Arxeoloji Tədqiqat Materialları Əsasında. Azərbaycan Arxeologiyası və Etnoqrafiyası Dergisi, Sayı 2.

Aslanov, Q.M. (1962). I-IV Əsrlər Qafqaz Albaniyasının Maddi Mədəniyyəti Tarixindən. Baku, Azərb.SSR EA Yayınları.

Атаев, Д.М. (1959). Галлинский Могильник – Памятник Средневековой Аварии (серир). Уч.Зап ИИЯЛ, Т VI.Махачкала.

Babayev, İ.A., Əhmədov, Q. (1981). Qəbələ: Tarixi Arxeoloji Oçerk. Baku, Elm Yayınları.

Bəşirov, R.Y. (2002). Naxçıvanın Orta Əsr Dəmirçixanaları Haqqında. Baku. Xəzər Universiteti Yayınları.

Bəşirov, R.Y. (2006). Naxçıvanın Orta Əsrlər Metalişləmə Sənəti (IX-XVIIəsrlər). TEH AD, AÜ, TED. Baku.

Джидди, Г.А. (1981). С Редневековий Город Шамаха IX-XVIII вв, Баку, Элм.

Dostiyev, T.M. (2008). Şimal-Şərq Azərbaycan IX-XV Əsrlərdə. Baku, BDU Yayınları.

Dostiyev, T.M. (2013). Orta Əsr Şəmkir Şəhər Yerindən Tapılmış Ox Ucluqları. Azərb.Arx. və .Etnoq-sı Dergisi, Sayı 1.

Əhmədov, Q.M. (1979). Orta Əsr Beyləqan Şəhəri. Baku.

Əhmədov. Ş.S. (2006). Pirsaatçay Hövzəsinin İlk Orta Əsr Arxeoloji Abidələri. Baku, Elm Yayınları.

Əliyev, Ə.Ə. (2008). Qədim Alban Silahları. Baku, 2008.

Филиманов, Г.Д. (1978). О Доисторической Культуре в Осетии: Антропологическая Выставка. Москва.

Xəlilov, C. (1961). Xınıslıda Qədim Yaşayış Yeri. Azərb.SSR.EA Xəbərlər Dergisi, Sayı 3.

İbarhimov, F.Ə. (1988). Azərbaycan Orta Əsr Şəhərlərində Metalişləmə Sənəti (IX-XII əsrlər). Baku, Elm Yayınları.

İbrahimov, F.Ə. (1995). Bakıda Metalişləmə Tarixi. Baku, Elm Yayınları.

Иессен, А.А., Деген-Ковалевеский, Б.Е. (1935). Из Истории Древней Металлургии Кафказа. Изв.ГАИ МК-1935-Вып. 120.

Kalankatuklu, M. (1993). Alabaniya Tarixi (tərc. Z.Bünyadov). Baku, Elm Yayınları.

Qasımlı, V.A. (2013). Naxçıvan III-IX Əsrlərdə. Baku, Elm Yayınları.

Qəzvini. Həmdullah. (1945). Nüzhət əl-Qulub: Qəlblərin Aynası (Tərc. Ed. A.Qasımov). Baku.

Quliyev, N., Tağızadə, N. (1964). Metal və Xalq Sənətkarlığı. Baku, Azərnəşr Yayınları.

Məmmədov, A.M. (1993). Gəncəbasar IV-XIII Əsrlərdə. Baku, Elm Yayınları.

Насирли, М.Н. (1959). Сельские Поселения и Крестьянские Жилища Намиреванской АССР. Баку, Изд.АН.Азерб.ССР.

Nuriyev, A.B. ve Babayev, Ə.H. (2003). Bilgəhdən Aşkar Edilmiş Nadir Şüşə Məmulatı Nümunələri. Azərbaycan Arxeologiyası və Etnoqrfiyası, Sayı 2, s.149-151.
396.

Nuriyev. A.B. ve Babayev, Ə.H. (2001). Bərdə Şəhərinin Tarixi Arxeoloji Oçerki (Antik və Orta Əsrlərdə). Baku, Nurlan Yayınlar.

Nuriyev. A.B. (1981). Qafqaz Albaniyasının Şüşə Məmulatı və İstehsalı Tarixi. Baku, Elm Yayınları.

Nuriyev, A.B. (1985). Bərdə Arxeoloji Ekspedisiyasının 1985-ci il Hesabatı. ЧТША, Hesabat

Osmanov, F.L. (1982). Qafqaz Albaniyasının Maddi Mədəniyyəti (e.ə.IV-b.e. III Əsrləri). Baku, Elm Yayınları.

Osmanov, F.L. Nüyididə 1972-ci il Arxeoloji Tədqiqatların Hesabatı. AMEA–nın AEİ EA H.77.

Уваров, А.С. (1910). Тр. Археологиц Сьезда. Москва.

Vahidov, R.M. (1961). Migəçevir III-VIII Əsrlərdə (Arxeoloji Qazıntı Materialları Əsasında. Baku, Azərb. SSR Elmlər Akademiyası Yayınları.

Ямпольский, З.И. (1956). К Изучению Древнего Пути из Каспийского Моря по Реке Кури Через Грузию к Черномурю Иорю. ТИ АН Груз. ССР. № 9, Тбилиси: Изд. АН Груз. ССР.

The Effects of Monetary Policy on the Economic Growth

Asoc. Prof. Yaşar KÖSE
ORCID: 0000-0003-0073-2095
Dr. Sakar ALI
University of Turkish Aeronautical Association, Turkey

Abstract
Every country tries to reach a high level of economic growth. Because as the economies reach a high level of economic growth, following it, living conditions of individuals can improve as well. One of the tools that can help the economies grow can be said monetary policies that lead to investment and production. In that context; this study aims to investigate how the monetary policy affects the growth in the Iraqi economy. The economic growth rate is employed as the dependent variable, while the exchange rate, inflation rate, and M2 money supply are independent ones to be monetary policies. The data of the study was acquired from the Central Bank of Iraq. The data is quarterly and covers the period 2005-2019. To estimate the equation, the ARDL Bound Test was employed due to the different levels of stationary of series. According to research findings, it was observed that the exchange rate affects negatively the growth; whereas the effects of the M2 Money supply and inflation rate are positive on the growth. These findings seem to be consistent with some earlier studies conducted in the literature. As a result, for the policy-makers, it can be stated two suggestions in the context of this study and economic literature. Firstly although its effect on growth is positive, inflation is supposed not to be increased, and at least, the price level should be kept stable by the Central Bank. Secondly, the money supply can be used by the central bank as a monetary policy to trigger production when the economy is shrunk.

Key Words: Economic Growth, Exchange Rate, Inflation, M2 Money Supply, ARDL Bound Test.

JEL Codes: E31, E51, E52, F31, O42.

