

BOOK OF ABSTRACTS

12TH

INTERNATIONAL
CONFERENCE ON MEDICAL &
HEALTH SCIENCES

August 23 – September 1, 2026, Japan

EDITORS

Prof. Dr. Mahire BAYRAMOĞLU AKKOYUN
Prof. Dr. Gökhan OTO



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adopted by Mariam Rasulan

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BOOK OF ABSTRACTS · ISPEC · ispeccongress.org**ORGANIZING INSTITUTION****CONGRESS ID****CONGRESS TITLE****12TH INTERNATIONAL CONFERENCE ON MEDICAL & HEALTH SCIENCES****DATE****August 23 – September 1, 2026****PLACE****Japan**

Face-to-face & Online (Zoom)

PARTICIPANT COUNTRIES (30)

Türkiye, Nigeria, India, Morocco, Azerbaijan, Pakistan, Romania, Albania, Indonesia, Georgia, Israel, Tunisia,
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273

TOTAL ACCEPTED PAPERS

29

TOTAL REJECTED PAPERS

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PAPERS FROM TURKIYE

154INTERNATIONAL
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All applications have undergone a double-blind peer review process · Oral Presentations

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12th INTERNATIONAL CONFERENCE ON MEDICAL & HEALTH SCIENCES

August 23 - September 01, 2026 / Japan

CONGRESS PROGRAM



IN-PERSON SESSION - 1**28.08.2026****HALL-1**

TOKYO LOCAL TIME: 09:00-11:00
United Nations University, Shibuya, Tokyo

HEAD OF SESSION: Prof. Dr. Melekber SÜLÜŞOĞLU DURUL

Authors	Affiliation	Presentation Title
Melekber SULUŞOĞLU DURUL	<i>Kocaeli University</i>	The Importance of Antioxidant Properties of Fruit Species for Human Health
Mehtap GUNEY	<i>Van Yuzuncu Yil University,</i>	What is Role of Flavonoid Sources in Rumen Fermentation
Suna ÇAKMAK	<i>Siirt University</i>	Biological Control from a One Health Perspective: Indirect Contributions of Trichoderma, Arbuscular Mycorrhizal Fungi, and Natural Enemies to Human Health
Züleyha DURAK Tülay GURSOY Şenol KUBİLAY	<i>Van Yuzuncu Yil University</i>	Adsorption Of Crystal Violet Dye on Our Local Soil: Characterization, Isotherm, Thermodynamics, And Kinetics
Halide TEMELCI Yusuf SEÇGIN Zulal ONER Muhammet ÇAKMAK Serkan ONER	<i>İzmir Bakırçay University</i>	Sex Prediction from Cranial Images Using Deep Learning: A Comparative Evaluation of a Dual-Stream Hybrid Architecture Based on Maxvit, Convnext, And Efficientnetv2 Models
Berfin ÖKSÜZ	<i>Van Yuzuncu Yil University</i>	Evaluation of the Effect of Honey on Wound Healing
Nilgün ONURSAL	<i>Siirt University</i>	Adsorption Technologies and the Health Effects of Heavy Metals: A Multidisciplinary Review with Examples from the World and Türkiye
Nilgün ONURSAL	<i>Siirt University</i>	HEAVY METAL POLLUTION AND BIOLOGICAL EFFECTS IN MARINE ECOSYSTEMS
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.		

IN-PERSON SESSION - 1**28.08.2026****HALL-2****TOKYO LOCAL TIME: 09:00-11:00****United Nations University, Shibuya, Tokyo****HEAD OF SESSION: Prof. Dr. Hülya KOYUNCU**

Authors	Affiliation	Presentation Title
Özden KUTLAY Tülay AKAN Şerife Nur BULAT Rumeysa CINAR	<i>Afyonkarahisar Health Sciences University</i>	Assessment of the Hepatorenal and Pulmonary Effects of Phenixin-14 Via Cytokine Profiling In An L-Arginine-Induced Rat Model of Toxicity
Hulya KOYUNCU	<i>Bursa Technical University</i>	Heavy Metals in Public Health: Removal from Wastewater
Tuba TARHAN Ahmet ULU Burhan ATES	<i>Mardin Artuklu University</i>	Design and Investigation of Physical and Mechanical Properties of Senps-Encapsulated Mucoadhesive Nanofiber Buccal Patches for The Treatment of Oral Infections
Tülay AKAN	<i>Afyonkarahisar Health Sciences University</i>	Effects of Chemerin on Inflammatory Cytokines and Cell Migration in the Hela Cell Line
Nur ATES SAHINKAYA Nilufer DEMIRSOY	<i>Eskişehir Osmangazi University</i>	Beyond Weight Loss: An Ethical and Value-Based Evaluation of Quality-of-Life Measurement Instruments Following Bariatric Surgery
Ferdane Ozlem AKARSU Nurdan KIRIMLIOGLU	<i>Eskişehir Osmangazi University</i>	Self-Management in Epilepsy: An Evaluation from the Perspectives of Patient-Centered Care and Medical Ethics
Ayşegül BILDİİK Umay ÇİLİNGİR BORAZANCI	<i>Aydın Adnan Menderes University</i>	The Effect of Borage Oil on Inflammation In 2,4-Dinitrochlorobenzene-Induced Atopic Dermatitis-Like Skin Lesions in Balb/C Mice
Selda YILDIZ Nilufer DEMIRSOY	<i>Eskişehir Osmangazi University</i>	Ethical Blindness as the Missing Link Between Malpractice Fear and Defensive Medicine: A Proposed Conceptual Framework
Fatmagül YUR Neval BURKAY	<i>Muğla Sıtkı Koçman University</i>	The Future of Health Strategy: Aging Management Through Nutrigenetics and Longevity
Nazmi KANAD Gülçin OZALP GERCEKER Müjgan ERCAN KARADAG Özge FENERCIOGLU İbrahim EKER Sibel TURMUS	<i>Afyonkarahisar University of Health Sciences</i>	Evaluation Of the Effect of Specimen Collection Training Provided to Nurses in The Pediatric Hematology and Oncology Clinic on Biochemistry Specimen Rejection Rates According to Ifcc Laboratory Errors and Patient Safety Specifications
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.		

IN-PERSON SESSION - 2**28.08.2026****HALL-1**

TOKYO LOCAL TIME: 11:30-13:30
United Nations University, Shibuya, Tokyo

HEAD OF SESSION: Prof. Dr. Nurhan DOĞAN

Authors	Affiliation	Presentation Title
Sinan SARACLI Nermin TEPE Emrah OZCAN Gülseren BUYUKSERBETCI	<i>Balıkesir University</i>	The Potential Role of Ventral Lateral Anterior (Vlan) And Ventral Lateral Posterior (Vlpn) Thalamic Nuclei In Migraine Patients
Mehmet Sinan EVCIL Seray DOGAN	<i>Afyonkarahisar Health Sciences University</i>	Endodontic Treatment of a Tooth with Internal Root Resorption Using Mta
Hüseyin CALI Pınar ALKIM ULUTAS	<i>Aydın Adnan Menderes University</i>	Effects of Intermittent Fasting on Some Biochemical Parameters in Rats with Experimental Diabetes
Kübra SARICAN Pınar ALKIM ULUTAS	<i>Aydın Adnan Menderes University</i>	Investigation of the Protective Effects of Systemic and Oral Glutathione in Rats with Experimentally Induced Acute Inflammation
Ece ARMAGAN Dilara KUŞ ÖNDER	<i>Aydın Adnan Menderes University</i>	An Examination of Digital Consumer Experiences with Probiotic Products (OTC): A Qualitative Study
Esmâ Bilge SAHİN	<i>Muğla Sıtkı Koçman University</i>	Effects Of Thymol and Carvacrol Loaded Gelatin Sponges on Fibroblast Proliferation, Antibacterial Activity, And Coagulation In The Treatment of Alveolar Osteitis
Dilek BOSTAN BUDAK	<i>Çukurova University</i>	Factors Affecting Young People's Entry into and Retention in Agriculture
Cahit GÜNGÖR Dilek BOSTAN BUDAK	<i>Çukurova University</i>	Effects Of Drought Shocks on Rural Household Welfare, Credit Access and Borrowing Behavior
Sevim CİFTÇİ YEGIN	<i>Giresun University</i>	The Aging Process: Epigenetic Approaches
Nurhan DOĞAN İsmet DOĞAN	<i>Afyonkarahisar Health Sciences University</i>	All-Cause And Cause-Specific Mortality Among Children Aged 0–17 Years in Türkiye, 2015–2024
Moderator is responsible for ensuring the smooth running of the presentation, managing the group discussion and dynamics.		

IN-PERSON SESSION - 2**28.08.2026****HALL-2**

TOKYO LOCAL TIME: 11:30-13:30
United Nations University, Shibuya, Tokyo

HEAD OF SESSION: Prof. Dr. Meltem SOYLU

Authors	Affiliation	Presentation Title
Aslı SARITAŞ Amine ÇUBUKÇU Sidar GÜL	<i>Siirt University</i>	The Relationship Between E-Health Literacy and Menstrual Myths Among Young People: The Case of Siirt University
Aybüke KAYA Özlem ÇAKIN	<i>Hatay Mustafa Kemal University</i>	A Regional Study on Farmers'; Perceptions and Approaches to Land Consolidation in Türkiye
Aybüke KAYA Reyhan YAKAR	<i>Hatay Mustafa Kemal University</i>	Evaluation Of the Agricultural Labor Wage Structure in Türkiye
Hasan SARITAS Abdullah YILMAZ	<i>Siirt University</i>	Associations Among Surgical Fear, Pain Catastrophizing, And Early Mobilization Experiences in Patients Undergoing Laparoscopic Abdominal Surgery
Adem YAGAN	<i>Van Yüzüncü Yıl University</i>	A Biopsychosocial Approach to Low Back Pain: Causes and Lifestyle Modifications
Ozan AYDEMİR Adem YAGAN Berfin YUCEL AYDEMİR	<i>Van Yüzüncü Yıl University</i>	The Role of Lifestyle and Screening in Colorectal Cancer Prevention: A Primary Care Perspective
Meltem SOYLU	<i>Alanya Alaaddin Keykubat University</i>	The Missing Link in the Prevention of Iodine Deficiency: Catering Services
Meltem SOYLU	<i>Alanya Alaaddin Keykubat University</i>	Seaweeds: Are They a Sustainable Food of the Future for Turkish Cuisine?

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27.08.2026 / ONLINE / SESSION-1 / HALL-1

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Mustafa KAPLAN

Authors	Affiliation	Presentation Title
Fatima SHAHBAZOVA Elif KAYA TILKI	<i>Anadolu University</i>	Evaluation of the Antioxidant Activity of Brimonidine Tartrate-Loaded Nanoparticles in A TbhP-Induced Oxidative Stress Model
Bilge Nur SERIN Fuat ERDEM	<i>Düzce University</i>	Retrospective Evaluation of the Contribution of Lipid Parameters, Parathyroid Hormone, and 25-Hydroxyvitamin D Levels to Achievement of Remission and Duration of Remission in Patients with Hematological Malignancies
Gonca KARAYAGIZ MUSLU Recep KARA	<i>Muğla Sıtkı Koçman University</i>	Beyond Screen Time: Mapping Digital Over-Connectedness onto Adolescent Occupational Balance Through The A-Obs Framework
Mustafa KAPLAN Gökhan OTO	<i>Van Yuzuncu Yıl University</i>	The Cytoprotective Effects of Ferula Pseudalliacea Rech. F.Methanol Extract in Rats with Bleomycin-Induced Pulmonary Fibrosis
Yusuf Sevinç Gökhan OTO	<i>Van Yuzuncu Yıl University</i>	The Protective Effect of Pistacia Terebinthus L. Fruit and Gum Against Isotretinoin-Induced Hepatic Damage in Rats
Nurdan KARISAN	<i>Mehmet Akif Ersoy University</i>	Artificial Intelligence and Digital Twin-Based Vulnerable Group Management in Disasters: An International Model Proposal
Reza SABİRİ Gülbeyaz BARAN DURMAZ	<i>Dicle University</i>	Pain Management in Pediatric Intensive Care Patients and The Role of Nurses
Bilge Nur SERIN Fuat ERDEM	<i>Düzce University Hospital,</i>	Lipid Parameters, Parathyroid Hormone, and 25 - Hydroxyvitamin D Levels on Remission and Duration of Remission in Patients Diagnosed with Hematologic Malignancies

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

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27.08.2026 / ONLINE / SESSION-1 / HALL-2

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Muhammed Ahmed SELÇUK

Authors	Affiliation	Presentation Title
Neryal TAHTA Salih GOZMEN Nilüfer SEN	<i>Izmir City Hospital</i>	Atypical Presentations of Pediatric Hodgkin and Non-Hodgkin Lymphoma: A Single-Center Pilot Study
Aykut EKIYOR	<i>Gazi University</i>	Hydration and Body Composition
Aykut EKIYOR	<i>Ankara Hacı Bayram Veli University</i>	The Perception of Turkey Health Tourism Positioning Within Transnational Social Networks
Aykut EKIYOR	<i>Ankara Hacı Bayram Veli University</i>	Positioning of Turkey Health Tourism Brand Value Through Transnational Social Networks
Hülya ADMIS Gülay ACAR Aynur Emine ÇİCEKCIBASI Güldane MAGAT	<i>Karabük University</i>	Morphometric and Morphological Analysis of the Greater Palatine Foramen and Its Association with Maxillary Sinus Pneumatization: A Cone-Beam Computed Tomography Study
Hatice BULUT	<i>Süleyman Demirel University</i>	Femtech in Women's Health: Smart Rings, Ovulation Tracking with Wearable Devices, and Digital Nursing
Ayşe Zehra OZDEMİR Sıdika ERTURK TOKER	<i>Istanbul University</i>	Plasma, Serum or Dried Blood Spots? An Analytical Chemistry Perspective on Imatinib Therapeutic Drug Monitoring
Osman Deniz KULAC Hülya OZDEMİR	<i>Van Yüzüncü Yıl University</i>	A Retrospective Investigation of the Effects of Postoperative Prophylactic Antibiotic Therapy Profiles on Length of Hospital Stay Following Spinal Fusion Surgery
Muhammed Ahmed SELÇUK	<i>Siirt University</i>	Heavy Oestrus Ovis Infestation in a Sheep

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Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Ayşe Kübra SAP KINAR

Authors	Affiliation	Presentation Title
Ayşe Kübra SAP KINAR	<i>Uşak University</i>	Association Between Digital Media Use, Social Life Characteristics, and Social Cognition in Retired Adults Aged 55 Years and Older
S. BENABDI M. AMANI K. DAHO H. ALLALI D. BOUMENDIL	<i>Pediatric Emergency Hospital Canastel Oran</i>	Urgent Placement of Dialysis Catheter in Children: Challenges and Anesthetic Issues
Ezgi DARICI KURT Miray Nilüfer ÇİMŞİT KEMAHİ Mehmet Reşit ASOĞLU	<i>Bahceci IVF center</i>	Cost-Effectiveness Of Omitting Routine Endocrine and Ultrasound Monitoring During Hormone Replacement Therapy Cycles for Frozen Embryo Transfer in Good-Prognosis Patients: A Cost-Effectiveness Analysis
Gülsüm KAYA Cengiz KARACAER	<i>Yalova University</i>	Evaluation of Hematological Parameters and Systemic Inflammatory Markers in Helicobacter pylori Infection
Ümmü Gülşen BOZOK	<i>Ankara Medipol University,</i>	Exosomes in Ischemia-Reperfusion Injury: Experimental Evidence and Emerging Clinical Significance
Ayşe İNKAYA Havva KACAN	<i>Kastamonu Education and Research Hospital</i>	The Effect of a Nurse-Led Coping Psychoeducational Program for Family Caregivers of Palliative Care Patients on Care Burden, Coping Strategies, and Burnout: A Semi-Experimental Study
Nisanur GÜLER Havva KACAN	<i>Kastamonu Education and Research Hospital</i>	The Effect of Intolerance of Uncertainty on Coping Strategies Among Parents of Children with Autism Spectrum Disorder and Psychiatric Diagnoses: A Comparative Study
Sinan ELİACIK Sena YANIKOĞLU	<i>Hitit University</i>	Dietary Patterns in Parkinson's Disease: An Updated Mini-Review (2024–2026)

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

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27.08.2026 / ONLINE / SESSION-1 / HALL-4

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Ibrahim Umar

Authors	Affiliation	Presentation Title
Andrea Lehoczki Vince Fazekas-Pongor Dávid Major Mónika Fekete	<i>Institute of Preventive Medicine and Public Health</i>	Fermented Foods as Modulators of the Gut Microbiome: Implications for Metabolic, Immune and Brain Health
Gheorghe Giurgiu Manole Cojocaru	<i>Deniplant-Aide Sante Medical Center</i>	Inflammation Now the Key Target for Seborrheic Dermatitis
Gazi Abu Horaira Sultan Ahmed Jobair Siaf Ahmed Khan Rezvy Taimiah Bin Harun	<i>University of Lisbon</i>	The Impact of International Migration and Remittances on Health Outcomes of Rural Households in Bangladesh
Iqra Farzeen Asma Ashraf Muhammad Muzammil Nazir Sehrish Muzaffar	<i>Government College University</i>	Mechanistic Insight into Anti-Inflammatory Activity of Fagonia Cretica Via COX Inhibition and Multimodal Pharmacological Evaluation
Amal Ghribi Mariem Ben Hmida Houda Ben Ayed Nouha Ketata Hanan Maamri Sourour Yaich	<i>Hedi CHAKER University</i>	Satisfaction among Mothers Regarding Childhood Vaccination Sessions at a Tunisian Primary Health Center
Amal Ghribi Nouha Ketata Houda Ben Ayed Mariem Ben Hmida Hanan Maamri Sourour Yaich	<i>Hedi CHAKER University</i>	Depression among Teachers in Southern Tunisia: Prevalence and Associated Factors
Ibrahim Umar Titus Matthew Yakubu Usman Mu'azu Nasiru Kontagora	<i>Umaru Sanda Ahmadu College of Education</i>	Innovations in Medical Biotechnology, Genetics, and Molecular Biology: A Critical Review of Challenges, Limitations, and Future Directions
Shukria Islam Tanjum Islam Kotha Nusrat Afrin	<i>University of Global Village</i>	How Social Media Reviews Influence Consumers for Selecting Restaurant
Sudhangshu Chakraborty Soumen Prakash Kabi	<i>Asansol Engineering College</i>	Smart Urban Ecosystems Enabled by Intelligent Internet of Things Networks

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27.08.2026 / ONLINE / SESSION-1 / HALL-5

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: K. Thamizhmaran

Authors	Affiliation	Presentation Title
Madalina Sorop Ion Petre Bogdan Sorop Tiberiu Buleu Daian Ionel Popa Florina Buleu Izabella Petre	<i>"Victor Babes" University of Medicine and Pharmacy Timisoara</i>	Interleukin-6 and Gestational Age in Pregnant Women with COVID-19 and Hypertensive Disorders of Pregnancy
Mihai Loichita Ion Petre Ionut Faur Razvan Bobora Alexandru – Marius Furau Izabella Petre	<i>"Victor Babes" University of Medicine and Pharmacy Timisoara</i>	Hematologic Dynamics During Platinum-Based Treatment in Patients with Stage III Cervical Cancer
Anwar Mallongi Atjo Wahyu Apollo Apollo Wahiduddin Wahyuni Salewe Muh Taufik Hidayat Stang Ernyasih A. Muh. Faudzul Adziim	<i>Hasanuddin University</i>	Calculating the Health Risks using Monte Carlo Simulations due to Carbon Dioxide and Particulate Matter 10 Pollutants in Cement Industrial Area, Pangkep Indonesia
Adrian Loichita Ion Petre Narcisa Carmen Mladin Alexandru – Marius Furau Ioana Marin Izabella Petre	<i>"Victor Babes" University of Medicine and Pharmacy Timisoara</i>	Maternal Arterial Stiffness and Adverse Neonatal Outcomes in Hypertensive Pregnancies: Linking Vascular Dysfunction to Perinatal Risk
Tahri Nouhayla Mikou Karima Nabloussi Abdelghani	<i>Sidi Mohamed Ben Abdellah University</i>	Field Evaluation of EMS-Induced Sesame (<i>Sesamum indicum</i> L.) Mutants for Adaptation to Early Sowing under Semi-Arid Conditions
Samin Shafigh Yu-Hsin Chen	<i>Wenzhou Medical University</i>	A Review on Non-Pharmacological Interventions for Sleep Disorders
El Mostafa Benharaf Ali Barhoumi Ahmed Moufti Mohamed Taoufik Mohammed Chafi Abdellah Zeroual Mohammed El Idrissi	<i>Sultan Moulay Slimane University</i>	Computational Insights into Novel Organic Photosensitizers for Dye-Sensitized Solar Cell Applications
Saemira Durmishi Rezarta Lalo Mitilda Gugu	<i>"Ismail Qemali" University</i>	Health Information Sources and Their Association with Lifestyle Behaviors Among Pregnant Women: A Cross-Sectional Study in Vlora, Albania
K. Thamizhmaran R. Vimali	<i>Government College of Engineering</i>	An Analysis of the Role of 5G and 6G Networks in Enabling Smart Healthcare Services

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

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27.08.2026 / ONLINE / SESSION-1 / HALL-6

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Poonam Dhiman

Authors	Affiliation	Presentation Title
Fateme Asadi TOURANLOU	<i>Tehran University of Medical Sciences</i>	Artificial Intelligence and Machine Learning Applications in Predictive Microbial Risk Assessment for Food Safety: A Systematic Review of Emerging Approaches
Mahira Firudin kizi Amirova	<i>Azerbaijan Medical University</i>	Bidirectional Microbiota-Immune-Nervous System Interactions in Neurological Disorders
Ilochi N. Ogadinma Wodu F. Emomotimi	<i>Federal University Otuoke</i>	Study Of the Effect of Organosulphur Extract of Onion and Garlic Juice on Heavy Metal-Induced Renal Toxicity in Male Wistar Rats
Tuhina Sinha Priya Chaudhuri	<i>Amity University</i>	Global Health Governance and Sovereign Compliance: Re-evaluating the Human Right to Health Under the WHO's International Health Regulations
Omer Shujat Bhatti M. Asad Ghufuran Atta Ullah Shah	<i>School of Architecture Planning</i>	Transforming Adversity into Opportunity: Assessing User Satisfaction in Hospital Transformation In Lieu Of a Pandemic Through the Multi Corridor Expansion Model for Epidemic Management and Environmental Design Enhancement
Shom Prakash Kushwaha Syed Misbahul Hasan Pushpendra Soni	<i>Integral University</i>	Pharmacophore Mapping for Anti-Lung-Cancer Agents
Mina Gholami Samaneh Mahmood-Aghdam Alireza Ahmadi Hedieh Rahmati Mehrnaz Izadpanah Abdolreza Daneshvar Amoli Mansoureh Farhangniya Shiva Mohammadi Mohammad Hossein Sanati Zahra Elyasi Gorgi	<i>Iranian Biological Resource Center</i>	A Renewable Biobank of EBV-Immortalized Lymphocytes from Globozoospermia Patients to Advance Reproductive Genetics and Andrology Research
Poonam Dhiman	<i>Sai Mohan College of Education</i>	Healthcare Education Progressive Role in Biomedical Waste Management and Environmental Sustainability

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

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27.08.2026 / ONLINE / SESSION-1 / HALL-7

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Ruhul Amin

Authors	Affiliation	Presentation Title
Ruhul Amin	<i>Comilla University</i>	Patient Satisfaction with Public Healthcare Services in Bangladesh: An Inclusive Assessment of Accessibility, Quality, Equity, and Service Delivery.
Iram Liaqat	<i>Overnment College University</i>	Flagellar assembly role in Salmonella FlhA deleted strain biofilm formation
Mohd Usman Mohd Siddique Azim Ansari	<i>SVKM NMIMS Global University</i>	AI-Enabled Multiscale Molecular Modelling and Advanced Data Analytics for the Identification of Phenolic Lead Molecules Against Human Metapneumovirus
Rajeev Kumar	<i>Manav Rachna International Institute of Research and Studies</i>	Sustainable Adsorptive Removal of Pharmaceuticals from Wastewater: One Step for Healthcare
Skender Demaku Arbnorë Aliu Donika Sylejmani Anita Ismajli Shqipe Berisha	<i>JES's SND College of Pharmacy</i>	Stem Cell-Based Tissue Repair and Regeneration
Madhuri Gaikwad	<i>University of Prishtina "Hasan Prishtina"</i>	Physicochemical, Biological, and Heavy Metal Analysis and Assessment of Water and Sediment at the Lluzhan Spa, Podujevë, Kosovo
Hadia Tabbasum Shazia Perveen Sumaira Kanwal	<i>The Women University Multan</i>	Antidiabetic, Antioxidant and Tissue Protective Effects of Alumina, Iron-Alumina composite and Silica-Chitosan hybrid Nanoparticles in Alloxan-Induced Diabetes in Rabbits
Milea Diana	<i>Constantin Stere" University of European Political and Economic</i>	The Role of Forensic Medicine and Psychiatry in Identifying and Documenting Forced Marriage
Izabella PETRE Narcisa Carmen MLADIN Daian Ionel POPA Florina BULEU Elena BUSUIOC Maryam KRROSHEN Ion PETRE	<i>"Victor Babes" University of Medicine and Pharmacy Timisoara</i>	Progressive Arterial Stiffening in Hypertensive Pregnancies: A Longitudinal Assessment of Maternal Vascular Adaptation

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27.08.2026 / ONLINE / SESSION-2 / HALL-1

Tokyo Local Time: 17:30-19:30



Ankara Local Time: 11:30-13:30

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Selin Engür Öztürk

Authors	Affiliation	Presentation Title
Erbil ARIK Eyüp ZENGİN	<i>Marmara University</i>	Double Retrograde Trans-Femoral Access Technique (Dore-Tract) For Endovascular Treatment of Combined Iliac and Femoral Artery Stenosis: Technical Description and Preliminary Experience
Ahmet AKKOCA Burcu GULTEKİN	<i>Necmettin Erbakan University</i>	Therapeutic Effects of Elamipretide on Cardiac Electrical, Hemodynamic, And Histopathological Parameters in a Rat Model Of 5-Fluorouracil-Induced Cardiotoxicity
Şevval YEYİT BOZDEMİR Havva KACAN	<i>Kastamonu Üniversitesi</i>	Artificial Intelligence Applications In Psychiatric Nursing: Areas of Use and Limitations
Nilgün OKSEL Zeliha Cansel OZMEN	<i>Tokat Gaziosmanpaşa University</i>	The Relationship Between Hypothalamic-Pituitary-Gonadal and Thyroid Axis Hormones and Semen Analysis Parameters: A Retrospective Evaluation
Ayşe Beyza BEKGOZ Hüseyin Nejat KUCUKDAG	<i>Düzce University</i>	Investigation of the Relationship Between Troponin T Levels and Platelet Count and Platelet Indices in Emergency Department Admissions with Suspected Acute Coronary Syndrome
Gökhan GUNDOĞDU Çağrı KALE	<i>Van Yüzüncü Yıl University,</i>	Effect of Chasteberry (<i>Vitex agnus-castus</i> L.) Seed Volatile Oil Added to The Diet on Performance, Carcass and Some Antioxidant Parameters in Quail (<i>Coturnix coturnix japonica</i>) Exposed to Stocking Density Stress
Selin ENGUR OZTURK	<i>Pamukkale University</i>	Dose-Dependent Vascular Tolerability of Hydrocortisone in the in Ovo Chorioallantoic Membrane Model: A Filter-Disc-Based Study
Sinan DEGIRMENCIOGLU Ali SEVGİLİ	<i>Bozova Mehmet-Enver Yıldırım State Hospital,</i>	Direct Laryngoscopy-Assisted I-Gel Placement for Flexible Bronchoscopic Cryotherapy in Severe Post-Intubation Tracheal Stenosis: A Case Report
Mehtap GENC Ahmet SANLI Emre CIYDEM	<i>Karamanoğlu Mehmetbey University</i>	The Relationship Between Belief in Sexual Myths and Sexual/Reproductive Health Stigma Among Women of Reproductive Age: The Mediating Role of Cognitive Distortions

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Tokyo Local Time: 17:30-19:30



Ankara Local Time: 11:30-13:30

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HEAD OF SESSION: Ali Yücel Kara

Authors	Affiliation	Presentation Title
Ali Yucel KARA	<i>Izmir Katip Celebi University</i>	Physiological Effects of Mortality Saliency: Autonomic Nervous System Responses and Neuroendocrine Findings
Oguzhan AKPINAR Umut Yasin OZDEMIR	<i>University of Health Sciences Bursa</i>	Occult Renal Mass as The Probable Primary Source of Solitary Brain Metastasis of Unknown Origin: A Multidisciplinary Diagnostic Approach
Halil Can YILDIZ Esin ÖZLEK	<i>Van Yüzüncü Yıl University</i>	Non-Surgical Endodontic Treatment in a Tooth with a Large Periapical Lesion: A Case Report
Halil Can YILDIZ Esin ÖZLEK	<i>Van Yüzüncü Yıl University</i>	Root Canal Treatment of a Tooth with a Periapical Lesion: A Case Report
Omer UNAL	<i>Samsun University</i>	Evaluation of Neurophysiological Dynamics Between Sleep Stages Through Quantitative Electroencephalogram Spectral Analysis
Nilufer AKGUN UNAL	<i>Ondokuz Mayıs University</i>	Investigation of the Effects of Ventricular Arrhythmias on Cardiac Autonomic Modulation Through in Silico Time-Domain Signal Analysis
Saniye Merve CENGİZ Ahmet Fatih CENGİZ Gökhan COBAN Ahmet Emin DEMİRBAS Abdullah Kemal ZENGİN	<i>Mersin University</i>	Management Of Bimaxillary Prognathism, Gummy Smile, And Skeletal Class II Malocclusion with Bimaxillary Orthognathic Surgery and Genioplasty: A Case Report
Saniye Merve CENGİZ Ahmet Fatih CENGİZ Ömer Faruk BAKI	<i>Mersin University</i>	Orthodontic Management of a Missing Maxillary Central Incisor Following Trauma: A Case Report

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27.08.2026 / ONLINE / SESSION-2 / HALL-3

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HEAD OF SESSION: Serhat SUNAR

Authors	Affiliation	Presentation Title
Serhat SUNAR	<i>Kafkas University</i>	Toxicological Effects of Ivermectin, A Commonly Used Antiparasitic, On the Male Reproductive System and Sperm Quality
Serhat SUNAR	<i>Kafkas University</i>	Effects Of Environmental Factors on Sperm Quality in Different Rabbit Breeds: A Comparative Review
Selçuk ALBAYRAK Oğuz MERHAN	<i>Kafkas University</i>	Preliminary Evaluation of Clinical, Acute-Phase Protein, And Biochemical Findings in Common Buzzards (<i>Buteo Buteo</i>) And European Honey Buzzards (<i>Pernis Apivorus</i>) Admitted to Wildlife Rehabilitation
Selçuk ALBAYRAK	<i>Kafkas University</i>	Masking Phenomenon in Raptors and Introducing the Observation-First Clinical Approach (Ofca)
Efsun SOMAY Sibel BASCIL	<i>Baskent University</i>	The Host Tissue Repair Vulnerability Index (HTRVI): A Composite Biomarker for Predicting Osteoradionecrosis in Locally Advanced Nasopharyngeal Carcinoma
Medine SIMSEK Taha Emre KOSE	<i>Recep Tayyip Erdoğan University</i>	Asymptomatic Internal Root Resorption Identified on Routine Radiographic Examination: A Case Report
Medine SIMSEK Taha Emre KOSE	<i>Recep Tayyip Erdoğan University</i>	Incidentally Detected Retained Pellets on Routine Panoramic Radiography: A Case Report
Esmâ OSMAN Esra GÜNEY	<i>İnönü University</i>	The Impact of Healthy Lifestyle Behaviors on Fertility and the Role of Midwives in Supporting Fertility
Esmâ OSMAN Esra GÜNEY	<i>İnönü University</i>	Alternative Birth Methods: Water Birth, Planned Home Birth, Vaginal Birth After Cesarean, And Epidural Birth

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27.08.2026 / ONLINE / SESSION-2 / HALL-4

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HEAD OF SESSION: Kanchi Ravi Padma

Authors	Affiliation	Presentation Title
Kanchi Ravi Padma	<i>Women's University</i>	Artificial Intelligence for Intelligent Disaster Management: Advancing Smart Agriculture and Healthcare Resilience
Rosa Aulia Ananda Safani Ranti Ekasari Lilis Widiastuty Fatmawaty Mallapiang	<i>Universitas Islam Negeri Alauddin Makassar</i>	Analysis of Lead Levels in Automotive Painting Workers in Makassar City
Balasubramani G L Rinky Rajput Manish Gupta Pradeep Dahiya Jitendra K Thakur Rakesh Bhatnagar Abhinav Grover	<i>Jawaharlal Nehru University</i>	Structure-Based Drug Repurposing to Inhibit the DNA Gyrase of Mycobacterium Tuberculosis
Nodar Sulashvili Margarita Beglaryan Nino Didbaridze Nana Gorgaslidze Lasha Tchelidze Magda Davitashvili Irina Imerlishvili Vira Kravchenko Marika Sulashvili Nato Alavidze Nino Abuladze David Aphkhazava Igor Seniuk Marina Giorgobiani Lela Grigolia Kakhaber Robakidze	<i>Georgian National University SEU</i>	Scientific Discourse on Epilepsy: Immunological and Other Pathogenetic Mechanisms, Diagnostic Challenges, Pharmacological Management, Drug-Related Complications, Current Advances in Diagnosis, Precision Therapeutics, Clinical Outcomes and Future Research Perspectives Worldwide
Aleksandar STOYANOV Dario ZEHTINSKI Martin SHOPOV Tonislav VLAHOV Rumyana STOYANOVA	<i>Technical University of Sofia</i>	The Role of Chatgpt in Providing Mental Health Information and Support: A Literature Review
Rana Osman Rama Mousa Alaa Sheta	<i>Nile University</i>	Vision Transformer-Based Breast Cancer Classification from Histopathological Images
Adamu Amanu Asari Ameyu Godesso Zewdie Birhanu	<i>Jimma University</i>	Health Literacy Status Among Adolescents and Implications in Ethiopia
Boutaina Yahyai Rajae Agnaou Meyrem Doubi Chaimae Torres Fatima Zahra Hafid Driss Hmouni Brahim Bourkhiss	<i>Biotechnology and Plant Protection</i>	Moroccan Middle Atlas Medicinal Flora: Methodological Framework For Phytochemical and Anti-Inflammatory Bioactivity Screening
Pooja Rasal Gaurav Kasar Aman Upaganlawar Pranoti Nikama Akanksha Puneekar Sayali Patil Chandrashekhar Wake	<i>JES's SND College of Pharmacy</i>	Natural Compounds in the Prevention and Management of Neurological Disorders: Therapeutic Potential and Future Perspectives

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27.08.2026 / ONLINE / SESSION-2 / HALL-5

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HEAD OF SESSION: Bledar Kraja

Authors	Affiliation	Presentation Title
Bledar Kraja	<i>University of Medicine Tirana</i>	The Impact of Physical Activity, Obesity and Body Mass on Colorectal Cancer Risk: Mechanisms and Preventive Strategies
Bismillah Iftikhar	<i>Essentials Healthcare Lahore</i>	Optimizing Vitamin D3 Bioavailability: Development of High-Dose Oral Shot Formulation (Vol-D)
Gowhar Ahmad Wani Shifanath A. S. Thasneem K. A.	<i>B.S. Abdur Rahman Crescent Institute of Science and Technology</i>	Health Insurance and Financial Protection in India: Challenges and Prospects
Muhammad Saleh Faisal	<i>Khyber Medical College</i>	Pharmacogenetic Role of UGT1A6 Gene Polymorphism in Antiepileptic Drug Response
Varun V. Joshi Nitu L. Wankhede Aman B. Upaganlawar Chandrashekhar D. Upasani	<i>SNJB's Shriman Sureshdada Jain College of Pharmacy</i>	Neuroprotective Potential of Natural Compounds Against Streptozotocin- Induced Diabetic Peripheral Neuropathy: A Preclinical Study
Nwaforbe Frank L. Adekola Saheed A Bakare Mustapha Umar Musah Khadijat Toyin	<i>Federal University of Environment and Technology Koroma/Saakpenwa Rivers State</i>	Use of Digital Interventions for Hygiene Promotion among Primary School Students in Nigeria: A Narrative Review
Divyadharshini R Jai Shyam S Karthika H	<i>R.M.K. Engineering College</i>	Low-Cost Healthcare Technologies
Dhikroh Oriyomi Adekola Khadijat Toyin Musah Saheed Ayodeji Adekola Sodiq Adetunji Adekola	<i>University of Abuja</i>	Access to and Outcomes of Epidural Labour Analgesia in Low-Resource Settings: A Comparative Analysis of Urban vs. Rural Healthcare Facilities in Nigeria
Fatima El hilah Nadia Belahbib Jamila Dahmani Lahcen Zidane	<i>Ibn Tofail University</i>	Pharmacological Validation of Moroccan Medicinal Plants in the Management of Chronic Diseases: A Critical Synthesis

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27.08.2026 / ONLINE / SESSION-2 / HALL-6

Tokyo Local Time: 17:30-19:30



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HEAD OF SESSION: Brahmi Zahia

Authors	Affiliation	Presentation Title
T.N.Kosayeva A.T.Amiraslanov B.E.Abbasov	<i>Azerbaijan Medical University</i>	Pd-L1 Expression in Epithelial Ovarian Tumors: Clinicopathological Implications
Bledar Kraja Fatjona Kraja	<i>University of Medicine</i>	Determinants of Survival in Albanian Patients with Gastric Cancer: A Retrospective Cohort Study
Fatjona Kraja Erald Karaulli	<i>University of Medicine</i>	Personalizing Local Treatment in Early-Stage Breast Cancer: Which Patients May Safely Avoid Adjuvant Radiotherapy?
Boutaina Yahyai Rajae Agnaou Meyrem Doubi Chaimae Torres Fatima Zahra Hafid Driss Hmouni Brahim Bourkhiss	<i>Biotechnology and Plant Protection</i>	Moroccan Middle Atlas Medicinal Flora: A Methodological Framework for Phytochemical and Anti-Inflammatory Bioactivity Screening
Brahmi Zahia Gherissi Djallel Eddine	<i>University of Souk-Ahras</i>	Integrated Estradiol Profiling and Transrectal Ultrasonography Reveal Distinct Reproductive Responses in Dromedary Camels
Deven S. Aspalani Anuja B. Bahirat Pushpraj S. Shelke Buddhagosh J. Khandezod Sushant R. Gite Pooja U. Gunjal Prajakta P. Mande	<i>Savitribai Phule Pune University</i>	Digital Twin-Based Personalized Pharmacotherapy: Integrating Pharmacokinetics, Pharmaceutical Formulation and Patient-Specific Data for Precision Healthcare
Dovonou Mehinto Flore Houndji Pamphile	<i>University of Abomey-Calavi</i>	Influence Of Climatic Factors on the Prevalence of Water-Related Diseases in the Municipality of Lokossa (Benin)
Usman Kris Joko Suharjo Tunjung Pamekas Lidia Yunirti Manik	<i>University of Bengkulu</i>	Promoting The Formation of Solo Garlic by Vernalization of Different Sources of Planting Materials

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27.08.2026 / ONLINE / SESSION-2 / HALL-7

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HEAD OF SESSION: Sawaira Moeen

Authors	Affiliation	Presentation Title
Z Ait Said L Harchaoui S Ouafi	<i>Research Laboratory on Arid Zones</i>	Exploring the Antioxidant and Anti-inflammatory Potential of <i>Solenostemma argel</i> Phenolic Extracts
Brahim Elhilali Moulay Lafdil Belghiti Abdelhak Saidi Abdelkader Chahlaoui	<i>Moulay Ismaïl University</i>	Evaluating Physico-Chemical and Organic Pollution Dynamics Using the WQI And OPI At Ouislane Wadi (Meknes), Morocco
Sawaira Moeen Muhammad Ikram	<i>Government College University Lahore</i>	Designing G-C 3 N 4 /PVP@Ca(OH) 2 Ternary Heterostructure Catalysts for Efficient Degradation of Dyes and Antibacterial Activity
Zdravka Harizanova Ferihan Popova Fanka Gerginska Sabri Sabri Zlatizara Todorova Lilia Grozlekova Vyara Zaykova Polina Ivanova	<i>Medical University of Plovdiv</i>	A Band-shaped Pes Anserinus Insertion: An Anatomical Variant with Implications for Tendon Graft Harvesting
Reda Chahir Océane Pertegaz Salma Chakir Noureddine Hammani Hinde Aassila Marie Potier-Cartereau Naoual Oukkache	<i>Hassan I University</i>	Characterization and Anticancer Properties of Venom-Derived Peptides from the Moroccan Scorpion <i>Androctonus mauritanicus</i> and the Cobra <i>Naja haje</i> : Proteomic Insights, Inhibition of Cell Proliferation and Migration, and Modulation of Ion Channels in Human Glioblastoma Models
Melkamu Adamu Belaynew Asmamew Genet Yohanes Almeken Berihun and Melkeneh Wondie	<i>Gambella University</i>	Illegal Wildlife Hunting Patterns, Techniques, and Local Community Aspects in the case of Jikaw District, Southwest Ethiopia
Aishwarya S Priyanka K Varshana Deepa M Samiksha R K	<i>R.M.K. Engineering College</i>	Medical Sciences
Fozia Anjum Muhammad Shahid	<i>Government College University Faisalabad</i>	Microbial Production of Glutathione Under Optimal Conditions Using Poultry Waste

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Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Merve Türkegün Şengül

Authors	Affiliation	Presentation Title
Deniz OZKAN VARDAR	<i>Lokman Hekim University</i>	A New Approach Methodology-Based Comparative Assessment of the Thyroid-Disrupting Potential of Bisphenol A, Bisphenol S, And Bisphenol F
Mine TOPAL Emine YASSIBAS	<i>Gazi University</i>	Avoidant/Restrictive Eating Disorder in Patients with Celiac Disease
Özge Sultan BALIKCI Ezgi SESEN	<i>Ankara Medipol University</i>	Paralinguistic Features of Infant-Directed Speech (Motherese) in Mother-Child Interaction in Language Development: A Systematic Review
Merve TURKEGUN SENGUL	<i>Alanya Alaaddin Keykubat University</i>	Causal Inference from Observational Studies: Methodology and Reporting Principles for Target Trial Emulations
Havva KACAN Şevval YEYİT BOZDEMİR	<i>Kastamonu University</i>	An Examination of Nursing Approaches to Common Mental Disorders in Adolescence in Light of Current Evidence
ŞEVİN AKSOY SACİDE PEHLIVAN	<i>Istanbul University</i>	Genetic And Epigenetic Mechanisms of Restricted and Repetitive Behaviors In Autism Spectrum Disorder: Their Relationship with Emotion Regulation and Emotion Dysregulation
Ayça TOPRAK SEMİZ	<i>Recep Tayyip Erdoğan University</i>	Repurposing Of Existing Drugs for Nsaid-Induced Gastric Ulcers: Insights from Recent Experimental Studies
Hülya SARAY KILIC	<i>Bilecik Şeyh Edebali University</i>	Fear Of Falling in Surgical Patients: A Narrative Review of Prevalence, Risk Factors, Clinical Outcomes, And Nursing Interventions
Kaya OZEN	<i>Gazi Yaşargil Training and Research Hospital</i>	Atherosclerosis: Comparison Of Global and National Perspectives in Prevention, Diagnosis, And Treatment

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28.08.2026 / ONLINE / SESSION-1 / HALL-2

Tokyo Local Time: 15:00-17:00



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HEAD OF SESSION: Özge Çimen

Authors	Affiliation	Presentation Title
Kevser PAMUK Eren SARITAS Nazmiye YILDIRIM	<i>Afyonkarahisar Health Sciences University</i>	Examining Postgraduate Theses Involving Laughter Yoga Interventions in Türkiye: A Document Analysis
Fatma Ayşe UZ Çağdaş AKTAN	<i>Bandırma Onyedli Eylül University</i>	Non-Coding Rna Networks and Molecular Signaling Pathways in the Development of Castration-Resistant Prostate Cancer
Elif MANSUROGLU Gülbin OZCELIKAY	<i>Ankara University</i>	Pharmacist-Administered Vaccination in Turkey: A Legal Document Analysis
Özge CIMEN	<i>Nuh Naci Yazgan University</i>	Evidence-Based Nursing Practices in Burn Patient Care
Bengisu ARSLANTAS Zeynep BIRSU CINCIN	<i>ADAM European Center for Lifelong Learning, Research & Development</i>	A Modular 3D-Printed Titanium Microscrew-Assisted Platform for Stable and Reproducible EEG Recordings in Behavioral Neuroscience
Bengisu ARSLANTAS Dilara KOCABAL Zeynep BIRSU CINCIN	<i>ADAM European Center for Lifelong Learning, Research & Development</i>	Mixture-aware systems pharmacology maps hazelnut-oil constituents onto phase-specific human wound-repair states
Tarana SULEYMANOVA Aytac ALLAHVERDIYEVA Günel ALIYEVA	<i>Azerbaijan Medical University</i>	Microbiological Diagnostic Methods for Catheter-Associated Urinary Tract Infections Following Surgical Procedures
Zekeriya CETINKAYA	<i>Kayseri State Hospital</i>	Evaluation of Thyroid Functions, Vitamin B12, Folate, Ferritin and Metabolic Parameters in Patients with Ptosis: A Controlled Study
Işıl KURT Gamze KUŞ Hayal GÜLER	<i>Hatay Mustafa Kemal University</i>	Association of Pain Intensity and Functional Status with Adipose Tissue, Muscle Strength, And Physical Activity in Individuals with Chronic Low Back Pain

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28.08.2026 / ONLINE / SESSION-1 / HALL-3

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Nazife Nur AKBULUT

Authors	Affiliation	Presentation Title
Ahmet CALISKAN Betül KARABUDAK Sena AKSOY Harun EROL Bekir SALIH Hacı Mehmet KAYILI	<i>Karabük University</i>	N-Glycan Profiling of Renal Cell Carcinoma for Maldi Mass Spectrometry
Ahmat Adam AMIR Esra Nur AKYILDIZ Sena AKSOY Betül KARABUDAK Bekir SALIH Hacı Mehmet KAYILI	<i>Karabük University</i>	Meat Product Authentication Based On N-Glycan Profiles
Fatih SARGIN	<i>Antalya City Hospital</i>	Liver Laceration Following Polytrauma, Hemopneumothorax, And Multiple Complications During an Extended Intensive Care Stay: A Case Report
Nazife Nur AKBULUT	<i>Recep Tayyip Erdoğan University</i>	Investigation Of Findings Before and After Voice Therapy in a Case with Unilateral Vocal Fold Atrophy and Muscle Tension Dysphonia
Ramazan USTUN Erbil SEVEN Ayşe SEKER Harun EYYUPKOCA	<i>Bolu Abant İzzet Baysal University</i>	Decrease in B3-Tubulin and Neurofilament Heavy Chain (Nfh) Immunoreactivity Following Optic Nerve Crush Injury in Mice: A Comparative Analysis of Control and Injury Groups
Harun EYYUPKOCA	<i>Van Yüzüncü Yıl University</i>	The Brain in Crisis: Neurophysiological Foundations of Acute Stress, Triage, And Simulation Training in Pre-Hospital Emergency Health Services
Rüştü ERSOY SAKAYRA Muhammed Mustafa AKAR	<i>Atatürk University</i>	Rehabilitation of Complete Edentulism with Screw-Retained Implant-Supported Fixed Prostheses Using a Digital Workflow:A Case Report
Aynur Karadağ GÜREL Gökhan GÖRĞİŞEN Hamdullah YANIK	<i>University of Health Sciences</i>	Identification of Common Peripheral Blood Transcriptomic Biomarkers Across Female Cancers

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28.08.2026 / ONLINE / SESSION-1 / HALL-4

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Umar Baba Shaaba

Authors	Affiliation	Presentation Title
Umar Baba Shaaba	<i>Ahman Pategi University</i>	Artificial Intelligence Adoption and Financial Reporting Quality: Evidence from Small and Medium-Sized Enterprises in Nigeria
Umar Baba Shaaba	<i>Ahman Pategi University</i>	The Role of Forensic Accounting in Combating Financial Fraud and Enhancing Corporate Governance in Emerging Economies
Nurliani Erni Suhardi Suhardi	<i>Mulawarman University</i>	Phenotypic Diversity and Correlation of Body Condition Score with Bali Cattle Body Size
Bornare Ashwini	<i>JES's SND College of Pharmacy</i>	Advanced Nanotechnology-Based Drug Delivery Systems
Ranti Ekasari Dian Kurnia Ningsih Nurul Fasya Faisal Nur Inayah Rustan Randi Surya Rannu Muhammad Zulfikar Djafar	<i>Universitas Islam Negeri Alauddin Makassar</i>	Work Posture Assessment Among Retail Cashiers: A Descriptive Ergonomic Study in Makassar, Indonesia
Chahid SLIMANI Abdellah BAHTAT	<i>Sidi Mohamed Ben Abdellah University</i>	Artificial Intelligence and Medical Decision-Making: Redefining Physician Autonomy, Patient Consent, and Liability
Maria Fareed Siddiqui Umar Raees	<i>University of Lahore</i>	Navigating the Infodemic: COVID-19 Literacy and Treatment Misconceptions Among Medical and Non-Medical Workers in Punjab
Mohammad Moneruzzaman Khandaker Shahida Kanwal Mohd Hailmi Sajili	<i>Universiti Sultan Zainal Abidin</i>	Enhancing Growth, Cellular Structure, and Anthracnose Resistance in Chilli Using Sargassum polycystum Extracts
Abdelaadim Khriss Aissa Kerkour Elmiad Mohammed Badaoui Filip Šuligoj	<i>Mohammed Premier University</i>	Learning Anatomical Spatial Relationships for Landmark Detection in Full-Leg Radiographs

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28.08.2026 / ONLINE / SESSION-1 / HALL-5

Tokyo Local Time: 15:00-17:00



Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: BKIRI Abderrahim

Authors	Affiliation	Presentation Title
Mark Anthony N. Polinar Mary Adeline B. Delos Cientos Joanna Marie U. Ato April Marie N. Mahipos Jenalyn B. Boctot	<i>Mabolo National High School</i>	Social Media Platform Utilization and Perceived Business Growth among Food Micro, Small, and Medium Enterprises (MSMEs)
Muawuya Ibrahim Gumi A.M K. Abdullahi Shamsudeen Muhammad Muhammad Lema Aisha Muhammed	<i>Abdullahi Fodio University of Sci. and Tech.</i>	Assessment of Anthocyanin Pigmentation Diversity among Rice (<i>Oryza glaberrima</i> Steud.) Varieties Using Spectral Pigment Indices
Hari Nandhini A Ramya G	<i>Bharath Institute of Higher Education and Research</i>	3D-Printed Medicines: The Future of Personalized Drug Therapy
Nyayiru Kannaian Udaya Prakash Srinivasan Bhuvaneswari	<i>Technology and Advanced Studies</i>	The Atmospheric Presence of <i>Aspergillus Fumigatus</i> , A Who Priority Pathogen in Chennai, India: Historical Evidence From 1996-1998
Olaniyi Habib ALIU Jamiu Rotimi OLASINA	<i>Federal Polytechnic Ilaro</i>	Lightweight Convolutional Neural Networks for Automated Malaria Parasite Detection in Blood Smear Microscopy Images
BKIRI Abderrahim	<i>Faculty of Sciences of Kénitra</i>	Valorization Of Waste Rocks from Tte Former French Mining Company Of MIBLADEN: Recovery of Lead and Barite.
Oluwatosin Emmanuel AKINSUROJU	<i>Federal University</i>	Resource-Utilisation and Internal Efficiency of Medical and Health Sciences Programmes in Universities in Ekiti State, Nigeria: Implications for Quality and Sustainable Health Workforce Development
Mariami Managadze	<i>Tbilisi State Medical University</i>	The Problem of Microplastics in Environmental Medicine
Olaniyi Habib ALIU Jamiu Rotimi OLASINA	<i>Federal Polytechnic</i>	Explainable AI for Student Dropout Risk Prediction in Nigerian Polytechnics

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28.08.2026 / ONLINE / SESSION-1 / HALL-6

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Ankara Local Time: 09:00-11:00

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HEAD OF SESSION: Bhavesh Bhamare

Authors	Affiliation	Presentation Title
Ilochi. N. Ogadinma Adeolu Esther Abiola	<i>Federal University Otuoke</i>	The Impact of Hygiene Education in Reducing Respiratory Infection Among 400 Level Nursing Students in Madonna University
Ilochi. N. Ogadinma Adeolu Esther Abiola	<i>Federal University Otuoke</i>	Exploring The Effect of Noncompliance with Malaria Treatment on Academic Performance Among Undergraduate Students
A.O. Ibegbu I. Mullaney L. Fyfe D. MacBean	<i>Federal University Ndufu</i>	Stress Predisposes Neuronal Cells to changes in G-Protein Coupled Receptor Gene Expression in Cortical Neurons in culture
Ilochi N. Ogadinma Anyanwu C. Frances	<i>Federal University Otuoke</i>	Cognitomotor Effect of an Allium Specie And Its Bioactive Agent on Heavy Metal- Induced Toxicity
Parviz Abbasov Parvin Najafgulyeva	<i>Azerbaijan State Advanced Training Institute for Doctors</i>	Comparative Outcomes of Laparoscopic TAPP and Open Lichtenstein Mesh Repair in the Surgical Treatment of Inguinal Hernia
Sorin Burlica Elena Ramona Dragomir Ion Petre Roxana Furau Florina Buleu Cezar Pântea Izabella Petre	<i>"Victor Babes" University of Medicine and Pharmacy Timisoara</i>	Vitamin D Status and Reproductive Hormonal Profiles in Early versus Physiological Menopause: A Comparative Study
Kawthar El Ahmadi Khadija Haboubi Phuong Nguyen-Tri	<i>Abdelmalek Essaâdi University</i>	Biological Valorization of Cannabis sativa L. Extracts and By-Products Obtained by Supercritical CO ₂ : Antimicrobial and Anti-Inflammatory Potential
Bhavesh Bhamare	<i>University: S.N.D. College of Pharmacy</i>	3D-Printed Medicines and the Future of Personalized Healthcare: Economic, Social and Pharmaceutical Implications
Mahima verma	<i>I.K. Gujral Punjab Technical University</i>	Role of Functional Foods in Women's Health: From Menarche to Menopause

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28.08.2026 / ONLINE / SESSION-1 / HALL-7

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Ankara Local Time: 09:00-11:00

Zoom Meeting ID: 844 6001 0824 / Zoom Passcode: 123456

HEAD OF SESSION: Ghazaleh Elahi

Authors	Affiliation	Presentation Title
Ghazaleh Elahi	<i>Golestan University of Medical Sciences</i>	Molecular Identification of ESBLs Genes (bla TEM, bla SHV and bla CTX) among Non-fermenting Gram-negative Bacteria Isolated from Hospitalized Patients in Mazandaran Province, Iran
Ghazaleh Elahi Abdollah Ardebili	<i>Golestan University of Medical Sciences</i>	Evaluation Of Biofilm-Related Phenotypic and Genotypic Characteristics in Clinical Acinetobacter Baumannii Isolates from Gorgan, Northern Iran
Moses Adeolu AGOI Success Eniola OGBOYE Samuel Olayiwola AJAGA Oluwanifemi Opeyemi AGOI	<i>Lagos State University of Education</i>	Reimagining Continuing Medical and Health Sciences Education Through Mobile Microlearning: Evidence-Based Evaluation of Knowledge Retention, Professional Competence, And Clinical Practice
Hari Nandhini A Ramya G	<i>Bharath Institute of Higher Education and Research</i>	Pharmacogenomics: Personalized Medicine Based on Genetic Makeup.
Ibrahim Samaila Usman Samaila	<i>Umaru Musa Yar'adua University</i>	The Application of Nanoparticles as a Therapeutic Agent
Usman Samaila Ibrahim Samaila	<i>Umaru Musa Yar'adua University</i>	Green Hybrid Nanoparticles for Biomedical Applications
Salehova G.B. Emrahova F.B.	<i>The K.Y. Farajova Institute of Scientific Research in Pediatrics</i>	Choledochal Cyst Associated with Pancreatic Exocrine Insufficiency and Electrolyte Imbalances
Aytan Agayeva Kamala Namazova Sabuhi Yusifov Rashad Guliev Nazrin Agayeva	<i>Academician M. Topchubashov Scientific Surgery Center</i>	International Standards and Local Practice in Papillary Thyroid Cancer: A Comparative Analysis
Rabar Mohammed HUSSEIN	<i>Noble Technical Institute</i>	Climate Change Impacts on Freshwater Ecosystems in the Kurdistan Region, Iraq

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28.08.2026 / ONLINE / SESSION-2 / HALL-1

Tokyo Local Time: 17:30-19:30



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HEAD OF SESSION: Gülşah TOLLU

Authors	Affiliation	Presentation Title
Gülşah TOLLU Erdal YABALAK	<i>Mersin University</i>	Investigation of the Efficacy of Avocado Seed Extracts in Preventing, Inhibiting and Eradicating S. Aureus and P. Aeruginosa Biofilms
Gülşah TOLLU Erdal YABALAK	<i>Mersin University</i>	Subcritical Water-Derived Ceratonia Siliqua L. Seed Extract as a Natural Antimicrobial Agent Against Pathogenic Bacteria and Fungi
İsmail Musab GÜLAÇAR Aynur Karadağ GÜREL Gökhan GÖRGİŞEN	<i>University of Health Sciences,</i>	Liquid Biopsy and Next-Generation Sequencing (Ngs): The Role of Ctdna in Cancer Management
Asma RAHMANI TANGROUDI Seval YILMAZ	<i>Atılım University</i>	Investigation Of Oculomotor Function and Digital Fatigue in Individuals with Non-Specific Neck Pain
Miray ACAR Gamze Sevri EKREN AŞICI Senem AKKOÇ FEİZİ DEH NAYEBİ	<i>Aydın Adnan Menderes University</i>	In Vitro Evaluation of The Antiproliferative Effect of a Newly Synthesized Benzimidazole Derivative on the Human Breast Cancer Mcf-7 Cell Line
Kadir Han ALVER	<i>Pamukkale University</i>	Evolving Procedural Profile of Interventional Radiology: A Five-Year Single-Center Trend Analysis
Muhammed KOSTEKCI	<i>Kırşehir Ahi Evran University</i>	The Role of Child Development Specialist in Community-Based Social Work in The Context of Migration and Poverty
Muhammed KOSTEKCI	<i>Kırşehir Ahi Evran University</i>	The Impact of the “Nfluencer” Culture on Children’s Identity Development and The Protective Role of Social Services
Kübra Aslantaş Akar Muhammed Mustafa Akar	<i>Kafkas University</i>	The Role of Endodontic Treatment in the Prevention of Tooth Loss: The Importance of Preserving the Natural Tooth

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28.08.2026 / ONLINE / SESSION-2 / HALL-2

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Ankara Local Time: 11:30-13:30

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HEAD OF SESSION: Nasrin ZIAYEE

Authors	Affiliation	Presentation Title
Paata J. KERVALISHVILI	<i>Georgian Technical University</i>	Optical Spectroscopy of Viral Nanoparticles and Perspectives of their Resonance-Based Inactivation
Nasrin ZIAYEE	Ahlul-Bayt International University Tehran	Green Chemistry Framework for Women's Reproductive Health: Engineering Biodegradable Formulations to Mitigate Transgenerational Bioaccumulation of Endocrine-Disrupting Chemicals
Jitendra AHERKAR	<i>Atmiya University,</i>	Mental Well-being of Generation Beta: Challenges in a Hyperconnected World
Bushra ANSARI	<i>Aligarh Muslim University</i>	Therapeutic Potential of Short-Chain Fatty Acids in Parkinson's Disease: An Integrated Metabolomics Approach
Le Quang NGOC Nguyen Thi THOM Nguyen Xuan DUY	<i>Institute of Sociology and Psychology,</i>	Access to Central-Level Hospitals among Older Adults in Rural Vietnam
Valery V. BELAKHOV	<i>Technion – Israel Institute of Technology</i>	Discovery of New Group of Organofluorine Derivatives of Heptaene Macrolide Antifungal Antibiotic Amphotericin B
Valery V. BELAKHOV	<i>Technion – Israel Institute of Technology</i>	Development of a New Unified Technological Method for the Isolation and Chemical Purification of Polyene Macrolide Antibiotics with Protection Against Inactivation
Valery V. BELAKHOV	<i>Technion – Israel Institute of Technology</i>	Design, Synthesis, Biological Activity, And Use Prospects of New Functionally Substituted Monosaccharides as Highly Effective and Environmentally Safe Pesticides
Chahinez BOUDJEMAI Mourad DJEZIRI Hassiba ZEMMOURI	<i>Advanced Technologies Laboratory</i>	Antioxidant and Proteolytic Enzyme Activities Across Organs of Octopus vulgaris as Indicators of Physiological Status

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HEAD OF SESSION: Anamika Basu

Authors	Affiliation	Presentation Title
Sumayya Akram Matloob Ahmad Sana Aslam	<i>Government College University Faisalabad</i>	Synthesis and Biological Evaluation of Pyridylpiperazine-Based Carbodithioates as Urease Inhibitors
Imane Elbelghiti Noureddine Slimani Zohra Lemkhente Fatima Boubrik Ahmed Belmouden	<i>Ibn Zohr University</i>	Isolation, Characterization and Therapeutic Applications of Bacteriophages against Pathogenic Bacteria of the ESKAPE group
Nabil ZAARA Jamila DAHMANI Souad SKALLI Amina TOUHAMI OUAZZANI Allal DOUIRA	<i>Ibn Tofail University</i>	The Influence of Climatic Factors and the Cultivation System on the Physicochemical Characteristics of Olive Oil from the Moroccan Variety Picholine (<i>Olea Europaea</i> L.) Cultivated in The Northern and Central Region of Morocco
Anamika Basu	<i>Gurudas College Affiliated to University of Calcutta</i>	Conserved Molecular Pathways of Coal Dust Exposure: Cross-Species Insights from Zebrafish and Human Transcriptomics
Oussama Mahmoudi	<i>Mohamed-Cherif Messaadia University</i>	Antimicrobial Resistance in Animal Production: Mechanisms, Selective Pressures, and Mitigation Strategies within the One Health Framework
Abubakar Abdulkadir Abuabdin	<i>Business Administration, Federal University</i>	AI-Powered Consumer Insights and the Marketing of Green Innovations: A STEAM Approach to Sustainable Consumption in Nigeria
Nayab Parveen	<i>National Institute of Educational Planning and Administration</i>	The Role of Rehabilitation and Assistive Technology in Improving Quality of Life Among People with Physical Disabilities
Lhoucine Naanaai Abdellah El Aissouq Youness Moukhliiss Hicham Zaitan Mohammed Bouachrine Fouad Khalil	<i>Sidi Mohamed Ben Abdellah University</i>	Design Of Novel Hydrazide–Hydrazone Derivatives Against MGC803 Gastric Cancer Cells Using 3D-QSAR, ADMET, Network Pharmacology, Docking and MD Simulations
BELLIL Dassine GHAROUT-SAIT Alima DJOUADI Ferhat BELLIL Zahra MENDIL Ouidad MANSEUR Lyticia DIB-SAIT Sabrina	<i>Université de Bejaia</i>	Comparative Assessment of Decontamination Strategies for the Isolation of <i>Mycobacterium</i> spp. from Diverse Animal Samples

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28.08.2026 / ONLINE / SESSION-2 / HALL-4

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Ankara Local Time: 11:30-13:30

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HEAD OF SESSION: Sarah Shahid

Authors	Affiliation	Presentation Title
Sarah Shahid	<i>Khyber Girls Medical College</i>	Correlation Of Hematological Inflammatory Indices with Physical Activity Level and Angiographic Severity in Patients with Coronary Artery Disease
Rabiu Haruna Idris Abdulrashid Rahmat Adam Abdulkadir Idris Zulaihat Yakubu Muhammad	<i>Federal University Dutse</i>	Postoperative Appearance and Facial Satisfaction Outcomes among Adults with Repaired Cleft Lip and Palate in Jigawa State, Nigeria
Yassine Koubi Youness Moukhliiss Oumayma Abdssadk Marwa Alaqrbeh Hamid Maghat Tahar Lakhlifi Mohammed Bouachrine	<i>Moulay Ismail University of Meknes</i>	Computational Structure – Biological Activity and Retrosynthesis Investigations Of 1,2,3-Triazole-Quinoline Hybrid Molecules as Potential Respiratory Virus Inhibitors
Dabeer Ahmed Khan Syed Abid Mehdi Kazmi Sohail Rafi Amna Aamir Khan Mazhar Ali Bhutto	Dr. Ziauddin Hospital	Comparative Effects of Kinetic Chain Exercises on Pain and Arterial Occlusion Pressure in Acute Anterior Knee Pain: A Randomized Controlled Trial
Anjitha. A B. Rajendran	University of Kerala	Health and Wellness Tourism in Kerala: The Role of Ayurveda and Medical Science
Soukaina Hamou Mustapha Moufassih Ousama Tarahi Anas Mazid Said Agounad Hafida Idrissi Azami	Ibn Zohr University	Evaluating the Impact of Machine Learning Classification Methods on Correlation-Based SSVEP Decoding
Ranjita Sinha Mithu Dey Induprama Mandal	Asansol Engineering College	AI-Powered Environmental Monitoring for Sustainable Ecosystem Management
Ranjita Sinha Mithu Dey Anubhab Dassharma	Asansol Engineering College	Microbial Fuel Cells for Environmental Sustainability and Wastewater Treatment

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28.08.2026 / ONLINE / SESSION-2 / HALL-5

Tokyo Local Time: 17:30-19:30



Ankara Local Time: 11:30-13:30

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HEAD OF SESSION: Karim Nadir

Authors	Affiliation	Presentation Title
El Mahdi Bouabdalli Mohamed El Jouad Samira Touhtouh Ilyass El kadmiri Nathalie Gaumer Mostapha Siniti Abdelowahed Hajjaji	<i>Sidi Mohamed Ben Abdellah University</i>	Engineering Structure–Property Relationships in Eu 3 ⁺ -Doped Strontium Phosphate Glasses for Advanced Photonic and Photovoltaic Applications
El Mahdi Bouabdalli Mohamed El Jouad Samira Touhtouh Fouad Belhora Nathalie Gaumer El Kebir Hlil Abdelowahed Hajjaji	<i>Sidi Mohamed Ben Abdellah University</i>	A Synergistic Multiphysics and Judd–Ofelt Framework for High-Efficiency Red Emission in Eu 3 ⁺ -Doped Silicophosphate Sol–Gel Glasses
Karim Nadir Hassan Benchelha	Université Ibn Tofail	Socioeconomic Status, Motivation, Self-Esteem, and Nonverbal Intelligence as Determinants of Academic Achievement: An Integrative Structural Model
Huma Ikram Ambreen Hasnat Saniya Tauqeer Hafsa Abdullah Syeda Yumna Darakhshan J. Haleem	University of Karachi	Levothyroxine Rescues Hypothyroidism- and Scopolamine-Induced Memory Deficits in a Rat Model: Role of Hippocampal Serotonergic Modulation
Lorena SALIAJ Marinel SALIAJ	Mediterranean University of Albania	Longitudinal Statistical Analysis Of Gastrointestinal Symptom Dynamics Following Helicobacter Pylori Eradication
Anum Shahzadi Ali Haider Muhammad Ikram	COMSATS University Islamabad	Graphene Oxide/Chitosan-Layered Double Hydroxides: Efficient Dye Degradation And Antibacterial Agent With Computational Validation
Mohammed El Goual Mouad Benaicha	Mohammed First University	Numerical Assessment Of Heat Extraction Enhancement In Photovoltaic–Phase Change Material (PV–PCM) Collectors
Bendaoud Ahmed Mohammed Salah Zeroual Abdellah	Chouaib Doukkali University	Synthesis and Anticorrosion Efficiency of a Benzo[d]oxazole Derivative for E24 Steel: Insights from DFT and Molecular Dynamics Simulations
Orges Lena Jasemin Todri	UCAM Universidad Católica San Antonio de Murcia	Postural Reeducation for Low Back Pain in Elite Athletes: A Randomized Controlled Trial
Diyana Zhelyazkova Svetlin Aleksandrov Dobromira Shopova	Medical University-Plovdiv	Combined Fixed–Removable Prosthetic Rehabilitation Of The Maxilla In A Partially Dentate Patient: A Clinical Case Report
Aher Asmita Changdeo Bhamare Bhavesh Sanjay Kolhe Yogita Babasaheb Gaikwad Chanchal Navnath Thorat Siddhi Deepak	S.N.D College Of Pharmacy	Smart Nanocarriers for Personalized Medicine: Integrating Nanotechnology, Artificial Intelligence and Targeted Drug Delivery

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28.08.2026 / ONLINE / SESSION-2 / HALL-6

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HEAD OF SESSION: Gamze SAATÇI

Authors	Affiliation	Presentation Title
Gamze SAATÇI	Kırşehir Ahi Evran University	The Role of Nurses in Recognizing, Stopping, and Correcting Medical Errors
Gamze SAATÇI	Kırşehir Ahi Evran University	Alarm Fatigue and Patient Safety in Healthcare Services
Nahit SAYLAK	Dicle University	Rhinoplasty In Brachycephalic Cats: Surgical Techniques and Clinical Outcomes
Sümbüle Köksoy Vayisoğlu Demet Harbalioglu	Mersin University	The Effect Of Self-Applied Ear Massage On Sleep Quality In Earthquake-Affected Women
Ahliman Amiraslanov Tamara Guliyeva	Azerbaijan Medical University	Association Between Pten Gene Deletion And Treatment Outcomes In Patients With Soft Tissue Sarcoma
Arkhmammedova Gulshan Karimli Nurane Hasanova Vafa	Azerbaijan Medical University	Comparative Assessment Of Dental Disease Prevention Among Pregnant Women
Kerimbekova Gulnara	Azerbaijan Medical University	Current Approaches To The Clinical Features, Diagnosis, And Management Of Cutaneous Leishmaniasis
Shahla Yusubova Elmira Aliyeva Qasim Bayramov Shafag Mammadova	Azerbaijan Medical University	Features of Immunological Processes And Interactions With The Body In The Pathogenesis Of Periodontal Diseases
Ravana GULIYEVA Nigar ALIYEVA Sevinc AMIRASLANOVA Aytən HÜSEYNOVA İlhama SAFAROVA Sevinc ABDULLAZADƏ Surayya İSMAYILOVA İSMİKHAN	Baku State University	The Chemistry Of Addiction: Psychoactive Plant Metabolites, Neurobiological Targets, And The Duality Of Therapeutic Potential And Toxicity
Ravana GULIYEVA Səadət AZADƏLİYEVA İlhama SAFAROVA Narmin MAMMADOVA Milana AKİFLİ Diana AHMADOVA	Baku State University	From Molecules To Mind: The Gut–Brain Axis As A Molecular Link Between Microbiota, Neurotransmitters, Inflammation, And Mental Health
S. M. YAGUBOVA T. S. SULTANOVA, A. A. ALAKBAROV I. I. KARIMOVA G. N. ALIYEVA G. A. HUSEYNOVA	Azerbaijan Medical University	Digital Pathology And Its Applications In Modern Medicine
I. E. YUSUBOV	Azerbaijan Medical University	The Role Of Esophagogastroduodenoscopy In The Diagnosis And Treatment Of Postoperative Complications

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CONFERENCE GALLERY

















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WHAT IS ROLE OF FLAVONOID SOURCES IN RUMEN FERMENTATION**Mehtap GÜNEY**

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ABSTRACT

In this study, the effects of various flavonoid sources on rumen digestion and fermentation in ruminants were evaluated. Animal production is more important than ever due to current and future climate change pressures and insufficiency of feed resources. It is important to increase performance in ruminant animals, improve feed utilization efficiency, animal health and rumen fermentation. For this purpose, flavonoids, which are natural feed additives in animal nutrition, contain secondary metabolites that give plants color and taste and contribute to the plants' defense against external factors in their interactions with the environment. Flavonoids, which are mentioned among plant secondary metabolites, have gained importance due to their wide range of biological activities, especially their antimicrobial properties. Flavonoids are found in many plant species, the most common being flavonols and flavones. The most frequently used flavonoids are quercetin, kaempferol, and myricetin. Flavonoids are a class of polyphenols known to possess anti-inflammatory and antioxidant functions. It has been emphasized that the addition of flavonoid-rich plant extracts to rations increases milk yield and lactation performance, and may reduce the incidence of acidosis. Moreover, in ruminants, flavonoids are well known as antibacterial agents and, by selectively targeting gram-positive bacteria, can contribute to increased animal productivity due to their positive effects on energy metabolism. The response of flavonoids to rumen microorganisms varies, and information on this subject is still insufficient. However, it has been shown to improve rumen fermentation and inhibit methane production.

Keywords: flavonoids, rumen fermentation, ruminant

BIOLOGICAL CONTROL FROM A ONE HEALTH PERSPECTIVE: INDIRECT CONTRIBUTIONS OF TRICHODERMA, ARBUSCULAR MYCORRHIZAL FUNGI, AND NATURAL ENEMIES TO HUMAN HEALTH

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ABSTRACT

Objective: The aim of this study is to evaluate the contributions of biological control agents, including *Trichoderma* spp., arbuscular mycorrhizal fungi (AMF), and natural enemies, to reducing pesticide use within the framework of the One Health approach, and to highlight their indirect effects on human health, environmental sustainability, and safe food production based on current scientific literature.

Materials And Methods: This study was designed as a review. Current national and international scientific articles, review papers, and reports focusing on the One Health approach, biological control, *Trichoderma*, arbuscular mycorrhizal fungi (AMF), natural enemies, pesticide exposure, and integrated pest management were systematically examined. The collected information was evaluated with respect to the role of biological control agents in reducing pesticide use and their indirect contributions to human health.

Results And Discussion: The reviewed literature indicates that the intensive use of chemical pesticides is associated with neurological disorders, reproductive health problems, endocrine system disruption, and environmental contamination. Furthermore, pesticide residues entering the food chain, contamination of soil and water resources, and adverse effects on beneficial organisms negatively affect the sustainability of agricultural production. The examined studies demonstrate that *Trichoderma* spp. enhance plant health by promoting plant growth, suppressing plant pathogens, and inducing systemic resistance. Similarly, arbuscular mycorrhizal fungi improve nutrient uptake, enhance tolerance to biotic and abiotic stresses, and strengthen plant defense mechanisms. In addition, natural enemies, such as predators and parasitoids, effectively suppress pest populations below the economic injury level, thereby substantially reducing the need for chemical pesticide applications. Integrating these biological control agents into Integrated Pest Management (IPM) programs can decrease the frequency of pesticide applications, reduce pesticide residues in food products, and minimize environmental contamination.

Conclusion: Within the One Health framework, biological control practices represent not only effective alternatives for pest management but also comprehensive strategies that contribute to the protection of human health, the promotion of safe food production, and environmental sustainability. In particular, the widespread adoption of integrated biological control programs combining *Trichoderma*, arbuscular mycorrhizal fungi, and natural enemies is expected to play a significant role in reducing pesticide dependency and establishing more sustainable agricultural production systems.

Keywords: One Health, biological control, *Trichoderma*, arbuscular mycorrhizal fungi, natural enemies, pesticide exposure, human health, Integrated Pest Management, sustainable agriculture.

**BÖLGE TOPRAĞIMIZ ÜZERİNE KRİSTAL VİOLET BOYASININ ADSORPSİYONU:
KAREKTERİZASYONU, İZOTERMİ, TERMODİNAMİĞİ, KİNETİĞİ**

*ADSORPTION OF CRYSTAL VIOLET DYE ON OUR LOCAL SOIL: CHARACTERIZATION,
ISOTHERM, THERMODYNAMICS, AND KINETICS*

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ÖZET

Amaç: Su kirliliği önemli bir çevresel sorundur. Bu bilimsel çalışmada, tekstil sektörü atık sularında bulunan kristal violet boyası, yaşadığımız bölgede bulunan ucuz ve bol toprak doğal materyali üzerine adsorbe edilmiş ve bu yolla atık sudan uzaklaştırılmaya çalışılmıştır.

Materyal Ve Yöntem: Van Gölü Havzasından temin edilmiş olan doğal toprak materyalimizin karakterizasyonu SEM, SEM EDX, FTIR ve BET analizleri ile yapılmıştır. Kristal violet boyası olan adsorbatımız ise analitik saflıkta ticari olarak temin edilmiştir. Fiziksel/kimyasal adsorpsiyon işlemi, çeşitli zaman periyotları, boya konsantrasyonları ve sıcaklıklarda uygulanmış ve adsorplanan boyar madde miktarı UV viskozimetresi ile ölçülmüştür. Adsorpsiyon işleminin denge çalışmaları; sabit sıcaklıkta adsorpsiyon izoterminin belirlenmesi için, adsorpsiyon işleminin termodinamiği; kendiliğinden gerçekleşebilirlik, endotermik/ekzotermik oluşumun ve entropi durumunun belirlenmesi için; adsorpsiyon işleminin kinetiği ise adsorbatın katı toprak adsorbanının yüzeyine tutunma hızını ve bu hızı etkileyen mekanizmaları ölçmek için hesaplanmış ve incelenmiştir.

Bulgular: SEM görüntülemesi yoğun kübik/silindirik yapıyı ve kısmi octahedral yapıyı göstermiştir. SEM-EDX analizi, topraktan beklenen oksijen ve kalsiyum içeriğine ve adsorpsiyonu destekleyici C/Si içeriğine ortaya çıkarmıştır. FTIR analizi adsorpsiyon bağlanmalarının Ca/Si elementleri üzerinden gerçekleşmiş olduğunu açıklamıştır. BET yüzey ölçümü analizleri, adsorpsiyon/desorpsiyon diyagramlarına bakıldığında tip3 izotermini, özgül yüzey alanı ve ortalama gözenek çapı değerleri ise mezogözenekli adsorban yapıyı tanımlamıştır. Deneysel veriler, adsorpsiyon denge çalışması sonucunu oda koşullarında adsorpsiyon oranını %77,2 ve q_{max} değerini %97,5 olarak tespit etmiştir. Adsorpsiyon izotermi Freundlich denklemine, adsorpsiyon termodinamiği endotermik ve fiziksel bağlanmayı, adsorpsiyon kinetiği ise (psödo-second) ikinci dereceden kinetik modele uygun bulunmuştur.

Sonuç: Doğada biyolojik olarak parçalanmayan boyar maddeler, canlılar için zehir, insan sağlığı açısından kanserojen ve sudaki hayat için toksisitedir. Atık suların arıtılması elzemdir.

Anahtar kelimeler: adsorpsiyon, toprak, kristal violet boyası, atık su

ABSTRACT

AIM: Water pollution is a major environmental problem. In this scientific study, crystal violet dye found in wastewater from the textile industry was adsorbed onto an inexpensive and abundant natural soil material found in our region, in an effort to remove it from the wastewater.

Materials And Methods: The characterization of our natural soil material, obtained from the Lake Van Basin, was performed using SEM, SEM-EDX, FTIR, and BET analyses. Our adsorbate, crystal violet dye, was commercially obtained in analytical grade. The physical/chemical adsorption process was carried out at various time intervals, dye concentrations, and temperatures, and the amount of adsorbed dye was measured using a UV viscometer. Equilibrium studies of the adsorption process were conducted to determine the adsorption isotherm at a constant temperature; the thermodynamics of the adsorption process were examined to determine spontaneity, endothermic/exothermic nature, and entropy; and the

kinetics of the adsorption process were calculated and examined to measure the rate at which the adsorbate binds to the surface of the solid soil adsorbent and the mechanisms affecting this rate.

Findings: SEM imaging revealed a dense cubic/cylindrical structure and a partial octahedral structure. SEM-EDX analysis revealed oxygen and calcium content expected in soil, as well as a C/Si ratio consistent with adsorption. FTIR analysis indicated that adsorption binding occurred via Ca and Si elements. BET surface area analyses, when examined in terms of adsorption/desorption diagrams, revealed a Type 3 isotherm, whilst the specific surface area and average pore diameter values indicated a mesoporous adsorbent structure. Experimental data from the adsorption equilibrium study determined the adsorption rate to be 77.2% and the $q_{\max}$ value to be 97.5% under ambient conditions. The adsorption isotherm was found to follow the Freundlich equation; the thermodynamics of adsorption were endothermic and indicated physical binding; and the adsorption kinetics were consistent with a second-order (pseudo-second) kinetic model.

Conclusion: Dyes that do not biodegrade in nature are toxic to living organisms, carcinogenic to humans, and toxic to aquatic life. Wastewater treatment is essential.

Keywords: adsorption, soil, crystal violet dye, wastewater

**CRANIUM GÖRÜNTÜLERİNDEN DERİN ÖĞRENME İLE CİNSİYET TAHMİNİ:
MAXVİT, CONVNEXT VE EFFICIENTNETV2 TEMELLİ MODELLER İLE ÇİFT-AKIŞLI
HİBRİT BİR MİMARİNİN KARŞILAŞTIRMALI DEĞERLENDİRMESİ**
*SEX PREDICTION FROM CRANIAL IMAGES USING DEEP LEARNING: A COMPARATIVE
EVALUATION OF A DUAL-STREAM HYBRID ARCHITECTURE BASED ON MAXVIT,
CONVNEXT, AND EFFICIENTNETV2 MODELS*

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ÖZET

Amaç: Cranium kimliklendirme çalışmalarında cinsiyet tahmini açısından en sık değerlendirilen ve yüksek doğruluğa sahip kemiklerdendir. Geleneksel kraniometrik yöntemler deneyim gerektiren, gözlemci bağımlı ve zaman alıcı yöntemler iken derin öğrenme metotları gözlemci bağımlılığı olmayan, kısa sürede büyük örneklem üzerinden tahmin yapabilen yöntemler olarak karşımıza çıkmaktadır. Bu hipotez ile yola çıkılan bu çalışmada amaç Bilgisayarlı Tomografi (BT) görüntülerinden elde edilen cranium görüntülerinden geleneksel derin öğrenme mimarileri ile önerilen çift-akışlı hibrit mimarinin cinsiyet tahminindeki başarısını değerlendirmektir.

Materyal Ve Metot: Çalışma 18-65 yaş aralığındaki 380 kadın, 380 erkek bireye ait BT görüntüleri üzerinden retrospektif olarak gerçekleştirildi. Toplam 760 bireyin %20'si test seti olarak değerlendirildi (76 kadın, 76 erkek). Görüntüler geleneksel MaxViT-Tiny, ConvNeXt-Tiny, EfficientNetV2-S mimarileri kullanılarak ve ConvNeXt ve MaxViT akışlarını token düzeyinde çift-yönlü çapraz-dikkat ile birleştiren özgün bir hibrit model geliştirilerek eğitildi.

Bulgular: Çalışma sonucunda en yüksek doğruluk oranı önerilen hibrit mimari ile 0,934 olarak bulundu (F1 macro: 0,934, AUC macro: 0,963, Mcc: 0,869). Geleneksel hibrit mimarilerin doğruluk oranı ise 0,822 ile 0,868 arasında bulundu. Hibrit modelin duyarlılığı kadın ve erkek sınıflarında dengeli olarak bulundu (0,921 ve 0,947). Üç temel modelin tümü de McNemar testinde anlamlı sonuç elde etti (MaxViT p=0,004; ConvNeXt p=0,013; EfficientNetV2 p<0,001).

Sonuç: Kullanılan geleneksel ve hibrit derin öğrenme mimarileri ile cranium görüntülerinden cinsiyet tahmini açısından yüksek doğruluk sundular ve bu çalışmada önerilen hibrit mimari geleneksel mimarilere göre daha yüksek sonuç üretti. Bu yeni hibrit mimari yaklaşımı adli ve antropolojik uygulamalarda karar-destek aracı olarak kullanılabilir.

Anahtar Kelimeler: Cranium, Bilgisayarlı Tomografi, Derin Öğrenme, Görüntü Sınıflandırma, Cinsiyet Tahmini

ABSTRACT

Objective: The cranium is one of the bones most frequently evaluated for sex estimation in cranial identification studies and is known for its high accuracy. While traditional craniometric methods require experience, are observer-dependent, and time-consuming, deep learning methods offer observer-independent approaches capable of making predictions on large samples in a short time. Based on this hypothesis, the objective of this study is to evaluate the performance of traditional deep learning architectures and the proposed dual-stream hybrid architecture in sex prediction using cranial images derived from computed tomography (CT) scans.

Materials And Methods: The study was conducted retrospectively using CT images from 380 women and 380 men aged 18–65. Twenty percent of the total 760 individuals were used as the test set (76 women, 76 men). The images were trained using traditional MaxViT-Tiny, ConvNeXt-Tiny, and EfficientNetV2-S architectures, as well as a novel hybrid model developed by combining the ConvNeXt and MaxViT pipelines with token-level bidirectional cross-attention.

Results: The study found that the highest accuracy rate was 0.934 with the proposed hybrid architecture (F1 macro: 0.934, AUC macro: 0.963, MCC: 0.869). The accuracy rates of traditional hybrid architectures ranged from 0.822 to 0.868. The sensitivity of the hybrid model was found to be balanced across the female and male classes (0.921 and 0.947). All three base models yielded statistically significant results in the McNemar test (MaxViT $p=0.004$; ConvNeXt $p=0.013$; EfficientNetV2 $p<0.001$).

Conclusion: The traditional and hybrid deep learning architectures used in this study achieved high accuracy in sex prediction from cranium images, and the hybrid architecture proposed in this study yielded better results than the traditional architectures. This new hybrid architectural approach can be used as a decision-support tool in forensic and anthropological applications.

Keywords: Cranium, Computed Tomography, Deep Learning, Image Classification, Sex Prediction

ASSESSMENT OF THE HEPATORENAL AND PULMONARY EFFECTS OF PHOENIXIN-14 VIA CYTOKINE PROFILING IN AN L-ARGININE-INDUCED RAT MODEL OF TOXICITY

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ABSTRACT

Objective: The aim of this study was to evaluate the effects of Phoenixin-14 (PNX-14) on lung, liver, and kidney tissues in an L-arginine-induced rat model of toxicity by assessing proinflammatory cytokines [interleukin (IL)-1 β , IL-6, tumor necrosis factor- α (TNF- α), IL-17, IL-23] and the anti-inflammatory cytokine IL-10 levels.

Materials And Methods: Eighteen male Sprague-Dawley rats were randomly divided into three groups (n=6/group). The control group received intraperitoneal (IP) saline at 0, 1, and 2 hours. The L-arginine group received IP L-arginine (250 mg/100 g) at 1 and 2 hours. The L-arginine+PNX-14 group received Phoenixin-14 (50 μ g/kg) at 0 and 2 hours along with IP L-arginine (250 mg/100 g) at 1 and 2 hours. Cytokine levels in lung, liver, and kidney tissues were analyzed using the ELISA method. Statistical analysis was performed using One-Way ANOVA followed by Tukey's HSD test, with $p < 0.05$ considered statistically significant.

Results: In lung tissue, L-arginine administration significantly increased proinflammatory cytokine levels (IL-1 β , IL-6, TNF- α , IL-17, and IL-23) and decreased IL-10 levels compared with the control group. PNX-14 treatment significantly attenuated these proinflammatory changes ($p < 0.05$). In liver tissue, L-arginine administration significantly increased IL-6, TNF- α , and IL-23 levels, whereas PNX-14 reduced these alterations and increased IL-10 levels compared with both the control and L-arginine groups ($p < 0.05$). In kidney tissue, L-arginine administration significantly increased IL-1 β , IL-6, TNF- α , IL-17, and IL-23 levels, while PNX-14 significantly reduced the elevated IL-6, TNF- α , IL-17, and IL-23 levels ($p < 0.05$).

Conclusion: L-arginine administration induced a marked proinflammatory response in lung, liver, and kidney tissues, with organ-specific differences. Phoenixin-14 administration significantly reduced L-arginine-induced cytokine alterations and contributed to the suppression of the inflammatory response. Particularly, the increase in IL-10 levels in liver tissue suggests that Phoenixin-14 may possess protective potential against multiple organ injury in addition to its anti-inflammatory effects.

Keywords: L-arginine, Phoenixin-14, cytokine, inflammation, lung, liver, kidney

HEAVY METALS IN PUBLIC HEALTH: REMOVAL FROM WASTEWATER**Hulya KOYUNCU**

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ABSTRACT

Introduction And Aim: Heavy metals are elements with a density greater than 5 g/cm³, an atomic number greater than 20, and high toxicity. Although the disorders that occur in humans with acute or chronic exposure to heavy metals vary, kidney and liver dysfunction, damage to the endocrine and immune systems, neurological and cardiovascular disorders, and carcinogenicity can occur. Heavy metals, released as a result of rapid industrialization and urbanization and polluting water, pose serious toxic and carcinogenic threats to living organisms because they cannot be broken down or decomposed by chemical or biological processes like organic pollutants. Products contaminated by agricultural activities carried out in water that is not sufficiently purified of heavy metals or in soils with heavy metal pollution are affected. Heavy metal pollution, carried to surface and groundwater, as well as seas, rivers, and lakes, enters the metabolic activities of living organisms such as fish, crustaceans, and mollusks, and is transferred to humans through their consumption. Additionally, heavy metals can enter the human body through drinking water. Therefore, researching methods that can minimize heavy metal levels in wastewater is of great importance.

Materials And Methods: In this study, the kinetics of removing multi-heavy metal ions (lead, copper, zinc, and nickel) from an aqueous medium using a developed hybrid metal-organic framework (MOF; AC/n-B/NH₂-MIL-53(Al)) were investigated. Multi-metal stock solutions were prepared by dissolving appropriate amounts of the metal salts in deionized (DI) water, and batch adsorption experiments were performed.

Results And Conclusions: The pH value of the solution and competitive adsorption between the metal ions had a significant effect on the removal process. The results showed that effective removal was achieved within the first 30 min. The developed hybrid MOF, demonstrated promising performance in the simultaneous removal of multi-heavy metals from an aqueous medium.

Keywords: Multi-metal removal, wastewater treatment, metal-organic framework

DESIGN AND INVESTIGATION OF PHYSICAL AND MECHANICAL PROPERTIES OF SENPS-ENCAPSULATED MUCOADHESIVE NANOFIBER BUCCAL PATCHES FOR THE TREATMENT OF ORAL INFECTIONS

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ABSTRACT

Purpose: In recent years, mucoadhesive systems have become increasingly in demand as a novel drug delivery system with more effective treatment. The aim of our study is to design a novel mucoadhesive nanofiber buccal patch that can be effectively used in the treatment of infections and lesions occurring in the oral tissue, which plays a vital role in our basic needs. Thus, we aim to produce a new patch that increases treatment efficacy, minimizes side effects, is easy to apply, facilitates patient compliance, and has a good market share in the future.

Materials And Methods: We aimed to achieve more effective treatment by increasing the absorption of selenium nanoparticles (SeNPs) under 20 nm, which have a therapeutic effect, in the buccal mucosa. SeNPs-encapsulated mucoadhesive nanofiber buccal patches composed of sodium alginate (SA) and polyethylene oxide (PEO) were coated with a protective layer on one surface for unidirectional drug release. Furthermore, various physical properties and morphological structures of nanofibers have been elucidated.

Results: According to ICP-MS results, 90.86% of SeNPs were encapsulated. The water vapor permeability of the designed plain nanofibers was measured as 1.763×10^{-8} g/m² Pa.s, and that of the surface-coated nanofibers as 6.826×10^{-9} g/m² Pa.s. Mechanical strength ranged from 5.62 ± 1.06 to 12.26 ± 2.67 MPa. Additionally, the water contact angles were found to be in the range of 44.10 ± 2.52 to 57.67 ± 7.66 . After 48 hours, the degradation percentages were calculated as 91.8% for bare nanofibers and 80.5% for surface-coated nanofibers.