Özet
Her ülke yüksek büyüme seviyesine ulaşma çabası içindedir. Çünkü ekonomiler yüksek büyüme oranlarına ulaştıkça, ardından bireylerin yaşam şartları da iyileşme gösterir. Ekonomilerin büyümesine yardım eden araçlardan biri de yatırım ve üretimi teşvik eden para politikalarıdır. Bu kapsamda; bu çalışmanın amacı Irak ekonomisinde uygulanan para politikalarının büyümeyi nasıl etkilediğini araştırmaktır. Çalışmanın bağımlı değişkeni ekonomik büyüme oranı iken, bağımsız değişkenleri ise para politikası araçları olarak kullanılan döviz kuru, enflasyon ve M2 para arzıdır. Veriler Irak Merkez Bankasından elde edilmiş olup, 2005-2019 döneminin çeyreklik verilerini kapsamaktadır. Serilerin değişik seviyelerde durağan gözlenmesi üzerine, tahmin yöntemi olarak ARDL Sınır Testi Yaklaşımı tahmin yöntemi olarak kullanılmıştır. Araştırma bulgularına göre, döviz kurunun büyümeyi olumsuz etkilediği; M2 para arazı ve enflasyonun ise pozitif yönde etkilediği görülmüştür. Bu bulgular, literatürde daha önceki dönem yapılan bir kısım çalışmalar ile tutarlılık içindedir. Sonuç olarak politika yapıcılar için bu çalışma ve ekonomi literatürü bağlamında iki öneride bulunulabilir. Bu önerilerden birincisi, her ne kadar büyüme üzerindeki etkisi pozitif olsa da enflasyonun Merkez Bankası tarafından artırılmasının önüne geçilmesi ve fiyatlar genel düzeyinin en azından stabil kalmasının sağlanmasıdır. İkinci öneri ise para arzının, bir para politikası aracı olarak Merkez Bankası tarafından ekonominin daraldığı durumda üretimi teşvik için kullanılabileceğidir.

Anahtar Kelimeler: Ekonomik Büyüme, Döviz Kuru, Enflasyon, M2 Para Arzı, ARDL Sınır Testi

JEL Kodları: E31, E51, E52, F31, O42

ISLAK MENDİL MAKİNELERİNİN DOZAJLAMA SİSTEMİNDE ENDÜSTRİ 4.0 YAKLAŞIMI

Aydın Kaleoğlu
Ümit Gençtürk
Ersan Ay
Ubeydullah Demir
Recep Gündoğan
Pakten Sağlık Ürünleri A.Ş, Ar-Ge Merkezi Gaziantep / Türkiye

Özet
Günümüzde ıslak mendiller farklı (boyut, koku, lif ve kimyasal) içeriklerde piyasada varlıklarını sürdürmektedir. Basit olarak ıslak mendil makineleri, hijyenik ıslak mendiller üretmek için dokunmamış kumaşın (nonwowen) işlenmesiyle tüketiciye paketlenmiş olarak hazırlanan sistemlerden oluşmaktadır. Islak mendillerde kullanılan solüsyonlar (saf su, E.D.T.A, sitrik asit ve baz maddeleri) reçeteye bağlı hazırlandığından, hazırlık sürecinde insan faktörü devreye girmektedir. Bu çalışmada zaman kaybı olarak düşünülen solüsyon oluşturma sürecinde insan faktörünü devreden kaldırarak endüstri 4.0 sistemleri ile bu sorunun çözüme kavuşturulması amaçlanmıştır. Bunun için geliştirilen PLC kontrol sistemlerinde elektronik terazilerle ölçüm yapılıp reçeteye uygun şekilde pompa vasıtasıyla kimyasal aktarımı sağlanmıştır. Toplamda iki farklı ıslak mendil numunesine gerçekleştirilen fiziksel ve kimyasal testler sonucunda, solüsyon hazırlık aşamasında beşerî faktörlerin yerine makinelerin rol alması ile zaman tasarrufu, üretim kapasitesi artışı ve insan eli değmeden üretim sağlandığından mikrobiyal üreme ihtimali ortadan kaldırılmıştır.

Anahtar Kelimeler: Endüstri 4.0, Islak Mendil, Dozajlama

INDUSTRY 4.0 APPROACH IN THE DOSING SYSTEM OF WET WIPES MACHINES

Abstract
Nowadays, wet wipes continue to exist in the market in different (size, odor, fiber and chemical) contents. Basically, wet wipe machines consist of systems prepared by processing nonwoven fabric to produce hygienic wet wipes, packaged to the consumer. Since the solutions (pure water, E.D.T.A, citric acid and base substances) used in wet wipes are prepared on a prescription basis, the human factor comes into play during the preparation process. In this project, it is aimed to solve this problem with industry 4.0 systems by removing the human factor in the solution formation process, which is considered to be a waste of time. Therefore, in the PLC control systems developed, measurements are made with electronic scales and chemical transfer is provided by means of pumps in accordance with the recipe.As a result of physical and chemical tests performed on 2 different wet wipe samples in total, the possibility of microbial reproduction has been eliminated, since machines take the

role of human factors, saving time, increasing production capacity and ensuring production without human touch.

Keywords: Industry 4.0, Wet Wipes, Dosing

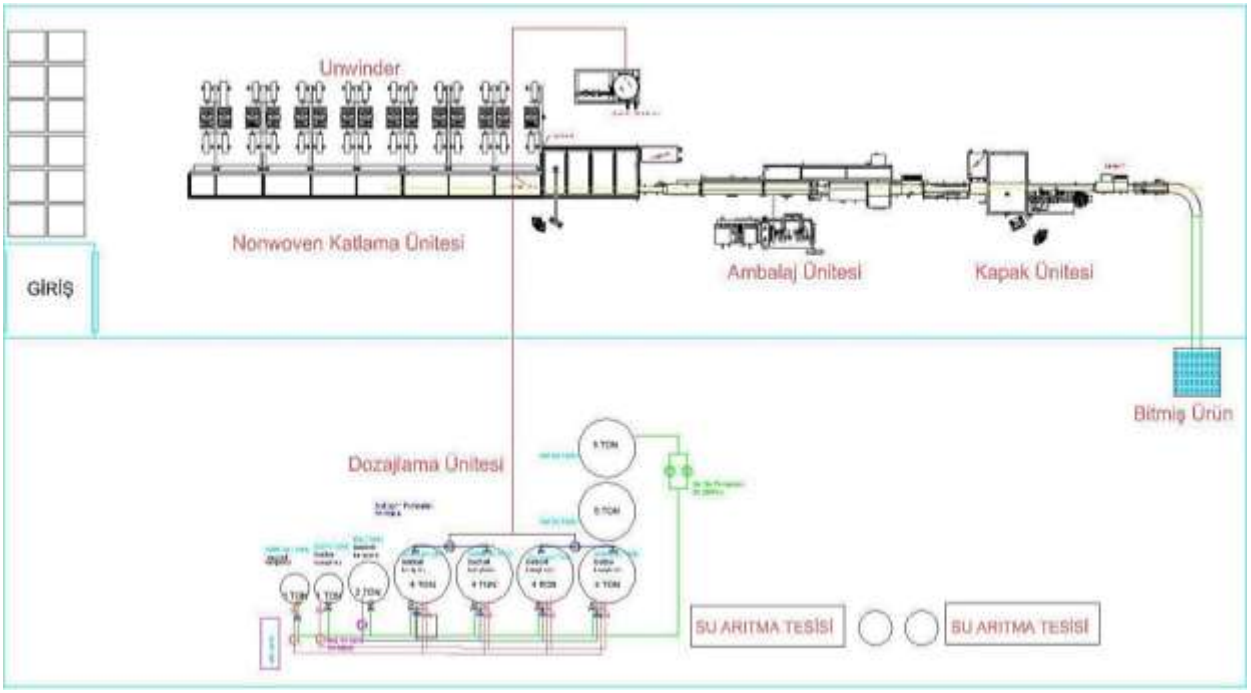
Giriş

Islak mendiller dokunmamış kumaşlardan meydana gelmektedir. Dokunmamış kumaşlar, liflerin mekanik, termal veya kimyasal olarak bağlandığı yapılar veya ağlardır. Gözenekli kumaş yapıları doğrudan liften veya erimiş polimerden oluştuğundan, liflerin bağ oluşturması için ipliğe dönüştürülmesine gerek yoktur [1]. Bugüne kadar, nonwovenlar için uluslararası olarak kabul edilen tek tanım EN ISO 9092 standardında yer almaktadır. Nonwovenlar EN ISO 9092 standardında şu şekilde tanımlamaktadır: "Nonwoven, fiziksel ve / veya kimyasal yollarla birleştirilen, yapısal bütünlük yüzeyine sahip, esasen düzlemsel olan, dokuma, örgü veya kâğıt yapımı harici lifli yapıdan meydana gelen mühendislik ürünüdür" [2]. Günümüzde, nonwoven endüstrisine hizmet eden uluslararası sanayi birlikleri, INDA (Nonwoven Kumaş Endüstrisi Birliği) ve EDANA (Avrupa Tek Kullanımlık Ürünler ve Nonwovens Derneği), Uluslararası Standardizasyon Örgütü'ne (ISO) şu metni önerdiler: "Nonwoven bir lif tabakasıdır, dokuma veya örme haricinde herhangi bir yolla bir ağ halinde oluşturulmuş ve herhangi bir yolla birbirine bağlanmış kesintisiz filamentler veya herhangi bir cinse ait kesikli liflerle oluşturulan yapılardır. Bunun haricinde ıslak yöntemle elde edilen keçeler nonwoven değildir [3]. Dokunmamış mendiller, tek kullanımlık ürünler veya daha uzun kullanım amaçlı ürünler olarak sınıflandırılabilir. Bu mendiller kuru mendil veya ıslak mendil (losyon içeren) olarak satılmaktadır. Kişisel bakım bezleri (bebek mendilleri, ev temizliği vb. dahil kişisel hijyen) ve endüstriyel mendiller olarak kullanım amaçlarına göre de ayırt edilebilirler. Islak mendiller önceden nemlendirilmiş dokunmamış mendiller kategorisinde yer almaktadır. Günümüzde kişisel bakım uygulamaları başta olmak üzere günlük hayatta pek çok amaçla kullanılmaktadır. Kullanıcılara kolaylık kazandıran bu ürünler ayrıca temizlik zamanından tasarruf sağlarlar. Ayrıca, hareket halindeyken veya evde kullanılabiliyor olması nedeniyle hızlı ve pratik çözümler sunmasının yanında artan hijyen ihtiyacını da karşılamaktadır.

Şekil 1. Piyasada Kullanılan Islak Mendil Çeşitleri

Kişisel bakım ıslak mendillerinin çeşitliliği ve uygulamaları son yıllarda giderek artmaktadır. Mendillerin çoğu, sentetik polimerler (polyester vb.) ve doğal liflerin (viskoz lifler ve / veya odun hamuru) karışımlarından oluşturulmaktadır. Viskoz/ odun hamuru lifleri, yüksek emici ve biyolojik olarak parçalanabiliyor iken, sentetik polimer lifleri ise yüksek dayanım, daha

yumuşak ve çözücülere karşı dirençleri ile ön plana çıkmaktadırlar [1]. Evde kullanılmakta olan temizlik ve bebek mendilleri, yüksek gerilme mukavemeti ve yumuşak dokuya sahip biyolojik olarak parçalanmayan yüksek oranda sentetik karışımlı ürünlerden meydana gelmektedir. Fakat kozmetik ürünlerde ise daha çok emicilik ön plana çıktığından biyolojik olarak parçalanabilen (flushable) lifler tercih edilir. Nemli tuvalet mendilleri (ve bazı tuvalet dezenfektan mendilleri ve bazı özel hijyen mendilleri gibi çok az sayıda başka ürün) dışında, diğer tüm ıslak mendiller paket talimatlarına göre evsel atıklarla birlikte atılmalıdır [4]. Islak mendil makineleri, dokunmamış kumaşı istenilen ebatta ve tasarlanan biçimde keserek ambalajlama işleminin ardından ıslak mendilleri tüketiciyle buluşturmaktadır. Basit olarak üç üniteden oluşan ıslak mendil makinelerinin çalışma prensibi; kuru bir şekilde birden çok bobin sağma ünitesine (unwinder) takılan dokunmamış kumaşlar, operatör ve tahrik yönlerine göre nonwoven katlama ünitesinde istenilen şekle göre katlanır. Ardından solüsyon ile dolu bir havuza kumaş ya daldırılır ya da nozullar vasıtasıyla kumaşın üstüne solüsyon püskürtülür. Daha sonra ıslak mendiller istenilen adet sayısına göre üst üste dizilerek katlama ünitesinden hareketli bantlar vasıtasıyla ambalajlama ünitesine aktarılır. Ambalajlama ünitesinde, ayrı bir sarım ünitesinden beslenen PE+OPP/PE+PET film tabakasının üzerine banttan ıslak mendiller getirilir. Taşıma bantlarıyla ıslak mendil ve ambalaj ısıtılmış diskler arasından geçirilerek, ambalajın uç kısımlarından ısıl işlemle birleştirilir. Ambalaj üzerine eğer kapak ilave edilecekse kapak ünitesinde, plastik kapaklar ambalajlanmış ıslak mendil üzerine eriyik (hot melt) tutkal ile yapıştırılır.