Conclusion: These structural and functional data reveal that the developed nanofiber matrices have high potential and are perfectly suited to the targeted biomedical applications and smart drug delivery systems.

Keywords: Selenium Nanoparticles, Buccal patch, Mucoadhesive, Nanofiber

Acknowledgement

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EFFECTS OF CHEMERIN ON INFLAMMATORY CYTOKINES AND CELL MIGRATION IN THE HELA CELL LINE

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ABSTRACT

Objective: Cervical cancer is one of the most frequently diagnosed cancers among women worldwide. Chemerin is a multifunctional adipokine involved in inflammation, adipogenesis, and glucose homeostasis. Due to its variable expression in cancer tissues and its pro- and anti-inflammatory properties, its role in carcinogenesis appears to be tissue-specific and pleiotropic. Cytokines are key regulators of the tumor microenvironment and inflammatory processes. NF- κ B, TNF- α , and IL-6 are important mediators involved in inflammatory signaling and carcinogenesis. This study aimed to investigate the effects of chemerin on TNF- α , NF- κ B, and IL-6 immunoreactivity, as well as cell migration in human HeLa cervical cancer cells.

Materials And Methods: The IC₅₀ value of chemerin was determined as 100 nM using the MTT assay. HeLa cells were divided into control and 100 nM chemerin-treated groups. After 24 hours of incubation, immunohistochemical staining was performed to evaluate TNF- α , NF- κ B, and IL-6 immunoreactivity. Cell migration was assessed using an in vitro wound healing assay at 0, 12, and 24 hours.

Results: At 24 hours, cell migration was significantly reduced in the chemerin-treated group compared with the control group, while the control group showed pronounced wound closure. H-score analysis demonstrated that chemerin treatment increased TNF- α immunoreactivity and decreased NF- κ B and IL-6 immunoreactivity ($p < 0.01$).

Conclusion: These findings suggest that chemerin may modulate inflammatory signaling pathways by regulating TNF- α , NF- κ B, and IL-6 expression, potentially influencing cell migration and the balance between cellular survival and apoptosis in HeLa cells.

Keywords: Chemerin, HeLa cells, TNF- α , NF- κ B, IL-6, Migration

BEYOND WEIGHT LOSS: AN ETHICAL AND VALUE-BASED EVALUATION OF QUALITY OF LIFE MEASUREMENT INSTRUMENTS FOLLOWING BARIATRIC SURGERY

KİLO KAYBININ ÖTESİNDE: BARIATRİK CERRAHİ SONRASI YAŞAM KALİTESİ ÖLÇÜM ARAÇLARININ ETİK VE DEĞER TEMELLİ DEĞERLENDİRMESİ

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ABSTRACT

Aim: For many years, the success of bariatric surgery has primarily been evaluated based on weight loss, body mass index (BMI), and improvements in metabolic outcomes. However, it is now widely acknowledged that surgical success cannot be adequately explained solely by biomedical outcomes. Assessments of quality of life, encompassing patients' physical, psychological, and social well-being, are considered equally important as clinical indicators. This study aimed to evaluate the quality-of-life measurement instruments used following bariatric surgery within the framework of ethical principles and value-based healthcare and to demonstrate the contribution of the Bariatric Surgery Quality of Life Scale (BSQL-scale), developed by our research team, to the existing literature from this perspective.

Materials And Methods. A narrative evaluation of the principal quality-of-life instruments developed specifically for bariatric surgery was conducted from the perspectives of biomedical ethics and value-based healthcare. The reviewed instruments included the Moorehead–Ardelt Quality of Life Questionnaire II (M-AQoLQ II), Bariatric Quality of Life Index (BQL), Bariatric and Obesity Specific Survey (BOSS), BODY-Q, Body-QoL, Quality of Life for Obesity Surgery (QOLOS), and the Post-Bariatric Surgery Quality of Life Scale (PBSQLS) developed in Türkiye. Their conceptual domains and measurement characteristics were compared with those of the newly developed Bariatric Surgery Quality of Life Scale (BSQL-scale), a multidimensional instrument comprising 50 items across four subscales: General Health Status, Psychological Well-being, Holistic Well-being, and Adaptation to Lifestyle Changes.

Results: Existing bariatric surgery-specific quality-of-life instruments evaluate a broad range of domains, including physical functioning, body image, psychological well-being, social relationships, sexual functioning, and surgery-related complications. However, the literature indicates that none of these instruments comprehensively captures all dimensions of postoperative quality of life. In particular, ethically significant domains such as patient experiences, individual values, adaptation to lifestyle changes, and subjective evaluations of the care process remain insufficiently represented. The BSQL-scale addresses these limitations by providing a multidimensional and patient-centered assessment that integrates physical, psychological, social, and lifestyle adaptation domains, thereby making patient-valued outcomes more visible.

Conclusion: The BSQL-scale extends the assessment of bariatric surgery outcomes beyond traditional biomedical indicators by incorporating ethically meaningful and patient-centered dimensions of quality of life. By emphasizing patients' lived experiences, holistic well-being, and adaptation to lifestyle changes, the scale provides a comprehensive framework that aligns with the principles of value-based healthcare. Its application may contribute to more comprehensive evaluations of surgical success and support ethically informed, patient-centered decision-making in bariatric surgery.

Keywords: Bariatric surgery, dietary satisfaction, quality of life

ÖZET

Amaç: Uzun yıllar boyunca bariatrik cerrahinin başarısı öncelikle kilo kaybı, beden kitle indeksi (BKİ) ve metabolik sonuçlardaki iyileşmeler temelinde değerlendirilmiştir. Ancak günümüzde cerrahi başarının yalnızca biyomedikal sonuçlarla yeterince açıklanamayacağı yaygın olarak kabul

edilmektedir. Hastaların fiziksel, psikolojik ve sosyal iyilik hallerini kapsayan yaşam kalitesi değerlendirmeleri, klinik göstergeler kadar önemli kabul edilmektedir. Bu çalışmanın amacı, bariatrik cerrahi sonrasında kullanılan yaşam kalitesi ölçüm araçlarını etik ilkeler ve değer temelli sağlık hizmeti yaklaşımı çerçevesinde değerlendirmek ve araştırma ekibimiz tarafından geliştirilen Bariatrik Cerrahi Yaşam Kalitesi Ölçeği (BSQL-Scale)'nin bu bakış açısıyla literatüre sağladığı katkıyı ortaya koymaktır.

Materyal Ve Yöntem: Bariatrik cerrahiye özgü olarak geliştirilmiş başlıca yaşam kalitesi ölçüm araçları, biyomedikal etik ve değer temelli sağlık hizmeti perspektiflerinden anlatsal (narrative) bir yaklaşımla değerlendirilmiştir. İncelenen ölçekler arasında Moorehead–Ardelt Quality of Life Questionnaire II (M-AQoLQ II), Bariatric Quality of Life Index (BQL), Bariatric and Obesity Specific Survey (BOSS), BODY-Q, Body-QoL, Quality of Life for Obesity Surgery (QOLOS) ve Türkiye'de geliştirilen Post-Bariatric Surgery Quality of Life Scale (PBSQLS) yer almaktadır. Bu ölçeklerin kavramsal boyutları ve ölçüm özellikleri; Genel Sağlık Durumu, Psikolojik İyi Oluş, Bütüncül İyi Oluş ve Yaşam Tarzı Değişikliklerine Uyum olmak üzere dört alt boyut ve toplam 50 maddeden oluşan yeni geliştirilen Bariatrik Cerrahi Yaşam Kalitesi Ölçeği (BSQL-Scale) ile karşılaştırılmıştır.

Bulgular: Mevcut bariatrik cerrahiye özgü yaşam kalitesi ölçekleri; fiziksel işlevsellik, beden algısı, psikolojik iyi oluş, sosyal ilişkiler, cinsel işlev ve cerrahiye bağlı komplikasyonlar gibi geniş bir alanı değerlendirmektedir. Bununla birlikte literatür, mevcut ölçeklerin hiçbirinin ameliyat sonrası yaşam kalitesinin tüm boyutlarını kapsamlı biçimde değerlendiremediğini göstermektedir. Özellikle hasta deneyimleri, bireysel değerler, yaşam tarzı değişikliklerine uyum ve bakım sürecine ilişkin öznel değerlendirmeler gibi etik açıdan önemli alanların yeterince temsil edilmediği görülmektedir. BSQL-Scale, fiziksel, psikolojik, sosyal ve yaşam tarzına uyum boyutlarını bütüncül ve hasta merkezli bir yaklaşımla bir araya getirerek bu eksiklikleri gidermekte ve hastalar açısından değer taşıyan sonuçları daha görünür hâle getirmektedir.

Sonuç: BSQL-Scale, bariatrik cerrahinin başarısını yalnızca geleneksel biyomedikal göstergeler üzerinden değil, aynı zamanda etik açıdan anlamlı ve hasta merkezli yaşam kalitesi boyutlarını da dikkate alarak değerlendirmektedir. Hastaların yaşam deneyimlerini, bütüncül iyi oluşlarını ve yaşam tarzı değişikliklerine uyum süreçlerini ön plana çıkarması sayesinde ölçek, değer temelli sağlık hizmeti ilkeleriyle uyumlu kapsamlı bir değerlendirme çerçevesi sunmaktadır. Ölçeğin kullanımı, bariatrik cerrahinin başarısının daha bütüncül değerlendirilmesine katkı sağlayabilir ve etik açıdan temellendirilmiş, hasta merkezli klinik karar verme süreçlerini destekleyebilir.

Anahtar Kelimeler: Bariatrik cerrahi, diyet memnuniyeti, yaşam kalitesi.

**SELF-MANAGEMENT IN EPILEPSY: AN EVALUATION FROM THE PERSPECTIVES OF
PATIENT-CENTERED CARE AND MEDICAL ETHICS**
*EPİLEPSİDE ÖZ YÖNETİM: HASTA MERKEZLİ BAKIM VE TIP ETİĞİ PERSPEKTİFLERİNDEN
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ABSTRACT

Aim: Epilepsy is a chronic neurological disorder that affects not only seizure control but also the physical, psychological, and social well-being of individuals over the long term. Contemporary approaches to chronic disease management emphasize patient-centered care, highlighting self-management as a fundamental strategy that encourages patients to actively participate in their treatment process. Successful management of chronic illnesses depends not only on medical treatment but also on patients' abilities to solve problems, make informed decisions, effectively utilize available resources, collaborate with healthcare professionals, and sustain their own care. This study aimed to evaluate the concept of self-management in epilepsy within the theoretical framework of patient-centered care and the fundamental principles of medical ethics.

Materials and Methods: A narrative literature review and conceptual ethical analysis were conducted to examine self-management in epilepsy. The concept was evaluated within the framework of patient-centered care and the four fundamental principles of biomedical ethics—respect for autonomy, beneficence, non-maleficence, and justice. The analysis focused on the multidimensional components of epilepsy self-management, including medication adherence, seizure monitoring, implementation of safety precautions, stress management, healthy lifestyle behaviors, communication with healthcare professionals, and the utilization of social support systems.

Results: The findings indicate that self-management in epilepsy extends beyond medication adherence and encompasses behavioral, psychological, and social dimensions of care. As individuals' knowledge, skills, and confidence regarding their health increase, they become more actively involved in treatment decisions and disease management, thereby contributing to improved treatment adherence, seizure control, and quality of life. From an ethical perspective, self-management promotes respect for patient autonomy by supporting informed and voluntary decision-making. Furthermore, healthcare professionals have ethical responsibilities to enhance patient well-being (beneficence), minimize preventable harm (non-maleficence), and ensure equitable access to education, counseling, and healthcare services (justice). These findings demonstrate that self-management represents a collaborative and ethically grounded model of care rather than merely an individual responsibility.

Conclusion: Self-management in epilepsy represents a comprehensive approach that integrates the clinical, behavioral, and ethical dimensions of chronic disease management. Strengthening self-management skills within the framework of patient-centered care enhances treatment adherence, seizure control, and quality of life while fostering patient engagement in healthcare decisions. Beyond promoting individual autonomy, self-management supports relational autonomy through collaborative partnerships among patients, families, and healthcare professionals, reinforces shared decision-making, and provides an essential ethical foundation for patient-centered epilepsy care.

Keywords: Epilepsy ,Self-management ,Patient-centered care ,Medical ethics , Bioethics

ÖZET

Amaç. Epilepsi, yalnızca nöbet kontrolünü değil, aynı zamanda bireylerin uzun dönemde fiziksel, psikolojik ve sosyal iyilik hallerini de etkileyen kronik nörolojik bir hastalıktır. Güncel kronik hastalık yönetimi yaklaşımları, hasta merkezli bakımı ön plana çıkarmakta ve öz yönetimi, hastaların tedavi

süreçlerine aktif katılımını sağlayan temel bir strateji olarak kabul etmektedir. Kronik hastalıkların başarılı yönetimi yalnızca tıbbi tedaviye değil; hastaların problem çözme, bilinçli karar verme, mevcut kaynakları etkili kullanma, sağlık profesyonelleriyle iş birliği yapma ve kendi bakımını sürdürebilme becerilerine de bağlıdır. Bu çalışmanın amacı, epilepside öz yönetim kavramını hasta merkezli bakımın kuramsal çerçevesi ve tıp etiğinin temel ilkeleri doğrultusunda değerlendirmektir.

Materyal ve Yöntem: Epilepside öz yönetim kavramını incelemek amacıyla anlatsal bir literatür taraması ve kavramsal etik analiz gerçekleştirilmiştir. Kavram; hasta merkezli bakım yaklaşımı ile biyomedikal etiğin dört temel ilkesi olan özerkliğe saygı, yararlılık, zarar vermeme ve adalet ilkeleri çerçevesinde değerlendirilmiştir. Analiz; ilaç tedavisine uyum, nöbet izlemi, güvenlik önlemlerinin uygulanması, stres yönetimi, sağlıklı yaşam davranışlarının sürdürülmesi, sağlık profesyonelleriyle etkili iletişim ve sosyal destek sistemlerinden yararlanma gibi epilepside öz yönetimin çok boyutlu bileşenlerine odaklanmıştır.

Bulgular: Bulgular, epilepside öz yönetimin yalnızca ilaç tedavisine uyumu değil, aynı zamanda bakımın davranışsal, psikolojik ve sosyal boyutlarını da kapsadığını göstermektedir. Bireylerin sağlıklarına ilişkin bilgi, beceri ve öz güven düzeyleri arttıkça, tedavi kararlarına ve hastalık yönetimine daha aktif katıldıkları; bunun da tedaviye uyumu, nöbet kontrolünü ve yaşam kalitesini iyileştirdiği görülmektedir. Etik açıdan değerlendirildiğinde öz yönetim, hastaların bilinçli ve gönüllü karar verebilmelerini destekleyerek özerklik ilkesinin hayata geçirilmesine katkı sağlamaktadır. Bunun yanında sağlık profesyonellerinin hastanın iyilik halini geliştirme (yararlılık), önlenabilir zararları en aza indirme (zarar vermeme) ve eğitim, danışmanlık ile sağlık hizmetlerine adil erişimi sağlama (adalet) yönünde etik sorumlulukları bulunmaktadır. Bu Bulgular, öz yönetimin yalnızca bireysel bir sorumluluk değil, aynı zamanda iş birliğine dayalı ve etik temellere oturan bir bakım modeli olduğunu ortaya koymaktadır.

Sonuç: Epilepside öz yönetim, kronik hastalık yönetiminin klinik, davranışsal ve etik boyutlarını bütünleştiren kapsamlı bir yaklaşımdır. Hasta merkezli bakım anlayışı çerçevesinde öz yönetim becerilerinin güçlendirilmesi; tedaviye uyumu, nöbet kontrolünü ve yaşam kalitesini artırırken hastaların sağlık kararlarına aktif katılımını da desteklemektedir. Öz yönetim, bireysel özerkliği güçlendirmenin ötesinde, hasta, aile ve sağlık profesyonelleri arasında kurulan iş birliğine dayalı ilişkiler yoluyla ilişkisel özerkliği desteklemekte, ortak karar verme süreçlerini güçlendirmekte ve hasta merkezli epilepsi bakımının vazgeçilmez etik temellerinden birini oluşturmaktadır.

Anahtar Kelimeler: Epilepsi, öz yönetim, hasta merkezli bakım, tıp etiği, biyoetik.

THE EFFECT OF BORAGE OIL ON INFLAMMATION IN 2,4-DINITROCHLOROBENZENE-INDUCED ATOPIC DERMATITIS-LIKE SKIN LESIONS IN BALB/C MICE*

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ABSTRACT

Objective: Atopic dermatitis (AD) is a chronic inflammatory skin disease with complex pathogenesis involving genetic, immunological, and environmental factors. As our understanding of AD pathophysiology continues to improve, novel therapeutic strategies have been explored. This study aimed to investigate the therapeutic effects of topical borage oil, a natural source rich in γ -linolenic acid (GLA), in an experimental DNCB-induced atopic dermatitis model by evaluating the levels of inflammatory cytokines and histopathological changes.

Materials and Methods: Forty-two female BALB/c mice (8–12 weeks old, 25–30 g) were randomly allocated into six groups (n = 7): Control, DNCB, acetone–olive oil, borage oil, corticosteroid, and reference treatment. AD-like skin lesions were induced using 2,4-dinitrochlorobenzene (DNCB). The control group received no treatment, other than dorsal shaving. One day after dorsal epilation (approximately 4 cm²), 150 μ L of 1% DNCB dissolved in an acetone–oil mixture (3:1, v/v) was applied to the dorsal skin once daily for nine consecutive days. Beginning five days after epilation, 150 μ L of 0.2% DNCB in the same solvent was applied three times weekly for three weeks to maintain AD-like lesions. Following the establishment of dermatitis, borage oil was applied topically for 16 days. At the end of the experiment, serum IgE, histamine, IL-4, IL-25, and IL-33 levels were measured using commercially available mouse-specific ELISA kits. Histopathological evaluation of the skin tissue was also performed.

Results: Serum IgE concentrations were significantly higher in the DNCB, acetone–olive oil, and borage oil groups than in the control group (p < 0.05), but no significant differences were observed among the remaining groups (p > 0.05). Serum IL-4 and histamine levels were not significantly different between the experimental and control groups (p > 0.05). Although serum IL-25 and IL-33 concentrations tended to increase in the experimental groups, statistical significance was observed only in the borage oil-treated group (p < 0.05). Histopathological examination revealed that topical borage oil reduced epidermal hyperkeratosis and improved skin morphology compared to untreated DNCB-induced lesions.

Conclusion: Topical borage oil application did not significantly alter most systemic inflammatory cytokine levels in the DNCB-induced AD model. Nevertheless, histopathological findings indicated that borage oil alleviated epidermal hyperkeratosis and improved skin architecture, suggesting a protective effect on local skin tissue despite the absence of marked systemic immunological changes in the study. These findings indicate that borage oil may be a promising complementary topical treatment for improving skin lesions associated with atopic dermatitis, although further studies are needed to clarify its underlying mechanisms.

Keywords: Atopic dermatitis, borage oil, DNCB, IgE, IL-4, IL-25, IL-33

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ETHICAL BLINDNESS AS THE MISSING LINK BETWEEN MALPRACTICE FEAR AND DEFENSIVE MEDICINE: A PROPOSED CONCEPTUAL FRAMEWORK

MALPRAKTİS KORKUSU İLE DEFANSİF TIP ARASINDAKİ EKSİK HALKA OLARAK ETİK KÖRLÜK: KAVRAMSAL BİR ÇERÇEVE ÖNERİSİ

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ABSTRACT

Aim: Malpractice fear has become an important occupational stressor influencing physicians' clinical judgment, ethical reasoning, and quality of care. Increasing litigation concerns, professional accountability pressures, and public scrutiny may create psychological burdens that shape clinical decision-making. Although the relationship between malpractice fear and defensive medicine is well established, the cognitive and ethical mechanisms underlying this association remain insufficiently explained. This conceptual review proposes ethical blindness as a potential mediating mechanism linking malpractice fear to defensive medical practices.

Materials And Methods: A narrative conceptual review was conducted through critical synthesis of literature from medical ethics, moral psychology, health law, patient safety, and defensive medicine fields. Evidence regarding malpractice fear, ethical fading, ethical blindness, second victim experiences, and defensive medicine was integrated to develop a theoretical framework.

Results: The proposed model suggests that persistent malpractice fear may contribute to emotional distress and ethical fading, reducing physicians' attention to the ethical dimensions of clinical decisions. This process may result in temporary ethical blindness, where self-protective considerations become dominant despite adequate ethical knowledge. Consequently, physicians may engage in defensive practices such as unnecessary testing, excessive documentation, overtreatment, and avoidance of high-risk patients, potentially increasing costs and compromising patient trust and safety.

Conclusion: Ethical blindness may provide a critical theoretical explanation for the relationship between malpractice fear and defensive medicine. This framework highlights the importance of ethical resilience, physician support, and just organizational cultures.

Keywords: malpractice fear; ethical blindness; ethical fading; defensive medicine; patient safety; conceptual framework

ÖZET

Amaç: Malpraktis korkusu, hekimlerin klinik yargılarını, etik muhakemelerini ve sundukları sağlık hizmetinin niteliğini etkileyen önemli bir mesleki stres etkeni hâline gelmiştir. Artan dava edilme kaygısı, mesleki hesap verebilirlik baskısı ve kamuoyu denetimi, klinik karar verme süreçlerini şekillendiren psikolojik yükler oluşturabilmektedir. Malpraktis korkusu ile defansif tıp arasındaki ilişki literatürde iyi tanımlanmış olmasına rağmen, bu ilişkinin altında yatan bilişsel ve etik mekanizmalar henüz yeterince açıklanamamıştır. Bu kavramsal derleme, malpraktis korkusunu defansif tıbbi uygulamalara bağlayan olası aracılık mekanizması olarak etik körlük kavramını önermektedir.

Gereç Ve Yöntem: Bu çalışma, tıp etiği, ahlak psikolojisi, sağlık hukuku, hasta güvenliği ve defansif tıp alanlarındaki literatürün eleştirel sentezine dayanan anlatısal bir kavramsal derleme olarak yürütülmüştür. Malpraktis korkusu, etik silikleşme, etik körlük, ikinci mağdur deneyimleri ve defansif tıp konularındaki kanıtlar bütüncül bir yaklaşımla değerlendirilerek kuramsal bir çerçeve geliştirilmiştir.

Bulgular: Önerilen model, sürekli malpraktis korkusunun hekimlerde duygusal sıkıntıyı ve etik silikleşmeyi artırabileceğini, bunun da klinik kararların etik boyutlarına gösterilen dikkati azaltabileceğini ileri sürmektedir. Bu süreç, hekimlerin etik bilgi ve farkındalıkları yeterli olmasına rağmen, öz korumaya yönelik kaygıların baskın hâle geldiği geçici bir etik körlük durumuna yol açabilmektedir. Sonuç olarak hekimler; gereksiz tetkik isteme, aşırı belgelendirme, gereğinden fazla

tedavi uygulama ve yüksek riskli hastalardan kaçınma gibi defansif uygulamalara yönelebilmekte, bu durum sağlık hizmeti maliyetlerini artırırken hasta güvenini ve hasta güvenliğini de olumsuz etkileyebilmektedir.

Sonuç: Etik körlük, malpraktis korkusu ile defansif tıp arasındaki ilişkiyi açıklayabilecek önemli bir kuramsal yaklaşım sunmaktadır. Önerilen bu çerçeve, etik dayanıklılığın güçlendirilmesi, hekimlerin desteklenmesi ve adil örgütsel kültürlerin geliştirilmesinin önemini vurgulamaktadır.

Anahtar Kelimeler: Malpraktis korkusu; etik körlük; etik silikleşme; defansif tıp; hasta güvenliği; kavramsal çerçeve.

THE FUTURE OF HEALTH STRATEGY: AGING MANAGEMENT THROUGH NUTRIGENETICS AND LONGEVITY

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ABSTRACT

Objective: While life expectancy is increasing worldwide, the number of years lived in good health and functional independence is not rising at the same rate. As a result, age-related chronic diseases, cognitive and physical decline, and care dependency have become major public health concerns. This study evaluated the relationship among aging biology, nutrigenetics, and personalized nutrition, and the potential of the *Precision Longevity* approach to extend healthspan and preserve functional independence.

Materials And Methods: The current literature on the biological mechanisms of aging, nutrigenetic and nutrigenomic approaches, biomarkers of biological age, epigenetic clocks, multi-omics technologies, personalized nutrition, and lifestyle interventions was conceptually reviewed. Genetic differences associated with nutrient metabolism, inflammation, oxidative stress, DNA methylation, mitochondrial function, and the gut microbiota were examined within an integrated framework.

Results: Aging is a multidimensional process shaped by genomic instability, epigenetic alterations, mitochondrial dysfunction, cellular senescence, chronic inflammation, loss of proteostasis, and changes in the gut microbiota. Responses to dietary and lifestyle interventions may vary by genetic, epigenetic, metabolic, microbial, and environmental factors. Genetic variants related to fatty acid and one-carbon metabolism, caffeine response, lactose digestion, vitamin requirements, glycemic control, and inflammation may influence individual nutritional needs. Integrating nutrigenetic data with biological age measurements, epigenetic clocks, metabolomic and microbiome analyses, clinical findings, and lifestyle data may improve individualized risk prediction and intervention planning.

Conclusion: Future aging management should shift from treatments initiated after disease onset to preventive, personalized approaches that identify biological risks early. Combining nutrigenetics-based nutrition with physical activity, sleep regulation, stress management, and microbiota-supportive strategies may help extend healthspan and preserve functional independence. Clinical applications should be guided by scientific evidence, interdisciplinary assessment, ethical data management, and long-term monitoring.

Keywords: Nutrigenetics, longevity, healthy aging, biological age, personalized nutrition, epigenetics, precision longevity.

Biography

Prof. Dr. Fatmagül Yur is a faculty member in the Department of Nutrition and Dietetics, Division of Nutrition Sciences, at the Fethiye Faculty of Health Sciences, Muğla Sıtkı Koçman University, Türkiye. She earned her veterinary medicine degree from Yüzüncü Yıl University and completed her PhD in Biochemistry at the university's Institute of Health Sciences.

Her academic work spans biochemistry, nutrition, oxidative stress, antioxidants, trace elements, genetics, epigenetics, and the biochemical mechanisms underlying health and aging. She has authored numerous scientific articles and book chapters, including work on the genetic and epigenetic contributions to human nutrition, vitamins, oxidative stress, and healthy aging. She also teaches courses including Nutritional Biochemistry, Nutrition and Genetics, and Biological Anti-Aging.

Throughout her academic career, Prof. Dr. Yur has held several administrative roles, including serving as Dean, Department Chair, and Vice Dean. Her current research focuses on integrating nutrition, molecular biology, genetics, and healthy aging to support preventive and personalized approaches to health management.

EVALUATION OF THE EFFECT OF SPECIMEN COLLECTION TRAINING PROVIDED TO NURSES IN THE PEDIATRIC HEMATOLOGY AND ONCOLOGY CLINIC ON BIOCHEMISTRY SPECIMEN REJECTION RATES ACCORDING TO IFCC LABORATORY ERRORS AND PATIENT SAFETY SPECIFICATIONS

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ABSTRACT

Objective: This study aimed to evaluate the impact of specimen collection training provided to nurses on the rejection rates of biochemistry specimens submitted from the Pediatric Hematology and Oncology Clinic to the Medical Biochemistry Laboratory and to assess the laboratory's preanalytical performance using the quality indicators established by the International Federation of Clinical Chemistry and Laboratory Medicine (IFCC) Working Group on Laboratory Errors and Patient Safety (WG-LEPS).

Materials And Methods: In this retrospective study, biochemistry specimens submitted from the Pediatric Hematology and Oncology Clinic of Afyonkarahisar Health Sciences University Hospital between October 1, 2024, and January 31, 2025, were compared with those submitted between March 1, 2025, and June 30, 2025, following specimen collection training provided to nurses between February 17 and 21, 2025. Data on the total number of specimens, rejection rates, and reasons for specimen rejection were retrieved from the Laboratory Information System. Preanalytical quality indicators were calculated according to the IFCC WG-LEPS quality indicator model, and the pre-training and post-training periods were compared. Performance was evaluated using the desirable performance specification (50th percentile) recommended by the WG-LEPS.

Results: The quality indicator (QI) percentages for the post-training and pre-training periods were 0% and 0.024% for misidentification errors, 0.037% and 0.055% for incorrect sample type, 0.334% and 0.332% for incorrect fill level, 0.274% and 0.269% for clotted samples, and 0.148% and 0.055% for hemolyzed samples, respectively. Among the five evaluated quality indicators, only incorrect fill level failed to meet the desirable performance specification recommended by the WG-LEPS during the pre-training period.

Conclusion: Regular and repeated training programs on specimen collection and transportation, together with continuous monitoring of preanalytical quality indicators, may improve the quality of the preanalytical process, reduce specimen rejection rates, and ultimately enhance laboratory quality and patient safety.

Keywords: Preanalytical phase; Quality indicators; Specimen rejection; Nurse training; WG-LEPS.

THE POTENTIAL ROLE OF VENTRAL LATERAL ANTERIOR (VLAN) AND VENTRAL LATERAL POSTERIOR (VLPN) THALAMIC NUCLEI IN MIGRAINE PATIENTS**Sinan SARAÇLI**

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ABSTRACT

Aim: The purpose of this study is to examine the effects of Ventral Lateral Anterior (VLAN) and Ventral Lateral Posterior (VLPN) Thalamic Nuclei in Migraine Patients via Machine Learning-Based Analysis. With this purpose, MRI scans from 72 migraine patients and 51 control subjects from Balıkesir University Neurology Clinic were uploaded to the Volbrain system and digitized. The volumes of the Ventral Lateral Anterior and Ventral Lateral Posterior thalamic nuclei were evaluated using SHAP analysis to identify the nuclei that were significant in distinguishing between the control and migraine groups.

Introduction: Migraine is a highly disabling primary headache disorder with a 1- year prevalence of ~15% in the general population. According to the Global Burden of Disease Study, migraine is the second most prevalent neurological disorder worldwide and is responsible for more disability than all other neurological disorders combined. Examining thalamus volume for migraine diagnosis via machine learning is a highly active and promising area of neuroimaging research. The thalamus acts as the critical gating relay station for the trigeminovascular pain pathway, making its structural remodeling a prime target for computational biomarkers. Anatomically, the ventral lateral nucleus consists of the ventral lateral anterior (VL_a/VLAN) and ventral lateral posterior (VL_p/VLPN) subdivisions. While the VLAN primarily receives inputs from the basal ganglia and connects with the premotor cortex and supplementary motor areas, the VLPN is the principal motor thalamic nucleus that relays information from cerebellar nuclei to the primary motor cortex. Consequently, the ventral lateral complex plays a role not only in the regulation of motor control but also in the modulation of pain-associated motor responses, postural adaptation, and sensorimotor integration. Experimental studies suggest that trigeminothalamic pathways form functional connections with the ventral lateral complex and that this nucleus may contribute to pain modulation.

Findings And Conclusion: An examination of the study's findings reveals that the VLAN_Right nucleus had a substantially higher impact on differentiating migraine patients from controls than other nuclei, followed in order by VLPN_Right, VLPN_Left, VLAN_Left, and the age variable. The obtained findings are consistent with similar studies in the literature, suggesting that ventral lateral nuclei may play a role in pain modulation due to their connections with motor circuits and trigeminothalamic pathways. Therefore, identifying the right VLAN as the most critical variable in the model for migraine patients represents a biologically plausible finding.

Keywords: Machine Learning, Migraine Diagnosis, Thalamus Volume

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ENDODONTIC TREATMENT OF A TOOTH WITH INTERNAL ROOT RESORPTION USING MTA

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ABSTRACT

Aim: Internal root canal resorption is a progressive type of destruction caused by odontoclastic activity in the internal radicular dentin structure of the cervical, middle and apical thirds of the root canal wall. Although the exact cause of internal root resorption is unknown. In most cases, there are no early clinical symptoms. Internal root resorption may be detected during routine clinical and radiographic examinations. The aim of this case report is to present the treatment of a tooth with internal resorption, in which no perforation was observed, using MTA and a bioceramic root canal sealer.

Materials And Methods: A systemically healthy 30-year-old male patient was referred to our clinic for a routine dental examination. Panoramic, periapical radiograph and CBCT images were obtained, revealing internal root resorption of her mandibular central incisor. After root canal preparation apical third of the tooth and resorption area filled with MTA and rest of the root obturated with bioceramic seal and gutta-percha. The access cavity filled with composite resin.

Results: It was determined that no complaints developed at the 3th, 6th and 12th month controls. There was no clinical or radiological problem occurred.

Conclusion: In cases of internal root resorption with or without perforation, MTA is preferred due to its biocompatibility, resistance to moisture, and its ability to stimulate the formation of apical repair tissue. Also, MTA is a good alternative for homogeneous filling of the resorption area. Even if internal resorption is treated once it is determined, the prognosis might be unsuccessful; therefore, it is important to follow these cases for symptoms over a long period.

EFFECTS OF INTERMITTENT FASTING ON SOME BIOCHEMICAL PARAMETERS IN RATS WITH EXPERIMENTAL DIABETES

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ABSTARCT

Objective: Diabetes mellitus is associated with chronic hyperglycemia and persistent low-grade inflammation, both of which contribute to the development of metabolic complications. This study aimed to investigate the effects of intermittent fasting on metabolic and inflammatory parameters in a rat model of streptozotocin-induced diabetes mellitus.

Materials And Methods: Twenty-eight adult Sprague–Dawley rats were randomly allocated into four groups (n = 7 per group): Healthy Control, Diabetic, Healthy + Intermittent Fasting (IF), and Diabetic + Intermittent Fasting (IF). Diabetes was induced in the diabetic groups by a single intraperitoneal injection of streptozotocin (50 mg/kg) prepared in 0.01 M sodium citrate buffer (pH 4.5), while the control groups received sodium citrate buffer alone. Seven days after injection, diabetes was confirmed by measuring blood glucose levels. Rats in the intermittent fasting groups were then subjected to a 6-week intermittent fasting regimen. At the end of the experimental period, blood samples were collected under anesthesia. Serum glucose and hemoglobin A1c (HbA1c) concentrations were determined spectrophotometrically. Serum concentrations of C-reactive protein (CRP), interleukin-1 (IL-1), interleukin-6 (IL-6), and tumor necrosis factor-alpha (TNF- α) were measured using commercially available rat-specific ELISA kits.

Results: Serum glucose (P < 0.001) and HbA1c (P = 0.014) concentrations were significantly higher in the diabetic group fed ad libitum than in the other experimental groups. Although no statistically significant differences were detected among the groups in serum CRP, IL-1, IL-6, or TNF- α concentrations (P > 0.05), the diabetic group exhibited the highest mean TNF- α level. Intermittent fasting was associated with lower glucose and HbA1c concentrations in diabetic rats compared with diabetic rats fed ad libitum.

Conclusion: Intermittent fasting improved glycemic control in rats with experimentally induced diabetes and showed a tendency to attenuate inflammatory responses, although changes in inflammatory biomarkers did not reach statistical significance. These findings suggest that intermittent fasting may represent a promising non-pharmacological strategy for improving metabolic outcomes in diabetes. Further studies involving larger sample sizes and mechanistic investigations are needed to confirm its effects on inflammation.

Keywords: Intermittent fasting, CRP, diabetes, glucose, hemoglobin A1c, IL-1, IL-6, TNF- α

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INVESTIGATION OF THE PROTECTIVE EFFECTS OF SYSTEMIC AND ORAL GLUTATHIONE IN RATS WITH EXPERIMENTALLY INDUCED ACUTE INFLAMMATION

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ABSTARCT

Objective: Glutathione (GSH), one of the major endogenous antioxidants, has been proposed as a potential therapeutic agent for preventing oxidative damage associated with inflammatory conditions. This study aimed to evaluate the protective effects of orally and intraperitoneally administered GSH in a rat model of experimentally induced acute inflammation and to compare the effects of the two administration routes on oxidative stress, inflammatory, and biochemical parameters.

Materials And Methods: Forty male Wistar albino rats (12–14 weeks old, 300–350 g) were randomly assigned to six groups: Oral-GSH, Oral-FTS, IP-GSH, IP-FTS, Control-Infection, and Control-Healthy. The Oral-GSH group received GSH orally at a dose of 50 mg/kg once daily for 21 days, while the IP-GSH group received GSH intraperitoneally at a dose of 50 mg/kg twice weekly for the same period. The Oral-FTS and IP-FTS groups received physiological saline via the corresponding administration routes according to the same treatment schedule. On day 21, acute inflammation was induced in all groups except the healthy control group by a single intraperitoneal injection of Freund's Complete Adjuvant (FCA; 5 mL/kg). Blood samples were collected 24 h after FCA administration to determine serum DSH, malondialdehyde (MDA), C-reactive protein (CRP), ceruloplasmin, vitamin C, total protein, albumin, nitrite, and nitrate concentrations.

Results Significant differences among the groups were observed in serum ceruloplasmin, vitamin C, CRP, total protein, albumin, and total nitrate levels ($P < 0.05$). No significant differences were found in serum GSH, MDA, or total nitrite levels ($P > 0.05$). However, the IP-GSH group showed higher serum GSH levels and lower MDA and total nitrite levels than the Oral-GSH group.

Conclusion: GSH supplementation modulated several biochemical and inflammatory parameters associated with experimentally induced acute inflammation. Although IP administration produced relatively greater improvements in oxidative stress markers than oral administration, the overall protective efficacy of the two treatment routes was comparable. These findings suggest that exogenous GSH supplementation may represent a promising adjunctive strategy for reducing oxidative stress and inflammation and may have potential applications in both veterinary and biomedical medicine. Further studies investigating the underlying molecular mechanisms and long-term therapeutic efficacy are warranted.

Keywords: Glutathione, oral, systemic, inflammation, rat.

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EFFECTS OF THYMOL AND CARVACROL LOADED GELATIN SPONGES ON FIBROBLAST PROLIFERATION, ANTIBACTERIAL ACTIVITY, AND COAGULATION IN THE TREATMENT OF ALVEOLAR OSTEITIS

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ABSTRACT

AİM: alveolar osteitis is a common post-extraction complication characterized by pain and delayed healing. local application of antimicrobial and proliferative agents may support wound healing and reduce complications. this study aimed to evaluate the antibacterial activity, coagulation potential, and fibroblast proliferation of gelatin-based sponges loaded with thymol, carvacrol, and their combination.

Materials and Methods: The sponges were fabricated under laboratory conditions using 150 µg thymol, 100 µg carvacrol, and a combination of both compounds, and were characterized by scanning electron microscopy (SEM). Antibacterial activity was assessed against *E. coli* and *Staphylococcus aureus* using the disk diffusion method. Coagulation capacity was evaluated in vitro by visual clot formation, while fibroblast proliferation was analyzed using the MTT assay at 24 and 48 hours.

Results: Thymol- and carvacrol-loaded sponges showed significantly larger inhibition zones compared to unloaded gelatin sponges ($p<0.05$). SEM analysis confirmed a porous structure suitable for homogeneous agent distribution. In coagulation tests, all loaded sponges demonstrated faster clot formation than controls. However, MTT assays revealed reduced fibroblast viability in all loaded groups, with OD values ranging from 0.109–0.142, markedly lower than control values, indicating concentration-dependent cytotoxicity.

Conclusion: In conclusion, thymol- and carvacrol-loaded gelatin sponges exhibited strong antibacterial activity and enhanced coagulation, suggesting potential in the management of alveolar osteitis. Nevertheless, the observed cytotoxic effects on fibroblasts highlight the need for dose optimization or alternative carrier systems to improve biocompatibility. These findings provide a basis for further refinement of plant-derived bioactive scaffolds for clinical use.

Keywords: Thymol, Carvacrol, Alveolar Osteitis

GENÇLERİN TARIMA GİRİŞİNİ VE TARIMDA KALMASINI ETKİLEYEN FAKTÖRLER
*FACTORS AFFECTING YOUNG PEOPLE'S ENTRY INTO AND RETENTION IN AGRICULTURE***Dilek Bostan BUDAK**Department of Agricultural Economics, Faculty of Agriculture, Çukurova University, Adana, Türkiye.
ORCID ID: 0000-0001-6318-698X**ABSTRACT**

The ageing of the farming population and the withdrawal of young people from agriculture have become central concerns for agricultural continuity, rural vitality and the future of food systems. This paper reviews the economic, social and institutional factors shaping young people's entry into and retention in farming, with emphasis on land access, finance, farm profitability, income uncertainty and succession. It is a critical narrative review of peer-reviewed research and institutional reports published mainly since 2010. Three findings recur. First, entry barriers are interdependent rather than additive: land prices and insecure tenancy raise start-up capital requirements, limited collateral constrains access to finance, and volatile incomes raise the opportunity cost of farming relative to non-farm employment. Second, entry and retention are analytically distinct outcomes that respond to different instruments; delayed succession in particular may deny young people effective managerial authority even where they are formally registered as holders. Third, the category of young farmer conceals heterogeneity by entry route, gender, sector, farm size and region, so that a uniform grant may over-subsidize one group while under-serving another. Single-instrument programs centered on start-up grants therefore cannot secure long-term retention. The review argues that policy should span the full pathway from orientation and entry through establishment and growth to persistence, combining land, finance, markets, social protection, rural services, advice and mentoring in a sequenced package. For Türkiye, policies are recommended that include secure access to land, credit guarantees, phased farm succession, stronger producer organizations, independent business development advisory services, mentoring and investments to improve the rural quality of life in rural areas.

Keywords: Young farmers, farm succession, land access, agricultural finance, rural development**ÖZET**

Tarımsal nüfusun yaşlanması ve gençlerin tarımdan uzaklaşması, tarımsal üretimin sürekliliği, kırsal ekonomilerin canlılığı ve gıda sistemlerinin geleceği bakımından temel politika sorunlarından biridir. Bu çalışma, gençlerin tarıma girişini ve tarımda kalmasını etkileyen ekonomik, sosyal ve kurumsal faktörleri, özellikle araziye erişim, finansman, işletme karlılığı, gelir belirsizliği ve çiftlik devri eksenlerinde incelemektedir. Çalışma, ağırlıklı olarak 2010-Ağustos 2026 döneminde yayımlanan hakemli araştırmalar ile ulusal ve uluslararası kurum raporlarının eleştirel biçimde değerlendirildiği bir literatür derlemesidir. Literatürde üç bulgu öne çıkmaktadır. Birincisi, giriş engelleri birbirinden bağımsız değil, karşılıklı olarak bağımlıdır; arazi fiyatları ve güvencesiz kiracılık başlangıç sermayesi ihtiyacını büyütmede, teminat eksikliği finansmana erişimi zorlaştırmakta, değişken tarımsal gelir ise tarım dışı istihdamın fırsat maliyetini yükseltmektedir. İkincisi, tarıma giriş ile tarımda kalma farklı araçlara yanıt veren ayrı sonuçlardır; çiftlik devrinin gecikmesi, gençlerin resmi işletme yöneticisi olsalar bile gerçek karar yetkisine ulaşmasını engelleyebilmektedir. Üçüncüsü, genç çiftçi kategorisi giriş yolu, toplumsal cinsiyet, ürün kolu, işletme ölçeği ve bölge bakımından önemli bir çeşitliliği gizlemekte; tek tip bir hibe bir grubu gereğinden fazla desteklerken diğerinin ihtiyacını karşılamayabilmektedir. Bu nedenle yalnızca kuruluş hibesine dayanan tek araçlı politikalar uzun dönemli kalıcılığı güvence altına almamaktadır. Derleme, genç çiftçi politikasını bir bütün olarak ele almasını ve arazi, finansman, pazar, sosyal güvenlik, kırsal hizmetler, danışmanlık ve mentorluk araçlarının birleştirmesini savunmaktadır. Türkiye için araziye güvenli erişim, kredi garantileri, aşamalı çiftlik devri, güçlendirilmiş üretici örgütleri, bağımsız iş geliştirme danışmanlığı, mentorluk ve kırsal yaşam kalitesi artırabilecek politikalar önerilmektedir.

Anahtar kelimeler: Genç çiftçi, çiftlik devri, araziye erişim, tarımsal finansman, kırsal kalkınma.

KURAKLIK ŞOKLARININ KIRSAL HANE REFAHI, KREDİ ERİŞİMİ VE BORÇLANMA DAVRANIŞI ÜZERİNDEKİ ETKİLERİ**EFFECTS OF DROUGHT SHOCKS ON RURAL HOUSEHOLD WELFARE, CREDIT ACCESS AND BORROWING BEHAVIOR****Cahit GÜNGÖR**

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ABSTRACT

Drought is a multidimensional welfare shock that affects not only agricultural output but also rural households' consumption, asset, labor, migration and financing decisions. This paper reviews the international literature on how drought shocks on rural household welfare, access to credit and borrowing behavior, and identifies the gaps that remain. Contributions from development economics, agricultural finance and climate risk research are synthesized narratively and discussed under seven headings: consumption and asset smoothing, credit demand and informal finance, credit supply and lender behavior, indebtedness and default, public assistance and debt relief, interlinked insurance-credit instruments, and long-run and gendered outcomes. The reviewed evidence indicates that drought lowers income, weakens access to liquidity, encourages distress sales of productive assets and pushes households toward low-risk, low-return production choices, while lenders' tighten credit supply as they reassess spatially correlated default risk. Evidence on the demand side is nonetheless thin: few studies track actual loan volumes, interest rates, rationing status and informal credit terms for the same households before and after a drought. Index insurance and state-contingent loan contracts confirm the importance of joint risk and liquidity constraints, yet their measured effects are sensitive to institutional context, cropping patterns and contract design. Household-level work on the drought-credit nexus is especially scarce for Türkiye and the wider Mediterranean basin. The paper concludes that drought relief, agricultural insurance and credit policy should be designed not as separate instruments but as complementary components of an integrated risk management framework.

Keywords: Drought, rural household welfare, agricultural credit, borrowing behavior, climate risk

ÖZET

Kuraklık, tarımsal üretim kayıplarının ötesinde kırsal hanelerin tüketim, varlık, emek, göç ve finansman kararlarını eş zamanlı olarak etkileyen çok boyutlu bir refah şokudur. Bu bildiri, kuraklık şoklarının kırsal hane refahı, krediye erişim ve borçlanma davranışı üzerindeki etkilerini uluslararası literatür temelinde derlemekte ve alandaki boşlukları ortaya koymaktadır. Kalkınma iktisadı, tarımsal finans ve iklim riski çalışmaları nitel biçimde sentezlenmiş ve yedi başlık altında tartışılmıştır. Tüketim ve varlık stokunun korunması, kredi talebi ve informal finansman, kredi arzı ve kredi verme davranışı, borçluluk ve geri ödememe, kamu yardımları ve borç affı, sigorta-kredi bağlantılı araçlar, uzun dönemli ve toplumsal cinsiyete duyarlı sonuçlardır. İncelenen çalışmalar kuraklığın geliri azaltmanın yanında hanelerin likiditeye erişimini zayıflatıldığını, üretken varlıkların zararına satışını ve düşük riskli-düşük getirili üretim tercihlerini teşvik ettiğini, borç verenlerin ise mekansal olarak ilişkili geri ödememe riskini yeniden değerlendirerek kredi arzını daraltıldığını göstermektedir. Buna karşılık talep yönlü kanıtlar sınırlıdır; fiili kredi tutarı, faiz oranı, kredi kısıtlanma durumu ve informal kredi koşullarını aynı haneler için şok öncesi ve sonrasında izleyen çalışma sayısı azdır. Endeks bazlı sigorta ve şoka bağlı kredi sözleşmelerine ilişkin Bulgular, risk ve likidite kısıtlarının birlikte önemini doğrulamakla birlikte, ölçülen etkiler ülke bağlamına, ürün desenine ve sözleşme tasarımına duyarlıdır. Türkiye ve geniş Akdeniz havzasında hane düzeyinde kuraklık-kredi etkileşimini inceleyen çalışmalar özellikle sınırlıdır. Bildiri, kuraklık yardımı, tarımsal sigorta ve kredi politikalarının ayrı araçlar olarak değil, bütünleşik bir risk yönetimi çerçevesinin birbirini tamamlayan bileşenleri olarak tasarlanması gerektiği sonucuna ulaşmaktadır.

Anahtar Kelimeler: Kuraklık, kırsal hane refahı, tarımsal kredi, borçlanma, iklim riski

THE AGING PROCESS: EPIGENETIC APPROACHES**Associate Prof. Dr. Sevim Çiftçi YEGIN**

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ABSTRACT

Objective: Aging is a complex and multifaceted biological process resulting from the interaction of genetic, environmental and lifestyle factors. Recent research in the field of aging biology has shown that not only genetic changes but also epigenetic mechanisms that regulate gene expression without altering the DNA sequence play a decisive role in the aging process. This study examines the epigenetic foundations of aging, the concept of the epigenetic clock, and the effects of lifestyle on the epigenome.

Materials And Methods: This study is a systematic review prepared to evaluate the role of epigenetic mechanisms in the aging process and epigenetic-based approaches.

Findings: When the studies examined are evaluated together, it is seen that aging is not solely the result of genetic programming; it is a dynamic process shaped by the interaction of epigenetic mechanisms and environmental factors. DNA methylation, histone modifications, and changes in non-coding RNAs are among the key molecular determinants of aging; epigenetic clock models stand out as reliable tools in assessing biological age.

Conclusion: Epigenetic mechanisms have constituted an important paradigm shift in the understanding of aging. Today, epigenetic clocks are used as promising biomarkers in the evaluation of biological age; Lifestyle changes and epigenetic-based treatments stand out as innovative approaches that support healthy aging. In the coming years, developments in the field of epigenetics are expected to make significant contributions to personalized aging management and prevention of age-related diseases.

Keywords: Aging, Epigenetics, Epigenetic Clock, Healthy Aging

TÜRKİYE’DE 0–17 YAŞ GRUBU ÇOCUKLARDA GENEL VE NEDENE ÖZGÜ ÖLÜMLER, 2015–2024

ALL-CAUSE AND CAUSE-SPECIFIC MORTALITY AMONG CHILDREN AGED 0–17 YEARS IN TÜRKİYE, 2015–2024

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ÖZET

Amaç: Bu çalışmanın amacı, Türkiye’de 2015–2024 yılları arasında 0–17 yaş grubundaki çocuk ölümlerinin cinsiyete ve spesifik ölüm nedenlerine göre zamansal eğilimlerini, dönüm noktalarını ve yıllık yüzde değişimlerini değerlendirmektir.

Materyal Ve Yöntem: Çalışmada 2015–2024 yıllarına ait Türkiye İstatistik Kurumu 0–17 yaş çocuk ölüm verileri analiz edilmiştir. Cinsiyete ve spesifik ölüm nedenlerine göre zamansal eğilimleri ve kırılma noktalarını tespit etmek amacıyla Joinpoint Regresyon Analizi (JRA) uygulanmıştır. Eğilimlerin yönünü ve şiddetini belirlemek üzere Yıllık Yüzde Değişim (YYD) ve Ortalama Yıllık Yüzde Değişim (OYYD) değerleri ve bunlara ait %95 güven aralıkları (%95 GA) hesaplanmıştır.

Bulgular: 2015–2024 kapsama döneminde genel çocuk ölümleri her iki cinsiyette de istatistiksel olarak anlamlı bir artış eğilimi göstermiştir (OYYD: Erkek = %2,1, $p=0,001$; Kız = %2,3, $p=0,018$). Her iki cinsiyette de 2021 yılı bir dönüm noktası olarak saptanmıştır. 2015–2021 periyodunda çocuk ölümleri istatistiksel olarak anlamlı düşüş kaydetmişken (Erkek YYD = -%8,6; Kız YYD = -%8,3; $p<0,001$), 2021–2024 periyodunda keskin bir artışa geçmiştir (Erkek YYD = %17,1; Kız YYD = %20,1). Ölüm nedenleri detaylandırıldığında; 2021 sonrasındaki bu kırılmanın temel nedeni her iki cinsiyette de yükseliş gösteren "Dışsal yaralanma ve zehirlenmeler" olduğu tespit edilmiştir (2021–2024 YYD: Erkek = %106,3, $p<0,0001$; Kız = %176,3, $p<0,0001$). Buna karşın her iki cinsiyette de neoplazmlar, metabolik ve nörolojik hastalıklarına bağlı ölümlerde periyot boyunca anlamlı düşüşler görülmüştür.

Sonuç: Türkiye’de 2015–2021 yılları arasında çocuk ölümlerinde kaydedilen kararlı düşüş eğilimi, 2021 yılı sonrasında kırılarak artış trendine girmiştir. Bu olumsuz eğilimin başlıca nedeni; kazalar, yaralanmalar, doğal afetler ve zehirlenmeleri kapsayan dışsal etmenlerde yaşanan artıştır.

Anahtar Kelimeler: Çocuk ölümleri; Joinpoint regresyon analizi; Ölüm nedenleri; Türkiye.

ABSTRACT

Objective: This study aims to evaluate the temporal trends, inflection points, and annual percentage changes in child mortality in the 0–17 age group in Türkiye between 2015 and 2024, stratified by sex and specific causes of death.

Methods: Mortality data for children aged 0–17 years for the period 2015–2024 were obtained from the Turkish Statistical Institute. Joinpoint Regression Analysis (JRA) was applied to identify temporal trends and inflection points by sex and specific causes of death. Annual Percentage Change (APC) and Average Annual Percentage Change (AAPC) values along with their 95% confidence intervals (95% CI) were calculated to determine the direction and magnitude of the trends.

Results: Over the 2015–2024 coverage period, overall child mortality showed a statistically significant increasing trend in both sexes (AAPC: Boys = 2.1%, $p = 0.001$; Girls = 2.3%, $p = 0.018$). The year 2021 was identified as an inflection point for both sexes. While child mortality recorded a statistically significant decline during 2015–2021 (APC: Boys = -8.6%; Girls = -8.3%; $p < 0.001$), it experienced a sharp surge during 2021–2024 (APC: Boys = 17.1%; Girls = 20.1%). Cause-specific analysis revealed that the primary driver of this post-2021 reversal was "External causes of injury and poisoning", which increased in both sexes (2021–2024 APC: Boys = 106.3%, $p < 0.0001$; Girls = 176.3%, $p < 0.0001$). Conversely, deaths due to neoplasms, metabolic, and neurological diseases showed significant declining trends in both sexes throughout the period.

Conclusion: The steady decline in child mortality observed in Türkiye between 2015 and 2021 reversed after 2021, entering an upward trend. The primary contributor to this adverse trend is the increase in external factors, accidents, injuries, natural disasters, and poisonings.

Keywords: Child mortality; Joinpoint regression analysis; Causes of death; Türkiye.

THE RELATIONSHIP BETWEEN E-HEALTH LITERACY AND MENSTRUAL MYTHS AMONG YOUNG PEOPLE: THE CASE OF SIIRT UNIVERSITY

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ABSTRACT

Objective: This study aimed to examine the relationship between university students' eHealth literacy levels and their beliefs in menstruation-related myths and to determine the effect of eHealth literacy on the adoption of these myths.

Materials And Methods: This descriptive and correlational study was conducted with 421 students studying at Siirt University between April 15 and July 15, 2026. Data were collected using the Personal Information Form, the eHealth Literacy Scale, and the Menstruation Myths Scale. Descriptive statistics and Pearson's correlation analysis were used to analyze the data.

Results: The mean age of the participants was 22.63 ± 3.89 years, and 50.6% were male. Of the participants, 87.6% were single, 74.3% had a moderate income level, 56.3% belonged to a nuclear family, and 44.2% resided in a district. Turkish was the most commonly spoken language (48.7%). Regarding parental education, 26.8% of the mothers were literate, while 29.7% of the fathers had completed high school. The participants' mean total eHealth Literacy Scale score was 44.52 ± 7.45 , and the mean total Menstruation Myths Scale score was 44.99 ± 10.40 . A weak, negative, and statistically significant correlation was found between eHealth literacy levels and belief in menstruation-related myths ($r = -0.242, p < 0.001$).

Conclusion: Higher levels of eHealth literacy were associated with significantly lower levels of belief in menstruation-related myths. Educational programs aimed at improving eHealth literacy skills and promoting evidence-based menstrual health awareness among young people are recommended.

Keywords: eHealth Literacy, Menstruation Myths, Young Adults

**TÜRKİYEDE ARAZİ TOPLULAŞTIRMASINA YÖNELİK ÇİFTÇİ ALGILARI VE
YAKLAŞIMLARINA İLİŞKİN BÖLGESEL BİR ARAŞTIRMA**
*A REGIONAL STUDY ON FARMERS' PERCEPTIONS AND APPROACHES TO LAND
CONSOLIDATION IN TÜRKİYE*

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ÖZET

Bu çalışmanın amacı, üreticilerin arazi toplulaştırmasına ilişkin algı ve düşüncelerini belirleyerek toplulaştırma çalışmalarına yönelik bilgi düzeyleri ile yaklaşımlarını ortaya koymaktır. Türkiye’de toplam 14,3 milyon hektar alan arazi toplulaştırmasına uygun olup, yaklaşık 7,4 milyon hektarlık alanda çalışmalar tamamlanarak tescillenmiştir. Araştırmanın ana materyalini, Türkiye’nin Akdeniz Bölgesi’nin doğusunda yer alan Adana ve Hatay illerinden tesadüfi yöntemle seçilen 200 üretici ile yüz yüze gerçekleştirilen anketlerden elde edilen veriler oluşturmaktadır. Tarım faaliyetlerinde verimliliği etkileyen başlıca faktörler; tohum, gübre ve ilaç kullanımı, parsel parçalanması, işlenebilir arazi büyüklüğü, parsel sayısı, mülkiyet yapısı ve kullanılan teknoloji ile makineler olarak belirlenmiştir. Bu faktörlerin planlı ve sistemli bir şekilde uygulanabilmesi açısından arazi toplulaştırma çalışmaları önemli bir araçtır. Araştırma bulgularına göre, üreticilerin çoğunluğu toplulaştırmanın üretim verimliliğini yükselttiği, arazi kullanımını kolaylaştırdığı ve ulaşım sorunlarını azalttığı yönünde görüş bildirmiştir. Bununla birlikte bazı üreticiler, bilgilendirme eksikliği, proje sürecinin uzunluğu ve uygulamalardaki altyapı sorunlarının süreci olumsuz etkilediğini belirtmiştir. Bu doğrultuda toplulaştırma çalışmalarının daha etkin yürütülebilmesi için üretici bilgilendirme faaliyetlerinin artırılması, sürecin şeffaf ve katılımcı bir yaklaşımla yönetilmesi ve altyapı yatırımlarının hızlandırılması önerilmektedir. Ayrıca tarla yolları ve sulama sistemlerinin tamamlanmasının, toplulaştırmanın üretici memnuniyetine ve kırsal kalkınma hedeflerine daha güçlü katkılar sağlayacağı değerlendirilmektedir.

Anahtar Kelimeler: Arazi toplulaştırma, parçalılık, tarımsal verimlilik, çiftçi algısı, sürdürülebilirlik.

ABSTRACT

The aim of this study is to determine farmers’ perceptions and opinions regarding land consolidation and to reveal their level of knowledge and approaches toward land consolidation practices. In Türkiye, approximately 14.3 million hectares of agricultural land are considered suitable for land consolidation, and consolidation projects have been completed and officially registered on approximately 7.4 million hectares. The primary data of the study were obtained through face-to-face surveys conducted with 200 farmers, randomly selected from the provinces of Adana and Hatay, located in the eastern Mediterranean Region of Türkiye. The findings indicate that the major factors affecting agricultural productivity include the use of quality seeds, fertilizers, and pesticides, land fragmentation, the size of cultivable land, the number of parcels, land tenure structure, and the level of technology and machinery used. Land consolidation is recognized as an important instrument for enabling these factors to be managed in a planned and systematic manner. According to the survey results, the majority of farmers believe that land consolidation increases agricultural productivity, facilitates more efficient land use, and reduces transportation-related problems. However, some respondents reported that insufficient information, the lengthy implementation process, and infrastructure-related deficiencies negatively affect the effectiveness of land consolidation projects. Based on these findings, the study recommends strengthening farmer information and awareness activities, managing the consolidation process through a transparent and participatory approach, and accelerating infrastructure investments. Furthermore, the completion of farm roads and irrigation systems is expected to enhance farmer satisfaction and contribute more effectively to the objectives of rural development.

Keywords: Land consolidation, land fragmentation, agricultural productivity, farmers' perceptions, sustainability.

TÜRKİYEDE TARIMSAL İŞGÜCÜ ÜCRET YAPISININ DEĞERLENDİRİLMESİ *EVALUATION OF THE AGRICULTURAL LABOR WAGE STRUCTURE IN TÜRKİYE*

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ÖZET

Tarım sektörü, Türkiye ekonomisinde istihdam, gıda güvenliği ve kırsal kalkınma açısından stratejik bir öneme sahiptir. Bununla birlikte tarım işgücü piyasası; düşük ücret düzeyleri, mevsimlik çalışma yapısı, kayıt dışı istihdamın yaygınlığı, toplumsal cinsiyete dayalı ücret farklılıkları ve sınırlı sosyal güvence gibi yapısal sorunlarla karşı karşıyadır. Bu sorunlar, tarımsal üretimin sürdürülebilirliği ile sektörde çalışanların ekonomik ve sosyal refahını olumsuz yönde etkilemektedir. Bu çalışmanın amacı, Türkiye'de tarımsal işgücü ücret yapısını ikincil veriler ışığında değerlendirerek mevsimlik ve sürekli tarım işçilerinin ücret düzeylerini, cinsiyete göre ücret farklılıklarını, bölgesel ücret dağılımlarını ve son yıllardaki değişim eğilimlerini ortaya koymaktır. Çalışmada, Türkiye İstatistik Kurumu (TÜİK) tarafından yayımlanan veriler kullanılmıştır. Tarım işgücü ücretleri; cinsiyet, istihdam türü ve bölgesel farklılıklar açısından değerlendirilmiştir. Araştırma bulguları, 2020–2025 döneminde mevsimlik ve sürekli tarım işçilerinin ücretlerinde nominal artışlar yaşandığını, ancak kadın işçilerin ücretlerinin tüm dönemlerde erkek işçilere kıyasla daha düşük seviyede kaldığını göstermektedir. Ayrıca ücretlerin iller arasında önemli farklılıklar gösterdiği, kayıt dışı istihdamın yaygınlığının ve mevsimlik çalışma yapısının ücret yapısını etkileyen temel unsurlar arasında yer aldığı belirlenmiştir. Elde edilen Bulgular, tarım işgücü piyasasında ücret farklılıklarının yalnızca ekonomik değil, aynı zamanda toplumsal cinsiyet ve bölgesel eşitsizliklerle ilişkili yapısal bir sorun olduğunu ortaya koymaktadır. Sonuç olarak, tarımsal işgücü piyasasında daha adil ve sürdürülebilir bir ücret yapısının oluşturulabilmesi için kayıt dışı istihdamın azaltılmasına yönelik politikaların güçlendirilmesi, toplumsal cinsiyet temelli ücret eşitsizliklerinin giderilmesi, sosyal güvenlik kapsamının genişletilmesi ve mevsimlik tarım işçilerinin çalışma koşullarının iyileştirilmesi büyük önem taşımaktadır. Bu doğrultuda geliştirilecek istihdam ve ücret politikalarının, tarımsal üretimin sürdürülebilirliğine ve kırsal kalkınmaya önemli katkılar sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Tarımsal işgücü, ücret yapısı, mevsimlik tarım işçileri, toplumsal cinsiyet, kayıt dışı istihdam.

ABSTRACT

The agricultural sector plays a strategic role in the Turkish economy in terms of employment, food security, and rural development. However, the agricultural labor market faces several structural challenges, including low wage levels, the seasonal nature of employment, widespread informal employment, gender-based wage disparities, and limited social security coverage. These challenges adversely affect both the sustainability of agricultural production and the economic and social well-being of agricultural workers. The aim of this study is to evaluate the wage structure of agricultural labor in Türkiye using secondary data by examining the wage levels of seasonal and permanent agricultural workers, gender-based wage differentials, regional wage disparities, and recent trends in agricultural wages. The study utilizes secondary data published by the Turkish Statistical Institute (TurkStat). Agricultural labor wages were examined according to gender, employment type, and regional differences. The findings indicate that nominal wages of both seasonal and permanent agricultural workers increased during the 2020–2025 period. However, women's wages remained consistently lower than those of men throughout the study period. Furthermore, substantial regional disparities in agricultural wages were identified, while the prevalence of informal employment and the seasonal nature of agricultural work were found to be among the main factors influencing the wage structure. The results demonstrate that wage disparities in the agricultural labor market represent not only an economic issue but also a structural problem associated with gender inequality and regional disparities. In conclusion, strengthening policies aimed at reducing informal employment, eliminating gender-based wage

inequalities, expanding social security coverage, and improving the working conditions of seasonal agricultural workers is essential for establishing a fairer and more sustainable agricultural wage structure. In this context, employment and wage policies designed for the agricultural sector are expected to make significant contributions to the sustainability of agricultural production and rural development.

Keywords: Agricultural labor, wage structure, seasonal agricultural workers, gender, informal employment.

ASSOCIATIONS AMONG SURGICAL FEAR, PAIN CATASTROPHIZING, AND EARLY MOBILIZATION EXPERIENCES IN PATIENTS UNDERGOING LAPAROSCOPIC ABDOMINAL SURGERY

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ABSTRACT

Objective: This study examined the associations among surgical fear, pain catastrophizing, and pain and difficulty during early mobilization in patients undergoing laparoscopic abdominal surgery.

MATERIALS AND METHODS: This descriptive, cross-sectional, correlational study was conducted between June 25 and August 2, 2026, in the surgical units of a state training and research hospital in southeastern Türkiye. The sample comprised 51 eligible patients who consented to participate. Data were collected face-to-face using a Patient Information Form, the Surgical Fear Questionnaire, the Pain Catastrophizing Scale, and the Patient Mobility Scale. The Surgical Fear Questionnaire was administered on the morning of surgery before the procedure; the other scales were administered on postoperative day 2. Normality was evaluated using skewness and kurtosis coefficients and the Shapiro–Wilk test. Because the scale scores were non-normally distributed, the Mann–Whitney U test and Spearman’s rank-order correlation analysis were used. Statistical significance was set at $p < 0.05$.

Results: Participants’ mean age was 39.76 ± 12.11 years; 51.0% were male, 58.8% were married, and 52.9% had no previous surgical experience. Married patients had higher surgical fear and pain catastrophizing scores than non-married patients (both $p < 0.001$). Patients without previous surgical experience had higher surgical fear ($p = 0.002$), pain catastrophizing ($p < 0.001$), and Patient Mobility Scale scores ($p < 0.001$). Surgical fear was positively correlated with pain catastrophizing ($r_s = 0.783$), while Patient Mobility Scale scores were positively correlated with surgical fear ($r_s = 0.569$) and pain catastrophizing ($r_s = 0.573$) (all $p < 0.001$).

Conclusion: Greater surgical fear and pain catastrophizing were associated with greater pain and difficulty during early postoperative mobilization. Preoperative assessment of surgical fear, particularly among patients without previous surgical experience, and individualized nursing interventions incorporating education, psychological support, and mobilization preparation are recommended.

Keywords: Early mobilization, laparoscopic surgery, nursing, pain catastrophizing, surgical fear

BEL AĞRISINA BİYOPSİKOSOSYAL YAKLAŞIM: NEDENLER VE YAŞAM TARZI DEĞİŞİKLİKLERİ*A BIOPSYCHOSOCIAL APPROACH TO LOW BACK PAIN: CAUSES AND LIFESTYLE MODIFICATIONS***Adem YAĞAN**

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ÖZET

AMAÇ: Bel ağrısı, fonksiyon kaybına ve iş gücü kaybına yol açabilen, birinci basamakta sık karşılaşılan önemli bir sağlık sorunudur. Bu bildirinin amacı bel ağrısının başlıca nedenlerini biyopsikososyal yaklaşımla sınıflandırmak, acil veya ileri değerlendirme gerektiren uyarıcı bulguları tanımlamak ve korunma ile tedavide uygulanabilecek kanıta dayalı yaşam tarzı değişikliklerini değerlendirmektir.

MATERYAL VE YÖNTEM: Bu anlatı derlemesinde Dünya Sağlık Örgütü'nün 2023 tarihli kronik primer bel ağrısı rehberi, NICE bel ağrısı ve siyatik rehberi, Amerikan Radyoloji Kolejinin 2021 görüntüleme uygunluk kriterleri, 2021 fizik tedavi klinik uygulama rehberi ve Küresel Hastalık Yüğü 2021 araştırmasının bel ağrısına ilişkin sonuçları incelendi. Kanıtlar; nedenler, değiştirilebilir risk faktörleri, kırmızı bayraklar, görüntüleme yaklaşımı ve yaşam tarzı müdahaleleri başlıklarında sentezlendi.

BULGULAR: 2020 yılında dünyada yaklaşık 619 milyon kişinin bel ağrısı yaşadığı ve bu sayının 2050 yılında 843 milyona ulaşabileceği bildirilmektedir. Olguların yaklaşık %90'ı belirli bir ciddi patolojiyle açıklanamayan nonspesifik bel ağrısıdır. Klinik nedenler; nonspesifik veya mekanik bel ağrısı, sinir kökü tutulumu ile seyreden radiküler ağrı ve kırık, enfeksiyon, malignite, inflamatuvar hastalık ya da kauda ekuina sendromu gibi spesifik durumlar olarak sınıflandırılabilir. Yeni gelişen mesane veya bağırsak işlev bozukluğu, eyer bölgesinde duyu kaybı, ilerleyici kas güçsüzlüğü, ateş, açıklanamayan kilo kaybı, kanser öyküsü ve önemli travma ileri değerlendirme gerektirir. Kırmızı bayrak bulunmayan komplikasyonsuz olgularda rutin görüntüleme önerilmemektedir. Yönetimde günlük aktivitelerin sürdürülmesi, uzun süreli yatak istirahatinden kaçınılması, kişiye göre kademelendirilen aerobik ve güçlendirme egzersizleri, sağlıklı vücut ağırlığı, sigaranın bırakılması, yeterli uyku, hareketsizliğin azaltılması, iş ortamının düzenlenmesi ve psikososyal engellerin ele alınması öne çıkmaktadır.

Sonuç: Bel ağrısında etkili yaklaşım yalnızca anatomik veya radyolojik bulgulara odaklanmamalıdır. Ciddi nedenler dışlandıktan sonra güven verici hasta eğitimi, güvenli hareketin korunması ve çok bileşenli yaşam tarzı düzenlemesi birinci basamak yönetiminin merkezinde yer almalıdır.

Anahtar Kelimeler: bel ağrısı, yaşam tarzı, fiziksel aktivite, egzersiz, birinci basamak

ABSTRACT

OBJECTIVE: Low back pain is a common primary care problem causing functional limitation, reduced quality of life, and loss of work capacity. This presentation aimed to classify its major causes, identify warning features requiring urgent or further evaluation, and review evidence-based lifestyle modifications.

MATERIALS AND METHODS: This narrative review examined the 2023 World Health Organization guideline, the NICE guideline on low back pain and sciatica, the 2021 American College of Radiology imaging criteria, the 2021 physical therapy clinical practice guideline, and findings of the Global Burden of Disease 2021 study. Evidence was synthesized under causes, red flags, imaging, and lifestyle interventions.

RESULTS: Approximately 619 million people experienced low back pain worldwide in 2020, and prevalent cases are projected to reach 843 million by 2050. About 90% of presentations are nonspecific and cannot be confidently attributed to serious pathology. Causes can be grouped as nonspecific or mechanical pain, radicular pain associated with nerve-root involvement, and specific conditions such as fracture, infection, malignancy, inflammatory disease, or cauda equina syndrome. New bladder or bowel dysfunction, saddle sensory loss, progressive muscle weakness, fever, unexplained weight loss, cancer history, and significant trauma require further evaluation. Routine imaging is not recommended for uncomplicated low back pain without red flags. Management should emphasize continuation of usual

activities, avoidance of prolonged bed rest, individually progressed aerobic and strengthening exercise, healthy body weight, smoking cessation, adequate sleep, reduced sedentary time, workplace adjustments, and management of psychosocial barriers. Education should explain that pain does not necessarily indicate continuing tissue damage and that gradual movement is generally safe.

CONCLUSION: Effective care should not focus solely on anatomical or radiological findings. After serious causes have been excluded, reassuring education, safe movement, and multicomponent lifestyle modification should form the core of person-centred primary care.

Keywords: low back pain, lifestyle, physical activity, exercise, primary care

**KOLOREKTAL KANSERDEN KORUNMADA YAŞAM TARZI VE TARAMANIN ROLÜ:
BİRİNCİ BASAMAK PERSPEKTİFİ**

*THE ROLE OF LIFESTYLE AND SCREENING IN COLORECTAL CANCER PREVENTION: A
PRIMARY CARE PERSPECTIVE*

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ÖZET

AMAÇ: Kolorektal kanser, yüksek insidans ve mortalitesi nedeniyle önemli bir halk sağlığı sorunudur. Bu bildirinin amacı, kolorektal kanserin değiştirilebilir risk faktörlerini, yaşam tarzı temelli korunma yaklaşımlarını ve taramanın erken tanıdaki rolünü birinci basamak perspektifiyle değerlendirmektir.

Materyal ve Yöntem: Bu anlatı derlemesinde Dünya Sağlık Örgütü'nün 2026 tarihli kolorektal kanser bilgi notu, Uluslararası Kanser Araştırmaları Ajansının 2024 küresel kanser tahminleri, Dünya Kanser Araştırma Fonunun güncel korunma önerileri ve Türkiye Ulusal Kolorektal Kanser Tarama Programına ilişkin güncel resmi kaynaklar incelendi. Bulgular; hastalık yükü, risk faktörleri, yaşam tarzı müdahaleleri ve tarama uygulamaları başlıkları altında sentezlendi.

BULGULAR: Güncel küresel tahminlerde 2024 yılında yaklaşık 2,0 milyon yeni kolorektal kanser olgusu ve 918 bin ölüm bildirilmiştir. İleri yaş, aile öyküsü, kalıtsal sendromlar, inflamatuvar bağırsak hastalıkları ve önceki adenomatöz polipler değiştirilemeyen ya da klinik olarak yüksek risk oluşturan başlıca faktörlerdir. İşlenmiş ve kırmızı etten zengin, liften fakir beslenme; fiziksel hareketsizlik; fazla kilo ve obezite; tütün ve alkol kullanımı değiştirilebilir risk faktörleri arasında yer almaktadır. Sebze, meyve, tam tahıl ve kuru baklagillerden zengin beslenme, sağlıklı vücut ağırlığının korunması, düzenli fiziksel aktivite ve tütün kullanımının bırakılması temel korunma yaklaşımlarıdır. Türkiye'de ortalama riskli 50-70 yaş kadın ve erkeklere iki yılda bir gaitada gizli kan testi, ayrıca 10 yılda bir kolonoskopi önerilmektedir. Pozitif test sonuçlarının kolonoskopiyle tamamlanması tarama programının etkisi açısından kritik önemdedir.

Sonuç: Kolorektal kanser yükünün azaltılması, yaşam tarzı danışmanlığı ile organize taramanın birlikte yürütülmesini gerektirir. Aile hekimleri ve iç hastalıkları uzmanları; risk değerlendirmesi, taramaya davet, pozitif sonuçların yönlendirilmesi ve davranış değişikliğinin izlenmesinde temel role sahiptir.

Anahtar Kelimeler: Kolorektal kanser, tarama, gaitada gizli kan testi, yaşam tarzı, birinci basamak

ABSTRACT

OBJECTIVE: Colorectal cancer is a major public health problem because of its high incidence and mortality. This presentation aimed to evaluate modifiable risk factors, lifestyle-based prevention strategies, and the role of screening in early detection of colorectal cancer from a primary care perspective.

MATERIALS AND METHODS: This narrative review examined the World Health Organization colorectal cancer fact sheet published in 2026, the International Agency for Research on Cancer global cancer estimates for 2024, current cancer prevention recommendations of the World Cancer Research Fund, and recent official sources describing the Turkish National Colorectal Cancer Screening Programme. Evidence was synthesized under disease burden, risk factors, lifestyle interventions, and screening practices.

RESULTS: Current global estimates indicate approximately 2.0 million new colorectal cancer cases and 918,000 deaths in 2024. Older age, family history, hereditary syndromes, inflammatory bowel disease, and previous adenomatous polyps are major non-modifiable or clinically high-risk factors. Diets

rich in processed and red meat and low in fibre, physical inactivity, overweight and obesity, tobacco use, and alcohol consumption are important modifiable factors. A dietary pattern rich in vegetables, fruits, whole grains, and legumes, maintenance of a healthy body weight, regular physical activity, and smoking cessation constitute the main lifestyle-based prevention measures. In Türkiye, average-risk women and men aged 50-70 years are offered a faecal occult blood test every two years, together with a recommendation for colonoscopy every ten years. Completion of colonoscopy after a positive stool test is essential for the effectiveness of the screening pathway. High-risk individuals require individualized assessment rather than routine population screening alone.

CONCLUSION: Reducing the burden of colorectal cancer requires lifestyle counselling and organized screening to be implemented together. Family physicians and internal medicine specialists have a central role in risk assessment, screening invitation, referral after positive results, and longitudinal support for behavioural change.

Keywords: Colorectal cancer, screening, faecal occult blood test, lifestyle, primary care

İYOT YETERSİZLİĞİ İLE MÜCADELEDE EKSİK HALKA: TOPLU BESLENME HİZMETLERİ

THE MISSING LINK in THE PREVENTION of IODINE DEFICIENCY: CATERING SERVICES

Meltem SOYLU

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ÖZET

İyot, tiroit hormonlarının sentezi için gerekli, besinlerle alınması zorunlu bir eser element olup yetersiz alımı; guatr, hipotiroidi, büyüme ve gelişme geriliği, gebelik komplikasyonları ve bilişsel gelişim bozukluklarına yol açabilmektedir. Bu derlemenin amacı, toplu beslenme sistemlerinde iyotlu tuz kullanımına yönelik güncel kanıtları bütüncül olarak değerlendirmektir.

İyot yetersizliğinin önlenmesinde Evrensel İyotlu Tuz Kullanımı (USI) en etkili stratejilerden biri olarak önerilmektedir. Bu strateji yalnızca evlerde kullanılan sofraya tuzlarını değil, gıda sanayisi ile restoranlar, hastaneler, huzurevleri, okul ve işyeri yemekhaneleri gibi toplu beslenme hizmetlerinde kullanılan tüm gıda amaçlı tuzların iyotlanması kapsamaktadır. Bunun temel nedeni, günümüzde günlük tuz tüketiminin önemli bir bölümünün işlenmiş gıdalar ve ev dışında tüketilen yemeklerden sağlanmasıdır. Türkiye'de 1994 yılında başlatılan İyot Yetersizliği Hastalıklarının Önlenmesi ve Tuzun İyotlanması Programı ile iyotlu tuz kullanımı önemli ölçüde artmış; hanelerde iyotlu tuz kullanım oranı 1995 yılında %18,2 iken 2008 yılında %85,4'e yükselmiştir. Bununla birlikte 2020 yılında Antalya'da yapılan izlem çalışması, okul çağı çocuklarında yeterli iyot düzeyine ulaşıldığını gösterirken, 2021 yılında Türkiye genelinde gebeler üzerinde gerçekleştirilen ulusal araştırmada gebelerin %74'ünde ve yenidoğanların %51'inde iyot yetersizliği saptanmıştır. Bu Bulgular, özellikle risk gruplarında yalnızca evlerde iyotlu tuz kullanımının yeterli olmadığını göstermektedir.

Türkiye'de doğrudan tüketiciye sunulan sofraya tuzlarının iyotlanması zorunlu olmasına rağmen, toplu yemek üretiminde kullanılan gıda sanayi tuzlarının iyotlanması zorunlu değildir. Buna karşın ev dışında beslenmenin arttığı ülkelerde gıda sanayisi ve toplu beslenme hizmetlerinde kullanılan tuzların da iyotlanması önerilmektedir. İsviçre, Avusturya ve İtalya gibi ülkelerde bu uygulama teşvik edilmektedir. Ancak Türkiye'de hastaneler, huzurevleri, okul yemekhaneleri ve catering işletmelerinde kullanılan tuzun iyot içeriğini ortaya koyan bilimsel çalışmalar bulunmamaktadır. Bu nedenle toplu beslenme hizmetlerinde iyotlu tuz kullanımının değerlendirilmesi, iyot yetersizliğiyle mücadelede önemli ancak ihmal edilmiş bir araştırma alanı olarak öne çıkmaktadır.

Mevcut bilimsel kanıtlar, toplu beslenme sektöründe iyotlu tuz kullanımının artırılmasının toplumun toplam iyot alımına anlamlı katkı sağlayabileceğini desteklemektedir. Bu konuda ülkemizde güncel araştırmaların yapılması desteklenmelidir.

Anahtar Kelimeler: Evrensel İyotlu Tuz Kullanımı, İyot Yetersizliği, Toplu Beslenme.

ABSTRACT

Iodine is an essential trace element required for the synthesis of thyroid hormones and must be obtained through the diet. Inadequate iodine intake may lead to iodine deficiency disorders, including goiter, hypothyroidism, impaired growth and development, pregnancy complications, and cognitive dysfunction. This review aimed to provide a comprehensive overview of the current evidence regarding the use of iodized salt in mass catering services.

Universal Salt Iodization (USI) is recognized as one of the most effective, safe, and cost-effective strategies for the prevention of iodine deficiency. USI encompasses not only household table salt but also all food-grade salt used in the food industry and mass catering settings, including restaurants, hospitals, nursing homes, schools, workplace cafeterias, and other institutional food services. This approach is particularly important because a substantial proportion of daily salt intake is now derived from processed foods and meals consumed outside the home.

In Türkiye, the National Program for the Prevention of Iodine Deficiency Disorders and Salt Iodization, launched in 1994, substantially increased household iodized salt use from 18.2% in 1995 to 85.4% in 2008. Nevertheless, surveillance studies conducted in 2020 demonstrated adequate iodine status among school-aged children, whereas a nationwide study published in 2021 reported iodine deficiency in 74%

of pregnant women and 51% of newborns, indicating that household iodized salt use alone is insufficient for vulnerable populations.

Although iodization of table salt sold directly to consumers is mandatory in Türkiye, iodization of food-grade salt used in food manufacturing and catering is not required. In contrast, iodization of salt used in the food industry and catering services is recommended in countries where out-of-home food consumption is common, and countries such as Switzerland, Austria, and Italy actively promote this practice. However, no scientific studies have evaluated the iodine content of salt used in hospitals, nursing homes, school cafeterias, or catering services in Türkiye.

Current evidence suggests that increasing the use of iodized salt in catering services could significantly improve population iodine intake. Further research is warranted to evaluate iodized salt use in institutional food services and to support evidence-based public health policies.

Keywords: Universal Salt Iodization; Iodine Deficiency; Catering.

DENİZ YOSUNLARI: GELECEĞİN SÜRDÜRÜLEBİLİR GIDASI TÜRK SOFRALARINA UYGUN MU?*SEAWEEDS: ARE THEY A SUSTAINABLE FOOD OF THE FUTURE FOR TURKISH CUISINE?***Meltem SOYLU**

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ÖZET

Deniz yosunları (makroalgler), fotosentetik organizmalar olup yaklaşık 500–700 türü yenilebilen son yıllarda içeriği ile dikkat çeken besinler arasında yer almaktadır.

Deniz yosunları; yüksek diyet lifi, vitamin, mineral ve biyoaktif bileşik içerikleri ile düşük yağ oranına sahip besinlerdir. Deniz yosunları; protein, iyot, kalsiyum, magnezyum, demir ve çinko açısından zengin olmalarının yanı sıra C ve E vitaminleri, karotenoidler, polifenoller, klorofiller ve fikobiliproteinler gibi antioksidan bileşikler ile aljinat, fucoidan, laminarin ve ulvan gibi biyoaktif polisakkaritleri içermeleri nedeniyle fonksiyonel besin olarak değerlendirilmektedir. Gıda sanayinde kurutulmuş, taze, toz veya ekstrakt formunda ekmek, makarna, çorba, salata ve çeşitli fonksiyonel gıda ürünlerinde kullanılabilmektedir. Ayrıca verimli tarım arazisi, tatlı su ve yoğun gübre kullanımına gereksinim duymaması, karbon tutulumu ve deniz ekosistemlerine katkı sağlaması nedeniyle sürdürülebilir gıda sistemlerinin önemli bileşenlerinden biridir.

Türk mutfağı, tarihsel süreç boyunca farklı coğrafyalardan gelen besinleri ve pişirme geleneklerini benimseyerek kendi kültürel yapısı içerisinde uyarlamış ve zenginleştirmiş köklü mutfaklardan biridir. Ancak, besin değeri yüksek ve sürdürülebilir bir gıda kaynağı olmasına rağmen deniz yosunu tüketimi Türk beslenme kültüründe henüz yaygın değildir. Sürdürülebilir beslenme yaklaşımlarının önem kazanması, bitki bazlı beslenme eğilimlerinin artması ve fonksiyonel gıdalara yönelik tüketici ilgisinin artması, deniz yosunlarının Türk beslenme kültürüne kazandırılması için önemli fırsatlar sunmaktadır. Bilimsel çalışmalar, tüketici kabulünün artırılmasında deniz yosunlarının tek başına tüketilmesinden ziyade, geleneksel gıdalara düşük oranlarda ilave edilmesinin daha başarılı olduğunu göstermektedir. Bu kapsamda deniz yosunlarının ekmek, tarhana, erişte, makarna, çorba, yoğurtlu mezeler ve balık ürünleri gibi geleneksel Türk gıdalarında besin zenginleştiricisi olarak kullanılması; beslenme kalitesini artırabilir. Ayrıca, deniz yosunlarının geleneksel gıdaların formülasyonuna düşük oranlarda (%1–5) ilave edilmesi, tüketicilerin duyuşal kabulünü artırırken yerel damak tadının korunmasına ve yeni bir besinin günlük beslenme alışkanlıklarına daha kolay entegre edilmesine katkı sağlayabilir. Bu yaklaşım hem besin çeşitliliğinin artırılmasına hem de sürdürülebilir gıda üretimi ve tüketimini destekleyen yenilikçi ürünlerin geliştirilmesine katkı sağlayabilecek uygulanabilir bir strateji olarak değerlendirilmektedir.

Anahtar kelimeler: Deniz Yosunu, Makroalg, Türk Beslenme Kültürü.

ABSTRACT

Seaweeds (macroalgae) are photosynthetic organisms, of which approximately 500–700 species are considered edible, and have attracted increasing attention in recent years because of their unique nutritional composition. Seaweeds are characterized by a high content of dietary fiber, vitamins, minerals, and bioactive compounds, while being naturally low in fat. They are regarded as functional foods due to their richness in protein, iodine, calcium, magnesium, iron, and zinc, as well as their content of antioxidant compounds such as vitamins C and E, carotenoids, polyphenols, chlorophylls, and phycobiliproteins, together with bioactive polysaccharides including alginate, fucoidan, laminarin, and ulvan. In the food industry, seaweeds are utilized in dried, fresh, powdered, or extract forms in the production of bread, pasta, soups, salads, and a variety of functional food products. Furthermore, seaweeds are considered an important component of sustainable food systems because they require neither fertile agricultural land, freshwater, nor intensive fertilizer inputs for cultivation, while also contributing to carbon sequestration and marine ecosystem health.

Turkish cuisine is one of the world's well-established culinary traditions, having evolved through the adaptation and integration of foods and cooking practices originating from diverse geographical regions. Nevertheless, despite their high nutritional value and sustainability potential, seaweed consumption is not yet common in the Turkish cuisine. The growing emphasis on sustainable diets, increasing interest

in plant-based nutrition, and rising consumer demand for functional foods provide significant opportunities for incorporating seaweeds into the Turkish cuisine. Scientific evidence suggests that consumer acceptance is higher when seaweeds are incorporated into traditional foods at low inclusion levels rather than consumed alone. Accordingly, incorporating seaweeds as nutritional fortifiers into traditional Turkish foods such as bread, tarhana, noodles, pasta, soups, yogurt-based appetizers, and fish products may improve their nutritional quality. Moreover, adding seaweeds at low levels (1–5%) to traditional food formulations may enhance sensory acceptance while preserving traditional flavor profiles and facilitating the integration of this novel food into daily dietary habits. This approach represents a practical strategy for increasing dietary diversity and supporting the development of innovative food products that promote sustainable food production and consumption.

Keywords: Seaweed, Macroalgae, Turkish Cuisine.

EVALUATION OF THE ANTIOXIDANT ACTIVITY OF BRIMONIDINE TARTRATE-LOADED NANOPARTICLES IN A TBHP-INDUCED OXIDATIVE STRESS MODEL

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ABSTRACT

AIM: Glaucoma is a neurodegenerative disease characterized by retinal ganglion cell damage and is one of the leading causes of irreversible vision loss worldwide. Oxidative stress plays a critical role in glaucoma pathogenesis by promoting retinal cell dysfunction. The antioxidant effects of brimonidine tartrate (BT)-loaded nanoparticles were evaluated in a tert-butyl hydroperoxide (tBHP)-induced oxidative stress model using R28 retinal cells, and their potential as a neuroprotective strategy for reducing glaucoma-associated oxidative damage was investigated.

MATERIALS AND METHOD: The oxidative stress model was established in R28 retinal cells using tBHP. The cytotoxic concentration of tBHP and the protective concentrations of brimonidine tartrate (BT) and BT-loaded nanoparticles (BT-NPs) were first determined by the MTT assay. Cells were then exposed to tBHP for 1 h, followed by treatment with BT or BT-NPs for 24 h. The mRNA expression levels of SOD and GPX were analyzed by qRT-PCR.

RESULTS: Exposure to tBHP significantly reduced R28 cell viability and suppressed the expression of the antioxidant genes SOD and GPX, confirming the establishment of the oxidative stress model. Treatment with BT and BT-loaded nanoparticles (BT-NPs) improved cell viability in a dose-dependent manner. Moreover, 10 µg/mL BT and BT-NPs restored SOD expression, while 10 µg/mL BT-NPs produced the highest GPX expression, indicating a stronger antioxidant response than free BT.

CONCLUSION: BT-loaded nanoparticles effectively protected R28 retinal cells against tBHP-induced oxidative stress by improving cell viability and enhancing the expression of the antioxidant genes SOD and GPX. These findings suggest that BT-loaded nanoparticles may represent a promising neuroprotective strategy for reducing oxidative stress associated with glaucoma.

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Keywords: Brimonidine tartrate, nanoparticles, glaucoma, oxidative stress, R28 cells.

RETROSPECTIVE EVALUATION OF THE CONTRIBUTION OF LIPID PARAMETERS, PARATHYROID HORMONE, AND 25-HYDROXYVITAMIN D LEVELS TO ACHIEVEMENT OF REMISSION AND DURATION OF REMISSION IN PATIENTS WITH HEMATOLOGICAL MALIGNANCIES

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ABSTRACT

Objective: Hematological malignancies comprise a heterogeneous group of diseases affecting the blood and lymphatic system, with considerable variability in disease course and treatment response. Recent evidence suggests that lipid metabolism, vitamin D, and parathyroid hormone (PTH) are associated not only with metabolic disorders but also with cancer development and prognosis. However, no comprehensive study has simultaneously evaluated the impact of these parameters on remission outcomes across all major hematological malignancies.

The aim of this study was to retrospectively evaluate the effects of baseline lipid parameters (HDL, LDL, triglycerides, and total cholesterol), PTH, and 25-hydroxyvitamin D [25(OH)D] levels on remission achievement and remission duration in adult patients with hematological malignancies. In addition, differences in these parameters among various hematological malignancy subgroups were investigated.

Materials And Methods

Study Design and Participants

This retrospective descriptive study included 545 newly diagnosed patients treated at the Hematology Clinic of Atatürk University Faculty of Medicine Research Hospital between January 2014 and December 2020.