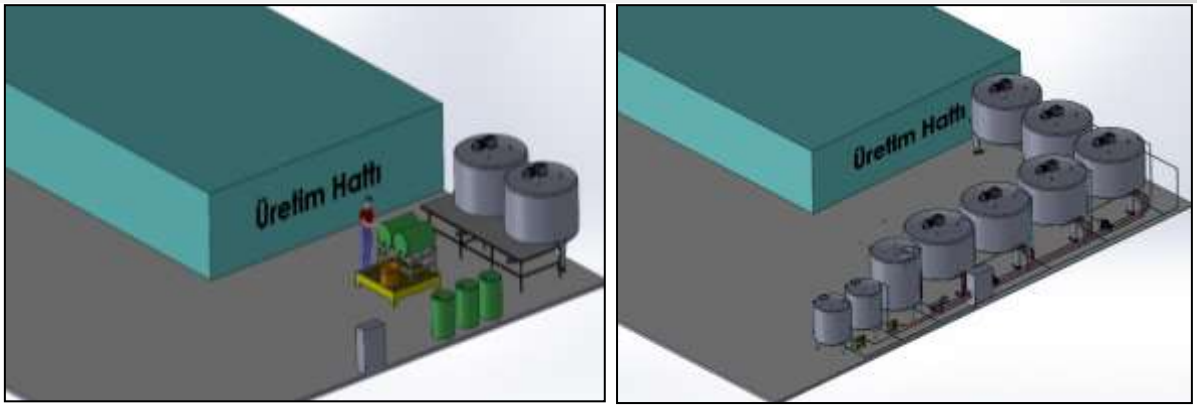
Şekil 2. Islak Mendil Üretim Hattı (Autocad Çizim)

Islak mendil üretiminde zaman verimliliği incelendiğinde, manuel sistemde temel hazırlık aşamalarının (solüsyon çözeltisi, nonwoven makine hazırlık) büyük bir kısmı solüsyon hazırlanması ile gerçekleşmektedir. Islak mendil hatlarında manuel olarak hazırlanan solüsyonlar yerine, dozajlama sistemlerine sahip ıslak mendil hatlarında solüsyonların otomatik aktarımının gerçekleştirilmesi bu çalışmada amaçlanmıştır. Böylece çalışma

sonunda temel hazırlık aşamalarında büyük tonajlı üretimlerde solüsyon hazırlama süresinin 10 kata kadar düşürülmesi sağlanacaktır. Ayrıca mevcut sistemde solüsyonlar bağlı olduğu reçeteye göre manuel olarak hazırlanırken, yeni geliştirilen sistemde ise solüsyon hazırlığı için gereken kimyasal maddelerin hazırlık süreci insan eli değmeden gerçekleştirildiğinden ortamda olası bakteri üreme riskleri de önlenecektir. Bunun için PLC kontrol sistemleriyle prosesin endüstri 4.0 yaklaşımına uygun olarak gerçekleştirilecektir.

Tablo 1. Yüksek Miktarlı Üretimler İçin Dozajlama ve Manuel Sistem

16 Ton Üretim İçin Dozajlama Sistemi 100 ton/dk						**Toplam 46,8 dk**
	3 dk	0 dk	1,5 dk	60 dk	-	43 dk
Baz Hazırlık	***E.D.T.A-Sitrik Asit***	***Solüsyon Karışım***	***pH Ölçüm***	***Nonwoven Hazırlık***	***Islak Mendil Üretimi***	***Tank Temizlik***
225 kg	*37 kg*	*16 ton*	*Otomatik*	*912 kg*	*100 paket/dk*	
225 kg	*37 kg*	*16 ton*	*Kimyasal İlave*	*912 kg*	*100 paket/dk*	
Baz Hazırlık	***E.D.T.A-Sitrik Asit***	***Solüsyon Karışım***	***pH Ölçüm***	***Nonwoven Hazırlık***	***Islak Mendil Üretimi***	***Tank Temizlik***
	187 dk	20 dk	200 dk	60 dk	-	156 dk
16 Ton Üretim İçin Manuel Sistemi ton/dk						**Toplam 468 dk**



Şekil 3. Manuel Solüsyon Hazırlama-Endüstri 4.0 ile Dozalajlama Sistemleri ile Solüsyon Hazırlama