Inclusion and Exclusion Criteria: Patients diagnosed with hematological malignancies during the study period who had complete records of lipid profile, 25(OH)D, and PTH levels were included. Patients with missing laboratory data, irregular follow-up, or diagnosis outside the study period were excluded.

Data Collection: Demographic characteristics, diagnosis, baseline laboratory findings (HDL, LDL, triglycerides, total cholesterol, 25(OH)D, and PTH), time from diagnosis to remission (days), and time from remission to relapse (months) were obtained from medical records and the electronic hospital database.

Statistical Analysis: Statistical analyses were performed using NCSS 2020 software. Normality was assessed with the Shapiro–Wilk test. Group comparisons were conducted using the Mann–Whitney U test, Kruskal–Wallis test with Dunn–Bonferroni post hoc analysis, Chi-square test, and Fisher's exact test. Pearson's and Spearman's correlation analyses were performed where appropriate. A two-sided p value <0.05 was considered statistically significant.

Results: Among the 545 patients included in the study, 339 (62.2%) were male and 206 (37.8%) were female. The mean age was 59.90 ± 17.76 years. The most common diagnostic groups were chronic lymphoproliferative diseases (CLPD, 33.8%), plasma cell disorders (PCD, 23.7%), and acute myeloid leukemia (AML, 21.7%). At the end of follow-up, 285 patients (52.3%) remained in remission, whereas 260 (47.7%) experienced relapse. The mean time from diagnosis to remission was 35.99 ± 13.97 days, and the mean remission duration was 32.64 ± 23.78 months.

Comparison According to Diagnostic Groups

Patients with plasma cell disorders had significantly higher HDL levels than the other diagnostic groups ($p=0.001$). LDL levels were significantly higher in patients with chronic lymphoproliferative diseases than in those with chronic myeloproliferative diseases ($p=0.005$). Triglyceride levels were significantly higher in patients with acute lymphoblastic leukemia compared with those with plasma cell disorders ($p=0.033$). Total cholesterol levels were significantly lower in patients with chronic myeloproliferative

diseases than in those with chronic lymphoproliferative diseases and plasma cell disorders ($p=0.017$). No significant differences were observed in 25(OH)D levels among diagnostic groups ($p>0.05$). PTH levels were significantly lower in patients with plasma cell disorders than in all other groups ($p=0.001$).

Comparison According to Clinical Outcome

Patients who remained in remission were significantly younger than those who relapsed (54.19 vs. 66.17 years, $p=0.001$). HDL, LDL, and total cholesterol levels were significantly higher in the remission group than in the relapse group ($p=0.003$, $p=0.003$, and $p=0.037$, respectively). No significant differences were observed in vitamin D or PTH levels between the two groups.

Factors Affecting Remission Duration

Patients with HDL levels ≥ 40 mg/dL had significantly longer remission duration ($p=0.004$). Patients with LDL levels >130 mg/dL had significantly shorter remission duration ($p=0.001$), whereas patients with total cholesterol levels >200 mg/dL had significantly longer remission duration ($p=0.001$). The longest remission duration was observed in patients with chronic lymphoproliferative diseases and was significantly longer than that observed in patients with AML and ALL. No significant association was found between vitamin D levels and remission duration ($p>0.05$). Patients with PTH levels <12 pg/mL had significantly shorter remission duration than those with normal PTH levels ($p=0.048$).

Conclusion: In this retrospective study, the effects of lipid parameters, PTH, and vitamin D levels on remission outcomes in patients with hematological malignancies were evaluated.

Higher HDL and total cholesterol levels emerged as protective factors associated with an increased likelihood of achieving remission and prolonged remission duration, suggesting that lipid parameters may serve as prognostic biomarkers in hematological malignancies.

Lower LDL levels, particularly in patients with chronic myeloproliferative diseases, were associated with shorter remission duration. This finding may reflect increased cholesterol utilization by proliferating malignant cells.

Elevated triglyceride levels in patients with acute lymphoblastic leukemia indicate that metabolic parameters should be closely monitored in this subgroup.

Lower PTH levels observed in plasma cell disorders are consistent with the pathophysiology of these diseases and are likely related to PTH suppression secondary to hypercalcemia and renal involvement.

No prognostic effect of vitamin D levels on remission duration was demonstrated. This finding may be attributable to the high prevalence of severe vitamin D deficiency in the study population (82.6% of patients had serum 25(OH)D levels <20 ng/mL).

Although the retrospective single-center design and the inability to evaluate confounding factors such as nutritional status, comorbidities, and medication use represent important limitations, this study constitutes one of the largest investigations conducted on this subject in Türkiye. Overall, lipid parameters appear to be simple, inexpensive, and readily available prognostic biomarkers for the follow-up of patients with hematological malignancies. Prospective multicenter studies are warranted to validate these findings.

Keywords: Hematological malignancies; Lipid profile; High-density lipoprotein; 25-Hydroxyvitamin D; Parathyroid hormone; Remission; Prognostic biomarkers.

BEYOND SCREEN TIME: MAPPING DIGITAL OVER-CONNECTEDNESS ONTO ADOLESCENT OCCUPATIONAL BALANCE THROUGH THE A-OBS FRAMEWORK**Prof. Dr. Gonca KARAYAĞIZ MUSLU**

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ABSTRACT**OBJECTIVE:** This review aims to critically synthesize how digital over-connectedness—specifically nomophobia, phubbing, and the Fear of Missing Out (FoMO)—sabotages adolescent occupational balance by utilizing the multidimensional framework of the Adolescent Occupational Balance Scale (A-OBS), thereby transcending reductionist quantitative screen-time metrics.**MATERIAL AND METHODS:** A comprehensive literature search was conducted across major electronic databases (PubMed, Scopus, CINAHL, and TR Dizin) spanning recent scientific evidence. Studies investigating tech-induced behavioral addictions, adolescent lifestyle disruptions, and pediatric nursing interventions were critically analyzed and conceptually mapped onto the four core subscales of the A-OBS framework.**FINDINGS:** The synthesized findings delineate a multi-layered destructive cascade across all four A-OBS dimensions: (1) Algorithmic reward architectures trigger continuous dopaminergic feedback loops, causing severe micro- and macro-level time compression (Temporality); (2) Bedtime device usage and short-wavelength blue-light exposure suppress nocturnal melatonin secretion, prolonging sleep latency and fragmenting slow-wave and REM sleep architecture (Rest and Sleep); (3) Excessive virtual immersion monopolizes daily schedules, displacing physical activities and serving as a sanctuary for maladaptive coping (Occupational Variations and Adaptation); and (4) Externalized digital validation loops degrade the subjective value adolescents assign to offline milestones and face-to-face relationships (Occupational Meaning and Value).**CONCLUSION:** Digital over-connectedness induces a profound clinical occupational crisis. Pediatric nursing interventions must evolve beyond simplistic screen-time restrictions toward holistic lifestyle redesign, peer-inclusive counseling, and macro-level health policy advocacy. This paradigm empowers advanced clinicians to target the neurobiological and cognitive drivers of digital addiction, effectively reclaiming restorative occupations and safeguarding adolescent health.**Keywords:** Adolescent Occupational Balance Scale (A-OBS); Pediatric Nursing; Digital Addiction; Nomophobia; Phubbing; Lifestyle Redesign.

**THE CYTOPROTECTIVE EFFECTS OF FERULA PSEUDALLIACEA RECH. F.
METHANOL EXTRACT IN RATS WITH BLEOMYCIN-INDUCED PULMONARY
FIBROSIS**

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ABSTRACT

OBJECTIVE : This study aimed to analyze the phytochemical composition of the methanol extract of *Ferula pseudalliacea* Rech. f., a plant traditionally used in folk medicine, and to evaluate its potential protective effects, which may be attributed to its bioactive compounds, in a bleomycin-induced rat model of pulmonary fibrosis.

MATERIAL AND METHOD : A total of 32 male Wistar albino rats aged 2–3 months and weighing 190–220 g were used under standard housing conditions. Animals were obtained from the Experimental Medicine Research and Application Center of Van Yüzüncü Yıl University and divided into four groups of eight rats each. Group 1 served as the control group; Group 2 received a single intratracheal dose of 7.5 mg/kg bleomycin; Group 3 was administered 200 mg/kg *F. pseudalliacea* Rech. f. methanol extract orally for 30 days; and Group 4 received both the extract (200 mg/kg, orally for 30 days) and a single dose of bleomycin (7.5 mg/kg, intratracheally). On day 30, all rats were euthanized under anesthesia with 10 mg/kg xylazine and 90 mg/kg intraperitoneal ketamine, and tissue samples were collected for histopathological and biochemical analyses.

RESULTS : In histopathological evaluations, it was observed that lung damage induced by BLM was markedly reduced in the group treated with the methanol extract of *F. pseudalliacea* Rech. f. The absence of tissue toxicity related to the extract was considered an important finding. In biochemical analyses, no significant differences were detected in hydroxyproline levels; however, in the group receiving only the extract, a significant increase in TAS levels and significant decreases in TOS and OSI levels were observed.

CONCLUSION : These findings suggest that the extract has the potential to support antioxidant defense and regulate oxidative stress. In conclusion, the *F. Pseudalliacea* Rech. F. Extract provided histopathological improvement in the experimental lung fibrosis model and exhibited favorable effects on certain biochemical parameters. These results indicate that the antifibrotic potential of the plant extract should be further supported by advanced experimental studies.

Keywords: *Ferula pseudalliacea* Rech. f., Bleomycin, Pulmonary Fibrosis, Lung, Rat

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THE PROTECTIVE EFFECT OF PISTACIA TEREBINTHUS L. FRUIT AND GUM AGAINST ISOTRETINOIN-INDUCED HEPATIC DAMAGE IN RATS

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ABSTRACT

OBJECTIVE: This study aimed to investigate the protective effects of *Pistacia terebinthus* fruit and gum extracts against isotretinoin-induced hepatotoxicity using an experimental model.

MATERIALS AND METHODS: In this experimental study, 64 male Wistar albino rats aged 2–3 months and weighing 190–220 g were housed under standard laboratory conditions and randomly divided into eight groups (n = 8 per group). The groups included the following: control (0.9% NaCl), isotretinoin (40 mg/kg/day), silymarin (200 mg/kg/day), *P. terebinthus* fruit extract (200 mg/kg/day), *P. terebinthus* gum extract (200 mg/kg/day), and combinations of isotretinoin with each of these treatments. To evaluate isotretinoin-induced liver damage, serum and liver tissue samples were collected to measure ALT, AST, LDH, HDL, total antioxidant status (TAS), total oxidant status (TOS), oxidative stress index (OSI), and hydroxyproline levels.

RESULTS: The findings revealed that isotretinoin induced oxidative stress, inflammation, and cellular damage in rat liver tissue, as confirmed by histopathological evaluation. In the isotretinoin-treated group, liver tissue exhibited inflammation, apoptosis, and hyperemia, indicating impaired liver function. Administration of *Pistacia terebinthus* fruit and gum extracts, either alone or in combination with isotretinoin, significantly attenuated these effects and preserved histological integrity. Notably, the gum extract demonstrated greater efficacy in reducing liver damage. Biochemically, significant increases in hydroxyproline, TOS, and OSI levels, along with a decrease in TAS, were observed in the isotretinoin group. Treatment with *Pistacia terebinthus* improved these parameters, indicating reduced oxidative stress and hepatotoxicity. Silymarin also demonstrated a comparable hepatoprotective effect.

CONCLUSION: In conclusion, *Pistacia terebinthus* fruit and gum extracts have the potential to serve as effective protective agents against isotretinoin-induced hepatotoxicity. These findings suggest that the antioxidant and hepatoprotective properties of this plant may contribute to the development of future pharmacological treatment strategies.

Keywords: isotretinoin, *Pistacia terebinthus*, liver, terebinth gum, rats

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ARTIFICIAL INTELLIGENCE AND DIGITAL TWIN-BASED VULNERABLE GROUP MANAGEMENT IN DISASTERS: AN INTERNATIONAL MODEL PROPOSAL

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ABSTRACT

Disasters increasingly threaten public health systems and disproportionately affect vulnerable populations, including older adults, children, pregnant women, individuals with disabilities, people with chronic diseases, and displaced populations. Although recent advances in artificial intelligence (AI), Internet of Things (IoT), Geographic Information Systems (GIS), and Digital Twin technologies have significantly improved disaster management capabilities, an integrated decision-support framework specifically designed for vulnerable group management remains limited. This study proposes an innovative conceptual model, DIGI-VULNERA (Digital Twin-Based Intelligent Vulnerable Population Emergency Response Architecture), to enhance disaster preparedness, response, and recovery through real-time monitoring, dynamic risk assessment, and AI-assisted decision-making.

The proposed model integrates heterogeneous data sources, including demographic characteristics, health records, environmental hazards, transportation networks, shelter capacities, and healthcare resources into a unified Digital Twin platform. By continuously synchronizing physical and digital environments, the system enables emergency managers to identify high-risk populations, prioritize resource allocation, optimize evacuation routes, and coordinate multi-agency interventions. The model is designed to be adaptable across multiple disaster scenarios, including earthquakes, floods, wildfires, pandemics, and Chemical, Biological, Radiological, and Nuclear (CBRN) incidents.

Unlike existing disaster management frameworks that primarily focus on infrastructure or operational logistics, DIGI-VULNERA adopts a human-centered approach by placing vulnerable populations at the core of emergency planning and response. The proposed framework has the potential to improve situational awareness, interagency coordination, operational efficiency, and equity in disaster response. It may also serve as a scalable decision-support architecture for governments, healthcare organizations, humanitarian agencies, and emergency management authorities worldwide. Future studies should validate the proposed model through simulation studies, Digital Twin environments, and real-world disaster case analyses.

Keywords: Digital Twin; Artificial Intelligence; Disaster Management; Vulnerable Populations; Decision Support Systems; Emergency Management.

PEDİATRİK YOĞUN BAKIM HASTALARINDA AĞRI YÖNETİMİ VE HEMŞİRENİN ROLÜ**PAIN MANAGEMENT IN PEDIATRIC INTENSIVE CARE PATIENTS AND THE ROLE OF NURSES****Master's Student Reza SABİRİ**

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ÖZET**GİRİŞ:** Bu derleme, pediatrik yoğun bakım hastalarında ağrının değerlendirilmesi, ağrı yönetiminde kullanılan yöntemler ve hemşirenin rolünün incelenmesi amacıyla hazırlanmıştır.

Çocuklarda ağrı, pediatrik yoğun bakım ünitelerinde en sık karşılaşılan semptomlardan biri olup hastalıklar, travmalar, cerrahi girişimler ve tanı-tedavi amaçlı uygulamalardan kaynaklanabilmektedir. Bu derlemede çocuklarda ağrının fizyolojisi, değerlendirilmesi, ağrıya neden olan faktörler ve farmakolojik ile farmakolojik olmayan ağrı yönetimi yaklaşımları güncel literatür doğrultusunda ele alınmıştır.

Pediatrik yoğun bakım hastalarının günlük bakım süreçlerinde çok sayıda ağrılı girişime maruz kaldıkları bildirilmektedir. Tedavi edilmeyen ağrı; solunum komplikasyonları, artmış oksijen tüketimi, yara iyileşmesinde gecikme, uzamış hastanede yatış süresi ve olumsuz psikolojik sonuçlarla ilişkilidir. Çocuklarda ağrının değerlendirilmesi yaşa, gelişim düzeyine ve iletişim becerilerine bağlı olarak güçleşmektedir. Bu nedenle NIPS, FLACC, Wong-Baker Yüz İfadeleri Ölçeği, VAS ve PIPP gibi yaşa uygun değerlendirme araçlarının kullanılması önerilmektedir. Ağrı yönetiminde opioidler, non-opioid analjezikler, lokal anestezipler ve sedatif ilaçlar kullanılmakla birlikte; dikkat dağıtma, müzik terapisi, masaj, pozisyon verme, gevşeme teknikleri, aile katılımı ve terapötik iletişim gibi farmakolojik olmayan yöntemlerin de etkili olduğu bildirilmektedir. Hemşireler ağrının tanınması, düzenli değerlendirilmesi, uygun girişimlerin uygulanması ve sonuçların izlenmesinde temel role sahiptir.

Sonuç: Pediatrik yoğun bakım hastalarında etkili ağrı yönetimi, multidisipliner yaklaşım ve düzenli ağrı değerlendirmesini gerektirmektedir. Hem farmakolojik hem de farmakolojik olmayan yöntemlerin birlikte kullanılması ağrı kontrolünü güçlendirmektedir. Hemşirelerin bilgi, deneyim ve farkındalık düzeylerinin artırılması, çocuklarda ağrı yönetiminin etkinliğini artırarak bakım kalitesinin geliştirilmesine katkı sağlayacaktır.

Anahtar Kelimeler: Çocuk, ağrı, pediatrik yoğun bakım, ağrı yönetimi, hemşirelik.

ABSTRACT

INTRODUCTION: This review was prepared to examine pain assessment, pain management methods, and the role of nurses in pediatric intensive care patients.

Pain is one of the most common symptoms encountered in pediatric intensive care units and may result from illnesses, trauma, surgical interventions, and diagnostic or therapeutic procedures. This review discusses the physiology of pain in children, pain assessment, factors contributing to pain, and both pharmacological and non-pharmacological pain management approaches in light of current literature.

Pediatric intensive care patients are frequently exposed to numerous painful procedures during their daily care. Untreated pain has been associated with respiratory complications, increased oxygen consumption, delayed wound healing, prolonged hospital stay, and adverse psychological outcomes. Pain assessment in children can be challenging due to age, developmental level, and communication abilities. Therefore, the use of age-appropriate assessment tools such as the Neonatal Infant Pain Scale (NIPS), Face, Legs, Activity, Cry, Consolability (FLACC) Scale, Wong-Baker Faces Pain Rating Scale, Visual Analog Scale (VAS), and Premature Infant Pain Profile (PIPP) is recommended. Pain management includes the use of opioids, non-opioid analgesics, local anesthetics, and sedative agents. In addition, non-pharmacological interventions such as distraction techniques, music therapy, massage, positioning, relaxation techniques, family involvement, and therapeutic communication have been

reported to be effective. Nurses play a key role in pain identification, regular assessment, implementation of appropriate interventions, and monitoring of outcomes.

CONCLUSION: Effective pain management in pediatric intensive care patients requires a multidisciplinary approach and regular pain assessment. The combined use of pharmacological and non-pharmacological methods strengthens pain control. Increasing nurses' knowledge, experience, and awareness can enhance the effectiveness of pain management in children and contribute to improving the quality of care.

Keywords: Child, pain, pediatric intensive care, pain management, nursing.

ÇOCUKLUK ÇAĞI HODGKIN VE NON-HODGKIN LENFOMALARINDA ATIPIK KLİNİK PREZENTASYONLAR: TEK MERKEZLİ PILOT ÇALIŞMA
ATYPICAL PRESENTATIONS OF PEDIATRIC HODGKIN AND NON-HODGKIN LYMPHOMA: A SINGLE-CENTER PILOT STUDY

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ÖZET

Amaç: Çocukluk çağı Hodgkin lenfoma (HL) ve Non-Hodgkin lenfoma (NHL) olguları çoğunlukla ağrısız lenfadenopati ve B semptomları ile başvurur. Ancak atipik klinik Bulgular tanının gecikmesine neden olabilmekte ve enfeksiyöz, inflamatuvar, alerjik veya cerrahi hastalıkları taklit edebilmektedir. Bu çalışmada merkezimizde tanı alan çocukluk çağı HL ve NHL olgularındaki atipik başlangıç bulgularının değerlendirilmesi amaçlandı.

Gereç ve Yöntem: Bu retrospektif tek merkezli pilot çalışmaya Ocak 2024-Haziran 2026 tarihleri arasında histopatolojik olarak HL veya NHL tanısı alan 18 yaş altındaki hastalar dahil edildi. Demografik özellikler, lenfoma alt tipi, başvuru şikayetleri, laboratuvar ve radyolojik Bulgular, tedavi ve klinik sonuçlar elektronik hasta kayıtlarından geriye dönük olarak incelendi. Başvuru bulguları literatüre göre tipik ve atipik olarak sınıflandırıldı.

Bulgular: Çalışmaya 18 hasta dahil edildi. Hastaların 12'si (%66,7) Hodgkin lenfoma, 6'sı (%33,3) Non-Hodgkin lenfoma tanısı aldı. Dört hastada (%22,2) atipik başlangıç bulguları saptandı. İki hastada (%11,1) ilk başvuru yakınması yaygın kaşıntı iken, bir hasta nedeni bilinmeyen ateş, bir hasta ise izole karın ağrısı ile başvurdu. Diğer hastalar periferik lenfadenopati ve/veya B semptomları ile başvurdu. Atipik bulgularla başvuran hastalarda lenfoma tanısı öncesinde farklı ön tanımlar nedeniyle değerlendirme yapıldığı görüldü.

Sonuç: Çocukluk çağı lenfomalarının büyük çoğunluğu klasik klinik bulgularla başvursa da atipik prezentasyonlar azımsanmayacak sıklıkta görülmekte ve tanıda gecikmeye neden olabilmektedir. Persistan yaygın kaşıntı, nedeni bilinmeyen ateş ve açıklanamayan karın ağrısı ile başvuran çocuklarda ayırıcı tanıda lenfoma da düşünülmelidir. Bu pilot çalışma, çocukluk çağı lenfomalarının atipik klinik prezentasyonlarına dikkat çekmekte ve daha geniş, çok merkezli çalışmalar için öncü nitelikte veriler sunmaktadır.

Anahtar Kelimeler: Hodgkin lenfoma, Non-Hodgkin lenfoma, çocukluk çağı, atipik prezentasyon, kaşıntı, nedeni bilinmeyen ateş.

ABSTRACT

Background: Pediatric Hodgkin lymphoma (HL) and non-Hodgkin lymphoma (NHL) usually present with painless lymphadenopathy and constitutional (B) symptoms. However, atypical clinical manifestations may delay diagnosis by mimicking infectious, inflammatory, allergic, or surgical conditions. We aimed to evaluate uncommon presenting symptoms in pediatric lymphoma patients treated at our institution.

Methods: This retrospective pilot study included pediatric patients diagnosed with histopathologically confirmed HL or NHL between January 2024 and June 2026 at a tertiary referral center. Demographic characteristics, lymphoma subtype, presenting complaints, laboratory and radiological findings, treatment, and clinical outcomes were retrospectively reviewed. Presenting symptoms were categorized as typical or atypical according to previously published literature.

Results: Eighteen children were included, comprising 12 patients with HL and 6 with NHL. Four patients (22.2%) presented with atypical manifestations. Generalized pruritus was the presenting complaint in two patients (11.1%), whereas one patient presented with fever of unknown origin and another with isolated abdominal pain. The remaining patients presented with classical manifestations, including peripheral lymphadenopathy with or without constitutional symptoms. Patients with atypical presentations underwent evaluation for alternative diagnoses before lymphoma was considered.

Conclusion: Although most pediatric lymphomas present with characteristic clinical findings, atypical manifestations are not uncommon and may contribute to diagnostic delay. Persistent generalized pruritus, fever of unknown origin, and unexplained abdominal pain should prompt clinicians to consider lymphoma in the differential diagnosis. Despite its limited sample size, this pilot study highlights clinically important atypical presentations and provides a basis for larger multicenter studies.

Keywords: Pediatric lymphoma, Hodgkin lymphoma, Non-Hodgkin lymphoma, Atypical presentation

HİDRASYON VE VÜCUT BİLEŞİMİ HYDRATION AND BODY COMPOSITION

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ÖZET

Bireylerin hidrasyon durumu, susuzluk mekanizması, içeceklerin hidrasyon indeksi, bireysel (yaş, cinsiyet, vücut kompozisyonu, sağlık durumu, fiziksel aktivite düzeyi, meslek) ve çevresel faktörlerden (iklim, çalışılan ortam vb) etkilenmektedir ve saptanması oldukça zordur. Literatürde hidrasyon düzeyinin saptanmasında altın standart bir yöntem bulunmayıp, mevcut yöntemlerden en az 2 tanesinin (bazı kan parametreleri, bazı idrar parametreleri, dilisyon yöntemi, vücut kütlesi farkı) birlikte kullanımı önerilmektedir. Bireylerde görülen dehidrasyon ve hiperhidrasyon yorgunluk, gerginlik, baş ağrısı, solunum güçlüğü, elektrolit dengesinde bozulma gibi pek çok sağlık sorununa sebep olabilmektedir. Bunun yanında hem dehidrasyon hem de hiperhidrasyon bireylerde tek frekanslı ve çok frekanslı biyoelektrik empedans analizi (BIA), dual-enerji X-ray absorbsiyometri (DXA) vb. ile tahmin edilen vücut kompozisyonu ölçümlerini de etkilemekte yanlış sonuç alınmasına sebep olabilmektedir. Çalışmalar, 500 mL ve daha fazla besin ve içecek tüketiminin ve dehidrasyonun tek ve çok frekanslı BIA, DXA, deri kıvrım kalınlıkları ile saptanan vücut kompozisyonu ölçümlerini etkilediğini, ancak ultrason, hava yer değiştirme pletismografisi, sualtı ağırlık ölçümü yöntemlerini etkilemediğini göstermiştir. Bu etkilerin dirençteki değişikliklerden, ozmotik dengenin bozulmasından, değişen plazma sodyum ve elektrolit konsantrasyonundan, cihaz yazılımında kullanılan tahmin denklemlerinden, bireysel gastrik boşalma hızı farklılıklardan kaynaklanabileceği düşünülmektedir. Hidrasyonun antropometrik ölçümler üzerine karıştırıcı etkilerini engellemek için ölçümlerden önce bireylerin hidrasyon durumlarının saptanması ve cihaz ölçüm kılavuzlarındaki kurallara mutlak uyulmasına dikkat edilmesi doğru sonuçlar alınması için oldukça önemlidir.

Anahtar Kelimeler: Hidrasyon, Vücut Bileşimi, Dehidrasyon

ABSTRACT

The hydration status of individuals is affected by the thirst mechanism, beverages hydration index, individual (age, gender, body composition, health condition, physical activity level, occupation), and environmental factors, so it is difficult to determine. In the literature, there is no gold standard method for determining the level of hydration. Therefore, it is recommended to use at least 2 of the existing methods (blood, urine variables, stable isotope dilution, body mass changes, BIA, and BIVA). Dehydration and hyperhydration may cause many health problems (fatigue, headache, respiratory difficulties, electrolyte imbalance, etc.), as well as it affects predicted body composition measurements from bioelectrical impedance analysis (BIA) and dual-energy X-ray absorptiometry (DXA). Studies have shown that food and beverage consumption of 500 mL or more and dehydration affect body composition measurements determined by single and multi-frequency BIA, DXA, and skinfold thicknesses, but not ultrasound, air displacement plethysmography, and underwater weighing methods. It is thought that these effects may be caused by changes in resistance, osmotic imbalance, changing plasma sodium and electrolyte concentration, estimation equations used in the device software, and individual gastric emptying rate differences. In order to prevent the confounding effects of hydration on anthropometric measurements, it is recommended to determine the hydration status of individuals before measurements and to comply with the rules in the device measurement guides.

Keywords: Hydration, Body Composition, Dehydration

**ULUSAŞIRI SOSYAL AĞLARIN TÜRKİYE SAĞLIK TURİZMİ KONUMLANDIRMA
ALGISI***THE PERCEPTION OF TURKEY HEALTH TOURISM POSITIONING WITHIN TRANSNATIONAL
SOCIAL NETWORKS***Prof. Dr. Aykut EKİYOR**

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ÖZET

Hastaların sağlık hizmeti almak amacıyla uluslararası seyahat etmesi yeni bir olgu değildir. Burada iki ana gerekçe bulunur. Bunlardan birisi kendi ülkesinde bulunmayan ya da yeterli olarak değerlendirilmeyen bir sağlık hizmetinin alınmak istenmesi bir diğeri ise daha uygun maliyetli bir hizmet alınmak istenmesidir. Bunun dışında tedavi için uzun süre beklemek istememek, tedavi ile birlikte bir tatil hizmeti de almak istemek, alınan tedavi hizmetinin gizliliğini sağlamak gibi farklı nedenler de olabilmektedir. Bu bağlamda hasta hareketliliğinin yönü bazı durumlarda daha gelişmiş ülkelere doğru olurken bazı durumlarda ise daha gelişmiş ülkelerden görece daha az gelişmiş ülkelere doğru olmaktadır. Bu araştırmada, Türkiye Sağlık Turizminin gelişmesini sağlamak amacıyla ulus aşırı sosyal ağlar aracılığıyla ürün grupları ve bu ürün gruplarına göre ön plana çıkan değişkenlerin belirlenmesi ve uluslararası sosyal ağların algılarına göre konumlarını ortaya koymak amaçlanmıştır. Araştırmada medikal turizm alanlarını ve değişkenleri belirlemek amacıyla 100 farklı kişi ile ön mülakatlar yapılmıştır. Yapılan mülakatlar ve literatür taraması sonucunda medikal alanlar ve değişkenler belirlenmiştir. Türkiye Medikal Turizmi kapsamında saç ekimi, diş estetiği ve protez, estetik cerrahi (burun estetiği), göz, obezite (mide küçültme), ortopedi ve omurga cerrahi, onkoloji (kanser tedavisi) olmak üzere 8 alan ile araştırma yürütülmüştür. Belirlenen alanlar fiyat düşüklüğü, nitelikli tıbbi uzman, hizmet kalitesi, bekleme süresinin kısalığı ve diğer belirlenen 19 değişken ile katılımcı algıları konumlandırılmıştır. Araştırma evrenini Amerika Birleşik Devletleri'nde farklı eyaletlerde yaşayan kişiler oluşturmıştır. Araştırma evreni içerisinde 381 örnekleme yüz yüze ve online ulaşılmıştır. Araştırmaya katılan katılımcılar 8 medikal turizm alanını değerlendirdiğinden toplam (381*8) 3048 veri üzerinden analizler yapılmıştır. Araştırmanın demografik verilerine frekans analizi, ölçek verilerine ise Çok Boyutlu Ölçekleme Analizi uygulanmıştır. Yapılan frekans analiz sonucunda; katılımcıların %51,0'i erkek, %49,0'u kadındır. Cinsiyet dağılımının dengeli olması bulguları genellemek açısından önemlidir. Katılımcıların %65,0'i 18-44 yaş aralığında yer almakta olup en büyük grubu 25-34 yaş aralığı (%29,3) oluşturmaktadır. Eğitim düzeyinde lisans mezunları %44,7 ile birinci sıradadır. Örneklemin %49,9'u özel sektörde çalışmaktadır. Katılımcıların %86,4'ünün sağlık sigortası bulunmaktadır. Deneklerin %81,9'u Amerika Birleşik Devletleri doğumludur. Katılımcıların %55,2'si Türkiye'ye sağlık turizmi için gelmeyi düşünmektedir. Bu oran Türkiye Sağlık Turizmi açısından önemli bir orandır. Katılımcıların 132'si (%37,6) diş estetiği ve protezi birinci tercih olarak işaretlemiştir. Saç ekimi ve göz tedavisi sırasıyla ikinci ve üçüncü sıradadır. Mide küçültme ve estetik (burun estetiği ve diğer) ihtiyacının da güçlü olduğu belirlenmiştir. Estetik prosedürlerin baskın olması Türkiye'nin bu alanlardaki uluslararası rekabet gücünü yansıtmaktadır. Araştırmanın ana amacı olan algılama haritalarını ortaya çıkarmak için Çok Boyutlu Ölçekleme Analizi uygulanmıştır. Analiz sonucunda öne çıkan diş estetiği, saç ekimi, göz alanlarında fiyat düşüklüğü, maliyet avantajı ve bekleme süresinin kısalığı değişkenleri aynı bölgede yüksek algılanmıştır. Türkiye'nin fiyat rekabetçiliğini hizmet kalitesi güvencesiyle destekleyen bütünleşik bir konumlandırma stratejisi uygulanmalıdır. Öncelikli diş, saç ekimi ve göz alanlarında, daha sonra ise diğer medikal alanlarda dijital pazarlama ve marka iletişimi yatırımları artırılmalıdır.

Anahtar Kelimeler: Türkiye Sağlık Turizmi, Türkiye Medikal Turizmi, Amerika Birleşik Devletleri, Uluslararası Ağlar, Konumlandırma, Algılama Haritaları.

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ABSTRACT

Patients traveling across borders to receive healthcare services is not a new phenomenon. There are two primary reasons for this: the desire to access a healthcare service that is unavailable or deemed

inadequate in one's home country, and the desire to obtain services at a more affordable cost. Additionally, other factors may include a reluctance to endure long waiting times for treatment, a desire to combine medical treatment with a vacation, and the need to ensure the confidentiality of the treatment received. In this context, the direction of patient mobility varies; in some instances, it is toward more developed nations, while in others, it flows from more developed countries to those that are relatively less developed. This study aims to identify product groups and their associated key variables within the Turkish health tourism sector—utilizing insights from transnational social networks—and to map their positioning based on the perceptions held within these networks. Preliminary interviews were conducted with 100 individuals to identify relevant medical tourism fields and variables; these fields and variables were subsequently finalized based on the interview findings and a review of the literature. The research focused on eight specific areas within Turkish medical tourism: hair transplantation, dental aesthetics and prosthetics, aesthetic surgery (rhinoplasty), ophthalmology, obesity treatment (gastric reduction), orthopedics and spinal surgery, and oncology (cancer treatment). Participant perceptions were analyzed to position these fields according to factors such as low cost, the presence of qualified medical specialists, service quality, short waiting times, and 19 other identified variables. The study population consisted of individuals residing in various states across the United States, and a sample of 381 participants was reached through both face-to-face and online methods. Since the participants evaluated eight medical tourism areas, analyses were conducted based on a total of 3,048 data points (381×8). Frequency analysis was applied to the demographic data, while Multidimensional Scaling Analysis was applied to the scale data. Frequency analysis revealed that 51.0% of the participants were male and 49.0% were female; the balanced gender distribution is significant for the generalizability of the findings. 65.0% of the participants fell within the 18–44 age range, with the largest group (29.3%) belonging to the 25–34 age bracket. Regarding education, bachelor's degree holders constituted the largest group at 44.7%. 49.9% of the sample worked in the private sector, and 86.4% possessed health insurance. 81.9% of the subjects were born in the United States. 55.2% of the participants indicated an intention to visit Turkey for health tourism—a significant figure for the country's health tourism sector. 132 participants (37.6%) selected cosmetic dentistry and prosthetics as their primary preference, followed by hair transplantation and eye treatment in second and third place, respectively. A strong demand for gastric reduction and aesthetic procedures (such as rhinoplasty and others) was also identified. The prominence of aesthetic procedures reflects Türkiye's international competitiveness in these fields. Multidimensional Scaling Analysis was employed to generate the perceptual maps that constituted the study's primary objective. The analysis highlighted that variables such as low prices, cost advantages, and short waiting times were perceived favorably in the areas of cosmetic dentistry, hair transplantation, and eye treatment. An integrated positioning strategy should be implemented to reinforce Türkiye's price competitiveness with assurances of service quality. Investments in digital marketing and brand communication should be increased, prioritizing the fields of dentistry, hair transplantation, and eye treatment, followed by other medical sectors.

Keywords: Turkey Health Tourism, Turkey Medical Tourism, United States, Transnational Networks, Positioning, Perceptual Maps.

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**ULUŞAŞIRI SOSYAL AĞLARIN TÜRKİYE SAĞLIK TURİZMİ MARKA DEĞERİ
KONUMLANDIRMASI**
*POSITIONING OF TURKEY HEALTH TOURISM BRAND VALUE THROUGH TRANSNATIONAL
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ÖZET

Sağlık turizmi, kişilerin sağlık hizmeti almak amacıyla hizmetin sunulduğu yere seyahat edilmesini zorunlu kılmaktadır. Bundan dolayı ortaya çıkan hareketlilik, sağlık turizminin kapsadığı uluslararası ilişkiler ağıının temel unsurlarından birisi olarak görülmektedir. Bu çalışmada; uluşaşırı sosyal ağların Türkiye Sağlık Turizmi marka değeri algısının incelenmesi amaçlanmıştır. Çalışma amacı doğrultusunda Türkiye Sağlık Turizminin gelişmesini sağlamak amacıyla uluşaşırı sosyal ağlar aracılığıyla medikal turizm ürün grupları ve bu ürün gruplarına göre ön plana çıkan değişkenlerin belirlenmesi ve uluşaşırı sosyal ağların marka değeri algılarına göre konumlarını ortaya koymak hedeflenmiştir. Araştırma evrenini Amerika Birleşik Devletleri'nde yaşayan hazırlanan ankete cevap verebilecek kişiler oluşturmuştur. Belirlenen evren doğrultusunda araştırma anketi 491 kişiye uygulanmıştır. Araştırmada Türkiye Medikal Turizmi kapsamında saç ekimi, diş estetiği ve protez, estetik cerrahi (burun estetiği), göz, obezite (mide küçültme), ortopedi ve omurga cerrahi, onkoloji (kanser tedavisi) olmak üzere 8 alan belirlenmiştir. Katılımcılar 8 alanla ilgili belirlenen marka değeri boyutlarına cevaplar vermiştir. Marka değeri ile karşılaştırma yapılan boyutlar marka farkındalığı, algılanan kalite, algılanan değer, marka kişiliği, organizasyon çağrışımı, marka sadakati, fiyat ödeme eğilimi, hizmet alam niyeti, erişebilirlik, hizmet veren personel, turizm imkânları, mahremiyet ve coğrafi konum şeklinde belirlenmiştir. Araştırma 3928 (8*491) veri setine Türkiye Medikal Turizm marka değeri konumlandırma haritalarını çıkarmak için faktör analizi ve tanımlayıcı istatistiki analizler uygulanmıştır. Analiz sonucunda; demografik olarak katılımcıların %53,6'sı erkek, %46,4'ü kadın; %43,4'ü 45-54 yaş aralığında; %38,1'i lisans eğitilmiş; %47,0'si özel sektörde çalışmaktadır. Araştırmaya katılanların %94,5'i Amerika Birleşik Devletleri doğumludur ve öncelikli New York, New Jersey, California olmak üzere farklı eyaletlerde ikamet etmektedirler. Katılımcıların %43,8'i Türkiye'ye medikal turizm kapsamında gelmeyi düşünmektedir. Katılımcılar ağırlıklı olarak diş, saç ekimi, göz, estetik cerrahi ve mide küçültme alanlarına ihtiyaç duymakta ve gelmeyi düşünmektedirler. Marka değeri ile diğer boyutların karşılaştırmasını belirlemek ve algılama haritaları ortaya koymak için faktör analizi uygulanmıştır. Yapılan analiz sonucunda, marka değeri ile belirlenen diğer boyutların (marka farkındalığı, algılanan kalite, algılanan değer, marka kişiliği, organizasyon çağrışımı, marka sadakati, fiyat ödeme eğilimi, hizmet alam niyeti, erişebilirlik, hizmet veren personel, turizm imkanları, mahremiyet ve coğrafi konum) karşılaştırılmasında saç ekimi ve diş estetiğinin diğer medikal alanlara göre önemli bir şekilde pozitif yüksek algı bölgesinde konumlandığı tespit edilmiştir. Bu iki medikal alanı göz takip etmiştir. Onkoloji ve kardiyoloji marka değeri ile diğer boyutlar karşılaştırmasında negatif düşük algı bölgesinde yer almıştır. Araştırma genelinde marka farkındalığı ve algılanan değer, marka değerini en güçlü etkileyen boyutlar olarak belirlenmiştir. Araştırma sonucunda tek tip bir ulusal sağlık turizmi pazarlama stratejisinin yetersiz kalacağını ve branş bazında farklılaşmış yaklaşımların zorunlu olduğu tespit edilmiştir. Saç ekimi ve diş hekimliği branşlarının mevcut marka güçleri korunmalı ve bu alanlardaki tanıtım faaliyetleri sürdürülmelidir. Onkoloji ve kardiyoloji branşları için uluslararası akreditasyonların öne çıkarılmasını ve başarı hikâyelerinin sistematik biçimde yaygınlaştırılmasını kapsayan kapsamlı marka geliştirme programları hayata geçirilmelidir. Marka değeri üzerinde etkisi yüksek olan marka farkındalığı boyutuna yönelik dijital pazarlama yatırımlarının artırılması önerilmektedir.

Anahtar Kelimeler: Türkiye Sağlık Turizmi, Türkiye Medikal Turizmi, Marka Değeri, Ulaşaşırlı Ağlar, Amerika Birleşik Devletleri, Konumlandırma, Algılama Haritaları.

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ABSTRACT

Health tourism entails individuals traveling to the location where healthcare services are provided. The resulting mobility is considered a fundamental element of the international relationship network encompassed by health tourism. This study aims to examine the perception of Turkey's health tourism brand value within the context of transnational social networks. In line with this objective, the study seeks to identify medical tourism product groups and the variables that stand out for each group—facilitating the development of Turkey's health tourism sector—and to determine the positioning of these groups based on brand value perceptions within transnational social networks. The research population consisted of individuals residing in the United States who were capable of completing the prepared survey; the survey was administered to 491 individuals from this population. Eight fields within the scope of Turkey's medical tourism were identified for the study: hair transplantation, dental aesthetics and prosthetics, aesthetic surgery (rhinoplasty), ophthalmology, obesity treatment (gastric reduction), orthopedics and spine surgery, and oncology (cancer treatment). Participants provided responses regarding the brand value dimensions associated with these eight fields. The dimensions evaluated against brand value included brand awareness, perceived quality, perceived value, brand personality, organizational association, brand loyalty, willingness to pay, service acquisition intention, accessibility, service personnel, tourism amenities, privacy, and geographical location. Factor analysis and descriptive statistical analyses were applied to the dataset of 3,928 entries (8 fields × 491 participants) to generate brand value positioning maps for Turkey's medical tourism. As a result of the analysis... Demographically, 53.6% of the participants are male and 46.4% are female; 43.4% are in the 45–54 age group; 38.1% hold a bachelor's degree; and 47.0% work in the private sector. 94.5% of the survey participants were born in the United States and reside in various states, primarily New York, New Jersey, and California. 43.8% of the participants are considering coming to Turkey for medical tourism. The participants are primarily interested in and considering services related to dentistry, hair transplantation, ophthalmology, aesthetic surgery, and bariatric surgery. Factor analysis was conducted to compare brand value with other dimensions and to generate perceptual maps. The analysis revealed that, when comparing brand value against other dimensions (brand awareness, perceived quality, perceived value, brand personality, organizational association, brand loyalty, willingness to pay, service purchase intention, accessibility, service personnel, tourism amenities, privacy, and geographic location), hair transplantation and dental aesthetics were positioned in the zone of high positive perception relative to other medical fields. Ophthalmology followed these two medical fields. Oncology and cardiology were situated in the zone of low negative perception in the comparison of brand value with other dimensions. Across the study, brand awareness and perceived value were identified as the dimensions with the strongest influence on brand value. The study concluded that a uniform national health tourism marketing strategy would be insufficient and that differentiated approaches based on medical specialties are essential. The existing brand strength of hair transplantation and dentistry should be maintained, and promotional activities in these areas should be continued. Comprehensive brand development programs should be implemented for oncology and cardiology, focusing on highlighting international accreditations and systematically disseminating success stories. It is recommended to increase digital marketing investments targeting the brand awareness dimension, which has a significant impact on brand value.

Keywords: Turkish Health Tourism, Turkish Medical Tourism, Brand Value, Transnational Networks, United States, Positioning, Perceptual Maps.

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FORAMEN PALATINUM MAJOR'UN MORFOMETRİK VE MORFOLOJİK ANALİZİ VE SINUS MAXILLARIS PNÖMATİZASYONU İLE İLİŞKİSİ: KONİK IŞINLI BİLGİSAYARLI TOMOGRAFİ ÇALIŞMASI

MORPHOMETRIC AND MORPHOLOGICAL ANALYSIS OF THE GREATER PALATINE FORAMEN AND ITS ASSOCIATION WITH MAXILLARY SINUS PNEUMATIZATION: A CONE-BEAM COMPUTED TOMOGRAPHY STUDY

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ÖZET

Materyal ve Yöntem Farklı maloklüzyon derecelerine sahip 321 hastanın (168 kadın, 153 erkek) konik ışınlı bilgisayarlı tomografi (KIBT) görüntüsü incelendi. Hastaların SMH, PDI ve İM sınıflandırması yapıldı. FPM'nin sagittal ve taransvers çap değerleri (FPMsç, FPMtç), FPM'nin for. incisivus (FPM-FI), sutura palatina mediana (FPM-SPM), spina nasalis posterior (FPM-SNP), PD arka sınırı (FPM-PDP), 2. molar diş (FPM-2M), karşı taraf FPM (FPM-FPM) ile uzaklıkları, FPM-FI-SNP arasında oluşan açı, FPM'nin şekil varyasyonları (FPMŞ), konum varyasyonları (FPM23MK, FPM-PDPK), for. palatinum minor (FPM_{min}) sayısı her bir hasta için ölçüldü ve tespit edildi. Ayrıca CPM'nin uzunluğu (CPMU), Frankfort horizontal düzlemle (CPM-FHDaçı), SM'nin alt ve üst sınırı ile yaptığı açılar (CPM-SM_{alt}açı, CPM-SM_{üst}açı) ölçüldü ve seyri sırasındaki açılanma varyasyonları ile şekil varyasyonları (CPMAS, CPMŞ) tespit edildi.

Bulgular Lineer morfometrik değerler erkeklerde, açısal değerler ise kadınlarda daha büyük bulundu. Class III bireylerde SMH, FPM-FPM mesafesi, FPM-FI-SNP açısı, CPM uzunluğu ve CPM'nin SM sınırlarına eğimi daha büyük; FPM-FI mesafesi ve PD uzunluğu daha küçük saptandı. Hiperplazik SM'ye sahip bireylerde daha büyük morfometrik verilere rastlandı. Kısa-geniş PD'ye sahip bireylerde FPM-FPM, FPM-SPM, FPM-SNP, FPM-FI-SNP_{açı} ve CPMU değerlerinin; uzun-dar PD'ye sahip bireylerde ise FPM-FI ve PDU değerleri anlamlı derecede daha büyük bulundu. Yaşlı grupta hipoplazik SMH oranı yüksek, Class III oranı düşük olup morfometrik ölçümler daha küçüktü. Kadın ve yaşlıların genellikle Class I/II, hipoplastik SMH ve uzun-dar PDI; erkek ve gençlerin ise Class III, hiperplastik SMH ve kısa-geniş PDI eğilimi gösterdiği belirlendi.

Sonuç FPM ile CPM morfometri ve morfolojisi cinsiyet ve yaşın yanı sıra SMH, PDI ve İM sınıflandırmalarına göre istatistiki anlamlı değişiklikler göstermektedir. Bölgeye yönelik klinik ve cerrahi girişimlerde bu varyasyonların göz önünde bulundurulması tedavi başarısını doğrudan etkileyecektir.

Anahtar Kelimeler: Foramen ve canalis palatinum major, İskeletsel maloklüzyon, Konik ışınlı bilgisayarlı tomografi, Palatal indeks, Sinus maxillaris hacmi.

ABSTRACT

Objective: The study aimed to investigate the morphometric and morphological characteristics of the greater palatine foramen (GPF) and greater palatine canal (GPC), and their variations according to sex, age, and lateralization, as well as maxillary sinus volume (MSV), skeletal malocclusion (SM), and hard palate index (HPI) classifications.

Methods: Cone-beam computed tomography (CBCT) images of 321 patients (168 females, 153 males) with varying malocclusion degrees were retrospectively analyzed. MSV, HPI, and SM classifications were established. For each patient, sagittal/transverse diameters of the GPF, its distances to the incisive foramen (GPF-IF), median palatine suture (GPF-MPS), posterior nasal spine (GPF-PNS), posterior border of the hard palate (GPF-PBHP), second molar (GPF-2M), and contralateral GPF (GPF-GPF), alongside the GPF-IF-PNS angle, GPF shape/positional variations, and lesser palatine foramina count were recorded. Additionally, the length of the GPC (GPCL), its angle with the Frankfort horizontal plane (GPC-FHangle), and the angles it forms with the superior and inferior borders of the MS (GPC-MSsupangle, GPC-MSinfangle) were measured. Furthermore, angulation variations along its course and morphological shape variations (GPCAV, GPCSV) were determined.

Results: Linear morphometric values were larger in males, while angular values were larger in females. In Class III individuals, MSV, GPF-GPF distance, GPF-IF-PNS angle, GPC length, and GPC inclination relative to MS boundaries were larger, whereas GPF-IF distance and HP length (HPL) were smaller. Hyperplastic MS was associated with larger morphometric data. In short-wide HP individuals, GPF-GPF, GPF-MPS, GPF-PNS, GPF-IF-PNS angle, and GPCL were significantly larger; whereas in long-narrow HP individuals, GPF-IF and HPL were significantly larger. The older group showed a higher rate of hypoplastic MSV, a lower rate of Class III, and smaller morphometric measurements. Overall, females and older individuals tended to have Class I/II, hypoplastic MSV, and a long-narrow HP; whereas males and younger individuals tended to have Class III, hyperplastic MSV, and a short-wide HP.

Conclusion: The morphometry and morphology of the GPF and GPC demonstrate statistically significant variations based on MSV, PDI, and SM classifications, in addition to age and gender. Taking these anatomical variations into account during clinical and surgical interventions involving this region will directly enhance treatment success.

Keywords: Cone-beam computed tomography, Greater palatine foramen and canal, Maxillary sinus volume, Palatal index, Skeletal malocclusion.

FEMTECH IN WOMEN'S HEALTH: SMART RINGS, OVULATION TRACKING WITH WEARABLE DEVICES, AND DIGITAL NURSING

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ABSTRACT

Digital technologies developed for women's health have expanded rapidly under the concept of FemTech. Mobile health applications, smart rings, smartwatches, and other wearable devices are increasingly used for menstrual cycle monitoring, ovulation prediction, fertility awareness, and pregnancy planning. These technologies continuously or periodically measure physiological indicators such as skin temperature, heart rate, heart rate variability, respiratory rate, sleep, and physical activity. Current research indicates that wearable technologies may provide useful information for identifying physiological changes associated with ovulation and estimating the fertile window. However, their performance differs according to the sensors and algorithms used, menstrual cycle characteristics, adherence to device use, and the reference methods used to confirm ovulation. Wearable devices do not directly visualise ovulation but generate estimates from physiological changes. Therefore, their results should not be interpreted as stand-alone diagnostic findings. The increasing use of FemTech also raises concerns regarding data privacy, measurement accuracy, affordability, and digital inequality. Women's health nurses have important responsibilities in assessing women's purposes for using these devices, explaining their intended uses and limitations, supporting the appropriate interpretation of device-generated data, and providing guidance regarding data privacy. FemTech should be integrated into women's health care as a complementary tool that supports professional assessment and person-centred nursing rather than as a replacement for clinical care.

Keywords: FemTech, women's health, smart ring, wearable device, ovulation tracking, digital nursing

PLASMA, SERUM OR DRIED BLOOD SPOTS? AN ANALYTICAL CHEMISTRY PERSPECTIVE ON IMATINIB THERAPEUTIC DRUG MONITORING

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ABSTRACT

Aim: The aim of this study was to compare plasma, serum, and dried blood spots (DBS) as biological matrices for therapeutic drug monitoring (TDM) of imatinib in terms of analytical performance, sample preparation requirements, matrix effects, recovery, stability, clinical applicability, and patient compliance. Furthermore, the advantages of plasma as the current reference matrix and the potential of serum and DBS as alternative matrices were assessed from an analytical chemistry perspective. Particular emphasis was placed on identifying the strengths and limitations of each matrix and evaluating their suitability for routine clinical monitoring and personalized imatinib therapy.

Material and Method: This study was designed as a literature-based comparative review. Publications involving analytical method development, method validation, pharmacokinetic investigations, and therapeutic drug monitoring applications for imatinib in plasma, serum, and DBS samples were evaluated. Studies were assessed according to the biological matrix used, sample volume, analytical platform (HPLC-MS, LC-MS/MS, and UHPLC-MS/MS), lower limits of quantification, accuracy, precision, recovery, matrix effects, stability, and clinical applicability. Plasma, serum, and DBS matrices were comparatively analyzed in terms of analytical performance, sample preparation requirements, recovery, matrix effects, stability characteristics, clinical usefulness, and patient convenience.

Results.: Plasma-based studies provided the most comprehensive pharmacokinetic and therapeutic target data, with reported target trough concentrations of approximately 1000 ng/mL for chronic myeloid leukemia and 1100 ng/mL for gastrointestinal stromal tumors. Serum-based methods demonstrated satisfactory analytical performance, with accuracy values ranging from 91.7% to 104.6%, recovery rates of approximately 95.4%, and minimal matrix effects. DBS-based methods required as little as 10 µL of whole blood and demonstrated a strong correlation with plasma concentrations ($R^2 = 0.9772$), supporting their suitability for microsampling applications. In addition, all three matrices showed acceptable analytical performance in terms of recovery, stability, and method validation parameters. Overall, serum and DBS exhibited analytical performances comparable to those of plasma in selected therapeutic drug monitoring applications.

Conclusion: From an analytical chemistry viewpoint, each matrix possesses distinct advantages and limitations. Plasma remains the most extensively validated and clinically established matrix for imatinib therapeutic drug monitoring. Serum provides comparable analytical performance while offering simplified sample handling and laboratory workflows. DBS represents a promising alternative due to its microsampling capability, improved patient compliance, and ease of sample collection and transport. Selecting the most appropriate biological matrix in accordance with analytical requirements, instrument infrastructure, target sensitivity, and clinical objectives plays a crucial role in personalizing imatinib therapy and ensuring reliable therapeutic drug monitoring.

Keywords: Therapeutic Drug Monitoring; Plasma; Serum; Dried Blood Spot (DBS); Biological Matrix Selection; LC-MS/MS; Analytical Chemistry

A RETROSPECTIVE INVESTIGATION OF THE EFFECTS OF POSTOPERATIVE PROPHYLACTIC ANTIBIOTIC THERAPY PROFILES ON LENGTH OF HOSPITAL STAY FOLLOWING SPINAL FUSION SURGERY

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ABSTRACT

OBJECTIVE: To evaluate the association between postoperative prophylactic and empirical antibiotic dosing patterns and length of hospital stay (LOS) following spinal fusion surgery and to determine whether cumulative antibiotic exposure predicts prolonged hospitalization.

Materials and Methods: This retrospective single-center study included 76 patients who underwent spinal fusion surgery. Daily and cumulative antibiotic doses were analyzed according to LOS groups. Statistical analyses included the Shapiro–Wilk, Kruskal–Wallis, chi-square, Spearman correlation, multiple linear regression, and receiver operating characteristic (ROC) curve analyses using IBM SPSS Statistics version 28.0.

Results: The mean operative time was 194.20 ± 69.76 minutes, and the mean LOS was 210.05 ± 122.93 hours. Ceftriaxone (51.3%) and ampicillin–sulbactam (31.6%) were the most frequently prescribed antibiotics. Daily antibiotic doses were comparable during the first five postoperative days ($p > 0.05$), whereas significant differences emerged from postoperative day 6 onward. The strongest correlation between cumulative antibiotic dose and LOS was observed on postoperative day 7 ($r = 0.79$, $p = 0.01$). In multiple linear regression analysis ($R^2 = 0.74$ – 0.78 , $p < 0.01$), cumulative antibiotic exposure remained independently associated with LOS after age adjustment. Cumulative ampicillin–sulbactam dose independently predicted LOS ($\beta = 0.34$, $p = 0.01$), whereas cumulative ceftriaxone dose did not. ROC analysis identified a cumulative antibiotic dose of ≥ 32 g on postoperative day 10 as the optimal threshold for predicting prolonged hospitalization (> 7 days) (AUC = 0.85, sensitivity = 85%, specificity = 75%).

Conclusion: Antibiotic use during the first five postoperative days was consistent with Surgical Care Improvement Project (SCIP) recommendations. Beyond postoperative day 6, cumulative antibiotic exposure emerged as an objective predictor of prolonged hospitalization. These findings support multidisciplinary antimicrobial stewardship based on rational drug use, evidence-based time-limited therapy, and antimicrobial de-escalation. A cumulative antibiotic dose of ≥ 32 g by postoperative day 10 may serve as a practical threshold for predicting delayed discharge and optimizing hospital resource utilization.

Keywords: Spinal fusion surgery, Prophylactic antibiotics, Antibiotic dose burden, Length of hospital stay, Antimicrobial stewardship

BİR KOYUNDA YOĞUN OESTRUS OVİS ENFESTASYONU HEAVY OESTRUS OVIS INFESTATION IN A SHEEP

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ÖZET

Amaç: *Oestrus (O.) ovis*, larvaları koyun ve keçilerin burun boşlukları ile sinüslerinde gelişen önemli bir ektoparazitir. Dişi sinekler birinci dönem larvaları konağın burun delikleri çevresine bırakır; larvalar nazal boşluklar ve sinüslerde gelişerek üçüncü döneme ulaşır, ardından konağı terk edip toprakta pupalaşır. Enfestasyon; burun akıntısı, sık hapşırma ve solunum güçlüğüyle seyreden kavikol miyazise ve sürülerde ekonomik kayıplara yol açabilir. Bu olgu sunumunda, tek bir koyunda saptanan yüksek sayıdaki *O. ovis* larvasına dikkat çekilmesi amaçlanmıştır.

Materyal ve Yöntem: Seromüköz-pürülan burun akıntısı, sık hapşırma ve solunum güçlüğü bulunan üç yaşlı, erkek Hamdani melezi bir koyuna ait baş materyali parazitolojik yönden incelenmiştir. Derisi yüzülen baş longitudinal olarak ikiye ayrılmış; sinüsler, konkalar ve diğer nazal yapılar makroskobik olarak değerlendirilmiştir. Toplanan larvalar temizlenerek %10'luk formolde fikse edilmiş, stereomikroskop ve ışık mikroskobu altında incelenmiştir. Larvaların segmentasyon özellikleri, oral kancaları, posterior spiraküllerinin yapısı ve kütiküler diken dizilimleri değerlendirilmiş ve standart taksonomik anahtarlar kullanılarak tür ve gelişim dönemi düzeyinde teşhis edilmiştir.

Bulgular: Ayrıntılı parazitolojik inceleme sonucunda koyunun nazal boşlukları ve sinüslerinden toplam 70 *O. ovis* larvası elde edilmiştir. Larvaların 21'inin (%30) birinci dönem (L1), 21'inin (%30) ikinci dönem (L2) ve 28'inin (%40) üçüncü dönem (L3) olduğu belirlenmiştir. En yüksek oranın L3 evresinde bulunduğu saptanmıştır.

Sonuç: Tek bir koyunda yüksek sayıda ve farklı gelişim dönemlerinde *O. ovis* larvasının saptanması, enfestasyonun ileri düzeyde ve uzun süredir devam ettiğini, ayrıca konağın parazite farklı zamanlarda tekrarlayan biçimde maruz kalmış olabileceğini düşündürmektedir. Yüksek paraziter yükün klinik bulguları şiddetlendirebileceği ve üst solunum yollarında belirgin patolojik etkilere neden olabileceği değerlendirilmektedir. Bu nedenle özellikle endemik bölgelerde erken tanı, düzenli sürü muayenesi ve uygun parazit kontrol programlarının uygulanması önem taşımaktadır.

Anahtar Kelimeler: *Oestrus ovis*, koyun, nazal miyazis, larva evreleri, Siirt

ABSTRACT

OBJECTIVE: *Oestrus (O.) ovis* is an important ectoparasite whose larvae develop in the nasal cavities and sinuses of sheep and goats. Female flies deposit first-stage larvae around the host's nostrils; the larvae develop in the nasal passages and sinuses, reach the third stage, leave the host, and pupate in soil. Infestation may cause cavitary myiasis characterized by nasal discharge, frequent sneezing, and respiratory distress, causing economic losses in flocks. This case report aimed to highlight the high number of *O. ovis* larvae detected in a single sheep.

Materials and Methods: The head of a three-year-old male Hamdani crossbred sheep with seromucous-purulent nasal discharge, frequent sneezing, and respiratory distress was examined parasitologically. After skin removal, the head was longitudinally divided into two halves, and the sinuses, nasal conchae, and other nasal structures were evaluated macroscopically. The larvae were cleaned, fixed in 10% formalin, and examined by stereomicroscopy and light microscopy. Segmentation, oral hooks, posterior spiracles, and cuticular spine patterns were evaluated, and the larvae were identified by species and developmental stage using standard taxonomic keys.

Results: A total of 70 *O. ovis* larvae were recovered from the nasal cavities and sinuses. Of these, 21 (30%) were first-stage larvae (L1), 21 (30%) were second-stage larvae (L2), and 28 (40%) were third-stage larvae (L3). The highest proportion occurred in the L3 stage.

Conclusion: Numerous *O. ovis* larvae at different developmental stages in a single sheep indicated an advanced, prolonged infestation and suggested repeated exposure at different times. The high parasitic burden may have aggravated clinical signs and caused marked pathological effects in the upper

respiratory tract. Therefore, early diagnosis, regular flock examination, and appropriate parasite control are important, particularly in endemic regions.

Keywords: *Oestrus ovis*, sheep, nasal myiasis, larval stages, Siirt

ASSOCIATION BETWEEN DIGITAL MEDIA USE, SOCIAL LIFE CHARACTERISTICS, AND SOCIAL COGNITION IN RETIRED ADULTS AGED 55 YEARS AND OLDER**Ayşe Kübra ŞAP KINAR**

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ABSTRACT

OBJECTIVE:Digital media use and social life characteristics are increasingly recognized as factors that may influence social cognition in older adults. This study aimed to investigate the association between digital media use, social life characteristics, and social cognition in retired adults aged 55 years and older.

Materials and Methods:This cross-sectional study included 85 retired adults aged 55 years and older. Participants were assessed using a sociodemographic questionnaire, a survey on digital media use and social life characteristics, the 15-item Geriatric Depression Scale (GDS-15), and the Reading the Mind in the Eyes Test (RMET). RMET scores were compared across daily digital media use groups, and the relationships between RMET performance and age, years since retirement, digital media use, and social life characteristics were evaluated using Spearman's correlation analysis.

Results:The mean age of the participants was 61.87 ± 5.91 years, and 57.6% were female. The mean RMET score was 21.58 ± 3.97 , while the mean GDS-15 score was 4.25 ± 3.80 . Participants who used digital media for ≥ 2 hours/day demonstrated significantly higher RMET scores than those who used it for ≤ 1 hour/day (22.67 ± 3.83 vs. 20.18 ± 3.44 , $p = 0.047$). Among the evaluated social life characteristics, participants living in households with 3–4 members had significantly higher RMET scores than those living in households with 1–2 members (22.89 ± 3.44 vs. 20.71 ± 3.97 , $p = 0.036$). Correlation analysis revealed a significant positive association between digital media use and RMET scores ($p = 0.298$, $p = 0.006$) and a significant negative association between years since retirement and RMET scores ($p = -0.274$, $p = 0.011$).

Conclusion:Longer daily digital media use was associated with better social cognition in retired older adults. Living in a larger household was also associated with better social cognition. These findings suggest that greater engagement with digital media and favorable social life characteristics are associated with better social cognitive performance in retired older adults. Longitudinal studies with larger samples are warranted to clarify the direction and underlying mechanisms of these associations.

Keywords: Digital media use; Social cognition; Retired adults

URGENT PLACEMENT OF DIALYSIS CATHETER IN CHILDREN: CHALLENGES AND ANESTHETIC ISSUES

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ABSTRACT

Introduction: Acute renal failure in children constitutes a medical-surgical emergency that requires rapid and appropriate management. When conservative measures are insufficient, extracorporeal renal replacement therapy becomes essential. Two main modalities are used in emergencies: peritoneal dialysis via Tenckhoff catheter placement and hemodialysis requiring central vascular access.

The urgent placement of these devices, whether a Tenckhoff catheter or a central venous catheter for hemodialysis, often occurs in a critical clinical context characterized by severe hydro-electrolytic disturbances, metabolic acidosis, and sometimes multiorgan failure. This situation exposes patients to specific anesthetic risks and requires close coordination between anesthesiologists, pediatric nephrologists, and surgeons.

Objectives:

1. To describe our experience with the urgent placement of dialysis devices.
2. To assess anesthetic risks.

Materials and Methods: This is a retrospective descriptive observational study conducted in the pediatric medical-surgical emergency department of Canastel (Oran-ALGERIA). All pediatric patients requiring urgent placement of a Tenckhoff catheter for peritoneal dialysis or a central venous catheter for hemodialysis were included.

Study period: March 2025 – March 2026

Inclusion criteria: age, weight, indication for urgent extracorporeal renal replacement therapy (acute renal failure, severe hydro-electrolytic disturbances, fluid overload, anuria lasting more than 12 hours). Primary endpoint: occurrence of perioperative anesthetic complications (hemodynamic instability, arrhythmias, desaturation, cardiopulmonary arrest).

Results: A total of 11 pediatric patients were included. Hemodialysis was performed in 8 patients (72.7%), all weighing more than 10 kg, while peritoneal dialysis via Tenckhoff catheter was performed in 3 patients (27.3%).

Vascular access (hemodialysis catheter): 5 femoral catheters (62.5%) and 3 internal jugular catheters (37.5%).

Main indications for extracorporeal renal replacement therapy included anuria lasting more than 12 hours (6 patients, 54.5%). Severe metabolic acidosis was found in 2 patients (18.2%), acute pulmonary edema in 2 patients (18.2%), and threatening hyperkalemia in 1 patient (9.1%).

Perioperative complications: desaturation ($\text{SpO}_2 < 90\%$) occurred in 3 patients (27.3%). One case of perioperative cardiac arrest was noted, with recovery after cardiopulmonary resuscitation.

Conclusion: Urgent management of extracorporeal renal replacement therapy in children, whether hemodialysis or peritoneal dialysis, occurs within a high anesthetic risk context. The frequency of perioperative complications, particularly respiratory and cardiovascular, highlights the importance of preoperative optimization and rigorous monitoring.

COST-EFFECTIVENESS OF OMITTING ROUTINE ENDOCRINE AND ULTRASOUND MONITORING DURING HORMONE REPLACEMENT THERAPY CYCLES FOR FROZEN EMBRYO TRANSFER IN GOOD-PROGNOSIS PATIENTS: A COST-EFFECTIVENESS ANALYSIS

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ABSTRACT

Aim: Does omitting routine endocrine and ultrasound monitoring during hormone replacement therapy frozen embryo transfer (HRT-FET) cycles improve healthcare value without compromising reproductive outcomes in good-prognosis patients undergoing single blastocyst transfer?

Materials and methods: This retrospective cohort-based cost-effectiveness analysis included 294 women undergoing autologous single frozen-thawed blastocyst transfer in HRT-FET cycles at a tertiary IVF centre between June 2023 and October 2024. Patients underwent either a non-monitoring protocol (n = 76) or conventional endocrine and ultrasound monitoring (n = 218) during endometrial preparation. The primary economic outcome was the incremental cost-effectiveness ratio (ICER) per additional ongoing pregnancy. Clinical outcomes included ongoing pregnancy, clinical pregnancy, implantation, miscarriage and live birth rates. Deterministic and probabilistic sensitivity analyses, including non-parametric bootstrap resampling and cost-effectiveness acceptability curves, were performed to characterize decision uncertainty.

Results: Reproductive outcomes were comparable between the non-monitoring and monitoring groups. Ongoing pregnancy rates were 46.1% and 49.1%, respectively (OR 0.88, 95% CI 0.52–1.49; $p = 0.690$), with no significant differences in clinical pregnancy, implantation, miscarriage or live birth rates. Routine monitoring substantially increased healthcare costs while providing only marginal gains in effectiveness, resulting in limited economic value. Probabilistic analyses demonstrated considerable uncertainty regarding the comparative effectiveness of monitoring, and the probability of routine monitoring being cost-effective remained modest across a wide range of willingness-to-pay thresholds.

Conclusion: Routine endocrine and ultrasound monitoring during HRT-FET cycles did not improve reproductive outcomes in good-prognosis patients despite increasing healthcare costs. Omitting routine monitoring may represent a higher-value approach for carefully selected patients by improving resource utilization without compromising treatment outcomes. These findings should be confirmed in adequately powered randomized non-inferiority trials.

Keywords: Frozen embryo transfer; Hormone replacement therapy; Endometrial preparation; Cost-effectiveness analysis; Reproductive outcomes; Assisted reproductive technology.

EVALUATION OF HEMATOLOGICAL PARAMETERS AND SYSTEMIC INFLAMMATORY MARKERS IN *HELICOBACTER PYLORI* INFECTION

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ABSTRACT

Aim: *Helicobacter pylori* (*H. pylori*) is one of the most prevalent chronic bacterial infections worldwide and plays a pivotal role in the pathogenesis of several gastrointestinal diseases, including chronic gastritis, peptic ulcer disease, gastric adenocarcinoma, and mucosa-associated lymphoid tissue (MALT) lymphoma. In addition to its well-established gastrointestinal effects, accumulating evidence suggests that *H. pylori* infection may be associated with systemic inflammation and may induce alterations in hematological parameters and inflammatory biomarkers. The aim of this study was to compare hematological and inflammatory laboratory parameters between *H. pylori*-positive patients and *H. pylori*-negative healthy individuals in order to evaluate the potential impact of *H. pylori* infection on the systemic inflammatory response.

Materials and Methods: This retrospective study was conducted at the Gastroenterology Outpatient Clinic of Sakarya Training and Research Hospital. Patients diagnosed with *H. pylori* infection and *H. pylori*-negative individuals who attended the gastroenterology outpatient clinic between November 30, 2020, and January 1, 2022, were included in the study. Demographic characteristics, presenting symptoms, and laboratory parameters were retrospectively retrieved from the hospital information management system and patients' medical records. Statistical analyses were performed using SPSS version 22.0, and a two-sided *p* value of <0.05 was considered statistically significant.

Results: A total of 60 *H. pylori*-positive patients and 60 age- and sex-matched healthy controls were included in the study. There were no statistically significant differences between the groups regarding age (*p*=0.428), sex distribution (*p*=0.852), hypertension (*p*=0.283), diabetes mellitus (*p*=1.000), cardiovascular disease (*p*=1.000), asthma (*p*=0.119), or hypothyroidism (*p*=0.619) (Table 1). Comparison of hematological and inflammatory laboratory parameters revealed that the *H. pylori*-positive group had significantly different WBC (*p*=0.031), HCT (*p*=0.015), RDW (*p*=0.049), PDW (*p*<0.001), neutrophil count (*p*=0.024), monocyte count (*p*=0.003), and systemic inflammation response index (SIRI) (*p*=0.003) values compared with healthy controls. In contrast, no statistically significant differences were observed between the groups in terms of RBC, HGB, PLT, MCV, MCH, MCHC, MPV, lymphocyte, eosinophil, basophil, NLR, PLR, SII, CRP, vitamin B12, or vitamin D levels (all *p*>0.05) (Table 2).

Table 1. Demographic and clinical characteristics of the study population

Variable	<i>H. pylori</i> -Negative (n = 60)	<i>H. pylori</i> -Positive (n = 60)	P value
Age (years)	44.5 ± 14.6	46.6 ± 14.1	0.428
Sex, n (%)			
Female	36 (60.0)	37 (61.7)	0.852
Male	24 (40.0)	23 (38.3)	
Hypertension, n (%)			
No	50 (83.3)	54 (90.0)	0.283
Yes	10 (16.7)	6 (10.0)	
Diabetes mellitus, n (%)			
No	54 (90.0)	56 (93.3)	1.000
Yes	6 (10.0)	4 (6.7)	

Cardiovascular disease, n (%)

No	58 (96.7)	59 (98.3)	1.000
Yes	2 (3.3)	1 (1.7)	

Asthma, n (%)

No	56 (93.3)	60 (100.0)	0.119
Yes	4 (6.7)	0 (0.0)	

Hypothyroidism, n (%)

No	59 (98.3)	57 (95.0)	0.619
Yes	1 (1.7)	3 (5.0)	

Data are presented as mean $\pm$ standard deviation (SD) or n (%). Continuous variables were compared using the independent-samples t test. Categorical variables were compared using Pearson's chi-square test or Fisher's exact test, as appropriate.

Table 2. Comparison of Hematological and Inflammatory Laboratory Parameters Between Healthy Controls and *H. pylori*-Positive Patients

Variable	<i>H. pylori</i> -Negative (n = 60)	<i>H. pylori</i> -Positive (n = 60)	P value
WBC ($\times 10^9/L$)	7.76 $\pm$ 1.99	7.00 $\pm$ 1.83	0.031
RBC ($\times 10^{12}/L$)	4.48 $\pm$ 0.53	4.67 $\pm$ 0.58	0.068
HGB (g/dL)	13.27 $\pm$ 4.26	13.59 $\pm$ 1.69	0.596
HCT (%)	39.16 $\pm$ 5.43	41.72 $\pm$ 5.91	0.015
PLT ($\times 10^9/L$)	238.27 $\pm$ 69.51	262.03 $\pm$ 66.23	0.058
MCV (fL)	87.53 $\pm$ 8.19	88.49 $\pm$ 5.80	0.461
MCH (pg)	29.07 $\pm$ 3.42	28.94 $\pm$ 2.75	0.815
MCHC (g/dL)	33.15 $\pm$ 1.40	32.77 $\pm$ 1.45	0.148
RDW (%)	16.48 $\pm$ 2.58	15.43 $\pm$ 3.19	0.049
MPV (fL)	8.65 $\pm$ 1.53	8.43 $\pm$ 1.34	0.406
PDW (fL)	18.18 $\pm$ 1.16	17.43 $\pm$ 1.12	<0.001
Neutrophils ($\times 10^9/L$)	4.70 $\pm$ 1.56	4.10 $\pm$ 1.28	0.024
Lymphocytes ($\times 10^9/L$)	3.18 $\pm$ 4.11	2.22 $\pm$ 0.75	0.078
Monocytes ($\times 10^9/L$)	0.53 $\pm$ 0.18	0.44 $\pm$ 0.16	0.003
Eosinophils ($\times 10^9/L$)	0.20 $\pm$ 0.17	0.18 $\pm$ 0.14	0.497
Basophils ($\times 10^9/L$)	0.074 $\pm$ 0.038	0.076 $\pm$ 0.112	0.889
NLR	2.60 $\pm$ 2.53	1.98 $\pm$ 0.71	0.073
PLR	122.35 $\pm$ 81.27	130.97 $\pm$ 55.10	0.498
SIRI	1.34 $\pm$ 1.13	0.86 $\pm$ 0.45	0.003
SII	0.551 $\pm$ 0.569	0.432 $\pm$ 0.193	0.128
CRP (mg/L)	9.11 $\pm$ 18.17	4.13 $\pm$ 2.16	0.065
Vitamin B12 (pg/mL)	305.1 $\pm$ 113.3	369.6 $\pm$ 324.0	0.204
Vitamin D (ng/mL)	15.31 $\pm$ 9.36	16.76 $\pm$ 8.13	0.673

Data are presented as mean $\pm$ standard deviation (SD). Continuous variables were compared using the independent-samples t test.

Conclusion: *Helicobacter pylori* infection was found to be associated with alterations in several hematological parameters and systemic inflammatory markers. Significant differences in WBC, HCT, RDW, PDW, neutrophil count, monocyte count, and the systemic inflammation response index (SIRI)

suggest that *H. pylori* infection may influence the systemic inflammatory response. Larger prospective studies are warranted to further clarify the clinical utility of these biomarkers and their potential role in the assessment of *H. pylori*-associated systemic inflammation.

Keywords: *Helicobacter pylori*; hematological parameters; systemic inflammation; inflammatory biomarkers; systemic inflammation response index (SIRI).

EXOSOMES IN ISCHEMIA-REPERFUSION INJURY: EXPERIMENTAL EVIDENCE AND EMERGING CLINICAL SIGNIFICANCE

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ABSTRACT

Aim: Ischemia-reperfusion injury (IRI) occurs when blood flow returns to tissue that has been deprived of it. Oxidative stress, inflammation, apoptosis and mitochondrial failure all contribute. This review asks what experimental studies show about exosomes in IRI, and how much of that work has reached patients.

Materials and Methods: We examined in vitro and in vivo studies of exosomes in cardiac, renal, cerebral, hepatic and testicular IRI. We also reviewed human ex vivo organ perfusion work, registered trials, and reports on circulating exosomal microRNAs. Studies were grouped by vesicle source, cargo, signaling pathway and target organ, then compared across models.

Results: Exosomes from mesenchymal stem cells reduced apoptosis, infarct size and inflammation in every organ reviewed. Several mechanisms recurred. miR-486-5p suppressed PTEN and increased Akt phosphorylation. miR-223-3p acted on NLRP3 and restored mitophagy. miR-146a-5p targeted IRAK1 and reduced NF- κ B signaling. miR-126a-3p engaged RISK pathway components after remote ischemic preconditioning. Nrf2/HO-1 signaling and microglial shift toward the M2 phenotype were also reported. Delivery depended partly on CXCR4 and SDF-1 α , but uptake by other organs remained high. Human data were far more limited. Exosomes added during hypothermic oxygenated perfusion protected marginal donor kidneys ex vivo. Circulating exosomal microRNAs separated stroke patients from control. Therapeutic experience in patients is limited to a few early-phase stroke trials that remain confined to trial registries. In the most widely cited of these, exosomes were delivered about a month after stroke onset, well outside the reperfusion window that the preclinical rationale addresses.

Conclusion: The animal evidence agrees across organs. Clinical translation remains constrained by the lack of GMP-compatible isolation and scale-up protocols, of validated potency and release criteria, and of dose-response and pharmacokinetic data defining the therapeutic window, together with the absence of trials in which administration is timed to reperfusion.

Keywords: exosomes, extracellular vesicles, ischemia-reperfusion injury, microRNA, clinical translation

**PALYATİF BAKIM HASTALARININ AİLE BAKIM VERENLERİNE HEMŞİRE
LİDERLİĞİNDE UYGULANAN BAŞA ÇIKMA PSİKOEĞİTİM PROGRAMININ BAKIM
YÜKÜ, BAŞA ÇIKMA STRATEJİLERİ VE TÜKENMİŞLİK ÜZERİNDEKİ ETKİSİ: YARI
DENEYSEL BİR ÇALIŞMA**

*THE EFFECT OF A NURSE-LED COPING PSYCHOEDUCATION PROGRAM FOR FAMILY
CAREGIVERS OF PALLIATIVE CARE PATIENTS ON CAREGIVER BURDEN, COPING
STRATEGIES, AND BURNOUT: A QUATE-EXPERIMENTAL STUDY*

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ÖZET

Amaç: Palyatif bakım hastalarının aile bakım verenleri, bakım sürecinin uzunluğu ve yoğunluğu nedeniyle bakım yükü, etkisiz başa çıkma stratejileri ve tükenmişlik yaşayabilmektedir. Bu araştırma, palyatif bakım hastalarının aile bakım verenlerine hemşire liderliğinde uygulanan yapılandırılmış altı haftalık başa çıkma psikoeğitim programının bakım yükü, başa çıkma stratejileri ve tükenmişlik üzerindeki etkisini belirlemek amacıyla yürütüldü.

Materyal ve Yöntem: Araştırma, ön test-son test deney ve kontrol gruplu yarı deneysel desende, 01 Kasım 2025-30 Haziran 2026 tarihleri arasında Kastamonu Eğitim ve Araştırma Hastanesi Palyatif Bakım Servisinde yürütüldü. Araştırmaya deney grubunda 20 ve kontrol grubunda 20 olmak üzere toplam 40 aile bakım vereni dâhil edildi. Veriler Bakım Verici Bilgi Formu, Zarit Bakım Yükü Ölçeği, Stresle Başa Çıkma Tarzları Ölçeği ve Maslach Tükenmişlik Ölçeği kullanılarak toplandı. Deney grubuna altı hafta süreyle hemşire liderliğinde yapılandırılmış başa çıkma psikoeğitim programı uygulanırken kontrol grubuna ise rutin bakım uygulandı. Veriler IBM SPSS Statistics 22.0 programında analiz edildi; istatistiksel anlamlılık düzeyi $p<0,05$ kabul edildi.

Bulgular: Başlangıçta gruplar arasında sosyodemografik özellikler ile bakım yükü, başa çıkma stratejileri ve tükenmişlik puanları açısından anlamlı fark bulunmadı ($p>0,05$). Program sonrasında deney grubunda bakım yükü puanı, duygusal tükenme, duyarsızlaşma, düşük kişisel başarı ve toplam tükenmişlik puanlarının kontrol grubuna göre anlamlı düzeyde azaldığı belirlendi ($p<0,05$). Kendine güvenli ve iyimser yaklaşım puanları artarken boyun eğici yaklaşım puanları azaldı ($p<0,05$). Çaresiz yaklaşım alt boyutunda gruplar arasında anlamlı fark saptanmadı ($p>0,05$). Bulgular duyarlılık analizleri ve robust yöntemlerle desteklendi.

Sonuç: Hemşire liderliğinde uygulanan yapılandırılmış başa çıkma psikoeğitim programının, palyatif bakım hastalarının aile bakım verenlerinde bakım yükünü ve tükenmişliği azaltmada, olumlu başa çıkma stratejilerini geliştirmede etkili olduğu belirlendi. Programın palyatif bakım hizmetlerine entegre edilmesi, aile bakım verenlerinin psikososyal iyilik hâlinin desteklenmesine katkı sağlayabilir.

Anahtar Kelimeler: Palyatif bakım, aile bakım verenleri, bakım yükü, başa çıkma stratejileri, tükenmişlik, psikoeğitim.

Objective: Family caregivers of palliative care patients may experience caregiving burden, ineffective coping strategies, and burnout due to the length and intensity of the care process. This research was conducted to determine the effect of a nurse-led, structured six-week coping psychoeducation program on caregiving burden, coping strategies, and burnout in family caregivers of palliative care patients.

Materials and Methods: This study was conducted in a quasi-experimental design with pre-test-post-test experimental and control groups at the Palliative Care Service of Kastamonu Training and Research Hospital between November 1, 2025, and June 30, 2026. A total of 40 family caregivers were included in the study, 20 in the experimental group and 20 in the control group. Data were collected using the Caregiver Information Form, the Zarit Caregiver Burden Scale, the Stress Coping Styles Scale, and the Maslach Burnout Scale. The experimental group received a structured coping psychoeducation program

led by a nurse for six weeks, while the control group received routine care. Data were analyzed using IBM SPSS Statistics 22.0; the statistical significance level was accepted as $p < 0.05$.

Findings: Initially, no significant differences were found between the groups in terms of sociodemographic characteristics, caregiver burden, coping strategies, and burnout scores ($p > 0.05$). After the program, it was determined that caregiver burden score, emotional exhaustion, depersonalization, low personal accomplishment, and total burnout scores decreased significantly in the experimental group compared to the control group ($p < 0.05$). While self-confident and optimistic approach scores increased, submissive approach scores decreased ($p < 0.05$). No significant difference was found between the groups in the helpless approach sub-dimension ($p > 0.05$). The findings were supported by sensitivity analyses and robust methods.

Conclusion: The study found that a nurse-led, structured coping psychoeducation program was effective in reducing caregiving burden and burnout in family caregivers of palliative care patients, and in developing positive coping strategies. Integrating the program into palliative care services could contribute to supporting the psychosocial well-being of family caregivers.

Keywords: Palliative care, family caregivers, caregiver burden, coping strategies, burnout, psychoeducation.

OTİZM SPEKTRUM BOZUKLUĞU VE PSİKİYATRİK TANILI ÇOCUKLARIN EBEVEYNLERİNDE BELİRSİZLİĞE TAHAMMÜLSÜZLÜĞÜN BAŞA ÇIKMA TUTUMLARINA ETKİSİ: KARŞILAŞTIRILMALI BİR ARAŞTIRMA
THE EFFECT OF INTOLERANCE OF UNCERTAINTY ON COPING ATTITUDES IN PARENTS OF CHILDREN WITH AUTISM SPECTRUM DISORDER AND PSYCHIATRIC DIAGNOSES: A COMPARATIVE STUDY

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ÖZET

Amaç: Otizm Spektrum Bozukluğu (OSB) ve diğer psikiyatrik bozukluklar, ebeveynler üzerinde önemli psikososyal yük oluşturabilmekte; bakım sürecindeki belirsizlikler başa çıkma biçimlerini etkileyebilmektedir. Bu araştırma, OSB tanılı çocukların ebeveynleri ile psikiyatrik tanılı çocukların ebeveynlerinde belirsizliğe tahammülsüzlüğün başa çıkma tutumlarına etkisini karşılaştırmak amacıyla gerçekleştirilmiştir.

Materyal ve Yöntem: Araştırma karşılaştırmalı ve kesitsel tasarımda yürütülmüştür. Araştırmaya OSB tanılı çocuk ebeveyni (n=100) ve psikiyatrik tanılı çocuk ebeveyni (n=100) olmak üzere toplam 200 ebeveyn dahil edilmiştir. Örneklem büyüklüğü G*Power 3.1 programı ile hesaplanmıştır. Veriler Tanıtıcı Bilgi Formu, Belirsizliğe Tahammülsüzlük Ölçeği-12 ve Stresle Başa Çıkma Tarzları Ölçeği kullanılarak toplanmıştır. Verilerin değerlendirilmesinde Welch t testi, MANOVA, Pearson korelasyon, hiyerarşik doğrusal regresyon ve lojistik regresyon analizleri uygulanmıştır.

Bulgular: Grupların sosyodemografik ve tanımlayıcı özellikleri karşılaştırıldığında ebeveyn yaşı, eğitim ve çalışma durumu ile çocuğun yaşı ve cinsiyeti, tanı süresi, bakım süreci, günlük ve sosyal yaşamın etkilenmesi, uyku sorunu ve psikososyal destek ihtiyacı açısından anlamlı farklılıklar bulunmuştur (p<0,05). Tanı grubunun başa çıkma tarzları üzerinde anlamlı çok değişkenli etkisi saptanmış (Pillai izi=0,137; p<0,001); OSB grubunda kendine güvenli (p=0,011) ve iyimser yaklaşım (p<0,001) puanları daha yüksek bulunmuştur. Belirsizliğe tahammülsüzlükteki artış; iyimser yaklaşımda azalma (B=-0,056; p=0,014), çaresiz yaklaşımda artış (B=0,146; p<0,001) ve sosyal desteğe başvurmada azalma (B=-0,081; p=0,001) ile ilişkili bulunmuştur. OSB grubundaki ebeveynlerin psikososyal destek ihtiyacı 4,37 kat daha yüksek bulunmuş (OR=4,37; p=0,039); ölçekteki her bir puanlık artışın destek ihtiyacı olasılığını %11,4 artırdığı belirlenmiştir (OR=1,114; p=0,006). OSB grubunun belirsizliğe tahammülsüzlük toplam ve alt boyut puanları daha yüksek bulunmuştur (p<0,001).

Sonuç: OSB tanılı çocuk ebeveynlerinde belirsizliğe tahammülsüzlük düzeyi daha yüksek bulunmuş; belirsizliğe tahammülsüzlüğün başa çıkma tarzları ve psikososyal destek gereksinimi ile ilişkili olduğu belirlenmiştir. Belirsizliğe tahammülsüzlüğü azaltmaya ve işlevsel başa çıkma becerilerini güçlendirmeye yönelik psikososyal müdahalelerin geliştirilmesi önerilmektedir.

Anahtar Kelimeler: Otizm spektrum bozukluğu, psikiyatrik tanı, ebeveyn, belirsizliğe tahammülsüzlük, başa çıkma.

ABSTRACT

Objective: Autism Spectrum Disorder (ASD) and other psychiatric disorders can impose a significant psychosocial burden on parents, and uncertainties inherent in the caregiving process can influence coping styles. This study was conducted to compare the impact of intolerance of uncertainty on coping attitudes among parents of children diagnosed with ASD and parents of children with other psychiatric diagnoses.

Materials and Methods: The study was conducted using a comparative, cross-sectional design. A total of 200 parents were included in the study: parents of children diagnosed with ASD (n=100) and parents of children with a psychiatric diagnosis (n=100). Sample size was calculated using the G*Power 3.1

program. Data were collected using a Descriptive Information Form, the Intolerance of Uncertainty Scale-12, and the Stress Coping Styles Scale. Welch's t-test, MANOVA, Pearson correlation, hierarchical linear regression, and logistic regression analyses were performed to evaluate the data.

Results: When comparing the sociodemographic and descriptive characteristics of the groups, significant differences were found regarding parental age, education, and employment status; child's age and gender; duration since diagnosis; caregiving process; impact on daily and social life; sleep problems; and the need for psychosocial support ($p < 0.05$). A significant multivariate effect of diagnostic group on coping styles was identified (Pillai's trace=0.137; $p < 0.001$); scores for self-confident ($p = 0.011$) and optimistic ($p < 0.001$) approaches were higher in the ASD group. Increased intolerance of uncertainty was associated with a decrease in optimistic approach ($B = -0.056$; $p = 0.014$), an increase in helpless approach ($B = 0.146$; $p < 0.001$), and a decrease in seeking social support ($B = -0.081$; $p = 0.001$). The need for psychosocial support among parents in the ASD group was found to be 4.37 times higher ($OR = 4.37$; $p = 0.039$); it was determined that each one-point increase on the scale raised the likelihood of needing support by 11.4% ($OR = 1.114$; $p = 0.006$). Total and sub-dimension scores for intolerance of uncertainty were higher in the ASD group ($p < 0.001$).

Conclusion: Higher levels of intolerance of uncertainty were found in parents of children diagnosed with ASD; it was determined that intolerance of uncertainty is associated with coping styles and the need for psychosocial support. The development of psychosocial interventions aimed at reducing intolerance of uncertainty and strengthening functional coping skills is recommended.

Keywords: Autism spectrum disorder, psychiatric diagnosis, parent, intolerance of uncertainty, coping.

DIETARY PATTERNS IN PARKINSON'S DISEASE: AN UPDATED MINI-REVIEW (2024–2026)**Sinan ELİAÇIK**

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ABSTRACT

Purpose: Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by both motor and non-motor manifestations. Increasing evidence suggests that nutritional interventions may complement pharmacological treatment by influencing oxidative stress, neuroinflammation, mitochondrial dysfunction, and alterations of the gut microbiota. This mini-review summarizes current evidence published between 2024 and 2026 regarding dietary patterns investigated in PD.

Materials and Methods: A narrative literature review was conducted using recent peer-reviewed publications indexed in major biomedical databases between January 2024 and June 2026. Clinical studies, systematic reviews, and expert reviews evaluating Mediterranean, (The Mediterranean-DASH Intervention for Neurodegenerative Delay (MIND) diet emerged as a promising nutritional strategy for preserving cognitive function and potentially slowing disease progression) MIND, ketogenic, plant-based, and microbiota-directed dietary interventions in Parkinson's disease were included. The available evidence was synthesized with emphasis on clinical outcomes and potential biological mechanisms.

Results: The Mediterranean diet demonstrated the most consistent evidence, showing favorable associations with cognitive performance, gastrointestinal function, and quality of life while reducing oxidative stress and chronic inflammation. The MIND diet emerged as a promising nutritional strategy for preserving cognitive function and potentially slowing disease progression. Ketogenic diets showed encouraging effects on selected non-motor symptoms, including fatigue, cognition, and sleep quality; however, evidence from large randomized controlled trials remains limited. Growing data also support microbiota-targeted nutritional approaches, including high-fiber diets and polyphenol-rich foods, which may improve intestinal homeostasis and modulate neuroinflammatory pathways through the gut–brain axis.

Conclusion: Current evidence indicates that individualized nutritional counseling should be considered an integral component of comprehensive Parkinson's disease management. Although dietary interventions cannot replace dopaminergic therapy, Mediterranean- and MIND-style dietary patterns appear to offer the strongest supportive evidence. Future large-scale randomized studies are required to determine whether precision nutrition can modify disease progression and improve long-term neurological outcomes.