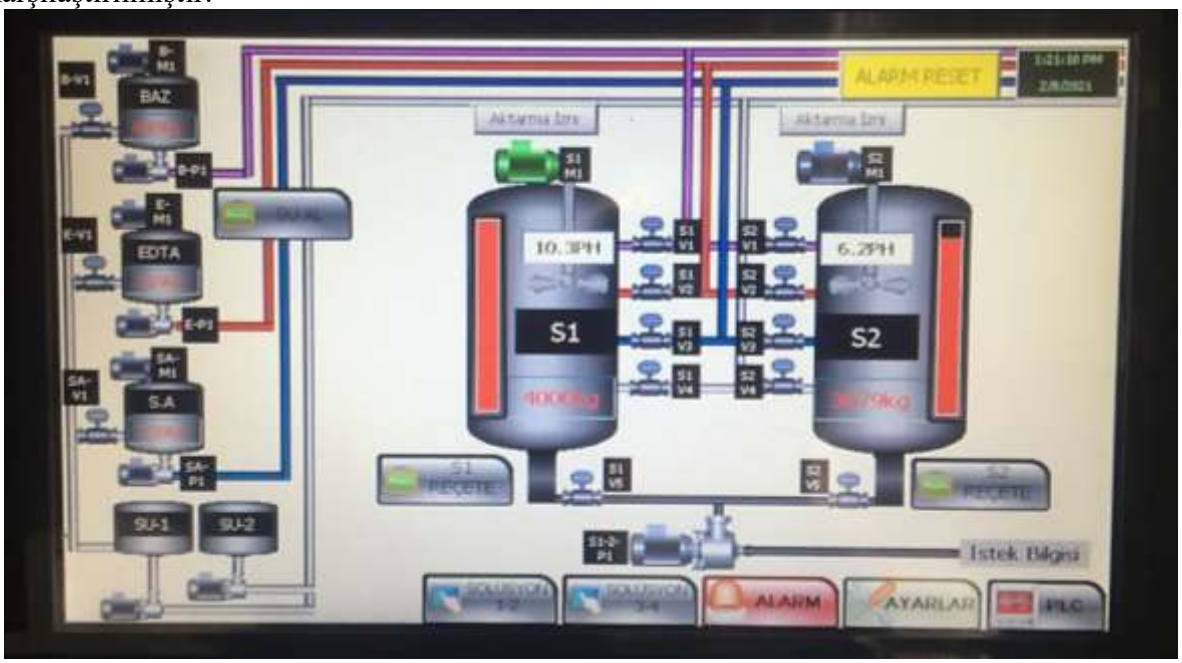
Literatür Taraması

C. A. Arma ve ark. dozajlama sistemleri üzerine yapmış olduğu patent başvurusu; sıvı nakil cihazı, valf gövdesi, valf membranı, valf odası yatağı ve dış manşondan oluşmaktadır. Giriş valf kanalı ve çıkış valf kanalı iki valf plakası ile kapatılmıştır. Bu sayede valf plakalarının sıvıların sızdırmazlığı kontrol altına alınmıştır. Basınç odasının aktüatör ile kaplı olması sayesinde giriş-çıkış kontrol altına alınarak kontrollü sıvı akışı sağlanmıştır. Dış manşonda bulunan konsol yeri, iç duvarda halka şeklinde bir çıkıntı yapı oluşturmuştur. Son olarak dış manşonun çevresi üzerinde birçok sayıda birbirine geçen yapılar ayrı ayrı düzenlenerek dozajlama sisteminde sıvı akışını gerçekleştirmiştir [5]. Kurt Vetter ve ark. yapmış olduğu çalışmada, dozajlama sırasında sıvı transfer hassasiyetini arttırmak amacıyla, solüsyon akışının kontrol edilmesi ve böylece solüsyon için ölçülen akışın istenilen değerde kullanılması için, gerekli kimyasal maddelerin istenen değerde belirlenmesi sağlanmıştır. Bu

kapsamda ilk etapta belirlenen kimyasal maddelerin sisteme tanımlanması gerçekleştirilmiştir. Daha sonra solüsyonun otomasyon ile servo kontrollü bir elemanla ya da dişli bir pompayla tanklara aktarımı sağlanmıştır. Ayını zamanda pompanın güç kaynağı iki tako-jeneratöre sahip elektrik devresi ile belirlenerek, devre kontrolü yapay zekâ yöntem ve ekipmanlarıyla ölçülmüştür [6]. Yapılan çalışmada, sıvı seviyesi kontrolü, potansiyometreye eş zamanlı çalışan şamandıra ile elde edilen analog veriler işlenerek elde edilmiştir. Motor sürücü içerisinde yer alan PID denetleyicilerinin parametrelerinin, oluşturulan program ara yüzü kullanarak kalibrasyonu yapılmıştır. Santrifüj pompanın uygun bir şekilde çalışması ve sıvı seviyesinin istenen seviyede kalması amaçlanmıştır. SCADA sistemi altyapısı için gerekli olan program ara yüzü tasarımı Visual Basic programı ile tasarlanarak, USB-RS 485 dönüştürücü aracılığıyla Mod-Bus protokolü kullanılarak uzaktan izleme ile veri analizi yapılabilmesi amaçlanmıştır. Program ara yüzünde yer alan PID parametrelerini belirlemek için iki farklı deneysel çalışma yapılmıştır. Birinci çalışmada; deneme yanılma yöntemiyle elde edilen en iyi PID katsayıları ile sıvı seviyesinin istenen referans değere istikrarlı olarak ulaşma süresi gözlemlenmiştir. İkinci çalışmada ise daha önce de bahsedilen Ziegler-Nichols teoremine uygun olarak belirlenen, PID katsayılarını kullanarak sıvı seviyesinin istenen referans değere istikrarlı olarak ulaşma süresi gözlemlenmiştir. Daha sonra bu iki sonuç kıyaslanmıştır. Sistemin uzaktan izlenebilir olması ve müdahale yetisine sahip olması açısından SCADA sisteminin ana işlevlerini yerine getirmesinin en doğru yöntem olduğu tespit edilmiştir [7]. Yapılan başka bir çalışmada endüstride ve akademik laboratuvar ortamlarında en çok zaman alan sürecin çözelti hazırlığı olduğu saptanmıştır. Laboratuvarda, solüsyon hazırlama, ölçüm, karıştırma, pH ayarlama, sıcaklık ayarlama, gaz giderme, filtreleme gibi işlemler manuel yapıldığından, aynı zamanda çalışma ortamının büyük kısmını da işgal etmektedir. Ayrıca solüsyonda kullanılan kimyasal malzemelerin toz ve kristal katı vb. halden sıvı hale getirilmesi işlemi manuel olarak el ile gerçekleşmektedir. Zaman tasarrufu sağlamak için geliştirilen yöntemde otomasyon kalıcı bir şekilde, tek personelin zaman harcamasını azaltarak onlara arta kalan zamanının başka görevlerde kullanılmasına olanak sağlayacaktır. Sıcaklık ve pH değerinin tutarlı ve doğru bir şekilde takibi ile çözeltinin kolay ve hızlı hazırlanması optimize edilmiştir. Hazırlık miktarı, dolayısıyla önemli miktarda kimyasal kullanımının laboratuvarlara uyarlanması ile çevreci bir çözüm sunarak, tasarruf etmesi sağlanmıştır [8].

Metot

Dozajlama ünitesi; özel olarak tasarlanmış AISI 316 paslanmaz çelik tanklardan, kimyasal tepkimeye girmeyen pompalar ve AISI 316 paslanmaz çelik borular ile solüsyon haznelerine belirlenen ölçülerde sıvının aktarılmasını gerçekleştirmektedir. Sistem iki adet beş tonluk saf su tankı, birer tonluk sitrik asit ve E.D.T.A tankı, iki tonluk baz tankı ve toplamda on altı tonluk kapasiteye sahip solüsyon bekleme ve aktarma tanklarından oluşmaktadır. Sistemin çalışma prensibi; dört adet solüsyon tankına, tank kapasitesinin %98 oranında saf su ilave edilir. Daha sonra %1,5 oranında solüsyon içerisinde yer alan kimyasallar baz yardımıyla eklenir. Saf su ile karışan kimyasalların çökme ihtimaline karşı her karışım tankında birer adet mikser bulunmaktadır. Bu sayede sürekli olarak homojen karışım elde edilir. Tanklara gönderilen sıvı aktarım oranları ve doğruluğu PLC ile haberleşen load cell (elektronik terazi) vasıtasıyla kontrol edilmektedir. Pnömatik vanalar, PLC ile haberleşip tanklardan kontrollü bir şekilde sıvı aktarımına izin vererek sistemde hassasiyeti sağlamaktadır. Bu yöntemde otomasyon sistemi haberleşme protokolü olarak Profinet tercih edilmiştir. Hazırlanan solüsyonların cilde uygunluğu pH ölçer tarafından sürekli olarak her tank için kontrol edilmektedir. Ürünün istenilen pH değerlerine ulaşabilmesi için pH ölçüm değerleri PLC ile haberleşen pH metrelerle E.D.T.A (pH yükselten) ve sitrik asit (pH düşüren) aktarımını sağlamaktadır. Burada sistemin getirdiği en büyük avantaj, PLC tarafından pH ölçümünün pH metrelere ve sıvı transferinin ise pompalara verilen komutlarla sağlanıyor olmasıdır. İnsan faktörünün manuel sistemden farklı olarak devre dışı bırakılmasıyla olası mikrobiyel oluşma riski de bu sayede önlenmiştir. Hatta beslenmesi düşünülen farklı kimyasal uygulamalar göz önüne alınıp, tanklarının temizlenmesi için yıkama topları ve tahliyesi için drenaj hattı sisteme dahil edilmiştir. Drenaj sisteminin sağladığı en büyük avantaj, bu yenilik ile manuel sisteme göre çok büyük bir iş yükünden ve süreden kazanç sağlanmıştır. Bu çalışmada, insan faktörü devredeyken manuel olarak hazırlanan solüsyon ile dozajlama ünitesine sahip insan eli değmeden hazırlanan solüsyonların hazırlık süreci ve kimyasal özellikleri test edilerek karşılaştırılmıştır.