Keywords: Parkinson's disease; Mediterranean diet; MIND diet; Ketogenic diet; Gut microbiota

FERMENTED FOODS AS MODULATORS OF THE GUT MICROBIOME: IMPLICATIONS FOR METABOLIC, IMMUNE AND BRAIN HEALTH

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ABSTRACT

Background: Fermented foods have been part of the human diet for thousands of years, and increasing scientific attention has recently focused on their potential effects on the gut microbiome, immune regulation, metabolic health, and brain function. Fermentation induces complex microbial and biochemical transformations that can modify the nutritional composition, digestibility, bioavailability, and bioactive properties of foods.

OBJECTIVE: This presentation aims to review the potential health effects of fermented foods, with particular emphasis on their interactions with the gut microbiome and their possible metabolic, immunological, and neuropsychological implications.

Results: Fermented foods may provide live microorganisms, microbial metabolites, polyphenols, dietary fibres, and other bioactive compounds capable of influencing the composition and metabolic activity of the intestinal microbiome. Fermentation-related changes in nutrient availability, the formation of bioactive metabolites, and the degradation of certain antinutritional compounds may contribute to the regulation of intestinal barrier integrity, immune responses, and host metabolism. Available human evidence suggests that the consumption of selected fermented foods may be associated with favourable effects on glucose metabolism, cardiometabolic health, body-weight regulation, inflammatory and immune parameters, as well as mood and cognitive function. Potential gut–brain mechanisms include microbiota-derived metabolites, immune signalling, intestinal barrier function, and neuroendocrine pathways. However, current evidence remains heterogeneous, and the biological effects of individual fermented foods cannot be generalized across all products because of substantial differences in food matrices, microbial composition, fermentation processes, and study design.

Conclusion: Fermented foods represent a promising component of functional nutrition and may influence metabolic, immune, and brain health partly through modulation of the gut microbiome and its metabolic activity. Nevertheless, further standardized, adequately powered, and well-controlled human studies are required to determine which fermented foods, microbial communities, and fermentation-derived metabolites provide clinically meaningful health benefits.

Keywords: fermented foods; gut microbiome; probiotics; short-chain fatty acids; functional nutrition; gut–brain axis

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INFLAMMATION NOW THE KEY TARGET FOR SEBORRHEIC DERMATITIS

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ABSTRACT

Background: A growing body of evidence highlights that intestinal dysbiosis is associated with the development of seborrheic dermatitis. The gut-skin axis is the novel concept of the interaction between skin diseases and microbiome through inflammatory mediators, metabolites and the intestinal barrier. The gut microbiome affects skin homeostasis through its influence on the signaling pathways that coordinate inflammation.

The objective of this study was to synthesize current data on the Deniplant nutraceuticals of the gut microbiome in patients with seborrheic dermatitis.

Materials and methods All studies confirmed the association of seborrheic dermatitis and gut microbiota dysbiosis. We describe the recent advances regarding the interplay between gut microbiota and the skin. Thus, the microbiome can be considered an effective therapeutical target for treating this disorder.

Results: This presentation provides a detailed and comprehensive systematic study regarding gut microbiome in patients with seborrheic dermatitis. These results are supported by clinical observations based on a case serie showing improvement in seborrheic dermatitis lesions after Deniplant nutraceuticals. It is still not clear whether seborrheic dermatitis is an effect or a cause of the observed disbalance between beneficial and pathogenic microbes. In this context, the study provides very interesting results, showing significantly greater changes in the gut microbiome of patients with seborrheic dermatitis treated Deniplant nutraceuticals.

Conclusion: There is a significant association between alterations in gut microbial composition and seborrheic dermatitis. Intestinal dysbiosis is a state of imbalanced gut microbiome that eventually has a negative impact on skin function and integrity. Deniplant nutraceuticals is a potential therapeutic strategy in patients with seborrheic dermatitis.

Keywords: dysbiosis, microbiome, seborrheic dermatitis, gut-skin axis, gut barrier, Deniplant nutraceuticals

THE IMPACT OF INTERNATIONAL MIGRATION AND REMITTANCES ON HEALTH OUTCOMES OF RURAL HOUSEHOLDS IN BANGLADESH

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ABSTRACT

International migration has become a significant livelihood strategy for many households in developing countries, particularly in Bangladesh. Beyond its economic contribution through remittances, migration plays a crucial role in shaping the health and well-being of family members left behind. This study examines the impact of international migration and remittance inflows on the health outcomes of rural households in Bangladesh. Using a quantitative research approach, the study investigates how remittance income influences access to healthcare services, healthcare expenditure, nutrition, maternal and child health, and overall household well-being. The research further explores whether remittance-receiving households experience better health outcomes compared to non-remittance-receiving households. Data will be collected through structured questionnaires and analyzed using descriptive and inferential statistical techniques.

The findings are expected to demonstrate that remittances contribute positively to health by increasing household income, improving access to medical services, enhancing nutritional intake, and reducing financial barriers to healthcare utilization. However, the study also highlights potential challenges, including the psychological and social impacts of prolonged family separation due to migration.

The study contributes to the growing literature on migration, health, and sustainable development by providing evidence-based insights for policymakers. The findings may assist governments and development agencies in designing policies that maximize the health benefits of migration while addressing its social and psychological costs.

Keywords: International Migration, Remittances, Health Outcomes, Rural Households, Bangladesh, Public Health, Sustainable Development.

MECHANISTIC INSIGHT INTO ANTI-INFLAMMATORY ACTIVITY OF FAGONIA CRETICA VIA COX INHIBITION AND MULTIMODAL PHARMACOLOGICAL EVALUATION

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ABSTRACT

The application of natural plant-based medicine has sparked a great interest in *Fagonia cretica*, a traditional herb with medicinal properties. However comprehensive evidence regarding anti-inflammatory mechanism remains limited. This study aimed to evaluate phytochemical, anti-inflammatory and toxicological profiles of *Fagonia cretica* ethanolic extract (EEFC). EEFC was prepared by Soxhlet extraction, and bioactive components were identified using GC-MS analysis. According to OECD guidelines, Swiss albino rats were orally administered at different doses in acute and subacute toxicity. GC-MS analysis revealed 30 phytocompounds with Octan-2-yl palmitate, Pyridine-3-carboxamide, and 2-Ethylhexyl stearate present abundantly. In acute and subacute toxicity, EEFC did not induce any toxicity or mortality, as well as no significant change in blood parameters. Bovine serum albumin assay (BSA), EEFC manifested significant concentration-dependent inhibition of protein denaturation at 50, 100, 250, 500, and 1000 µg/ml (IC₅₀= 34.79 µg/ml) as compared to the SC group ($p < 0.05$) (IC₅₀= 22.51 µg/ml). In the COX-1 and COX-2 assays, EEFC has significant inhibitory activity as compared to the standard drug DS. In the carrageenan-induced paw edema model, 100 mg/kg (5.71 ± 0.02), 200 mg/kg (5.26 ± 0.03) and 400 mg/kg (4.46 ± 0.01) reduced paw edema in a dose-dependent manner, showing a biphasic process. Furthermore, following Swiss ADME and toxicity analysis, molecular docking demonstrated strong binding affinities with COX-1 (6Y3C) and COX-2 (5KIR), with in the range – 7.7 and – 8.0, respectively. In conclusion, EEFC exhibited significant anti-inflammatory activity and demonstrated favorable preclinical safety profile.

Keywords: Natural product · Inflammation · Bovine serum albumin · *In-silico* · Carrageenan

SATISFACTION AMONG MOTHERS REGARDING CHILDHOOD VACCINATION SESSIONS AT A TUNISIAN PRIMARY HEALTH CENTER

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ABSTRACT

Introduction: Patient satisfaction is a key indicator of healthcare quality, particularly during vaccination sessions for children accompanied by their mothers. Assessing the maternal experience helps identify organizational and communication shortcomings that may influence adherence to the vaccination schedule. Our study aimed to assess mothers' satisfaction with the conduct of their children's vaccination sessions and to identify the main factors of dissatisfaction.

Methods: A descriptive cross-sectional study was conducted among a representative sample of mothers accompanying their children during a vaccination session at a primary health center in Mahdia. Data were collected using a structured questionnaire covering reception, communication, organization, information provided, and sources of information.

Results: A total of 427 mothers were included, of whom 89% (n=380) reported being satisfied with the session. However, several shortcomings were reported: poor reception (89%; n=380), 9.1% reported a lack of communication with the child, and 1.9% reported a lack of empathy toward the baby's pain. Regarding weight monitoring, 87.6% did not receive information about their child's weight, due to lack of information from the nurse or the absence of a baby scale. Questioning about the presence of an active illness was considered satisfactory in 89% of cases. Vaccination hours were considered adequate by 89.7% of mothers, with a median waiting time of 2 hours (IQR [1–2]). Information about the vaccine administered was lacking for 43% of participants, while 73.5% were informed of the next appointment. Overall satisfaction with vaccination reached 79.4%. The main reasons for dissatisfaction were adverse effects (81.7%) and poor communication (10.5%). Nurses were the main source of information (33.5%).

Conclusion: Despite high overall satisfaction, gaps persist in reception, communication, and information provision. Strengthening the relational and organizational practices of healthcare professionals could improve the maternal experience and reinforce adherence to the vaccination program.

DEPRESSION AMONG TEACHERS IN SOUTHERN TUNISIA: PREVALENCE AND ASSOCIATED FACTORS

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ABSTRACT**Introduction**

Depression is a major mental disorder and one of the leading public health problems due to its high prevalence and often chronic course. Certain professions, particularly teaching, may constitute a risk factor because of the psychosocial burden and high level of stress they involve. The aim of this study was to estimate the prevalence of depression risk among teachers and to identify the main associated factors.

Methods: This was a cross-sectional study conducted in 2024 among a sample of teachers in primary and secondary schools in southern Tunisia. Data were collected using an anonymous, self-administered questionnaire. Depression risk was assessed using the validated Center for Epidemiologic Studies Depression Scale (CES-D).

Results: A total of 525 teachers were included, of whom 292 (55.6%) were women. The median age was 48 years (interquartile range (IQR) = [41–53]). The majority of teachers were of urban origin (55.4%; n = 291), and 132 (25.1%) reported a chronic illness.

Fifty-six teachers were at risk of depression (CES-D score ≥ 16), corresponding to a prevalence of 10.7%. Factors significantly associated with depression risk were: age over 60 years (Odds Ratio (OR) = 4.97; p = 0.01), a high number of working hours per day (≥ 7 hours; OR = 2.59; p = 0.004) and per week (≥ 30 hours; OR = 2.05; p = 0.015), smoking (OR = 2.05; p = 0.015), and severe generalized anxiety (GAD score ≥ 15 ; OR = 2.28; p = 0.018).

Conclusion: The prevalence of depression risk among Tunisian teachers in 2024 remains notable. Several personal and occupational factors are associated with it. These findings highlight the need to strengthen mental health prevention strategies in the school setting, particularly through regular screening and appropriate psychological support.

INNOVATIONS IN MEDICAL BIOTECHNOLOGY, GENETICS, AND MOLECULAR BIOLOGY: A CRITICAL REVIEW OF CHALLENGES, LIMITATIONS, AND FUTURE DIRECTIONS

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ABSTRACT

Medical biotechnology has become one of the most transformative scientific disciplines of the twenty-first century, reshaping disease diagnosis, prevention, treatment, and healthcare delivery through advances in genomics, molecular diagnostics, gene editing, regenerative medicine, and artificial intelligence (AI). This review critically synthesises international, African, and Nigerian literature published between 2019 and 2026, supplemented by seminal foundational studies, to examine innovations that have shaped contemporary medical biotechnology alongside the scientific, ethical, regulatory, economic, and infrastructural barriers that constrain their equitable diffusion. A narrative, thematic-analytic review method was applied to literature retrieved from PubMed, Scopus, Web of Science, and reports of leading international bodies, and the analysis was organised through an integrated theoretical lens combining Systems Theory, Human Capital Theory, and the Technology Acceptance Model. The review finds that while precision medicine, CRISPR-Cas gene editing, molecular diagnostics, and AI-assisted drug discovery have measurably improved diagnostic accuracy and treatment outcomes, substantial disparities persist between high-income and low- and middle-income countries in research funding, laboratory infrastructure, skilled workforce, regulatory capacity, and commercialisation pathways. In Nigeria and much of Sub-Saharan Africa, these disparities are compounded by weak university–industry linkages, brain drain, and dependence on imported diagnostics and biologics. The review concludes that sustainable progress requires coordinated investment in research infrastructure, interdisciplinary human-capital development, ethical governance, and innovation-friendly policy frameworks, and it proposes an integrated biotechnology-innovation framework together with targeted recommendations for governments, universities, industry, and international development partners.

Keywords: medical biotechnology; genetics; molecular biology; precision medicine; gene editing; genomics; Nigeria; Africa

HOW SOCIAL MEDIA REVIEWS INFLUENCE CONSUMERS FOR SELECTING RESTAURANT

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ABSTRACT

With the rise of social media, it could impact more on customer choices greater. Consumers increasingly read online reviews and publish their thoughts and ideas on social media, probably influencing their decision-making while deciding on a restaurant or cafe based on preceding opinions. So, this study aims to see how social media reviews affect a consumer's restaurant choice. First, this study takes a look at identifies elements which could impact patron restaurant selection primarily based on social media critiques reviews. The questionnaire protected three independent social media review factors: online review availability, Electronic Word of Mouth (e-WOM), and trust in the online review. This study uses non-probability convenience sampling to pick out 112 respondents. Measurement techniques used for this take a look at are descriptive data, correlation of variables, regression analysis, ANOVA used, and Cronbach alpha measured the reliability of variables. Data had been analyzed by using the use of SPSS v25. The outcome of this studies demonstrates that each one 3 factors have a Significant and positive relationship with consumers' restaurant selection. Among the various three factors of social media review, the availability of online reviews has the most effect on clients' restaurant selection. Hopefully, this study may contribute more to the restaurant industry by knowing how social media reviews impacts their business and how it influences consumers' decision-making.

Keywords: Social Media , e-WOM , Restaurant , Bangladesh , Food Review

SMART URBAN ECOSYSTEMS ENABLED BY INTELLIGENT INTERNET OF THINGS NETWORKS

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ABSTRACT

The rapid advancement of the Internet of Things (IoT) has significantly transformed urban environments by enabling the seamless integration of physical devices, sensors, communication networks, and data-driven services. Intelligent IoT networks form the backbone of smart urban ecosystems, facilitating real-time monitoring, efficient resource management, and enhanced public services. By connecting everyday objects through advanced sensing and communication technologies, IoT contributes to improved urban sustainability, energy efficiency, mobility, and quality of life for citizens. Despite these benefits, the large-scale deployment of IoT systems presents challenges related to data security, privacy protection, interoperability, and effective data management. Continuous developments in sensor technologies, wireless communication, cloud computing, and data analytics, coupled with growing demands for sustainable urban planning and citizen-centric governance, are accelerating the adoption of IoT-enabled smart city solutions. Among various applications, the Arduino IoT-based Smart Street Light System demonstrates the practical implementation of intelligent urban infrastructure. By utilizing ambient light and motion sensors integrated with internet connectivity, the system automatically controls street lighting, reduces energy consumption, minimizes operational costs, and enables remote monitoring and management. Such intelligent IoT applications play a vital role in creating sustainable, efficient, and interconnected smart urban ecosystems capable of addressing the challenges of modern urbanization.

Keywords: Internet of Things (IoT), Smart Urban Ecosystems, Smart Cities, Intelligent Networks, Sustainable Urban Development, Smart Street Lighting, Sensors, Energy Efficiency.

INTERLEUKIN-6 AND GESTATIONAL AGE IN PREGNANT WOMEN WITH COVID-19 AND HYPERTENSIVE DISORDERS OF PREGNANCY

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ABSTRACT

Background: Pregnancy complicated by COVID-19 and hypertensive disorders represents a challenging clinical condition in which systemic inflammation may interact with pregnancy-specific vascular and endothelial dysfunction. Interleukin-6 (IL-6) is a major pro-inflammatory cytokine involved in the immune response to SARS-CoV-2 infection and has also been implicated in the pathophysiology of hypertensive disorders of pregnancy. Understanding its relationship with gestational age may provide additional information regarding inflammatory activity throughout pregnancy in this particularly vulnerable population. **Aim:** To evaluate circulating IL-6 concentrations and investigate their relationship with gestational age in pregnant women with COVID-19 complicated by gestational hypertension and preeclampsia.

Materials and Methods: This observational study included 52 pregnant women with COVID-19 and hypertensive disorders of pregnancy, including gestational hypertension (HTAIS) and preeclampsia. Serum IL-6 concentrations were assessed as a marker of systemic inflammatory activity. Gestational age was available for 51 patients. Descriptive statistical analysis was performed, and the relationship between IL-6 concentrations and gestational age was evaluated using Spearman's rank correlation due to the non-normal distribution of IL-6 values.

Results: The mean gestational age was 29.75 weeks, indicating that the cohort predominantly consisted of women in advanced pregnancy. IL-6 concentrations showed substantial interindividual variability, with a mean value of 35.44 ± 123.50 pg/mL, a median of 6.30 pg/mL, and a maximum concentration of 713.50 pg/mL. The marked difference between mean and median values indicated a strongly right-skewed inflammatory profile, with a limited number of patients exhibiting markedly elevated IL-6 concentrations. A weak positive correlation was observed between IL-6 and gestational age (Spearman $\rho = 0.170$); however, the association did not reach statistical significance ($p = 0.234$).

Conclusions: Pregnant women with COVID-19 and hypertensive disorders of pregnancy

demonstrated highly heterogeneous IL-6 concentrations, including markedly increased values in selected patients. Although IL-6 tended to increase with advancing gestational age, no statistically significant association was identified. These findings suggest that systemic inflammatory activity in pregnancies complicated by COVID-19, gestational hypertension, and preeclampsia is unlikely to be determined by gestational age alone. Individual disease severity and the complex interaction between infection, inflammation, and hypertensive pregnancy disorders may play a more important role. Further studies involving larger cohorts are needed to clarify the potential clinical and prognostic significance of IL-6 in these high-risk pregnancies.

Keywords: interleukin-6; COVID-19; pregnancy; gestational age; preeclampsia; gestational hypertension; inflammation.

HEMATOLOGIC DYNAMICS DURING PLATINUM-BASED TREATMENT IN PATIENTS WITH STAGE III CERVICAL CANCER

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ABSTRACT

Background: Concurrent chemoradiotherapy using platinum-based chemotherapy represents an important therapeutic approach for locally advanced cervical cancer. Despite its clinical effectiveness, treatment-related hematologic toxicity may affect treatment tolerance, continuity, and ultimately patient outcomes. Serial assessment of hematologic parameters may therefore provide clinically relevant information during therapy.

Aim: To evaluate longitudinal changes in hematologic and renal parameters during platinum-based treatment in patients with stage III cervical cancer and to identify the biological parameters most affected during successive treatment cycles.

Materials and Methods: This study included 45 patients with stage III cervical cancer treated between 2018 and 2023 at an oncology center in Western Romania. Patients were classified as stage IIIA, IIIB, IIIC1, or IIIC2. Among them, 42 patients received cisplatin and three received carboplatin. Clinical and laboratory parameters were monitored throughout treatment, including neutrophils, leukocytes, lymphocytes, hemoglobin, thrombocytes, and creatinine.

Results: A progressive deterioration of several hematologic parameters was observed during treatment. Mean leukocyte levels decreased from $7.39 \pm 2.62 \times 10^9/L$ at the first evaluation to $3.48 \pm 1.51 \times 10^9/L$ at the fifth evaluation, while neutrophils decreased from 5.30 ± 2.16 to $2.55 \pm 1.31 \times 10^9/L$. Lymphocytes showed a marked decline from 1.42 ± 0.76 to $0.48 \pm 0.31 \times 10^9/L$. Hemoglobin progressively decreased from 12.18 ± 1.66 to 10.37 ± 1.88 g/dL, and thrombocytes from 301.28 ± 82.70 to $190.13 \pm 107.05 \times 10^9/L$. In contrast, mean creatinine increased only moderately, from 0.70 ± 0.21 to 0.80 ± 0.50 mg/dL. Paired analyses demonstrated significant changes between baseline and final measurements for neutrophils, leukocytes, lymphocytes, hemoglobin, and thrombocytes ($p < 0.001$), whereas the baseline-to-final change in creatinine was not statistically significant ($p = 0.109$).

Conclusions: Platinum-based treatment for stage III cervical cancer was associated with progressive and significant hematologic changes across successive treatment evaluations, particularly affecting lymphocytes, leukocytes, hemoglobin, and thrombocytes. Renal function, reflected by creatinine levels, remained comparatively stable. These findings emphasize the importance of serial hematologic

monitoring during chemoradiotherapy to identify treatment-related toxicity early and support timely therapeutic and supportive-care decisions.

Keywords: cervical cancer; cisplatin; carboplatin; chemoradiotherapy; hematologic toxicity; lymphopenia; anemia.

CALCULATING THE HEALTH RISKS USING MONTE CARLO SIMULATIONS DUE TO CARBON DIOXIDE AND PARTICULATE MATTER 10 POLLUTANTS IN CEMENT INDUSTRIAL AREA, PANGKEP INDONESIA

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ABSTRACT

Background: Carbon dioxide (CO₂) and fine particulate matter ten (PM₁₀) are chronic exposure that may lead to adverse health impacts on humans and environment. Some impact and may get directly and indirectly to those communities who are living and expose the both pollutant of CO₂ and PM₁₀.

This study, therefore aimed to investigate the magnitude of CO₂ and PM₁₀ level and to form the spatial distribution which then continued to assess the health risks posed by communities living surround the site. This study also applied the Monte Carlo Simulation model with 10.000 iterations was used estimate and assess the risk analysis through the inhalation pathway suffered by communities.

Results: The average magnitude of CO₂ concentration was in station 2 and station 1 with the concentration of 152,92 and 143,23 µg/m³ whereas the lowest one in station 12 with 89.6 µg/m³, respectively. In addition, the highest level of PM₁₀ was in station 11 with 187.85 while the lowest was in station 13 with 62.97, respectively. All those stations have above the air quality guidelines of the World Health Organization. However, the results of the Monte Carlo Simulation that to assess the health risk with the 95th percentile demonstrated that children and adults are still indicated at low risk for developing adverse health effects among those communities.

In addition, level of sensitivity analysis result indicated that exposure frequency with (26.0%) for adult and concentration of inhalation rate with (26%) were the most contributing factors to health risks in adults and children, respectively. This simulation is a visible approach to determines the critical factors with major effects on reducing the health risk of the vulnerable population such us population around Tonasa cement industry in Pangkep Indonesia.

Conclusion: Both CO₂ and PM₁₀ poses hazard health risks to adults and children, despite the current calculated risks are still acceptable. Thus, limiting exposure frequency and inhalation fine particulate matter levels in the residential area are highly demanded.

Keywords: Carbon Dioxide, Particulate Matter 10, Health hazard, Children, Adult, Monte carlo simulation.

MATERNAL ARTERIAL STIFFNESS AND ADVERSE NEONATAL OUTCOMES IN HYPERTENSIVE PREGNANCIES: LINKING VASCULAR DYSFUNCTION TO PERINATAL RISK

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ABSTRACT

Background: Hypertensive disorders of pregnancy represent an important cause of preterm delivery, impaired fetal growth, and adverse neonatal outcomes. Maternal vascular dysfunction may contribute to placental hypoperfusion and consequently affect fetal development. Non-invasive arterial stiffness assessment could therefore provide information not only about maternal cardiovascular status but also about pregnancy and neonatal prognosis.

Aim: To investigate the association between maternal vascular dysfunction and adverse obstetric and neonatal outcomes in pregnancies complicated by hypertensive disorders.

Materials and Methods: A prospective cohort of 200 pregnant women was analyzed, comprising 100 women with hypertensive disorders of pregnancy and 100 normotensive controls. Maternal arterial stiffness and central hemodynamics were evaluated during the second and third trimesters using PWVao, AIx, and central blood pressure measurements. Pregnancy outcomes included gestational age at delivery, preterm birth, mode of delivery, neonatal birth weight, and 1-minute Apgar score.

Results: Pregnancies complicated by HDP resulted in significantly earlier delivery compared with normotensive pregnancies (34.30 ± 3.28 vs. 38.91 ± 0.90 weeks, $p < 0.001$). Mean neonatal birth weight was substantially lower in the HDP group (2573.90 ± 785.55 g) than among controls (3571.30 ± 451.35 g, $p < 0.001$). Neonatal adaptation was also impaired, with a lower mean 1-minute Apgar score (7.61 ± 2.14 vs. 9.14 ± 0.85 , $p < 0.001$). Cesarean delivery occurred in 83.0% of hypertensive pregnancies compared with 31.0% of normotensive pregnancies. Increased PWVao and AIx were associated with earlier gestational age at delivery, lower neonatal birth weight, poorer neonatal adaptation, and higher maternal blood pressure.

Conclusions: Maternal arterial stiffness is closely associated with adverse obstetric and neonatal outcomes in hypertensive pregnancies. Higher PWVao and AIx accompany earlier delivery, reduced neonatal birth weight, and poorer immediate neonatal adaptation. These findings support the potential role of non-invasive vascular assessment as an additional tool for identifying pregnancies at increased maternal and perinatal risk.

Keywords: hypertensive pregnancy; preeclampsia; arterial stiffness; neonatal outcomes; pulse wave velocity.

FIELD EVALUATION OF EMS-INDUCED SESAME (*SESAMUM INDICUM* L.) MUTANTS FOR ADAPTATION TO EARLY SOWING UNDER SEMI-ARID CONDITIONS**Nouhayla TAHRI**

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ABSTRACT

Plant biological performance is strongly influenced by environmental conditions, while genetic diversity determines the capacity of plants to respond and adapt to these conditions. Understanding the interaction between genotype and agro-environmental factors is therefore essential for identifying adaptive plant material and developing crops better suited to changing environments. Sesame (*Sesamum indicum* L.) is an important oilseed crop in Morocco, whose cultivation is strongly influenced by environmental conditions during establishment and subsequent plant development. Traditionally sown around June, advancing sowing to April could allow better use of residual spring rainfall and contribute to reduced irrigation requirements. However, early sowing exposes plants to a distinct agro-environmental context, making the identification of genetically adapted material an important challenge for sustainable and climate-resilient production. This study aimed to evaluate the biological and agronomic performance of EMS-induced sesame mutant lines under early-sowing field conditions and to identify genotypes showing promising adaptation.

Six genotypes, including Local, ML13, four EMS-derived mutants (ML2-5, ML2-10, ML2-37 and ML2-72), and US1-2, were evaluated at the Skhounat experimental station (M'haya, Meknès, Morocco) following sowing on 17 April 2025. After soil and irrigation water analysis, the site is characterized by a semi-arid to arid climate and a calcareous brown soil. The irrigation water had a moderate salt load, a relatively high chloride concentration, and high hardness (1.71 dS m⁻¹, with 400 mg L⁻¹ chlorides and a total hardness of 25°). Plant emergence, stem length, branching, capsule production and first-capsule length were evaluated.

Highly significant genotypic variation ($p < 0.001$) was observed for all measured traits. ML2-5 exhibited the greatest stem length (167.0 cm), while ML2-72 showed the highest branching capacity (38.9 branches plant⁻¹). ML13 displayed outstanding reproductive performance, producing 90.9 capsules plant⁻¹ compared with 42.0 in Local. These contrasting responses demonstrate substantial genetic differentiation in sesame performance under early-sowing environmental conditions.

Overall, the evaluated EMS-derived mutants, particularly ML2-5 and ML2-72, represent promising genetic resources for investigating plant adaptation and supporting the development of sesame cultivars better suited to early sowing and variable semi-arid environments.

Keywords: *Sesamum indicum* L.; early sowing; environmental adaptation; EMS mutagenesis; field evaluation; semi-arid conditions

A REVIEW ON NON-PHARMACOLOGICAL INTERVENTIONS FOR SLEEP DISORDERS**Samin SHAFIGH**

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ABSTRACT

Sleep is a confirmed critical behaviour and activity across all humans. It is a physiological brain process where the body rests and the brain sleeps. The health of the body and brain are inseparably linked; hence the maintenance and promotion of their well-being is directly linked to the overall human health. Adequate sleep has been proven to have direct positive links to physical, and mental health, cognitive function, daily performance, safety, and longevity. Whilst inadequate sleep increases morbidity and all-cause mortality. Poor sleep has clinically significant influences on diseases and illnesses, with current evidence suggesting possible associations between poor sleep and certain cancers. Despite the extensive growing evidence acknowledging the essential role of sleep, sleep disorders are still a continuously growing health issue worldwide. Current estimates suggest that globally more than 852 million individuals are affected by sleep disorders. In order to combat this issue, there are long lists of pharmacological and non-pharmacological interventions in place. While pharmacological approaches do provide moderate treatment efficiency, they are not recommended for long term use and their adverse effects can often times outweigh its benefits. So much so that more than half of the people who suffer from sleep disorders prefer non-pharmacological interventions for various reasons. To date, there are many different non-pharmacological methods which can be broadly categorized into therapeutic, behavioural, environmental, sensorial, nutritional, cognitive, and complementary interventions. All of which have presented varying effectiveness, with some interventions showing clinically significant outcomes. This review focuses on the non-pharmacological methods that have been studied for the improvement of overall sleep quality. Thus far, these interventions have showcased themselves as a promising approach for improving inadequate sleep, but more research is required to strengthen and further increase the existing knowledge. This will enable its integration into clinical practice and consequently improve the quality of life for millions worldwide.

Keywords: Sleep disorder, poor sleep, non-pharmacological, health, mental health

COMPUTATIONAL INSIGHTS INTO NOVEL ORGANIC PHOTOSENSITIZERS FOR DYE-SENSITIZED SOLAR CELL APPLICATIONS

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ABSTRACT

This study employed TD-DFT to investigate the electronic, optical, and interfacial properties of quinoxaline-based organic dyes (C1–C5) for DSSC applications. All dyes exhibit suitable HOMO/LUMO alignment with the TiO₂ conduction band and electrolyte redox potential, ensuring efficient electron injection and regeneration. Global reactivity analysis identifies C4 as the most reactive and flexible, suggesting enhanced intramolecular charge-transfer capability. FMO, TDM, and electrostatic potential investigations confirm effective donor–acceptor charge transfer, particularly for C2 and C5. Adsorption and PDOS analyses on the TiO₂ anatase (111) surface reveal improved interfacial charge-transfer behavior and stronger electronic coupling for C2, C3, and C5, evidenced by significant orbital overlap near the Fermi level. Overall, the combined results establish C2, C3, and C5 as the most promising sensitizers for high-performance DSSCs, owing to their balanced optical properties, efficient charge-transfer processes, and strong dye–semiconductor interactions [1-2].

Keywords: TD-DFT, dye-sensitized solar cells, high-performance, charge transfer, dye adsorption.

HEALTH INFORMATION SOURCES AND THEIR ASSOCIATION WITH LIFESTYLE BEHAVIORS AMONG PREGNANT WOMEN: A CROSS-SECTIONAL STUDY IN VLORA, ALBANIA

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ABSTRACT

Introduction: Pregnant women obtain health information from various sources, including the internet, family, healthcare professionals, and social media. Regular physical activity, appropriate gestational weight gain, and healthy nutrition remain essential for the long-term health of both mother and infant (Dalhaug & Haakstad, 2019).

Aim: This study aims to assess the main sources of health information used by pregnant women and their association with lifestyle behaviors.

Methodology: A cross-sectional study was conducted in the Vlorë district during May–June 2026, involving 135 pregnant women selected through random sampling. Data was collected using a self-administered structured questionnaire. Data analysis was performed using descriptive statistics.

Results: Among participants, 20% resided in rural areas and 46% were unemployed; 32% were in their first pregnancy, 51% in their second, and 17% had had more than two pregnancies. The main source of health information was the gynecologist (34%), followed by the nurse/midwife (21%), family doctor (19%), internet/social media (16%), and family/friends (10%). Regarding trust, the gynecologist was rated as the most reliable source by 54% of women, while the internet (13%), family doctor (12%), and family (11%) were perceived as less reliable. However, 68% of participants considered the information received to be insufficient. Regarding lifestyle behaviors, 74% regularly consumed fruits and vegetables, while 48% reported frequent fast-food consumption. Nutritional advice was always followed by 71% of women. Only 12% reported current tobacco/alcohol use, while 63% used supplements recommended by professionals. In self-assessment, 52% perceived their lifestyle as very healthy, 34% as moderately healthy, and 14% as not healthy.

Conclusion: Although the gynecologist remains the most trusted source of information, the widespread perception of its insufficiency highlights the need for more structured counseling and health education from healthcare professionals during pregnancy.

Keywords: Pregnant women; Health information sources; Lifestyle; Prenatal education

AN ANALYSIS OF THE ROLE OF 5G AND 6G NETWORKS IN ENABLING SMART HEALTHCARE SERVICES

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ABSTRACT

The rapid evolution of wireless communication technologies is transforming traditional healthcare into connected, reliable, and smart healthcare services. This paper presents an analysis of the role of fifth-generation (5G) and emerging sixth-generation (6G) networks in supporting next-generation healthcare applications. 5G technology offers high data rates, low latency, enhanced reliability, massive connectivity, and improved network capacity, making it suitable for applications such as Internet of Medical Things (IoMT), telemedicine, remote patient monitoring, connected medical devices, emergency healthcare communication, and real-time medical data transmission. The study analyzes the capabilities of 5G networks and examines the potential of 6G technology to address the increasing communication requirements of future healthcare systems. A comparative analysis of 5G and 6G is performed based on key parameters including latency, data rate, reliability, connectivity, scalability, network capacity, security, and healthcare applicability. The analysis also considers the requirements of medical devices and IoMT environments, where continuous connectivity, reliable communication, low delay, and secure data exchange are essential. Various challenges, including network security and privacy, interoperability, infrastructure requirements, device compatibility, reliability, energy efficiency, and deployment cost, are discussed. The study further identifies potential opportunities for 6G in enabling ubiquitous healthcare connectivity, advanced remote healthcare services, immersive healthcare applications, and real-time medical communication. The findings indicate that 5G provides a strong technological foundation for present-day smart healthcare services, while 6G has the potential to enhance the scalability, reliability, responsiveness, and accessibility of future healthcare networks. This analysis highlights the transition from 5G-enabled connected healthcare toward next-generation 6G-supported smart healthcare services.

Keywords: 5G, 6G, Smart Healthcare, Internet of Medical Things, Medical Devices, Telemedicine, Wireless Communication, Healthcare Networks.

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING APPLICATIONS IN PREDICTIVE MICROBIAL RISK ASSESSMENT FOR FOOD SAFETY: A SYSTEMATIC REVIEW OF EMERGING APPROACHES

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ABSTRACT

Foodborne illness remains a major global public health burden, with unsafe food estimated to cause hundreds of millions of illnesses annually. Traditional microbial risk assessment relies heavily on culture-based methods and classical predictive microbiology models, often slow and unable to capture the complex, nonlinear interactions among pathogens, food matrices, and environmental conditions across the farm-to-fork continuum. In recent years, artificial intelligence (AI) and machine learning (ML) have emerged as powerful tools for faster, more accurate microbial hazard prediction and food safety decision-making.

This review aims to systematically synthesize and critically evaluate current AI/ML applications in predictive microbial risk assessment for food safety, identify methodological trends, and highlight gaps limiting real-world adoption. A structured search was conducted across PubMed, Scopus, Web of Science, and ScienceDirect for studies published between 2019 and 2026, using keywords related to artificial intelligence, machine learning, predictive microbiology, and food safety risk assessment.

Findings show increasing use of random forest, support vector machines, artificial neural networks, and deep learning for pathogen growth prediction, shelf-life estimation, outbreak forecasting, and rapid contamination detection. These approaches offer improved accuracy over classical models and integrate heterogeneous data sources, but challenges remain, including limited interpretability, scarce standardized validation datasets, and insufficient industrial-scale validation.

By consolidating a fragmented and rapidly growing literature into a unified framework, this review offers novel insight into the capabilities and limitations of AI-driven food safety tools, and proposes a research agenda toward interpretable, validated, industry-ready predictive systems for safeguarding the food supply chain.

Keywords: food safety; artificial intelligence; machine learning; predictive microbiology; microbial risk assessment

BIDIRECTIONAL MICROBIOTA-IMMUNE-NERVOUS SYSTEM INTERACTIONS IN NEUROLOGICAL DISORDERS**Assoc. Prof. Dr. Mahira Firudin Kizi AMIROVA**

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ABSTRACT**Background**

The intestinal microbiota operates within a bidirectional network linking the gut epithelium, mucosal and systemic immunity, neuroendocrine pathways, the enteric and autonomic nervous systems, and the brain. Microbial ligands and metabolites can influence epithelial permeability, immune differentiation, inflammatory mediators, vagal afferents, glial states, and neuronal function. Short-chain fatty acids (SCFAs), tryptophan metabolites, modified bile acids, and microbe-associated molecular patterns therefore provide biologically plausible links to neurodevelopment, cognition, behavior, neuroinflammation, and neurodegeneration. These mechanisms have intensified interest in Parkinson disease, Alzheimer disease, multiple sclerosis, epilepsy, stroke, depression, and anxiety. Available literature often portrays dysbiosis as an initiating or aggravating factor. Such an interpretation captures only one direction of causality. Neural and neuroendocrine activity continually remodels the microbial habitat by regulating gastrointestinal transit, secretion, perfusion, barrier integrity, mucus production, immune surveillance, feeding, movement, sleep, and circadian timing. Neurological disease may therefore generate microbial alterations without microbial initiation. Observed profiles may represent causes, consequences, mediators, treatment effects, or concurrent processes. A reciprocal framework is essential for causal inference, biomarker development, and intervention design.

Objective of this study was to synthesize evidence for bidirectional communication among the intestinal microbiota, immune system, and nervous system. It emphasized mechanisms through which neural health and dysfunction reorganize microbial ecology. It also connected organ-level observations with pattern-recognition signaling, inflammasome activation, metabolite-sensitive receptors, epithelial-junction regulation, cholinergic immune control, circadian programs, and disease-associated genes. A further aim was to distinguish established physiology from preliminary therapeutic concepts and to define requirements for classifying microbiome differences as causes, consequences, mediators, or state markers.

Methods: Indexed biomedical literature was synthesized by direction of communication. Microbiota-to-host pathways included microbial metabolites and ligands, immune activation, epithelial and blood-brain barriers, vagal afferent signaling, glial states, and neurological outcomes. Host-to-microbiota pathways included stress physiology, autonomic and enteric regulation, motility, secretion, sleep, circadian organization, neuroinflammation, sickness behavior, diet, activity, disability, and medication exposure. The synthesis covered neurodegenerative, neuroimmune, neurovascular, seizure-related, and psychiatric conditions. Mechanistic interpretation was prioritized over taxonomic enumeration. Particular attention was given to TLR4 inflammatory signaling; P2RX7-dependent NLRP3 inflammasome assembly; SCFA sensing through FFAR2, FFAR3, and HCAR2; AHR-mediated indole sensing; tryptophan metabolism through IDO1, TDO2, KMO, and KYAT enzymes; FXR- and TGR5-mediated bile acid signaling; CHRNA7-dependent cholinergic immune control; and pathways involving SNCA, LRRK2, GBA1, TREM2, APOE, BACE1, and IL23R-JAK2-STAT3-RORC.

Evidence for study was drawn from heterogeneous experimental systems. Germ-free models, antibiotic perturbation, fecal transfer, and receptor knockouts support mechanistic testing but substantially modify development, immunity, or ecology. Human cohorts described in the literature offer greater clinical relevance but often lack temporal resolution and adequate measurement of diet, bowel function, sleep, disability, and medication. Findings were therefore weighted according to temporal ordering, target engagement, and translational relevance.

Results: The evidence supports a distributed feedback system rather than a unidirectional gut-to-brain pathway. SCFAs engage FFAR2 and FFAR3; butyrate additionally activates HCAR2 and modulates histone deacetylase activity. These mechanisms affect regulatory T-cell programs, epithelial junctions, immune tolerance, and microglial maturation. Indole derivatives activate AHR-dependent transcription

and influence mucosal defense and astrocyte responses. Tryptophan allocation shapes serotonin, immunoregulatory indoles, and kynurenine metabolites. Microbially transformed bile acids regulate metabolic, inflammatory, and enteroendocrine responses through FXR and TGR5. Barrier disruption permits bacterial products to activate innate immunity. Lipopolysaccharide recognition by the TLR4 complex induces adaptor-, kinase-, and NF- κ B-dependent inflammatory signaling. Extracellular ATP and cellular stress can promote P2RX7-associated NLRP3 assembly and caspase-1-mediated cytokine maturation. These pathways connect dysbiosis with peripheral inflammation, glial responses, and neurological dysfunction. Their activity nevertheless depends on barrier integrity and immune tone, which are themselves neurally and endocrinologically regulated.

Stress provides the clearest host-to-microbiota mechanism. Corticotropin-releasing signals, glucocorticoids, and sympathetic catecholamines alter motility, perfusion, mucus, epithelial junctions, and cytokine production. Some bacteria also respond directly to catecholamines, although responses vary by organism and context. Experimental stress produces no universal taxonomic signature. It more consistently changes intestinal physiology, permeability, inflammation, and microbial metabolism. Parasympathetic and enteric pathways offer complementary mechanisms. Efferent vagal activity coordinates digestion, secretion, motility, and inflammatory restraint. Acetylcholine acting through CHRNA7 on myeloid cells modulates JAK-STAT and NF- κ B signaling. Vagus nerve stimulation can alter gut physiology and microbial features, but effects vary by stimulation method, species, disease model, and sampling interval. Enteric neuropathy is especially consequential because transit governs microbial retention, substrate exposure, water availability, stool form, and fermentation. Neurological disease can disrupt transit through autonomic failure, enteric pathology, immobility, dehydration, dysphagia, and medication. Sleep and circadian disruption can also generate dysbiosis. Central and peripheral clocks coordinate feeding, autonomic balance, endocrine rhythms, epithelial renewal, immunity, and microbial oscillations. Because many neurological and psychiatric disorders disrupt sleep, diagnosis-associated microbiome differences may be mediated by altered timing rather than by disease-specific microbial effects. Repeated circadian sampling and objective sleep assessment are therefore necessary.

Neuroinflammation further stabilizes reciprocal feedback. Cytokines alter appetite, movement, sleep, gastrointestinal function, and medication requirements. Microbial products simultaneously influence peripheral immune cells, microglia, astrocytes, and barriers. TREM2, CX3CR1, innate inflammatory pathways, and metabolite-sensitive epigenetic programs contribute to heterogeneous glial states. Neural stress, barrier impairment, dysbiosis, and immune activation may consequently become mutually reinforcing. Behavior and treatment are major ecological determinants. Cognition, mood, pain, fatigue, motor function, dysphagia, and executive capacity shape diet, meal timing, oral care, activity, and bowel function. Psychotropic, antiseizure, antiparkinsonian, anticholinergic, antimicrobial, laxative, analgesic, and acid-suppressive therapies can directly or indirectly alter the microbiota. Disease-associated signatures may therefore encode treatment history and care context. Disorder-specific evidence conforms to this model. In Parkinson disease, prodromal constipation, autonomic dysfunction, sleep disturbance, inactivity, diet, and medication complicate causal interpretation. In dementia, frailty, institutional care, altered meals, poor sleep, reduced mobility, and medication adherence may dominate late-stage profiles. Stroke can rapidly remodel the gut through sympathetic activation, impaired perfusion, barrier disturbance, immune suppression, dysphagia, altered nutrition, antimicrobials, and hospitalization. In epilepsy, seizures, sleep loss, ketogenic diets, antiseizure therapy, and vagal stimulation are influential exposures. In multiple sclerosis and spinal cord disease, dysmotility, neurogenic bowel, immobility, dietary adaptation, and recurrent medication are prominent. Depression and anxiety similarly combine neuroendocrine stress, sleep disruption, appetite change, inactivity, bowel symptoms, and psychotropic treatment. Human findings remain heterogeneous because geography, diet, extraction, sequencing, sample handling, statistical choices, stool consistency, disease severity, and medication vary substantially. Publication bias, small samples, multiple analytical choices, and selective emphasis on named taxa further constrain inference. Microbiome data are compositional, and sequencing predicts function less reliably than direct metabolomic or transcriptional assays. Neurological diagnoses also contain biologically distinct subgroups. The dominant direction of communication may differ by disease stage, treatment status, and autonomic function. These limitations restrict generalizability and may explain inconsistent taxonomic replication. Temporal and spatial resolution impose additional constraints. Neural signals may alter microbial transcription or metabolite

release within hours, whereas community composition may change only after sustained differences in transit, nutrition, or inflammation. A single stool specimen can miss rapid functional responses or combine signals from different disease phases. Fecal samples primarily represent the distal lumen and provide limited information about the small bowel, mucus layer, and epithelium-associated organisms. Repeated sampling should therefore be integrated with metabolomics, immune phenotyping, transit, permeability, physiological measures, and justified mucosal sampling. Taxonomic similarity does not establish functional equivalence. Different organisms may perform overlapping metabolic functions, whereas strains of one species may exhibit distinct biological properties. Host receptor abundance, epithelial integrity, dietary substrates, and intestinal chemistry determine whether a microbial product reaches an effective concentration. Strong inference therefore requires evidence of microbial activity, host target engagement, a relevant cellular response, and association with a defined clinical phenotype. Therapeutic studies remain difficult to interpret. Fiber, fermented foods, probiotics, prebiotics, postbiotics, and community transfer intervene at different ecological levels. Effects depend on baseline diet, resident microbiota, host genetics, disease stage, bowel physiology, and concurrent treatment. Host-directed interventions-including bowel management, sleep restoration, rehabilitation, psychological care, and vagal modulation-may change both symptoms and microbial measures without microbial mediation. Parallel improvement does not establish causality. Prespecified mechanistic outcomes, appropriate comparators, and formal mediation analyses are required. Research designs should also reflect time-dependent reciprocity. Longitudinal cohorts should begin during prodromal or early disease stages and use repeated sampling. *Transit, stool form, bowel frequency, constipation, laxative use, diet, meal timing, feeding route, sleep, circadian timing, stress, activity, autonomic function, disability, care environment, and medication should be treated as core variables.* Intervention studies must specify whether they manipulate the microbial or host compartment. Causal claims should demonstrate a sequence from microbial gene or metabolite change to target engagement, cellular response, and clinically relevant neurological outcome.

Conclusion: The intestinal microbiota, immune system, and nervous system constitute a reciprocal regulatory network. Microbial metabolites and ligands influence barriers, immunity, glia, and neural signaling. Neural and neuroendocrine activity simultaneously determines the conditions that select microbial communities and functions. In neurological disease, altered microbiota may precede pathology, follow it, amplify it, or reflect treatment and disability. Dysbiosis could be therefore best interpreted as a dynamic component of *host-microbe feedback* rather than as an isolated cause. Greater attention to neural-to-intestinal signaling can improve biomarker validity and intervention design. Functional evidence should supersede isolated taxonomic associations. Future therapies should identify the *dominant component of the feedback loop* within defined patient subgroups and verify modulation of the intended molecular and physiological pathway. Most neurological microbiome applications will remain in the research phase unless interactions with and mediation of target sites are demonstrated.

Keywords: gut microbiota; gut-brain axis; immune signaling; autonomic nervous system; neuroinflammation; neurological disorders; bidirectional interactions

STUDY OF THE EFFECT OF ORGANOSULPHUR EXTRACT OF ONION AND GARLIC JUICE ON HEAVY METAL-INDUCED RENAL TOXICITY IN MALE WISTAR RATS**N. Ogadinma ILOCHI**

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ABSTRACT

This study comparatively evaluated the effects of selected organosulphur-containing vegetables (specifically garlic, *Allium sativum*, and onion, *Allium cepa*) on renal function parameters, oxidative stress markers, in male Wistar rats exposed to cadmium-induced nephrotoxicity. A total of 30 male Wistar rats (80–120g) were randomly divided into six groups of six rats each: a control group, a cadmium-only group, an onion-only group, a garlic-only group, an onion plus cadmium group, and a garlic plus cadmium group. The study lasted for 28 days following an acclimatization period. Renal function was assessed by measuring serum markers including albumin, urea, total protein, and creatinine. Oxidative stress was evaluated via Superoxide Dismutase (SOD), Catalase (CAT), Reduced Glutathione (GSH), and Malondialdehyde (MDA) levels. Exposure to cadmium alone triggered severe renal impairment and oxidative stress, marked by statistically significant ($p < 0.001$) elevations in serum albumin, urea, total protein, and creatinine, alongside severe depletion of renal antioxidant defenses (SOD, CAT, GSH) and a heavy escalation in MDA. Conversely, administration of garlic or onion extracts alone maintained baseline physiological safety and enhanced antioxidant capacity. When co-administered with cadmium, both vegetables successfully mitigated tubular necrosis and oxidative damage. However, pairwise comparisons revealed that onion co-treatment achieved significantly superior attenuation ($p < 0.05$) of serum urea and creatinine compared to garlic, alongside better restoration of GSH and suppression of MDA. In conclusion, while both garlic and onion exhibit substantial antioxidant and nephroprotective efficacy against heavy metal-induced renal toxicity, onion extract demonstrates superior prophylactic and ameliorative outcomes, establishing it as a potent dietary and therapeutic candidate for preserving and restoring renal function. Keywords: Organosulphur compounds, Garlic, Onion, Cadmium, Nephroprotection, Oxidative stress, Renal function, Wistar rats.

GLOBAL HEALTH GOVERNANCE AND SOVEREIGN COMPLIANCE: RE-EVALUATING THE HUMAN RIGHT TO HEALTH UNDER THE WHO'S INTERNATIONAL HEALTH REGULATIONS

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ABSTRACT

The COVID-19 pandemic exposed persistent tensions between state sovereignty and the collective obligations enshrined in international health law. This paper critically re-evaluates the human right to health within the normative architecture of the World Health Organization's International Health Regulations (IHR 2005, as amended in 2024), examining whether the current compliance framework adequately reconciles national sovereignty with global health governance imperatives. Employing a doctrinal legal analysis complemented by a comparative case-study methodology, the study interrogates the enforceability gap embedded in the IHR's soft-law character, wherein state parties retain substantial discretion in reporting, response, and resource allocation despite binding notification obligations. The research draws on international human rights instruments, including the International Covenant on Economic, Social and Cultural Rights (ICESCR) and General Comment No. 14 in order to assess whether the right to health, as a justiciable entitlement, can meaningfully constrain sovereign non-compliance during public health emergencies of international concern (PHEICs). Through analysis of state practice during COVID-19, mpox, and recent PHEIC declarations, the paper identifies structural deficiencies: the absence of binding enforcement mechanisms, inequitable vaccine and resource distribution, and the marginalization of low- and middle-income countries in decision-making processes. It further examines the 2024 IHR amendments and the parallel Pandemic Treaty negotiations as attempts to recalibrate this sovereignty-compliance nexus, questioning whether procedural reforms translate into substantive accountability. The paper argues for a rights-based reconceptualization of compliance one that shifts from a state-centric enforcement model toward a solidarity-based framework grounded in shared responsibility, equity, and the extraterritorial obligations of states under international human rights law. It concludes by proposing normative and institutional reforms, including strengthened compliance review mechanisms, equity-oriented resource-sharing protocols, and enhanced WHO institutional authority, to bridge the gap between formal sovereign commitments and the substantive realization of the right to health in an interdependent world.

Keywords: Global Health Governance; International Health Regulations; Human Right to Health; State Sovereignty; Pandemic Preparedness; Compliance Mechanisms

**TRANSFORMING ADVERSITY INTO OPPORTUNITY: ASSESSING USER
SATISFACTION IN HOSPITAL TRANSFORMATION IN LIEU OF A PANDEMIC
THROUGH THE MULTI CORRIDOR EXPANSION MODEL FOR EPIDEMIC
MANAGEMENT AND ENVIRONMENTAL DESIGN ENHANCEMENT**

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ABSTRACT

The COVID 19 pandemic brought the world to a standstill, demonstrating the critical importance of preparedness and adaptation in the face of pandemics and epidemics. Pandemics and epidemics have been a persistent threat throughout human history, causing significant mortality and morbidity, as well as disrupting economies, societies, and politics. The COVID 19 pandemic, caused by the SARS CoV 2 virus, had a profound impact on healthcare systems worldwide, leading to hospitals transforming into pandemic centers. This case study, conducted at Riphah International Hospital (RIH) in Islamabad, Pakistan, explores the transformation of an existing facility into a pandemic center, highlighting the challenges faced in managing the pandemic conditions and ensuring the safety of the public and medical teams. The study was based on an observational study and data collection from end users with respect to transformation satisfaction and issues faced. Spatial segregation, logistics, air flow control, managing infection control, etc were major challenges faced and managed. Stress was high for the end users who facilitated in medical teams. The study emphasizes the critical importance of preparedness and adaptation in the face of pandemics epidemics, including the need for specialized training of medical personnel, dedicated COVID 19 units in hospitals, and a robust and resilient healthcare system that can manage future epidemics.

Keywords: hospital transformation, COVID-19 pandemic, hospital redesign, hospital environment, public health resilience.

PHARMACOPHORE MAPPING FOR ANTI-LUNG-CANCER AGENTS**Shom Prakash KUSHWAHA**

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ABSTRACT

Pharmacophore mapping is a ligand and structure based computational strategy used to identify the spatial arrangement of chemical features required for effective anti-lung-cancer activity. In lung cancer drug discovery, models are commonly developed against oncogenic targets such as epidermal growth factor receptor (EGFR), anaplastic lymphoma kinase (ALK), mesenchymal–epithelial transition factor (MET), vascular endothelial growth factor receptor, and other resistance-associated kinases. Typical pharmacophoric elements include hydrogen-bond donors and acceptors, hydrophobic regions, aromatic rings, ionisable groups, and excluded volumes. These features are generated from active ligands, protein–ligand crystal structures, or molecular dynamics-derived conformations, then validated using known actives, decoys, enrichment factors, and receiver operating characteristic analysis.

Validated models enable rapid virtual screening of large chemical libraries and support scaffold hopping, lead optimisation, and drug repurposing. Candidate compounds are usually prioritised by pharmacophore fit, molecular docking, binding-energy estimation, molecular dynamics simulation, and predicted absorption, distribution, metabolism, excretion, and toxicity properties. For EGFR-mutant non-small-cell lung cancer, mapping can distinguish interactions needed for wild-type, sensitising, and resistance mutations such as L858R, T790M, and C797S. Multi-target pharmacophore models may also help identify compounds capable of suppressing parallel signalling pathways and delaying resistance. Nevertheless, computational hits require biochemical, cellular, and in vivo validation because model quality depends on ligand diversity, protein conformation, protonation state, and dataset balance. Integration with QSAR and machine learning can further improve activity prediction and prioritisation. Overall, pharmacophore mapping reduces experimental workload and guides the rational discovery of selective, potent, and safer anti-lung-cancer agents.

Keywords: Pharmacophore mapping; Lung cancer; EGFR inhibitors; Virtual screening; Molecular docking

A RENEWABLE BIOBANK OF EBV-IMMORTALIZED LYMPHOCYTES FROM GLOBOZOOSPERMIA PATIENTS TO ADVANCE REPRODUCTIVE GENETICS AND ANDROLOGY RESEARCH

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ABSTRACT

Background: Globozoospermia is a rare form of male infertility characterized by round-headed sperm lacking acrosomes, leading to failed fertilization. Establishing lymphoblastoid cell lines (LCLs) via Epstein–Barr virus (EBV) transformation of B-lymphocytes provides a renewable source of patient-derived genetic material, supporting ongoing research into the molecular basis of spermatogenesis defects.

Methods: After obtaining informed consent, blood was collected from 7 individuals diagnosed with globozoospermia. Lymphocytes were isolated using Ficoll-Paque gradient and transformed with EBV (B95-8 strain) in the presence of cyclosporine A. Established LCLs were expanded, characterized, and cryopreserved. Quality control included mycoplasma detection, sterility testing, species verification (PCR), and screening for HBV, HCV, and HIV.

Results: Seven LCLs from globozoospermic patients were successfully generated. All contamination tests for mycoplasma, bacteria, and fungi were negative. Human origin was confirmed, and pathogen

screening for HBV, HCV, and HIV was negative. The cell lines were catalogued and stored in the vapor phase of liquid nitrogen.

Conclusion: EBV-transformed cell lines from globozoospermia patients represent a valuable and sustainable biobank resource for infertility research. While direct fertility treatment remains challenging, this resource enables unlimited access to high-quality genomic DNA for future genetic association studies, epigenetic analyses, and functional genomics to better understand the pathophysiology of globozoospermia. All 7 lines are available through the Iranian Biological Resource Centre (<https://ibrc.ir/>).

Keywords: Globozoospermia, lymphoblastoid cell lines, EBV-transformation, biobank

HEALTHCARE EDUCATION PROGRESSIVE ROLE IN BIOMEDICAL WASTE MANAGEMENT AND ENVIRONMENTAL SUSTAINABILITY

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ABSTRACT

Human health is the primary goal of everyone globally. Health is wealth can be achieved only by precaution and awareness. Healthcare education is one of the prime steps in promoting awareness regarding biomedical waste management and achieving environmental sustainability. Biomedical waste generated from hospitals and any other sources is seriously concern globally. Professionals and best trainers are required to handle biomedical waste. Segregation, collection, transportation, treatment, and disposal are the main steps that should be carefully taken before handling these wastes. Educational programs and awareness are the key steps to controlling the effects of this waste on society. Waste-management protocol compliance can be strengthened by frequent seminars, demonstrations, and awareness campaigns. Additionally, waste reduction, appropriate material recycling, energy and water conservation, and the adoption of sustainable technologies can all be promoted through healthcare education. In order to promote safer healthcare practices, safeguard public health, and help achieve the Sustainable Development Goals, healthcare education is a potent instrument for fostering a culture of safety, accountability, and sustainability.

Keywords: Education, Biomedical Waste, Environmental Sustainability, Healthcare, SDG-3, Waste Management

**PATIENT SATISFACTION WITH PUBLIC HEALTHCARE SERVICES IN BANGLADESH:
AN INCLUSIVE ASSESSMENT OF ACCESSIBILITY, QUALITY, EQUITY, AND SERVICE
DELIVERY****Dr. Md. Ruhul AMIN**

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ABSTRACT

Public health services in Bangladesh are vital for access to basic health care particularly of the poor and disadvantaged sections of the population. Despite major advances in health infrastructure, service coverage and health outcomes, patients still experience problems with overcrowding, long waiting times, poor access to facilities, shortages of medicines, limited diagnostic services, unhelpful staff and unequal access. The encountered problems make it necessary to systematically measure the patient satisfaction as a significant element in the assessment of the quality of care and the efficacy of the services given. The importance of this research is that the patients' impressions may aid policy makers, healthcare administrators and healthcare professionals to identify the limitations and establish more inclusive, accessible, equitable and patient-centered public healthcare services. To investigate the overall satisfaction level of patients with the public health care in Bangladesh with special emphasis on accessibility, quality, equality, responsiveness and service delivery. The research was carried out utilizing mixed method of research, which is a blend of quantitative and qualitative methodologies. Primary data was collected via structured surveys and interviews while secondary data was collected from government publications, policy papers, academic literature and relevant institutional sources. Descriptive statistics and inferential methods were used to examine the quantitative data of the research, while the qualitative data were evaluated using theme analysis. The preliminary results will indicate that patients are generally satisfied with the service and that the level of satisfaction of patients varies by several factors: the waiting time; availability of medicines, diagnostic facilities; behavior of the staff; accessibility; cost of service; cleanliness; the perceived level of the quality of service. The research suggests to improve service quality, responsiveness, infrastructure, accountability and equal access to boost the patient satisfaction and make public healthcare more inclusive in Bangladesh.

Keywords: Patient satisfaction; public healthcare services; accessibility; healthcare quality; equity and inclusive service delivery.

FLAGELLAR ASSEMBLY ROLE IN SALMONELLA FLHA DELETED STRAIN BIOFILM FORMATION

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ABSTRACT

Biofilms formation is a major hazardous problem from both clinical and environmental perspective. Flagellum-mediated motility is important for biofilm formation by several gram-negative bacteria. >50 genes are involved in flagellar biosynthesis and function in *Salmonella typhimurium*. The flagella basal body is a representative of Type III protein secretion systems; used by several gram-negative bacterial pathogens to colonize foreign tissues and substrates. The mechanism of flagellar assembly was analyzed in *S. typhimurium*, using bioinformatics analysis to identify conserved structural elements. In this study, *FliI* a flagellar protein that is needed for flagellar assembly and may be involved in a specialized protein export pathway was cloned and overexpressed. *FlhA* deleted mutant salmonella strain SJW1616 was used to transform *FliI* overproducing plasmid by electroporation. Using vital dyes (Alexafluor 488), visualization of motility was observed in wild type, SJW1616 ($\Delta flhA$) and *FlhA* transductant strain which was further assessed by biofilm formation ability. Swimming, swarming motility along with significantly reduced biofilm formation was observed in SJW1616 ($\Delta flhA$) compared to wild type and *FlhA* transductant strains. This study will extend initial evidence that *FliI* plays important role in flagellar export system and flagellum-mediated rotation is critical for swimming, swarming motility and biofilm formation. The flagellar basal body is a particularly convenient drug target, since the architecture of most its components has been determined near atomic resolution and it is an ancient evolutionarily conserved macromolecular assembly. The knowledge gained will also have implications for elucidation of the mechanistic design principles underlying protein secretion complexes.

Keywords: *FliI*, *Salmonella*, Alexa fluor staining, *FlhA*, Flagellar motility

AI-ENABLED MULTISCALE MOLECULAR MODELLING AND ADVANCED DATA ANALYTICS FOR THE IDENTIFICATION OF PHENOLIC LEAD MOLECULES AGAINST HUMAN METAPNEUMOVIRUS

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ABSTRACT

Human metapneumovirus (hMPV) is a deadlier respiratory virus for which no specific antiviral therapy or vaccine exists to date. Thus, it needs urgent development of potent antiviral drug for the treatment. We first screened over 3,000 phenolic compounds towards the target protein of hMPV (PDB ID: 6W16) employing AI enabled multiscale molecular modelling techniques and advanced data analytic tools for the identification possible hMPV inhibitors.

All five HITs (Corilagin, Haematoxylin, Chebulic acid, Polydatin and Verbascoside) had better docking scores (-10.64 to -8.41 kcal/mol) and their stable protein-ligand interactions and compact conformations were confirmed by 300 ns MD simulations with RMSD (2.61-3.45 Å) and RMSF (1.53-2.03 Å). The compact conformational behaviour was observed during the data analysis by PCA, cluster analysis, DCCM and free energy landscape analyses. Further binding free energies calculated by MM/GBSA binding free energies, it was found in the range of -41.779 to -60.541 kcal/mol

Analysis of all these in silico results, with advanced data analytics identifies Corilagin, Haematoxylin, Chebulic acid, Polydatin and Verbascoside as lead molecules for hMPV inhibition and a potential basis for future in vitro, in vivo and structure-based antiviral drug development.

Keywords: Human Metapneumovirus; AI-Enabled Virtual Screening; Phenolic Compounds; Antiviral Drug Discovery

SUSTAINABLE ADSORPTIVE REMOVAL OF PHARMACEUTICALS FROM WASTEWATER: ONE STEP FOR HEALTHCARE

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ABSTRACT

Recently, wastewater from hospitals and pharmaceutical industries has become a global concern. This wastewater contains many pharmaceutical drugs and other toxic chemicals. Untreated wastewater contains numerous pharmaceutical drugs and other toxic chemicals that pose a major threat to life. The development of affordable and sustainable materials and technologies for pharmaceutical wastewater cleanup has consequently gained international attention. Because of its ease of use and operational flexibility, adsorption has gained popularity and is today one of the most widely used methods for treating pharmaceutical wastewater. Materials derived from natural resources, such as plants, soil, and any other, are attractive, accessible, and environmentally friendly alternatives for treating pharmaceutical wastewater. With a focus on hazardous pharmaceuticals and other emerging pollutants, this study aims to thoroughly assess the potential of naturally occurring waste materials as a sustainable adsorbent for treating pharmaceutical wastewater. It also highlights their capacity for adsorption, regeneration, and underlying removal mechanisms, as well as their promise for important environmental applications in sustainable pharmaceutical wastewater treatment.

Keywords: Adsorptive removal, Pharmaceutical drugs, Healthcare, SDG-6, Toxic chemicals, Wastewater treatment

STEM CELL-BASED TISSUE REPAIR AND REGENERATION**Madhuri GAIKWAD**

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ABSTRACT

Age-related tissue damage is a major biological challenge associated with progressive decline in tissue structure and function, reduced regenerative capacity, and impaired healing. Stem cell-based tissue repair and regeneration has emerged as a promising strategy for restoring damaged tissues by harnessing the self-renewal and differentiation potential of stem cells. Various stem cell populations, including mesenchymal stem cells, induced pluripotent stem cells, and tissue-specific progenitor cells, are being investigated for their ability to support tissue regeneration and modulate the local repair environment. Emerging approaches combine stem cells with biomaterials, tissue-engineered scaffolds, extracellular vesicles, growth factors, and advanced delivery systems to improve cell survival, differentiation, and functional integration. In age-related tissue damage, these strategies may help overcome impaired regenerative signaling, cellular senescence, chronic inflammation, and changes in the tissue microenvironment. Tissue engineering and regenerative medicine approaches further provide opportunities to create supportive three-dimensional environments that promote tissue restoration. Despite significant advances, challenges such as limited cell survival, immune responses, variability in stem cell preparations, safety concerns, manufacturing complexity, and regulatory requirements remain important barriers to clinical translation. Continued research into stem cell biology, biomaterial design, cell-free therapies, and personalized regenerative strategies may improve the effectiveness of tissue repair in age-related damage. In conclusion, stem cell-based regenerative approaches represent an emerging and potentially transformative field for the repair and restoration of age-associated tissue injury.

Keywords: Stem Cells, Tissue Repair, Regeneration, Aging, Tissue Engineering, Mesenchymal Stem Cells, Induced Pluripotent Stem Cells, Regenerative Medicine

**PHYSICOCHEMICAL, BIOLOGICAL, AND HEAVY METAL ANALYSIS AND
ASSESSMENT OF WATER AND SEDIMENT AT THE LLUZHAN SPA, PODUJEVË,
KOSOVO**

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ABSTRACT

Our study is primarily concerned with analyzing the chemical parameters of the spring-fed waters at the Luzhan Spa and correlating the actual parameters with those permitted by EU criteria. For a thorough analysis, water samples were collected from three distinct locations, which we have designated as (M1, M2, M3). Additionally, the values of various parameters, including physico-chemical, toxic, and organoleptic, were examined, with a focus on the samples' electrical conductivity, pH, temperature, sulfates, nitrates, and heavy metal content. The findings demonstrate that the majority of the examined parameters, with the exception of lead metal, which surpasses legal limits and poses serious health hazards to people should it be consumed, are within acceptable ranges in accordance with EU regulations. Additionally the primary risk of bioaccumulation in aquatic organisms, as well as a secondary risk if fish are consumed. To maintain the preservation of this environment, which has significant importance for our nation's biodiversity, recommendations have been made for ongoing monitoring, tourist limitations, and the use of this water for agricultural and recreational purposes

Keywords: Water purity Luzhan spa, Physical-chemical analysis EU norms Heavy metals surveillance keeping the ecology intact

ANTIDIABETIC, ANTIOXIDANT AND TISSUE PROTECTIVE EFFECTS OF ALUMINA, IRON-ALUMINA COMPOSITE AND SILICA-CHITOSAN HYBRID NANOPARTICLES IN ALLOXAN-INDUCED DIABETES IN RABBITS**Hadia TABBASUM**

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ABSTRACT

Diabetes mellitus is defined as a chronic metabolic disorder causing hyperglycemia, oxidative stress and multiple organ complications. The objective of the present study was to investigate the antidiabetic, antioxidant and tissue protective effects of alumina nanoparticles, iron–alumina nanocomposite and silica–chitosan nanohybrid in alloxan induced diabetic rabbits. Alloxan was used to induce diabetes in one dose and experimental animals were grouped as a control, diabetic animals and animals treated with nanoparticles. Therapeutic efficacy was evaluated by biochemical, antioxidant and histopathological analyses. Significantly elevated blood glucose, ALT and AST, urea, creatinine, cholesterol, triglycerides, LDL and VLDL levels, decreased HDL, decreased serum amylase activity of the diabetic group were indicative of severe metabolic disturbances and organ damage. The activities of antioxidant enzymes such as catalase (CAT), superoxide dismutase (SOD), and glutathione peroxidase (GPx) were found to be significantly lowered and Malondialdehyde (MDA) level was significantly elevated, indicating oxidative stress. Histopathological studies showed significant degenerative changes in liver, kidney, pancreas and spleen tissues. Nanoparticles were significantly effective in restoring biochemical and antioxidant parameters as well as tissue architecture. Silica–chitosan nanohybrid was the most effective treatment in liver function, lipid profile, antioxidant status and pancreatic recovery, and iron–alumina nanocomposite was the most effective treatment in glucose-lowering and nephroprotective effect and alumina nanoparticles exhibited moderate effect among all treatments. Overall, the results demonstrate that nanoparticle based therapy is highly promising against alloxan induced diabetes with special reference to silica–chitosan and iron–alumina nanoparticles for antidiabetic, antioxidant, hepatoprotective, nephroprotective and tissue regenerative effect. These nanoparticles could be potential therapeutic agents for diabetes and diabetic complications.

Keywords: Alloxan monohydrate, Alumina nanoparticles, Antioxidant enzymes, Diabetes Mellitus, Histopathology, Iron-Alumina nanocomposite, Oxidative stress, Silica-Chitosan nanohybrid.

THE ROLE OF FORENSIC MEDICINE AND PSYCHIATRY IN IDENTIFYING AND DOCUMENTING FORCED MARRIAGE

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ABSTRACT

Forced marriage, classified by the World Health Organization (2024) as a form of gender-based violence, requires specialized forensic and psychiatric assessment for accurate identification and legal documentation. Despite recent legislative development including Directive (EU) 2024/1385, which mandates criminalization of forced marriage as a standalone offence, and Law No. 252/2025 in the Republic of Moldova healthcare and judicial systems remain inadequately equipped with standardized protocols for evidence collection and trauma assessment.

This article examines the clinical and forensic indicators of forced marriage, including physical markers of intimate partner violence, reproductive coercion, and psychological sequelae consistent with complex trauma and coercive control. The framework established by the Istanbul Convention (Article 33) and reinforced by GREVIO's 2023 baseline evaluation of Moldova emphasizes the necessity of trauma-informed approaches in forensic examination and psychiatric evaluation.

The article identifies critical gaps in current practice: the absence of standardized forensic protocols for documenting coercive control mechanisms, insufficient psychiatric expertise in recognizing complex trauma presentations specific to forced marriage, and poor coordination between medical and judicial institutions. Comparative analysis of forensic pathways in the United Kingdom, Sweden, and Germany demonstrates that effective identification depends upon multidisciplinary training, specialized victim assessment tools, and systematic integration of health findings into criminal proceedings. The article concludes that forensic medicine and psychiatry must assume a primary evidentiary role in establishing the non-consensual character of forced marriage, thereby strengthening both victim protection and prosecution outcomes under current European legislation.

Keywords: forced marriage, forensic medicine, psychiatric evaluation, coercive control, trauma-informed care, Directive (EU) 2024/1385, evidence documentation, gender-based violence.

PROGRESSIVE ARTERIAL STIFFENING IN HYPERTENSIVE PREGNANCIES: A LONGITUDINAL ASSESSMENT OF MATERNAL VASCULAR ADAPTATION

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ABSTRACT

Background: Normal pregnancy requires substantial cardiovascular adaptation, including reduced systemic vascular resistance and increased arterial compliance. In hypertensive disorders of pregnancy (HDP), these physiological mechanisms are impaired, leading to endothelial dysfunction, increased vascular resistance, and arterial stiffening. Longitudinal evaluation of vascular parameters may provide additional information regarding the progression of maternal cardiovascular dysfunction during pregnancy.

Aim: To evaluate longitudinal changes in arterial stiffness and central hemodynamics in women with hypertensive disorders of pregnancy compared with normotensive pregnant women. **Materials and**

Methods: This prospective longitudinal cohort study included 200 pregnant women, divided into two groups: 100 women with HDP, including gestational hypertension and preeclampsia, and 100 normotensive pregnant controls. Cardiovascular assessment was performed during the second trimester (20–24 weeks) and repeated during the third trimester (32–36 weeks). Arterial stiffness was assessed using aortic pulse wave velocity (PWVao) and augmentation index (AIx), while central and peripheral blood pressure parameters were evaluated non-invasively using validated oscillometric systems.

Results: Women with HDP demonstrated substantially greater arterial stiffness than normotensive controls throughout pregnancy. Second-trimester PWVao was 10.92 ± 1.36 m/s in the HDP group compared with 8.21 ± 0.99 m/s in controls. During the third trimester, the difference increased further, with PWVao reaching 12.37 ± 1.68 m/s versus 8.72 ± 0.75 m/s, respectively. Women with HDP also presented significantly higher AIx and central and peripheral blood pressure values (all $p < 0.001$). The longitudinal pattern indicates progressive deterioration of maternal arterial properties as pregnancy advances in women affected by hypertensive disorders. **Conclusions:** Hypertensive pregnancies are characterized by marked and progressive impairment of maternal vascular function. Increased PWVao and AIx distinguish women with HDP from normotensive pregnancies as early as the second trimester, with further deterioration during late gestation. Longitudinal assessment of arterial stiffness may

represent a useful complementary approach for identifying abnormal maternal cardiovascular adaptation and improving cardiovascular risk stratification during pregnancy.

Keywords: hypertensive disorders of pregnancy; preeclampsia; arterial stiffness; pulse wave velocity; augmentation index; maternal hemodynamics.

DOUBLE RETROGRADE TRANS-FEMORAL ACCESS TECHNIQUE (DORE-TRACT) FOR ENDOVASCULAR TREATMENT OF COMBINED ILIAC AND FEMORAL ARTERY STENOSIS: TECHNICAL DESCRIPTION AND PRELIMINARY EXPERIENCE

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ABSTRACT

OBJECTIVE: Synchronous endovascular treatment of combined aortoiliac and femoropopliteal lesions requires strategic access planning to avoid prolonged procedures and added risks. Single-access approaches often lack flexibility, limit equipment caliber, and complicate complication management. This study evaluates the preliminary efficacy of the Double Retrograde Trans-femoral Access Technique (DoRe-TRACT), a dual-access strategy designed to optimize the management of complex multi-segment peripheral arterial disease.

Materials and Methods: The DoRe-TRACT was utilized in 16 patients presenting with combined aortofemoral and femoropopliteal stenoses. The strategy involves two stages. First, an antegrade approach is performed via contralateral retrograde trans-femoral access to treat external iliac artery (EIA) and femoropopliteal lesions using a long vascular sheath. Subsequently, an ipsilateral retrograde trans-femoral access is established to treat common iliac artery (CIA) lesions. This dual-access method allows for large-bore sheaths, enabling balloon angioplasty, atherectomy, and covered stenting.

Results : The technique was applied with a 100% technical success rate across all 16 patients. Procedural adaptability permitted the execution of multiple intervention modalities in both antegrade and retrograde directions during a single session. There were no procedure-related complications, and the dual-access setup provided a robust safety net for potential complication management, such as treating distal embolization via the contralateral access.

Conclusion: The DoRe-TRACT provides a safe, efficient, and versatile alternative for the synchronous treatment of complex multi-segment arterial disease. By overcoming the limitations of brachial and popliteal approaches, this strategy ensures procedural stability, complication management, and full operator control during interventions.

Keywords: aortoiliac stenosis, endovascular treatment, peripheral arterial disease.

THERAPEUTIC EFFECTS of ELAMIPRETIDE on CARDIAC ELECTRICAL, HEMODYNAMIC, and HISTOPATHOLOGICAL PARAMETERS in A RAT MODEL of 5-FLUOROURACIL-INDUCED CARDIOTOXICITY
FLOROURASİL KAYNAKLI SIÇAN KARDİYOTOKSİSİTE MODELİNDE ELAMİPRETİDİN KALP ELEKTRİKSEL, HEMODİNAMİK VE HISTOPATOLOJİK PARAMETRELER ÜZERİNDEKİ TERAPÖTİK ETKİLERİ

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ABSTRACT

Objective: This study aimed to investigate the therapeutic effects of Elamipretide (Ela), a mitochondria-targeted antioxidant, on cardiac electrical, hemodynamic, and histopathological parameters in an acute rat model of cardiotoxicity induced by 5-Fluorouracil (5-Fu), a chemotherapeutic agent.

Materials and Methods: Twenty-eight adult female Wistar-Albino rats were randomly divided into four groups: Control, Ela (1.5 mg/kg/day, i.p., 14 days), 5-Fu (30 mg/kg/day, i.p., 7 days), and 5-Fu+Ela. Simultaneous electrocardiography (ECG) and impedance cardiography (ICG) recordings were obtained under anesthesia using the Biopac MP36 system prior to the initiation of injections and before sacrifice. Heart rate variability (HRV) analyses were calculated using MATLAB R2026a software. Left ventricular tissues were harvested, processed into paraffin blocks, and histopathologically examined using Hematoxylin-Eosin, Alizarin Red S (calcium accumulation), and Masson's Trichrome (fibrosis) staining.

Results: Administration of 5-Fu significantly reduced heart rate and prolonged PR and QRS conduction times. In the HRV analysis, time-domain (SDNN, RMSSD, SDSD, TINN) and non-linear (SD1, SD2, Sample Entropy) parameters were found to collapse dramatically in the 5-Fu group. ICG data showed a decrease in the dZ/dt_{max} value, an indirect indicator of left ventricular contractility, in the 5-Fu group. Histopathologically, widespread myofibrillar loss, interstitial edema, necrosis, mononuclear inflammation, focal calcium deposition sites, and interstitial/perivascular fibrosis were detected in the 5-Fu group. Elamipretide treatment, on the other hand, significantly improved ECG conduction durations, all collapsed HRV parameters, and the suppressed dZ/dt_{max} hemodynamic value. Furthermore, it markedly suppressed tissue myofibrillar damage, calcium accumulation foci, and the fibrotic process, restoring tissue morphology close to that of the control group.

Conclusion: In conclusion, 5-Fu causes cardiac conduction slowing, autonomic dysfunction, and severe tissue damage, whereas Ela treatment effectively reverses this electrical, hemodynamic, and structural toxicity.

Keywords: 5-Fluorouracil, Elamipretide, Heart Rate Variability, Impedance Cardiography, Cardiotoxicity.

ÖZET

Amaç: Bu çalışmada, bir kemoterapötik ajan olan 5-Fluorourasil (5-Fu) ile indüklenen akut sıçan kardiyotoksisite modelinde, mitokondriyi hedefleyen bir antioksidan olan Elamipretidin (Ela) kalp elektriksel, hemodinamik ve histopatolojik parametreleri üzerindeki terapötik etkilerinin araştırılması amaçlanmıştır.

Materyal ve Yöntem: Çalışmada 28 adet yetişkin Wistar-Albino dişi sıçan rastgele dört gruba ayrıldı: Kontrol, Ela (1.5 mg/kg/gün, i.p., 14 gün), 5-Fu (30 mg/kg/gün, i.p., 7 gün) ve 5-Fu+Ela. Enjeksiyonlar başlamadan önce ve sakrifikasyon öncesinde hayvanlardan anestezi altında Biopac MP36 sistemi kullanılarak eş zamanlı elektrokardiyografi (EKG) ve impedans kardiyografi (ICG) kayıtları alındı. Kalp hızı değişkenliği (HRV) analizleri MATLAB R2026a yazılımı üzerinden hesaplandı. Sol ventrikül

dokuları çıkarılarak parafin bloklama işlemlerinin ardından Hematoksilen-Eozin (H&E), Alizarin Red S (kalsiyum birikimi) ve Masson Trikrom (fibrozis) boyamalarıyla histopatolojik olarak incelendi.

Bulgular: 5-Fu uygulamasının kalp hızını belirgin şekilde düşürdüğü; PR ve QRS iletim sürelerini uzattığı saptanmıştır. HRV analizinde zaman alanı (SDNN, RMSSD, SDSD, TINN) ve doğrusal olmayan (SD1, SD2, Sample Entropy) parametrelerin 5-Fu grubunda dramatik şekilde çöktüğü belirlenmiştir. ICG verilerinde sol ventrikül kontraktilesinin dolaylı bir göstergesi olan dZ/dt_{max} değerinin 5-Fu ile azaldığı görülmüştür. Histopatolojik olarak 5-Fu grubunda yaygın miyofibriler kayıp, interstisyel ödem, nekroz, mononükleer inflamasyon, fokal kalsiyum çökelme odakları ile interstisyel/perivasküler fibrozis tespit edilmiştir. Elamipretid tedavisi ise EKG iletim sürelerini, çöken tüm HRV parametrelerini ve baskılanan dZ/dt_{max} hemodinamik değerini anlamlı ölçüde iyileştirmiştir. Ayrıca dokulardaki miyofibriler hasarı, kalsiyum birikim odaklarını ve fibrotik süreci belirgin şekilde baskılayarak kontrol grubu morfolojisine yaklaştırmıştır.

Sonuç: Elde edilen bulgular, 5-Fu uygulamasının kalbin iletim sisteminde yavaşlamaya, otonom regülasyonda hasara ve ciddi doku hasarına yol açtığını, Ela tedavisinin ise bu elektriksel, hemodinamik ve yapısal toksisiteyi tedavi sağlayarak güçlü bir şekilde geri çevirebileceğini ortaya koymaktadır.

Anahtar Kelimeler: 5-Florourasil, Elamipretid, Kalp Hızı Değişkenliği, İmpedans Kardiyografi, Kardiyotoksiste.

PSİKİYATRİ HEMŞİRELİĞİNDE YAPAY ZEKA UYGULAMALARI: KULLANIM ALANLARI VE SINIRLILIKLAR*ARTIFICIAL INTELLIGENCE APPLICATIONS IN PSYCHIATRIC NURSING: AREAS OF USE AND***Res. Asst. Şevval YEYİT BOZDEMİR**

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ÖZET

Amaç: Yapay zeka, ruh sağlığı hizmetlerinde semptom değerlendirme, risk tahmini, klinik karar desteği, psikoeğitim ve bireyselleştirilmiş bakıma ek olarak akıllı telefon uygulamaları, sanal gerçeklik ve yapay zekâ destekli sohbet robotları gibi dijital terapötik müdahalelerin geliştirilmesi ve uygulanmasında giderek daha fazla kullanılmaktadır (Lu ve diğerleri, 2026; Reyes ve diğerleri, 2026; Can Öz ve Duran, 2026). Bu derlemenin amacı, psikiyatri hemşireliği uygulamalarında yapay zekânın kullanım alanlarını ve bu teknolojilerin hemşirelik bakımı üzerindeki etkilerini güncel literatür doğrultusunda değerlendirmektir. **Yöntem:** Bu çalışma, literatür taramasına dayalı bir derleme niteliği taşımaktadır. Psikiyatri hemşireliğinde yapay zekâ kullanımına ilişkin son beş yılda yayımlanan çalışmalar, PubMed ve Google Scholar gibi veri tabanlarında “artificial intelligence”, “psychiatric nursing”, “mental health” ve “generative artificial intelligence” anahtar kelimeleri kullanılarak taranmıştır.

Bulgular: İncelenen çalışmalarda, yapay zekânın ruh sağlığı hizmetlerinde farklı kullanım alanları ile sağladığı yararlar ve sınırlılıkları ele alınmıştır. Auf ve ark. (2025), yapay zekânın ruh sağlığı hizmetlerinde klinik karar desteği, erken tanılama ve öz yönetimi desteklese de klinik uygulamaya entegrasyon açısından sınırlılıklar bulunduğunu bildirmiştir. Benzer şekilde, Reyes ve diğerleri (2026) yaptıkları çalışmada, yapay zekâ destekli araçların psikoeğitim, duygusal destek ve stres yönetimini desteklediğini vurgulamıştır. Yapılan bir sistematik derlemede, yapay zekâ destekli bilişsel davranışçı terapi uygulamalarının depresyon, anksiyete ve stres belirtilerini azaltmada etkili olduğu, ancak veri gizliliği ve etik sorunların sürdüğü belirtilmiştir (Ravikrishnan, 2026). Li ve Song (2026), yapay zekâ destekli sanal gerçeklik uygulamalarının ruh sağlığı eğitimi destekleyerek stres yönetimine katkı sağladığını bildirmiştir. Albikawi ve diğerleri (2025)’nin çalışması, hemşirelik öğrencilerinin yapay zekâ destekli ruh sağlığı uygulamalarına yönelik algılarının genel olarak olumlu olduğunu göstermiştir. Ayrıca, Tuncer ve Çetinkaya Duman (2025) ise psikiyatri hemşirelerinin yapay zekâyı bakım süreçlerini destekleyen yararlı bir araç olarak değerlendirmekle birlikte empati, terapötik ilişki ve klinik yargının yerini alamayacağını vurgulamıştır. **Sonuç:** Yapay zekâ, psikiyatri hemşireliği bakım süreçlerini desteklemede önemli bir potansiyele sahip olabilir. Ancak klinik uygulamalara güvenli ve etkili biçimde entegre edilebilmesi için etik ve veri güvenliği ilkeleri göz önünde bulundurulmalı, psikiyatri hemşireleri ve farklı örneklerde yürütülecek uzun dönemli ve yüksek kaliteli araştırmalarla mevcut kanıtların güçlendirilmesi önerilmektedir.

ABSTRACT

Aim: Artificial intelligence is increasingly being used in mental health services for symptom assessment, risk prediction, clinical decision support, psychoeducation, and personalized care, as well as in the development and implementation of digital therapeutic interventions such as smartphone apps, virtual reality, and AI-powered chatbots (Lu et al., 2026; Reyes et al., 2026; Can Öz and Duran, 2026). The purpose of this review is to evaluate the areas of application of artificial intelligence in psychiatric nursing practice and the effects of these technologies on nursing care in light of the current literature. **Method:** This study is a literature-based review. Studies published in the last five years regarding the use of artificial intelligence in psychiatric nursing were searched in databases such as PubMed and Google Scholar using the keywords “artificial intelligence,” “psychiatric nursing,” “mental health,” and “generative artificial intelligence.”

Results: The reviewed studies addressed the benefits and limitations of artificial intelligence in mental health services across various application areas. Auf et al. (2025) reported that while artificial intelligence supports clinical decision-making, early diagnosis, and self-management in mental health services, there are limitations regarding its integration into clinical practice. Similarly, in their study, Reyes et al. (2026) emphasized that AI-supported tools facilitate psychoeducation, emotional support, and stress management. A systematic review indicated that AI-supported cognitive-behavioral therapy applications are effective in reducing symptoms of depression, anxiety, and stress, though data privacy and ethical concerns persist (Ravikrishnan, 2026). Li and Song (2026) reported that AI-supported virtual reality applications contribute to stress management by supporting mental health education. A study by Albikawi et al. (2025) showed that nursing students' perceptions of AI-supported mental health applications were generally positive. Furthermore, Tuncer and Çetinkaya Duman (2025) noted that while psychiatric nurses view AI as a useful tool to support care processes, they emphasized that it cannot replace empathy, the therapeutic relationship, or clinical judgment. **Conclusion:** Artificial intelligence may hold significant potential for supporting psychiatric nursing care processes. However, to ensure its safe and effective integration into clinical practice, ethical and data security principles must be taken into account; it is recommended that psychiatric nurses and long-term, high-quality research conducted across diverse samples be used to strengthen the existing evidence.

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HİPOTALAMO-HİPOFİZER-GONADAL VE TİROİD AKS HORMONLARI İLE SPERMİYOGRAFİ PARAMETRELERİ ARASINDAKİ İLİŞKİNİN RETROSPEKTİF DEĞERLENDİRİLMESİ

THE RELATIONSHIP BETWEEN HYPOTHALAMIC-PITUITARY-GONADAL AND THYROID AXIS HORMONES AND SEMEN ANALYSIS PARAMETERS: A RETROSPECTIVE EVALUATION

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ÖZET

Amaç: Spermioyogram parametreleri ile serum FSH, LH, testosteron, prolaktin ve TSH düzeyleri arasındaki ilişkinin retrospektif değerlendirilmesi amaçlanmıştır.

Materyal ve Yöntem: Tokat Gaziosmanpaşa Üniversitesi Müdahale Olmayan Bilimsel Araştırmalar Etik Kurulu onayıyla (26-MOBAEK-238), 295 infertilite hastası retrospektif olarak incelenmiştir. Hastalar WHO 2021 eşiklerine göre sperm konsantrasyonu (≥ 16 milyon/mL), total sperm sayısı (≥ 39 milyon), ileri motilite ($\geq 30\%$) ve total motilite ($\geq 42\%$) gruplarına ayrılmıştır. Hormon düzeyleri Kruskal-Wallis ve Dunn post-hoc testleriyle, hormon-spermioyogram ilişkileri Spearman korelasyon analiziyle değerlendirilmiştir.

Bulgular: Sperm konsantrasyonu, total sperm sayısı ve total motilite gruplamalarında FSH ve LH, azospermi grubunda diğer gruplardan yüksek bulunmuştur (FSH: tüm karşılaştırmalarda $p < 0.001$; LH: azospermi-oligozoospermi $p = 0.019$; azospermi-düşük: $p = 0.011$ ve $p = 0.028$, azospermi-normal: tüm p değerleri < 0.001). İleri motiliteye göre FSH ve LH azospermi grubunda normal gruptan yüksek bulunmuştur (her ikisi için $p < 0.001$). Testosteron düzeyi azospermi grubunda; sperm konsantrasyonu ve total sperm sayısına göre normal gruptan (sırasıyla $p = 0.032$ ve $p = 0.026$), total sperm sayısı ve total motiliteye göre ise düşük gruptan düşük bulunmuştur (sırasıyla $p = 0.025$ ve $p = 0.010$). Prolaktin, dört grupta da farklılık göstermemiştir. TSH düzeyi sperm konsantrasyonu ve total sperm sayısına göre normal grupta azospermi grubundan ($p = 0.010$ ve $p = 0.026$), ileri motiliteye göre normal grupta düşük gruptan yüksek bulunmuştur ($p = 0.024$).

FSH ve LH; sperm konsantrasyonu, total sperm sayısı, motil sperm sayısı, total motil sperm sayısı, ileri motil sperm sayısı, total ileri motil sperm sayısı ve total non-motil sperm sayısı ile negatif korelasyon göstermiştir (FSH: $\rho = -0.316$ ile -0.244 , $p \leq 0.003$; LH: $\rho = -0.199$ ile -0.165 , $p = 0.016-0.048$). LH ayrıca motil sperm yüzdesiyle negatif ($\rho = -0.200$), non-motil sperm yüzdesiyle pozitif korelasyon göstermiştir ($\rho = 0.199$; ikisi $p = 0.016$). Prolaktin yalnız total non-motil sperm sayısı ile negatif korelasyon göstermiştir ($\rho = -0.242$; $p = 0.042$). Testosteron ve TSH korelasyon göstermemiştir.

Sonuç: FSH spermioyogram parametreleriyle en tutarlı, LH ise daha zayıf ilişkili hormondur. Testosteron grup farklılıklarına rağmen korelasyon göstermemiş; prolaktin yalnız total non-motil sperm sayısı ile zayıf negatif ilişki göstermiştir. TSH sonuçları düşük örneklem büyüklüğü ($n = 29$) nedeniyle dikkatle yorumlanmalıdır.

Anahtar Kelimeler: Erkek infertilitesi, Spermioyogram, FSH, LH, Testosteron, Prolaktin, TSH

ABSTRACT

OBJECTIVE: To evaluate relationships between semen parameters and serum FSH, LH, testosterone, prolactin, and TSH levels.

Materials and Methods: With approval from the Tokat Gaziosmanpaşa University Non-Interventional Scientific Research Ethics Committee (26-MOBAEK-238), 295 infertile men were retrospectively reviewed. Patients were grouped using WHO 2021 reference values: sperm concentration (≥ 16 million/mL), total sperm count (≥ 39 million), progressive motility ($\geq 30\%$), and total motility ($\geq 42\%$).

Group differences were assessed by Kruskal-Wallis and Bonferroni-adjusted Dunn post hoc tests; correlations by Spearman analysis.

Results: FSH and LH were highest in the azoospermia group across sperm concentration, total sperm count, and total motility classifications (FSH: all azoospermia comparisons $p < 0.001$; LH: azoospermia-oligozoospermia $p = 0.019$, azoospermia-low $p = 0.011$ and 0.028 , azoospermia-normal all $p < 0.001$). For progressive motility, both were higher in azoospermia than normal ($p < 0.001$). Testosterone was lower in the azoospermia group than normal groups for sperm concentration and total sperm count, and than low groups for total sperm count and total motility ($p = 0.010$ - 0.032). Prolactin showed no group differences. TSH was higher in normal than azoospermia groups for sperm concentration and total sperm count, and in the normal than low group for progressive motility ($p = 0.010$ - 0.026). FSH and LH correlated negatively with sperm concentration, total sperm count, motile sperm count, total motile sperm count, progressively motile sperm count, total progressively motile sperm count, and total non-motile sperm count (FSH: $\rho = -0.316$ to -0.244 , $p \leq 0.003$; LH: $\rho = -0.199$ to -0.165 , $p = 0.016$ - 0.048). LH correlated negatively with motile sperm percentage and positively with non-motile sperm percentage ($\rho = -0.200$ and 0.199 ; both $p = 0.016$). Prolactin correlated negatively with total non-motile sperm count ($\rho = -0.242$; $p = 0.042$). Neither testosterone nor TSH correlated. **Conclusion:** FSH showed the most consistent associations; LH showed weaker associations. Testosterone differed between groups but showed no correlations; prolactin correlated with one parameter. TSH findings require caution due to small sample ($n = 29$). FSH may therefore represent a useful endocrine marker.

Keywords: Male infertility, semen analysis, FSH, LH, testosterone, prolactin, TSH

AKUT KORONER SENDROM DÜŞÜNÜLEN ACIL BAŞVURULARINDA TROPONIN T DÜZEYİNİN PLATELET VE PLATELET İNDEKSLERİ ARASINDAKİ İLİŞKİNİN İNCELENMESİ

INVESTIGATION OF THE RELATIONSHIP BETWEEN TROPONIN T LEVELS AND PLATELET COUNT AND PLATELET INDICES IN EMERGENCY DEPARTMENT ADMISSIONS WITH SUSPECTED ACUTE CORONARY SYNDROME

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ÖZET

Amaç: Bu çalışma, Akut Koroner Sendrom (AKS) şüphesi olan hastalarda trombosit sayısı (PLT) ve indekslerinin (MPV, PCT, PDW) Troponin T (Trop T) düzeyleriyle ilişkisini inceleyerek trombotik süreçleri değerlendirmeyi ve Trop T düzeylerinin mevsimsel değişimini belirleyerek klinik farkındalığı artırmayı amaçlamıştır.

Gereç ve Yöntem: Düzce Üniversitesi Tıp Fakültesi Acil Servisi'ne son bir yılda başvurup kardiyolojiye konsülte edilen ve eş zamanlı Trop T ile tam kan sayımı yapılan hastalar geriye dönük incelendi. Mükerrer kayıtlar çıkarılarak ilk başvurusu olan 2074 hasta çalışmaya dahil edildi. Cinsiyet karşılaştırmalarında Mann-Whitney U ve yaşa göre düzeltilmiş ANCOVA, mevsimsel karşılaştırmalarda Kruskal-Wallis ve Bonferroni düzeltmeli post-hoc analizi, değişkenler arası ilişkide ise Spearman korelasyon analizi kullanıldı.

Bulgular: Hastaların yaş ortalaması $65,95 \pm 15,08$ olup %56,7'si erkekti. Trop T düzeyleri erkeklerde kadınlara göre anlamlı derecede yüksek bulunurken ($27,47$ ng/L'ye karşı $21,65$ ng/L; $p < 0,001$), tüm trombosit indeksleri (PLT, MPV, PCT, PDW) kadınlarda erkeklerden anlamlı derecede yüksek saptandı ($p < 0,001$). Trop T ile PLT ($r = -0,071$) ve PCT ($r = -0,066$) arasında zayıf negatif; PDW ile ($r = 0,049$) zayıf pozitif korelasyon izlendi; MPV ile anlamlı ilişki saptanmadı. Trop T seviyelerinde mevsimsel olarak anlamlı farklılık görüldü ($p = 0,004$); en yüksek ortanca değer kışın ($28,84$ ng/L), en düşük ise sonbaharda ($20,40$ ng/L) kaydedildi. Post-hoc analizde yalnızca kış ile sonbahar arasındaki fark istatistiksel olarak anlamlıydı ($p < 0,001$).

Sonuç: Trop T ile trombosit indeksleri arasındaki zayıf ilişki, bu parametrelerin AKS değerlendirmesinde tek başlarına yeterli olmadığını göstermektedir. Ancak Trop T düzeylerinde gözlenen mevsimsel dalgalanmalar (kışın en yüksek, sonbaharda en düşük) klinik uygulamada göz önünde bulundurulmalıdır.

Anahtar Kelimeler: Troponin T, trombosit indeksleri, mevsimsel değişim, akut koroner sendrom, acil servis.

ABSTRACT**Investigation of the Relationship Between Troponin T Levels and Platelet Count and Platelet Indices in Emergency Department Admissions with Suspected Acute Coronary Syndrome**

Aim: This study aimed to investigate the relationship between platelet count (PLT), platelet indices (MPV, PCT, PDW), and Troponin T (Trop T) levels to evaluate underlying thrombotic processes in acute coronary syndrome (ACS), and to assess seasonal variations in Trop T levels for clinical awareness.

Materials and Methods: Patients presenting to the Emergency Department of Düzce University Faculty of Medicine within the past year with suspected ACS who underwent simultaneous Trop T and complete blood count testing were retrospectively analyzed. After excluding duplicate entries, 2,074 unique patients were included. Sex differences were evaluated using the Mann-Whitney U test and age-adjusted ANCOVA. Kruskal-Wallis with Bonferroni correction was used for seasonal comparisons, and Spearman analysis evaluated correlation between variables.

Results: The mean age was 65.95 ± 15.08 years, and 56.7% were male. Trop T levels were significantly higher in men than women (27.47 vs. 21.65 ng/L; $p < 0.001$), whereas all platelet indices (PLT, MPV,

PCT, PDW) were higher in women ($p<0.001$ for all); differences remained significant after age adjustment. Trop T showed weak negative correlations with PLT ($r=-0.071$; $p=0.001$) and PCT ($r=-0.066$; $p=0.003$), and a weak positive correlation with PDW ($r=0.049$; $p=0.025$); no significant correlation was found with MPV. Significant seasonal variation was observed for Trop T ($p=0.004$), peaking in winter (median: 28.84) and lowest in autumn (median: 20.40), with post hoc analysis confirming a significant difference between winter and autumn ($p<0.001$).

Conclusion: The weak correlation between Trop T and platelet indices suggests these parameters are insufficient on their own for evaluating ACS. However, seasonal variations in Trop T levels (highest in winter, lowest in autumn) should be considered in clinical practice.

Keywords: Troponin T, platelet indices, seasonal variation, acute coronary syndrome, emergency department

**YOĞUN YERLEŞİM STRESİNE MARUZ KALAN BILDIRCINLARDA
(COTURNIX COTURNIX JAPONICA) RASYONA İLAVE EDİLEN HAYIT**

**(*Vitex agnus-castus* L.) TOHUMU UÇUCU YAĞININ PERFORMANS, KARKAS VE BAZI
ANTIÖKSİDAN PARAMETRELERE ETKİSİ***

**EFFECT OF CHASTEBERRY (*VITEX AGNUS-CASTUS* L.) SEED VOLATILE OIL ADDED TO THE
DIET ON PERFORMANCE, CARCASS AND SOME ANTIOXIDANT PARAMETERS IN QUAIL
(*COTURNIX COTURNIX JAPONICA*) EXPOSED TO STOCKING DENSITY STRESS**

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ÖZET

Amaç: Bu çalışma; yoğun yerleşim stresine maruz kalan bildircinlerde rasyona ilave edilen Hayıt (*Vitex agnus-castus* L.) tohumu uçucu (HUY) yağının performans, karkas ve bazı antioksidan parametrelere etkisini belirlemek amacıyla yapılmıştır.

Materyal ve Yöntem: Deneme, 8 günlük 252 adet karışık cinsiyetli Japon bildircini (*Coturnix coturnix japonica*) ile yürütülmüştür. Deneme; normal yerleşim sıklığında (160 cm²/hayvan) katkısız rasyonla beslenen kontrol grubu (K), yoğun yerleşim sıklığında (80 cm²/hayvan) katkısız rasyonla beslenen grup (Y) ve yoğun yerleşim sıklığında üç farklı dozda (150, 300 ve 450 mg/kg) HUY ilave edilen rasyonla beslenen gruplar (Y₁₅₀, Y₃₀₀, Y₄₅₀) olmak üzere 5 grupta dizayn edilmiştir. Her grup 5 tekrardan oluşturulmuştur. Normal yerleşimde alt gruplarda 7, yoğun yerleşimde 14 bildircin barındırılmıştır. Deneme 35 gün sürdürülmüştür.

Bulgular: Canlı ağırlık, canlı ağırlık artışı, yemden yararlanma oranı, sıcak ve soğuk karkas parametreleri bakımından gruplar arasında istatistiksel fark gözlenmemiştir. Yem tüketimi Y300 grubunda kontrole kıyasla düşmüştür. Kan glikoz, total antioksidan kapasite, total oksidan kapasite, süperoksit dismutaz ve kortikosteron konsantrasyonu bakımından gruplar arasında istatistiksel fark bulunmamıştır. Total kolesterol Y₃₀₀ grubunda kontrole kıyasla daha yüksekti. Trigliserid konsantrasyonu Y ve Y₁₅₀ gruplarında artmış, Y₃₀₀, Y₄₅₀ gruplarında ise azalmıştır. Ürik asit tüm muamele gruplarında kontrole kıyasla artmıştır. Bulgular bir bütün olarak değerlendirildiğinde, performans bakımından gruplar arasında istatistiksel olarak anlamlı bir farklılık olmasa da, rasyona ilave edilen hayıtın yoğun yerleşime bağlı stres oluşumunun önlenmesinde kontrole yakın sonuçlar verebileceği düşünülmüştür. Aynı durum karkas parametreleri için de söylenebilir. Kan parametrelerinden trigliserid konsantrasyonunun; orta ve yüksek dozda hayıt ilave edilen gruplarda azaldığı gözlenmiştir. **Sonuç:** Performans ve kan parametreleri göz önüne alınarak incelendiğinde; yoğun yerleşim sıklığının bildircinlerde olumsuz etkiler yarattığı, düşük dozdaki (150 mg/kg) hayıt tohumu uçucu yağının ise bu olumsuzlukları azaltma eğiliminde olduğu görülmüştür. İleride konu ile ilgili yapılacak yeni çalışmalarda kanatlılarda stres yönetimi için rasyonlarda hayıt tohumu uçucu yağı kullanımında, sunulan çalışmadan daha düşük dozların denenerek araştırılmasının faydalı olabileceği kanaatine varılmıştır.

Anahtar kelimeler: Antioksidan, Bildircin, Hayıt (*Vitex agnus-castus* L.), Yoğun Yerleşim

ABSTRACT

OBJECTIVE: This study was conducted to determine the effect of adding Chasteberry (*Vitex agnus-castus* L.) seed volatile oil (CO) to the diet on performance, carcass characteristics and certain antioxidant parameters in quails exposed to high stocking density stress.

Material and Method: The experiment was run with 252 mixed-sex Japanese quails (*Coturnix coturnix japonica*) 8-day old. The experiment was designed with five groups: a control group (C) fed an

unsupplemented diet at normal stocking density (160 cm²/animal), a group (HD) fed an unsupplemented diet at high stocking density (80 cm²/animal), and three groups (HD₁₅₀, HD₃₀₀, and HD₄₅₀) fed a diet supplemented with CO at three different doses (150, 300, and 450 mg/kg). Each experimental group consisted of 5 replicates. The normal stock density group housed 7 quails, while the high stock density group housed 14. The experiment lasted 35 days.

Results: There were no statistically significant differences among the groups in terms of body weight, body weight gain, feed conversion ratio, and hot and cold carcass parameters. Feed intake was lower in the Y₃₀₀ group compared to the control group. No statistically significant differences were found between the groups in terms of blood glucose, total antioxidant capacity, total oxidant capacity, superoxide dismutase, and corticosterone concentrations. Total cholesterol was higher in the Y₃₀₀ group compared to the control group. Triglyceride levels were increased in the Y and Y₁₅₀ groups but decreased in the Y₃₀₀ and Y₄₅₀ groups. Uric acid levels were increased in all treatment groups compared to the control group. When the results were evaluated as a whole, although there was no statistically significant difference in performance between the groups, it was concluded that adding chasteberry to the diet could yield results similar to those of the control group in preventing stress associated with high stocking density. The situation is the same for carcass parameters. Among the blood parameters, a decrease in triglyceride concentration was observed in the groups supplemented with medium and high doses of chasteberry.

Conclusion: when performance and blood parameters are considered together, it was observed that high stocking density has adverse effects on quails, while low-dose (150 mg/kg) chasteberry seed essential oil tends to mitigate these adverse effects. It has been concluded that in future studies on this topic, it may be beneficial to investigate the use of chasteberry seed essential oil in rations for stress management in poultry by testing doses lower than those used in the present study.

Keywords: Antioxidant, Chasteberry (*Vitex agnus-castus* L.), Quail, Stocking Density.

DOSE-DEPENDENT VASCULAR TOLERABILITY OF HYDROCORTISONE IN THE IN OVO CHORIOALLANTOIC MEMBRANE MODEL: A FILTER-DISC-BASED STUDY**Selin Engür ÖZTÜRK**

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ABSTRACT

Aim: The chick chorioallantoic membrane (CAM) model is a rapid, cost-effective, highly vascularized, and ethically advantageous *in ovo* platform for evaluating local vascular responses and preliminary biocompatibility. This study aimed to investigate the acute and 24-hour vascular tolerability of hydrocortisone at different concentrations using filter-disc-mediated local application and to determine a preliminary dose range for subsequent *in ovo* studies.

Material and Method: Fertilized chicken eggs were disinfected with 70% ethanol, candled, and incubated at 37 °C and 70% relative humidity with periodic turning. Approximately 3 mL of albumen was removed on embryonic day 3. On day 9, a shell window was opened, and viable eggs were randomly allocated to PBS control, 100 µM hydrocortisone, and 1000 µM hydrocortisone groups (n=7). Sterile filter-paper discs loaded with 50 µL of the corresponding solution were placed on vascularized CAM regions. CAMs were imaged using a stereomicroscope equipped with a digital camera immediately after application and at 24 hours. The images were descriptively evaluated for hemorrhage, vascular lysis, coagulation, vascular integrity, capillary visibility, avascular zone formation, and local morphological changes.

Results: Neither hydrocortisone concentration induced acute hemorrhage, vascular lysis, or coagulation. After 24 hours, the integrity of the main vessels and surrounding capillary networks was preserved, with no overt necrosis or clearly demarcated avascular zones. Mild localized changes were observed at some disc margins.

Conclusion: Filter-disc-mediated application of 100 and 1000 µM hydrocortisone was well tolerated by the CAM and caused no overt acute or delayed vascular damage. These concentrations may provide a suitable preliminary range for subsequent *in ovo* dose-optimization and pharmacological studies.

Keywords: Hydrocortisone, chorioallantoic membrane, *in ovo*, vascular tolerability.

**DIRECT LARYNGOSCOPY-ASSISTED I-GEL PLACEMENT FOR FLEXIBLE
BRONCHOSCOPIC CRYOTHERAPY IN SEVERE POST-INTUBATION TRACHEAL
STENOSIS: A CASE REPORT**

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ABSTRACT

OBJECTIVE: This case report describes direct laryngoscopy-assisted i-gel placement and perioperative anesthetic management after two unsuccessful blind i-gel insertion attempts in a patient with severe post-intubation tracheal stenosis and prior hypoxic cardiac arrest following failed intubation.

Materials and Methods: A 59-year-old man (78 kg, 174 cm) with ASA physical status IV was scheduled for flexible bronchoscopic cryotherapy and dilation. He had biphasic stridor at rest, air hunger, and could speak only in short phrases. Preoperative room-air SpO₂ was 89%, heart rate was 104 beats/min, and respiratory rate was 20 breaths/min. Computed tomography showed severe proximal tracheal stenosis 35 mm below the vocal cords, with an anteroposterior luminal diameter of 4.43 mm. After five minutes of preoxygenation, SpO₂ increased to 100%. Following propofol-fentanyl induction, mask ventilation was confirmed before rocuronium administration. Two blind insertion attempts with a size 5 i-gel resulted in marked air leakage and inadequate ventilation. Direct laryngoscopy with a size 3 Macintosh blade was then used to elevate the laryngeal structures and guide the i-gel into the hypopharynx.

Results: Adequate tidal volume, bilateral chest expansion, and a consistent capnography waveform were achieved on the first laryngoscopy-assisted attempt, and flexible bronchoscopy confirmed the i-gel position. The bronchoscope was then advanced through the i-gel, and cryotherapy, dilation, and biopsy were performed. Minimum SpO₂ was 91% and maximum EtCO₂ was 41 mmHg. The procedure was completed without a major airway-related complication. After 48 hours of intensive care monitoring, the patient was transferred to the ward with marked improvement in stridor and resolution of air hunger.

Conclusion: In severe proximal tracheal stenosis, a supraglottic airway device can provide ventilation and a working channel for bronchoscopy without traversing the stenotic segment. When standard blind i-gel insertion fails, direct laryngoscopy-guided placement may offer a practical rescue option and avoid repeated blind attempts.

Keywords: Tracheal stenosis; i-gel; supraglottic airway; direct laryngoscopy; flexible bronchoscopy; cryotherapy; difficult airway

ÜREME ÇAĞINDAKİ KADINLARDA CİNSEL MITLERE İNANMANIN CİNSEL/ÜREME SAĞLIĞI DAMGALAMASI İLE İLİŞKİSİ: BİLİŞSEL ÇARPITMALARIN ARACILIK ROLÜ

THE RELATIONSHIP BETWEEN BELIEF IN SEXUAL MYTHS AND SEXUAL/REPRODUCTIVE HEALTH STIGMA AMONG WOMEN OF REPRODUCTIVE AGE: THE MEDIATING ROLE OF COGNITIVE DISTORTIONS

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ÖZET

Amaç: Bu araştırma, üreme çağındaki kadınlarda cinsel mitlere inanma ile cinsel/üreme sağlığı damgalaması arasındaki ilişkide bilişsel olumsuz benlik algısı ve kendini suçlamanın aracı rolünün belirlenmesi amacıyla gerçekleştirilmiştir. **Yöntem:** Araştırma, kesitsel tanımlayıcı ve ilişki arayıcı tasarımda yürütülmüştür. Araştırma, 11 Mayıs 2026-30 Haziran 2026 tarihleri arasında bir kamu üniversitesinde öğrenim gören 1031 üreme çağındaki kadın ile tamamlanmıştır. Verilerin analizinde aracılık analizleri kullanılmıştır. Araştırma öncesinde Karamanoğlu Mehmetbey Üniversitesi Sağlık Bilimleri Bilimsel Araştırma ve Yayın Etik Kurulu'ndan etik kurul onayı (25.03.2026, 02-2026/37) ve araştırmanın yürütüldüğü kamu üniversitesi rektörlüğünden kurum izni (08.04.2026, E-36321956-044-324441) alınmıştır.

Bulgular: Aracılık analizleri sonucunda, cinsel mitlere inanmanın cinsel/üreme sağlığı damgalamasını anlamlı ve pozitif yönde yordadığı belirlenmiştir ($B=0,0204$, $p<0,01$). Cinsel mitlere inanmanın kendini suçlama üzerinde anlamlı ve pozitif bir etkisi bulunurken ($B=0,0260$, $p<0,05$), olumsuz benlik algısı üzerinde anlamlı bir etkisinin olmadığı saptanmıştır ($B=0,0070$, $p>0,05$). Ayrıca kendini suçlamanın ($B=0,0535$, $p<0,05$) ve olumsuz benlik algısının ($B=0,0432$, $p<0,05$) cinsel/üreme sağlığı damgalamasını anlamlı ve pozitif yönde yordadığı belirlenmiştir. Aracılık analizleri, kendini suçlamanın cinsel mitlere inanma ile cinsel/üreme sağlığı damgalaması arasındaki ilişkide anlamlı bir aracı rol oynadığını ($B=0,0014$, $p<0,05$), olumsuz benlik algısının ise anlamlı bir aracı rol üstlenmediğini göstermiştir ($p>0,05$).

Sonuç: Üreme çağındaki kadınlarda cinsel mitlere inanma düzeyi arttıkça cinsel/üreme sağlığı damgalamasının ve kendini suçlama düzeyinin arttığı belirlenmiştir. Ayrıca kendini suçlamanın, cinsel mitlere inanma ile cinsel/üreme sağlığı damgalaması arasındaki ilişkide önemli bir bilişsel mekanizma olduğu bulunmuştur.

Öneriler: Cinsel ve üreme sağlığına ilişkin damgalayıcı tutumların azaltılmasına yönelik girişimlerde cinsel mitlerin ve kendini suçlama gibi bilişsel çarpıtmaların dikkate alınması önerilmektedir.

Anahtar Kelimeler: Cinsel mitler, cinsel/üreme sağlığı damgalaması, bilişsel çarpıtmalar, kendini suçlama, üreme çağındaki kadınlar.

ABSTRACT

Background/OBJECTIVES: This study was conducted to determine the mediating roles of negative self-perception and self-blame in the relationship between belief in sexual myths and sexual/reproductive health stigma among women of reproductive age.

Methods: This study was conducted with a cross-sectional descriptive and correlational design. The study was completed with 1,031 women of reproductive age attending a public university between May 11, 2026, and June 30, 2026. Mediation analyses were used to analyze the data. Prior to the study, ethical

approval was obtained from the Scientific Research and Publication Ethics Committee of the Faculty of Health Sciences at Karamanoğlu Mehmetbey University (Date: March 25, 2026; No: 02-2026/37), and institutional permission was obtained from the Rectorate of the public university where the study was conducted (Date: April 8, 2026; No: E-36321956-044-324441).

Results: Mediation analyses revealed that belief in sexual myths significantly and positively predicted sexual/reproductive health stigma ($B = 0.0204$, $p < 0.01$). While belief in sexual myths had a significant positive effect on self-blame ($B = 0.0260$, $p < 0.05$), it did not have a significant effect on negative self-perception ($B = 0.0070$, $p > 0.05$). In addition, both self-blame ($B = 0.0535$, $p \leq 0.05$) and negative self-perception ($B = 0.0432$, $p \leq 0.05$) significantly and positively predicted sexual/reproductive health stigma. The mediation analyses further demonstrated that self-blame had a significant mediating role in the relationship between belief in sexual myths and sexual/reproductive health stigma ($B = 0.0014$, $p \leq 0.05$), whereas negative self-perception did not have a significant mediating role ($p > 0.05$).

Conclusions: Higher levels of belief in sexual myths were associated with increased levels of sexual/reproductive health stigma and self-blame among women of reproductive age. Furthermore, self-blame was identified as an important cognitive mechanism in the relationship between belief in sexual myths and sexual/reproductive health stigma.

Recommendations: It is suggested that initiatives to reduce stigmatizing attitudes toward sexual and reproductive health should consider sexual myths and cognitive distortions such as self-blame.

Keywords: sexual myths, sexual/reproductive health stigma, cognitive distortions, self-blame, women of reproductive age.

PHYSIOLOGICAL EFFECTS OF MORTALITY SALIENCE: AUTONOMIC NERVOUS SYSTEM RESPONSES AND NEUROENDOCRINE FINDINGS

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ABSTRACT

OBJECTIVE: To determine whether mortality salience alters autonomic, cardiovascular, or neuroendocrine responses, either immediately or during subsequent stress.

Materials and Methods: A PubMed search through July 2026 was supplemented by screening records indexed in Scopus and Web of Science, reference lists, and citing articles. Eligible peer-reviewed human experiments induced mortality salience or presented death-related cues, included a comparison condition, and reported objective autonomic, cardiovascular, or neuroendocrine outcomes. Eleven original studies met these criteria. Study design, sample, induction, comparator, timing, outcomes, and factors linked to variation in findings were recorded. Findings were compared and summarized narratively.

Results: Standard mortality-salience procedures produced no consistent condition-specific changes in cardiac, electrodermal, respiratory, or vascular measures compared with aversive or neutral controls. Neither cortisol nor salivary alpha-amylase showed a reliable direct increase. One immersive cemetery-based virtual reality study found between-condition differences in heart rate variability indices but not heart rate. After mortality-salience induction, two studies found stronger cardiovascular responses during performance tasks only when task difficulty was high or not fixed in advance. This pattern suggests that the cardiovascular effects of mortality salience are task-dependent rather than evidence of generalized physiological arousal. In some experiments, mortality-salience induction altered responses to later laboratory stressors. Responses varied by sex or stressor type, with separate studies reporting interactions with early-life adversity or perceived maternal care. Greater self-reported negative affect sometimes occurred without corresponding physiological changes.

Conclusion: Mortality salience did not consistently produce an immediate autonomic, cardiovascular, or neuroendocrine stress response. Physiological effects emerged during later performance tasks or laboratory stressors in some studies and varied with task demands, stressor type, sex, and early-life experiences. Future studies should use comparable induction procedures, timing, control conditions, and simultaneous multisystem recordings.

Keywords: Autonomic nervous system, Cardiovascular responses, Mortality salience, Neuroendocrine responses, Stress physiology

OCCULT RENAL MASS AS THE PROBABLE PRIMARY SOURCE OF SOLITARY BRAIN METASTASIS OF UNKNOWN ORIGIN: A MULTIDISCIPLINARY DIAGNOSTIC APPROACH

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ABSTRACT

OBJECTIVE: To present the diagnostic pathway leading to the identification of an occult renal mass as the probable primary source in a patient presenting with solitary brain metastasis of unknown origin, and to highlight the role of multidisciplinary evaluation combining neurosurgical, oncological, and urological perspectives in metastasis of unknown primary.

Materials and Methods: A 75-year-old male presented to the emergency department with a two-to-three-day history of right-sided numbness. Neurological examination revealed no focal deficit, with a Glasgow Coma Scale score of 15. Cranial computed tomography demonstrated a hyperdense lesion within an area of hypodense edema in the right parietal region. Contrast-enhanced cranial magnetic resonance imaging revealed a peripherally enhancing lesion measuring approximately 13 mm in the right parietal lobe, surrounded by extensive vasogenic edema, raising suspicion for malignancy. The patient underwent right parieto-occipital craniotomy, achieving gross total resection of the lesion.

Results: Histopathological examination revealed metastatic carcinoma; however, immunohistochemical staining could not determine the tumor subtype or primary site of origin. Subsequent whole-body 18F-FDG PET-CT performed for primary tumor screening showed no pathological uptake in the stomach, spleen, pancreas, or adrenal glands, but demonstrated an intensely hypermetabolic heterogeneous mass in the lower pole of the left kidney, measuring approximately 6×4.5×5 cm (SUV_{max} 15.2). Contrast-enhanced abdominal CT confirmed a heterogeneously enhancing lesion at the same location. Laboratory findings included a PSA level of 4.43 ng/mL, creatinine of 0.8 mg/dL, and GFR of 88 mL/min. Based on imaging findings, renal cell carcinoma was considered the probable primary malignancy, and systemic therapy with a tyrosine kinase inhibitor/immunotherapy combination was initiated without histopathological confirmation of the renal mass, given the radiological features highly suggestive of malignancy and the clinical urgency following intracranial surgery.

Conclusion: This presentation underscores that renal cell carcinoma may initially manifest with a solitary cerebral metastasis in the absence of typical urological symptoms, and that immunohistochemically indeterminate brain metastases warrant systematic screening for occult renal masses. Timely identification of the probable primary tumor site through PET-CT enabled prompt initiation of systemic therapy based on radiological findings alone, emphasizing the value of a multidisciplinary diagnostic approach in metastasis of unknown primary origin, particularly in clinical scenarios where invasive tissue sampling may be deferred.

Keywords: Brain metastasis; Renal cell carcinoma; Metastasis of unknown primary; PET-CT; Multidisciplinary approach

**GENİŞ PERİAPİKAL LEZYONLU DIŞTE CERRAHİ OLMAYAN ENDODONTİK TEDAVİ:
OLGU SUNUMU**
*NON-SURGICAL ENDODONTIC TREATMENT IN A TOOTH WITH A LARGE PERIAPICAL
LESION: A CASE REPORT*

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ÖZET

Amaç: Bu olgu sunumunun amacı, geniş periapikal lezyona sahip bir dişte uygulanan cerrahi olmayan endodontik tedavinin dokuz aylık takip sürecindeki klinik ve radyografik iyileşme bulgularını sunmaktır.

Materyal ve Yöntem: Sistemik olarak sağlıklı 32 yaşındaki kadın hasta, 41 numaralı dişinde ağrı şikayeti ile Endodonti Kliniğine başvurdu. Klinik muayenede ilgili dişte perküsyon ve palpasyonda hassasiyet saptandı. Radyografik muayenede 41 numaralı dişte geniş periapikal radyolüsent lezyon izlendi ve semptomatik apikal periodontitis tanısı konuldu. Lokal anestezi altında rubber-dam izolasyonu sağlandı. Çalışma boyu elektronik apeks bulucu ile belirlenerek radyografik olarak doğrulandı. Kök kanal preparasyonu EndoArt Smart Gold Kit 04 Taper döner eğe sistemi kullanılarak gerçekleştirildi. Preparasyon sırasında her eğe değişiminde %5 sodyum hipoklorit (NaOCl) ile irrigasyon yapıldı. Kök kanalına kalsiyum hidroksit yerleştirildi ve iki hafta sonrası için randevu verildi. İkinci seansta dişin asemptomatik olduğu tespit edildi, gutaperka ve epoksi rezin içerikli pat ile lateral kompaksiyon yöntemi kullanılarak kök kanal tedavisi tamamlandı.

Bulgular: Dokuz aylık takipte ilgili diş asemptomatik olup, radyografik incelemede periapikal radyolüsenzinin boyutunda belirgin azalma, kemik trabekülasyonunun yeniden oluşumu ve periapikal iyileşme bulguları izlendi. Hastanın klinik ve radyografik takipleri devam etmektedir.

Sonuç: Bu olgu, geniş periapikal lezyonların tedavisinde cerrahi olmayan endodontik yaklaşımın başarılı klinik ve radyografik sonuçlar sağlayabileceğini göstermektedir. Bu nedenle, geniş periapikal lezyonlu dişlerde cerrahi tedavi planlanmadan önce konservatif yaklaşım öncelikle değerlendirilmelidir.

Anahtar kelimeler: Periapikal Lezyon, Apikal Periodontitis, Kalsiyum Hidroksit

ABSTRACT

Aim: The aim of this case report is to present the clinical and radiographic healing findings during a nine-month follow-up period of non-surgical endodontic treatment in a tooth with a large periapical lesion.

Material and Method: Systemically healthy 32-year-old female patient presented to the Endodontics Clinic with the complaint of pain in tooth 41. In clinical examination, tenderness to percussion and palpation was detected in the relevant tooth. In radiographic examination, a large periapical radiolucent lesion was observed in tooth 41 and diagnosed as symptomatic apical periodontitis. Rubber-dam isolation was provided under local anesthesia. Working length was determined with an electronic apex locator and radiographically confirmed. Root canal preparation was performed using EndoArt Smart Gold Kit 04 Taper rotary file system. During preparation, irrigation with 5% sodium hypochlorite (NaOCl) was performed at each file change. Calcium hydroxide was placed into the root canal and an appointment was given for two weeks later. In the second session, the tooth was determined to be asymptomatic, root canal treatment was completed using gutta-percha and epoxy resin- based sealer with lateral compaction technique.

Results: In the nine-month follow-up, the tooth remained asymptomatic. Radiographic examination revealed a marked deduction in the size of the periapical radiolucency, reformation of the trabecular bone pattern, and signs of periapical healing were observed. Clinical and radiographic follow-up of the patient is ongoing.

Conclusion: This case demonstrates that a non-surgical endodontic approach can provide successful clinical and radiographic results in the treatment of large periapical lesions. Therefore, a conservative approach should be evaluated first before planning surgical treatment in teeth with large periapical lesions.

Keywords: Periapical Lesion, Apical Periodontitis, Calcium Hydroxide

PERİAPİKAL LEZYONLU DİŞİN KÖK KANAL TEDAVİSİ: OLGU SUNUMU
ROOT CANAL TREATMENT OF A TOOTH WITH A PERIAPICAL LESION: A CASE REPORT

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ÖZET

Amaç: Bu olgu sunumunun amacı, periapikal lezyonlu bir dişte iki seanslı endodontik tedavinin klinik ve radyografik sonuçlarını değerlendirmektir.

Materyal ve Yöntem: Sistemik olarak sağlıklı 46 yaşındaki kadın hasta, 34 numaralı dişinde ağrı şikâyetiyle başvurdu. Klinik muayenede ilgili dişte derin dentin çürüğü ile perküsyon duyarlılığı, radyografik incelemede ise periapikal radyolüsent lezyon saptandı. Klinik ve radyografik Bulgular doğrultusunda semptomatik apikal periodontitis tanısı konularak cerrahi olmayan endodontik tedavi planlandı. Lokal anesteziyi takiben rubber-dam izolasyonu altında endodontik giriş kavitesi açıldı. Çalışma boyu elektronik apeks bulucu ile belirlenerek periapikal radyografi ile doğrulandı. Kök kanal sistemi EndoArt Smart Gold Kit 04 Taper döner eğe sistemi ile şekillendirildi. Her eğe değişiminde %5 sodyum hipoklorit (NaOCl) solüsyonu ile irrigate edildi. Kanal içi medikament olarak kalsiyum hidroksit uygulanarak dişin geçici restorasyonu yapıldı. İki hafta sonraki ikinci seansta kanal içi medikament uzaklaştırıldı ve pasif ultrasonik aktivasyon ile final irrigasyonu yapıldı. Kök kanal dolumu gutaperka ve epoksi rezin esaslı kök kanal patı kullanılarak lateral kompaksiyon tekniği ile tamamlandıktan sonra diş kompozit rezin ile restore edildi.

Bulgular: Altıncı ve dokuzuncu ay kontrollerinde ilgili dişin asemptomatik olduğu, perküsyon ve palpasyon testlerinin negatif olduğu belirlendi. Radyografik incelemelerde periapikal radyolüsenzinin boyutunda belirgin azalma izlendi. Hastanın klinik ve radyografik takipleri devam etmektedir.

Sonuç: Bu olgu, periapikal lezyonlu dişlerde uygun kemomekanik preparasyon ve kanal içi medikament uygulaması ile cerrahi olmayan endodontik tedavinin başarılı klinik ve radyografik sonuçlar sağlayabileceğini göstermektedir.

Anahtar kelimeler: Periapikal Periodontitis, Kalsiyum Hidroksit, Kök Kanal Tedavisi

ABSTRACT

Aim: The aim of this case report is to evaluate the clinical and radiographic outcomes of two-visit endodontic treatment in a tooth with a periapical lesion.

Material and Method: Systemically healthy 46-year-old female patient presented with the complaint of pain in tooth 34. Clinical examination revealed deep dentinal caries and tenderness to percussion, while radiographic examination demonstrated a periapical radiolucent lesion. Based on the clinical and radiographic findings, a diagnosis of symptomatic apical periodontitis was established, and non-surgical endodontic treatment was planned. Following local anesthesia, access cavity was opened under rubber-dam isolation. Working length was determined with an electronic apex locator and confirmed with a periapical radiograph. Root canal system was shaped with EndoArt Smart Gold Kit 04 Taper rotary file system. The root canal was irrigated with 5% sodium hypochlorite (NaOCl) solution after each instrument change. Calcium hydroxide was applied as an intracanal medicament and temporary restoration of the tooth was performed. In the second session two weeks later, the intracanal medicament was removed and final irrigation was performed with passive ultrasonic activation. Root canal treatment was completed using gutta-percha and epoxy resin-based root canal sealer with lateral compaction technique, and then the tooth was restored with composite resin.

Results: At the 6- and 9-month follow-up examinations, the tooth remained asymptomatic, and both percussion and palpation tests were negative. Radiographic evaluation revealed a marked reduction in the size of the periapical radiolucency. Clinical and radiographic follow-up of the patient is ongoing.

Conclusion: This case demonstrates that non-surgical endodontic treatment, combined with appropriate chemomechanical preparation and intracanal medicament application, can achieve favorable clinical and radiographic outcomes in teeth with periapical lesions.

Keywords: Periapical Periodontitis, Calcium Hydroxide, Root Canal Treatment

EVALUATION OF NEUROPHYSIOLOGICAL DYNAMICS BETWEEN SLEEP STAGES THROUGH QUANTITATIVE ELECTROENCEPHALOGRAM SPECTRAL ANALYSIS

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ABSTRACT

Aim: Sleep is a complex physiological process characterized by dynamic and cyclical changes in cortical electrical activity. Conventional observational sleep staging, known as visual scoring, relies on standardized rules but remains inherently susceptible to subjective interpretation and inter-rater variability. This study aims to provide an objective evaluation of cortical activity differences between successive sleep stages in healthy individuals. By utilizing open-access databases and frequency-domain analysis through quantitative electroencephalogram (qEEG), we aim to characterize the neurophysiological transitions between deep sleep and rapid eye movement (REM) periods with high analytical precision.

Material and Method: In this retrospective study, full-night polysomnography (PSG) recordings from 40 healthy adults were retrieved from the Sleep-EDF Database on the PhysioNet open-access platform. Specific epochs representing NREM Stage 3 (n=40) and REM (n=40) sleep were isolated for comparative analysis. Raw EEG signals were processed in a Python environment utilizing the MNE-Python library. To ensure signal integrity, line noise and non-physiological artifacts were filtered. Subsequently, Fast Fourier Transform (FFT) was applied to calculate Power Spectral Densities (PSD). The absolute power distributions of Delta (0.5-4 Hz) and Theta (4-8 Hz) frequency bands were extracted and compared using a paired t-test to determine statistical significance between stages.

Findings: Analysis of cumulative averages revealed a prominent Delta dominance in NREM Stage 3 ($35.4 \pm 4.2 \mu\text{V}^2/\text{Hz}$), reflecting high-amplitude cortical synchronization typical of deep sleep. During the transition to the REM stage, Delta power significantly decreased to $12.1 \pm 3.5 \mu\text{V}^2/\text{Hz}$ ($p < 0.0001$). Conversely, the absolute power of the Theta band rose from $8.2 \pm 2.1 \mu\text{V}^2/\text{Hz}$ in NREM to $14.5 \pm 3.2 \mu\text{V}^2/\text{Hz}$ in the REM stage ($p < 0.0001$). This shift effectively validates the characteristic cortical desynchronization associated with REM sleep, providing a clear quantitative signature of the neurophysiological state change.

Conclusion: The in silico investigation of sleep stages using qEEG frequency-domain analysis clearly elucidates the intricate electrical modulations occurring within cortical networks. These computer-aided signal processing techniques offer a robust and objective framework for understanding sleep architecture. Furthermore, such quantitative methods provide a powerful analytical tool that complements traditional visual EEG scoring, potentially enhancing diagnostic accuracy in clinical neurophysiology and sleep medicine research.

Keywords: Polysomnography, Quantitative EEG, Fast Fourier Transform, REM sleep, Neurophysiology.

INVESTIGATION OF THE EFFECTS OF VENTRICULAR ARRHYTHMIAS ON CARDIAC AUTONOMIC MODULATION THROUGH IN SILICO TIME-DOMAIN SIGNAL ANALYSIS

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ABSTRACT

Aim: Heart rate variability (HRV) is a fundamental biophysical parameter reflecting the dynamic autonomic regulation exerted on the sinoatrial node. The balance between sympathetic and parasympathetic nervous system activities is vital for cardiovascular health; its disruption often signals impending pathologies. This study aims to quantitatively examine the disruptive effects of ventricular arrhythmias on cardiac autonomic modulation and specific vagal tone. By utilizing open-access databases and time-domain signal analysis methods, we investigate how these arrhythmias alter the heart's biophysical adaptability and autonomic control mechanisms.

Material and Method: In this retrospective study, 48 dual-channel long-term electrocardiogram (ECG) recordings were obtained from the Arrhythmia Database on the PhysioNet open-access platform. The data were categorized into "Normal Sinus Rhythm" (n=24) and "Ventricular Arrhythmia" (n=24) groups. Raw signals were processed in a Python environment using the Waveform Database (WFDB) library based on cardiologist-approved annotation (.atr) files. To ensure accurate normal-to-normal (NN) intervals, non-physiological artifacts and outliers (<300 ms and >2000 ms) were strictly excluded. Key time-domain HRV parameters were calculated: the standard deviation of NN intervals (SDNN) for general autonomic regulation and the root mean square of successive differences (RMSSD) for short-term parasympathetic (vagal) tone.

Findings: Comparative analysis of cumulative averages showed that SDNN was 81.56 ms in the healthy group, whereas it decreased to 73.61 ms in the arrhythmia group, indicating that general autonomic flexibility is suppressed on an arrhythmogenic basis. Conversely, the RMSSD value, reflecting short-term parasympathetic activity, was measured at 56.77 ms in the normal group and increased to 73.27 ms in the arrhythmic group. This suggests that the heart exhibits compensatory vagal fluctuations as a physiological response to the rhythm disturbances caused by ventricular arrhythmia.

Conclusion: Ventricular arrhythmias significantly suppress the heart's overall autonomic regulation and biophysical flexibility. However, the observed increase in RMSSD suggests that the heart activates compensatory parasympathetic mechanisms to mitigate arrhythmogenic stress. Utilizing in silico signal processing algorithms on expert-annotated datasets provides a powerful analytical foundation that supports and enhances in vivo experimental electrophysiology studies.

Keywords: Ventricular arrhythmia, Cardiac autonomic modulation, Vagal tone, In silico analysis, Electrocardiogram.

**BİMAKSİLLER PROGNATI, GUMMY SMILE VE İSKELETSEL SINIF II
MALOKLÜZYONUN ÇİFT ÇENE ORTOGNATİK CERRAHİ VE GENİOPLASTİ İLE
YÖNETİMİ: OLGU SUNUMU**

*MANAGEMENT OF BIMAXILLARY PROGNATHISM, GUMMY SMILE, AND SKELETAL CLASS II
MALOCCLUSION WITH BIMAXILLARY ORTHOGNATHIC SURGERY AND GENIOPLASTY: A
CASE REPORT*

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ÖZET

Amaç: Maksiller vertikal fazlalık, sagittal iskeletsel uyumsuzluk ve belirgin gingival görünüm (gummy smile), erişkin bireylerde estetik ve fonksiyonel problemlere neden olan, multidisipliner yaklaşım gerektiren dentofasiyal deformitelerdir. Bu vaka raporunun amacı, iskeletsel Sınıf II maloklüzyon, dudak yetersizliği, konveks profil, artmış overjet ve gummy smile şikâyetleri bulunan erişkin kadın hastanın ortodontik tedavi ile kombine çift çene ortognatik cerrahi ve genioplasti tedavisinin sonuçlarını sunmaktır.

Materyal ve Yöntem: Tedavi öncesinde üst ve alt keserlerin ileri derecede protrüziv ve prokline konumlanmasına bağlı gelişen alveoler kompanzasyon nedeniyle, ideal keser pozisyonunun sağlanması, cerrahi hareket miktarının optimize edilmesi ve postoperatif stabilitenin artırılması amacıyla üst ve alt çenede 14, 24, 34 ve 44 numaralı dişler çekilerek ortodontik dekompanzasyon gerçekleştirilmiş ve hasta cerrahiye hazırlanmıştır. Cerrahi aşamada Le Fort I osteotomisi ile maksillaya impaksiyon uygulanarak vertikal maksiller fazlalık düzeltilmiş, gingival görünüm azaltılmış ve maksilla üç boyutlu olarak yeniden konumlandırılmıştır. Ardından bilateral sagittal split ramus osteotomisi (BSSRO) ile mandibular ilerletme yapılarak sagittal iskeletsel uyumsuzluk giderilmiş, yüz profilini ve alt yüz estetiğini iyileştirmek amacıyla eş zamanlı genioplasti uygulanmıştır. Postoperatif ortodontik tedavi ile oklüzyon detaylandırılmış ve tedavi tamamlanmıştır.

Bulgular: Tedavi sonunda Sınıf I oklüzyon, ideal overjet ve overbite ilişkisi, düzelmiş yüz profili, azalmış gingival görünüm, uyumlu dudak kapanışı ve dengeli fasiyal estetik elde edilmiştir.

Sonuç: Bu vaka, erişkin bireylerde sagittal iskeletsel uyumsuzluk ve gummy smile tedavisinde çekimli ortodontik dekompanzasyonun, maksiller impaksiyon, çift çene ortognatik cerrahisi ve genioplasti ile kombine edilmesinin hem fonksiyonel hem de estetik açıdan başarılı ve öngörülebilir sonuçlar sağlayan etkili bir tedavi yaklaşımı olduğunu göstermektedir.

Anahtar Kelimeler: Bimaksiller prognati, Gummy smile, Ortognatik cerrahi, Genioplasti, İskeletsel Sınıf II maloklüzyon

ABSTRACT

Purpose: Vertical maxillary excess, sagittal skeletal discrepancy, and excessive gingival display (gummy smile) are dentofacial deformities that cause esthetic and functional impairments in adult patients and often require a multidisciplinary treatment approach. The aim of this case report was to present the treatment outcomes of an adult female patient with skeletal Class II malocclusion, lip incompetence, a convex facial profile, increased overjet, and excessive gingival display who was treated with a combination of orthodontic treatment, bimaxillary orthognathic surgery, and genioplasty.

Materials and Methods: Before surgery, orthodontic decompensation was performed by extracting the maxillary and mandibular first premolars (14, 24, 34, and 44) to eliminate the dentoalveolar compensation associated with severely protrusive and proclined maxillary and mandibular incisors. This approach was intended to establish optimal incisor positioning, optimize the magnitude of surgical correction, and enhance postoperative stability, thereby preparing the patient for orthognathic surgery. During the surgical phase, vertical maxillary excess was corrected by means of a Le Fort I osteotomy with maxillary impaction, resulting in reduced gingival display and three-dimensional repositioning of the maxilla. Subsequently, bilateral sagittal split ramus osteotomy (BSSRO) was performed to advance the mandible and correct the sagittal skeletal discrepancy. Simultaneous genioplasty was carried out to further improve the facial profile and lower facial esthetics. Following surgery, postoperative orthodontic treatment was completed to refine the occlusion and finalize the treatment.

Results: Treatment resulted in a stable Class I occlusion, ideal overjet and overbite relationships, an improved facial profile, reduced gingival display, competent lip closure, and harmonious facial esthetics.

Conclusion: This case demonstrates that extraction-based orthodontic decompensation combined with maxillary impaction, bimaxillary orthognathic surgery, and genioplasty is an effective and predictable treatment approach for adult patients with sagittal skeletal discrepancy and excessive gingival display, providing successful functional and esthetic outcomes.

Keywords: Bimaxillary prognathism, Gummy smile, Orthognathic surgery, Genioplasty, Skeletal Class II malocclusion

TRAVMAYA BAĞLI MAKSİLLER SANTRAL KESİCİ EKSİKLİĞİNİN ORTODONTİK YÖNETİMİ: OLGU SUNUMU**ORTHODONTIC MANAGEMENT OF A MISSING MAXILLARY CENTRAL INCISOR FOLLOWING TRAUMA: A CASE REPORT****Asst. Prof. Dr. Saniye Merve CENGİZ**

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ÖZET

Amaç: Travmaya bağlı maksiller santral kesici diş kayıpları, büyüme ve gelişim dönemindeki hastalarda estetik, fonksiyonel ve psikososyal sorunlara yol açabilmektedir. Bu hastalarda implant tedavisi büyüme tamamlanıncaya kadar uygun olmadığından, ortodontik boşluk kapatılması önemli bir tedavi alternatifi olarak değerlendirilmektedir. Bu olgu sunumunun amacı, travmaya bağlı bilateral maksiller santral kesici diş kaybı bulunan büyüme ve gelişim dönemindeki bir hastada tüm üst ark mezializasyonu ile ortodontik boşluk kapatılması ve direkt kompozit build-up restorasyonları ile gerçekleştirilen multidisipliner tedavinin klinik ve radyografik sonuçlarını sunmaktır.

Materyal ve Yöntem: Travmaya bağlı 11 ve 21 numaralı dişlerini kaybeden hastada yapılan klinik muayenede bilateral maksiller santral kesici diş eksikliği, anterior bölgede estetik kayıp ve maksiller arkta boşluklar saptandı. Tedavi kapsamında sabit ortodontik tedavi ile tüm üst dental ark kontrollü olarak mezialize edildi, boşluklar tamamen kapatıldı ve lateral kesici dişler santral kesici pozisyonuna taşındı. Kaninlerin mezializasyonu ve ekstrüzyonu sonrasında selektif mine müllemesi ile lateral kesici morfolojisi kazandırıldı. Ardından estetik rehabilitasyon amacıyla direkt kompozit build-up restorasyonları uygulandı.

Bulgular: Tedavi sonunda anterior estetik belirgin olarak iyileşti, fonksiyonel overjet ve overbite elde edildi, dental ark bütünlüğü korundu ve implant gereksinimi ortadan kaldırıldı. Radyografik değerlendirmede kök paralelliğinin yeterli olduğu, periodontal dokuların korunduğu ve oklüzal ilişkinin stabil olduğu gözlemlendi.

Sonuç: Büyüme ve gelişim dönemindeki travmaya bağlı maksiller santral kesici diş kayıplarında tüm üst ark mezializasyonu ile ortodontik boşluk kapatılması ve direkt kompozit build-up restorasyonlarının birlikte uygulanması; estetik, fonksiyon ve periodontal sağlık açısından başarılı ve konservatif bir tedavi seçeneği olarak değerlendirilebilir.

Anahtar Kelimeler: Travmatik diş kaybı, tüm ark mezializasyonu, sabit ortodontik tedavi, multidisipliner tedavi.

ABSTRACT

Objective: Traumatic loss of the maxillary central incisors may result in significant esthetic, functional, and psychosocial problems, particularly in patients during the growth and developmental period. Since implant therapy is generally contraindicated until craniofacial growth is complete, orthodontic space closure is considered an important treatment alternative in these patients. The aim of this case report was to present the clinical and radiographic outcomes of a multidisciplinary treatment involving orthodontic space closure through mesialization of the entire maxillary dentition followed by direct composite build-up restorations in a growing patient with traumatic bilateral loss of the maxillary central incisors.

Materials and Methods: Clinical examination of a patient with traumatic loss of teeth 11 and 21 revealed bilateral absence of the maxillary central incisors, esthetic impairment in the anterior region, and residual spaces within the maxillary arch. Comprehensive fixed orthodontic treatment was

performed to achieve controlled mesialization of the entire maxillary dentition, resulting in complete orthodontic space closure and repositioning of the lateral incisors into the central incisor positions. Following mesialization and extrusion of the canines, selective enamel recontouring was performed to establish lateral incisor morphology. Subsequently, direct composite build-up restorations were placed to achieve esthetic rehabilitation.

Results: At the completion of treatment, anterior esthetics were markedly improved, functional overjet and overbite were established, dental arch integrity was preserved, and the need for implant therapy was eliminated. Radiographic evaluation demonstrated satisfactory root parallelism, preservation of the periodontal tissues, and stable occlusal relationships.

Conclusion: Orthodontic space closure through mesialization of the entire maxillary dentition combined with direct composite build-up restorations may be considered a successful and conservative treatment approach for traumatic loss of the maxillary central incisors in growing patients, providing favorable esthetic, functional, and periodontal outcomes.

Keywords: Traumatic tooth loss; Full arch mesialization; Fixed orthodontic treatment; Multidisciplinary treatment.

YAYGIN KULLANILAN BİR ANTİPARAZİTER OLAN İVERMEKTİNİN ERKEK ÜREME SİSTEMİ VE SPERMA KALİTESİ ÜZERİNE TOKSİKOLOJİK ETKİLERİ**TOXICOLOGICAL EFFECTS OF IVERMECTIN, A COMMONLY USED ANTIPARASITIC, ON THE MALE REPRODUCTIVE SYSTEM AND SPERM QUALITY****Serhat SUNAR**

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ÖZET

Amaç: İvermektin, veteriner hekimlikte paraziter enfeksiyonların kontrolünde yaygın olarak kullanılan geniş spektrumlu makrosiklik lakton türevi bir antiparaziter ilaçtır. Terapötik dozlarda güvenli kabul edilmesine rağmen, özellikle damızlık değeri olan erkek hayvanlarda üreme sistemi ve spermatolojik parametreler üzerindeki potansiyel toksikolojik etkileri endişe yaratmaktadır. Bu derlemenin amacı, ivermektin uygulamasının testis histolojisi, sperma kalitesi ve reproduktif hormon profilleri üzerindeki etkilerini güncel bilimsel literatür ışığında kapsamlı bir şekilde değerlendirmektir.

Materyal ve Yöntem: Bu derleme kapsamında, ivermektinin farklı doz (terapötik ve toksik) ve sürelerde uygulandığı *in vivo* deney hayvanı (kemirgen ve tavşan) modellerini inceleyen araştırmalar taranmıştır. Literatür araştırmasında; sperm motilitesi, yoğunluğu, morfolojik anormallik oranları ve DNA hasarını değerlendiren çalışmalar merkeze alınmıştır. Ayrıca, hücresel düzeyde meydana gelen oksidatif stres belirteçleri (lipid peroksidasyonu) ve testis dokusundaki histopatolojik değişimleri (seminifer tübül dejenerasyonu, apoptoz) analiz eden araştırmalar karşılaştırmalı olarak incelenmiştir.

Bulgular: İncelenen literatür verileri, ivermektinin özellikle yüksek dozlarda ve uzun süreli kullanımlarında sperma canlılığını, motilitesini ve yoğunluğunu istatistiksel olarak anlamlı düzeyde düşürdüğünü göstermektedir. Biyokimyasal analizler, ilacın antioksidan enzim kapasitesini zayıflatarak reaktif oksijen türlerinin (ROS) artışına ve sperma membranında şiddetli lipid peroksidasyonuna yol açtığını ortaya koymaktadır. Histolojik Bulgular ise seminifer tübül epitelinde dejeneratif değişiklikler ve germ hücrelerinde apoptotik indeksin arttığını doğrulamaktadır. Leydig hücrelerindeki disfonksiyona bağlı olarak serum testosteron seviyelerinde düşüşler rapor edilmiştir.

Sonuç: Sonuç olarak, ivermektinin erkek üreme sistemi üzerinde doza ve süreye bağlı reproduktif toksisite potansiyeli taşıdığı, bu toksisitenin temelinde yatan ana mekanizmanın oksidatif stres olduğu anlaşılmaktadır. Damızlık erkek hayvanlarda ivermektin kullanımında doz optimizasyonuna titizlikle dikkat edilmeli ve olası fertilité kayıpları mutlaka göz önünde bulundurulmalıdır. Reproduktif hasarı önlemeye yönelik antioksidan stratejilerin araştırılması büyük önem taşımaktadır.

Anahtar Kelimeler: İvermektin, Sperma Kalitesi, Reproduktif Toksisite, Oksidatif Stres, Veteriner Farmakoloji.

ABSTRACT

OBJECTIVE: Ivermectin is a broad-spectrum macrocyclic lactone derivative antiparasitic drug widely used in veterinary medicine for the control of parasitic infections. Although considered safe at therapeutic doses, its potential toxicological effects on the reproductive system and spermatological parameters, especially in breeding male animals, raise concerns. The aim of this review is to comprehensively evaluate the effects of ivermectin administration on testicular histology, sperm quality, and reproductive hormone profiles in the light of current scientific literature.

Material and Method: Within the scope of this review, studies examining *in vivo* experimental animal (rodent and rabbit) models in which ivermectin was administered at various doses (therapeutic and toxic) and durations were screened. In the literature search, studies evaluating sperm motility, density, morphological abnormality rates, and DNA damage were centered upon. Furthermore, researches analyzing oxidative stress markers (lipid peroxidation) occurring at the cellular level and histopathological changes (seminiferous tubule degeneration, apoptosis) in testicular tissue were examined comparatively.

Findings: Examined literature data indicate that ivermectin, especially in high doses and during long-term use, statistically significantly decreases sperm viability, motility, and concentration. Biochemical analyses reveal that the drug weakens the antioxidant enzyme capacity, leading to an increase in reactive oxygen species (ROS) and severe lipid peroxidation in the sperm membrane. Histological findings

confirm degenerative changes in the seminiferous tubule epithelium and an increased apoptotic index in germ cells. Decreases in serum testosterone levels have been reported due to dysfunction in Leydig cells.

Conclusion: In conclusion, it is understood that ivermectin carries a potential for dose- and duration-dependent reproductive toxicity on the male reproductive system, and the main mechanism underlying this toxicity is oxidative stress. Strict attention must be paid to dose optimization in the use of ivermectin in breeding male animals, and possible fertility losses must absolutely be taken into consideration. Investigating antioxidant strategies to prevent reproductive damage is of great importance.

Keywords:Ivermectin, Sperm Quality, Reproductive Toxicity, Oxidative Stress, Veterinary Pharmacology

**ÇEVRESEL FAKTÖRLERİN FARKLI TAVŞAN IRKLARINDA SPERMA KALİTESİ
ÜZERİNE ETKİLERİ: KARŞILAŞTIRMALI BİR İNCELEME****EFFECTS OF ENVIRONMENTAL FACTORS ON SPERM QUALITY IN DIFFERENT RABBIT
BREEDS: A COMPARATIVE REVIEW****Serhat SUNAR**

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ÖZET

Tavşan yetiştiriciliğinde döl verimini belirleyen en temel unsurlardan biri erkek damızlıkların sperma kalitesidir. Tavşanlar, anatomik yapıları gereği ortam sıcaklığı ve fotoperiyot (ışıklandırma süresi) gibi çevresel stres faktörlerine karşı oldukça duyarlı canlılardır. Bu derlemenin amacı, iklimsel ve çevresel değişimlerin farklı tavşan ırklarının (Yeni Zelanda, Kaliforniya ve yerel ırklar) spermatolojik parametreleri üzerindeki etkilerini güncel bilimsel çalışmalar ışığında karşılaştırmalı olarak değerlendirmektir. Bu çalışmada, ısı stresi, mevsimsel sıcaklık dalgalanmaları ve barınak koşullarının tavşan sperması üzerine etkilerini inceleyen in vivo araştırmalar taranmıştır. Farklı ırkların çevresel stresörlere verdikleri fizyolojik yanıtlar; ejakülat hacmi, sperm konsantrasyonu, ileri yönlü motilite, canlılık oranları ve morfolojik bütünlük gibi kalite parametreleri üzerinden detaylı biçimde analiz edilmiştir. Literatür verileri, artan ortam sıcaklığının şiddetli ısı stresine yol açarak tüm ırklarda sperma kalitesini ve libido düzeyini istatistiksel olarak düşürdüğünü göstermektedir. Isı stresi, testislerde oksidatif stresi tetikleyerek sperm DNA hasarına ve anormal sperm oranlarında artışa neden olmaktadır. Bununla birlikte, ırklar arasında çevresel stresörlere adaptasyon kapasitesi açısından genetik farklılıklar bulunduğu; bazı lokal veya melez ırkların ticari ırklara kıyasla sıcaklık değişimlerine karşı daha yüksek tolerans gösterdiği ve spermatolojik parametrelerdeki bozulmanın daha sınırlı kaldığı görülmüştür. Çevresel faktörler ve özellikle ısı stresi, erkek tavşanlarda reproduktif performansı olumsuz yönde etkileyen en önemli unsurlardandır. Reproduktif verimliliği maksimize etmek amacıyla, damızlık programlarında ırk spesifik adaptasyon yeteneklerinin mutlaka dikkate alınması gerekmektedir. İklim değişikliklerinin etkilerini azaltmak için barınaklarda çevresel koşulların optimizasyonu da hayati önem taşımaktadır.

Anahtar Kelimeler: Tavşan, Sperma Kalitesi, Çevresel Stres, Isı Stresi, Reproduktif Performans**ABSTRACT**

In rabbit breeding, one of the most fundamental elements determining reproductive efficiency is the semen quality of male bucks. Due to their anatomical structure, rabbits are highly sensitive to environmental stress factors such as ambient temperature and photoperiod (light duration). The aim of this review is to comparatively evaluate the effects of climatic and environmental changes on the spermatological parameters of different rabbit breeds (New Zealand, Californian, and local breeds) in light of current scientific studies. In this study, in vivo researches examining the effects of heat stress, seasonal temperature fluctuations, and housing conditions on rabbit semen were reviewed. The physiological responses of different breeds to environmental stressors were analyzed in detail based on quality parameters such as ejaculate volume, sperm concentration, progressive motility, viability rates, and morphological integrity. Literature data show that increasing ambient temperature leads to severe heat stress, statistically reducing sperm quality and libido levels in all breeds. Heat stress triggers oxidative stress in the testes, causing sperm DNA damage and an increase in the rate of abnormal sperm. However, genetic differences exist among breeds in terms of adaptation capacity to environmental stressors; some local or crossbred breeds exhibit higher tolerance to temperature changes compared to commercial breeds, and the deterioration in their spermatological parameters remains more limited. Environmental factors and especially heat stress are among the most critical factors negatively affecting reproductive performance in male rabbits. To maximize reproductive efficiency, breed-specific adaptation capacities must be considered in breeding programs. Optimizing housing environmental conditions is also vital to mitigate the impacts of climate change.

Keywords: Rabbit, Semen Quality, Environmental Stress, Heat Stress, Reproductive Performance

YABAN HAYATI REHABİLİTASYONUNA KABUL EDİLEN BAYAĞI ŞAHİN (BUTEO BUTEO) VE ARI ŞAHİNLERİNDE (PERNIS APIVORUS) KLİNİK, AKUT FAZ PROTEİNLERİ VE BİYOKİMYASAL BULGULARIN ÖN DEĞERLENDİRİLMESİ

PRELIMINARY EVALUATION OF CLINICAL, ACUTE-PHASE PROTEIN, AND BIOCHEMICAL FINDINGS IN COMMON BUZZARDS (BUTEO BUTEO) AND EUROPEAN HONEY BUZZARDS (PERNIS APIVORUS) ADMITTED TO WILDLIFE REHABILITATION

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ÖZET

Amaç: Bayağı şahin (*Buteo buteo*) ve arı şahini (*Pernis apivorus*), farklı ekolojik ve beslenme özelliklerine sahip iki yırtıcı kuş türüdür. Arı şahininin *Hymenoptera* ağırlıklı özelleşmiş beslenme ekolojisi, biyokimyasal bulguların yorumlanmasında dikkate alınmalıdır. Bayağı şahine ilişkin sınırlı veri bulunmakla birlikte, özellikle arı şahininde akut faz proteinleri ve kapsamlı biyokimyasal profil verileri oldukça kısıtlıdır. Bu çalışmanın amacı, Erzurum Doğa Koruma ve Milli Parklar (DKMP) Müdürlüğüne getirilen bu iki türe ait bireylerin kabul nedenlerini, klinik durumlarını, serum amiloid A (SAA) ve haptoglobulin (Hp) düzeyleri ile biyokimyasal parametrelerini tanımlayıcı olarak ön değerlendirmeye tabi tutmaktır.

Materyal ve Yöntem: Çalışma materyali; ağır kanat travması ve açık yaralanması bulunan üç erişkin bayağı şahin ile beslenme yetersizliği, kanat kırığı veya ileri bitkinlik ve şiddetli kaşeksi bulgularıyla kabul edilen üç arı şahininden (iki erişkin, bir yavru) oluşmaktadır. İlk fiziksel muayene sonrası alınan serum örneklerinde SAA, Hp ile hepatik, renal, enerji, lipid ve demir metabolizmasına yönelik biyokimyasal parametreler (AST, ALT, GGT, ALP, TP, albümin, glukoz, üre, TG, TK, HDL-C, Fe, DDBK) ölçülmüştür. Örneklem küçüklüğü nedeniyle istatistiksel karşılaştırma yapılmamış, Bulgular tanımlayıcı olarak değerlendirilmiştir.

Bulgular: Bayağı şahinlerin tamamında yüksek üre, travma ve olası sıvı kaybı nedeniyle prerenal mekanizmalarla; düşük Fe ise inflamasyona bağlı demir sekestrasyonu ile ilişkilendirilmiştir. Şiddetli kaşeksiyle kabul edilen arı şahininde saptanan yüksek üre ve düşük TK, ileri malnütrisyon, sıvı kaybı ve uzamış katabolizmayla ilişkilendirilmiştir. SAA ve Hp testlerinin bu türler için analitik validasyonunun bulunmaması bir sınırlılıktır; bu nedenle sonuçlar bireysel düzeyde değerlendirilmiştir.

Sonuç: Bu tanımlayıcı olgu serisi, laboratuvar bulgularının klinik durumla birlikte yorumlanması gerektiğini göstermektedir. Küçük örneklem, tek zamanlı örnekleme ve tür-spesifik referans aralığı eksikliği nedeniyle Bulgular genellenemez; mevcut veriler, gelecekteki geniş ölçekli tür-spesifik çalışmalar için ön veri niteliğindedir.

Anahtar Kelimeler: Arı şahini, bayağı şahin, akut faz proteinleri, klinik biyokimya, yaban hayatı rehabilitasyonu.

ABSTRACT

OBJECTIVE: The common buzzard (*Buteo buteo*) and European honey buzzard (*Pernis apivorus*) are raptor species with distinct ecological and dietary characteristics. The Hymenoptera-dominated feeding ecology of the honey buzzard should be considered when interpreting its biochemical findings. Although limited biochemical data exist for the common buzzard, acute-phase protein and comprehensive biochemical profile data remain scarce, particularly for the honey buzzard. This study aimed to descriptively evaluate the reasons for admission, clinical status, serum amyloid A (SAA) and haptoglobin (Hp) concentrations, and biochemical parameters in individuals of these two species admitted to the Erzurum Directorate of Nature Conservation and National Parks (DKMP).

Materials and Methods: The material comprised three adult common buzzards with severe wing trauma and open wounds, and three honey buzzards (two adults, one juvenile) admitted with malnutrition, wing fracture, or severe cachexia. Serum samples taken after initial examination were

analyzed for SAA, Hp, and biochemical parameters reflecting hepatic, renal, energy, lipid, and iron metabolism (AST, ALT, GGT, ALP, TP, albumin, glucose, urea, TG, TC, HDL-C, Fe, UIBC). Owing to the small sample size, no statistical comparisons were performed; findings were evaluated descriptively.

Results: In all common buzzards, elevated urea was attributed to prerenal mechanisms related to trauma and fluid loss, while low Fe was associated with inflammation-related iron sequestration. In the cachectic honey buzzard, elevated urea and markedly low TC were associated with advanced malnutrition, fluid loss, and prolonged catabolism. Lack of species-specific analytical validation for the SAA and Hp assays is a limitation; results were therefore evaluated individually.

Conclusion: This descriptive case series demonstrates the importance of interpreting laboratory findings alongside clinical status. Owing to the small sample, single-time-point sampling, and limited species-specific reference intervals, findings cannot be generalized; the data provide preliminary information for future, larger-scale, species-specific clinicopathological studies.

Keywords: European honey buzzard, common buzzard, acute-phase proteins, clinical biochemistry, wildlife rehabilitation.

YIRTICI KUŞLARDA MASKELEME FENOMENİ VE GÖZLEM ÖNCELİKLİ KLİNİK YAKLAŞIM (GÖKY)

MASKING PHENOMENON IN RAPTORS AND INTRODUCING THE OBSERVATION-FIRST CLINICAL APPROACH (OFCA)

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ÖZET

Amaç: Yırtıcı kuşlar, hayatta kalma içgüdüleriyle zayıflıklarını ve hastalık belirtilerini gizleme konusunda önemli bir evrimsel eğilime sahiptir. Bu çalışmada, erken fiziksel muayenenin getireceği yakalama miyopatisi ve stresi önlemek adına, hayvan refahını merkeze alan sistematik bir “Gözlem Öncelikli Klinik Yaklaşım (GÖKY)” tanıtılmaktadır.

Materyal ve Yöntem: Bu çalışma, anlatsal bir literatür derlemesi (narrative review) ile uzun yıllara dayanan yaban hayatı veteriner hekimliği saha deneyimlerinin sentezlendiği bir perspektif değerlendirmesidir. Literatür verileri; Web of Science, PubMed ve Google Scholar veri tabanlarında spesifik anahtar kelimelerle taranarak hastalık gizleme davranışının evrimsel temelleri açısından incelenmiş; saha deneyimleri ise ilk kabul, triyaj, gözlem ve tedavi planlaması süreçleri bağlamında bu verilerle harmanlanmıştır.

Bulgular: Literatür ve saha gözlemleri, yırtıcı kuşların tehdit algısı altında klinik bulguları maskelediğini ve hasta kuş bakışı'nın ancak ileri dekompanzasyon evrelerinde ortaya çıktığını göstermektedir. Geleneksel fiziksel muayeneler tek başına uygulandığında klinisyeni yanılgıya düşürebilmektedir. Önerilen bu yaklaşım sayesinde, hastanın kliniğe ilk kabulünden itibaren stresörlerin minimize edilmesi, uzaktan davranış gözleminin yapılması ve ancak bunun ardından hedefe yönelik kısa fiziksel muayeneye geçilmesi sağlanmaktadır.

Sonuç: İlk klinik kararları doğrudan etkileyen bu maskeleme davranışı önemli bir hasta yönetimi sorunudur. GÖKY, yırtıcı kuşların ilk değerlendirmesinde maskelenmiş patolojilerin kaçırılma riskini azaltmak ve hastanın enerji rezervlerini korumak için düşük stresli, pratik ve gözlem odaklı bir yaklaşım sunmaktadır.

Anahtar Kelimeler: Yırtıcı kuşlar, maskeleme fenomeni, GÖKY, yaban hayatı rehabilitasyonu, davranışsal değerlendirme.

ABSTRACT

OBJECTIVE: Raptors have a significant evolutionary tendency to conceal signs of weakness and disease as a survival strategy. In this study, a systematic “Observation-First Clinical Approach (OFCA)”, which centers on animal welfare, is introduced to prevent capture myopathy and stress caused by early physical examination.

Materials and methods: This study is a perspective evaluation synthesizing a narrative literature review with long-term wildlife veterinary field experiences. Literature data were searched in databases such as Web of Science, PubMed, and Google Scholar to review the evolutionary foundations of masking behavior; field experiences were integrated with these data in the context of initial admission, triage, observation, and treatment planning processes.

Results: Literature and field observations show that raptors mask clinical signs under perceived threat, and the “sick bird look” only appears in advanced decompensation stages. Immediate conventional physical examinations alone can mislead the clinician. Through the OFCA, stressors are minimized from the patient's initial admission to the clinic, remote behavioral observation is conducted, and only then is a targeted brief physical examination performed.

Conclusion: The masking behavior is a patient management issue that directly affects clinical decisions. OFCA provides a low-stress, practical, and observation-focused clinical approach to reduce the risk of missing masked pathologies and to preserve the patient's energy reserves during the initial assessment of raptors.

Keywords: Raptors, masking phenomenon, OFCA, wildlife rehabilitation, behavioral assessment.

THE HOST TISSUE REPAIR VULNERABILITY INDEX (HTRVI): A COMPOSITE BIOMARKER FOR PREDICTING OSTEORADIONECROSIS IN LOCALLY ADVANCED NASOPHARYNGEAL CARCINOMA

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ABSTRACT

Background: Osteoradionecrosis of the jaw (ORNJ) remains a major late complication of head and neck radiotherapy, and risk assessment relies mainly on clinical and dosimetric factors. We constructed the Host Tissue Repair Vulnerability Index (HTRVI), a composite biomarker integrating inflammatory, immune-nutritional, and oxygenation-related parameters, to estimate biological susceptibility to ORNJ in locally advanced nasopharyngeal carcinoma (LA-NPC).

Methods: This retrospective cohort included 261 LA-NPC patients treated with definitive concurrent chemoradiotherapy between 2010 and 2021. HTRVI was calculated as $(\text{CRP} \times \text{platelet} \times \text{neutrophil}) / (\text{albumin} \times \text{lymphocyte} \times \text{hemoglobin})$. HTRVI was compared with hemoglobin (Hb) and the Global Immune-Nutrition-Inflammation Index (GINI) using receiver operating characteristic analysis. Multivariable logistic regression, restricted cubic spline analysis (RCS), and bootstrap resampling assessed independent association, continuous risk relationship, and internal validation.

Results: During a median follow-up of 63.8 months, 24 patients (9.2%) developed ORNJ. HTRVI showed superior discrimination (AUC, 0.864; 95% CI, 0.769–0.932) compared with Hb (AUC, 0.785; $P=0.001$) and GINI (AUC, 0.759; $P=0.045$). HTRVI remained independently associated with ORNJ after adjustment for mandibular mean dose and post-CCRT tooth extraction burden (OR per standard deviation increase, 4.81; 95% CI, 1.10–20.99; $P=0.037$). RCS analysis showed a significant continuous association between HTRVI and ORNJ risk ($P_{\text{overall}} < 0.001$) without nonlinearity ($P_{\text{nonlinear}} = 0.736$). Internal validation showed minimal optimism (bootstrap-corrected AUC, 0.993).

Conclusions: HTRVI was independently associated with ORNJ and improved prediction beyond established clinical and dosimetric factors in this single-center cohort. The continuous HTRVI–ORNJ association supports a biological continuum model of host tissue repair vulnerability. However, HTRVI should currently be regarded as an investigational biomarker requiring independent external and prospective validation before clinical implementation.

Keywords: osteoradionecrosis; nasopharyngeal carcinoma; host tissue repair vulnerability index; radiotherapy toxicity; host susceptibility; risk stratification

ASYMPTOMATIC INTERNAL ROOT RESORPTION IDENTIFIED ON ROUTINE RADIOGRAPHIC EXAMINATION: A CASE REPORT

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ABSTRACT

Objective:

Internal root resorption (IRR) is a rare type of root resorption characterized by dentin loss associated with odontoclastic activity secondary to an inflammatory response within the pulp tissue. Due to its often asymptomatic nature, it may be incidentally detected during routine radiographic examinations. This case report aims to emphasize the importance of careful radiographic evaluation in the early diagnosis of IRR and to highlight its contribution to accurate diagnosis and appropriate treatment planning.

Materials and Methods: A routine panoramic radiograph was obtained from a 21-year-old systemically healthy patient who presented to our clinic with pain in the third molar region. Panoramic radiographic examination revealed suspected root resorption associated with the maxillary right lateral incisor, and a periapical radiograph was subsequently obtained for further evaluation. Periapical radiography demonstrated irregularity in the canal contour and loss of continuity of the canal lumen at the coronal third of the root. Cone-beam computed tomography (CBCT) examination was performed for detailed assessment of the resorptive lesion.

Results: CBCT evaluation revealed a resorptive defect associated with the pulp canal space and extending toward the buccal aspect at the coronal third of the root of the maxillary right lateral incisor. Preservation of the external root contour and the continuity between the resorptive area and the canal space were consistent with internal root resorption. The patient was referred to the Department of Endodontics for treatment planning.

Conclusion: This case highlights the importance of careful radiographic evaluation in the early diagnosis of internal root resorption and demonstrates the value of CBCT in determining the localization and extent of resorptive lesions. Three-dimensional imaging contributes to accurate diagnosis and appropriate treatment planning in cases of internal root resorption.

Keywords: Cone-Beam Computed Tomography, Endodontics, Panoramic Radiography, Root Resorption

INCIDENTALLY DETECTED RETAINED PELLETS ON ROUTINE PANORAMIC RADIOGRAPHY: A CASE REPORT

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ABSTRACT

OBJECTIVE: Panoramic radiography (PR) is widely used for routine evaluation of the maxillofacial region. Although it provides valuable diagnostic information, incidental radiopaque findings such as foreign bodies may complicate image interpretation and may be confused with pathological calcifications or other radiopaque lesions. Accurate identification of these findings is essential to avoid unnecessary investigations and interventions. This case report emphasizes the importance of recognizing incidentally detected metallic foreign bodies on routine PR and highlights the contribution of detailed medical history to accurate diagnosis and appropriate patient management.

Materials and Methods: A 35-year-old male patient presented for a routine dental examination. Clinical examination revealed no symptoms or pathological findings. PR revealed five millimetric, well-defined radiopaque foreign bodies in the maxillofacial region, which were considered compatible with retained shotgun pellets. A detailed medical history revealed a previous shotgun pellet injury approximately three years earlier. The localization of the metallic foreign bodies and their relationship with adjacent anatomical structures were evaluated based on clinical and radiographic findings.

Results: The radiopaque findings were diagnosed as retained metallic foreign bodies associated with previous trauma. No clinical signs of infection or pathological changes related to the foreign bodies were observed. The patient reported that the retained pellets were under the follow-up of his physician and that removal was not considered necessary due to the absence of symptoms. The patient was advised to inform healthcare providers about the presence of retained metallic foreign bodies, especially before magnetic resonance imaging (MRI) examinations.

Conclusion: Routine PR is valuable for the incidental detection of asymptomatic retained metallic foreign bodies. Correlation of radiographic findings with the patient's medical history facilitates accurate diagnosis, prevents unnecessary surgical procedures, and supports appropriate patient management. Awareness of retained metallic foreign bodies before MRI is essential for ensuring patient safety.

Keywords: Foreign Bodies, Maxillofacial Injuries, Panoramic Radiography, Wounds

ALTERNATIVE BIRTH METHODS: WATER BIRTH, PLANNED HOME BIRTH, VAGINAL BIRTH AFTER CESAREAN, AND EPIDURAL BIRTH

ALTERNATİF DOĞUM YÖNTEMLERİ: SUDA DOĞUM, PLANLI EVDE DOĞUM, SEZARYEN SONRASI VAJİNAL DOĞUM VE EPİDURAL DOĞUM

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ABSTRACT

Objective: Although the physiology of birth has remained unchanged for thousands of years, the ways in which birth is managed have evolved significantly. Alternative birth methods such as water birth, planned home birth, vaginal birth after cesarean (VBAC), and epidural birth have become increasingly popular with the common goals of careful monitoring, reducing unnecessary interventions, involving parents in decision-making, and supporting women's autonomy. This narrative review aims to examine the benefits, risks, eligibility criteria, and current evidence regarding these alternative birth methods.

Materials and Methods: This narrative review was conducted by synthesizing current national and international guidelines and evidence-based literature on water birth, planned home birth, vaginal birth after cesarean (VBAC), and epidural analgesia. Key sources included recommendations from ACOG and other professional organizations, along with recent clinical studies and systematic reviews related to maternal and neonatal outcomes of these alternative birth methods.

Results: Water immersion during the first stage of labor is associated with reduced pain perception, decreased need for pharmacological analgesia, shorter labor duration, and higher maternal satisfaction; however, evidence regarding the second stage remains limited, and ACOG recommends delivery out of water. Planned home birth, when conducted for low-risk women with appropriate preparation, can reduce rates of induction, episiotomy, and cesarean section while improving psychological outcomes. VBAC success rates generally range between 60% and 80%, with previous vaginal birth history being the strongest predictor, along with maternal height, estimated fetal weight, and cervical dilatation. Modern low-dose epidural analgesia provides effective pain relief with minimal impact on labor progress and operative delivery rates, and large-scale evidence suggests it may reduce severe maternal morbidity.

Conclusion: In conclusion, the safe implementation of alternative birth methods requires evidence-based protocols and woman-centered care. When appropriate eligibility criteria are applied and continuous monitoring is ensured, these methods can support maternal autonomy, reduce unnecessary interventions, and improve birth experiences without compromising safety.

Keywords: Water birth; Planned home birth; Vaginal birth after cesarean; Epidural analgesia

ÖZET

Amaç: Doğumun fizyolojisi değişmemiş olsa da yönetim şekilleri yıllar içinde çeşitlenmiştir. Suda doğum, planlı evde doğum, sezaryen sonrası vajinal doğum (SSVD/VBAC) ve epidural doğum gibi alternatif yöntemler, gereksiz müdahaleleri azaltma, ebeveynlerin karar alma süreçlerine katılımını artırma ve kadın merkezli bakım sunma amacıyla giderek daha fazla tercih edilmektedir. Bu derleme, söz konusu alternatif doğum yöntemlerinin yararları, riskleri, uygulama kriterleri ve güncel kanıtlar ışığında incelenmesini amaçlamaktadır.

Materyal ve Yöntem: Bu anlatsal derleme, suda doğum, planlı evde doğum, sezaryen sonrası vajinal doğum (SSVD) ve epidural analjezi konularındaki güncel ulusal ve uluslararası kılavuzlar ile kanıta dayalı literatürün sentezlenmesiyle gerçekleştirilmiştir. Kaynaklar arasında ACOG önerileri, mesleki örgütlerin rehberleri ve bu alternatif doğum yöntemlerinin maternal ve neonatal sonuçlarına ilişkin klinik çalışmalar ile sistematik derlemeler yer almaktadır.

Bulgular: Suda doğum, özellikle doğumun birinci evresinde ağrı algısını azaltmakta, farmakolojik analjezi ihtiyacını düşürmekte ve doğum memnuniyetini artırmaktadır; ancak ikinci evrede su altında

doğum konusunda kanıtlar sınırlıdır ve ACOG su dışında doğumu önermektedir. Planlı evde doğum, düşük riskli gebelerde indüksiyon, epizyotomi ve sezaryen oranlarını azaltırken, uygun hazırlıklarla gerçekleştirildiğinde güvenli bir seçenek olabilir. SSVD başarı oranı genel olarak %60-80 arasında değişmekte olup, önceki vajinal doğum öyküsü, maternal boy, fetal ağırlık ve servikal dilatasyon gibi faktörler başarıyı belirlemektedir. Epidural analjezi etkili ağrı kontrolü sağlarken, modern düşük doz tekniklerle doğum süresi ve operatif doğum riski üzerindeki olumsuz etkiler büyük ölçüde azalmıştır; ayrıca şiddetli maternal morbiditeyi azaltıcı etkisi bildirilmektedir.

Sonuç: Sonuç olarak, alternatif doğum yöntemlerinin güvenli uygulanması için kanıta dayalı protokoller ve kadın merkezli danışmanlık kritik öneme sahiptir. Uygun seçim kriterleri uygulandığında ve sürekli izlem sağlandığında, bu yöntemler maternal özerkliği destekleyebilir, gereksiz müdahaleleri azaltabilir ve doğum deneyimini iyileştirebilir.

Anahtar Kelimeler: Suda doğum; Planlı evde doğum; Sezaryen sonrası vajinal doğum; Epidural doğum

THE IMPACT OF HEALTHY LIFESTYLE BEHAVIORS ON FERTILITY AND THE ROLE OF MIDWIVES IN SUPPORTING FERTILITY

SAĞLIKLI YAŞAM BİÇİMİ DAVRANIŞLARININ FERTİLİTE ÜZERİNDEKİ ETKİSİ VE FERTİLİTENİN DESTEKLENMESİNDE EBENİN ROLÜ

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ABSTRACT

Objective: Infertility is a global public health issue affecting approximately 10–15% of reproductive-aged couples and is defined by the World Health Organization (WHO, 2025) as a disease of the reproductive system. Alongside organic and pathological causes, modifiable lifestyle behaviors—including nutrition, body weight, physical activity, tobacco/alcohol/substance use, psychological stress, environmental toxins, endocrine-disrupting chemicals (EDCs), sleep disturbances, and electromagnetic exposure—play a critical role in infertility etiology. This narrative review aims to examine the biological and hormonal mechanisms through which healthy lifestyle behaviors influence fertility and to highlight the key roles of midwives as educators, counselors, and care providers in protecting reproductive health and supporting fertility.

Materials and Methods: A comprehensive literature search was conducted across PubMed, Web of Science, Scopus, ScienceDirect, CINAHL, and the YÖK Thesis Center databases using combinations of keywords including infertility, fertility, lifestyle factors (BMI, nutrition, exercise, toxic exposures), endocrine disruptors, and midwifery care. Current national and international clinical guidelines (WHO, 2025; ASRM, 2024; ESHRE) alongside evidence-based literature published between 2021 and 2026 were retrieved and synthesized in accordance with APA referencing standards.

Results: The synthesized literature demonstrates that obesity (BMI ≥ 30 kg/m²) and low body weight (BMI < 18.5 kg/m²) impair ovulation and oocyte quality in women while decreasing sperm concentration and motility in men. Adherence to a Mediterranean diet rich in antioxidants and omega-3 fatty acids positively correlates with improved semen parameters and higher IVF success rates. Moderate physical activity supports fertility; however, strenuous or elite exercise can negatively affect ovarian function and semen quality. Active and passive smoking, alcohol abuse, high caffeine intake (>300 mg/day), chronic stress, sleep deprivation, exposure to EDCs (phthalates, parabens, heavy metals in cosmetics), and elevated scrotal temperature are consistently associated with increased sperm DNA fragmentation, reduced ovarian reserve, and prolonged time-to-pregnancy.

Conclusion: Healthy lifestyle interventions represent cost-effective, high-impact strategies that significantly improve both natural conception rates and assisted reproductive technology outcomes. Midwives, operating on the frontline of primary healthcare and reproductive health services, are uniquely positioned to screen for lifestyle risk factors, deliver individualized counseling, facilitate stress and weight management, and foster sustainable health behavior changes. Integrating midwife-led holistic lifestyle coaching into preconception and infertility care pathways is strongly recommended.

Keywords: Infertility; Fertility; Lifestyle Behaviors; Endocrine Disruptors; Midwifery Care

ÖZET

Amaç: İnfertilite, üreme çağındaki çiftlerin yaklaşık %10-15'ini etkileyen küresel bir halk sağlığı sorunudur ve Dünya Sağlık Örgütü (WHO, 2025) tarafından üreme sisteminin bir hastalığı olarak tanımlanmaktadır. Organik ve patolojik nedenlerin yanı sıra, beslenme, vücut ağırlığı, fiziksel aktivite, tütün/alkol/madde kullanımı, psikolojik stres, çevresel toksinler, endokrin bozucu kimyasallar (EDC'ler), uyku bozuklukları ve elektromanyetik maruziyet gibi değiştirilebilir yaşam biçimi davranışları infertilite etiyolojisinde kritik rol oynamaktadır. Bu derlemenin amacı, sağlıklı yaşam

biçimi davranışlarının fertilitiyi etkilediği biyolojik ve hormonal mekanizmaları incelemek ve ebelerin üreme sağlığını koruma ile fertilitenin desteklenmesindeki eğitici, danışman ve bakım verici rollerini vurgulamaktır.

Materyal ve Yöntem: Bu anlatsal derleme için PubMed, Web of Science, Scopus, ScienceDirect, CINAHL ve YÖK Tez Merkezi veritabanlarında infertilite, fertilitite, yaşam biçimi faktörleri (BKİ, beslenme, egzersiz, toksik maruziyetler), endokrin bozucular ve ebelik bakımı anahtar kelimeleri kullanılarak kapsamlı bir literatür taraması yapılmıştır. 2021-2026 yılları arasında yayımlanan kanıta dayalı literatür ile güncel ulusal ve uluslararası klinik kılavuzlar (WHO, 2025; ASRM, 2024; ESHRE) APA referans standartlarına uygun şekilde taranmış ve sentezlenmiştir.

Bulgular: Sentezlenen literatür, obezite ($BKİ \geq 30 \text{ kg/m}^2$) ve düşük vücut ağırlığının ($BKİ < 18,5 \text{ kg/m}^2$) kadınlarda ovulasyon ve oosit kalitesini bozduğunu, erkeklerde ise sperm konsantrasyonu ve motilitesini azalttığını göstermektedir. Antioksidan ve omega-3 yağ asitlerinden zengin Akdeniz diyetine uyum, semen parametrelerinde iyileşme ve daha yüksek IVF başarı oranları ile pozitif ilişkilidir. Orta düzeyde fiziksel aktivite fertilitiyi desteklerken, aşırı/elit düzeyde egzersiz over fonksiyonunu ve semen kalitesini olumsuz etkileyebilmektedir. Aktif ve pasif sigara kullanımı, alkol kötüye kullanımı, yüksek kafein alımı ($>300 \text{ mg/gün}$), kronik stres, uyku yoksunluğu, EDC'lere (kozmetiklerdeki fitalatlar, parabenler, ağır metaller) maruziyet ve artmış skrotal sıcaklık; artmış sperm DNA fragmantasyonu, azalmış over rezervi ve uzamış gebe kalma süresi ile tutarlı şekilde ilişkilendirilmiştir.

Sonuç: Sağlıklı yaşam biçimi müdahaleleri, hem doğal konsepsiyon oranlarını hem de yardımcı üreme teknikleri sonuçlarını önemli ölçüde iyileştiren maliyet-etkin ve yüksek etkili stratejilerdir. Birinci basamak sağlık hizmetleri ve üreme sağlığı hizmetlerinin ön saflarında yer alan ebeler, yaşam biçimi risk faktörlerini tarama, bireyselleştirilmiş danışmanlık sunma, stres ve kilo yönetimini kolaylaştırma ve sürdürülebilir sağlık davranışı değişikliklerini teşvik etme konusunda benzersiz bir konuma sahiptir. Ebe liderliğindeki bütüncül yaşam tarzı koçluğunun prekonsepsiyonel ve infertilite bakım yollarına entegre edilmesi güçlü şekilde önerilmektedir.

Anahtar Kelimeler: İnfertilite; Fertilitite; Yaşam Biçimi Davranışları; Endokrin Bozucular; Ebelik Bakımı

**ARTIFICIAL INTELLIGENCE FOR INTELLIGENT DISASTER MANAGEMENT:
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ABSTRACT

Artificial Intelligence (AI) is transforming disaster management by enabling predictive, preventive, and responsive strategies to mitigate the impacts of both natural and man-made disasters. The convergence of AI with smart agriculture and healthcare has created innovative solutions that enhance resilience, improve decision-making, and support sustainable development. In smart agriculture, AI integrates machine learning, deep learning, Internet of Things (IoT) devices, satellite remote sensing, drones, and weather forecasting systems to detect droughts, floods, pest infestations, crop diseases, and wildfires, thereby improving crop productivity, resource utilization, and food security. In healthcare, AI strengthens disaster preparedness through disease outbreak prediction, intelligent patient triage, medical image analysis, telemedicine, emergency resource optimization, and real-time surveillance during pandemics, industrial accidents, and environmental hazards. Recent advancements in Generative AI, Explainable AI (XAI), digital twins, edge computing, federated learning, and multimodal data analytics have further improved early warning systems, situational awareness, and coordinated emergency response. These technologies facilitate faster risk assessment, efficient resource allocation, and evidence-based decision-making while supporting climate adaptation and resilient infrastructure. However, challenges related to data privacy, cybersecurity, interoperability, algorithmic bias, ethical governance, and regulatory compliance continue to influence the widespread adoption of AI-based disaster management systems. This chapter presents a comprehensive overview of AI-driven disaster management by integrating smart agriculture and healthcare perspectives, discussing emerging technologies, recent developments, implementation challenges, and future research directions. The proposed AI-enabled framework contributes to resilient communities, sustainable agriculture, improved healthcare delivery, and effective disaster risk reduction, aligning with global sustainability goals and promoting a safer, smarter, and more adaptive future.