Şekil 4. Endüstri 4.0 ile Dozalajlama Sistemleri Ekran Paneli

E.D.T.A ve sitrik asit transferinde rol oynayan pompalar ATEX'e (parlayıcı ve kolay yanıcı ortamlarda kullanılan ürünlerin yapıldığı yer için alınan uluslararası bir sertifika) uygundur. Pompaların materyali; PP, PP+CF, PVDF+CF olup katı geçirgenliği 0,5 mm, çalışma sıcaklığı 90 ºC ve ağırlıkları 3 kg'dır. Maksimum 21 lt/dk. solüsyon aktarımı yapabilen bu sistemde maksimum basınç 7 bar olmaktadır. Hava tüketimine bağlı olarak kapasite değişebilmektedir. Çalışma kapsamında üretim parametreleri Tablo 2'de verilmiştir.

Tablo 2. Makine Üretim Parametreleri

Makine Parametreleri	**Birim**
Unwinder Sayısı (adet)	15
Kalite Noktası/ Sensör (adet)	3
Disk Sıcaklıkları (ºC)	130-180
Çene Sıcaklıkları (ºC)	190-260
Punch (º)	165
Ortalama Üretim Hızı (adet/dk.)	100
Kapak Tutkal Sürülme Sıcaklığı (°C)	150-170

Islak mendillere uygulanan stabilite testleri için ürünün belirlenen raf ömrü süresince fiziksel, kimyasal ve mikrobiyolojik kriterlerinde herhangi bir değişiklik olup olmadığını tayin etmek için belirli periyotlarda inkübatör, etüv ve oda şartlarında iklimlendirme kabininde muhafaza edilmiştir. Islak mendillere uygulanan kimyasal testler Pakten Sağlık Ürünleri Ar-Ge Merkezi Laboratuvarlarında gerçekleştirilmiştir. Islak mendillerin bakteri oluşumları ve irritasyon özelliklerinin tespiti için akredite test kuruluşlarından destek alınmıştır.

Tablo 3. Uygulanan Testler ve Standartları

Kumaş Tipi	**Test Tipi**	**Testler ve Standartları**
Islak Mendil	Kimyasal	PH, Viskozite, Yoğunluk
	Epiderm	Cilt İrritasyon (SIT) (OECD TG 439)
	Stabilite	Raf Ömrü
	Mikrobiyel	Kalitatif Disk Difüzyon Testi TS EN 1276

Bulgular

Çalışmada üretilen ıslak mendiller 40 gsm Viskon/Polyester karışım oranına sahip spunlace dokusuz kumaşlardan oluşturulmuştur. Üretimlerde solüsyonların aplikasyonu spreyleme yöntemiyle Z tipi katlamayla gerçekleştirilmiştir. 15*19 cm ± 1 cm boyutlarında 1 adet kuru mendilin ağırlığı 1,14 g ±%10 g iken, 190 mm dilimli bobinlerden kuru mendil için püskürtülen solüsyon miktarı 3 g ±%10 g olarak belirlenmiştir. Üretilen 1 adet kuru mendil solüsyon miktarı 4,14 g ±%10 gr toplam ağırlığındadır. Sıcaklık 25 °C, bağıl nem %50, taze hava (hepafiltre) ve pozitif basınç yaratılan bir ortamda deneme üretimler gerçekleştirilmiştir.

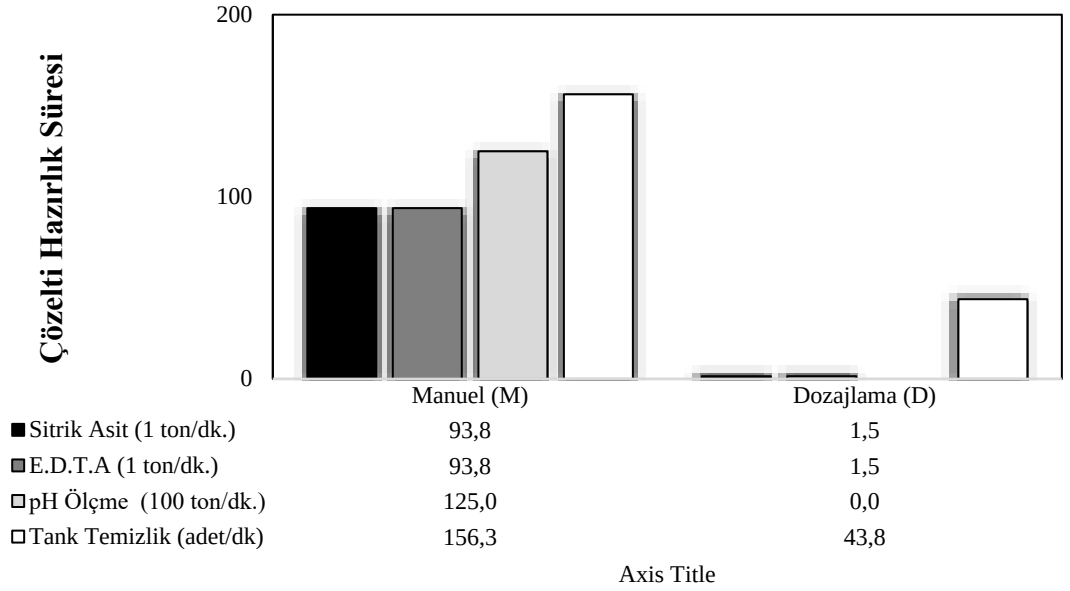
Şekil 5. Üretilen Islak Mendil Numunesi

İki farklı yöntemle üretilen ıslak mendillerin hazırlık süreleri ve diğer bilgiler Tablo 3'te yer almaktadır.