Keywords: Artificial Intelligence (AI), Disaster Management, Smart Agriculture, Healthcare Resilience, Predictive Analytics

ANALYSIS OF LEAD LEVELS IN AUTOMOTIVE PAINTING WORKERS IN MAKASSAR CITY

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ABSTRACT

Lead (Pb) exposure is a potential occupational health risk among automotive painting workshop workers due to contact with heavy metal-containing materials during painting activities. Lead can accumulate in the body, and hair is commonly used as a bioindicator of long-term exposure. This study aimed to describe lead (Pb) levels in hair and examine the relationship between age, years of service, daily working hours, smoking intensity, PPE use, and hair lead levels among automotive painting workshop workers in Makassar City. A cross-sectional study was conducted involving 32 workers selected through accidental sampling. Data were collected through laboratory analysis of hair samples and interviews using a structured questionnaire. Data were analyzed using univariate and bivariate methods, including Spearman correlation and independent t-tests. Most respondents were aged ≥ 27 years, had more than 10 years of work experience, worked ≤ 8 hours per day, had moderate smoking intensity, and did not use appropriate PPE. Lead levels in hair ranged from 0.007 to 1.17 mg Pb/100 g and were within the normal range for all respondents. No significant associations were found between age, years of service, working hours, smoking intensity, PPE use, and hair lead levels ($p > 0.05$). Although lead levels in hair tended to increase with years of service, working hours, and smoking intensity, the correlations were very weak. This study concludes that the individual characteristics examined were not significantly associated with hair lead levels among automotive painting workshop workers in Makassar City. Regular monitoring and safe work practices are recommended to minimize long-term lead accumulation.

Keywords: Automotive painting workers, bioindicator, hair, lead

STRUCTURE-BASED DRUG REPURPOSING TO INHIBIT THE DNA GYRASE OF MYCOBACTERIUM TUBERCULOSIS

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ABSTRACT

Drug repurposing is an alternative avenue for identifying new drugs to treat tuberculosis (TB). Although TB can be cured with anti-tubercular drugs, the emergence of multidrug-resistant and extensively drug-resistant strains of *Mycobacterium tuberculosis* H37Rv (Mtb), as well as the significant death toll globally, necessitate the development of effective drugs to treat TB. In this study, drug repurposing approach was employed to address this drug resistance problem by screening drugbank database to identify novel inhibitors of the Mtb target enzyme, DNA gyrase. The compounds were screened against the ATPase domain of gyrase B subunit (MtbGyrB47), and the docking results showed Echinacoside, Doxorubicin, Epirubicin, and Idarubicin possess high binding affinities against MtbGyrB47. Comprehensive assessment using fluorescence spectroscopy, SPR, and CD titration studies revealed that Echinacoside as a potent binder against MtbGyrB47. Further, ATPase, and DNA supercoiling assays exhibited IC₅₀ values of 2.1-4.7 μ M for Echinacoside, Doxorubicin, Epirubicin, and Idarubicin. Among these compounds, the least MIC₉₀ of 6.3 μ M and 12 μ M were observed for Epirubicin and Echinacoside, respectively. Hence, our findings indicate that Echinacoside and Epirubicin target mycobacterial DNA gyrase, inhibit its catalytic cycle, and retard mycobacterium growth. Further these compounds exhibits potential scaffolds for optimizing novel anti-mycobacterial agents that can act on drug-resistant strains.

Keywords: ATP hydrolysis, ATPase, DNA gyrase, DNA supercoiling, drug repurposing, *Mycobacterium tuberculosis*

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**SCIENTIFIC DISCOURSE ON EPILEPSY: IMMUNOLOGICAL AND OTHER
PATHOGENETIC MECHANISMS, DIAGNOSTIC CHALLENGES, PHARMACOLOGICAL
MANAGEMENT, DRUG-RELATED COMPLICATIONS, CURRENT ADVANCES IN
DIAGNOSIS, PRECISION THERAPEUTICS, CLINICAL OUTCOMES AND FUTURE
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ABSTRACT

Epilepsy is one of the most common chronic neurological disorders and represents a major global public health challenge because of its high prevalence, recurrent clinical manifestations, and profound impact on patients, families, and healthcare systems. Characterized by recurrent unprovoked seizures resulting from abnormal, excessive, and synchronous neuronal activity within the central nervous system, epilepsy encompasses a heterogeneous group of disorders with diverse etiologies, clinical presentations, and prognostic outcomes. Although remarkable advances have been achieved in neuroimaging, molecular genetics, electrophysiology, and pharmacotherapy, the complex biological mechanisms underlying epileptogenesis remain incompletely understood. Recent scientific discoveries have substantially expanded the traditional concept of epilepsy from a disorder primarily involving neuronal hyperexcitability to a multifactorial disease in which immune dysregulation, neuroinflammation, genetic susceptibility, structural abnormalities, metabolic disturbances, infectious agents, vascular injury, and environmental influences interact through intricate molecular and cellular pathways to promote seizure initiation, propagation, and chronic disease progression. Growing evidence has identified immunological mechanisms as central contributors to the development and persistence of epilepsy. Activation of innate and adaptive immune responses following brain injury or systemic inflammation initiates a cascade of inflammatory signaling involving activated microglia, astrocytes, infiltrating immune cells, cytokines, chemokines, complement proteins, and damage-associated molecular patterns. These inflammatory mediators alter neuronal excitability by disrupting glutamatergic and gamma-aminobutyric acid neurotransmission, modifying ion channel function, impairing synaptic plasticity, and compromising the integrity of the blood-brain barrier. Autoimmune forms of epilepsy have further emphasized the importance of immune-mediated mechanisms through the identification of neuronal autoantibodies directed against cell-surface and intracellular antigens, leading to distinct clinical syndromes that frequently respond to immunomodulatory therapies. The recognition of these mechanisms has transformed diagnostic approaches and expanded therapeutic opportunities beyond conventional antiseizure medications. In addition to immunological factors, epilepsy arises from numerous pathogenetic mechanisms that frequently coexist and influence disease severity. Genetic mutations affecting ion channels, synaptic proteins, neurotransmitter receptors, and intracellular signaling pathways contribute to inherited epileptic syndromes and modify susceptibility to acquired forms of epilepsy. Structural brain abnormalities, including cortical malformations, hippocampal sclerosis, traumatic brain injury, cerebrovascular disease, neoplasms, and neurodegenerative disorders, disrupt normal neuronal networks and facilitate epileptogenesis. Metabolic disorders, mitochondrial dysfunction, electrolyte imbalances, developmental abnormalities, and central nervous system infections further contribute to disease complexity by altering neuronal metabolism, synaptic connectivity, and network stability. These diverse mechanisms underscore the biological heterogeneity of epilepsy and highlight the importance of individualized diagnostic evaluation and precision-based therapeutic strategies. Despite considerable therapeutic progress, epilepsy continues to present substantial clinical and societal challenges. A significant proportion of patients develop drug-resistant epilepsy despite receiving appropriately selected antiseizure medications, resulting in persistent seizures, cognitive decline, psychiatric comorbidities, increased injury risk, reduced quality of life, and elevated premature mortality. Delayed diagnosis, limited access to specialized neurological care, socioeconomic disparities, healthcare resource limitations, and persistent social stigma remain major barriers to optimal disease management worldwide. Furthermore, epilepsy frequently coexists with depression, anxiety, cognitive impairment, sleep disorders, and other neurological conditions, necessitating comprehensive multidisciplinary approaches that address both seizure control and long-term psychosocial well-being. Pharmacological management remains the cornerstone of epilepsy treatment and aims to achieve complete seizure freedom while minimizing adverse effects and preserving cognitive and functional capacity. Contemporary antiseizure medications target multiple molecular pathways, including voltage-gated sodium and calcium channels, gamma-aminobutyric acid receptors, glutamate receptors, potassium channels, and synaptic vesicle proteins, thereby reducing

neuronal hyperexcitability through complementary mechanisms. The selection of therapy depends upon seizure classification, epilepsy syndrome, patient age, comorbidities, reproductive considerations, pharmacokinetic properties, and potential drug interactions. Emerging precision medicine approaches integrating genomic information, molecular biomarkers, advanced neuroimaging, and immunological profiling are increasingly facilitating individualized treatment selection and improving therapeutic outcomes, particularly in patients with genetically determined or immune-mediated epilepsies. Although modern antiseizure medications have significantly improved disease control, their long-term use is frequently associated with adverse effects that influence treatment adherence and quality of life. Drug-related complications include neuropsychiatric disturbances, cognitive impairment, hepatotoxicity, nephrolithiasis, metabolic abnormalities, hematological disorders, dermatological hypersensitivity reactions, endocrine dysfunction, osteoporosis, teratogenicity, and clinically significant pharmacokinetic interactions. Careful patient monitoring, individualized dose optimization, and early recognition of adverse events are therefore essential components of comprehensive epilepsy management. Future therapeutic developments involving immunomodulatory agents, targeted biological therapies, gene editing technologies, neuromodulation, regenerative medicine, and artificial intelligence-assisted clinical decision-making offer promising opportunities for improving seizure control and modifying disease progression. This scientific discourse synthesizes current evidence regarding the immunological and non-immunological mechanisms of epileptogenesis, examines contemporary diagnostic and therapeutic challenges, evaluates pharmacological management and drug-related complications, and highlights emerging advances that are shaping precision therapeutics and future epilepsy research worldwide.

Keywords: Epilepsy; Neuroinflammation; Autoimmune Epilepsy; Precision Therapeutics; Antiseizure Medications.

THE ROLE OF CHATGPT IN PROVIDING MENTAL HEALTH INFORMATION AND SUPPORT: A LITERATURE REVIEW

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ABSTRACT

Purpose: To analyze and synthesize the available scientific evidence regarding the application of ChatGPT in mental health, evaluating its capabilities, limitations, and future clinical potential.

Materials and Methods: A narrative literature review was conducted based on a systematic search of PubMed, Scopus, Web of Science, and Google Scholar. English-language publications published between 2023 and 2026 addressing the use of ChatGPT and other large language models in mental health were considered. After applying predefined inclusion and exclusion criteria, eight studies were included, comprising systematic and scoping reviews, original research, and qualitative studies.

Results: The reviewed evidence indicates that ChatGPT has potential as a tool for psychoeducation, providing accessible mental health information, and supporting the preliminary screening of anxiety, depression, and other common mental disorders. Empirical studies demonstrated good agreement between ChatGPT-adapted questionnaires and validated psychometric instruments for anxiety and depression assessment, whereas reliability was lower for more complex psychological constructs. Comparative analyses of different large language models revealed variability in diagnostic performance depending on the model, clinical task, and prompt design. Users generally appreciated ChatGPT's accessibility, anonymity, and practical recommendations but expressed concerns regarding the accuracy, consistency, and reliability of its responses.

Conclusions: Current evidence suggests that ChatGPT may serve as a valuable complementary tool in mental healthcare, particularly for psychoeducation, preliminary screening, and facilitating access to health information. However, it lacks sufficient clinical reliability to replace professional assessment or therapeutic decision-making. Further high-quality clinical studies, standardized validation methods, and clear ethical and regulatory frameworks are required to ensure the safe and effective integration of generative artificial intelligence into mental health practice.

Keywords: Mental health, ChatGPT, artificial intelligence, anxiety and depression screening, digital health.

VISION TRANSFORMER-BASED BREAST CANCER CLASSIFICATION FROM HISTOPATHOLOGICAL IMAGES

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ABSTRACT

Early and accurate detection of breast cancer is essential for improving diagnosis and patient survival. Although Convolutional Neural Networks (CNNs) have achieved promising results in medical image analysis, their local receptive fields may limit their ability to capture global contextual information in complex histopathological images. Therefore, this study proposes a Vision Transformer (ViT)-based approach that leverages self-attention mechanisms to improve feature extraction and classification performance for breast cancer diagnosis. A Vision Transformer (ViT) model was fine-tuned using transfer learning on a labeled breast histopathological image dataset. The framework was implemented in Python using the PyTorch deep learning library. Model performance was evaluated using standard classification metrics, including accuracy, precision, recall, specificity, F1-score, and the area under the Receiver Operating Characteristic curve (ROC-AUC). The proposed ViT-based framework demonstrated strong performance in breast cancer classification by effectively capturing both local and global image features through self-attention. The evaluation metrics indicate that the model provides accurate and reliable classification performance, highlighting its potential for computer-aided diagnosis. The findings suggest that Vision Transformers offer an effective alternative to conventional CNN-based approaches for breast cancer classification from histopathological images. By exploiting global contextual information, the proposed model has the potential to improve diagnostic accuracy and support pathologists in digital pathology applications. Future work will focus on optimizing the model and validating its performance on larger and more diverse datasets.

Keywords: Breast Cancer Classification; Vision Transformer; Histopathological Images; Deep Learning; Transfer Learning; Digital Pathology.

HEALTH LITERACY STATUS AMONG ADOLESCENTS AND IMPLICATIONS IN ETHIOPIA

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ABSTRACT

Background: Adolescents' health literacy (HL) plays a decisive role in shaping their behaviors and long-term wellbeing. Low HL among this age group intensifies pressing challenges such as sexually transmitted infections and diseases, substance use, and mental health issues. This study aims to assess adolescents' HL status and elucidate the implications in Ethiopia.

Methods: A cross-sectional study was conducted in 2024 among secondary school students using stratified random sampling. Data were collected with a validated HL scale consisting of 33 items. Responses were self-administered, processed in Epidata 3.1, and analyzed in SPSS 27.0 using descriptive and inferential statistics.

Results: Among 722 participants, nearly three-quarters (74.8%) had inadequate HL. About 80% reported unhealthy behavior, at least in one of key health-related behaviors. Inadequate HL was strongly linked to risky behaviors and to sociodemographic factors such as attending public schools, low parental education, and low household income.

Conclusion and implications: The findings highlight an urgent need for tailored interventions to strengthen HL among adolescents. Integrating HL into school curricula and community programs could empower adolescents to make informed choices, reduce risky behaviors, and improve overall wellbeing. Addressing socioeconomic disparities is equally crucial to ensure equitable health outcomes. Strengthening HL among adolescents also should be recognized as a national priority to foster healthy lifestyles, reduce health risks, and advance broader public health and development goals.

Keywords: Adolescent, social determinants of health, health literacy, health behavior, Ethiopia

MOROCCAN MIDDLE ATLAS MEDICINAL FLORA: A METHODOLOGICAL FRAMEWORK FOR PHYTOCHEMICAL AND ANTI-INFLAMMATORY BIOACTIVITY SCREENING

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ABSTRACT

Objectives: Despite centuries of traditional use, the medicinal flora of the Moroccan Middle Atlas has rarely been examined through the lens of modern pharmacology. This work sets out to critically review the scientific literature on plants traditionally used against chronic inflammatory conditions in this region, and to develop a standardized extraction protocol for the systematic phytochemical screening of their bioactive potential.

Methods: A structured bibliographic database was built from over 140 indexed, peer-reviewed articles (Scopus, PubMed, Web of Science), documenting the botanical, phytochemical and pharmacological profiles of the relevant species. Most of the available studies were conducted in other geographic contexts, and region-specific data remain scarce. Building on this review, a standardized hydroalcoholic maceration protocol was designed and applied to dried, ground plant material collected in the Moroccan Middle Atlas, with a view to subsequent chemical characterization by HPLC.

Results: The literature reveals a body of evidence that is substantial yet fragmented and rarely specific to this region: the species concerned are consistently described elsewhere as rich in polyphenolic and terpenoid compounds with antioxidant and anti-inflammatory properties, while standardized pharmacological validation carried out locally remains uncommon. A reproducible extraction protocol has since been implemented, and the resulting extracts are currently being processed for chemical profiling.

Conclusions: Taken together, these findings position the Moroccan Middle Atlas as a still largely untapped source of bioactive natural compounds. The methodological framework proposed here offers a reproducible basis for its scientific valorization and lays the groundwork for further pharmacological investigation of this traditional pharmacopeia.

Keywords: Medicinal plants; Moroccan Middle Atlas; Phytochemical screening; Anti-inflammatory bioactivity; Standardized extraction.

NATURAL COMPOUNDS IN THE PREVENTION AND MANAGEMENT OF NEUROLOGICAL DISORDERS: THERAPEUTIC POTENTIAL AND FUTURE PERSPECTIVES

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ABSTRACT

Neurological disorders, including Alzheimer's disease, Parkinson's disease, epilepsy, stroke, and multiple sclerosis, are among the leading causes of disability and mortality worldwide. Their pathogenesis is characterized by complex mechanisms such as oxidative stress, neuroinflammation, mitochondrial dysfunction, protein misfolding, and progressive neuronal loss, which collectively contribute to cognitive and motor impairments. In recent years, naturally derived compounds from plants, marine organisms, fungi, and microorganisms have attracted considerable interest for their neuroprotective properties and potential therapeutic applications. Plant-derived constituents such as polyphenols, flavonoids, alkaloids, terpenoids, and carotenoids have demonstrated antioxidant, anti-inflammatory, anti-apoptotic, and neuroregenerative effects in experimental studies. These natural molecules influence multiple cellular signaling pathways involved in neuronal survival, synaptic plasticity, mitochondrial function, and the regulation of inflammatory responses, thereby offering a multitargeted approach to the management of neurological diseases. Although promising findings have been reported in preclinical studies, their clinical application remains limited by poor bioavailability, rapid metabolism, restricted blood–brain barrier penetration, and a lack of well-designed clinical trials. Advances in drug delivery systems, including nanotechnology-based formulations and structural optimization, are expected to overcome these limitations and improve therapeutic outcomes. This review summarizes the mechanisms of action, therapeutic potential, and current challenges associated with natural compounds in neurological disorders, highlighting their promise as complementary strategies for disease prevention and management while emphasizing the need for further translational and clinical research.

Keywords: Neurological disorders, Natural compounds, Neuroprotection, Oxidative stress, Phytochemicals

THE IMPACT OF PHYSICAL ACTIVITY, OBESITY, AND BODY MASS ON COLORECTAL CANCER RISK: MECHANISMS AND PREVENTIVE STRATEGIES

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ABSTRACT

Background: Colorectal cancer (CRC) is one of the most common malignancies worldwide, with markedly higher incidence rates in developed countries. Increasing evidence suggests that lifestyle-related factors, particularly obesity and physical inactivity, play a major role in colorectal carcinogenesis.

OBJECTIVE: This review aims to summarize current evidence on the relationships among body weight, obesity, physical activity, and the risk of colorectal cancer, with particular emphasis on the biological mechanisms underlying these associations.

Methods: A narrative review of epidemiological, clinical, and experimental studies examining the effects of obesity, body mass index (BMI), abdominal adiposity, and physical activity on colorectal cancer development was performed. Proposed molecular and metabolic mechanisms linking excess adiposity to colorectal carcinogenesis were also evaluated.

Results: Prospective cohort studies consistently demonstrate that overweight and obesity, particularly central obesity, are associated with an increased risk of colon cancer, especially in men. Conversely, regular physical activity significantly reduces the risk of colorectal cancer, with moderate-to-vigorous exercise associated with a 20–25% reduction in colon cancer incidence. Several biological pathways may explain these associations, including chronic low-grade inflammation, insulin resistance, hyperinsulinemia, increased insulin-like growth factor-1 (IGF-1) signaling, adipokine dysregulation, and activation of pro-inflammatory mediators such as tumor necrosis factor- α (TNF- α), interleukin-6 (IL-6), nuclear factor-kappa B (NF- κ B), and cyclooxygenase-2 (COX-2). In addition, physical activity enhances immune surveillance, shortens intestinal transit time, and improves metabolic homeostasis, thereby reducing exposure of the colonic mucosa to carcinogenic stimuli.

Conclusions: Obesity and physical inactivity are important modifiable risk factors for colorectal cancer. The available evidence supports promoting healthy body weight, regular physical activity, and balanced dietary habits as key strategies for primary prevention. Public health interventions targeting lifestyle modification may substantially reduce the global burden of colorectal cancer.

Keywords: colorectal cancer; obesity; body mass index; abdominal obesity; physical activity

**OPTIMIZING VITAMIN D3 BIOAVAILABILITY:
DEVELOPMENT OF HIGH-DOSE ORAL SHOT FORMULATION (VOL-D)**

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ABSTRACT

Background: Vitamin D3 (cholecalciferol) deficiency is a prevalent global health concern associated with skeletal, cardiovascular, and immune dysfunctions. Despite widespread supplementation, poor bioavailability and low patient adherence to conventional oral tablets or capsules remain major limitations. This study focuses on the formulation and evaluation of VOL-D, a high-dose (200,000 IU) oral shot designed to enhance Vitamin D3 absorption and improve compliance.

Objective: To develop and assess a high-strength, single-dose oral shot formulation of Vitamin D3 (VOL-D) for optimized bioavailability, ease of administration, and improved patient adherence.

Methods: A lipid-based emulsion system was optimized to enhance the solubility and intestinal absorption of cholecalciferol. The formulation was evaluated for physicochemical stability, uniformity, and palatability. Comparative in vitro dissolution and simulated intestinal absorption studies were conducted against conventional tablet forms. Additionally, sensory acceptability and compliance potential were assessed through pilot consumer feedback.

Results: VOL-D demonstrated superior dispersion and dissolution characteristics compared to standard Vitamin D3 tablets, indicating improved bioavailability potential. The formulation remained physically and chemically stable over accelerated storage conditions. Participant feedback reflected enhanced convenience, taste acceptability, and willingness for continued use, supporting improved adherence potential.

Conclusion: The VOL-D oral shot offers an innovative, patient-friendly, and effective nutraceutical approach to address Vitamin D3 deficiency. By combining high-dose efficacy with superior absorption and convenience, this formulation can contribute to global preventive healthcare strategies against hypovitaminosis D.

Keywords: Vitamin D3, Cholecalciferol, Bioavailability, Oral Shot, Nutraceutical, VOL-D, Supplementation, Innovation, Immunity, Formulation Development

HEALTH INSURANCE AND FINANCIAL PROTECTION IN INDIA: CHALLENGES AND PROSPECTS

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ABSTRACT

Health insurance plays a pivotal role in protecting households from catastrophic health expenditure and promoting equitable access to quality healthcare services. In India, despite significant policy initiatives such as Ayushman Bharat–Pradhan Mantri Jan Arogya Yojana (AB-PMJAY), a substantial proportion of healthcare expenditure continues to be financed through out-of-pocket payments, placing considerable financial strain on households, particularly those belonging to low-income and vulnerable groups. This paper critically examines the role of health insurance in enhancing financial protection and improving healthcare accessibility in India. It explores the existing landscape of public and private health insurance schemes, the determinants of insurance coverage, and the barriers limiting enrolment and utilization. The study further analyses the economic implications of inadequate insurance coverage, including catastrophic health expenditure, indebtedness, and poverty. Drawing upon secondary data from government publications, research articles, reports of national and international organizations, and existing literature, the paper evaluates the effectiveness of current health insurance programmes in reducing financial hardship and improving health outcomes. The findings suggest that expanding insurance coverage, strengthening public healthcare infrastructure, increasing awareness, and implementing inclusive policy reforms are essential for achieving universal health coverage and ensuring sustainable financial protection. The paper concludes that a comprehensive and equitable health insurance system is fundamental to improving population health and fostering inclusive economic development in India.

Keywords: Health Insurance, Financial Protection, Universal Health Coverage, Out-of-Pocket Expenditure, Healthcare Financing, Ayushman Bharat, India.

PHARMACOGENETIC ROLE OF UGT1A6 GENE POLYMORPHISM IN ANTIEPILEPTIC DRUG RESPONSE

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ABSTRACT

Background: Ethnic diversity plays a vital role in clinical practice, significantly influencing the pharmacokinetics and pharmacodynamics of drugs. UDP-glucuronosyl transferase (UGT) is one of the most important phase II drug metabolizing enzyme, responsible for metabolism of many antiepileptic drugs which is expressed by UGT gene. The current study ascertains potential impacts of *UGT1A6* gene polymorphisms on the metabolism of valproic acid and consequently, the control of seizures in epileptic patients of Khyber Pakhtunkhwa.

Methodology: This longitudinal study enrolled 120 epileptic patients who visited the Lady Reading Hospital and Khyber Teaching Hospital, Peshawar. They were screened according to inclusion/exclusion criteria. Baseline interviews were conducted to collect the demographic data and details about seizures were documented on the structured proforma. Patients were prescribed valproic acid at recommended dosages and blood samples were drawn at three different phases. At the baseline visit, blood was collected for routine investigations and the genetic profiling of patients. DNA was extracted from blood samples by salting-out principle and targeted regions of *UGT1A6* were amplified by PCR. Sanger sequencing was performed for genotype analysis and drug plasma levels were measured through HPLC. Clinical outcome was also observed in terms of reduction in the seizures frequency. As an end-point analysis, drug plasma levels, and clinical outcomes were correlated with patients' genetic profiles to determine the impact of chosen SNPs on the metabolism of VPA.

Results: The total number of enrolled patients with epilepsy were 120 with a notable prevalence of male participants at 66.3%. The mean age of subjects was 26.1 ± 13.5 years. The most common type of seizure was Generalized tonic-clonic whereas the most prevalent age group was 21-30 years. Regarding the distribution pattern of genotypes, heterozygous variants were more common in all the SNPs of UGT genes. Statistically, no significant differences were observed in the genotype distribution between genders and seizure types.

In VPA treated group, the lower plasma concentrations and poor seizure control were significantly correlated with homozygous and heterozygous variants of *UGT1A6*.

Conclusion: The study concluded that homozygous and heterozygous variants of *UGT1A6* are most likely associated with lower plasma concentrations of valproic acid in our study population.

NEUROPROTECTIVE POTENTIAL OF NATURAL COMPOUNDS AGAINST STREPTOZOTOCIN-INDUCED DIABETIC PERIPHERAL NEUROPATHY: A PRECLINICAL STUDY

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ABSTRACT

Objective: To evaluate the neuroprotective potential of selected natural compounds, administered individually and in combination, against streptozotocin (STZ)-induced diabetic peripheral neuropathy (DPN) in experimental rats.

Background: Diabetic peripheral neuropathy is a major microvascular complication of diabetes characterized by hyperglycemia-induced oxidative stress, neuroinflammation, and progressive peripheral nerve damage. Natural compounds with antioxidant and anti-inflammatory properties may provide a promising therapeutic strategy for its management.

Methods: Diabetic peripheral neuropathy was induced in Sprague-Dawley rats by a single intraperitoneal injection of STZ (55 mg/kg). Following confirmation of diabetes, animals received oral treatment with two natural compounds at three dose levels, either individually or in combination, for four weeks. Behavioral assessments included the Von Frey, hot plate, acetone, pinprick, Randall-Selitto, and rota-rod tests. Biochemical parameters, oxidative stress markers (GSH, SOD, MDA, Catalase, and Nitrite), inflammatory biomarkers (TNF- α , IL-1 β , and CRP), and histopathological alterations of the sciatic nerve were evaluated.

Results: Treatment with the natural compounds significantly and dose-dependently improved neuropathic pain behaviors, motor coordination, fasting blood glucose, HbA1c, lipid profile, and general physiological parameters compared with diabetic controls. The treatments restored antioxidant defense by increasing GSH, SOD, and Catalase while reducing MDA and Nitrite levels. Serum inflammatory biomarkers were significantly decreased, and histopathological examination demonstrated preservation of sciatic nerve architecture, improved myelin integrity, and reduced endoneurial edema. Combination treatment consistently produced greater neuroprotective effects than individual treatments.

Conclusion: The investigated natural compounds demonstrated significant neuroprotective effects against STZ-induced diabetic peripheral neuropathy, supporting their potential as promising therapeutic candidates for further preclinical development.

Keywords: Natural Compounds; Diabetic Peripheral Neuropathy; Streptozotocin; Neuroprotection; Oxidative Stress; Neuroinflammation; Histopathology; Preclinical Study.

USE OF DIGITAL INTERVENTIONS FOR HYGIENE PROMOTION AMONG PRIMARY SCHOOL STUDENTS IN NIGERIA: A NARRATIVE REVIEW

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ABSTRACT

The sustained burden of hygiene-related diseases among primary school children in Nigeria emphasizes the urgent need for innovative, scalable, and context-sensitive interventions within primary school settings. Traditional hygiene promotion strategies, while significant, have often been limited by infrastructural deficiencies, gaps in teacher competencies, and weak integration within the broader educational framework. This narrative review critically examines the emerging role of digital interventions—including mobile applications, interactive e-learning platforms, and digital monitoring systems—in advancing hygiene promotion among primary school students in Nigeria. Drawing upon empirical evidence from school-based WASH interventions, the review highlights measurable improvements in handwashing compliance, sanitation awareness, and behavioral reinforcement when digital tools are embedded within structured programs. Complementary findings from public health education research reveal systemic gaps in curriculum design, teacher preparedness, and infrastructural support, while concurrently advocating for digital resources as a mechanism for bridging existing gaps through experiential learning and community engagement. Furthermore, implementation research frameworks applied to hygiene promotion initiatives emphasize the critical dimensions of scalability, sustainability, and policy integration, particularly in contexts where digital innovation intersects with community-driven approaches. This review situates digital hygiene interventions within broader theoretical discourses on health behavior change, educational technology adoption, and systems thinking in public health. It argues that digital platforms not only enhance knowledge acquisition but also foster participatory learning environments that empower students as agents of change within their households and communities. Nonetheless, significant challenges persist: infrastructural inequities between urban and rural schools, limited internet connectivity, inadequate teacher training in digital pedagogy, and socio-cultural barriers to technology acceptance. Addressing these constraints requires a multi-level strategy that combines policy reform, investment in school infrastructure, and capacity-building for educators, alongside the development of culturally tailored digital content. By synthesizing evidence across WASH outcomes, educational reform, and implementation science, this review concludes that digital interventions represent a transformative pathway for hygiene promotion in Nigerian primary schools. Their integration into school health programs has the potential to reduce the incidence of hygiene-related diseases, improve educational equity, and contribute to Nigeria's progress toward Sustainable Development Goals (SDGs) on health, education, and clean water and sanitation. The findings underscore the necessity of embedding digital hygiene promotion within national education and health policies, thereby ensuring long-term sustainability and systemic impact.

Keywords: digital interventions/innovation, hygiene promotion, school children, education, technology.Nigeria

LOW COST HEALTHCARE TECHNOLOGIES**Divyadharshini R.**

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ABSTRACT

LifeLink AI is an AI-powered intelligent emergency response and rural healthcare platform designed to improve the speed and efficiency of emergency medical services. The system addresses critical challenges such as delayed ambulance dispatch, inaccurate accident location detection, traffic congestion, and limited coordination between ambulances and hospitals. It integrates GPS-based emergency detection, AI-driven ambulance allocation, real-time route optimization, and smart traffic signal prioritization to ensure that the nearest suitable ambulance reaches the patient as quickly as possible. The platform also identifies the most appropriate hospital based on the patient's medical condition, availability of specialists, ICU beds, ventilators, and other essential healthcare resources. By enabling seamless communication between patients, emergency responders, and hospitals, LifeLink AI reduces response time, improves patient outcomes during the golden hour, and enhances healthcare accessibility in rural and underserved regions. The proposed solution leverages Artificial Intelligence, IoT, cloud computing, and real-time data analytics to create a scalable, reliable, and cost-effective emergency healthcare ecosystem. This integrated approach has the potential to save lives by delivering the right ambulance, the right hospital, and the right care at the right time.

Keywords: Artificial Intelligence, Emergency Response System, Smart Ambulance Dispatch, Rural Healthcare, GPS Tracking, Route Optimization, IoT, Healthcare Analytics, Smart Traffic Management, LifeLink AI.

ACCESS TO AND OUTCOMES OF EPIDURAL LABOUR ANALGESIA IN LOW-RESOURCE SETTINGS: A COMPARATIVE ANALYSIS OF URBAN VS. RURAL HEALTHCARE FACILITIES IN NIGERIA

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ABSTRACT

Introduction: Epidural labour analgesia is widely regarded as the most effective pharmacological method of intrapartum pain relief, yet its availability across Nigerian healthcare facilities remains limited and unevenly distributed between urban and rural settings. Persistent gaps in trained personnel, equipment, funding, and institutional guidelines continue to constrain access, particularly outside major urban centres.

Aim: This study compared access to, and healthcare provider perspectives on, epidural labour analgesia between urban and rural healthcare facilities in Nigeria, with a view to identifying the contextual factors that hinder its provision.

Methodology: A descriptive cross-sectional survey design was adopted. A structured, self-administered electronic questionnaire was distributed to maternal healthcare providers (midwives, nurses, obstetricians, medical officers, and anaesthetists) practising in urban and rural facilities across Nigeria. Thirty-five valid responses were analysed using descriptive statistics, Pearson's chi-square test, and Fisher's exact test (for cells with expected counts below five), with statistical significance set at $p < 0.05$.

Results: Twenty-eight respondents (80.0%) practised in urban facilities and seven (20.0%) in rural facilities. Epidural analgesia was available in 39.3% of urban facilities compared with none of the rural facilities surveyed ($p = 0.072$). Trained personnel capable of administering epidural analgesia were present in 60.7% of urban facilities versus 0.0% of rural facilities ($p = 0.008$). Lack of trained staff was cited as a limiting factor by 85.7% of rural respondents compared with 32.1% of urban respondents ($p = 0.027$). Provider attitudes toward the effectiveness and safety of epidural analgesia were generally favourable across both settings, with no statistically significant urban–rural difference in these attitudes.

Conclusion: A substantial urban–rural gap exists in the availability of trained personnel and functional epidural analgesia services in Nigeria, even though provider attitudes toward the intervention are broadly positive in both settings. The principal barriers are structural and human-resource related rather than attitudinal.

Recommendation: Targeted investment in training, equipment, and government funding, particularly for rural and primary healthcare facilities, alongside the development and enforcement of standard labour analgesia protocols, is recommended to close the urban–rural access gap.

Keywords: Epidural labour analgesia; Access to care; Urban–rural disparities; Low-resource settings; Maternal health; Nigeria

PHARMACOLOGICAL VALIDATION OF MOROCCAN MEDICINAL PLANTS IN THE MANAGEMENT OF CHRONIC DISEASES: A CRITICAL SYNTHESIS

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ABSTRACT

Background: Morocco holds a rich ethnobotanical heritage, long mobilized in the traditional management of chronic conditions such as type 2 diabetes, arterial hypertension, and inflammatory disorders. Numerous species, including *Trigonella foenum-graecum* L., *Artemisia herba-alba* Asso, and *Olea europaea* L., are widely reported in national ethnopharmacological surveys. However, the extent of scientific validation of their underlying pharmacological mechanisms remains uneven, which limits their rational integration into public health strategies.

Objective : This communication proposes a critical synthesis of the pharmacological evidence available for a set of Moroccan medicinal plants commonly reported for the management of diabetes, hypertension, and inflammatory disorders, juxtaposing traditional uses with existing biomedical evidence.

Methods: The analysis draws on a narrative review of indexed scientific literature, cross-referencing Moroccan ethnobotanical data with in vitro, in vivo, and, where available, clinical pharmacological studies on the identified species.

Results: Available data suggest that certain species exhibit antidiabetic, antihypertensive, and anti-inflammatory activities that may be linked to specific bioactive compounds (polyphenols, saponins, alkaloids). Nevertheless, heterogeneity in experimental protocols, the scarcity of controlled clinical trials, and the frequent lack of extract standardization constrain the strength of currently available conclusions.

Conclusion: This synthesis highlights the need to strengthen collaboration between ethnobotanists and medical science researchers to consolidate the pharmacological basis of traditional uses, with a view to a well-informed integration of these phytotherapeutic resources into complementary health approaches, contingent on rigorous clinical oversight.

Keywords: medicinal plants, Morocco, pharmacology, chronic diseases, ethnopharmacology.

PD-L1 EXPRESSION IN EPITHELIAL OVARIAN TUMORS: CLINICOPATHOLOGICAL IMPLICATIONS

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ABSTRACT

Introduction: Epithelial ovarian tumors are the most common ovarian neoplasms and remain a major cause of gynecological cancer mortality. Programmed death-ligand 1 (PD-L1), an important immune checkpoint molecule, promotes tumor immune evasion and has been proposed as a prognostic biomarker. However, its clinical significance in epithelial ovarian tumors remains controversial.

Aim: The present study aimed to investigate the immunohistochemical expression of PD-L1 in epithelial ovarian tumors and to determine its relationship with clinicopathological characteristics, including histological subtype, tumor differentiation, FIGO stage, recurrence, disease-free survival (DFS), and overall survival (OS).

Materials and Methods: This retrospective study included 105 patients treated surgically for epithelial ovarian tumors between 2018 and 2025 at the Oncologic Clinic of Azerbaijan Medical University and the National Center of Oncology. The cohort comprised 67 malignant, 11 borderline, and 27 benign epithelial ovarian tumors. PD-L1 expression was assessed immunohistochemically using the VENTANA PD-L1 (SP263) assay on the BenchMark ULTRA platform. Tumors with membranous staining in $\geq 1\%$ of tumor cells were considered PD-L1-positive. Associations with clinicopathological variables were analyzed using Pearson's chi-square or Fisher's exact test. DFS and OS were evaluated by the Kaplan–Meier method.

Results: PD-L1 positivity was identified in 31 of 105 patients (29.5%), whereas 74 patients (70.5%) were PD-L1-negative. Positive expression was observed predominantly in serous carcinomas, accounting for 58.0% of PD-L1-positive tumors, while no PD-L1 expression was detected in mucinous carcinomas. Among borderline epithelial tumors, PD-L1 positivity was found in 19.4% of cases, whereas only one benign epithelial tumor (3.2%) demonstrated positive staining, indicating a highly significant difference between malignant and benign lesions ($p < 0.001$). A statistically significant association was observed between PD-L1 expression and poor tumor differentiation (G3) ($p < 0.05$), with G3 tumors occurring more frequently in the PD-L1-positive group. In contrast, no significant associations were found between PD-L1 expression and patient age or FIGO stage ($p > 0.05$). Recurrence occurred in 43.3% of PD-L1-positive patients and 39.6% of PD-L1-negative patients, showing no significant relationship (OR=1.17; 95% CI: 0.47–2.91; $p = 0.927$). Kaplan–Meier analysis demonstrated that PD-L1 expression was not associated with disease-free survival (log-rank $p = 0.772$) or overall survival (log-rank $p = 0.392$).

Conclusions: PD-L1 expression was associated with poor tumor differentiation and serous histology but showed no significant relationship with recurrence or survival outcomes. These findings suggest that, although PD-L1 reflects certain aggressive pathological characteristics, it was not an independent prognostic marker in the present cohort.

Keywords: epithelial ovarian tumors; PD-L1; prognostic biomarker

DETERMINANTS OF SURVIVAL IN ALBANIAN PATIENTS WITH GASTRIC CANCER: A RETROSPECTIVE COHORT STUDY**Prof. Dr. Bledar KRAJA**

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ABSTRACT

Purpose or Objective: To identify clinicopathological and treatment-related factors associated with survival in Albanian patients with nonmetastatic gastric cancer.

Materials and Methods: A retrospective study included 210 patients with stage IB–III gastric cancer treated between 2016 and 2021. Demographic, pathological, treatment, and follow-up data were analyzed to identify prognostic factors for overall survival (OS), disease-free survival (DFS), local recurrence (LR), and disease progression (PD). Pearson correlation, logistic regression, and age-adjusted multivariable analyses were performed using SPSS version 26.

Results: The mean age was 57.8 ± 9.6 years (range, 28–80 years), with a male-to-female ratio of 3.5:1. Median follow-up was 38 ± 12 months. Subtotal gastrectomy was performed in 55.6% of patients, total gastrectomy in 35.4%, and 9.0% were inoperable. R1 resection occurred in 9.0%, and D2 lymphadenectomy was performed in 47.0%. Adenocarcinoma accounted for 94.2% of tumors, while 52.0% of patients had stage III disease. Adjuvant treatment was administered to 87.2% of patients, including chemoradiotherapy in 40.0%. At the end of follow-up, 65.7% of patients were alive, local control was 91.7%, and mean DFS was 13.5 ± 10.8 months. Age and sex were not associated with OS or DFS. Vascular invasion ($p = 0.03$) and nodal stage ($p = 0.042$) independently predicted local recurrence, which was significantly associated with disease progression ($p = 0.002$). T stage, nodal stage, vascular invasion, perineural invasion, type of surgery, extent of lymphadenectomy, R1 resection, and adjuvant treatment were significant predictors of OS and DFS (all $p < 0.05$). Adjuvant radiotherapy was associated with improved outcomes (OR = 3.6, 95% CI 1.1–5.1; $p = 0.02$).

Conclusion: Tumor stage, pathological features, surgical quality, and adjuvant therapy significantly influenced survival in patients with nonmetastatic gastric cancer. These findings support risk-adapted treatment strategies and multidisciplinary management, although larger prospective studies are needed for validation.

Keywords: gastric adenocarcinoma, determinants factors, overall survival.

PERSONALIZING LOCAL TREATMENT IN EARLY-STAGE BREAST CANCER: WHICH PATIENTS MAY SAFELY AVOID ADJUVANT RADIOTHERAPY?**Dr. Fatjona KRAJA**

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ABSTRACT

Background: Adjuvant radiotherapy following breast-conserving surgery has long been a cornerstone of early breast cancer management because of its proven ability to reduce local recurrence. However, advances in systemic therapy, molecular subtyping, and genomic profiling have identified patient groups with a very low risk of recurrence, prompting interest in tailoring or omitting radiotherapy in selected cases.

Methods: A narrative review of evidence from randomized clinical trials, prospective cohort studies, and contemporary international guidelines was performed. The impact of radiotherapy omission or de-escalation was evaluated using local recurrence, distant recurrence, overall survival, treatment toxicity, and quality-of-life as the principal outcomes.

Results: Evidence consistently supports omission of radiotherapy in carefully selected older women with low-risk, hormone receptor-positive, node-negative breast cancer receiving endocrine therapy. The CALGB 9343 and PRIME II trials demonstrated a modest increase in ipsilateral breast recurrence without compromising overall survival. More recent biomarker-driven studies, including the LUMINA trial, suggest that favorable tumor biology rather than chronological age alone may identify patients with an exceptionally low risk of recurrence after surgery and endocrine therapy. Ongoing trials, including PRECISION and EXPERT, are investigating whether genomic assays such as Oncotype DX and PAM50/Prosigna can refine patient selection for radiotherapy omission. In ductal carcinoma in situ (DCIS), radiotherapy remains the standard of care for most patients, although active surveillance and omission strategies are under evaluation in carefully selected low-risk disease. For patients requiring radiotherapy, treatment burden may be reduced through partial-breast irradiation and ultra-hypofractionated schedules, both of which maintain excellent local control.

Conclusions: Treatment individualization has become a key principle in early breast cancer management. Selected patients with favorable clinicopathological and biological characteristics may safely avoid adjuvant radiotherapy without adversely affecting survival. Future integration of molecular biomarkers and genomic profiling is expected to improve patient selection and support personalized, multidisciplinary decision-making while minimizing overtreatment.

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MOROCCAN MIDDLE ATLAS MEDICINAL FLORA: A METHODOLOGICAL FRAMEWORK FOR PHYTOCHEMICAL AND ANTI-INFLAMMATORY BIOACTIVITY SCREENING

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ABSTRACT

Objectives: Despite centuries of traditional use, the medicinal flora of the Moroccan Middle Atlas has rarely been examined through the lens of modern pharmacology. This work sets out to critically review the scientific literature on plants traditionally used against chronic inflammatory conditions in this region, and to develop a standardized extraction protocol for the systematic phytochemical screening of their bioactive potential.

Methods: A structured bibliographic database was built from over 140 indexed, peer-reviewed articles (Scopus, PubMed, Web of Science), documenting the botanical, phytochemical and pharmacological profiles of the relevant species. Most of the available studies were conducted in other geographic contexts, and region-specific data remain scarce. Building on this review, a standardized hydroalcoholic maceration protocol was designed and applied to dried, ground plant material collected in the Moroccan Middle Atlas, with a view to subsequent chemical characterization by HPLC.

Results: The literature reveals a body of evidence that is substantial yet fragmented and rarely specific to this region: the species concerned are consistently described elsewhere as rich in polyphenolic and terpenoid compounds with antioxidant and anti-inflammatory properties, while standardized pharmacological validation carried out locally remains uncommon. A reproducible extraction protocol has since been implemented, and the resulting extracts are currently being processed for chemical profiling.

Conclusions: Taken together, these findings position the Moroccan Middle Atlas as a still largely untapped source of bioactive natural compounds. The methodological framework proposed here offers a reproducible basis for its scientific valorization and lays the groundwork for further pharmacological investigation of this traditional pharmacopeia.

Keywords: Medicinal plants; Moroccan Middle Atlas; Phytochemical screening; Anti-inflammatory bioactivity; Standardized extraction.

INTEGRATED ESTRADIOL PROFILING AND TRANSRECTAL ULTRASONOGRAPHY REVEAL DISTINCT REPRODUCTIVE RESPONSES IN DROMEDARY CAMELS**Zahia BRAHMI**

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ABSTRACT

Reproductive inefficiency remains a major constraint on the sustainable development of dromedary camel production, emphasizing the need for objective tools capable of characterizing reproductive responses and confirming pregnancy at an early stage. This study investigated the value of integrating plasma estradiol profiling with transrectal ultrasonography for reproductive assessment in female dromedary camels during the breeding season. Twenty clinically healthy, non-pregnant females were monitored under controlled reproductive management. Plasma estradiol concentrations were determined at predefined time points over a 44-day observation period using a chemiluminescent immunoassay. Following controlled mating, pregnancy diagnosis was performed by transrectal ultrasonography in 15 available females. Endocrine monitoring revealed marked temporal variation in estradiol concentrations, with group means ranging from 42.99 ± 20.85 to 192.85 ± 12.17 pg/mL. The strongest late-stage estrogenic response was characterized by a high mean concentration accompanied by low inter-individual variability, indicating a relatively homogeneous reproductive response. Ultrasonographic examination confirmed pregnancy in 11 of the 15 evaluated females, corresponding to an overall pregnancy proportion of 73.3%. Positive diagnoses were based on direct visualization of intrauterine gestational structures, including a fluid-filled gestational sac and early embryonic features. Reproductive outcomes differed markedly across the monitored groups, ranging from the absence of confirmed pregnancies in one group to complete pregnancy confirmation among all examined females in two groups. These findings demonstrate that estradiol profiling provides valuable information on the temporal pattern and magnitude of ovarian endocrine activity, whereas ultrasonography supplies direct anatomical evidence of conception. Their combined application therefore offers a more comprehensive framework for evaluating reproductive status than either assessment alone. Importantly, the timing of ultrasonographic monitoring is particularly relevant in dromedary camels because ovulation is induced and depends on an adequate mating-associated stimulus. Integrating endocrine and ultrasonographic assessments may consequently strengthen reproductive decision-making and improve the precision of fertility monitoring in this species.

Keywords: dromedary camel; estradiol; reproductive biotechnology; transrectal ultrasonography; pregnancy diagnosis; fertility monitoring.

**DIGITAL TWIN-BASED PERSONALIZED PHARMACOTHERAPY: INTEGRATING
PHARMACOKINETICS, PHARMACEUTICAL FORMULATION AND PATIENT-
SPECIFIC DATA FOR PRECISION HEALTHCARE**

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ABSTRACT

Personalized pharmacotherapy aims to provide the right treatment for the right patient, yet most medicines are still prescribed using population-based dosing approaches. These approaches may not fully account for differences in drug absorption, distribution, metabolism, excretion, disease status, and treatment response among individuals. Digital twin technology offers a promising way to address this challenge by creating a dynamic, patient-specific computational model that can be updated as new clinical and pharmacokinetic information becomes available. This paper proposes a Digital Twin-Based Personalized Pharmacotherapy (DT-PP) framework that brings together pharmacokinetics, pharmaceutical formulation, and patient-specific data.

The proposed framework integrates demographic characteristics, organ function, laboratory findings, medication history, therapeutic drug monitoring, and relevant physiological information to develop an individualized digital representation of the patient. Pharmacokinetic, pharmacodynamic, physiologically based pharmacokinetic, Bayesian, and machine-learning approaches can then be used to predict drug exposure and compare different doses, dosing intervals, dosage forms, and drug-release profiles. This approach extends personalized medicine beyond simply adjusting the dose and opens the possibility of designing drug products around individual patient needs.

The framework may be particularly useful for narrow-therapeutic-index drugs, pediatric and geriatric patients, individuals with renal or hepatic impairment, and patients receiving multiple medicines. Continuous integration of treatment and monitoring data could allow the digital twin to evolve with the patient and support timely therapeutic adjustments. However, challenges involving data quality, model validation, privacy, cybersecurity, regulatory acceptance, and clinical implementation remain. Overall, digital twin-based pharmacotherapy could help move healthcare from standardized dosing toward more adaptive, patient-centered, and precise drug therapy.

Keywords: Digital twin; Personalized pharmacotherapy; Pharmacokinetics; Precision medicine; Pharmaceutical formulation; Pharmacometric modeling;

INFLUENCE OF CLIMATIC FACTORS ON THE PREVALENCE OF WATER-RELATED DISEASES IN THE MUNICIPALITY OF LOKOSSA (BENIN)

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ABSTRACT

In the municipality, water-related diseases exhibit seasonal variations influenced by climatic parameters, notably rainfall, humidity, and temperature, and are exacerbated by deteriorating environmental and sanitary conditions. This research analyzes the influence of climatic factors on the prevalence of water-related diseases in the municipality of Lokossa.

To carry out this study, the methodological approach was based on data collection, processing, and analysis. Documentary research and field surveys were the main methods of data collection. The questionnaire, interview guide, observation grid, and digital camera were the tools and equipment used to collect data from 415 respondents. The analysis of the results was conducted using the DPSIR model (Driving Forces, Pressures, State, Impacts, and Responses).

The analysis shows that malaria is more frequent during the rainy season (April to July) due to the proliferation of larval breeding sites, while dermatological conditions are more common during the dry season. Diarrheal diseases decrease with rainfall and increase during hot periods (January to April).

Malaria persists even with declining humidity (October–November), whereas dermatological conditions increase during periods of low humidity (November to January). Diarrheal diseases are more frequent during low-humidity periods (November to January) and increase again with rising humidity in January–February.

The analysis of the coefficients of determination shows that, in the study area, rainfall explains 29% of malaria cases, 6.84% of dermatological conditions, and 0.03% of diarrheal diseases. Average temperature explains 28.27% of the variance in malaria cases, 3.69% of dermatological conditions, and 60.27% of diarrheal diseases. Relative humidity explains 42.33% of malaria cases, 1.55% of dermatological conditions, and 28.44% of diarrheal diseases. Ultimately, the different diseases undermining the health of populations in the municipality of Lokossa are closely linked to variations in local meteorological parameters (rainfall, temperature, and humidity).

Keywords : Lokossa ; disease ; water ; climate ; influence.

PROMOTING THE FORMATION OF SOLO GARLIC BY VERNALIZATION OF DIFFERENT SOURCES OF PLANTING MATERIALS

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ABSTRACT

Solo garlic, garlic with only one clove, has been used for medicine since ancient time. However, regardless of its benefit and good prices, this garli has not been produced commercially in Indonesia, due to lack of information on how to produce it. The overall goal of this experiment was to promote the formation of solo garlic at low elevation in Indonesia by treating different sources of plant materials with vernalization. Furthermore, the specific objective of the experiment were to compare the effect of different souces of plant materials, different period of vernalization, and their interaction on the growth and yield of garlic crops. The experiment, conducted at low elevation of Indonesia (10 m a.s.l.) from December 2025 to March 2026, used randomized complete block design, arranged in factorial (2 factors, 5 reps). The first factor was source of plant material (outer cloves of regular garlic, inner clove of regular garlic, and solo garlic). The second factor was vernalization regime (0, 3, 6 weeks of vernalization). Vernalized seeds grown in the field with 20 cm x 20 cm of row spacing. Data recorded included plant height, number of leaf, number of bulb, bulb diameter, bulb length, buld weight, and buld volume. The results showed that all crops produced bulb with only one clove, having different size and weight. The outer clove showed the highest number of leaf, bulb diameter, bulb weight, and bulb volume. Vernalization did not affect crop growth, but it improved the quality of garlic bulb produced. There was no significant effect of the interaction between plant materials and period of vernalization. It was concluded that the best plant material to promoted the formation of solo garlic at low elevation of Indonesia was outer clove of regular garlic. Finally, a 3-week vernalization was considered the best period to promote the formation of solo garlic.

Keywords: Seeds, Solo garlic, Vernalizlation.

EXPLORING THE ANTIOXIDANT AND ANTI-INFLAMMATORY POTENTIAL OF SOLENOSTEMMA ARGEL PHENOLIC EXTRACTS

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ABSTRACT

Solenostemma argel is a medicinal plant from Algerian arid lands, traditionally used for various therapeutic purposes and represents a potential source of bioactive phenolic compounds. Oxidative stress and inflammation are involved in several pathological conditions.

This study aimed to explore the antioxidant and anti-inflammatory potential of phenolic extracts obtained from the aerial parts of *Solenostemma argel*.

Three phenolic extracts, namely ethereal (PE), butanolic (PB), and free aglycone (AG) extracts, were evaluated. Antioxidant activity was assessed using the DPPH radical-scavenging assay, with ascorbic acid as a reference. Anti-inflammatory activity was evaluated using the carrageenan-induced paw edema model at 500 mg/kg, with diclofenac as the reference drug.

The ethereal extract showed the highest DPPH-scavenging activity, with 86.05% inhibition and an IC₅₀ of 1.51 µg/mL. The butanolic and free aglycone extracts showed inhibition rates of 79.07% and 39.79%, respectively, with IC₅₀ values of 103 and 11.5 µg/mL. Regarding anti-inflammatory activity, the butanolic extract produced the highest inhibition of edema (79.64%), followed by the free aglycone extract (72.15%), both exceeding diclofenac (66.60%). The ethereal extract showed 57.43% inhibition. In conclusion, these findings highlight the promising antioxidant and anti-inflammatory potential of *S. argel* phenolic extracts, with activities varying according to extract type. The results support the pharmacological interest of this medicinal plant and warrant further investigation of its bioactive constituents.

Keywords: *Solenostemma argel*; phenolic extracts; antioxidant activity; anti-inflammatory activity; DPPH; medicinal plant.

EVALUATING PHYSICO-CHEMICAL AND ORGANIC POLLUTION DYNAMICS USING THE WQI AND OPI AT OUISLANE WADI (MEKNES), MOROCCO**Dr. Brahim ELHILALI**

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ABSTRACT

This study evaluated the spatial and seasonal dynamics of physical and chemical parameters and water quality in the Oweislan Valley over the course of a full hydrological year (December 2024–November 2025). Monthly sampling was conducted at four stations extending from the source to the mouth of the river. Standard laboratory analyses and field measurements were supplemented with statistical methods, including analysis of variance (ANOVA), correlation analysis, and principal component analysis. Two indices—the Water Quality Index (WQI) and the Organic Pollution Index (OPI)—were applied to assess overall water quality and levels of organic pollution. The results revealed clear seasonal variations in temperature, conductivity, turbidity, nutrients, and organic matter, driven by climatic fluctuations and anthropogenic pressures upstream. The analyses show a gradual and significant deterioration in water quality from upstream to downstream. Indeed, the Water Quality Index (IQE) ranges from 20.24 (Excellent, S1) to 1,551 (Very Poor, S3), and the Organic Pollution Index (IPO) classifies all stations located in the middle and lower reaches as “extremely polluted.” Overall, these results highlight the urgent need for integrated wastewater management and the strengthening of sanitation systems to preserve water resources and food security in the Meknes region.

Keywords: water, Ouislane Wadi, physicochemical, Quality Index

DESIGNING G-C₃N₄/PVP@CA(OH)₂ TERNARY HETEROSTRUCTURE CATALYSTS FOR EFFICIENT DEGRADATION OF DYES AND ANTIBACTERIAL ACTIVITY**Sawaira MOEEN**

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ABSTRACT

Global warming and environmental pollution demand urgent, sustainable solutions to mitigate their impacts on ecosystems and human health. To meet the rising need for efficient catalysts and antibacterial agents, advanced nanostructures have emerged as promising materials, offering enhanced functionality and sustainability in various applications. Here, we present a simple co-precipitation synthesis of ternary heterostructure (g-C₃N₄/PVP@Ca(OH)₂) catalysts for catalytic dye degradation and bactericidal applications. The catalyst nanostructure is controllably synthesized by utilizing varying amounts of graphitic carbon nitride (g-C₃N₄) nanosheets anchored on a fixed quantity of PVP-capped Ca(OH)₂ nanoparticles. Comprehensive characterization of the ternary heterostructure catalysts revealed polycrystalline behaviour, enhanced optical absorption, and decreased crystallite size. The modified g-C₃N₄/PVP@Ca(OH)₂ heterostructures exhibited enhanced surface area, improved charge transfer efficiency, a large number of active sites, and increased stability. These attributes resulted in effective catalytic reduction of both coloured and colourless dyes and notable antibacterial activity against *Escherichia coli* (*E. coli*), supported by molecular docking analysis. The ternary g-C₃N₄/PVP@Ca(OH)₂ heterostructure catalyst exhibited superior efficiency in degrading colored dyes compared to colorless compounds. Additionally, computational studies indicated the potential inhibitory effect of the synthesized catalyst on the DNA gyrase enzyme of *E. coli*. These findings highlight the promise of g-C₃N₄/PVP@Ca(OH)₂ nanostructures as multifunctional materials for environmental remediation and antibacterial applications, underscoring the need for further investigation and optimization.

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A BAND-SHAPED PES ANSERINUS INSERTION: AN ANATOMICAL VARIANT WITH IMPLICATIONS FOR TENDON GRAFT HARVESTING

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ABSTRACT

Introduction: The pes anserinus (PA) is a clinically relevant anatomical structure located on the anteromedial aspect of the proximal tibia and formed by the conjoined tendons of the sartorius, gracilis, and semitendinosus muscles. Considerable morphological variability has been described in this region, which may have important clinical implications, particularly when the gracilis and semitendinosus tendons are harvested as autografts for anterior cruciate ligament (ACL) reconstruction.

Aim: This study aimed to characterize the morphology and insertion pattern of the tendons contributing to the pes anserinus through lower limb dissection and to assess the potential clinical relevance of these anatomical features during tendon autograft harvesting.

Materials and Methods: Anatomical dissection was performed on a lower limb specimen fixed in 10% formalin solution. The composition of the pes anserinus, the presence of accessory tendinous bands, the pattern of tendon insertion, and the anatomical relationship between the pes anserinus and the crural fascia were systematically examined.

Results: A morphologically classical pes anserinus was identified, consisting of the tendons of the sartorius, gracilis, and semitendinosus muscles. The tendinous components inserted into the crural fascia on the anteromedial aspect of the tibia. All three tendons exhibited a band-shaped insertion pattern, defined as an insertional width less than twice the width of the proximal tendon.

Conclusion: The band-shaped insertion observed in all three components of the pes anserinus represents a clinically relevant anatomical variant. Failure to identify this insertion pattern may complicate the accurate identification and safe separation of the gracilis and semitendinosus tendons during surgical

graft harvesting. Awareness of this anatomical variation may therefore contribute to safer and more predictable tendon autograft procurement.

Keywords: pes anserinus, tendon graft, band-shaped insertion, dissection

CHARACTERIZATION AND ANTICANCER PROPERTIES OF VENOM-DERIVED PEPTIDES FROM THE MOROCCAN SCORPION *ANDROCTONUS MAURITANICUS* AND THE COBRA *NAJA HAJE*: PROTEOMIC INSIGHTS, INHIBITION OF CELL PROLIFERATION AND MIGRATION, AND MODULATION OF ION CHANNELS IN HUMAN GLIOBLASTOMA MODELS

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ABSTRACT

Venoms of animal origin constitute a largely untapped reservoir of bioactive peptides endowed with considerable pharmacological interest. Guided by an approach that bridges the conservation of natural ecosystems with the search for novel therapeutic agents, this study focuses on the venoms of two emblematic Moroccan species: the scorpion *Androctonus mauritanicus* and the cobra *Naja haje*. An in-depth proteomic characterization carried out by RP-HPLC fractionation followed by LC-MS/MS identification uncovered a broad collection of neurotoxic peptides with molecular masses spanning 2 to 5 kDa. The biological activity of these molecules was assessed through in vitro cytotoxicity assays conducted on human cancer cell lines, where selected venom fractions exhibited marked and targeted anti-proliferative effects. Complementary RT-PCR analyses revealed that the observed cytotoxic activity is closely associated with substantial changes in ion channel gene expression, suggesting that venom peptides exert their anticancer action at least in part by disrupting ion channel function. Collectively, these findings highlight the therapeutic relevance of venomous biodiversity and reinforce the idea that the sustainable exploration of natural toxins represents a strategic avenue for identifying innovative molecules capable of addressing unmet medical needs.

Keywords: Animal venoms, Bioactive peptides, Ion channel modulation, Cytotoxicity, Drug discovery

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ABSTRACT

The realm of Medical Sciences forms the basis for maintaining human health, preventing diseases and continuously striving for better quality of life in large groups of people. This vast field combines such basic disciplines as anatomy, physiology, biochemistry, and pathology with the fields of clinical practice such as internal medicine, surgery, oncology, and neurology. Due to the increasing number of medical challenges that healthcare systems have to deal with nowadays, including chronic diseases, antibiotic resistance and inequality in access to medical help, this branch of science has expanded its horizons a lot, involving not only the provision of medical services, but also public health and epidemiology. Nowadays, due to the recent advances in the fields of biotechnology, genomics and artificial intelligence, new opportunities for personalizing therapy and disease prevention methods have appeared. This new era of personalized medicine has changed our way of thinking about how diagnostics are made because of numerous advances in telemedicine, digital health and regenerative technologies. The conference is aimed to gather researchers, medical practitioners and specialists from the medical field to share the latest results and obtain interdisciplinary knowledge from each other.

Keywords: Genomics, Public health, Chronic diseases, Biotechnology, Epidemiology, Antibiotic resistance.

MICROBIAL PRODUCTION OF GLUTATHIONE UNDER OPTIMAL CONDITIONS USING POULTRY WASTE

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ABSTRACT

Glutathione is a tripeptide made up of cysteine, glycine and glutamine, which played an important role as an antioxidant and redox regulation in the body. The thiol (-SH) group in cysteine were particularly critical to its antioxidant function, as it donated electrons to neutralize reactive oxygen species. In this study, Chicken feathers, a protein rich waste byproduct from the poultry industry, were utilized as a cost-effective and sustainable substrate for microbial glutathione production due to their high keratin content. The research focused on microbial synthesis of glutathione (GSH) from *Saccharomyces cerevisiae* (baker's yeast) cultured in media supplemented with hydrolyzed poultry waste. These hydrolysates served as a nutrient source during cultivation of *S. cerevisiae*. The experimental procedures included inoculum preparation, fermentation under controlled conditions, and post fermentation processing steps such as cell harvesting, extraction, and purification of glutathione. To optimize glutathione yield, key fermentation parameters such as substrate concentration, carbon source, nitrogen source and incubation time were evaluated using Plackett-Burman design. Quantitative assessment of glutathione production was conducted using HPLC and UV. The findings demonstrated the feasibility of utilizing poultry waste as a low-cost substrate, thereby contributing to the reduction of production costs and supporting waste valorization strategies. This study highlighted the potential of fungal fermentation to transform organic waste into valuable antioxidant compounds.

A NEW APPROACH METHODOLOGY-BASED COMPARATIVE ASSESSMENT OF THE THYROID-DISRUPTING POTENTIAL OF BISPHENOL A, BISPHENOL S, AND BISPHENOL F

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ABSTRACT

Objective: Replacing bisphenol A (BPA) with bisphenol S (BPS) and bisphenol F (BPF) has increased the need for rapid, mechanism-based evaluation of their endocrine-disrupting potential. This study aimed to comparatively assess the thyroid-disrupting profiles of BPA, BPS, and BPF using a New Approach Methodology (NAM)-based evidence-integration framework.

Materials and Methods: A comparative computational toxicology analysis was conducted using publicly available information from the United States Environmental Protection Agency CompTox Chemicals Dashboard, ToxCast/Tox21 high-throughput screening resources, PubChem, and OECD thyroid-disruption method documents. Evidence was organized across thyroid-relevant molecular initiating events and key events, including thyroid hormone receptor signaling, thyroid-stimulating hormone receptor activity, thyroid peroxidase-related hormone synthesis, deiodinase-mediated metabolism, transthyretin-associated transport, and cellular thyroid hormone signaling. Structural similarity, physicochemical descriptors, assay activity, potency information, cytotoxicity flags, and mechanistic concordance were integrated into a qualitative weight-of-evidence matrix. Data gaps and differences in assay coverage were also recorded.

Results: The integrated NAM profile indicated that BPA, BPS, and BPF all possessed evidence of interference with thyroid-related biological pathways. BPA showed the broadest evidence base, while BPS and BPF demonstrated activity in receptor-mediated signaling and thyroid hormone homeostasis endpoints despite more limited assay coverage. BPF retained comparatively high structural similarity to BPA, whereas BPS displayed distinct polarity-related properties but continued to show biologically relevant thyroid activity. No analog demonstrated a consistent reduction in thyroid-related bioactivity across all evaluated evidence domains. Interpretation was limited by non-uniform testing, incomplete concentration-response coverage, and the inability of in vitro bioactivity alone to establish human clinical risk.

Conclusion: NAM-based evidence integration does not support assuming that BPS or BPF are thyroid-safe substitutes for BPA. Mechanistic screening, exposure-informed interpretation, and targeted experimental validation should be combined before BPA alternatives are regarded as safer substitutions.

Keywords: Bisphenol A; Bisphenol S; Bisphenol F; thyroid disruption; new approach methodologies.

ÇÖLYAK HASTALARINDA KAÇINGAN/KISITLI YİYECEK ALIM BOZUKLUĞU AVOIDANT/RESTRICTIVE EATING DISORDER IN PATIENTS WITH CELIAC DISEASE

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ÖZET

Amaç: Kaçingana/kısıtlı yiyecek alım bozukluğu (ARFID); besinlerin duyuşsal özelliklerine karşı isteksizlik, yemeye ilgi azlığı veya yemenin olumsuz sonuçlarından korkma nedeniyle besin alımının miktar ve/veya çeşitlilik açısından kısıtlanmasıyla karakterizedir [1]. ARFID riskinin, tedavi olarak kısıtlı diyetlerin uygulandığı kronik gastrointestinal sistem hastalıklarında daha yüksek olabileceği bildirilmektedir. Bilinen tek etkili tedavisi glutensiz diyet olan çölyak hastalığında diyetteki kısıtlamalar ile ARFID'e bağlı patolojik kaçınmanın ayırt edilmesi güçleşmektedir [2]. Bu derlemede, çölyak hastalığı olan bireylerde ARFID riskinin ve ilişkili faktörlerin incelenmesi amaçlanmıştır.

Materyal Ve Yöntem: Çölyak hastalığı olan bireylerde ARFID riski ve ilişkili faktörleri inceleyen güncel literatür değerlendirilmiştir. PubMed, Scopus ve Web of Science veri tabanlarında yer alan, 2016-2026 yılları arasında İngilizce olarak yayımlanan çalışmalar incelenmiştir.

Bulgular: Çölyak hastalığının bilinen tek etkili tedavisi yaşam boyu glutensiz diyet uyumdur [3, 4]. Glutensiz diyetin kısıtlayıcı içeriği, gluten maruziyeti ve gastrointestinal semptomlara ilişkin kaygılar; bazı bireylerde diyetin tıbbi beslenme tedavisinin ötesinde sınırlandırılmasına ve kaçingana/kısıtlı yeme davranışlarının gelişmesine zemin hazırlayabilmektedir [5]. ARFID'de besin alımının kısıtlanması; besinlere karşı ilginin az olması, besinlerin duyuşsal özelliklerine yönelik hassasiyet veya boğulma, kusma, ağrı ve gastrointestinal semptomlar gibi yemenin olumsuz sonuçlarından korkma ile ilişkili olabilmektedir. Bu durum yetersiz enerji ve besin ögesi alımı, vücut ağırlığı kaybı, büyüme geriliği, düşük diyet kalitesi ve yaşam kalitesinde bozulma ile sonuçlanabilmektedir [1, 5-9]. ARFID küresel prevalansının yetişkin popülasyonunda yaklaşık %0,3–3,1 arasında değiştiği, kronik gastrointestinal hastalıklara sahip bireylerde bu oranın daha yüksek olduğu bildirilmektedir [2, 5, 6]. Çölyak hastalarında yapılan çalışmalarda kullanılan ölçek, yaş grubu ve çalışma grubu özelliklerine bağlı olarak ARFID riskinin %14–57 arasında değiştiği bildirilmiştir [5].

SONUÇ: Mevcut Bulgular, çölyak hastalarında ARFID riskinin yalnızca glutensiz diyet uygulanmasıyla açıklanamayacağını göstermektedir. Devam eden gastrointestinal semptomlar, gluten maruziyetine ilişkin korku, sosyal ortamlarda diyet uyumun zorlaşması ve psikiyatrik eş tanılar ARFID riskiyle ilişkili olabilecek faktörler arasında değerlendirilmektedir. Çölyaklı bireylerin ARFID riski açısından tanınması ve multidisipliner olarak değerlendirilmesi önemlidir [2,6].

Anahtar Kelimeler: Çölyak hastalığı, kaçingana/kısıtlayıcı yiyecek alım bozukluğu, glutensiz diyet

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ABSTRACT

Objective: Avoidant/restrictive food intake disorder (ARFID) is characterized by restriction in the amount and/or variety of food consumed because of sensory aversion, lack of interest in eating, or fear of adverse consequences [1]. ARFID risk may be higher in chronic gastrointestinal diseases requiring restrictive diets. In celiac disease, whose only effective treatment is a lifelong gluten-free diet, distinguishing medically necessary restriction from pathological avoidance is difficult [2-4]. This review aimed to examine ARFID risk and associated factors in individuals with celiac disease.

Materials And Methods: Literature examining ARFID risk and associated factors in celiac disease was reviewed. English-language studies published between 2016 and 2026 and indexed in PubMed, Scopus, or Web of Science were evaluated.

Findings: The restrictive nature of a gluten-free diet, concerns about gluten exposure, and gastrointestinal symptoms may lead some individuals to restrict food intake beyond medical necessity and develop avoidant/restrictive eating behaviors [5]. In ARFID, restriction may reflect low interest in food, sensory sensitivity, or fear of consequences such as choking, vomiting, pain, and gastrointestinal symptoms. These behaviors may cause inadequate energy and nutrient intake, weight loss, growth retardation, poor diet quality, and impaired quality of life [1, 5–9]. Global ARFID prevalence among adults ranges from 0.3% to 3.1% and is higher in individuals with chronic gastrointestinal diseases [2, 5, 6]. Studies in celiac disease have reported ARFID risk ranging from 14% to 57%, depending on the assessment tool, age group, and study population [5].

Conclusion: Evidence suggests that ARFID risk in celiac disease cannot be explained solely by adherence to a gluten-free diet. Persistent gastrointestinal symptoms, fear of gluten exposure, difficulty following the diet in social settings, and psychiatric comorbidities may contribute to this risk. Screening individuals with celiac disease for ARFID and providing multidisciplinary evaluation are important components of the clinical care [2,6].

Keywords: Celiac disease, avoidant/restrictive food intake disorder, gluten-free diet

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DİL GELİŞİMİNDE ANNE-ÇOCUK ETKİLEŞİMİNDE BEBEĞE YÖNELİK KONUŞMANIN (MOTHERESE) PARALİNGÜİSTİK ÖZELLİKLERİ: SİSTEMATİK BİR DERLEME
PARALINGUISTIC FEATURES OF INFANT-DIRECTED SPEECH (MOTHERESE) IN MOTHER-CHILD INTERACTION IN LANGUAGE DEVELOPMENT: A SYSTEMATIC REVIEW

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ÖZET

Amaç: Dil gelişimi, yalnızca sözel değil sözel olmayan bileşenlerle de biçimlenen çok boyutlu bir süreçtir. Bu sistematik derlemenin amacı, anne-çocuk etkileşiminde bebeğe yönelik konuşmanın (motherese) paralinguistik özelliklerini ele alan çalışmaları sentezlemek ve bu özelliklerin erken dil ve konuşma gelişimindeki rolünü ortaya koymaktır.

Yöntem: PRISMA ilkeleri doğrultusunda başta PubMed olmak üzere ScienceDirect ve Google Scholar veri tabanları; “motherese” teriminin “language development”, “speech development” ve “communication milestones” anahtar sözcükleriyle oluşturulan kombinasyonlarıyla taranmıştır. Tipik ve klinik gelişim gösteren çocuklarda motherese ve onun paralinguistik/prozodik özelliklerini konu alan, İngilizce, hakemli ve tam metnine ulaşılan özgün araştırmalar dahil edilmiştir. Tam metnine erişilemeyen, anahtar sözcükler ve özet bağlamında konuyla ilişkisiz bulunan ve derleme niteliğindeki çalışmalar dışlanmıştır.

Bulgular: Veri tabanlarından 1984–2026 yılları arasında toplam 229 kayda ulaşılmış; tekrarlanan, tam metnine erişilemeyen, konuyla ilişkisiz ve derleme niteliğindeki yayınlar çıkarıldıktan sonra 33 özgün araştırma derlemeye dahil edilmiştir. İncelenen çalışmalar, motherese olarak da adlandırılan bebeğe yönelik konuşmanın yüksek temel frekans, geniş perde aralığı, abartılı prozodi, yavaş konuşma hızı ve uzatılmış ünlülerle karakterize olduğunu göstermektedir. Bu paralinguistik özelliklerin bebeğin dikkatini sürdürdüğü, duygulanımı düzenlediği, sözcük sınırlarının ve konuşmada sıra alma sinyallerinin ayırt edilmesini kolaylaştırdığı bildirilmektedir. Bakım verenin prozodik girdisinin, özellikle perde aralığı ve ünlü abartısının, çocuğun eş zamanlı ve ileriki dönem sözcük dağarcığı ile konuşma algısıyla ilişkili olduğu; dokuzuncu ayda annenin çocuğun duygu durumuna uyumlanabilme becerisinin ileri dönem dil anlamayı yordadığı vurgulanmaktadır. Motherese’in paralinguistik örüntüleri evrensel görünmekle birlikte, bakım verene ve çocuğa bağlı etkenlere göre farklılaşmaktadır.

Sonuç: Bebeğe yönelik konuşma ve onun paralinguistik bileşenleri, sözel olmayan iletişimin ve erken dil gelişiminin temel yapı taşları arasındadır; etkileşimdeki prozodik duyarlılık, dil kilometre taşlarının kazanımıyla yakından ilişkilidir. Bu bileşenlerin gelişimsel izlemde erken değerlendirilmesi, riskli bebeklerin belirlenmesi ve pediatrik dil-konuşma müdahale programlarının planlanması açısından klinik önem taşımaktadır.

Anahtar Sözcükler: Bebeğe yönelik konuşma (motherese), paralinguistik özellikler, dil gelişimi, konuşma gelişimi, iletişim kilometre taşları, anne-çocuk etkileşimi.

ABSTRACT

Aim: Language development is a multidimensional process shaped not only by verbal but also by nonverbal components. This systematic review aims to synthesize studies addressing the paralinguistic features of infant-directed speech (motherese) in mother-child interaction —such as pitch and intonation, stress, speech rate, rhythm, loudness, vowel lengthening, and pausing— and to clarify the role of these features in early language and speech development.

Method: In line with PRISMA guidelines, PubMed (primarily), ScienceDirect, and Google Scholar were searched using combinations of the term “motherese” with “language development”, “speech development”, and “communication milestones”. Peer-reviewed, full-text original studies in English addressing motherese and its paralinguistic/prosodic features in typically and clinically developing

children were included. Studies lacking full-text access, unrelated to the topic, or of a review nature were excluded.

Results: A total of 229 records dated between 1984 and 2026 were retrieved; after removing duplicates, records without full-text access, off-topic records, and review-type publications, 33 original studies were included. The reviewed studies show that infant-directed speech, also called motherese, is characterized by higher fundamental frequency, a wider pitch range, exaggerated prosody, slower speech rate, and lengthened vowels. These paralinguistic features sustain the infant's attention, regulate affect, and facilitate the detection of word boundaries and turn-taking cues. Caregiver prosodic input, particularly pitch range and vowel exaggeration, is associated with the child's concurrent and later vocabulary size and speech perception; maternal affective attunement at nine months predicts later language comprehension. Although the paralinguistic patterns of motherese appear universal, they vary according to caregiver- and child-related factors.

Conclusion: Infant-directed speech and its paralinguistic components are among the fundamental building blocks of nonverbal communication and early language development; prosodic sensitivity within interaction is closely related to the attainment of language milestones. Early assessment of these components is clinically important for developmental follow-up and pediatric speech-language intervention programs.

Keywords: Infant-directed speech (motherese), paralinguistic features, language development, speech development, communication milestones, mother-child interaction.

CAUSAL INFERENCE FROM OBSERVATIONAL STUDIES: METHODOLOGY AND REPORTING PRINCIPLES FOR TARGET TRIAL EMULATIONS**Merve Türkegün ŞENGÜL**Alanya Alaaddin Keykubat Üniversitesi, Tıp Fakültesi Biyoistatistik ve Tıp Bilişimi Anabilim Dalı
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Aim: Randomized controlled trials (RCTs) are the gold standard in causal inference studies. However, they are difficult to implement due to ethical constraints, high costs and operational difficulties. For this reason, researchers often tend to work with observational studies. However, these contain numerous design-related biases. At this point, the Target Trial Emulation (TTE) protocol is not only used as a statistical tool, but also as a study design framework with the aim of avoiding these biases. This study aims to introduce the key components of the TTE framework and the principles of transparent reporting based on the TARGET statement, and to provide guidance to researchers on the steps involved in planning a study in line with the TTE methodology.

Material and Methods: This study is a methodological and descriptive review examining the applicability of the TTE methodology. The rapid development of the TTE methodology in recent years has highlighted the need for such studies to be reported transparently, and it is in this context that the TARGET statement has been introduced into the literature. This study provides a conceptual guide on how to ensure methodological consistency in the analysis of observational data by detailing the seven basic protocol components of TARGET.

Results: TTE studies are a hybrid structure that combines both observational and experimental design principles. TTE defines eligibility criteria, treatment strategies and follow-up periods like RCT trial protocol. The success of TTE depends on the accurate definition of the time zero, the simultaneous initiation of enrolment, treatment allocation and follow-up, the prevention of immortal time bias, and the control of time-varying confounders using appropriate methods.

Conclusion: TTE derives observational studies from relationship-focused studies. Therefore, it supports clinical decision-making processes. Increased awareness of TTE amongst researchers, the wider use of the method, and compliance with the TARGET guidelines will support the production of high-quality studies in the literature.

Keywords: Target Trial Emulation, TARGET, Causality, Observational study

OTİZM SPEKTRUM BOZUKLUĞUNDA KISITLI VE YİNELEYİCİ DAVRANIŞLARIN GENETİK VE EPIGENETİK MEKANİZMALARI: DUYGU DÜZENLEME VE DUYGU DÜZENLEME GÜÇLÜKLERİYLE İLİŞKİSİ

GENETIC AND EPIGENETIC MECHANISMS OF RESTRICTED AND REPETITIVE BEHAVIORS IN AUTISM SPECTRUM DISORDER: THEIR RELATIONSHIP WITH EMOTION REGULATION AND EMOTION DYSREGULATION

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ÖZET

Kısıtlı ve yineleyici davranışlar (KYD), otizm spektrum bozukluğunun (OSB) temel tanı alanlarından biri olmakla birlikte motor stereotipiler, duyuşal yineleyici davranışlar, aynılıkta ısrar ve sınırlı ilgi alanları gibi farklı alt boyutlardan oluşan heterojen bir davranış kümesini temsil etmektedir. Bu derlemenin amacı, OSB'de görülen kısıtlı ve yineleyici davranışların altında yer alan genetik ve epigenetik mekanizmaları güncel kanıtlar doğrultusunda incelemek ve bu mekanizmaların duyuşal düzenleme ile duyuşal düzenleme güçlükleri (emotion dysregulation) arasındaki ilişkisini değerlendirmektir. Bu çalışma, 2000–2026 yılları arasında yayımlanan hakemli insan araştırmalarını kapsayan yapılandırılmış bir anlatı derlemesidir. PubMed/MEDLINE başta olmak üzere uluslararası veri tabanlarında yer alan sistematik derlemeler, meta-analizler, genom çapında ilişkilendirme çalışmaları (GWAS), ekzom dizileme araştırmaları, epigenom çalışmaları, kohort araştırmaları, uzunlamasına çalışmalar ve kontrollü klinik araştırmalar öncelikli olarak değerlendirilmiştir. Güncel genomik araştırmalar, kısıtlı ve yineleyici davranışların tek bir gen tarafından açıklanamayacağını; yaygın poligenik varyantlar, nadir kalıtsal varyantlar, de novo mutasyonlar ve gelişimsel gen düzenlenmesinin birlikte rol oynadığı heterojen bir biyolojik mimariye işaret etmektedir. Epigenetik çalışmalar ise DNA metilasyonu ve kromatin düzenlenmesindeki değişikliklerin nörogelişimsel süreçleri etkileyebileceğini, ancak davranış alt tiplerine özgü biyobelirteçlerin henüz yeterince ortaya konulmadığını göstermektedir. Bulgular ayrıca motor stereotipiler ile aynılıkta ısrar davranışlarının farklı sinir ağları ve gelişimsel süreçlerle ilişkili olduğunu; özellikle aynılıkta ısrarın kaygı, belirsizliğe tahammülsüzlük ve duyuşal düzenleme güçlükleriyle daha güçlü ilişki gösterdiğini ortaya koymaktadır. Buna karşın motor stereotipiler bazı bireylerde fizyolojik ve duyuşal öz düzenleme işlevi görebilmektedir. Kısıtlı ve yineleyici davranışlar tek bir genetik ya da epigenetik mekanizmanın sonucu olarak değerlendirilemez. Mevcut kanıtlar, genetik yatkınlık, epigenetik düzenleme, kortikostriatal ağ gelişimi, duyuşal işleme ve duyuşal düzenleme süreçlerinin dinamik etkileşimi sonucunda farklı davranış fenotiplerinin ortaya çıktığını göstermektedir. Klinik değerlendirme ve müdahalelerde davranışın yalnızca görünümüne değil, işlevine, bireyin düzenlenmesine katkısına ve günlük yaşamdaki etkilerine odaklanan bütüncül bir yaklaşım benimsenmelidir.

Anahtar Kelimeler: Otizm spektrum bozukluğu, kısıtlı ve yineleyici davranışlar, stereotipi, genetik, epigenetik, duyuşal düzenleme, duyuşal düzenleme güçlüğü.

ABSTRACT

Restricted and repetitive behaviors (RRBs) constitute one of the two core diagnostic domains of autism spectrum disorder (ASD) and encompass a heterogeneous range of behavioral phenotypes, including motor stereotypies, repetitive sensory-motor behaviors, insistence on sameness, and restricted interests. This review aimed to examine the current evidence regarding the genetic and epigenetic mechanisms underlying RRBs and to explore their relationship with emotion regulation and emotion dysregulation. A structured narrative review was conducted using peer-reviewed human studies published between 2000 and 2026. Priority was given to systematic reviews, meta-analyses, genome-wide association studies, large-scale exome sequencing studies, epigenome-wide investigations, longitudinal cohort

studies, neuroimaging research, and controlled clinical studies retrieved primarily from PubMed/MEDLINE and related biomedical databases. Current evidence indicates that RRBs cannot be explained by a single genetic determinant. Instead, they arise from the interaction of common polygenic variants, rare inherited variants, de novo mutations, and developmental gene regulatory mechanisms. Epigenetic studies suggest that alterations in DNA methylation and chromatin regulation may contribute to neurodevelopmental pathways associated with ASD; however, robust epigenetic biomarkers specific to RRB subtypes remain lacking. Neuroimaging and developmental studies further demonstrate that motor stereotypies and insistence on sameness are associated with partially distinct neural circuits and developmental trajectories. Insistence on sameness is consistently linked to anxiety, intolerance of uncertainty, and emotion dysregulation, whereas motor stereotypies may function as adaptive mechanisms for sensory and physiological self-regulation in some individuals. Restricted and repetitive behaviors should not be conceptualized as the consequence of a single biological pathway. Rather, they represent heterogeneous developmental phenotypes emerging from the interaction between genetic susceptibility, epigenetic regulation, neural circuit maturation, sensory processing, and emotional regulation processes. Future research should integrate multi-omics approaches with longitudinal developmental phenotyping to better clarify the biological diversity underlying RRBs and to support individualized intervention strategies.

Keywords: Autism spectrum disorder, restricted and repetitive behaviors, motor stereotypies, genetics, epigenetics, emotion regulation, emotion dysregulation.

REPURPOSING OF EXISTING DRUGS FOR NSAID-INDUCED GASTRIC ULCERS: INSIGHTS FROM RECENT EXPERIMENTAL STUDIES

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ABSTRACT

Aim:Nonsteroidal anti-inflammatory drug (NSAID)-induced gastric ulceration is a multifactorial disorder involving prostaglandin depletion, oxidative stress, inflammation, apoptosis, impaired microcirculation, and defective mucosal repair. This complexity has increased interest in repurposing existing drugs with established therapeutic indications as potential gastroprotective agents. This study aimed to evaluate recent experimental evidence from a unified perspective by examining the pharmacological rationale for drug repurposing in NSAID-induced gastric ulcer models and identifying the common mechanistic trends emerging from these studies.

Materials and Methods:Original experimental studies published between 2021 and 2026 were identified through the PubMed database. Studies investigating metformin, olmesartan, perindopril, rivastigmine, tadalafil, topiramate, felodipine, liraglutide, nifuroxazide, and alogliptin in experimental NSAID-induced gastric injury models were included. The studies were comparatively evaluated according to drug selection rationale, mechanisms of action, and the biological pathways involved in gastroprotection.

Results:Despite belonging to different pharmacological classes, the investigated drugs demonstrated convergent gastroprotective effects through complementary biological mechanisms. Protective effects were associated with reduced oxidative stress, suppressed inflammation and apoptosis, preservation of prostaglandin-mediated mucosal defense, improved endothelial function and microcirculation, and enhanced tissue repair. Frequently implicated pathways included ACE2/Ang-(1-7), DDAH-1/ADMA, Nrf2/HO-1, HMGB1/TLR4/NF- κ B, GDNF/PI3K/Akt, SDF-1/CXCR4, and VEGF signaling. These findings indicate that current drug repurposing strategies increasingly target coordinated mechanisms supporting both mucosal protection and regeneration.

Conclusion:Recent experimental evidence suggests that exploiting the pleiotropic properties of existing drugs represents a promising strategy for NSAID-induced gastric ulceration. Rather than focusing solely on acid suppression, drug repurposing targets multiple biological processes involved in ulcer pathogenesis and healing. Further translational and clinical studies are needed to determine the clinical applicability of these experimental findings.

Keywords:Drug repurposing; NSAID-induced gastric ulcer; Gastroprotection; Experimental pharmacology

FEAR OF FALLING IN SURGICAL PATIENTS: A NARRATIVE REVIEW OF PREVALENCE, RISK FACTORS, CLINICAL OUTCOMES, AND NURSING INTERVENTIONS

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ABSTRACT

Aim: Fear of falling (FOF) is a common but often underrecognized concern among surgical patients, adversely affecting postoperative recovery, early mobilization, rehabilitation, and discharge readiness. This review aimed to synthesize current evidence regarding the prevalence, associated risk factors, clinical consequences, and interventions related to FOF in adult surgical populations.

Materials and Methods: A narrative literature review was conducted using recent peer-reviewed studies investigating FOF in surgical patients. Evidence from observational studies, quasi-experimental research, prospective cohort studies, systematic reviews, and meta-analyses involving orthopedic, spinal, neurosurgical, and cardiac surgery populations was examined. The review focused on FOF prevalence, predictive factors, long-term outcomes, and intervention strategies.

Results: The prevalence of postoperative FOF ranged from 56% to 99%, with the highest rates reported following fall-related orthopedic surgery and spinal procedures. A meta-analysis involving 3,088 patients reported a pooled prevalence of 66.9% after hip fracture surgery. Pain, anxiety, depression, previous falls, frailty, female sex, higher body mass index, and kinesiophobia consistently emerged as significant predictors of FOF across surgical populations. Kinesiophobia demonstrated one of the strongest associations with postoperative FOF and reduced mobilization. Elevated preoperative FOF was associated with poorer mobility and lower quality of life up to three years after hip fracture surgery. Emerging evidence also indicates that FOF follows distinct postoperative recovery trajectories influenced by demographic, psychological, and clinical factors. Educational interventions targeting fall prevention before surgery significantly reduced FOF following total knee arthroplasty, while qualitative findings emphasized that nursing support during first mobilization alleviated patients' fears. However, evidence from randomized controlled trials remains limited.

Conclusion: Fear of falling is a prevalent postoperative problem with important implications for functional recovery and rehabilitation. Early identification of high-risk patients and multidisciplinary interventions addressing modifiable factors, including pain, anxiety, frailty, and kinesiophobia, may improve postoperative outcomes. Further well-designed randomized controlled trials are needed to establish effective evidence-based interventions for reducing FOF in diverse surgical populations.

Keywords: Fear of falling; Postoperative care; Nursing care

ATHEROSCLEROSIS: COMPARISON OF GLOBAL AND NATIONAL PERSPECTIVES IN PREVENTION, DIAGNOSIS, AND TREATMENT**Specialist Dr. Kaya ÖZEN**

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ABSTRACT

Objective: Atherosclerotic cardiovascular diseases (ASCVD) continue to be the leading cause of adult mortality and morbidity both globally and in Türkiye. The primary aim of this comprehensive review study is to examine the latest clinical innovations in the pathophysiology, diagnosis, prevention, and management of atherosclerosis in light of updated international consensus guidelines (2023 ESC Guidelines on Diabetes/CVD and 2024 ESC Guidelines on Chronic Coronary Syndromes) alongside national epidemiological data (TEKHARE, PURE, Turkish Heart Study), and to evaluate the specific risk profile of Türkiye.

Materials and Methods: International landmark epidemiological cohorts (INTERHEART, PURE, GBD) and national clinical studies, along with the latest ESC/EAS guideline recommendations, were systematically compiled and evaluated to comparatively analyze disease burden, risk prediction algorithms, subclinical atherosclerosis screening methods, and real-world treatment access parameters.

Results: While global cardiovascular deaths exceed 18.6 million annually, approximately 37.8% of all deaths in Türkiye are attributed to circulatory system diseases. The Turkish adult population exhibits a unique atherogenic lipid phenotype ('Pattern B') characterized by low HDL-C (50%), high triglycerides (33%), and high tobacco consumption (50–70% in males). According to the updated SCORE2 and SCORE2-Diabetes risk models, Türkiye is categorized in the 'very high-risk' region. Although the clinical adoption of innovative therapies such as SGLT2 inhibitors and GLP-1 receptor agonists is increasing, access to biological lipid-lowering agents like PCSK9 inhibitors and inclisiran remains insufficient due to reimbursement restrictions.

Conclusion: In current guidelines where Coronary Computed Tomography Angiography (CCTA) and Coronary Artery Calcium Scoring (CACS) are prioritized, integrating SCORE2-Diabetes into risk stratification, as well as achieving organ-protective (SGLT2i/GLP-1 RA) and aggressive lipid-lowering targets (<55 mg/dL) in diabetic and high-risk groups, is of critical importance.

Keywords: Atherosclerosis, Cardiovascular Risk, SCORE2-Diabetes, Coronary CT Angiography, PCSK9 Inhibitors, SGLT2 Inhibitors, Epidemiology of Türkiye.

EXAMINING POSTGRADUATE THESES INVOLVING LAUGHTER YOGA INTERVENTIONS IN TÜRKİYE: A DOCUMENT ANALYSIS*

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ABSTRACT

Objective: This study aimed to examine completed postgraduate theses on laughter yoga in Türkiye, identify current research trends, and provide a framework for future research.