Tablo 3. Manuel ve Dozajlama Sistemindeki Hazırlık Bilgileri

Üretim		**Manuel (M)**	**Dozajlama (D)**
Çözelti Hazırlama	Sitrik Asit (1 ton/dk.)	15	0,24
	E.D.T.A (1 ton/dk.)	15	0,24
	pH Ölçme (16 ton/dk.)	20	0
	Tank Temizlik (adet/dk)	25	7
	Baz (ton)	0,225	0,225
	Solüsyon (ton)	16	16
Tank	Solüsyon Tank Kapasitesi (ton)	2	16
	Tank Sayısı (adet)	3	9
Diğer	Mikrobiyel Oluşum İhtimali	Var	Yok
	Ürün Çeşitliliği	Tek	Limitsiz

Manuel sistem ve dozajlama sistemi ile solüsyon oluşturulması için çözelti hazırlık süreleri ve üretim miktarları Şekil 6'da yer almaktadır.



Şekil 6. Çözelti Hazırlık Zamanları ton/dk.

16 tonluk solüsyon üretimi düşünüldüğünde; manuel sistemde sitrik asit ve E.D.T.A hazırlığı için toplamda 187 dakika süre geçerken, dozajlama sistemlerinde ise bu süreç sadece 3 dakikada sağlanmaktadır. İşletmeler açısından değerlendirildiğinde manuel sistem için sürekli olarak sitrik asit ve E.D.T.A kimyasalları hazırlığı için ekstra zaman harcanmaktadır. Bu zaman kaybı üretim kapasitesini düşürmekle birlikte, personelin verimli kullanılmasını da engellemektedir. Bu sebeple dozajlama sisteminde çözelti hazırlık aşamasında geçen toplam sürenin manuel sisteme göre kullanılan kimyasalların sarfiyatı ve personelin hata yapma riski azalacağından dolayı avantajlı olarak görülebilir. Manuel sistemde pH ayarlamak için çözeltiye sürekli olarak eklenen kimyasalların ardından pH sürekli kontrol edilip istenilen aralıkta olması için belirli bir süre harcanmaktadır. Kimyasallar tek bir seferde bile kullanılmasına rağmen istenilen pH değerine ulaşamadığından, kimyasal ilavesi yapılması ayrıca maliyeti arttırmaktadır. Maliyetin artmasıyla birlikte ıslak mendilde kullanılan su miktarlarının azalmasına neden olabilir. Uygun karışım elde edilebilmek için kimyasal aktarımları için personelin çok düzenli ve titiz olması gereklidir. Fakat dozajlama sisteminde elde edilen çözeltinin pH hassasiyeti incelendiğinde, solüsyon oluşturmak için kullanılan kimyasalların oranları tek seferde otomatik olarak tank içerisinde yer alan pH ölçerler tarafından her an hiçbir süre harcanmadan ayarlanmaktadır. Yaklaşık 16 ton solüsyon hazırlığı için manuel sistemde yaklaşık 125 dakika pH ayarlamak için zaman gerekirken bu süre dozajlama ünitesinde 0 dakikadır. Ayrıca tank temizliği için geçen süreler tank adetleri bazında düşünüldüğünde manuel sistemde personelin tank içerisine girip tankı temizlemesi için yaklaşık 156 dakika zaman geçerken, bu temizlik süresi dozajlama sistemlerinde tank temizlikleri otomatik olarak yaklaşık 43 dakikada gerçekleşmektedir. Sistemin getirdiği başka bir avantaj ise tank kapasitelerinin artması olarak görülmektedir. Dozajlama sistemlerinde manuel sisteme göre tank sayısının 3 kat, tank kapasitesinin ise 8 kat artması ile daha kısa sürede yüksek üretim kapasitesi elde edilmektedir. Üretim için hatta girecek solüsyon miktarlarının yetersiz kalması, dolum gerektirdiğinden zaman kaybına neden olabilir. Tank adetleri kimyasalların çökme ihtimalleri düşünüldüğünden her üretim için istenilen miktarda depolama avantajı sağlamıştır. Aksi taktirde üretim için tankta fazla kalan solüsyonlar çökme

riskine neden olabilir. Son olarak solüsyonun kalite kontrol süreçlerinde gerekli testlerin yapılması için tanklardan numune alınması işlemi manuel sistemde aç-kapat işlemi ile sağlanırken, dozajlama sistemlerinde ise bu işlem kapalı olarak gerçekleştirilmektedir.

Tablo 4. Manuel ve Dozajlama Sisteminin Yaşlandırma Test Sonuçları

Yaşlandırma Testi		Manuel (M)	Dozajlama (D)
İlk Hali	pH	5,5	5,5
	Viskozite [cp]	10	10
	Yoğunluk [g/l]	1	1
4°C İnkübatör (3.Ay)	pH	5,5	5,5
	Viskozite [cp]	10,2	10,1
	Yoğunluk [g/l]	1,03	1,03
25°C Oda Sıcaklığı (3.Ay)	pH	5,6	5,5
	Viskozite [cp]	10,3	10,3
	Yoğunluk [g/l]	1,01	1,02
40 °C Etüv (3.Ay)	pH	5,8	5,7
	Viskosite [cp]	10,4	10,2
	Yoğunluk [g/l]	1,04	1,04

Islak mendillerin geçen süre zarfına bağlı olarak, paket içerisinde ıslatıcı özelliklerini kaybetmemesi istenmektedir. Bu yüzden tüketiciyle buluştuğu formuna eşdeğer olması için etüv, oda sıcaklığı ve inkübatörde 1-2 ve 3 aylık zamanda yaşlandırma testi gerçekleştirilmiştir. Üretilen ıslak mendillerden her bir numune için 3'er paket 15*19 cm ± 1 cm boyutlarında 120 adet mendil paketlenip, ağızları sızdırmazlığı sağlayacak şekilde kapatılmıştır. İklimlendirme kabinlerinin sıcakları sırasıyla etüv 40 °C, oda Sıcaklığı 25°C, inkübatör 4°C olarak belirlenmiştir. Manuel ve dozajlama sistemlerine uygulanan yaşlandırma testlerinde pH, viskozite ve yoğunluk özellikleri arasında belirgin bir fark tespit edilmemiştir. Her iki sistemde üretilen ıslak mendillerin pH, viskozite ve yoğunluk değerlerinin nihai tüketici kullanımı açısından sorun teşkil etmeyeceği yapılan testler sonucunda tespit edilmiştir.