Materials and Methods: This descriptive study was conducted using the document analysis method. Data were obtained by searching the Council of Higher Education (CoHE) National Thesis Center database using the keywords “*laughter yoga*” and “*laughter therapy*.” All completed postgraduate theses on laughter yoga identified through the search were evaluated in terms of publication year, thesis type, academic discipline, study design, sample characteristics, intervention protocols, data collection instruments, and main findings.

Results: A total of 35 completed postgraduate theses on laughter yoga in Türkiye were identified. Of these, 88.6% were conducted in 2022 or later, 88.6% were conducted in the field of nursing, and 82.9% employed randomized controlled experimental design. The studies included healthcare professionals, nursing and midwifery students, women's health groups, individuals with chronic diseases, and various special populations. The most frequently used data collection instruments were the Perceived Stress Scale, the Pittsburgh Sleep Quality Index, and various quality-of-life measures. Overall, the findings indicated that laughter yoga had positive effects in reducing stress, anxiety, depression, pain, and sleep problems and in improving quality of life, psychological well-being, and spiritual well-being. However, findings regarding biochemical markers were limited and heterogeneous.

Conclusion: The reviewed postgraduate theses suggest that laughter yoga is a complementary nursing intervention that can be applied to diverse populations and may have positive effects, particularly on psychosocial health outcomes. Nevertheless, further multicenter randomized controlled studies with standardized intervention protocols, long-term follow-up, and mixed-methods designs incorporating participants' experiences are needed.

Keywords: Laughter yoga, postgraduate theses, nursing, complementary therapy, document analysis.

**KASTRASYON DİRENÇLİ PROSTAT KANSERİNİN
GELİŞİMİNDE NON-CODİNG RNA AĞLARI VE MOLEKÜLER SİNYAL YOLAKLARI**
*NON-CODING RNA NETWORKS AND MOLECULAR SIGNALING PATHWAYS IN THE
DEVELOPMENT OF CASTRATION-RESISTANT PROSTATE CANCER*

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ÖZET

Kastrasyon dirençli prostat kanseri (KDPK), androjen yoksunluğu tedavisine (ADT) rağmen tümör hücrelerinin proliferasyonunu sürdürdüğü ileri evre prostat kanseridir. Klinik olarak prostat spesifik antijen (PSA) düzeylerinde yükselme, lokal nüks ve uzak metastaz ile karakterizedir ve tedavi yönetimi açısından önemli bir klinik sorun oluşturmaktadır. Bu derleme çalışması kapsamında, KDPK patogenezinin ilerlemesinde ve gelişiminde kritik roller üstlendiği bilinen mikroRNA (miRNA), uzun non-coding RNA (lncRNA) ve dairesel RNA (circRNA) gibi temel non-coding RNA (ncRNA) sınıflarının hücre içerisinde oluşturduğu çok katmanlı düzenleyici ağlar kapsamlı bir şekilde ele alınmıştır. Söz konusu ncRNA ağlarının; başta Androjen Reseptörü (AR) ve bunun yapısal olarak sürekli aktif olan varyantı AR-V7 olmak üzere, Wnt/ β -katenin, PI3K/AKT ve EGFR/RAS/MAPK gibi temel onkogenik sinyal yollarını moleküler düzeyde nasıl modüle ettiği detaylandırılmıştır. Bu hücrel etkileşimlerin, yarışan endojen RNA (ceRNA) tabanlı "süngerleme" mekanizmaları üzerinden yeni nesil antiandrojenler ve taksan temelli kemoteraplere karşı tedavi direncinin gelişimini nasıl tetiklediği moleküler boyutta tartışılmıştır. Ayrıca, bu ncRNA ağlarının epitelial-mezankimal geçiş (EMT) ve invaziv metastatik süreçleri regüle ederek tümör progresyonunu nasıl hızlandırdığı açıkça ortaya konmuştur. Sonuç olarak, KDPK'de ncRNA aracılı moleküler ağların bütüncül olarak anlaşılması, hastalığın biyolojisinin aydınlatılmasının yanı sıra tedavi direncini hedefleyen yeni terapötik yaklaşımların geliştirilmesine önemli katkılar sağlayabilir.

Anahtar Kelimeler: Kastrasyon Dirençli Prostat Kanseri, non-coding RNA, Sinyal Yolakları, AR-V7, Tedavi Direnci, ceRNA Mekanizması.

ABSTRACT

Castration-resistant prostate cancer (CRPC) is an advanced-stage prostate cancer in which tumor cells maintain proliferation despite androgen deprivation therapy (ADT). Clinically characterized by rising prostate-specific antigen (PSA) levels, local recurrence, and distant metastasis, CRPC poses a significant clinical challenge in terms of treatment strategies. Within the scope of this review, the intracellular multilayered regulatory networks formed by key non-coding RNA (ncRNA) classes such as microRNA (miRNA), long non-coding RNA (lncRNA), and circular RNA (circRNA) that play critical roles in the development and progression of CRPC pathogenesis are comprehensively discussed. It is detailed how these ncRNA networks modulate key oncogenic signaling pathways at the molecular level, primarily the androgen receptor (AR) and its constitutively active variant AR-V7, as well as Wnt/ β -catenin, PI3K/AKT, and EGFR/RAS/MAPK. The molecular mechanisms through which these cellular interactions trigger the development of treatment resistance against next-generation antiandrogens and taxane-based chemotherapies via competing endogenous RNA (ceRNA)-based 'sponging' mechanisms are discussed. Furthermore, it is clearly demonstrated how these ncRNA networks accelerate tumor progression by regulating epithelial-mesenchymal transition (EMT) and invasive metastatic processes. Consequently, a holistic understanding of ncRNA-mediated molecular networks in CRPC will not only elucidate the underlying biology of the disease but also provide significant contributions to the development of novel therapeutic approaches targeting treatment resistance.

Keywords: Castration-Resistant Prostate Cancer, non-coding RNA, Signalling Pathways, AR-V7, Treatment Resistance, ceRNA Mechanism.

PHARMACIST-ADMINISTERED VACCINATION IN TURKEY: A LEGAL DOCUMENT ANALYSIS

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ABSTRACT

Purpose: In many countries, community pharmacists now play an active role in vaccine administration, yet in Turkey this practice remains legally undefined. This study aims to clarify the current legal status of pharmacist-administered vaccination in Turkey by examining the relevant legislation and synthesising recent empirical findings on pharmacists' knowledge, attitudes, and practices regarding vaccination.

Materials And Methods: A qualitative document analysis was conducted using primary legal texts, including the Public Hygiene Law (No. 1593), the Nursing Law (No. 6283), the Law on the Practice of Medicine (No. 1219), and the 2014 Regulation on Pharmacists and Pharmacies. These sources were reviewed alongside recent peer-reviewed studies addressing pharmacists' vaccination-related knowledge, attitudes, and practices in Turkey.

Findings: The legislative review shows that vaccine administration is neither explicitly assigned to pharmacists nor explicitly prohibited; the current framework instead defines pharmacists' responsibilities around storage, dispensing, and pharmacovigilance. Recent studies indicate that most pharmacists support legal authorisation for vaccine administration, yet several also report gaps in vaccination-specific knowledge and limited confidence in managing adverse events such as anaphylaxis. Pharmacy professional associations have called for legal recognition of this role but have not received a formal response from health authorities.

Conclusion: Turkey's community pharmacists occupy a position of technical readiness without legal authority: they are integrated into vaccine storage and counselling, yet excluded from administration. This unresolved legal gap, combined with existing knowledge and training gaps among pharmacists, suggests that legislative change alone would be insufficient without accompanying training infrastructure. These findings provide a documented basis for future comparative policy research on pharmacist-administered vaccination.

Keywords: pharmacist-administered vaccination, community pharmacy, health legislation, Turkey, document analysis

EVIDENCE-BASED NURSING PRACTICES IN BURN PATIENT CARE

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ABSTRACT

Purpose: Burn injuries represent a significant global public health burden, causing 9 million injuries and 120,000 deaths annually, with 90% of fatalities occurring in low- and middle-income countries (McCann et al., 2022). The multidimensional complexity of burn care — encompassing wound management, infection control, pain, nutrition, and psychosocial rehabilitation — necessitates a comprehensive, evidence-based nursing approach (Sasaki et al., 2022; Greenfield, 2010).

Material And Method: This narrative review synthesizes evidence from international clinical practice guidelines, systematic reviews, meta-analyses, and randomized controlled trials published between 2009 and 2025 on burn nursing care.

Results: The use of topical antimicrobials combined with early excision and grafting has been associated with a significant decline in the incidence of burn wound infections (Jumaa et al., 2025). A systematic review of 11 studies involving 951 patients found that non-pharmacological interventions — including virtual reality, foot reflexology, and guided imagery — demonstrated partially positive effects on pain during wound dressing changes (Ma et al., 2024). Early enteral nutrition has been shown to significantly reduce overall mortality, length of hospital stay, and sepsis risk in burn patients (Naeini et al., 2024). A study of 80 burn survivors showed that a nurse-led psychosocial empowerment program significantly improved body image satisfaction, coping abilities, and post-traumatic stress disorder symptoms compared to the control group (Shokre et al., 2024). An integrative review of 17 studies identified that burn care nurses face significant challenges including ethical, clinical, and work-life challenges, and limited support (Wang et al., 2023). An overview of 21 systematic reviews reported that physical rehabilitation, psychological interventions, and complementary approaches support scar management and post-discharge recovery in burn patients (Al Hanna et al., 2024).

Conclusions: Evidence-based nursing practice in burn care, integrating wound management, pain control, nutrition, psychosocial support, and rehabilitation, significantly improves patient outcomes. Integrating current evidence into nursing practice is essential for optimizing burn care.

Keywords: Burns, surgical nursing, evidence-based nursing practice

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A MODULAR 3D-PRINTED TITANIUM MICROSCREW–ASSISTED PLATFORM FOR STABLE AND REPRODUCIBLE EEG RECORDINGS IN BEHAVIORAL NEUROSCIENCE

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ABSTRACT

Objective: Reliable electroencephalography (EEG) recordings in behavioral neuroscience experiments depend on stable electrode fixation throughout the experimental procedure. Animal movement, mechanical loading of electrode leads, and displacement of implanted electrodes may compromise signal quality and reduce the reproducibility of electrophysiological data. This study aimed to develop a low-cost, modular, and reproducible three-dimensional (3D)-printed fixation platform supported by titanium microscrews to facilitate secure electrode stabilization during behavioral experiments in rodents.

Materials and Methods: The fixation platform was designed using SolidWorks computer-aided design software and fabricated from polyethylene terephthalate glycol-modified (PETG) filament using fused deposition modeling (FDM) technology. The device comprises a cranial base secured with titanium microscrews, an internal compartment reinforced with dental filling material to improve structural rigidity, an integrated cable-protection channel, and a detachable protective cover designed to minimize mechanical damage to electrode connections during behavioral testing. Each platform was produced in approximately 15 minutes at an estimated unit cost of 30 Turkish lira. To maintain sterilization standards and prevent cross-contamination, a separate platform was used for each experimental animal. A pilot implementation evaluated mechanical stability, ease of application, electrode protection, and overall usability.

Results: The pilot implementation showed that the platform maintained stable electrode fixation during the behavioral procedure and protected electrode connections against external mechanical influences. Although the initial design accommodated four titanium microscrews, pilot observations indicated that two microscrews provided sufficient fixation stability. This modification reduced the amount of implanted material and supported a less invasive surgical approach. The detachable cover and integrated cable channel limited direct contact with the electrode assembly, while the modular architecture enabled adaptation to different experimental protocols and future electrophysiological or multimodal biosignal-recording configurations.

Conclusion: The developed 3D-printed, titanium microscrew-assisted fixation platform offers a practical, rapidly manufacturable, low-cost, and modular solution for EEG electrode stabilization in behavioral neuroscience research. Pilot findings support its feasibility for preclinical electrophysiological applications and indicate that adequate stability can be achieved using two microscrews. The originality, adaptable architecture, and translational potential of the design also support its evaluation within future intellectual property and biomedical device development processes. Controlled quantitative studies are required to determine its effects on EEG signal quality, movement artefacts, and long-term mechanical performance.

Keywords: 3D printing; electroencephalography; behavioral neuroscience; titanium microscrew; electrode fixation; rodent model.

**MIXTURE-AWARE SYSTEMS PHARMACOLOGY MAPS HAZELNUT-OIL
CONSTITUENTS ONTO PHASE-SPECIFIC HUMAN WOUND-REPAIR STATES****Bengisu ARSLANTAŞ**

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ABSTRACT

Hazelnut oil is a chemically heterogeneous lipid matrix whose biological activity cannot be represented by a single compound-target interaction. We formulated its potential action on cutaneous repair as a constituent-resolved, mixture-aware perturbation problem. A versioned registry separated saponifiable fatty-acyl composition from intact unsaponifiable constituents and linked 13 components to strictly filtered human bioactivity evidence. Donor-time pseudobulks from human acute wounds (GSE241132) defined cell-type-specific D1-D0, D7-D1 and D30-D7 programs, which were evaluated in independent spatial transcriptomics (GSE241124), diabetic foot ulcer (GSE165816), venous ulcer (GSE265972) and temporal proteomics (PXD052154). Composition-weighted target-to-program proximity was tested against 10,000 degree-matched nulls in STRING functional and physical interactomes and against almond, olive and sunflower-oil counterfactuals. Strict spatial mappings replicated all nine tested cell-type-transition programs in every available donor. Healing diabetic-foot-ulcer samples differed in 8 of 12 projected programs at false-discovery rate <0.05 , whereas venous ulcers showed large early/proliferative displacement with incomplete late resolution. The target-covered hazelnut fatty-acyl fraction was proximal to 9 of 53 functional-network and 2 of 53 physical-network modules; early myeloid D1-D0 convergence was robust across both networks ($z=5.09$ and 2.71). No matched hazelnut-versus-olive comparison produced non-overlapping composition-uncertainty intervals, identifying an oleic-rich oil-class topology rather than hazelnut specificity. A measured-x-y/modelled-z scenario analysis further localized predicted exposure toward wound-edge and epidermal compartments unless distributed delivery was imposed. The framework therefore prioritizes stage-, cell-state- and formulation-specific mechanisms for experimental testing; it does not infer whole-oil target engagement or therapeutic efficacy.

Keywords: hazelnut oil; cutaneous wound healing; systems pharmacology; spatial transcriptomics; network proximity; mixture modelling; counterfactual oils

MICROBIOLOGICAL DIAGNOSTIC METHODS FOR CATHETER-ASSOCIATED URINARY TRACT INFECTIONS FOLLOWING SURGICAL PROCEDURES

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Objective

Catheter-associated urinary tract infections (CAUTIs) are among the most important healthcare-associated infections and may lead to prolonged hospitalization, increased morbidity, and higher treatment costs. Biofilm formation on catheter surfaces, microbial migration, and antimicrobial resistance play important roles in the development of infection. The aim of this study was to evaluate microbiological diagnostic methods and identify the causative microorganisms in catheter-associated urinary tract infections developing after surgical procedures.

Materials and Methods

The study was conducted between September 15 and December 25, 2025, at Baku Academic Mirgasimov Republican Hospital and the Central Clinical Hospital of the Ministry of Defense. A total of 57 patients aged 40–61 years, including 41 males and 16 females, were enrolled. Sterile urine samples were collected from patients who underwent ureteral stone surgery, varicocelelectomy, percutaneous nephrolithotomy, transurethral resection of bladder tumor (TUR-BT), tension-free vaginal tape (TVT) procedure, and cystectomy. Samples were inoculated onto MacConkey Agar, Blood Agar, CLED Agar, and Sabouraud Dextrose Agar. Following identification of the isolated microorganisms, antimicrobial susceptibility was assessed using the Kirby–Bauer disk diffusion method and E-test.

Results

Microbiological examination revealed the isolation of major causative microorganisms, including *Escherichia coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Candida albicans*. Based on the culture results and antimicrobial susceptibility testing, appropriate antimicrobial treatment was planned for the patients.

Conclusion

Accurate specimen collection, early microbiological diagnosis, and antimicrobial susceptibility testing are of great importance for the effective management of catheter-associated urinary tract infections following surgical procedures. Individualized, pathogen-directed treatment approaches and implementation of infection prevention and control measures may contribute to reducing complications.

Keywords: Catheter-associated urinary tract infection, microbiological diagnosis, biofilm, antimicrobial resistance, urine culture.

EVALUATION OF THYROID FUNCTIONS, VITAMIN B12, FOLATE, FERRITIN AND METABOLIC PARAMETERS IN PATIENTS WITH PTOSIS: A CONTROLLED STUDY**Zekeriya CETINKAYA**

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ABSTRACT

Purpose: Ptosis is a multifactorial disorder characterized by downward displacement of the upper eyelid from its normal anatomical position. Although age-related aponeurotic changes are considered the main factors in the development of ptosis, systemic metabolic abnormalities may also contribute to disease pathogenesis. This study aimed to compare thyroid function tests, vitamin B12, folate, ferritin, and cholesterol levels between patients with ptosis and healthy individuals.

Material and Methods: This retrospective controlled study included 24 patients who underwent surgical treatment for ptosis and 26 age-matched healthy controls. Demographic characteristics including age and sex, as well as serum free triiodothyronine (FT3), free thyroxine (FT4), thyroid-stimulating hormone (TSH), vitamin B12, folate, ferritin, and cholesterol levels were evaluated. Laboratory parameters were statistically compared between the two groups.

Results: The ptosis and control groups were comparable in terms of age ($p=0.96$) and sex distribution ($p=1.00$). Vitamin B12 levels were significantly lower in the ptosis group compared with the control group (148 ± 48 vs 386 ± 130 , $p<0.001$). Ferritin levels showed a tendency to be lower in the ptosis group; however, this difference did not reach statistical significance ($p=0.08$). No significant differences were observed between the groups regarding FT3, FT4, TSH, folate, and cholesterol levels.

Conclusion: The findings of this study suggest that vitamin B12 deficiency and reduced iron stores may accompany ptosis. In addition to local anatomical factors, systemic metabolic parameters may be considered during the clinical evaluation of patients with ptosis. Further prospective studies with larger sample sizes are required to confirm these findings.

Keywords: Ptosis, Vitamin B12, Ferritin, Thyroid Function, Metabolic Factors

KRONİK BEL AĞRISI OLAN BİREYLERDE AĞRI ŞİDDETİNİN VE FONKSİYON DÜZEYİNİN, YAĞ DOKUSU, KAS KUVVETİ, FİZİKSEL AKTİVİTE İLE İLİŞKİSİ
ASSOCIATION OF PAIN INTENSITY AND FUNCTIONAL STATUS WITH ADIPOSE TISSUE, MUSCLE STRENGTH, AND PHYSICAL ACTIVITY IN INDIVIDUALS WITH CHRONIC LOW BACK PAIN

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ÖZET

Amaç: Kronik bel ağrılı bireylerde ağrı şiddeti ve fonksiyonun yağ dokusu, kas kuvveti, solunum fonksiyonları ve fiziksel aktivite düzeyi ile ilişkisini incelemektir.

Materyal ve Yöntem: Çalışmaya kronik bel ağrısı olan ve alınma kriterlerine olan 25-65 yaş arası bireyler dahil edildi. Ağrı şiddeti Görsel Analog Skalası, fonksiyonel yetersizlik ise Oswestry Engellilik İndeksi ile değerlendirildi. Vücut kompozisyonu antropometrik ölçüm yöntemleri ile, alt ekstremité kas kuvveti dijital el dinamometresi ile ve fiziksel aktivite düzeyi Uluslararası Fiziksel Aktivite Anketi (IPAQ) kullanılarak değerlendirildi.

Bulgular: Çalışmaya alınma kriterlerine uyan 130 kronik bel ağrılı birey dahil edildi (yaş ortalaması= 45,47±11,56, 70 kadın). Aktivite ağrısı vücut yağ oranı, yağ kütlesi ve beden kitle indeksi ile pozitif yönde ($r=0,261$, $p=0,003$; $r=0,206$, $p=0,019$; $r=0,184$, $p=0,036$, sırasıyla), kalça ekstansör kas kuvveti ile negatif yönde zayıf ilişki bulundu (sağ $r=-0,241$, $p=0,006$; sol $r=-0,261$, $p=0,003$). İstirahat ağrısı ile ise yağsız vücut kütlesi ($r=-0,192$, $p=0,029$), kalça abduksiyon kuvveti (sağ $r=-0,196$, $p=0,025$; sol $r=-0,277$, $p=0,001$) ve diz ekstansiyon (sağ $r=-0,209$, $p=0,017$) ile zayıf düzeyde ilişki bulundu. Fonksiyon vücut yağ oranı ile ($r=0,205$, $p=0,020$), çoğu kas kuvvetleri ve IPAQ ile ($r=-0,184$, $p=0,036$) zayıf düzeyde ilişki bulundu. Geride kalan diğer parametreleri ile ilgili bir ilişki bulunmadı.

Sonuç: Kronik bel ağrılı bireylerde artmış vücut yağlanması, azalmış alt ekstremité kas kuvveti ve fiziksel aktivite düşüşün ağrı şiddeti ve fonksiyon ile ilişkili iken fiziksel aktivite azalmasının ise fonksiyon ile ilişkili olduğu sonucuna varılmıştır. Bulgular, kronik bel ağrısının değerlendirilmesinde yalnızca ağrı ve fonksiyonel durumun değil, vücut kompozisyonu, kas kuvveti ve fiziksel aktivite seviyelerinin de birlikte ele alınmasının önemini göstermektedir.

Anahtar kelimeler: Kronik bel ağrısı, Ağrı, Yağ dokusu, Kas kuvveti

ABSTRACT

Aim: To investigate the associations of pain intensity and functional status with adipose tissue, muscle strength, respiratory functions, and physical activity in individuals with chronic low back pain.

Materials and Methods: Individuals aged 25–65 years with chronic low back pain who met the eligibility criteria were included. Pain intensity was assessed using the Visual Analog Scale, and functional disability using the Oswestry Disability Index. Body composition was assessed anthropometrically, lower extremity muscle strength using a digital hand-held dynamometer, and physical activity using the International Physical Activity Questionnaire (IPAQ).

Results: A total of 130 individuals were included (mean age=45.47±11.56 years; 70 women). Activity pain was weakly and positively correlated with body fat percentage, fat mass, and body mass index ($r=0.261$, $p=0.003$; $r=0.206$, $p=0.019$; $r=0.184$, $p=0.036$, respectively), and weakly and negatively correlated with hip extensor strength (right: $r=-0.241$, $p=0.006$; left: $r=-0.261$, $p=0.003$). Resting pain was weakly correlated with lean body mass ($r=-0.192$, $p=0.029$), hip abductor strength (right: $r=-0.196$, $p=0.025$; left: $r=-0.277$, $p=0.001$), and knee extensor strength (right: $r=-0.209$, $p=0.017$). Functional

status was weakly correlated with body fat percentage ($r=0.205$, $p = 0.020$), most muscle strength parameters, and IPAQ score ($r=-0.184$, $p=0.036$). No significant associations were found for the remaining parameters.

Conclusion: Increased adiposity, reduced lower extremity muscle strength, and lower physical activity were associated with pain intensity and functional status. These findings emphasize the importance of considering body composition, muscle strength, and physical activity alongside pain and functional status in individuals with chronic low back pain.

Keywords: Chronic low back pain, Pain, Adipose tissue, Muscle strength

N-GLYCAN PROFILING OF RENAL CELL CARCINOMA FOR MALDI MASS SPECTROMETRY

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ABSTRACT

Aim: Renal cell carcinoma (RCC) is the most common subtype among kidney cancers, and the number of studies examining N-glycosylation profiles in this cancer type remains limited. Abnormalities in glycosylation processes are closely associated with cancer development and progression. In this study, we aimed to determine the N-glycan profiles of RCC tissue samples by MALDI mass spectrometry and to reveal the differences between cancerous and adjacent healthy tissues.

Materials and Methods: Proteins were extracted from 39 formalin-fixed paraffin-embedded (FFPE) kidney tissue samples (cancerous and adjacent control), N-glycans were released using PNGase F enzyme, labeled with 2-AA, and purified by cellulose/porous graphitized carbon-based solid-phase extraction. MALDI-TOF-MS and MALDI-MS/MS analyses were performed, and multiple t-test, Mann-Whitney U test, and ROC analysis were applied for statistical evaluation.

Results: A total of 33 N-glycan conformations were detected in the analyses, of which 27 neutral N-glycans were included in the statistical evaluation. Bisecting N-glycan and biantennary bisecting N-glycan compositions were found to be significantly higher in healthy adjacent tissues compared to cancerous tissues ($p < 0.05$). ROC analysis revealed a discriminative power of 77% (AUC=0.769) for the bisecting N-glycan composition.

Conclusion: These findings indicate that bisecting N-glycans may serve as a strong candidate biomarker for distinguishing cancerous from healthy tissue in RCC.

Acknowledgment: This study was supported by the Karabük University Scientific Research Projects Coordination Unit (BAP) under project number FYL-2020-2174.

Keywords: Renal Cell Carcinoma, N-Glycan, MALDI-MS, Cancer Biomarker

MEAT PRODUCT AUTHENTICATION BASED ON N-GLYCAN PROFILES

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ABSTRACT

Aim: Verification of species identity in meat products is of great importance for ensuring food safety and preventing adulteration. In this study, we aimed to characterize the N-glycan profiles of glycoproteins derived from beef, lamb, and chicken meat, and to classify meat species based on glycomic data.

Materials and Methods: Protein extraction was performed on samples from each meat species (n = 3/species). N-glycans attached to glycoproteins were released using PNGase F enzyme and labeled with 2-aminobenzoic acid (2-AA). The labeled N-glycans were purified by solid-phase extraction (glycan SPE) and porous graphitized carbon (PGC) methods. The purified glycan structures were analyzed by MALDI-TOF/TOF-MS, and glycan structures were characterized based on the resulting mass spectra. Common and species-specific glycan profiles were compared across species, and levels of fucosylation, mannosylation, and galactosylation, as well as the proportions of hybrid- and complex-type glycans, were calculated.

Results: Mass spectrometry analyses identified N-glycan structures 35 in beef, 33 in lamb, and 30 in chicken. The most abundant glycan structure in beef and lamb was Hex7HexNAc4dHex1-AA, whereas in chicken it was Hex5HexNAc5dHex1-AA. Despite the limited sample size, glycan profiles exhibited distinct and consistent differences among meat species, suggesting a strong potential signal for species classification.

Conclusion: Integrating glycan-based profiling with mass spectrometry and machine learning methods offers a rapid and promising analytical approach for meat species authentication and detection of food adulteration. Nevertheless, these preliminary findings need to be validated with larger and independent sample cohorts.

Acknowledgment: This study was supported by the Karabük University Scientific Research Projects Coordination Unit (BAP) under project number KBÜBAP-23-YL-132.

Keywords: Glycomics, meat products, MALDI-TOF-MS, N-glycan, food authentication

INVESTIGATION OF FINDINGS BEFORE AND AFTER VOICE THERAPY IN A CASE WITH UNILATERAL VOCAL FOLD ATROPHY AND MUSCLE TENSION DYSPHONIA

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ABSTRACT

Objective: This study aimed to compare multidimensional voice assessment findings before and after voice therapy in a case with right vocal fold atrophy and muscle tension dysphonia.

Materials and Methods: A 15-year-old male underwent demographic and medical history review, laryngeal imaging, acoustic, aerodynamic, self- and proxy-report, and auditory-perceptual assessments. For acoustic analysis, a 5-second sustained /a/ vowel and connected speech samples were recorded. Twenty-two time-based parameters were visually examined using the Multi-Dimensional Voice Program (MDVP), and the multiparametric Acoustic Voice Quality Index (AVQI), which incorporates time- and frequency-based measures, was calculated using Praat software. Maximum phonation times (MPTs) for /a/, /s/, and /z/ were measured for aerodynamic assessment. The Pediatric Voice Handicap Index-10 (pVHI-10) and the Teacher-Reported Pediatric Voice Handicap Index were administered. The recordings used for acoustic analysis were also evaluated perceptually. Following the initial assessment, the patient received voice hygiene education, counseling, and an individualized voice therapy program.

Results: The patient reported a two-year history of voice complaints. Laryngeal imaging revealed right vocal fold atrophy and an I-shaped glottal closure defect. Marked muscle tension was observed during sustained phonation and connected speech. Before therapy, the MDVP display showed a large red area indicating parameters outside normative limits. After therapy, the green area representing parameters within normative limits increased, while the red area decreased substantially. The AVQI score decreased from 5.18 before therapy to 1.36 after therapy. No meaningful change was observed in MPT values. Self- and proxy-report scores decreased after therapy, indicating reduced perceived voice-related impact. Auditory-perceptual assessment also demonstrated a clear improvement in voice quality.

Conclusion: Voice hygiene education, counseling, and voice therapy provided by speech-language pathologists may improve voice quality and voice-related quality of life in individuals with vocal fold atrophy and muscle tension dysphonia.

Keywords: Voice therapy, vocal fold atrophy, dysphonia, muscle tension

DECREASE IN β 3-TUBULIN AND NEUROFILAMENT HEAVY CHAIN (NFH) IMMUNOREACTIVITY FOLLOWING OPTIC NERVE CRUSH INJURY IN MICE: A COMPARATIVE ANALYSIS OF CONTROL AND INJURY GROUPS

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ABSTRACT

Objective: In the damage-validation phase of a PhD thesis study investigating the regenerative effect of thymoquinone in a mouse model of optic nerve crush injury, this study aims to compare β 3-tubulin and neurofilament heavy chain (NFH) immunoreactivity using ImageJ on confocal microscopy images in Control (n=5) and Injury (n=5) groups of C57BL/6 mice. To confirm the accuracy of the established injury model, a significant reduction in both markers is targeted in the Injury group compared to the control. Consequently, it is anticipated that the crush model will be validated to induce robust and consistent axonal cytoskeletal damage.

Materials And Methods: Five animals were used in each of the Control (olive oil via gavage) and Injury (subjected to crush injury without treatment) groups. Optic nerve sections were immunohistochemically stained for β 3-tubulin and NFH, imaged via confocal microscopy, and mean fluorescence intensity (MFI) was measured using ImageJ (1–3 images per animal, ≥ 4 ROIs per image). To avoid pseudoreplication from multiple measurements obtained from the same animal, statistical comparison was performed using animal-level means (n=5/group). After verifying assumptions with Shapiro-Wilk and Levene's tests, an independent samples t-test (Welch's) was applied, and results were confirmed with the Mann-Whitney U test.

Marker	Control (Mean $\pm$ SD)	Injury (Mean $\pm$ SD)	Change	t-test p	Mann–Whitney p	Cohen's d
β 3-Tubulin (MFI)	56959 $\pm$ 4821	14300 $\pm$ 4810	↓ %74,9	<0,0001	0,008	8,86
NFH (MFI)	59832 $\pm$ 4770	17799 $\pm$ 2279	↓ %70,3	<0,0001	0,008	11,24

Results: Achieving the lowest possible p-value (0.008) for the Mann-Whitney U test with n=5/group indicates that there is no overlap between the two groups; that is, the value for every injured animal was strictly lower than that of all control animals. Furthermore, the Cohen's d values (8.86 and 11.24) are substantially above the threshold for "very large" effect sizes.

Discussion: This profound and parallel reduction reflects a Wallerian degeneration process consistent with the literature, which can be summarized as calcium influx into the axoplasm following crush injury and subsequent activation of calpain proteases, leading to the breakdown of microtubules/neurofilaments and disruption of axonal transport. These findings demonstrate the validity

and magnitude of the injury model used, rather than the effect of thymoquinone; comparing treatment groups (Treatment 1, Treatment 2) against these reference values using the same methodology represents the next step in testing the hypothesis regarding the regenerative effect of thymoquinone.

Keywords: Physiology, neuroscience, optic nerve crush injury, β 3-tubulin, neurofilament heavy chain, thymoquinone, axonal degeneration, confocal microscopy

THE BRAIN IN CRISIS: NEUROPHYSIOLOGICAL FOUNDATIONS OF ACUTE STRESS, TRIAGE, AND SIMULATION TRAINING IN PRE-HOSPITAL EMERGENCY HEALTH SERVICES

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ABSTRACT

Objective :Pre-hospital emergency health services operate in a high-uncertainty environment where critical life-and-death decisions must be made within seconds; defects in certain field decisions cannot be explained solely by a lack of professional experience or protocol knowledge. This explanatory gap suggests the necessity of a systematic approach to the functioning of the human nervous system under acute stress. The objective of this study is to evaluate the neurobiological processes occurring in the brain during crisis, the reflection of these processes particularly on triage decisions, and how simulation-based training and drills can translate these processes into a "trainable" domain, with a specific focus on Turkey's pre-hospital emergency health system (112, Command and Control Center [CCC/in Turkish KKM], National Medical Rescue Teams [UMKE]).

Materials and Methods :This study is a conceptual review combining international neuroscience and emergency medicine literature with field observations gathered from major disasters in Turkey (1999 Gölcük, 2011 Van, 2023 Kahramanmaraş earthquakes) and nearby regions (2020 Beirut Port explosion, 2023 Libya/Derna flood disaster); it contains no empirical data collection or statistical analysis. The literature search was conducted through international literature focusing on the neurobiology of stress, decision-making neuroscience, motor learning, and neuroplasticity, as well as institutional resources regarding Turkey's pre-hospital emergency health system (CCC, A2-type ambulance stations, UMKE). The review was structured across three main axes: (i) neuroendocrine foundations of acute stress, (ii) neurocognitive infrastructure of triage decisions, and (iii) neuroplastic mechanisms of simulation/drills, evaluating each axis in connection with the relevant institutional structures.

Results :A call reaching the CCC sequentially activates the sympatho-adrenomedullary (SAM) system within seconds, followed by the hypothalamic-pituitary-adrenal (HPA) axis, which peaks within minutes. Rapidly rising cortisol and catecholamines sharpen attention at moderate levels, whereas excessive or prolonged levels suppress prefrontal networks, paving the way for functional dominance of the amygdala ("amygdala hijack"). This picture directly impacts triage decisions: within the framework of Signal Detection Theory, a shift in the decision threshold toward "fear of missing" explains the tendency for over-triage; meanwhile, the functional paralysis of analytical Type 2 thinking under high glucocorticoid levels and the brain's shift to the fast, automatic Type 1 mode is defined by Dual Process Theory. Algorithms such as START/SALT act precisely at this point as a "cognitive prosthesis," taking over the load of the clinician's stressed prefrontal cortex. While intense focus locking attention onto a single stimulus can lead to Perceptual Blindness, the conscious suppression of the pain-empathy network in experienced personnel and defensive medicine reflexes triggered by fear of institutional punishment increase the risk of deviating from triage protocols. Translating these vulnerabilities into a trainable domain is the central function of simulations and drills: unlike declarative memory, which easily collapses under glucocorticoids, striatum-dependent procedural memory is resilient to stress, and Long-Term Potentiation (LTP) formed through repetitive stimulation transforms vital steps into autonomous reflexes. The effectiveness of high-fidelity simulation is explained by the "optimal acute stress window" in the Yerkes-Dodson Law; in this window, balanced noradrenaline release and moderate occupancy of MR/GR receptors trigger BDNF expression in the hippocampus and amygdala, supporting synaptogenesis. Cerebellar "complex spike" activity occurring during errors weakens faulty pathways through Long-Term Depression (LTD), while debriefing sessions transfer the Error-Related Negativity (ERN) wave generated in the anterior cingulate cortex into hippocampal consolidation. UMKE's annual, spaced drill schedule aligns with the principle of spaced repetition to limit skill decay seen in infrequently used skills, while post-drill group debriefings offer an opportunity not only for performance improvement but also for building collective psychological resilience against vicarious trauma and secondary traumatic stress risks.

Conclusion :Pre-hospital crisis management is a multi-layered continuum spanning from the macro-operational logistics of the CCC to individual synaptic processes in the field. Considering that triage decisions are largely the surfaced manifestation of a predictable neurobiological pattern, simulation-based training and drills can be positioned not merely as tools for technical skill acquisition, but as concrete neuroplasticity mechanisms that stabilize decision thresholds, transform protocols into automatic reflexes, and render empathy/emotion regulation sustainable. Although Turkey's CCC-UMKE framework provides a strong institutional infrastructure, confirming the optimal stress window with objective physiological metrics (HRV, cortisol) remains a significant research gap.

Keywords: Physiology, neuroscience, neurobiology of acute stress, triage, decision fatigue, pre-hospital emergency care, simulation training, neuroplasticity

**TOTAL DIŞSİZLİĞİN DİJİTAL İŞ AKIŞI İLE VIDALI İMPLANT ÜSTÜ SABİT
PROTEZLERLE REHABİLİTASYONU: OLGU SUNUMU**
*REHABILITATION OF COMPLETE EDENTULISM WITH SCREW-RETAINED IMPLANT-
SUPPORTED FIXED PROSTHESES USING A DIGITAL WORKFLOW: A CASE REPORT*

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ÖZET

Amaç: Bu olgu sunumunda, her iki çenesinde total dişsizlik bulunan hastanın tam dijital iş akışı kullanılarak vidalı implant üstü sabit protezlerle rehabilitasyonunun sunulması amaçlanmaktadır.

Olgu Sunumu: Total dişsiz hastalarda implant üstü sabit protetik restorasyonlar, tam protezlere kıyasla daha üstün retansiyon, stabilite ve çiğneme fonksiyonu sağlamaktadır. Dijital iş akışı, hem geleneksel ölçü alma yöntemleri sırasındaki hasta konforsuzluğunu ortadan kaldırmakta hem de tasarım ve üretim aşamalarında daha standardize bir ilerleme sunmaktadır. Sistemik rahatsızlığı bulunmayan 47 yaşındaki kadın hastanın klinik ve radyografik muayenesinde alt ve üst çenede total dişsizlik saptanmıştır. Protetik planlama doğrultusunda maksillaya 6, mandibulaya 6 olmak üzere toplam 12 implant yerleştirilmiştir. Postoperatif talimatların ardından osteointegrasyon için üç aylık iyileşme süresi beklenmiş; bu sürenin sonunda yapılan kontrollerde osteointegrasyonun başarıyla tamamlandığı görülmüştür. Hasta talebi ve uygun endikasyon doğrultusunda vidalı sabit protez tercih edilmiştir. İmplant aksları arasındaki açısal farklılıkların telafi edilerek ortak vida giriş yolunun elde edilmesi amacıyla paralellik pinleri kullanılmış ve her bölge için uygun multi-unit abutmentler seçilmiştir. Abutmentlere aynı sisteme ait scan body'ler adapte edilerek ağız içi dijital tarayıcı ile tam ark tarama yapılmış, implantların uzaysal konumları dijital ortama aktarılmıştır. Elde edilen STL verileri üzerinde ExoCAD 3.3 yazılımı ile restorasyon tasarımı gerçekleştirilmiştir. Tasarım, klinikte bulunan üç boyutlu yazıcı ile üretilerek deneme protezi olarak hastaya uygulanmış; estetik parametreler, dikey boyut, fonasyon, oklüzal uyum ve çene hareketleri sırasındaki fonksiyon değerlendirilmiştir. Komplikasyon gözlenmemesi ve hastanın tasarımı onaylaması üzerine daimi restorasyon olarak titanyum bar destekli zirkonya sabit protezler üretilmiş; pasif uyum ve oklüzyon kontrolünün ardından önerilen tork değerinde vidalanmıştır.

Sonuç: Dijital iş akışı, implant konumlarının doğru aktarımına, deneme protezi aracılığıyla estetik ve fonksiyonel öngörülebilirliğin artırılmasına ve hasta onayının daimi üretim öncesinde alınmasına olanak sağlamıştır. Protetik rehabilitasyonun 1 yıllık takibinde hastanın estetik, fonatik ve fonksiyonel açıdan herhangi bir sorun yaşamadığı belirlenmiştir.

Anahtar Kelimeler: total dişsizlik, implant üstü sabit protez, vidalı restorasyon, dijital iş akışı, multi-unit abutment, zirkonya

ABSTRACT

Aim: This case report aims to present the rehabilitation of a patient with complete edentulism in both arches using screw-retained implant-supported fixed prostheses fabricated through a fully digital workflow.

Case Report: In completely edentulous patients, implant-supported fixed prosthetic restorations provide superior retention, stability and masticatory function compared with complete dentures. The digital workflow both eliminates the patient discomfort associated with conventional impression techniques and offers a more standardized progression throughout the design and fabrication stages. Clinical and radiographic examination of a 47-year-old female patient with no systemic disease revealed complete edentulism in both the maxilla and the mandible. In accordance with the prosthetic treatment plan, a total of 12 implants were placed, six in the maxilla and six in the mandible. Following postoperative instructions, a three-month healing period was allowed for osseointegration; subsequent evaluation confirmed that osseointegration had been successfully achieved. Based on patient preference and appropriate indication, a screw-retained fixed prosthesis was selected. Parallelism pins were used

to compensate for angular discrepancies between the implant axes and to obtain a common screw-access path, and suitable multi-unit abutments were selected for each site. Scan bodies from the same system were connected to the abutments, and a full-arch intraoral scan was performed to transfer the spatial positions of the implants to the digital environment. The restoration was designed on the resulting STL data using ExoCAD 3.3 software. The design was fabricated with an in-office three-dimensional printer and delivered as a trial prosthesis, allowing evaluation of esthetic parameters, vertical dimension, phonation, occlusal adaptation and function during mandibular movements. As no complications were observed and the patient approved the design, definitive titanium bar-supported zirconia fixed prostheses were fabricated and torqued to the manufacturer's recommended value following verification of passive fit and occlusion.

Conclusion: The digital workflow enabled accurate transfer of implant positions, enhanced esthetic and functional predictability through the trial prosthesis, and allowed patient approval to be obtained prior to definitive fabrication. At the one-year follow-up of the prosthetic rehabilitation, the patient presented with no esthetic, phonetic or functional complications.

Keywords: complete edentulism, implant-supported fixed prosthesis, screw-retained restoration, digital workflow, multi-unit abutment, zirconia

IDENTIFICATION OF COMMON PERIPHERAL BLOOD TRANSCRIPTOMIC BIOMARKERS ACROSS FEMALE CANCERS

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ABSTRACT

Background: Blood-based transcriptomic profiling provides a promising approach for identifying non-invasive biomarkers for cancer detection. Since sex-related biological differences influence gene expression, sex-specific analyses may improve biomarker discovery. This study aimed to identify common transcriptomic signatures in female patients with bladder, breast, cervical, endometrial, and ovarian cancers compared with healthy female controls using the GSE203024 dataset.

Methods: Gene expression data from female participants in the GSE203024 dataset were analyzed. Uniform Manifold Approximation and Projection (UMAP) was used to visualize sample distribution. Differential gene expression analysis was performed using the limma package, and genes were ranked according to the moderated F-statistic and false discovery rate (FDR). Functional enrichment and protein–protein interaction analyses were conducted to investigate the biological significance of the identified genes.

Results: UMAP analysis demonstrated considerable overlap between female cancer and control samples, suggesting limited global transcriptomic separation. Nevertheless, differential expression analysis identified highly significant transcriptomic alterations. CIRBP (Cold Inducible RNA Binding Protein) was the most significantly differentially expressed gene ($F = 895.66$, adjusted $P = 2.95 \times 10^{-70}$), followed by EIF1, MYLIP, BTG1, PGMNC1, EGR3, G0S2, MIR22HG, NR4A2, RNF11, FOSB, and JUN. These genes are involved in cellular stress responses, transcriptional regulation, immune signaling, and cell-cycle control, indicating shared molecular alterations across multiple female cancers. **Conclusion:** This study identified a common peripheral blood transcriptomic signature among female patients with different cancer types. Despite the overlap observed in global expression profiles, several genes—particularly CIRBP—showed robust differential expression and may represent promising non-invasive biomarkers for cancer detection. These findings provide new insights into the shared molecular mechanisms of female cancers and warrant validation in independent cohorts.

Keywords: Female cancers; Peripheral blood; Transcriptomics; Biomarkers.

**ARTIFICIAL INTELLIGENCE ADOPTION AND FINANCIAL REPORTING QUALITY:
EVIDENCE FROM SMALL AND MEDIUM-SIZED ENTERPRISES IN NIGERIA****Umar Baba SHAABA**

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ABSTRACT

The rapid advancement of Artificial Intelligence (AI) is transforming accounting practices and the way financial information is processed, analysed and reported. This study examines the effect of Artificial Intelligence adoption on financial reporting quality among Small and Medium-Sized Enterprises (SMEs) in Nigeria. The study focuses on the extent to which AI-powered accounting systems, automated transaction processing, data analytics and intelligent fraud-detection mechanisms contribute to accurate, reliable, relevant and timely financial reporting. The study adopts a quantitative research approach using a survey design. Data are proposed to be collected from accounting professionals, finance managers and owners of selected SMEs in Nigeria. Financial reporting quality is assessed using indicators such as accuracy, reliability, relevance, timeliness and transparency. Descriptive statistics and inferential techniques, particularly regression analysis, will be employed to examine the relationship between AI adoption and financial reporting quality. The study is expected to demonstrate that appropriate adoption of AI can reduce accounting errors, improve processing efficiency, strengthen internal controls and enhance the reliability of financial reports. However, challenges such as high implementation costs, inadequate digital infrastructure, cybersecurity threats, data privacy concerns and shortage of skilled accounting personnel may limit effective AI adoption. The study recommends investment in digital accounting infrastructure, continuous professional development and appropriate regulatory frameworks to ensure responsible AI adoption. The study contributes to the growing literature on accounting digitalisation and provides useful implications for accounting professionals, SME managers, regulators and policymakers in Nigeria.

Keywords: Artificial Intelligence, Accounting, Financial Reporting Quality, SMEs, Digital Transformation, Nigeria.

THE ROLE OF FORENSIC ACCOUNTING IN COMBATING FINANCIAL FRAUD AND ENHANCING CORPORATE GOVERNANCE IN EMERGING ECONOMIES

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ABSTRACT

Financial fraud continues to pose a significant threat to organisational sustainability, investor confidence, and economic development, particularly in emerging economies where governance and regulatory enforcement may face persistent challenges. In response to the increasing sophistication of financial crimes, forensic accounting has emerged as a vital discipline that combines accounting, auditing, investigative techniques, and legal expertise to detect, prevent, and investigate fraudulent activities. This paper examines the role of forensic accounting in strengthening corporate governance and promoting transparency and accountability within both public and private sector organisations. Drawing on existing literature and contemporary empirical evidence, the study explores how forensic accounting techniques contribute to the early detection of financial irregularities, support litigation processes, and enhance the effectiveness of internal control systems. The paper also discusses the challenges affecting the adoption of forensic accounting practices, including inadequate professional capacity, technological limitations, and weak institutional frameworks. It argues that the integration of forensic accounting into organisational governance structures can significantly reduce fraud risk, improve financial reporting quality, and reinforce stakeholder confidence. Furthermore, the study highlights the importance of continuous professional training, regulatory reforms, and the adoption of advanced digital forensic tools in addressing emerging financial crimes. The findings suggest that strengthening forensic accounting capacity is essential for improving organisational integrity and achieving sustainable economic development in emerging economies. The paper concludes by recommending greater collaboration among professional accounting bodies, policymakers, regulatory agencies, and academic institutions to expand forensic accounting education and practice. The study contributes to the growing body of knowledge on fraud prevention and offers practical insights for organisations seeking to enhance financial accountability and corporate governance in an increasingly complex business environment.

Keywords: Forensic Accounting; Financial Fraud; Corporate Governance; Fraud Detection; Accountability; Emerging Economies.

PHENOTYPIC DIVERSITY AND CORRELATION OF BODY CONDITION SCORE WITH BALI CATTLE BODY SIZE

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ABSTRACT

Introduction and Purpose: This study aimed to analyze phenotypic diversity and the correlation between Body Condition Score (BCS) and Bali cattle body size.

Materials and Methods: The sample used was 55 Bali cattle raised at the UPTD PTHPT, East Kalimantan. The research method used was observation, with data collected on chest circumference, body length, height, and body condition score. Data were analyzed using descriptive statistics to determine the mean, standard deviation, and coefficient of variation (CV), as well as correlation analysis to determine the relationship between variables.

Results: The results showed that the mean chest circumference, body length, body height, and BCS were 134.54 cm; 101.72 cm; 103.22 cm; and 3.51 cm, respectively. The highest coefficient of variation was observed in BCS (20.61%), indicating high diversity. While chest circumference (14.76%) and body length (14.88%) showed moderate variability, and body height (9.90%) was relatively homogeneous. The results of the correlation analysis showed that BCS had a strong positive relationship with chest circumference ($r = 0.73$), body length ($r = 0.77$), and body height ($r = 0.78$).

Discussion and Conclusion: In conclusion, Bali cattle exhibit varying levels of phenotypic diversity with a strong relationship between body size and BCS, indicating that BCS can be used as a practical indicator in livestock selection and evaluation.

Keywords: Bali cattle; Body condition score; Correlation; Phenotypic diversity

ADVANCED NANOTECHNOLOGY-BASED DRUG DELIVERY SYSTEMS**Ashwini BORNARE**

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ABSTRACT

Advanced nanotechnology-based drug delivery systems have emerged as a transformative approach in modern pharmaceutical sciences, addressing the limitations associated with conventional drug delivery methods. These systems employ nanoscale carriers such as liposomes, polymeric nanoparticles, dendrimers, solid lipid nanoparticles, and nanoemulsions to enhance the therapeutic efficiency of drugs. The primary aim of these advanced systems is to achieve targeted, controlled, and sustained drug release, thereby improving bioavailability and reducing systemic toxicity. Nanocarriers can be engineered for both passive and active targeting, enabling selective delivery of drugs to specific tissues or cells.

This targeted approach is particularly beneficial in the treatment of chronic and complex diseases, including cancer, cardiovascular disorders, and neurological conditions. Additionally, nanotechnology-based systems improve the solubility and stability of poorly water-soluble drugs, protect them from premature degradation, and enhance their pharmacokinetic and pharmacodynamic profiles.

These advantages contribute to reduced dosing frequency and improved patient compliance. Despite their promising potential, several challenges remain, including high production costs, scale-up difficulties, possible toxicity of nanomaterials, and stringent regulatory requirements.

In conclusion, advanced nanotechnology-based drug delivery systems represent a significant innovation with the potential to revolutionize drug therapy.

Keywords: Nanotechnology, Drug Delivery Systems, Nanocarriers, Targeted Drug Delivery, Controlled Drug Release, Bioavailability Enhancement, Liposomes, Polymeric Nanoparticles

WORK POSTURE ASSESSMENT AMONG RETAIL CASHIERS: A DESCRIPTIVE ERGONOMIC STUDY IN MAKASSAR, INDONESIA

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ABSTRACT

The occupation of a retail cashier involves extended periods of standing, repeated movements of the upper limbs, limited reach, and active involvement with checkout machinery, all of which may lead to musculoskeletal pain. This analytical cross-sectional ergonomic investigation evaluated the risk of work posture and musculoskeletal issues among cashier employees in Talasalapang, Rappocini District, Makassar, Indonesia, in October 2022. The source population consisted of six workers, with five people participating in the evaluation. Musculoskeletal issues were documented using the Nordic Body Map (NBM), where each anatomical region was assessed on a four-point scale, and work posture was analyzed thru the Rapid Entire Body Assessment (REBA). The initial empirical values were preserved unchanged. All five employees received final NBM ratings categorized as low risk, with scores between 36 and 40 (average 38.6). Nonetheless, specific grievances were predominantly focused on the lower limbs and shoulders. The most significant total complaint scores were noted for the right calf (14), left calf (13), left shoulder (11), right shoulder (11), right knee (11), and left knee (10). The REBA scores for the five assessed working postures were 3, 3, 2, 4, and 4: three postures were deemed low risk while two were categorized as medium risk. These results suggest that a minimal overall NBM risk categorization might occur alongside localized discomfort and postural factors that require ergonomic consideration. The results of the study, which included merely five employees from a single retail location, ought to be understood in a descriptive manner rather than applied broadly. Pragmatic follow-up should emphasize workstation compatibility, reach distance, postural diversity, rest intervals, and regular ergonomic evaluations.

Keywords: Cashier; Ergonomics; Nordic Body Map; Work Posture

**ARTIFICIAL INTELLIGENCE AND MEDICAL DECISION-MAKING: REDEFINING
PHYSICIAN AUTONOMY, PATIENT CONSENT, AND LIABILITY****Prof. Dr Chahid SLIMANI**

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ABSTRACT

The integration of artificial intelligence (AI) into clinical decision-making is transforming the traditional physician-patient relationship, historically grounded in the physician's exclusive expertise, judgment, and moral responsibility. AI-based clinical decision support systems (Software as a Medical Device) increasingly assist diagnosis, prognosis, and treatment personalization, offering efficiency gains but redistributing responsibility between clinician, patient, and algorithm designer. This shift raises three interconnected concerns. First, physician autonomy: reliance on algorithmic recommendations risks reducing clinicians to mere executors of machine outputs, weakening critical judgment and clinical accountability. Second, informed consent: the opacity of “black-box” machine-learning models complicates patients' ability to understand and freely consent to AI-assisted care, a tension examined here against Article 5 of the Oviedo Convention and Moroccan medical law (Dahir n° 1-13-15, Article 30 of the Code of Medical Ethics). Third, liability: emerging regulatory responses — the French “human guarantee” (garantie humaine) requirement, human oversight boards, and explainable-AI (XAI) initiatives — attempt to preserve human control and traceability over augmented medical decisions, yet accountability gaps persist regarding algorithmic bias, black-box reasoning, and manufacturer responsibility. Drawing on comparative legal analysis (France, Morocco, EU medical device regulation), this contribution argues that AI should remain a decision-support tool rather than a substitute for clinical judgment, and proposes safeguards — mandatory disclosure, explainability requirements, human oversight committees, and continuous post-market surveillance — to preserve patient autonomy, informed consent, and medical accountability while enabling AI-driven precision medicine. The contribution also cautions against the emerging risk of a two-tier medicine, in which unequal access to AI tools and growing algorithmic dependency could undermine the equity of care.

Keywords: Artificial Intelligence; Medical Decision-Making; Informed Consent; Physician Liability; Human Oversight; Algorithmic Bias; Health Law; Patient Autonomy.

NAVIGATING THE INFODEMIC: COVID-19 LITERACY AND TREATMENT MISCONCEPTIONS AMONG MEDICAL AND NON-MEDICAL WORKERS IN PUNJAB

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ABSTRACT

Background: The rapid global escalation of COVID-19 in early 2020 triggered an unprecedented demand for public health compliance. Understanding how different segments of the workforce absorbed safety information is crucial for future crisis management. This study examines the intersection of health literacy, psychological impact, and preventive behaviors among medical and non-medical professionals in Punjab during the height of the initial pandemic wave.

Methods: We deployed a prospective, cross-sectional survey between June and August 2020, gathering insights from 800 participants (436 healthcare workers and 364 non-medical personnel). A comprehensive five-part questionnaire evaluated demographics, symptom awareness, therapeutic beliefs, safety compliance, and emotional well-being.

Results: The respondent pool was predominantly young and female, with 90.6% aged 18 to 30 and 64% identifying as women. While foundational knowledge was remarkably high—over 98% understood the viral origin of the disease and 91.6% recognized its core symptoms—a concerning gap emerged regarding transmission dynamics, as only 74.9% identified the virus as highly contagious. Furthermore, despite widespread understanding of prevention protocols, significant treatment misconceptions surfaced. Nearly 42.3% of respondents leaned toward herbal or traditional remedies, and 14.6% endorsed the self-prescription of antibiotics. At the time of data collection, 79.1% correctly acknowledged that a vaccine had not yet been developed.

Conclusion: Our findings reveal a paradox: while the Punjabi workforce demonstrated strong baseline awareness and a commitment to preventive hygiene, critical vulnerabilities remained regarding transmission risks and unverified treatments. This highlights a clear imperative for public health authorities to design sharper, nuance-driven communication strategies that actively counter misinformation, even among highly educated demographic groups.

Keywords: Pandemic communication, Health literacy, Treatment misconceptions, Cross-sectional behavior, Public health crisis, Punjab cohort

ENHANCING GROWTH, CELLULAR STRUCTURE, AND ANTHRACNOSE RESISTANCE IN CHILLI USING SARGASSUM POLYCYSTUM EXTRACTS

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ABSTRACT

Brown macroalgae are a promising source of plant metabolites and bioactive compounds that can mitigate biotic stress, offering a sustainable alternative to chemical fungicides. Anthracnose is a destructive fungal disease in chilli caused by *Colletotrichum* species and often reduced chilli yield over 50%. Anthracnose is mainly controlled with chemical fungicides, which pose risks to human health and the environment; therefore, sustainable management strategies are needed. This study investigated the aqueous extracts of *Sargassum polycystum* extracts on plant growth, cellular structure and anthracnose resistance of chilli under greenhouse conditions. Chilli seedlings were exposed to different concentration of algal extracts T0 (0%), T1 (2.5%), T2 (5.0%), T3 (10.0 %) and T4 (20.0 %) to assess the effects of growth, anatomy and disease resistance of chilli. The results showed that T4 (20% extracts v/v) increased the chilli seedlings height, number of branch and leaf area of chilli. The control treatment produced the lowest growth of the seedlings. Scanning Electron Microscopy (SEM) revealed that seedlings treated with higher concentration algal extracts increased the thickness of chilli fruit epidermis, dense pericarp tissue and reduced tracheary cell pore size and glandular trichomes. Algal extracts treatment also reduced the severity of anthracnose disease around 90% by improving the thickness of pericarp and tracheary cell wall. The growth, anatomy and disease severity were positively correlated with concentrations *S. polycystum* extracts. It is concluded that 20% *S. polycystum* extracts can improve the growth, development and reduce the disease severity of anthracnose under greenhouse conditions. These findings highlight the potential of *S. polycystum* extracts for use in sustainable disease management while protecting human health and the environment.

Keywords: Sea weed, vegetable, growth, anatomy, disease resistance

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LEARNING ANATOMICAL SPATIAL RELATIONSHIPS FOR LANDMARK DETECTION IN FULL-LEG RADIOGRAPHS

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ABSTRACT

Accurate detection of anatomical landmarks in full-leg radiographs is a critical step in orthopaedic computer-aided diagnosis, enabling automated measurement of lower-limb alignment parameters such as the Hip-Knee-Ankle (HKA) angle. Manual annotation of these landmarks is time-consuming and subject to inter-observer variability, motivating the development of robust automated methods. In this work, we present a deep learning approach for the simultaneous detection of 20 bilateral anatomical landmarks in full-leg anteroposterior radiographs, covering the hip, knee, tibial plateau, ankle, fibula head, and tibia shaft regions. We employ the Spatial Configuration Network (SCN), a two-branch architecture that combines a local appearance network (based on a VGG19 encoder with a U-Net decoder) for per-landmark Heatmap regression, with a spatial configuration network that models inter-landmark geometric constraints at a coarser resolution. The method is trained and evaluated on the BMPLE dataset, comprising 190 full-leg radiographs (120 training, 70 test) with pixel spacings ranging from 0.14 to 0.16 mm/px, resized to 768×384 pixels. Training is performed using a weighted mean squared error loss with automatic mixed precision, and a spike-detection mechanism is used to prevent training instability. Experiments on the 70 test cases yield a Mean Radial Error (MRE) of 2.66 mm with a Successful Detection Rate (SDR) of 85.9% at a 4 mm threshold, 92.0% at 6 mm, and 94.5% at 8 mm. Eighteen out of twenty landmarks achieve an MRE below 3 mm. The fibula head landmarks present the greatest challenge due to their low radiographic contrast and anatomical complexity. These results demonstrate the feasibility of applying spatial configuration-based Heatmap regression to full-leg landmark detection with limited training data, and establish a strong baseline for further investigation into anatomical constraint modelling and clinical deployment.

Keywords: anatomical landmark detection, full-leg radiograph, deep learning, heatmap regression, spatial configuration network, orthopaedic imaging, lower-limb alignment, VGG19, U-Net, computer-aided diagnosis

**SOCIAL MEDIA PLATFORM UTILIZATION AND PERCEIVED BUSINESS GROWTH
AMONG FOOD MICRO, SMALL, AND MEDIUM ENTERPRISES (MSMES)****Dr. Mark Anthony N. POLINAR**

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ABSTRACT

This study examined the relationship between social media platform utilization and perceived business growth among food Micro, Small, and Medium Enterprises (MSMEs) in Cebu City, Philippines. Specifically, it investigated four dimensions of digital platform utilization: social media marketing, online selling, online payment systems, and customer communication. The study employed a descriptive-correlational research design involving 100 registered food MSME owners selected through simple random sampling. Data were collected using an adapted questionnaire validated by experts and pilot-tested for reliability, yielding an internal consistency of 0.93. Descriptive statistics and Spearman's rank-order correlation were used to analyze the data. The findings revealed that respondents generally agreed that they actively utilized social media marketing ($M = 4.98$, $SD = 0.921$), online selling ($M = 4.75$, $SD = 0.976$), online payment systems ($M = 5.10$, $SD = 0.982$), and customer communication ($M = 4.86$, $SD = 0.897$). At the same time, perceived business growth was likewise rated high ($M = 4.97$, $SD = 0.798$). Spearman's correlation analysis demonstrated statistically significant positive relationships between all dimensions of digital platform utilization and perceived business growth, with customer communication exhibiting the strongest association ($\rho = .729$, $p < .001$), followed by social media marketing ($\rho = .670$), online payment systems ($\rho = .652$), and online selling ($\rho = .636$). The findings suggest that the strategic use of digital platforms enhances customer engagement, operational efficiency, and perceived business growth among food MSMEs.

Keywords: Business Growth, Cebu City, Digital Platforms, Micro, Small, and Medium Enterprises, Social Media Marketing

ASSESSMENT OF ANTHOCYANIN PIGMENTATION DIVERSITY AMONG RICE (*ORYZA GLABERRIMA* STEUD.) VARIETIES USING SPECTRAL PIGMENT INDICES

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ABSTRACT

Anthocyanins are important flavonoid pigments that contribute to plant coloration, photoprotection, stress tolerance, and nutritional quality in rice (*Oryza glaberrima* Steud.). Understanding the diversity of anthocyanin pigmentation among rice germplasm is essential for crop improvement and breeding programmes. This study investigated the diversity of anthocyanin pigmentation in 23 rice varieties collected from Kebbi State, Nigeria. The experiment was conducted using a Completely Randomized Design with three replications under field conditions at the Biological Garden, Usmanu Danfodiyo University, Sokoto. Leaf pigment characteristics were assessed non-destructively at different growth stages using a CI-710s SpectraVue Leaf Spectrometer to determine chlorophyll A, chlorophyll B, total chlorophyll, chlorophyll content index (CCI), carotenoid reflectance index (CRI), greenness index, and anthocyanin reflectance index (ARI). Data were analysed using one-way ANOVA, and treatment means were separated using Duncan's Multiple Range Test at $P \leq 0.05$. Significant varietal differences were observed for all pigmentation traits throughout the growth period. Bilsa consistently exhibited superior chlorophyll accumulation and chlorophyll content index at maturity, while Mai Allura CP demonstrated outstanding chlorophyll synthesis during the reproductive stage. Jirani Bazawara showed high chlorophyll content and early photosynthetic efficiency, whereas Yar Manja and Yar Gafan displayed favourable carotenoid and anthocyanin reflectance responses at specific developmental stages. Considerable variation in anthocyanin reflectance among the rice varieties indicated substantial genetic diversity for pigmentation traits. Overall, Bilsa emerged as the best-performing genotype based on its consistently superior physiological and pigmentation indices. These findings demonstrate the existence of exploitable genetic variability for anthocyanin-related traits and provide valuable information for breeding programmes aimed at improving stress tolerance, photosynthetic efficiency, and the nutritional quality of rice.

Keywords: Anthocyanin pigmentation; Rice (*Oryza glaberrima* Steud.); Anthocyanin Reflectance Index (ARI); Chlorophyll Content Index (CCI); Carotenoid Reflectance Index (CRI).

3D-PRINTED MEDICINES: THE FUTURE OF PERSONALIZED DRUG THERAPY

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ABSTRACT

Three-dimensional (3D) printing is an emerging pharmaceutical technology that has the potential to transform the way medicines are designed, manufactured, and administered. Unlike conventional manufacturing methods, 3D printing enables the production of drug formulations layer by layer with precise control over their shape, structure, drug dose, and release characteristics. This technology can be particularly useful in personalized medicine, where treatment can be customized according to an individual patient's therapeutic requirements, age, body weight, and medical condition.

Different 3D-printing techniques, including fused deposition modelling, stereolithography, inkjet printing, and semi-solid extrusion, are being investigated for pharmaceutical applications. These techniques can be used to manufacture tablets, implants, drug-loaded devices, and other dosage forms with specific drug-release profiles. One of the major advantages of 3D-printed medicines is the ability to prepare customized doses and complex drug combinations in a single dosage form. This may improve patient convenience, medication adherence, and therapeutic outcomes. The technology also offers potential applications in pediatric and geriatric patients who may require specialized dosage strengths or formulations.

Despite its promising benefits, several challenges need to be addressed before widespread clinical application. These include high production costs, formulation and material limitations, printing accuracy, stability of drugs during the printing process, quality control, and regulatory requirements. Further research is necessary to establish suitable manufacturing standards and ensure the safety and effectiveness of 3D-printed medicines. Overall, 3D printing represents a promising approach to personalized drug therapy and may contribute significantly to the future development of patient-specific pharmaceutical formulations.

Keywords: 3D Printing; Personalized Medicine; Drug Delivery; Pharmaceutical Technology; Customized Dosage

THE ATMOSPHERIC PRESENCE OF *ASPERGILLUS FUMIGATUS*, A WHO PRIORITY PATHOGEN IN CHENNAI, INDIA: HISTORICAL EVIDENCE FROM 1996-1998

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ABSTRACT

The fungus, *Aspergillus fumigatus* is declared as a priority fungal pathogen by World Health Organization (WHO). The fungus is the causal agent of Abstructive Broncho Pulmonary Aspergillosis (ABPA) and Aspergilloma. Further, the fungus is possessing capability to grow at wide temperature starting from 20°C to 55°C thus termed as thermotolerant fungus making the body temperature suitable for the fungus to grow as at optimum temperature. The spore size of the fungus (1-3µm diameter), play an advantageous role in penetrating the deeper lung whenever the subjects are exposed to the fungal spores. Thus, any study reporting the presence of *Aspergillus fumigatus* is significant medically in maintaining public health. The report presented here produces the historical evidence of the presence of *Aspergillus fumigatus* in the atmosphere of Chennai from the period of October 1996 to September 1998. The prevalence of the fungus was studied in different parts of Chennai using Andersen 2-Stage sampler (USA). The study was conducted at 9 different locations (Broadway, Royapuram, Kilpauk, Basin Bridge, Mylapore, Guindy, Chrompet, Taramani and Perungudi) of Chennai at 10 days' interval missing few samples due to flooding happened in Chennai during the study period. A total of 558 samplings were conducted which yielded around 76071 colonies with an average of 19.31 CFU/m³. The presence of maximum number of the fungus in specific location and the seasonal variation in different location of the fungus, *Aspergillus fumigatus* will be presented in detail. The study provides a baseline and historical evidence of the presence of *Aspergillus fumigatus* a priority fungal pathogen of WHO. The study emphasises the need of conducting similar study to learn the existence of the difference in atmospheric presence of *Aspergillus fumigatus* as they are widely reported in developing resistance to antimycotic agent.

Keywords: *Aspergillus fumigatus*, ABPA, Airborne, Atmosphere, Chennai, Priority pathogenic fungus, WHO

LIGHTWEIGHT CONVOLUTIONAL NEURAL NETWORKS FOR AUTOMATED MALARIA PARASITE DETECTION IN BLOOD SMEAR MICROSCOPY IMAGES

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ABSTRACT

In sub-Saharan Africa, the burden of malaria is still large, and the lack of trained staff and inefficient diagnostic methods using manual microscopy are responsible for a considerable proportion of preventable deaths. This work aims to compare the four described lightweight CNN architectures (MobileNetV2, SqueezeNet, ShuffleNetV2, and EfficientNet-B0) towards automated detection of malaria parasites in thin blood smear microscopy images for future deployment of these in low-resource clinical settings on a resource-constrained edge device. To create a fair comparison, each model was trained and evaluated with the same preprocessing, augmentation, and training conditions using the NIH Malaria Cell Images dataset of 27,558 pre-labelled single-cell images (infected and uninfected classes). To account for real-world deployability, besides error metrics such as accuracy, precision, recall, F1-score and AUC-ROC, computational efficiency metrics such as model size, inference latency, and floating-point operations (FLOPs) were also evaluated. To meet the clinical demand for interpretability and trustworthiness of AI-based diagnosis, Gradient-weighted Class Activation Mapping (Grad-CAM) was employed to generate visualisations of discriminative regions that affect the classification decision of each model as a qualitative assessment of the different morphological features of parasites. Results show that lightweight architectures can perform on par with heavier conventional CNNs in diagnostic performance while leading to significantly lower computational cost, making them suitable for point-of-care and embedded diagnostic applications. The provided framework is reproducible and is an interpretable evaluation metric for light-weight malaria detection models that have implications for scalable low-cost malaria screening in under-resourced areas.

Keywords: Blood smear microscopy, Edge deployment, Grad-CAM, Lightweight CNN, Malaria detection

VALORIZATION OF WASTE ROCKS FROM THE FORMER FRENCH MINING COMPANY OF MIBLADEN: RECOVERY OF LEAD AND BARITE.

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ABSTRACT

The intensive mining activities of the former French company in MIBLADEN have left behind large volumes of waste rocks containing residual concentrations of lead (Pb) and barite. These mining residues, which have been stored without any valorization, represent a dual challenge: an underexploited potential economic resource and a source of environmental pollution.

This study aims to characterize these waste rocks through comprehensive physicochemical analyses in order to assess their valorization potential. Gravity separation and flotation tests will be conducted to optimize the recovery of lead and barite. In parallel, an assessment of the environmental impacts associated with these residues will be carried out.

The expected results will enable the proposal of an integrated solution combining resource recovery and sustainable mining waste management. This approach will contribute to the rehabilitation of old mining areas while offering an economic opportunity through the reintegration of these materials into the industrial value chain.

RESOURCE-UTILISATION AND INTERNAL EFFICIENCY OF MEDICAL AND HEALTH SCIENCES PROGRAMMES IN UNIVERSITIES IN EKITI STATE, NIGERIA: IMPLICATIONS FOR QUALITY AND SUSTAINABLE HEALTH WORKFORCE DEVELOPMENT

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ABSTRACT

This study examines the correlation between resource utilisation and internal efficiency of medical and health sciences programmes in Ekiti State universities, and its implications for sustainable health workforce development. A survey research design was employed for the study. The sample size for this study is 240 academic and clinical personnel in three universities, sampled through proportionate stratified sampling technique. Resource Utilisation and Internal Efficiency Questionnaire (RUIEQ) was used to gather data for this study, and this yielded a reliability coefficient of 0.91. Mean, Standard Deviation, Pearson Product-Moment Correlation and Multiple Regression methods were used to analyse the data at 0.05 level of significance. It was found that human resources and physical/infrastructural resources were utilised at a high level, whereas the utilisation of clinical-resources, technological resources and financial resources were moderate. The internal efficiency was found to be significantly positively related to human-resource utilisation ($r = .486$, $p < .001$), physical/infrastructural-resource utilisation ($r = .421$, $p < .001$), clinical-resource utilisation ($r = .583$, $p < .001$), technological-resource utilisation ($r = .396$, $p < .001$) and financial-resource utilisation ($r = .424$, $p < .001$). The five dimensions together accounted for 51.5% of the variance ($R^2 = .515$; $F(5, 234) = 49.67$; $p < .001$) in internal efficiency as revealed by regression analysis. Clinical-resource utilisation contributed the most ($\beta = .398$, $p < .001$). The study therefore concluded that appropriate resource utilization is significantly correlates with the efficiency of medical and health sciences programmes in Ekiti State universities, Nigeria and it was recommended that the universities system should adopt integrated resource planning to improve the efficient utilisation and allocation of available resources in order to enhance the efficiency of medical and health sciences programmes in Nigeria, among others.

Keywords: resource-utilisation; internal efficiency; medical education; health sciences education; health workforce

THE PROBLEM OF MICROPLASTICS IN ENVIRONMENTAL MEDICINE

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ABSTRACT

Introduction: Microplastics represent one of the most significant challenges in modern environmental medicine due to their widespread distribution and potential adverse effects on human health. These compounds enter the environment through various routes, including marine and freshwater sources, ambient air, and food products, increasing human exposure.

The study aimed to analyze the main sources, global distribution, and pathophysiological effects of microplastics on human health based on recent scientific literature.

Study Methods and Materials: This study is based on a narrative literature review conducted in accordance with PRISMA guidelines to ensure methodological transparency and accuracy. A comprehensive search was performed in the PubMed and Google Scholar databases, covering the period from 2014 to 2024. The following keywords were used: “microplastics,” “human health,” “bioaccumulation,” “microplastics ingestion,” and “toxicology of microplastics.”

Inclusion criteria were: Peer-reviewed studies focusing on the impact of microplastics on human health, Systematic reviews, meta-analyses, original research articles. After initial screening of **134 articles**, **37** met the final eligibility criteria and were analyzed in depth.

Literature management was conducted using **Zotero**, while Microsoft Excel was used for data synthesis and thematic organization.

Results: The findings indicate that microplastics have bio accumulative properties and are linked to serious health effects, including endocrine disruption, inflammation, immune dysfunction, cancer risk, and neurodegenerative diseases.

Conclusion: Strengthening control measures across drinking water, food, and air quality to mitigate microplastic exposure, supported by coordinated efforts in environmental regulation, public health, and education.

Keywords: Microplastics, Health risks, Environmental medicine, Bioaccumulation.

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EXPLAINABLE AI FOR STUDENT DROPOUT RISK PREDICTION IN NIGERIAN POLYTECHNICS

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ABSTRACT

While dropout has been a significant issue in Nigerian tertiary institutions, existing work on machine learning research on dropout does not often involve modelling explainability, deployment viability, or modelling robustness against data quality issues. This study fills these gaps by accessing a simulated dataset of 5,065 students, which includes information about students' academic performance, expressed as trends in CGPA and scores in the UTME and O-level exams as well as failed courses, along with their behaviour, as indicated by attendance and other extracurricular activities, and their socio-economic status, such as income band, sponsorship type, and distance from home. The data set is designed to include realistic data quality problems like missing values, out-of-range values, duplicate values, inconsistent categorisation, and label noise to test the robustness of the models under realistic conditions of real institutional records. A clear comparison between the performance of six models is provided, four of which are strong learners (XGBoost, LightGBM, Random Forest, and Multilayer Perceptron) and two are weaker models (Gaussian Naive Bayes and k-Nearest Neighbours) to provide a meaningful spread between model complexities. In addition to prediction, the study incorporates explainable AI methods (SHAP and LIME) to reveal the individual inputs contributing to the classification for the risk of dropping out, enabling academic advisors to understand the classification instead of just relying on the model output. The models were assessed based on accuracy, precision, recall, F1 score and confusion matrix with a special focus on the recall value due to the minimal representation of dropouts in the dataset. The study also compares the inference latency and memory use for lower-cost standard, non-GPU institutional machines and breaks down performance by gender and departmental subgroup as a simple fairness audit. Findings are aimed at providing an interpretable, deployable and practical early-warning system for the management of dropouts in Nigerian polytechnics and universities.

Keywords: Edge deployment feasibility, explainable artificial intelligence, machine learning benchmarking, Nigerian higher education, student dropout prediction

THE IMPACT OF HYGIENE EDUCATION IN REDUCING RESPIRATORY INFECTION AMONG 400 LEVEL NURSING STUDENTS IN MADONNA UNIVERSITY

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ABSTRACT

Respiratory infections are a major cause of illness and death worldwide, and they can be particularly dangerous in healthcare settings. From common colds to more severe illnesses like influenza and COVID-19, these infections can disrupt learning environments and affect academic performance. By teaching proper handwashing techniques, respiratory etiquette, and personal hygiene practices, students can significantly reduce their risk of contracting and spreading respiratory illnesses. This study is made to ascertain the impact of hygiene education among selected nursing students in Madonna University. The objectives are to Assess the impact of hygiene education in reducing respiratory infections among nursing students, identify barriers to the adoption of recommended hygiene practices among nursing students, identify strategies for maintaining the effectiveness of hygiene education in reducing respiratory infections among Nursing Students in Madonna University, Elele, Rivers State. The target population is 100 Nursing Students of 400 level in Madonna University. To do this, we performed a Descriptive research design. The survey is based on a self-designed validated questionnaire. The results of this study revealed that the most prominent issue is inadequate school resources, with 73.75% of students reporting a lack of soap and hand sanitizer, and 53.75% stating that the bathrooms are not clean and well-maintained. 68.75% admitted being too tired or lazy to practice good hygiene. 68.75% also reported not being in the habit of practicing proper hygiene. Moreover, 56.25% noted a lack of posters or reminders promoting hygiene. The test of reliability was 0.86. Recommendations were made based on the findings that schools should provide sufficient soap, hand sanitizers, and clean water in all facilities. Regular inspection and maintenance of restrooms and handwashing stations should be prioritized to encourage hygiene compliance among students.

Keywords: Hygiene Education, Respiratory infections, Nursing Students, Madonna University.

EXPLORING THE EFFECT OF NONCOMPLIANCE WITH MALARIA TREATMENT ON ACADEMIC PERFORMANCE AMONG UNDERGRADUATE STUDENTS

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ABSTRACT

Noncompliance to malaria treatment is a common issue among undergraduate students. Most students say it is because of their busy schedule or that they stop taking the drugs after they start feeling better. This study aimed to explore the effect of noncompliance with malaria treatment on academic performance among undergraduate students in the Public Health Department, Madonna University, Elele, Nigeria. The study employed a cross-sectional descriptive design and a stratified random sampling technique, which was used to select 144 public health students. Results showed an overall mean of 3.78, indicating that, on average, the students showed a moderately high tendency to agree with the reasons for noncompliance presented. An overall mean of 2.78 reflected a moderate perceived impact of noncompliance with malaria treatment on academic outcomes. However, most students did not perceive a strong link between noncompliance and decline in overall academic performance. An overall mean score of 4.28 showed strong agreement across all recommendations. The researcher suggested that regular health education sessions should be implemented to emphasize the importance of completing malaria treatment and preventive measures. In conclusion, the findings emphasize the need for structured institutional support, enhanced health education, and accessible campus health services to improve adherence to malaria treatment. Addressing these factors will not only promote better health but also contribute positively to students' academic success.

Keywords: Effect, Noncompliance, malaria, treatment, undergraduate.

STRESS PREDISPOSES NEURONAL CELLS TO CHANGES IN G-PROTEIN COUPLED RECEPTOR GENE EXPRESSION IN CORTICAL NEURONS IN CULTURE**A. O. IBEGBU**

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ABSTRACT

Neuronal cells in particular have been shown to be more susceptible to the injurious effects of oxidative stress in which the cells may die when oxygen supply is reduced or completely eliminated. Cannabinoid (CB₁) receptor agonists have been shown to elicit several central nervous system effects, mediated via G protein-coupled receptors. The aim of the study was to evaluate the effect of oxidative stress on G-protein coupled receptor gene expression (CB₁) in cortical B50 cells in culture. B50 cells were cultured in normoxia (21%O₂; 5% CO₂) and hypoxia (5%O₂; 5% CO₂), and treated with cannabinoid agonists to determine their effects on oxidative stress-induced changes. Three cannabinoid agonists Win 55,212-2 mesylate (WIN); arachidonylethanolamide (AEA); and 2-arachidonyl glycerol (2-AG) were administered to the cells as treatment for 48 hours after 48 hours of initial culture for a total of 96 hours of culture in hypoxic conditions at doses of 10µM, 50µM and 100µM. The levels of G-protein coupled receptor (CB₁) mRNAs were assessed using RT-PCR. The results showed that oxidative stress induced morphological changes in B50 cells during hypoxia while the CB₁ RT-PCR mRNA levels showed no appreciable changes in normal, hypoxic and treated cells. The results show that B50 neuronal cells are susceptible to damage and injurious effects of oxidative stress, as are most brain cells and Cannabinoid agonist treatments showed no changes in the level of CB₁ receptor gene expression due to hypoxia or agonist treatment in neuronal B50 cells in culture.

COGNITOMOTOR EFFECT OF AN ALLIUM SPECIE AND ITS BIOACTIVE AGENT ON HEAVY METAL-INDUCED TOXICITY

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ABSTRACT

This experimental study investigated the cognitive and kinematic effects of *Allium sativum* and its active agent, allicin, on cadmium chloride-induced toxicity in male Wistar rats. Thirty (30) male Wistar rats were randomly assigned into six groups (n=5): Group A served as control, while Groups B–F received CdCl₂ (0.3 ml), allicin (1.0 ml), CdCl₂ + *A. sativum* (1.0 ml), CdCl₂ + *A. sativum* (1.5 ml), and CdCl₂ + allicin (1.0 ml), respectively. The study lasted six weeks. Phytochemical composition and total antioxidant capacity of *A. sativum* were determined using gas chromatography coupled to flame ionization detector and ultraviolet-visible spectrophotometry. Cognitive function was assessed using the T-maze, while kinematic parameters were evaluated using a gait test apparatus. Oxidative stress markers, muscle function markers, delta-aminolevulinic acid (D-ALA), acetylcholinesterase (AChE), NOS and plasma electrolytes were also assessed. The analysis was conducted using SPSS version 28 with One-Way analysis of variance (ANOVA). Findings revealed the presence of allicin, flavanones, tannins, terpenes, terpenoids and naringin in *A. sativum*. Cadmium chloride exposure produced alterations in cognitive, kinematic and biochemical parameters. MDA decreased in Groups C and F, while protein carbonyl decreased in Group C. D-ALA and GR levels increased in Groups C and F, while SOD, CAT, GSH and GPx increased in Groups C–F. Plasma creatine kinase decreased, whereas AChE increased in Groups C, E and F. Ca²⁺ increased in Groups B and F, K⁺ decreased in Group F, while Na⁺ showed no significant change. Step length and stride length increased, while NOS values decreased in Groups C and F. The T-maze findings showed increased post-treatment transfer latency in the CdCl₂ group, indicating impaired learning and memory, whereas allicin reduced transfer latency. Co-administration of *A. sativum* reduced cadmium-induced cognitive impairment, with the 1.5 ml dose producing greater improvement than the 1.0 ml dose. The CdCl₂ + allicin group showed incomplete cognitive protection. The findings suggest that *Allium sativum*, particularly its bioactive component allicin, possesses protective potential against cadmium chloride-induced cognitive, kinematic and biochemical disturbances in male Wistar rats.

COMPARATIVE OUTCOMES OF LAPAROSCOPIC TAPP AND OPEN LICHTENSTEIN MESH REPAIR IN THE SURGICAL TREATMENT OF INGUINAL HERNIA

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ABSTRACT

Background: Inguinal hernia repair is one of the most frequently performed procedures in general surgery. The open Lichtenstein tension-free mesh repair remains the traditional standard technique, whereas laparoscopic transabdominal preperitoneal (TAPP) repair has become increasingly popular because of its minimally invasive nature and favorable postoperative outcomes. This study aimed to compare the clinical results of laparoscopic TAPP repair with open Lichtenstein mesh hernioplasty.

Materials and Methods: A retrospective comparative study included 240 patients with primary inguinal hernia who underwent elective surgical treatment between 2019 and 2025. Of these, 120 patients underwent laparoscopic TAPP mesh repair, while 120 patients were treated using the open Lichtenstein technique. Surgical procedures were performed at the clinical bases of Azerbaijan Medical University and the Department of Surgery of the Azerbaijan State Advanced Training Institute for Doctors. The groups were compared regarding operative time, postoperative pain, length of hospital stay, time to ambulation, return to normal daily activities, cosmetic satisfaction, postoperative complications, and early recurrence.

Results: Both techniques were safe and effective, with excellent overall surgical outcomes. Although the mean operative time was slightly longer in the laparoscopic TAPP group, patients experienced significantly less postoperative pain, required fewer analgesics, and achieved earlier mobilization. The duration of hospitalization and time required to return to normal daily activities were significantly shorter after laparoscopic repair. Cosmetic satisfaction was considerably higher in the TAPP group because of the smaller incisions. The incidence of postoperative wound complications was lower following laparoscopic surgery. No statistically significant difference in early recurrence rates was observed between the two groups during the follow-up period.

Conclusion: Laparoscopic TAPP repair is a safe and reliable alternative to open Lichtenstein mesh repair for primary inguinal hernia. Its main advantages include reduced postoperative pain, faster rehabilitation, earlier return to normal activities, superior cosmetic results, and lower wound-related morbidity. In experienced surgical centers, TAPP should be considered one of the preferred treatment options for appropriately selected patients.

Keywords: inguinal hernia, laparoscopic TAPP, Lichtenstein repair, mesh hernioplasty, minimally invasive surgery, postoperative pain, rehabilitation, comparative study.

ÖZET

Amaç: Kasık fıtığı onarımı, genel cerrahide en sık uygulanan ameliyatlardan biridir. Açık Lichtenstein gerilimsiz yama onarımı uzun yıllardır standart yöntem olarak kabul edilirken, laparoskopik transabdominal preperitoneal (TAPP) onarım minimal invaziv yapısı ve olumlu postoperatif sonuçları nedeniyle giderek daha fazla tercih edilmektedir. Bu çalışmanın amacı, laparoskopik TAPP yöntemi ile açık Lichtenstein yama onarımının klinik sonuçlarını karşılaştırmaktır.

Gereç ve Yöntem: Bu retrospektif karşılaştırmalı çalışmaya 2019–2025 yılları arasında primer kasık fıtığı nedeniyle elektif cerrahi uygulanan toplam 240 hasta dahil edildi. Hastaların 120'sine laparoskopik TAPP yama onarımı, 120'sine ise açık Lichtenstein tekniği uygulandı. Ameliyatlar Azerbaycan Tıp Üniversitesi ile Azerbaycan Devlet Hekimleri Geliştirme Enstitüsü Cerrahi Anabilim Dalı'nın kliniklerinde gerçekleştirildi. Gruplar; ameliyat süresi, ameliyat sonrası ağrı, hastanede kalış süresi, mobilizasyon zamanı, günlük aktivitelere dönüş süresi, kozmetik memnuniyet, postoperatif komplikasyonlar ve erken nüks açısından karşılaştırıldı.

Bulgular: Her iki yöntem de güvenli ve etkili bulundu. Laparoskopik TAPP grubunda ameliyat süresi bir miktar daha uzun olmasına rağmen, ameliyat sonrası ağrı düzeyi ve analjezik gereksinimi anlamlı

derecede daha düşük bulundu. Bu grupta erken mobilizasyon sağlandı, hastanede kalış süresi ve günlük yaşama dönüş süresi daha kısa oldu. Ayrıca daha küçük kesiler nedeniyle kozmetik memnuniyet daha yüksekti ve yara yeri komplikasyonları daha az görüldü. Takip süresince iki grup arasında erken nüks oranları açısından istatistiksel olarak anlamlı bir fark saptanmadı.

Sonuç: Laparoskopik TAPP onarımı, primer kasık fıtığının tedavisinde açık Lichtenstein yama onarımına güvenli ve etkili bir alternatiftir. Daha az postoperatif ağrı, daha hızlı iyileşme, günlük yaşama daha erken dönüş, daha iyi kozmetik sonuçlar ve daha düşük yara yeri komplikasyonu oranları sağlamaktadır. Deneyimli cerrahi merkezlerde uygun hastalarda tercih edilmesi gereken yöntemlerden biridir.

Anahtar Kelimeler: kasık fıtığı, laparoskopik TAPP, Lichtenstein onarımı, yama hernioplasti, minimal invaziv cerrahi, postoperatif ağrı, rehabilitasyon, karşılaştırmalı çalışma.

VITAMIN D STATUS AND REPRODUCTIVE HORMONAL PROFILES IN EARLY VERSUS PHYSIOLOGICAL MENOPAUSE: A COMPARATIVE STUDY

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ABSTRACT

Background: Menopause is associated with substantial endocrine changes resulting from progressive ovarian dysfunction and declining reproductive hormone production. Early menopause is particularly relevant because women experience estrogen deficiency at a younger age and may consequently face a prolonged period of increased metabolic, skeletal, and cardiovascular vulnerability. **Aim:** To compare vitamin D status and reproductive hormonal profiles between women with early and physiological menopause and to investigate the potential relationship between serum 25-hydroxyvitamin D [25(OH)D] concentrations and reproductive hormones.

Materials and Methods: This retrospective observational study included 172 Romanian women evaluated in the Department of Obstetrics and Gynecology of the County Hospital in Timisoara. Participants were divided into two groups: 71 women with early menopause and 101 women with physiological menopause. Menopausal status was established based on clinical and biochemical criteria. Serum 25(OH)D concentrations were classified as deficient (<20 ng/mL), insufficient (21–29 ng/mL), or sufficient (≥30 ng/mL). Estradiol, progesterone, follicle-stimulating hormone (FSH), and luteinizing hormone (LH) were assessed using standardized immunoassays. Comparative and correlation analyses were used to evaluate differences between groups and potential relationships between vitamin D status and reproductive hormones. The analytical approach follows that used in the original study.

Results: Low vitamin D status was frequently observed in both early and physiological menopause, with deficient and insufficient concentrations representing the predominant vitamin D categories. The two groups demonstrated the expected menopausal endocrine pattern, characterized by reduced ovarian steroid activity and compensatory changes in gonadotropins. In women with early menopause, an inverse relationship between estradiol and FSH and between progesterone and LH was observed, supporting the characteristic hypothalamic–pituitary–ovarian changes associated with declining ovarian

function. However, no consistent relationship was identified between serum 25(OH)D concentrations and estradiol or progesterone. The overall pattern was similar in women with physiological menopause, suggesting that vitamin D status does not appear to be a major determinant of reproductive hormonal changes. These findings are consistent with the relationships identified in the original cohort.

Conclusions: Vitamin D deficiency and insufficiency are common findings in both early and physiological menopause. Despite clear changes in reproductive hormonal profiles, vitamin D status does not appear to be consistently associated with estradiol or progesterone concentrations. These findings suggest that vitamin D deficiency and reproductive endocrine alterations may represent largely independent aspects of menopausal health. Nevertheless, monitoring vitamin D remains clinically relevant because of its established importance for bone health and the increased long-term health vulnerability associated with menopause.

Keywords: early menopause; physiological menopause; vitamin D; estradiol; progesterone; endocrine profile.

BIOLOGICAL VALORIZATION OF CANNABIS SATIVA L. EXTRACTS AND BY-PRODUCTS OBTAINED BY SUPERCRITICAL CO₂: ANTIMICROBIAL AND ANTINFLAMMATORY POTENTIAL

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ABSTRACT

Cannabis sativa L. is a valuable source of bioactive compounds with potential biological applications. This study aimed to optimize supercritical CO₂ (SC-CO₂) extraction and evaluate the antimicrobial and anti-inflammatory activities of the resulting extracts and by-products. A total of 27 extraction experiments were performed under different operating conditions, including variations in CO₂ flow rate, pressure, and temperature. Antimicrobial activity was assessed against Gram-positive and Gram-negative bacteria, yeasts, and fungi using agar well diffusion and minimum inhibitory concentration (MIC) assays. Extraction yields ranged from 6.71% to 10.17%. The extracts showed greater antimicrobial activity against Gram-positive bacteria, particularly *Micrococcus luteus* and *Staphylococcus aureus*, with CR and H.CBD showing the strongest activity and a minimum MIC of 0.52%. Anti-inflammatory evaluation using carrageenan-induced edema also demonstrated significant activity, with the highest inhibition observed for HV-VB (59.64 ± 2.35%) at 3 h. Overall, these findings highlight the potential of SC-CO₂-derived *C. sativa* extracts and by-products as promising sources of bioactive compounds for sustainable valorization.

Keywords: *Cannabis sativa* L.; supercritical CO₂; antimicrobial activity; anti-inflammatory activity; by-products.