Şekil 8. Yaşlandırma Testi Ürün Görselleri

Test edilen 6 farklı ürünün başlangıçta ve 3.ay sonundaki görselleri Şekil 8'de yer almaktadır. Yaşlandırma testleri için geçen her ay ürünün tüketici kullanımı açısından geçen seneyi ifade etmektedir. Yani numunenin 1 ay yaşlandırma sürecinde kalması ürünün 1 sene sonundaki

hali simule edilir. Buna göre her iki ürünün iklimlendirme kabinlere konulmasının ardından 3 aylık periyot incelendiğinde; Her üç ay sonunda etüv, oda sıcaklığı ve inkübatör koşullarında bırakılan numunelerin koku karakterinde azalma tespit edilmemiştir. Ayrıca, mendil özellikleri (sararma, bakteri oluşumu), ambalajın rengi, delaminasyon, deformasyon gibi nihai ürünün kullanıcılar için olumsuzluk teşkil etmediği gerçekleştirilen testler ile görülmüştür.

Tablo 5. Islak Mendillerin Cilt Etkinliği Analiz Sonuçları

Numune	Kod	Ortalama OD	Ortalama OS	Canlılık Ort. (%)	% Canlılık SS	CV (%)
D	NC	1,213	0,015	100	1,43	1,4
	PC	0,324	0,048	13,5	1,59	10,57
	TM	1,425	0,037	**87,5**	1,96	2,37
M	NC	1,578	0,027	100	1,22	1,3
	PC	0,324	0,021	15,4	1,07	8,44
	TM	1,795	0,018	**84,6**	1,87	3,58

EU ve GHs (Global Harmonize sistem) sınıflandırılmasına göre iki farklı test materyaline maruz bırakılan 3 ayrı dokunun % relatif doku canlılık değeri, %50'den küçük ise (negatif kontrole göre) test materyali irritant olarak kabul edilmektedir. OECD TG 439 test standardı doğrultusunda yapılan deney sonuçlarına göre test materyallerinin, canlılık ortalaması oranının %87,5 ve %84,6 olduğu ve bu oranların deri irritasyonu yapıcı etkiye sahip olmadığı belirlenmiştir.

Tablo 6. Islak Mendillerin Mikrobiyolojik Test Sonuçları

Mikrobiyolojik Testler	Standart	Manuel (cfu/g)	Dozajlama (cfu/g)
Escherichia coli	TS EN ISO 21150:2015	Tespit Edilmedi	Tespit Edilemedi
Mezofilik Aerobik Bakteri	TS EN ISO 21149:2017	<10	<10
Küf ve Maya	TS EN ISO 16212:2017	<10	<10
Staphylococcus aureus	TS EN ISO 22718:2015	Tespit Edilmedi	Tespit Edilemedi
Pseudomonas aeruginosa	TS EN ISO 22717:2015	Tespit Edilmedi	Tespit Edilemedi
Candida albicans	TS EN ISO 18416:2015	Tespit Edilmedi	Tespit Edilemedi

Difüzyon yöntemiyle gerçekleştirilen mikrobiyolojik test sonuçlarına göre 6 farklı bakterinin ekimi petri kaplarında gerçekleştirilip, petriler 36 °C'de 24 saat inkübe edilmiştir. Süre sonunda oluşan koloniler sayılarak mililitrede koloni oluşturan birim (cfu/ml) olarak belirtilmiştir. İki farklı numuneye gerçekleştirilen toplamda altı farklı bakteri ekiminde mikrobiyel oluşumu gözlenmemiştir.

Sonuçlar

Manuel ıslak havlu solüsyonu sistemleri yerine dozajlama sistemleri göz önünde bulundurulduğunda farklı sistem arayışlarına düşük maliyetle ulaşma isteği kaçınılmazdır. Bu amaçla dozajlama sistemlerinde endüstri 4.0 kullanılmasıyla beşerî faktörlerin yerine makinelerin rol alması gerçekleştirilmiştir. Manuel sistemde zaman kaybı olarak görülen çözelti hazırlık aşamasında on altı tonluk solüsyon üretim süreci göz önüne alındığında toplamda 468 dk dk. süre sarf edilirken bu sürenin dozajlama üniteleriyle birlikte 46 dakikaya kadar düştüğü tespit edilmiştir. Aynı zamanda kapasite artmasına rağmen iş gücünün azalması sistemin getirdiği en büyük avantajdır. Dozajlama sistemiyle tamamen güvenilir, hijyenik ve sorunsuz çalışan kimyasal aktarımı sağlanarak, pH değerinin otomatik olarak

ayarlanması ile manuel sisteme göre ortaya çıkan ekstra maliyetlerin önüne geçilmiştir. Sistemin kazandırdığı diğer avantajlar şu şekildedir; tankların manuel tartım yerine otomatik tartımın yapılması, tek tank olan solüsyon tank sayısının dört kata kadar arttırılması ve üretim hattına el değmeden dozajlamanın otomatik gerçekleştirilmesi ve bu sayede mikroorganizmanın oluşmaması da yapılan testler sonucunda tespit edilmiştir. Manuel ve dozajlama sistemlerinden test edilen 6 farklı numuneye uygulanan yaşlandırma testlerinde pH, viskozite ve yoğunluk özellikleri arasında belirgin bir fark tespit edilmemiştir. Stabilite ve kimyasal olarak her iki ürün için anlamlı farkların gözlenmemiş olması ile nihai tüketici açısından sorun teşkil etmeyeceği yapılan testler sonucunda ortaya çıkmıştır. OECD TG 439 test standardına göre yapılan irritasyon sonuçlarına göre canlılık ortalaması oranlarının %87,5 ve %84,6 olduğu ve bu oranların deri irritasyon yapıcı etkiye sahip olmadığı belirlenmiştir.

Kaynakça

[1] R.-L. Mitchell, Causes, effects and solutions of operational problems in wastewater systems due to nonwoven wet wipes, Berlin: von der Fakultät V – Verkehrs- und Maschinensysteme der Technischen Universität Berlin, 2019.

[2] ISO, «ISO 9092:2019 Nonwovens Vocabular,» ISO, Genève, 2019.

[3] EDANA, «What are nonwovens?,» European Disposables and Nonwovens Association, 2020.

[4] P. Munoz, G. Baez, S. McKinney ve H. Garelick, «“Characterisation of "flushable" and "non-flushable" commercial wet wipes using microRaman, FTIR spectroscopy and fluorescence microscopy: to flush or not to flush,» *Environmental science and pollution research international,* cilt 25, no. 20, p. 20268–20279, 2018.

[5] C. A. Armano, S. St-Chrysostome ve C. Igor, «Fluid management/control system»». USA Patent: US 20190226183 A1, , 10 6 2018.

[6] W. S. K. Vetter, «Method and apparatus for the automatic dynamic dosing at least of one fluid component of a mixed fluid». USA Patent: US4440314A, 07 13 1981.

[7] A. Adıyan, Sıvı Seviye Kontrolü İçin Scada Sistem Tasarımı, İzmir: Dokuz Eylül Üniversitesi Fen Bilimleri Enstitüsü, 2012.

[8] Lechtonen ve ark, «Automate solution dispenser». USA Patent: CN104661737B, 13 07 2018.