3D-PRINTED MEDICINES AND THE FUTURE OF PERSONALIZED HEALTHCARE: ECONOMIC, SOCIAL AND PHARMACEUTICAL IMPLICATIONS

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ABSTRACT

Three-dimensional (3D) printing, also known as additive manufacturing, is emerging as a transformative technology in pharmaceutical science and personalized healthcare. Unlike conventional pharmaceutical manufacturing, which primarily follows a mass-production model, 3D printing enables the layer-by-layer fabrication of medicines with customized dose, geometry, drug-release characteristics and combinations of active pharmaceutical ingredients. This capability has the potential to address important limitations of the conventional “one-size-fits-all” approach, particularly in pediatric, geriatric, low-dose, polypharmacy and pharmacogenomically guided therapies. The approval of SPRITAM® (levetiracetam) demonstrated that 3D-printed medicines can progress from laboratory research to an approved pharmaceutical product. More recently, research has expanded toward hospital point-of-care manufacturing, community-pharmacy compounding, automated quality control and decentralized production.

This review critically examines the pharmaceutical, economic and social implications of 3D-printed medicines and evaluates their potential role in the future of personalized healthcare. Pharmaceutical applications include personalized dosing, polypills, modified drug-release systems, taste-masked formulations, complex geometries and on-demand production. Economically, 3D printing may reduce inventory requirements, improve production flexibility, decrease manual compounding and potentially reduce medication wastage; however, high equipment costs, formulation development, validation, quality assurance and regulatory compliance may limit economic advantages in some settings. Socially, personalized medicines may improve adherence, accessibility and patient-centered care but may also introduce concerns related to digital inequality, data privacy, professional responsibility, cybersecurity and unequal access to advanced healthcare technologies. Regulatory challenges surrounding decentralized manufacturing, digital prescriptions, printable pharmaceutical materials, process validation, traceability and batch release remain important barriers. The future of pharmaceutical 3D printing is therefore likely to depend on integration with artificial intelligence, pharmacogenomics, digital health records, process analytical technology and robust regulatory frameworks. Rather than replacing conventional pharmaceutical manufacturing, 3D printing is likely to develop as a complementary technology for situations in which personalization, flexibility and rapid small-batch production provide clear clinical value.

Keywords: 3D printing; additive manufacturing; personalized medicine; personalized dosage forms; pharmaceutical manufacturing; point-of-care manufacturing; digital pharmacy; drug delivery; pharmacogenomics; healthcare economics.

ROLE OF FUNCTIONAL FOODS IN WOMEN'S HEALTH: FROM MENARCHE TO MENOPAUSE

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ABSTRACT

The women's health is significantly affected by the hormonal changes and physiological events that occur throughout the life span, from menarche to the reproductive years and finally to menopause. These events are linked to the ever-changing nutritional needs and vulnerability to various health conditions, such as iron-deficiency anemia, polycystic ovary syndrome (PCOS), premenstrual syndrome (PMS), gestational metabolic disorders, osteoporosis, and cardiovascular diseases. In recent years, functional foods, which are described as "foods containing biologically active components that have health-promoting properties beyond basic nutritional needs," have gained popularity as a preventive and therapeutic food strategy specifically targeting women's needs. The research highlights the application of functional foods in relation to women's health issues and the major hormonal events. During adolescence, iron-fortified foods, vitamin B complex, and protein-fortified foods have a significant role in promoting healthy growth and preventing anemia. In the reproductive age group, omega-3 fatty acids, probiotics, dietary fiber, and low GI foods have been promising in managing PCOS, enhancing fertility, and improving metabolic profiles. During pregnancy and the postpartum period, functional foods fortified with folate, calcium, vitamin D, and essential fatty acids have been demonstrated to enhance women's health and fetal development.

During the transition phase of perimenopause and menopause, the use of phytoestrogens, antioxidants in fruits, and calcium and vitamin D-fortified foods has been found to be effective in the management of symptoms of vasomotor syndrome, maintenance of bone mineral density, and prevention of cardiovascular diseases. Mechanistically, functional foods act through the bioactive compounds, which are associated with endocrine modulation, inflammation, gut microbiota, and oxidative stress, making them critical in the management of hormonal imbalance and metabolism. The paper emphasizes on the use of functional foods in women-specific nutritional approaches has vast potential in the management of various health conditions throughout the life cycle of women.

Keywords: Functional foods; Women's health; Bioactive compounds; Menopause; PCOS; Personalized nutrition.

**MOLECULAR IDENTIFICATION OF ESBLs GENES (bla_{TEM} , bla_{SHV} AND bla_{CTX})
AMONG NON-FERMENTING GRAM-NEGATIVE BACTERIA ISOLATED FROM
HOSPITALIZED PATIENTS IN MAZANDARAN PROVINCE, IRAN**

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ABSTRACT

Introduction: Production of beta-lactamase enzymes, particularly extended-spectrum β -lactamases (ESBLs), is a major global concern due to their contribution to antimicrobial resistance. ESBL-encoding genes are commonly located on bacterial plasmids, with bla_{SHV} , bla_{TEM} , and bla_{CTX-M} being among the most prevalent resistance determinants. This study aimed to investigate the presence of ESBL-associated genes among non-fermenting Gram-negative bacteria (*Pseudomonas aeruginosa* and *Acinetobacter baumannii*) isolated from hospitalized patients in Mazandaran Province, Iran.

Methods: In this cross-sectional descriptive study, 81 non-fermenting Gram-negative bacterial isolates were collected from hospitalized patients. Antimicrobial susceptibility testing was performed according to CLSI guidelines. The presence of ESBL-associated genes, including bla_{SHV} , bla_{TEM} , and bla_{CTX-M} , was investigated using polymerase chain reaction (PCR) with specific primers.

Results: Among the 81 non-fermenting Gram-negative isolates, 49 (60.5%) were identified as *A. baumannii* and 32 (39.5%) as *P. aeruginosa*. In *P. aeruginosa* isolates, the prevalence of detected ESBL genes was 26% for bla_{SHV} , 19% for bla_{TEM} , and 12% for bla_{CTX-M} . In *A. baumannii* isolates, the frequencies were 11% for bla_{TEM} , 8% for bla_{CTX-M} , and 4% for bla_{SHV} .

Conclusions: The presence of ESBL-producing *A. baumannii* and *P. aeruginosa* strains among hospital isolates highlights the increasing burden of antimicrobial resistance. The potential dissemination of resistance genes among clinical strains emphasizes the importance of rapid molecular detection and effective infection control strategies in healthcare settings.

EVALUATION OF BIOFILM-RELATED PHENOTYPIC AND GENOTYPIC CHARACTERISTICS IN CLINICAL ACINETOBACTER BAUMANNII ISOLATES FROM GORGAN, NORTHERN IRAN

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ABSTRACT

Introduction: Biofilm formation and antibiotic resistance are key virulence characteristics of *Acinetobacter baumannii* that contribute to its persistence in hospital environments and the development of nosocomial infections. These features are particularly concerning in intensive care units (ICUs), where multidrug-resistant strains pose significant therapeutic challenges.

Methods: In this study, endotracheal aspirate specimens were collected from ICU-admitted patients and subjected to microbiological culture for the identification of *A. baumannii* isolates. The isolates were evaluated for antimicrobial susceptibility profiles, biofilm formation capacity, twitching motility phenotype, and the presence of biofilm-associated genes using molecular methods.

Results: A total of 108 *A. baumannii* isolates were identified. All isolates exhibited multidrug resistance (MDR), and 98.1% were classified as extensively drug-resistant (XDR). Biofilm formation was detected in 87 (80.6%) isolates, including 27.8% strong, 28.7% moderate, and 24% weak biofilm producers. No significant association was observed between biofilm formation capacity and antimicrobial resistance profiles or MDR/XDR phenotypes. Twitching motility was detected in 34.2% of isolates. The most prevalent biofilm-associated gene was **bap** (100%), followed by *csuE* (96.3%), *bfmS* (90.7%), *bfmR* (72.2%), *ompA* (52.7%), *pilA* (18.5%), and *epsA* (16.6%). All isolates harbored more than three biofilm-related genes simultaneously. No significant correlation was found between the presence of biofilm-associated genes and biofilm formation ability.

Conclusions: The study demonstrated a high prevalence of MDR and XDR *A. baumannii* isolates with strong biofilm-forming potential in ICU settings. The absence of significant associations between biofilm formation, resistance patterns, and biofilm-associated genes suggests that additional regulatory mechanisms and environmental factors may contribute to biofilm development and antibiotic tolerance. These findings highlight the ongoing challenge of managing *A. baumannii* infections and the need for improved strategies targeting biofilm-associated persistence.

REIMAGINING CONTINUING MEDICAL AND HEALTH SCIENCES EDUCATION THROUGH MOBILE MICROLEARNING: EVIDENCE-BASED EVALUATION OF KNOWLEDGE RETENTION, PROFESSIONAL COMPETENCE, AND CLINICAL PRACTICE

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ABSTRACT

The rapid evolution of medical knowledge, clinical technologies, healthcare delivery models, and professional competencies requires continuing medical and health sciences education approaches that are flexible, accessible, engaging, and capable of supporting sustained knowledge development. Mobile microlearning offers an emerging educational model in which concise, focused learning units are delivered through smartphones and other mobile devices, enabling healthcare professionals to engage with educational content within short periods and across diverse clinical and professional environments. This paper reimagines continuing medical and health sciences education through mobile microlearning and evaluates its potential contribution to knowledge retention, professional competence, and clinical practice. Drawing on recent evidence from health-professions education, continuing professional development, online learning, microlearning, and mobile-assisted education, the study synthesizes evidence concerning learning accessibility, knowledge acquisition, retention, learner engagement, confidence, and transfer of learning into professional practice. Existing literature indicates that digitally mediated continuing education can reduce temporal and geographical barriers while supporting self-directed and flexible learning, whereas microlearning can facilitate focused learning through concise instructional units, retrieval activities, repetition, feedback, and just-in-time access. However, evidence concerning sustained knowledge retention and direct improvement in clinical practice remains comparatively limited. The paper therefore proposes an evidence-based framework linking mobile microlearning design with measurable educational and professional outcomes. It argues that effective implementation should integrate clinically relevant content, spaced learning, formative assessment, feedback, personalization, learner analytics, and appropriate professional oversight. Mobile microlearning should consequently be regarded not merely as a technological delivery mechanism but as a pedagogically structured component of lifelong medical and health sciences education. The approach has potential to strengthen continuous professional development while improving the responsiveness of health professionals to evolving knowledge and clinical practice requirements.

Keywords: Continuing Education; Clinical Competence; Knowledge Retention; Mobile Microlearning.

PHARMACOGENOMICS: PERSONALIZED MEDICINE BASED ON GENETIC MAKEUP.**Asst. Prof. Hari Nandhini A.**

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ABSTRACT

Pharmacogenomics is an emerging field of pharmaceutical science that studies how an individual's genetic variations influence their response to medicines. It combines pharmacology and genomics to support the development of personalized treatment strategies. Conventional drug therapy generally follows a standard approach, where the same medicine and dose may be prescribed to many patients. However, differences in genetic makeup can cause variations in drug effectiveness, metabolism, and adverse reactions. Pharmacogenomics aims to identify these genetic differences and use them to select suitable medicines and doses for individual patients. Genetic variations can affect drug-metabolizing enzymes, transport proteins, and drug targets, which may alter the concentration and therapeutic response of a medicine in the body. By understanding these variations, healthcare professionals may predict whether a patient is more likely to respond to a particular drug or experience adverse effects. Pharmacogenomic approaches have potential applications in areas such as cancer treatment, cardiovascular diseases, psychiatric disorders, and infectious diseases. Genetic testing can also support the selection of appropriate therapies and help reduce the use of ineffective medications. Despite its potential, several challenges limit the widespread implementation of pharmacogenomics. These include the cost and availability of genetic testing, complex interpretation of genetic information, ethical and privacy concerns, limited awareness, and the need for standardized clinical guidelines. Continued advances in genomic research, bioinformatics, and molecular diagnostics may help overcome these limitations. Overall, pharmacogenomics represents an important step toward precision medicine by enabling safer, more effective, and individualized drug therapy based on a patient's genetic characteristics.

Keywords: Pharmacogenomics; Personalized Medicine; Genetic Variation; Precision Therapy; Drug Response

THE APPLICATION OF NANOPARTICLES AS A THERAPEUTIC AGENT**Ibrahim SAMAILA**

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ABSTRACT

Nanoparticles (NPs), ranging from 1100 nm, have become transformative therapeutic agents due to their customizable physicochemical traits, ability to traverse biological barriers, and multifunctionality. Applications include targeted drug delivery, controlled release, theranostics, gene therapy, and immunomodulation. This review highlights recent advancements during 20232025, focusing on nanoparticle classes such as polymeric, lipid-based, metallic, and hybrid systems. It presents mechanisms of action and applications across cancer, neurodegenerative and cardiovascular disorders, and organ-targeted therapies. While offering significant advantagesimproved specificity, reduced toxicity, and enhanced bioavailabilitynanoparticle-based treatments face challenges in safety, scalability, and clinical translation. Future directions involve personalized smart nanoparticles, scalable manufacturing techniques, and theranostic platforms, promising to revolutionize therapeutic landscapes.

Keywords:Nanoparticles, Therapeutic agents, Nanomedicine, Drug delivery, Theranostics, Smart nanoparticles.

GREEN HYBRID NANOPARTICLES FOR BIOMEDICAL APPLICATIONS**Usman SAMAILA**

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ABSTRACT

Green hybrid nanoparticles have emerged as a promising class of nanomaterials that combine the advantages of multiple components synthesized via environmentally friendly methods. Unlike conventional chemical and physical techniques, green synthesis utilizes plant extracts, microorganisms, and biopolymers, offering safer, cost-effective, and sustainable approaches. Hybrid nanoparticles, such as metal–metal oxide, metal–polymer, and multi-metal composites, exhibit enhanced physicochemical properties, including high stability, biocompatibility, and multifunctionality. These unique features make them particularly valuable in biomedical fields, ranging from antimicrobial and anticancer therapies to wound healing, bioimaging, biosensing, and drug delivery. Their mechanisms of action typically involve reactive oxygen species (ROS) generation, membrane disruption, DNA and protein interactions, and synergistic effects arising from the hybrid composition. Despite their promise, challenges such as cytotoxicity, large-scale synthesis, reproducibility, and regulatory approval hinder clinical translation. This review highlights recent advances in the green synthesis, characterization, and biomedical applications of hybrid nanoparticles, with a focus on their therapeutic potential and future prospects in precision medicine.

Keywords: Green, Hybrid, Nanoparticles, Biomedical Application, Reactive Oxygen Species.

**CHOLEDOCHAL CYST ASSOCIATED WITH PANCREATIC EXOCRINE
INSUFFICIENCY AND ELECTROLYTE IMBALANCES**
*PANKREATİK EKZOKRİN YETMEZLİK VE ELEKTROLİT BOZUKLUKLARI İLE SEYREDEN
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ÖZET

Koledok kistleri safra yollarının nadir görülen konjenital anomalileri olup çeşitli gastrointestinal ve hepatobilier bulgularla ortaya çıkabilmektedir. Klinik Bulgular yaşa göre değişkenlik göstermekle birlikte sarılık, akolik dışkı, malabsorbsiyon oluşturmaktadır. Bununla birlikte süt çocukluğu döneminde beslenme problemleri, büyüme geriliği, yağ emilim bozukluğu ve pankreatik fonksiyon bozuklukları ön planda olabilir. Elektrolit bozuklukları ve pankreatik ekzokrin yetmezlik ile başvuran olgular oldukça nadirdir. Erken dönemde tanı konulmayan olgularda büyüme-gelişme geriliği, malabsorbsiyon ve metabolik bozukluklar gelişebilir. Bu olgu sunumunda pankreatik ekzokrin yetmezlik, hiponatremi ve hipokloremi ile seyreden koledok kisti tanısı alan iki aylık bir hasta sunulmuştur.

Anahtar kelimeler: Koledok kisti, infant, pankreatik ekzokrin yetmezlik, hiponatremi, hipokloremi, malabsorbsiyon

Materyal ve Yöntem: İki aylık kız hasta anemi, hipoalbuminemi, hipoproteinemi, yaygın ödem, ciltte hiperemik ve deskuamatif döküntüler, öksürük, ishal, akolik dışkılama ve büyüme-gelişme geriliği nedeniyle yatırılarak değerlendirildi. Fizik muayene, laboratuvar incelemeleri ve abdominal ultrasonografi yapıldı.

Pankreatik ekzokrin fonksiyon dışkıda pankreatik elastaz düzeyi ile değerlendirildi. Hastaya multidisipliner yaklaşım kapsamında intravenöz sıvı ve elektrolit replasmanı, beslenme desteği, pankreatik enzim replasman tedavisi ve ursodeoksikolik asit tedavisi uygulandı.

Bulgular: Fizik muayenede genel durum orta-kötü, cilt soluk ve subikterik görünümdeydi. Yaygın ödem, hiperemik ve deskuamatif cilt lezyonları ile belirgin büyüme-gelişme geriliği saptandı. Laboratuvar incelemelerinde anemi (Hb 6,2 g/dl), ALT (107,2 U/L), AST (155,3 U/L), GGT (567 U/L) yüksekliği, direkt hiperbilirubinemi, hipoalbuminemi (1,5 g/dl), hiponatremi (117 mmol/L), hipokloremi (97 mmol/L), düşük serum total protein düzeyi, düşük kan amilazı ve düşük dışkı pankreatik elastaz düzeyi (20 µg/g) tespit edildi. Alfa-1 antitripsin düzeyi 2 g/L olarak bulundu. Abdominal ultrasonografide 10×7 mm boyutlarında koledok kisti saptandı. Bulgular pankreatik ekzokrin yetmezlik ve malabsorbsiyon ile uyumlu değerlendirildi. Klinik izlem sırasında elektrolit değerlerinde, beslenme durumunda ve genel klinik tabloda düzelme gözlemlendi. Bir aylık takip sonunda kistin tamamen rezorbe olduğu saptandı.

Sonuç: Koledok kistleri süt çocukluğu döneminde yalnızca hepatobilier belirtilerle değil, pankreatik ekzokrin yetmezlik, malabsorbsiyon, büyüme-gelişme geriliği ve elektrolit bozuklukları ile de ortaya çıkabilir.

Hiponatremi, hipokloremi, akolik dışkı ve pankreatik elastaz düşüklüğü bulunan hastalarda ayırıcı tanıda kistik fibrosis de düşünülmelidir. Erken tanı ve multidisipliner yaklaşım prognozu olumlu yönde etkileyebilir.

INTERNATIONAL STANDARDS AND LOCAL PRACTICE IN PAPILLARY THYROID CANCER: A COMPARATIVE ANALYSIS

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ABSTRACT

Introduction:Thyroid cancer has been considered one of the fastest-growing malignancies worldwide in recent decades. According to GLOBOCAN 2022, more than 820,000 new cases of thyroid cancer are diagnosed worldwide each year, with women three times more likely to be diagnosed than men. Papillary thyroid cancer accounts for approximately 80-85% of all thyroid cancer cases. It is typically a slow-growing tumor with a 10-year survival rate of over 95%. However, 10-15% of patients may experience an aggressive clinical course, characterized by distant metastases, resistance to radioactive iodine, and recurrence. For this reason, the approach to treating papillary thyroid cancer has changed radically over the past decade. The 2015 classifications of the American Thyroid Association, the 2022 classifications of the European Thyroid Association, and the 2022 classifications of the World Health Organization abandoned the maximally radical approach and recommended an individualized approach based on risk assessment.

Etiology and pathogenesis:The strongest risk factor in the etiology of papillary thyroid cancer is ionizing radiation, and the incidence of papillary cancer in children exposed to radiation after the Chernobyl accident increased 100-fold. Iodine deficiency leads to an increased incidence of follicular cancer, and after iodine prophylaxis, papillary cancer increases, and 5-10% of cases are found in a familial form. At the molecular level, the mitogen-activated protein kinase (MAPK) signaling pathway is activated in 95% of patients, with the BRAF V600E mutation detected in 45-80%, the RET/PTC translocation in 10-20%, and RAS mutations in 30-45%. The literature shows that the BRAF V600E mutation alone is not an independent negative prognostic factor, but when combined with a TERT promoter mutation, it increases the risk of death by 5.39 times, a finding confirmed in a large study by Xing et al., which included 1,849 patients at 16 centers. The incidence of angioinvasion varies from 2.5% to 34% in various reports and worsens the prognosis, especially when combined with capsular invasion.

Diagnosis:Ultrasound is the primary diagnostic method; hypoechoic solid nodules, irregular margins, microcalcifications, and height greater than width are considered suspicious features. The ACR

TIRADS system is used for risk stratification, with the risk of malignancy being 35% in TR5, 9.1% in TR4, and 4.8% in TR3. Fine-needle aspiration biopsy is the gold standard and is assessed using the Bethesda 2017 system, with the risk of malignancy being 97–99% in Bethesda VI, 60–75% in Bethesda V, and 10–40% in Bethesda III and IV. The introduction of molecular panels such as ThyroSeq v3 and Afirma for indeterminate nodules has overcome diagnostic difficulties, and a 2014 study by Nikiforov et al. on 143 nodules found that these panels had a sensitivity of 90% and a specificity of 93%. Serum thyroglobulin is not considered a diagnostic marker and is used only to monitor recurrence after total thyroidectomy.

Treatment: The primary treatment is surgery, with total thyroidectomy indicated for tumors larger than 4 cm, extrathyroidal extension, lymph node metastases, and distant metastases. However, for low-risk intrathyroidal tumors measuring 1–4 cm, lobectomy provides similar survival rates, as demonstrated in a study by Michael Adam et al., which included 61,728 patients from the SEER database. The 10-year survival rate was 97% for lobectomy and 96.8% for total thyroidectomy ($p=0.41$). Therefore, the 2015 ATA guidelines recommend lobectomy in this patient group. For microcarcinomas less than one centimeter in size, an active surveillance strategy may be chosen. In a study by Ito and Miyauchi conducted at Kuma Hospital involving 1,235 patients, only 8% of tumors increased in size by more than 3 mm and 3.8% had new lymph node metastases after 10 years of follow-up, while in a 20-year study by Sugitani involving 3,222 patients, the need for delayed surgery was only 0.3%. Regarding radioiodine therapy, radioiodine has not been shown to increase survival in low-risk patients, but, conversely, in a study by Haymart involving 21,980 patients, it increased the risk of second malignancy by 1.3-fold, and in the ESTIMABL1 and ESTIMABL2 studies, there was no difference in ablation efficacy between 30 mCi and 100 mCi in patients with T1-T2N0M0, which was 91.4% and 92.6%, respectively. Regarding the Azerbaijani experience, in a study by A.R. Agayeva and her colleagues from the Scientific and Surgical Center, which included 212 patients with papillary carcinoma, 68% of patients underwent total thyroidectomy, and 32% underwent lobectomy. The 5-year recurrence rate was 2.1% for lobectomy and 1.8% for total thyroidectomy, which is comparable to international results. However, in our country, since 40% of patients are diagnosed with stage N1, total thyroidectomy still predominates, while international recommendations recommend lobectomy in the absence of stage N1. On the other hand, although active surveillance is considered the standard approach for microcarcinoma in Japan, in Azerbaijan, 95% of patients with stage N0 disease less than one centimeter choose immediate surgery due to fear of cancer, and there is a lack of regular monitoring infrastructure with high-quality ultrasound. Although the use of radioactive iodine in low-risk patients has sharply declined internationally, it remains routinely prescribed in Azerbaijan due to the high rate of total thyroidectomy. Molecular panels are unavailable in our country, although they are commonly used in the United States for Bethesda III-IV nodules.

Conclusion: In recent years, the treatment strategy for papillary thyroid cancer has evolved from a highly radical approach to an individualized, risk-based approach. International guidelines recommend lobectomy for low-risk tumors measuring 1-4 cm, active surveillance for selected microcarcinomas, selective use of radioactive iodine, and decision-making based on BRAF, RAS, and TERT mutations. The Azerbaijani experience complies with international standards in terms of surgical technique and recurrence rates, but for its national adaptation, it is essential to improve the quality of ultrasound and fine-needle aspiration biopsy, gradually introduce molecular panels, and create an active surveillance infrastructure with patient education. This will reduce the number of unnecessary total thyroidectomies and radioiodine therapy cases by 30-40%.

Keywords: Papillary thyroid carcinoma, ATA 2015, WHO 2022, TIRADS, Bethesda, lobectomy, active surveillance

CLIMATE CHANGE IMPACTS ON FRESHWATER ECOSYSTEMS IN THE KURDISTAN REGION, IRAQ

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ABSTRACT

Climate change has become one of the most important environmental challenges affecting freshwater ecosystems worldwide. Increasing air temperatures, changing precipitation patterns, drought, and increasing water demand can significantly influence the physical, chemical, and biological characteristics of freshwater ecosystems. The Kurdistan Region of Iraq contains important freshwater resources, including lakes, reservoirs, rivers, and wetlands that support biodiversity, agriculture, fisheries, water supply, and other ecosystem services. This study aimed to evaluate recent air temperature variability and discuss its potential impacts on freshwater ecosystems in four major cities of the Kurdistan Region: Erbil, Sulaymaniyah, Duhok, and Halabja. Monthly mean air temperature data from January to June 2026 were analyzed to identify seasonal and spatial temperature variations among the selected locations. The results demonstrated a clear increase in mean air temperature from winter to early summer in all four cities. The lowest temperatures were observed in January, whereas the highest temperatures occurred in June. Erbil and Halabja generally recorded higher temperatures, while Duhok showed comparatively lower values, potentially reflecting differences in elevation, topography, and geographic location. The observed warming conditions may have important implications for freshwater ecosystems by increasing evaporation, influencing water temperature, reducing dissolved oxygen availability, modifying nutrient cycling, and affecting aquatic biodiversity and ecosystem productivity. Warmer conditions may also increase the potential for algal blooms and ecological stress, particularly in freshwater systems exposed to drought and water scarcity. The findings indicate that climate variability represents an important environmental pressure on freshwater ecosystems in the Kurdistan Region. Continuous climate monitoring, freshwater ecosystem assessment, and integrated water-resource management are therefore necessary to improve climate adaptation and protect aquatic biodiversity. Future research should combine air and water temperature observations with hydrological, physicochemical, and biological indicators to provide a more comprehensive assessment of climate-related impacts on freshwater ecosystems in the region.

Keywords: Climate change; air temperature; freshwater ecosystems; aquatic biodiversity; Kurdistan Region; Iraq

**INVESTIGATION OF THE EFFICACY OF AVOCADO SEED EXTRACTS IN
PREVENTING, INHIBITING AND ERADICATING *S. AUREUS* AND *P. AERUGINOSA*
BIOFILMS**

*AVOKADO ÇEKİRDEĞİ ÖZLERİNİN S. AUREUS VE P. AERUGINOSA BİYOFİLMLERİNİN
ÖNLENMESİ, ENGELLENMESİ VE ORTADAN KALDIRILMASINDAKİ ETKİNLİĞİNİN
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ABSTRACT

Background and Aim: Biofilms formed by *Staphylococcus aureus* and *Pseudomonas aeruginosa*, which are frequently associated with chronic wounds and medical devices, exhibit high tolerance to antimicrobial treatments due to their protective extracellular matrix structure. Therefore, the discovery of innovative natural bioactive agents capable of preventing biofilm attachment, inhibiting biofilm development, and reducing established biofilms has become increasingly important. This study aimed to investigate the antibiofilm potential of an extract obtained from avocado (*Persea americana* Mill.) seeds (ASE) against *S. aureus* and *P. aeruginosa* biofilms.

Methods: ASE were initially dried, powdered and extracted using the Soxhlet extraction method. Biofilm inhibition activity was assessed using the crystal violet staining assay by determining the minimum biofilm prevention concentration (MBPC), minimum biofilm inhibitory concentration (MBIC) and minimum biofilm eradication concentration (MBEC). Culture medium and chlorhexidine were used as negative and positive controls, respectively.

Results: The antibiofilm activity of the avocado seed extract increased in a concentration-dependent manner against both tested strains. At 500 mg/L, the highest inhibition of initial attachment was observed as 81.34% for *S. aureus* and 63.97% for *P. aeruginosa*. The extract inhibited biofilm formation by 79.28% and 65.09% and reduced established biofilms by 87.54% and 61.35% for *S. aureus* and *P. aeruginosa*, respectively. Significant differences were observed between the extract-treated groups and the negative control ($p < 0.05$), whereas no significant difference was detected between the extract and chlorhexidine treatments ($p > 0.05$).

Conclusion: Avocado seed extract demonstrated strong antibiofilm activity against biofilm-forming *S. aureus* and *P. aeruginosa*, exhibiting comparable activity to chlorhexidine at 500 mg/L. The bioactive compounds present in ASE may contribute to these effects by interfering with bacterial adhesion and disrupting biofilm matrix stability. These findings suggest that avocado seed extract may represent a promising natural-derived candidate for further investigation in the management of biofilm-associated infections.

Keywords: Avocado seed extract; antibiofilm activity; *Staphylococcus aureus*; *Pseudomonas aeruginosa*

ÖZET

Giriş ve Amaç: Kronik yaralarda ve tıbbi cihazlarda sıklıkla rastlanan *Staphylococcus aureus* ve *Pseudomonas aeruginosa* biyofilmleri, oluşturdukları koruyucu matris yapısı nedeniyle hastane enfeksiyonlarında yüksek direnç gösterirler. Bu biyofilmlerin önlenmesi, gelişimi durdurulması ve biyofilm oluşumunun azaltılmasında yenilikçi doğal aktif ajanlar kritik rol oynayabileceği düşünülmektedir. Bu nedenle çalışmada, avokado (*Persea americana* Mill.) çekirdeklerinden elde edilen ekstraktların potansiyel biyofilm yapışmasını önleme, biyofilm oluşumunu engelleme ve yerleşik biyofilmleri ortadan kaldırma etkinliğinin değerlendirilmesi amaçlanmıştır.

Yöntem: İlk olarak avokado çekirdekleri kurutulup öğütülerek, Soxhlet ekstraksiyonu yöntemi ile ekstrakte edilmiştir. Biyofilm aktivitesi, minimum biyofilm önleme, inhibisyon ve yok etme konsantrasyonlarının belirlenmesi için kristal viyole metodu kullanılarak incelenmiştir. Negatif kontrol olarak besiyeri ve pozitif kontrol olarak klorheksidin kullanılmıştır.

Bulgular: Tüm izolatlarda antibiyofilm aktivitenin konsantrasyona bağımlı olarak arttığı gözlemlenmiştir. Ekstrakt için en yüksek yapışma önleme 500 mg/L’de sırasıyla, *S. aureus* için %81,34 ve *P. aeruginosa* için %63,97, biyofilm oluşumunu engelleme *S. aureus* için %79,28 ve *P. aeruginosa* için %65,09 ve biyofilm yok etme *S. aureus* için %87,54 ve *P. aeruginosa* için %61,35 olarak bulunmuştur. Ekstrakt ve negatif kontrol arasında anlamlı farklılıklar ($p < 0,05$) bulunurken, ekstrakt ve klorheksidin arasında anlamlı bir fark ($p > 0,05$) bulunmamıştır.

Sonuç: Avokado çekirdeği ekstresi, biyofilm oluşturduğu bilinen *S. aureus* ve *P. aeruginosa*’ya karşı 500 mg/L konsantrasyonlarda klorheksidin ile benzer seviyede bir antibiyofilm etkinliği sergilemiştir. Avokado çekirdeği ekstresinin yapısında bulunan bileşiklerin; bakteriyel tutunmayı bozarak ve biyofilm matrisini destabilize ederek bu etkiye katkı sağladığı düşünülmektedir. Bu Bulgular, avokado çekirdeği ekstresinin biyofilm enfeksiyonlarının yönetiminde potansiyel bir doğal terapötik ajan olabileceğini göstermektedir.

Anahtar kelimeler: Avocado seed extract; antibiofilm activity; *Staphylococcus aureus*; *Pseudomonas aeruginosa*

SUBCRITICAL WATER-DERIVED CERATONIA SILIQUA L. SEED EXTRACT AS A NATURAL ANTIMICROBIAL AGENT AGAINST PATHOGENIC BACTERIA AND FUNGI
SUBKRİTİK SU EKSTRAKSİYONU İLE ELDE EDİLEN CERATONIA SILIQUA L. ÇEKİRDEK EKSTRAKTININ PATOJEN BAKTERİ VE MANTARLARA KARŞI DOĞAL ANTİMİKROBİYAL AJAN OLARAK DEĞERLENDİRİLMESİ

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ABSTRACT

Background and Aim: The global rise of antimicrobial resistance (AMR) has significantly threatened and limited the clinical efficacy of currently available antimicrobial therapies. This growing crisis highlights the urgent need to discover novel alternative antimicrobial agents with high phytotherapeutic potential. This study aimed to investigate the antimicrobial potential of an extract obtained from *Ceratonía siliqua* L. seeds (CsLSE) against bacterial and fungal pathogens.

Methods: The carob seeds were first dried, ground and then extracted using the method of subcritical water extraction for obtaining the extract. The reference microbial strains employed against the extracted antimicrobial were *Staphylococcus aureus* ATCC 25923, *Bacillus cereus* ATCC 14579, *Escherichia coli* ATCC 25922, *Pseudomonas aeruginosa* ATCC 27853, *Candida glabrata* ATCC 90030 and *Candida albicans* ATCC 90028. Antimicrobial activity of the CsLSE was measured via the agar well diffusion method at the extract concentration of 100 mg/mL. Minimum inhibitory concentration (MIC) as well as minimum bactericidal/fungicidal concentration (MBC/MFC) values were determined using the broth micro-dilution method in 96-well plates as per the CLSI guidelines.

Results: CsLSE exhibited inhibitory activity against all tested pathogenic microorganisms. The diameters of inhibition zone of CsLSE against the tested microorganisms ranged from 15 to 30 mm. The extract showed the highest antimicrobial activity against Gram-negative bacteria *Escherichia coli* (30 ± 0.5 mm) and *Pseudomonas aeruginosa* (29 ± 0.4 mm) with significantly larger zones of inhibition compared to the positive control, gentamicin (*E. coli*: 21.0 ± 0.9 mm; *P. aeruginosa*: 19.0 ± 0.8 mm). MBC/MFC analysis revealed bactericidal activity only against *E. coli*, with an MBC value of 12.5 mg/mL, whereas MBC/MFC values for the remaining microorganisms exceeded 100 mg/mL.

Conclusion: CsLSE demonstrated notable antimicrobial activity against the tested pathogens, particularly exhibiting strong inhibitory and bactericidal effects against *E. coli*. These findings suggest that *Ceratonía siliqua* L. seed extract represents a promising natural-source antimicrobial candidate, especially against Gram-negative bacterial pathogens and warrants further investigation for potential biomedical applications.

Keywords: *Ceratonía siliqua* L.; antibacterial activity; antifungal activity; minimum inhibitory concentration (MIC); minimum bactericidal/fungicidal concentration (MBC/MFC)

ÖZET

Giriş ve Amaç: Küresel ölçekte artan antimikrobiyal direnç (AMD), mevcut antimikrobiyal tedavi seçeneklerinin klinik etkinliğini ciddi derecede tehdit etmekte ve sınırlandırmaktadır. Bu kriz, patojenlere karşı yeni fitoterapötik potansiyeli yüksek alternatif antimikrobiyal ajanların keşfini zorunlu kılmaktadır. Bu çalışmada, keçiboynuzu (*Ceratonía siliqua* L.) çekirdeklerinden (CsLSE) elde edilen ekstraktların bakteriyel ve fungal izolatlar üzerindeki antimikrobiyal potansiyelinin belirlenmesi amaçlanmıştır.

Yöntem: İlk olarak keçiboynuzu çekirdekleri kurutulup öğütülerek, alt-kritik su ekstraksiyonu ile ekstrakte edilmiştir. Elde edilen ekstraktın antimikrobiyal aktivitesi Gram pozitif, Gram negatif ve

mayalara karşı değerlendirilmiştir. CsLSE, mikrobiyal referans suşlar (*S. aureus* ATCC 25923, *B. cereus* ATCC 14579, *E. coli* ATCC 25922, *P. aeruginosa* ATCC 27853, *C. glabrata* ATCC 90030 and *C. albicans* ATCC 90028) kullanılarak standart mikrobiyolojik prosedürlere uygun olarak kültüre edilmiştir. Ekstraktların antimikrobiyal duyarlılığı için agar kuyu difüzyon metodu (100 mg/ml); minimum inhibitör konsantrasyonu (MİK) ve minimum bakterisidal/fungisidal konsantrasyonu (MBK/MFC) değerlerinin tespiti için ise CLSI protokollerine uygun 96 kuyucuklu plakalarda sıvı mikrodilüsyon yöntemi kullanılmıştır.

Bulgular: CsLSE, test edilen tüm patojenik mikroorganizmalara karşı inhibitör aktivite göstermiştir. En düşük MIC değeri *Escherichia coli* için 6.25 mg/mL olarak belirlenirken, bunu *Bacillus cereus* ve *Pseudomonas aeruginosa* (12.5 mg/mL), *Staphylococcus aureus* (25 mg/mL) ve *Candida glabrata* (50 mg/mL) izlemiştir. MBC/MFC analizinde yalnızca *E. coli* için bakterisidal aktivite gözlenmiş (MBC: 12.5 mg/mL), diğer mikroorganizmalar için MBC/MFC değerleri >100 mg/mL olarak belirlenmiştir.

Sonuç: CsLSE, özellikle *E. coli* başta olmak üzere test edilen patojenlere karşı belirgin inhibitör aktivite sergilemiştir. Sonuçlar CsLSE'nin *E. coli* üzerinde bakterisidal etki göstererek önemli veri elde edildiğini göstermektedir. Ayrıca, CsLSE'nin doğal kaynaklı bir antimikrobiyal ajan olarak özellikle Gram-negatif bakterilere karşı potansiyel taşıdığı ve ileri biyolojik değerlendirmeler için umut verici bir aday olabileceği düşünülmektedir.

Keywords: Ceratonia siliqua L.; carob seed extract; antibacterial activity; antifungal activity; minimum inhibitory concentration (MIC); minimum bactericidal/fungicidal concentration (MBC/MFC);

LIQUID BIOPSY AND NEXT-GENERATION SEQUENCING (NGS): THE ROLE OF CTDNA IN CANCER MANAGEMENT*SIVI BİYOPSİ VE YENİ NESİL DİZİLEME (NGS): ctDNA'NIN KANSER YÖNETİMİNDEKİ ROLÜ***İsmail Musab GÜLAÇAR**

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ABSTRACT

Aim: Since conventional tissue biopsy is invasive, difficult to repeat, and inadequate at capturing intratumoral genetic heterogeneity, this review aims to evaluate the current role and potential of liquid biopsy-based circulating tumor DNA (ctDNA) analysis with next-generation sequencing (NGS) technologies, in clinical oncology.

Materials and Methods: This study synthesizes current literature and clinical evidence on the biological origin of cfDNA and ctDNA (apoptosis, necrosis/necroptosis, NETosis, active secretion); their structural and fragmentomic characteristics (fragment size, methylation patterns, end-motif diversity); and PCR-based (dPCR, ddPCR) and NGS-based (CAPP-Seq, TAm-Seq, duplex sequencing) analytical methods. It further reviews commercially available ctDNA assays — including FDA-approved tests such as Guardant360 CDx and FoundationOne Liquid CDx, as well as assays with FDA Breakthrough Device designation such as Signatera and Galleri — and the application of ctDNA in treatment selection, minimal residual disease (MRD) monitoring, and resistance-mutation detection in non-small cell lung cancer (NSCLC) and colorectal cancer (CRC).

Findings: Compared with imaging modalities, ctDNA functions as a dynamic molecular early-warning system, capable of detecting recurrence and treatment resistance months earlier. In NSCLC, ctDNA enables EGFR-mutation-guided treatment selection and early identification of resistance mutations such as T790M, while in CRC it supports adjuvant treatment decisions and detection of targetable alterations such as ERBB2 amplification. However, the lack of pre-analytical standardization, anatomical barriers such as the blood-brain barrier limiting ctDNA shedding, and false positives arising from clonal hematopoiesis (CHIP) remain major obstacles to routine clinical implementation.

Conclusion: Combined with advances in NGS technology, cfDNA/ctDNA-based liquid biopsy has become a powerful tool for treatment selection, response monitoring, and early detection of resistance mechanisms in precision oncology. With completion of pre-analytical standardization and large-scale randomized controlled trials demonstrating impact on overall survival, liquid biopsy is expected to become a primary decision-making tool in cancer management in the future.

Keywords: ctDNA, NGS, cancer diagnostic kits

ÖZET

Amaç: Konvansiyonel doku biyopsisi invaziv olması, tekrarlanması güç olması ve tümör içi genetik heterojeniteyi yeterince yansıtamaması nedeniyle, bu derleme, klinik onkolojide sıvı biyopsi temelli dolaşımdaki tümör DNA'sı (ctDNA) analizinin yeni nesil dizileme (NGS) teknolojileriyle birlikte güncel rolünü ve potansiyelini değerlendirmeyi amaçlamaktadır.

Gereç ve Yöntem: Bu çalışma; hücre dışı DNA (cfDNA) ve ctDNA'nın biyolojik kökenine (apoptoz, nekroz/nekroptoz, NETosis, aktif salgılanma) ilişkin güncel literatür ve klinik kanıtları; yapısal ve fragmentomik özelliklerini (fragman boyutu, metilasyon paternleri, uç-motif çeşitliliği); ve PCR temelli

(dPCR, ddPCR) ile NGS temelli (CAPP-Seq, TAm-Seq, duplex dizileme) analitik yöntemleri sentezlemektedir. Çalışma ayrıca; Guardant360 CDx ve FoundationOne Liquid CDx gibi FDA onaylı testler ile Signatera ve Galleri gibi FDA Çığır Açan Cihaz (Breakthrough Device) statüsüne sahip testler dahil olmak üzere ticari olarak mevcut ctDNA testlerini; ve ctDNA'nın küçük hücreli dışı akciğer kanseri (NSCLC) ile kolorektal kanserde (CRC) tedavi seçimi, minimal rezidüel hastalık (MRD) takibi ve direnç mutasyonu tespitindeki uygulamalarını gözden geçirmektedir.

Bulgular: Görüntüleme yöntemleriyle karşılaştırıldığında, ctDNA dinamik bir moleküler erken uyarı sistemi olarak işlev görmekte olup, nüksü ve tedavi direncini önceden tespit edebilmektedir. NSCLC'de ctDNA, EGFR mutasyonuna dayalı tedavi seçimini ve T790M gibi direnç mutasyonlarının erken tanımlanmasını mümkün kılarken; CRC'de adjuvan tedavi kararlarını ve ERBB2 amplifikasyonu gibi hedeflenebilir alterasyonların tespitini desteklemektedir. Bununla birlikte, pre-analitik standardizasyon eksikliği, kan-beyin bariyeri gibi ctDNA salınımını sınırlayan anatomik engeller ve klonal hematopoezden (CHIP) kaynaklanan yalancı pozitiflikler, rutin klinik uygulamanın önündeki başlıca engeller olmaya devam etmektedir.

Sonuç: NGS teknolojisindeki gelişmelerle birlikte, cfDNA/ctDNA temelli sıvı biyopsi; hassas onkolojide tedavi seçimi, yanıt takibi ve direnç mekanizmalarının erken tespiti açısından güçlü bir araç haline gelmiştir. Pre-analitik standardizasyonun tamamlanması ve genel sağkalım üzerindeki etkiyi gösteren büyük ölçekli randomize kontrollü çalışmaların yapılmasıyla birlikte, sıvı biyopsinin gelecekte kanser yönetiminde birincil karar verme aracı haline gelmesi beklenmektedir.

Anahtar Kelimeler: ctDNA, NGS, kanser tanı kitleri

INVESTIGATION OF OCULOMOTOR FUNCTION AND DIGITAL FATIGUE IN INDIVIDUALS WITH NON-SPECIFIC NECK PAIN

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ABSTRACT

Purpose: Non-specific neck pain (NSNP) is a common musculoskeletal disorder in the adult population that negatively affects quality of life. Recent studies have shown that NSNP is not limited to pain and functional disability but may also be associated with oculomotor function and digital fatigue. The aim of this study was to compare individuals with non-specific neck pain and healthy controls in terms of oculomotor function and digital fatigue.

Materials and Methods: A total of 42 volunteer participants, including 21 individuals with NSNP and 21 healthy controls, aged between 18 and 50 years, were included in this cross-sectional study. Oculomotor functions were evaluated using the NSUCO Saccade Test, the Near Point of Convergence Test, and the Eye–Hand Coordination Test. Digital eye fatigue was evaluated using the Digital Eye Fatigue Questionnaire, digital fatigue was evaluated using the Digital Fatigue Scale, and attention control was evaluated using the Attention Control Scale.

Results: The NSNP group demonstrated significantly poorer saccadic ability and greater head movement during saccades compared with the healthy control group ($p < 0.05$). No significant differences were found between the groups in the Near Point of Convergence Test or the Eye–Hand Coordination Test ($p > 0.05$). Digital eye fatigue and digital fatigue levels were significantly higher in the NSNP group than in the healthy control group ($p < 0.05$). However, no significant difference was found between the groups in terms of attention control ($p > 0.05$). **Conclusion:** The findings suggest that non-specific neck pain may negatively affect oculomotor function and digital fatigue. Considering visual system-related functions, in addition to musculoskeletal findings, during the assessment of individuals with NSNP may contribute to a more comprehensive clinical evaluation.

Keywords: Neck Pain, Saccades, Asthenopia

IN VITRO EVALUATION OF THE ANTIPROLIFERATIVE EFFECT OF A NEWLY SYNTHESIZED BENZIMIDAZOLE DERIVATIVE ON THE HUMAN BREAST CANCER MCF-7 CELL LINE

YENİ SENTEZLENEN BENZİMİDAZOL TÜREVİNİN İNSAN MEME KANSERİ MCF-7 HÜCRE HATTI ÜZERİNDEKİ ANTİPROLİFERATİF ETKİSİNİN İN VİTRO OLARAK DEĞERLENDİRİLMESİ

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ABSTRACT

Objective: Breast cancer is one of the most common malignancies among women and represents a major public health problem due to its high mortality rates. The limitations of current chemotherapeutic agents, including systemic toxicity and drug resistance, necessitate the development of novel anticancer compounds with greater selectivity and efficacy. This study aimed to investigate the in vitro cytotoxic and antiproliferative effects of a newly synthesized benzimidazole derivative, Compound 4, on the MCF-7 human breast cancer cell line.

Materials and Methods: Compound 4 was synthesized and characterized as a benzimidazolium salt derivative. MCF-7 cells were cultured under standard cell culture conditions (37°C, 5% CO₂). After seeding into 96-well plates, the cells were incubated with various concentrations of Compound 4 (12.5–500 µM) for 24 and 48 h. Cell viability was assessed using the MTT assay, and absorbance values were measured with a microplate reader. Data were analyzed using one-way analysis of variance (ANOVA) followed by Tukey's post hoc test in SPSS version 22, and $p < 0.05$ was considered statistically significant.

Results: The MTT assay demonstrated that Compound 4 significantly reduced the viability of MCF-7 cells in a dose- and time-dependent manner. Marked decreases in cell viability were observed at concentrations of 50 µM and above after 24 h of treatment, whereas cytotoxic activity was further enhanced after 48 h, with cell viability decreasing to approximately 39% at 500 µM ($p < 0.001$). These findings indicate that Compound 4 exerts a potent cytotoxic effect at higher concentrations and that its activity increases with prolonged incubation time.

Conclusion: The newly synthesized benzimidazole derivative Compound 4 exhibited pronounced dose- and time-dependent cytotoxic and antiproliferative effects on MCF-7 human breast cancer cells. The obtained results suggest that this compound may represent a promising candidate for further investigation as a potential therapeutic agent for breast cancer and warrants additional cellular and molecular studies.

Keywords: Antiproliferative effect; benzimidazole; breast cancer; MCF-7; cytotoxic activity.

ÖZET

Amaç: Meme kanseri, kadınlarda en sık görülen malignitelerden biri olup yüksek mortalite oranları nedeniyle önemli bir halk sağlığı sorunudur. Mevcut kemoterapötik ajanların sistemik toksisite ve ilaç direnci gibi sınırlılıkları, daha seçici ve etkili yeni antikanser bileşiklerin geliştirilmesini gerekli kılmaktadır. Bu çalışmada, yeni sentezlenen benzimidazol türevi compound 4'ün MCF-7 insan meme kanseri hücre hattı üzerindeki sitotoksik ve antiproliferatif etkileri *in vitro* koşullarda araştırılmıştır.

Materyal ve Yöntem: Compound 4, benzimidazolyum tuzu yapısında sentezlenmiş ve karakterize edilmiştir. MCF-7 hücreleri standart hücre kültürü koşullarında (%5 CO₂, 37°C) çoğaltılmıştır. Hücreler 96 kuyucuklu plakalara ekildikten sonra 12,5–500 µM aralığındaki farklı Compound 4 konsantrasyonları ile 24 ve 48 saat süreyle inkübe edilmiştir. Hücre canlılığı MTT yöntemi ile değerlendirilmiş, absorbans değerleri mikropłaka okuyucuda ölçülmüştür. Veriler SPSS 22 programında tek yönlü ANOVA ve Tukey testi kullanılarak analiz edilmiş, $p < 0,05$ anlamlı kabul edilmiştir.

Bulgular: MTT analizi sonuçları Compound 4'ün MCF-7 hücre canlılığını doza ve zamana bağlı olarak anlamlı şekilde azalttığını göstermiştir. 24 saatlik uygulamada 50 µM ve üzerindeki konsantrasyonlarda belirgin düşüşler saptanırken, 48 saatlik uygulamada sitotoksik etkinin daha da arttığı ve 500 µM konsantrasyonda canlılığın yaklaşık %39'a kadar düştüğü belirlenmiştir ($p < 0,001$). Bulgular, bileşiğin yüksek dozlarda güçlü sitotoksik etki oluşturduğunu ve etkinliğinin inkübasyon süresi uzadıkça arttığını ortaya koymuştur.

Sonuç: Yeni sentezlenen benzimidazol türevi Compound 4, MCF-7 insan meme kanseri hücreleri üzerinde belirgin doza ve zamana bağlı sitotoksik ve antiproliferatif etki göstermiştir. Elde edilen sonuçlar, bu bileşiğin meme kanseri tedavisinde potansiyel terapötik ajan adayı veya hücresel ve moleküler düzeyde araştırılmaya değer olduğunu düşündürmektedir.

Anahtar kelimeler: Antiproliferatif etki; benzimidazol; meme kanseri; MCF-7; sitotoksik aktivite.

EVOLVING PROCEDURAL PROFILE OF INTERVENTIONAL RADIOLOGY: A FIVE-YEAR SINGLE-CENTER TREND ANALYSIS

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ABSTRACT

Purpose: To evaluate the number, distribution, and temporal changes of interventional radiology (IR) procedures performed at our center.

Materials and Methods: IR procedures performed between 2019 and 2025 were retrospectively reviewed, excluding the COVID-19 period (2020–2021). Data were obtained from the hospital information system. Vascular procedures were classified as neurovascular (e.g., carotid artery stenting), central vascular (e.g., renal artery stenting), peripheral vascular (e.g., femoral artery stenting), central venous catheter/port procedures, or transarterial chemoembolization/radioembolization (TACE/TARE). Nonvascular procedures comprised biopsies, thermal ablations, drainage procedures (e.g., abscess drainage), hepatobiliary interventions (e.g., biliary drainage), and urological interventions (e.g., nephrostomy).

Results: Between 2019 and 2025, the overall procedural volume increased by 49%, primarily driven by nonvascular interventions, which increased by 67%. Among nonvascular procedures, thermal ablation showed the greatest relative increase (+469%), followed by urological interventions (+148%), drainage procedures (+60%), biopsies (+46%), and hepatobiliary interventions (+42%). In absolute numbers, biopsies (+720 procedures) and urological interventions (+605 procedures) accounted for the largest increases. Within vascular interventions, peripheral (–82%), central (–50%), and neurovascular (–25%) procedures declined markedly, whereas central venous catheter/port procedures (+51%) and TACE/TARE (+64%) increased, maintaining an overall stable vascular workload (+5%) (Table 1; Figures 1–3).

Biopsy was the most common procedure (31.5–37.4%). Central venous catheter/port placement ranked second except in 2025, when urological interventions became second (Table 2). Vascular procedures declined from 29.0% to 20.3% as the combined share of neurovascular, central vascular, and peripheral vascular interventions fell from 12.2% to 3.2%. Conversely, nonvascular procedures increased from 71.0% to 79.7%, driven by urological interventions, drainage procedures, and thermal ablation (Table 2; Figure 4).

Conclusion: Our experience demonstrates a marked shift toward nonvascular interventions. Although central venous catheter/port procedures and TACE/TARE increased, overall vascular workload remained stable because of declines in neurovascular, central vascular, and peripheral vascular interventions.

Keywords: Interventional radiology; nonvascular interventions; vascular interventions; procedural trends; workload

GÖÇ VE YOKSULLUK BAĞLAMINDA ÇOCUK GELİŞİMCİNİN TOPLUM TEMELLİ SOSYAL HİZMET ÇALIŞMALARINDAKİ KONUMU**THE ROLE OF CHILD DEVELOPMENT SPECIALIST IN COMMUNITY-BASED SOCIAL WORK IN THE CONTEXT OF MIGRATION AND POVERTY****Lecturer Muhammed KÖSTEKÇİ**

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ÖZET

Giriş:Göç ve yoksulluk, çocukların gelişim süreçlerini olumsuz etkileyen önemli risk faktörleri arasında yer almaktadır. Bu koşullarda yaşayan çocuklar; eğitim hizmetlerine erişimde güçlük, psikososyal sorunlar ve ev ortamında yeterli gelişimsel uyarılara ulaşamama gibi nedenlerle gelişimsel eşitsizliklerle karşı karşıya kalabilmektedir. Bu durum çocukların bilişsel, dil, sosyal-duygusal ve fiziksel gelişimlerini olumsuz etkileyerek uzun vadeli dezavantajlara yol açabilmektedir.

Toplum temelli sosyal hizmet uygulamaları dezavantajlı çocuk ve ailelerin desteklenmesinde önemli bir rol üstlenmesine rağmen, gelişimsel değerlendirme ve erken müdahale çalışmaları çoğu zaman geri planda kalmaktadır. Bu nedenle toplum temelli sosyal hizmet çalışmalarında çocuk gelişimcilerin daha aktif rol aldığı ve gelişimsel destek süreçlerini içeren erken müdahale bileşenlerinin güçlendirilmesine ihtiyaç duyulmaktadır.

Bu çalışmanın amacı, göç ve yoksulluk koşullarında yaşayan çocukların gelişimsel risklerini çocuk gelişimi perspektifinden ele alarak, çocuk gelişimcinin toplum temelli sosyal hizmet çalışmalarındaki rolünü incelemektir. Ayrıca gelişimsel tarama, risk belirleme ve erken müdahale süreçlerinin toplum temelli hizmetlere nasıl entegre edilebileceğine ilişkin bir çerçeve sunulması amaçlanmaktadır.

Göç ve yoksulluk kaynaklı gelişimsel eşitsizlikler, çocukların yaşam boyu gelişimlerini etkileyebilmekte ve kuşaklar arası aktarılabilir. Bu nedenle koruyucu ve önleyici toplum temelli hizmetlerin gelişim odaklı olarak yürütülmesi büyük önem taşımaktadır. Çalışma, çocuk gelişimcinin bu alandaki rolünü ortaya koyması ve uygulama ile politika geliştirme süreçlerine katkı sağlaması bakımından önemlidir.

ABSTRACT

Introduction:Migration and poverty are among the major risk factors that negatively affect children's developmental processes. Children living under these conditions may face developmental inequalities due to difficulties in accessing educational services, psychosocial problems, and insufficient developmental stimulation in the home environment. This situation can adversely affect children's cognitive, language, socio-emotional, and physical development, leading to long-term disadvantages. Although community-based social service practices play an important role in supporting disadvantaged children and families, developmental assessment and early intervention efforts often remain in the background. Therefore, there is a need to strengthen early intervention components that include developmental support processes and enable child development specialists to take a more active role in community-based social service practices.

The aim of this study is to examine the role of child development specialists in community-based social service practices by addressing the developmental risks faced by children living in conditions of migration and poverty from a child development perspective. In addition, the study aims to provide a framework for integrating developmental screening, risk identification, and early intervention processes into community-based services.

Developmental inequalities arising from migration and poverty can affect children's lifelong development and may be transmitted across generations. Therefore, it is of great importance that preventive and protective community-based services are implemented with a developmental focus. This study is significant in highlighting the role of child development specialists in this field and contributing to practice and policy development processes.

INFLUENCER KÜLTÜRÜNÜN ÇOCUK KİMLİK GELİŞİMİNE ETKİSİ VE SOSYAL HİZMETİN KORUYUCU ROLÜ**THE IMPACT OF THE “INFLUENCER” CULTURE ON CHILDREN’S IDENTITY DEVELOPMENT AND THE PROTECTIVE ROLE OF SOCIAL SERVICES****Lecturer Muhammed KÖSTEKÇİ**

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ÖZET

Dijitalleşme süreciyle birlikte Instagram gibi platformların sunduğu yeni iletişim deneyimleri, influencerlar aracılığıyla tüketim kültürünün yeniden tanımlanmasına yol açmıştır. Bu dönüşüm içerisinde çocukların dijital içeriklere dahil edilmesi, çocuk haklarının korunması noktasında sosyal hizmet disiplinine önemli sorumluluklar yüklemektedir. Çocuk Hakları Sözleşmesi'nde yer alan “çocuğun yüksek yararı” ve “mahremiyet hakkı” gibi temel ilkelerin, dijital dünyadaki yansımaları bu çalışmanın odağını oluşturmaktadır. Özellikle ebeveynlerin çocuklarına ait görsel ve verileri paylaşması olarak tanımlanan “*sharenting*” kavramı ve çocukların ticari birer meta haline getirilmesi, çocuk ihmal ve istismarı bağlamında riskli alanlar olarak değerlendirilmektedir. Sonuç olarak, dijital platformların bireylerin kimlik inşası ve sosyal etkileşim dinamikleri üzerindeki dönüştürücü etkisi, savunuculuk ve koruyucu-önleyici müdahale gerekliliğini artırmaktadır.

Anahtar Kelimeler: Influencer Kültürü, *Sharenting*, Çocuk Hakları, Kimlik Gelişimi, Sosyal Hizmet.**ABSTRACT**

With the digitalization process, new communication experiences offered by platforms such as Instagram have led to the redefinition of consumer culture through influencers. In this study, which is a qualitative literature review, the inclusion of children in digital content imposes significant responsibilities on the social work discipline in terms of protecting children's rights. The reflections of fundamental principles such as the “best interests of the child” and the “right to privacy” in the digital world, in the light of developmental theories such as Erikson and Bandura, constitute the focus of this research. Especially the concept of “*sharenting*” and the commodification of children are evaluated as risky areas in the context of child neglect and abuse. Consequently, the transformative effect of digital platforms on identity construction increases the necessity for advocacy and protective-preventive interventions.

Keywords: Influencer Culture, *Sharenting*, Child Rights, Identity Development, Social Work.

DİŞ KAYBININ ÖNLENMESİNDE ENDODONTİK TEDAVİNİN ROLÜ: DOĞAL DİŞİN
THE ROLE OF ENDODONTIC TREATMENT IN THE PREVENTION OF TOOTH LOSS: THE
IMPORTANCE OF PRESERVING THE NATURAL TOOTH

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ÖZET

Amaç: Bu derlemenin amacı, diş kaybının önlenmesinde endodontik tedavinin rolünü güncel literatür ışığında değerlendirmek ve kurtarılabilir dişlerde diş koruyucu yaklaşımın implant tedavisine göre biyolojik ve klinik avantajlarını tartışmaktır.

Gereç ve Yöntem: PubMed, Web of Science ve Google Scholar veri tabanlarında "tooth loss", "root canal treatment", "endodontic outcome" and "tooth survival" anahtar kelimeleri kullanılarak yayınlanmış sistematik derleme, meta-analiz ve uzun dönem klinik çalışmalar taranmış; elde edilen veriler başarı, sağkalım ve tedavi kararı başlıkları altında sentezlenmiştir.

Bulgular: Derin çürükler, apikal periodontitis, ileri periodontal hastalık, travma ve başarısız restorasyonlar diş kaybının başlıca nedenleridir. Diş kaybı; çiğneme fonksiyonunda azalma, alveol kemiği rezorpsiyonu, komşu dişlerde migrasyon, oklüzal bozukluklar ve yaşam kalitesinde düşüşle ilişkilidir. Literatürde primer kök kanal tedavisinde başarı oranı katı kriterlerde yaklaşık %75, esnek kriterlerde yaklaşık %85; 8–10 yıllık diş sağkalımı %87–93; retreatment başarısı %77–80; mikrocerrahi endodontide başarı %89–94 olarak bildirilmektedir. Dental operasyon mikroskobu, KIBT, nikel-titanyum döner ege sistemleri, ultrasonik aktivasyon, biyoseramik esaslı kanal patları ve rejeneratif yaklaşımlar öngörülebilirliği artırmıştır. Periodontal ligamentin ve proprioepsiyonun korunması, alveol kemiğinin daha iyi muhafaza edilmesi ve düşük biyolojik maliyet, kurtarılabilir dişin korunmasını implanta göre öncelikli kılmaktadır.

Sonuç: Endodontik tedavi yalnızca bir kanal tedavisi değil, doğal dişin korunmasına yönelik biyolojik ve maliyet etkin bir yaklaşımdır. Doğru tanı, uygun endikasyon ve kaliteli koronal restorasyon ile diş kayıplarının önemli bir bölümü önlenabilir; implant, doğal dişin alternatifi değil çekim sonrası bir tedavi seçeneği olarak konumlandırılmalıdır.

Anahtar Kelimeler: Diş kaybı, endodonti, kök kanal tedavisi, diş sağkalımı

ABSTRACT

Aim: The aim of this review was to evaluate the role of endodontic treatment in the prevention of tooth loss in the light of the current literature, and to discuss the biological and clinical advantages of a tooth-preserving approach over implant therapy in restorable teeth.

Materials and Methods: The PubMed, Web of Science and Google Scholar databases were searched using the keywords "tooth loss", "root canal treatment", "endodontic outcome" and "tooth survival". Systematic reviews, meta-analyses and long-term clinical studies were screened, and the retrieved data were synthesised under the headings of success, survival and treatment decision-making.

Results: Deep caries, apical periodontitis, advanced periodontal disease, trauma and failed restorations constitute the principal causes of tooth loss. Tooth loss is associated with reduced masticatory function, alveolar bone resorption, migration of adjacent teeth, occlusal disturbances and a decline in quality of life. Reported success rates for primary root canal treatment are approximately 75% under strict criteria and 85% under loose criteria; tooth survival at 8–10 years ranges between 87% and 93%; success of non-surgical retreatment is 77–80%; and success of endodontic microsurgery is 89–94%. The dental operating microscope, CBCT, nickel–titanium rotary systems, ultrasonic activation, bioceramic sealers and regenerative approaches have further improved predictability. Preservation of the periodontal ligament and proprioception, better maintenance of alveolar bone and a lower biological cost render the preservation of a restorable tooth preferable to implant placement.

Conclusion: Endodontic treatment is not merely root canal therapy, but a biological and cost-effective approach to preserving the natural tooth. With accurate diagnosis, appropriate indications and a high-quality coronal restoration, a substantial proportion of tooth loss can be prevented; the implant should be positioned not as an alternative to the natural tooth, but as a treatment option following extraction.

Keywords: Tooth loss, endodontics, root canal treatment, tooth survival

OPTICAL SPECTROSCOPY OF VIRAL NANOPARTICLES AND PERSPECTIVES OF THEIR RESONANCE-BASED INACTIVATION

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ABSTRACT

Viruses are nanoscale biological systems whose behavior is governed not only by biochemical interactions but also by well-defined physical principles. Owing to their finite size, elastic structure, and interaction with electromagnetic and acoustic fields, viral particles exhibit characteristic vibrational and oscillatory modes. In this article, viruses are treated as physical nanostructures with measurable vibrational fingerprints. We review and systematize theoretical, computational, and experimental approaches to vibrational spectroscopy of viral nanoparticles, including infrared absorption, Raman and resonance Raman spectroscopy, surface-enhanced Raman scattering, nonlinear sum-frequency generation, and electromagnetic modeling based on Maxwell–Helmholtz formulations. Particular attention is paid to computational studies revealing virus-specific resonance frequencies and to recent results suggesting mechanical vulnerability of enveloped viruses under resonant ultrasonic excitation. While direct therapeutic applications remain speculative, the concept of resonance-based physical interventions is discussed cautiously as a long-term perspective. The primary emphasis is placed on diagnostics, biosensing, and fundamental biophysical understanding. The presented framework supports the development of virus-specific spectral signatures and highlights future directions for interdisciplinary research at the interface of physics, nanotechnology, and biomedicine.

At nanometer scales, viral particles can be modeled as elastic bodies whose vibrational behavior is governed by continuum mechanics and electrodynamics. Depending on morphology, viruses may be approximated as spherical shells, core–shell systems, or elongated cylindrical structures. Normal modes of vibration include radial (breathing) modes, bending modes, and torsional modes, each associated with characteristic eigenfrequencies.

In addition to classical descriptions, quantum-mechanical considerations become relevant when confinement effects and wave–particle duality are considered. Although viral motion is non-relativistic, estimates of de Broglie wavelengths suggest that wave properties can be comparable to structural dimensions, supporting the use of diffraction and scattering concepts. These physical descriptions provide a foundation for interpreting spectroscopic measurements and computational simulations.

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**GREEN CHEMISTRY FRAMEWORK FOR WOMEN'S REPRODUCTIVE HEALTH:
ENGINEERING BIODEGRADABLE FORMULATIONS TO MITIGATE
TRANSGENERATIONAL BIOACCUMULATION OF ENDOCRINE-DISRUPTING
CHEMICALS**

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ABSTRACT

The widespread incorporation of endocrine-disrupting chemicals (EDCs)—including phthalates, parabens, and bisphenol A—into conventional pharmaceuticals and personal care products represents one of the most significant determinants of adverse reproductive outcomes in women. The World Health Organization (WHO) has expressed escalating concerns regarding the impact of these compounds on human health, particularly during pregnancy and early fetal development. These xenobiotics interfere with the endocrine system by mimicking or blocking endogenous hormones such as estrogens and androgens, leading to extensive consequences for female reproductive health. Human epidemiological evidence demonstrates that EDC exposure is associated with diminished ovarian reserve, impaired oocyte maturation, altered ovulation and implantation, and ultimately infertility. Specifically, phthalates are correlated with alterations in reproductive hormone profiles and oocyte-related outcomes, while bisphenol exposure has been linked to hormonal disturbances and polycystic ovary syndrome (PCOS). Beyond direct effects, evidence indicates that EDCs induce epigenetic modifications—including alterations in DNA methylation patterns, histone modifications, and non-coding RNA expression—within female reproductive tissues, leading to gene expression changes with long-term fertility consequences. These epigenetic disruptions can contribute to endometrial hyperplasia, infertility, endometriosis, uterine fibroids, and recurrent miscarriage. Moreover, persistent organic pollutants (POPs) possess the capacity to transmit their effects transgenerationally through epigenetic mechanisms, and recent studies have demonstrated a positive association between POP exposure and epigenetic aging biomarkers, with this association being significantly stronger in women.

The Stockholm Convention on Persistent Organic Pollutants provides a legal framework for restricting these compounds. Nevertheless, the present study proposes a paradigm shift toward the principles of green chemistry. Green chemistry, by promoting the use of renewable feedstocks and designing safer chemicals, directly contributes to the United Nations Sustainable Development Goals, particularly SDG 3 (Good Health and Well-being) and SDG 12 (Responsible Consumption and Production). We systematically outline a framework for the synthesis of biodegradable polymeric carriers and active ingredients derived entirely from renewable resources. Recent research underscores the necessity of replacing conventional plastic microbeads in cosmetic products with biodegradable alternatives. These novel macromolecules are structurally engineered to retain optimal therapeutic efficacy and protective properties while demonstrating absolute inertness toward estrogen receptor subtypes (ER- α and ER- β) and androgen receptors.

By integrating advanced computational toxicology, high-resolution molecular docking, and multi-compartment physiologically based pharmacokinetic (PBPK) transgenerational risk simulations, our comparative analysis reveals that the proposed bio-based alternatives achieve a substantial reduction in the predicted whole-body bioaccumulation factor relative to current commercial standards. Concurrently, rigorous in vitro biodegradation assays confirm that these candidates undergo complete mineralization into non-toxic, ecologically benign byproducts within a defined temporal window. Our findings collectively indicate that the strategic implementation of green chemistry represents a robust, economically viable primary prevention strategy capable of decisively disrupting the intergenerational cycle of chemical inheritance. This research urgently advocates for integrating eco-design metrics and "benign-by-design" criteria into regulatory frameworks, thereby safeguarding women's health and advancing the United Nations Sustainable Development Goals.

Keywords: Green Chemistry, Endocrine-Disrupting Chemicals (EDCs), Women's Reproductive Health, Transgenerational Toxicology, Biodegradable Polymers, Bioaccumulation, Sustainable Development Goals.

MENTAL WELL-BEING OF GENERATION BETA: CHALLENGES IN A HYPERCONNECTED WORLD

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ABSTRACT

Generation Beta are the children born after 2025, and it is expected to witness the highest level of connectivity through artificial intelligence, highly impactful cyber environments, and permanent online interactions. Hence, this technical progress will provide benefits besides increasing mental health challenges. The latter can be caused by constant association with digital devices, which might increase anxiety levels and stress, reducing attention span, quality of sleep, and leading to social isolation. The also growing impact of social media, online communities, and algorithmic content can cause the development of self-worth, identity, and emotional state. Moreover, there are worries regarding cyberbullying, addiction to the internet, privacy, and information overload which can create the inability to be psychologically strong and develop proper social relations. In addition to this, technologies can help to tackle mental issues through services like counseling, learning materials, and digital well-being applications. The research will primarily focus on mental challenges which can occur among Generation Beta as well as the way in which parents, educators, politicians, and technology producers can help to create a favorable digital landscape for them.

Keywords: Generation Beta, artificial intelligence, Technology

THERAPEUTIC POTENTIAL OF SHORT-CHAIN FATTY ACIDS IN PARKINSON'S DISEASE: AN INTEGRATED METABOLOMICS APPROACH

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ABSTRACT

The human gastrointestinal tract harbours diverse microbial communities whose full therapeutic potential remains underexplored. Growing evidence has highlighted bidirectional communication between the gut microbiome and the central nervous system, commonly referred to as the microbiota–gut–brain axis. This axis plays an important role in maintaining brain health and has been increasingly linked to the pathophysiology of Parkinson's disease (PD).

The association between gut microbiota and Parkinson's disease has emerged as a promising research area, with short-chain fatty acids (SCFAs), particularly butyrate, propionate, and acetate, being recognised as key microbial metabolites that may influence disease progression. These metabolites are produced through bacterial fermentation of dietary fibres and may exert neuroprotective effects by regulating neuroinflammation, oxidative stress, mitochondrial dysfunction, intestinal permeability, and synaptic activity. SCFAs can also modulate immune responses, influence microglial activation, reduce pro-inflammatory cytokine production, and contribute to epigenetic regulation through histone acetylation, thereby supporting neuronal survival and functional recovery.

This study aims to investigate the therapeutic potential of SCFAs in Parkinson's disease using an integrated metabolomics approach. Advanced analytical techniques such as gas chromatography–mass spectrometry (GC-MS) and liquid chromatography–mass spectrometry (LC-MS) will be employed to identify metabolic perturbations associated with PD. The detected metabolites will be analysed based on their mass-to-charge ratio (m/z), and SCFA levels will be correlated with clinical and biochemical markers, including oxidative stress parameters, inflammatory indicators, motor dysfunction, and α -synuclein-related pathology.

It is expected that patients with Parkinson's disease may exhibit altered or reduced SCFA profiles, contributing to gut dysbiosis, neuroinflammation, and disease progression. Restoration of SCFA balance may help reduce oxidative stress, inflammatory burden, α -synuclein aggregation, and motor decline, while supporting gut microbial homeostasis. This approach may provide a novel, non-invasive strategy for PD management and contribute to the development of microbiome-targeted therapeutics and personalised interventions based on metabolic signatures.

Keywords: Gut-Brain Axis Neurodegenerative Diseases Metabolomics Short Chain Fatty Acids Parkinson's Diseases

ACCESS TO CENTRAL-LEVEL HOSPITALS AMONG OLDER ADULTS IN RURAL VIETNAM

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ABSTRACT

Based on secondary data of Institute of Sociology, Vietnam Academy of Social Sciences on the 2013 Population Health Survey in Thai Nguyen, Khanh Hoa and Vinh Long provinces, the study analyzes the patterns of utilization of central level hospitals of the elderly in rural areas. The results indicate that, for older adults living in rural areas, the use of central level hospitals generally increases with the severity of the illness, reaching relatively high and stable levels among those with chronic conditions, whether newly diagnosed or pre-existing, compared to those with acute illnesses or minor injuries. Importantly, most older adults do not consider the geographical distance to central-level hospitals as too far, but they have serious problems with the actual travel time, with most of them having to travel more than one hour to reach these institutions. Also the study reveals obvious differences between social groups. Among those that are ill acutely, women are more likely than men to seek care at central-level hospitals rather than lower-level facilities, but this gender difference largely disappears among those with newly diagnosed chronic conditions. Age and physical health also are significant barriers to access. The lowest access rate to hospitals at the central level was observed in the age group of 80 years and over, compared to a higher tendency to seek care at these hospitals among those aged 60–69 years. The overall study confirms the obvious gap between the great demand for specialized healthcare and the logistical difficulties of travel time and physical limitations that elderly people in rural areas experience.

Keywords: central-level hospitals; older adults; rural areas; healthcare access.

DISCOVERY OF NEW GROUP OF ORGANOFLUORINE DERIVATIVES OF HEPTAENE MACROLIDE ANTIFUNGAL ANTIBIOTIC AMPHOTERICIN B**Dr. Valery V. BELAKHOV**

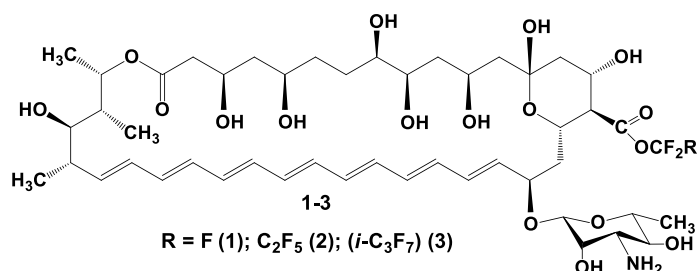
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ABSTRACT

The heptaene macrolide antibiotic amphotericin B, used in the clinic for over 60 years, is still considered the “gold standard” of antifungal therapy. This emphasizes its powerful fungicidal effect, due to a direct effect on the permeability of the cell membrane (formation of water channels) and the induction of reactive oxygen species in the cell. Amphotericin B, when used systemically, is active against most yeast-like, filamentous and dimorphic fungi, and unlike other polyene macrolide antibiotics, this antifungal agent is used intravenously, which significantly increases its therapeutic effectiveness in the treatment of deep mycoses. At the same time, the high toxicity (mainly nephrotoxicity) of amphotericin B, low absorption from the gastrointestinal tract, a number of adverse reactions, as well as decreased sensitivity to it pathogenic fungal microorganisms, stimulated intensive searches for various derivatives of amphotericin B.

We have shown that as a result of reactions of amphotericin B with base-protected organofluorine alcohols using Lewis aprotic acids as catalysts, organofluorine derivatives of this heptaene macrolide antibiotic (**1-3**) are formed.



As shown by the results of pharmacological tests, the acute toxicity (LD₅₀) of organofluorine derivatives of amphotericin B (**1-3**) was 5-6 times less than that of the parent antibiotic, and varied from 1150 to 1175 mg/kg (mice, intraperitoneal).

Biological studies have shown that organofluorine derivatives of amphotericin B indicated pronounced antifungal activity against 33 test cultures of pathogenic fungi belonging to various genera. It should be especially emphasized that organofluorine derivatives of amphotericin B (**1-3**) showed high activity against yeast-like fungi of the genus *Candida* and fungi of the genus *Aspergillus*, and minimum fungistatic concentrations were in range from 0.05 to 6.25 (μg/mL). These results are very important because in recent years, resistance of a number of clinically isolated strains of these two genera of pathogenic fungi to the action of amphotericin B has been discovered.

Moreover, yeast-like fungi of the genus *Candida* and fungi of the genus *Aspergillus* are known to cause severe invasive mycoses (candidiasis and aspergillosis, respectively), as well as opportunistic mycoses in AIDS patients, which are characterized by high mortality. The additional advanced biological investigations *in vivo* will reveal therapeutic effectiveness organofluorine derivatives amphotericin B (**1-3**) as promising antifungal agents for medical mycology.

Keywords: Amphotericin B, Organofluorine Derivatives, Toxicity, Antifungal Activity, Medical Mycology, Resistance, AIDS Patients

**DEVELOPMENT OF A NEW UNIFIED TECHNOLOGICAL METHOD FOR THE
ISOLATION AND CHEMICAL PURIFICATION OF POLYENE MACROLIDE
ANTIBIOTICS WITH PROTECTION AGAINST INACTIVATION**

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ABSTRACT

Amphotericin B, nystatin, pimaricin, candicidin, levorin, mycoheptin, and other polyene macrolide antibiotics (PMAs) are widely used in medical practice to treat both superficial and deep mycoses. PMAs are polyfunctional compounds characterized by a large lactone ring (ranging from 26 to 33 atoms) and the presence of conjugated double bonds (ranging from 4 to 7). PMAs molecules are typically divided into two parts: the rigid unsaturated section of the macrolactone ring, which exhibits hydrophobic properties, and the flexible polyol section, which confers hydrophilicity upon the molecule. Other important structural components of PMAs are the carboxyl group and the amino group, which is part of the carbohydrate fragment. The presence of polyfunctional groups sensitive to external influences within the PMAs structure accounts for the high lability of these antifungal agents. Consequently, investigating the inactivation processes of PMAs and developing methods to protect them against destabilizing factors starting from the biosynthesis stage are very important tasks.

To optimize the isolation and chemical purification processes for PMAs following their microbiological synthesis, studies were conducted in the following areas: 1) salting out impurity compounds from methanolic (or acetonic) PMAs extracts using metal chlorides or sulfates; 2) fractional precipitation of impurities using deionized water or 1.0-2.0% aqueous aluminum sulfate solutions at a volume of 10-15% relative to the PMAs extract volume and a pH of 5.0-5.5; 3) treatment of PMA paste with 0.2-2.0% aqueous solutions of the complexing agent sodium tripolyphosphate within a pH range of 7.5-8.5; 4) addition of antioxidants (sterically hindered phenol derivatives) at the mycelium extraction stage to prevent inactivation caused by free radicals; 5) heat treatment of the PMAs paste with methylene chloride in the presence of a catalytic amount of a mineral acid; 6) carrying out the entire process of PMAs isolation and chemical purification under protection against oxidation, under conditions of high-integrity containment and in an inert gas atmosphere (nitrogen or argon).

The report outlines the specific characteristics, chemical structure, and physicochemical properties of PMAs and discusses their influence on the isolation and chemical purification processes of these antifungal drugs. The mechanisms of PMAs inactivation associated with oxidative degradation, the action of free radicals, and the *cis-trans* isomerization of the polyene bond system are examined. The studies conducted have demonstrated that the developed unified method for producing PMAs makes it possible to increase their yield and improve their physicochemical characteristics and biomedical properties, ensuring full compliance with pharmacopoeia.

Keywords: Polyene Macrolide Antibiotics, Medical Mycology, Microbiological Synthesis, Oxidative Degradation, Prevention of Inactivation, Isolation, Chemical Purification

DESIGN, SYNTHESIS, BIOLOGICAL ACTIVITY, AND USE PROSPECTS OF NEW FUNCTIONALLY SUBSTITUTED MONOSACCHARIDES AS HIGHLY EFFECTIVE AND ENVIRONMENTALLY SAFE PESTICIDES

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The widespread use of synthetic organic compounds as pesticides has led to a significant increase in global production of food and industrial raw materials. However, over time, the adverse effects of the intensive use of chemical plant protection agents have become apparent: 1) accumulation in soil, bodies of water, and groundwater; 2) emergence of populations of harmful organisms resistant to them; 3) appearance of new economically significant pest species; 4) harmful effects on beneficial flora and fauna; 5) potential threat to human health. In view of this, the development of new low-toxicity, highly effective, multifunctional, and environmentally safe pesticides have attracted the attention of researchers in recent years.

Pesticides used in agriculture for plant protection belong to various classes of chemical compounds; however, carbohydrates, specifically monosaccharides, are entirely absent from the range of chemical plant protection agents. In this regard, we have synthesized low-toxicity, functionally substituted monosaccharides based on xylose and ribose, containing aryl-substituted, thiophosphate, phosphate, phosphonate groups, and also organo-fluoro-, organo-sulfur-, and organo-silicon groups, with the aim of investigating a broad spectrum of pesticidal activities, including fungicidal, insecticidal, acaricidal, nematocidal, and antibacterial effects. On the other hand, it was of undoubted interest to investigate the growth-regulating activity of potential pesticides derived from monosaccharides. The discovery of plant-growth-regulating effects alongside various types of pesticidal activity offers the potential for a multifaceted benefit from the use of such compounds not only protecting crops against diseases and harmful insects, but also increasing yields. Furthermore, monosaccharides readily degrade in the soil without forming toxic by-products, thereby ensuring environmental safety.

Biological tests have shown that the synthesized aryl-substituted xylose derivatives, containing either two nitro groups or three chlorine atoms on the phenyl ring, exhibit high fungicidal activity at concentrations of 0.05-0.1% against phytopathogenic fungi that cause diseases in agricultural crops: cucumber powdery mildew (caused by *Erysiphe cichoracearum*), tomato late blight (caused by *Phytophthora infestans*), and broad bean gray mold (caused by *Botrytis fabae*). It was found that organophosphorus derivatives of ribose exhibited high activity at a concentration of 0.1% against the *Alternaria* blight pathogens: *Alternaria alternata* and *Alternaria solani*, with zones of growth inhibition for the fungal phytopathogens ranging from 20.2 to 23.4 mm. We have identified high insecticidal activity of functionally substituted monosaccharides, primarily phosphate derivatives of ribose, as well as fluorine-, sulfur-, and organosilicon-containing ribose derivatives, against harmful arthropods, specifically the vetch aphid (*Megoura viciae* Buckt.). For instance, treatment with a 0.1% aqueous suspension of ribose phosphate derivatives resulted in 85-100% mortality of the vetch aphid within two hours. Additional biological tests revealed the stimulating effect of phosphate derivatives of ribose on the growth and development of vegetable crops: cucumber, zucchini, and pepper. It was shown that treating cucumber seeds with these compounds increased germination by 26-51%, zucchini seeds by 23-49%, and pepper seeds by 23-43%. The application of aryl-substituted derivatives of xylose leads to a 7-10% increase in the growth rate of cabbage cell cultures and their specific respiration rate. Pharmacological studies established that the obtained monosaccharide derivatives are compounds of low toxicity, with acute toxicity (LD₅₀) values ranging from 910 to 1435 mg/kg (white mice, intraperitoneal administration).

Thus, synthesized new functionally substituted monosaccharides can be regarded as promising multifunctional compounds for the development of highly effective, environmentally safe pesticides for agricultural crop protection.

Keywords: Pesticides, Environmental Safety, Functionally Substituted Monosaccharides, Fungicidal Activity, Insecticidal Activity, Growth-Regulating Activity, Toxicity, Crop Protection

ANTIOXIDANT AND PROTEOLYTIC ENZYME ACTIVITIES ACROSS ORGANS OF OCTOPUS VULGARIS AS INDICATORS OF PHYSIOLOGICAL STATUS

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ABSTRACT

Octopus vulgaris (poulpe) is increasingly used as a bioindicator species in marine ecotoxicology studies, given its wide distribution, predatory position in the food web, and pronounced organ-specific physiological responses. This study examined two enzymatic biomarkers, catalase (antioxidant defense) and protease (proteolytic activity), across five organs of *Octopus vulgaris*: gill, digestive gland, muscle, gonad and mantle. Catalase activity was highest in the gonads (5.178 $\mu\text{mol H}_2\text{O}_2/\text{min}/\text{mg}$ protein) and muscle (4.789), intermediate in the digestive gland (3.624), and lowest in the gill (2.718) and mantle (1.424), reflecting the antioxidant demand associated with gametogenesis and sustained muscular activity. Protease activity followed a markedly different pattern, peaking in the mantle (1116.7 mg/g), followed by the digestive gland (761.1), gill (658.3) and muscle (613.9), with the lowest activity in the gonads (583.3), consistent with the mantle's role in locomotion-related protein turnover and the digestive gland's role in protein hydrolysis. ANOVA revealed significant differences between organs for both enzymes ($p < 0.05$). These contrasting organ-specific profiles for antioxidant and proteolytic activity highlight the physiological specialization of *Octopus vulgaris* tissues and provide a baseline for future biomonitoring studies using this species as a bioindicator of marine environmental stress.

Keywords: *Octopus vulgaris*; Catalase; Protease; Enzymatic biomarkers; Bioindicator; Oxidative stress.

SYNTHESIS AND BIOLOGICAL EVALUATION OF PYRIDYLPYPERAZINE-BASED CARBODITHIOATES AS UREASE INHIBITORS

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ABSTRACT

The urease enzyme is acknowledged as an effective therapeutic agent to be used in the treatment of the virulent *Helicobacter pylori* bacterium due to its central contribution to the colonization and growth of the bacterium in the gastric mucosa. To manage the adverse effects of bacterial infections, urease prohibition demonstrates itself as one of the feasible and efficient methods. The present study was intended to obtain the synthesis of pyridylpiperazine-linked carbodithioate analogs 5a-5n and 7a-7n, which could be used as possible candidates of drug in the prevention of bacterial infections by urease inhibition. Their structural explication using gas chromatography-mass spectrometry (GC-MS) was then tested using 7a-7n to determine their capability to prevent the urease enzyme. During *in vitro* assessment by using thiourea as the standard drug, it was noted that all the compounds synthesized showed a great activity of inhibition in comparison to the reference drug. Out of the compounds tested, 5j (with an o-tolyl moiety) was found to be the most efficient inhibitor exhibiting high urease inhibition with an IC₅₀ of $5.16 \pm 2.68 \mu\text{M}$. This is a significantly lower IC₅₀ value than thiourea ($23 \pm 0.03 \mu\text{M}$), the most potent potential of inhibition. In molecular docking of 5j in the active site of urease, a vast number of interesting interactions have been observed.

ISOLATION, CHARACTERIZATION AND THERAPEUTIC APPLICATIONS OF BACTERIOPHAGES AGAINST PATHOGENIC BACTERIA OF THE ESKAPE GROUP

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ABSTRACT

Resistance to antimicrobials, including commonly used antibiotics, is a serious global health problem with significant risks to the public.

The emergence of antibiotic resistance compromises our ability to treat common infections, increases the cost of treatment, disrupts the progress we have made in the fight against disease, and thus poses a serious problem for our communities, healthcare systems and economies.

According to the WHO, every year antibiotic-resistant infections cause more than 750,000 deaths, equivalent to more than one death every minute, a figure predicted to rise to 10 million by 2050.

Faced with the scarcity of new antimicrobials on the market and the rapid evolution of bacterial resistance mechanisms, alternative strategies to antibiotic therapy are being developed for the treatment of bacterial infections. These new approaches include the fight against virulence factors, vaccination and modulation of host immunity, as well as protection or regulation of the microbiota and phagotherapy.

Phage therapy is based on the use of natural phages to infect and lyse bacteria at the site of infection. Advances in biotechnology have further expanded the repertoire of potential phage therapies to include new strategies using bioengineered phages and purified phage lytic proteins. Current research into the use of phages and their lytic proteins, particularly against multi-drug resistant bacterial infections, suggests that phage therapy could be used as an alternative or complement to antibiotic treatments.

The aim of this study is to build up a bank of bacteriophages specific to bacteria in the ESKAPE group and then to characterize them functionally and genetically.

Keywords :Antibiotic resistance; Bacteriophages; Phagotherapy; ESKAPE pathogens; Wastewater.

CONSERVED MOLECULAR PATHWAYS OF COAL DUST EXPOSURE: CROSS-SPECIES INSIGHTS FROM ZEBRAFISH AND HUMAN TRANSCRIPTOMICS

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ABSTRACT

Coal, used as fuel, containing organic compounds such as polycyclic aromatic hydrocarbons (PAHs), aliphatic hydrocarbons, aromatic nitro compounds, carboxylic acids, alcohols, aldehydes and ketones, pollutes our environment significantly. During extraction processes environmental damages are caused due to release of certain organic compounds (PAHs) and heavy metals (Zn, Sr, As, Se, Cu, Ni, Li, Rb, Sb, Cr and Co etc.).

Although many data are available on different animal models such as rat, earth worm, as well as human lung cells in in vitro system due to presence of coal dust and in zebra fish model system during exposure to aqueous coal dust extract. The latter study reveals in alternation of gene expression related with development, function of hematological system and connective tissues. But a major gap remains in our knowledge system due to lack of RNA-seq or GEO-based transcriptomic datasets from coal-exposed human populations.

Zebrafish embryo is considered as model for toxicity specifically genotoxicity study, as toxicities of environmental pollutants are well conserved in zebrafish and human. Comparative pathway enrichment analysis revealed a high degree of conservation in the molecular responses to coal exposure between zebrafish and humans. Ortholog mapping of zebrafish differentially expressed genes (DEGs) to human homologs demonstrates significantly overlap in pathways associated with apoptosis, oxidative stress, DNA damage response, and inflammatory mechanisms. These shared pathways are consistently enriched across zebrafish whole-organism transcriptomic data (GSE94997) and human datasets derived from coal miner cohorts and coal dust–exposed hepatic cell models, indicating evolutionarily conserved toxicological mechanisms.

**ANTIMICROBIAL RESISTANCE IN ANIMAL PRODUCTION: MECHANISMS,
SELECTIVE
PRESSURES, AND MITIGATION STRATEGIES WITHIN THE ONE HEALTH
FRAMEWORK**

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ABSTRACT

Antimicrobial resistance (AMR) represents one of the most significant challenges facing modern animal production and global public health. The increasing emergence of resistant bacterial strains compromises therapeutic efficacy, threatens animal welfare, reduces productivity, and facilitates the dissemination of resistant pathogens and resistance genes across animal, human, and environmental interfaces.

This review examines the principal mechanisms of bacterial resistance, including enzymatic antibiotic inactivation, efflux systems, reduced membrane permeability, and target-site modification. Particular attention is given to the selective pressures generated by inappropriate antimicrobial use, especially routine prophylactic administration, growth-promotion practices, and prolonged exposure to subtherapeutic doses. These factors accelerate the selection of resistant microorganisms and contribute to the development of multidrug-resistant populations. The review further explores the epidemiology of resistance dissemination through both clonal expansion and horizontal gene transfer, highlighting the role of food production systems, water resources, soil ecosystems, and the food chain in the circulation of resistance determinants.

Current evidence indicates that antimicrobial stewardship, biosecurity enhancement, diagnosis-guided therapy, and integrated surveillance programs are among the most effective strategies for limiting AMR emergence. In addition, vaccines, probiotics, and bacteriophage-based approaches provide promising alternatives that reduce dependence on conventional antibiotics. Within the One Health framework, preserving antimicrobial effectiveness requires a transition from routine and preventive overuse toward evidence-based and responsible antimicrobial practices. Such an approach is essential not only for safeguarding animal health and production efficiency but also for protecting public health and ensuring the long-term sustainability of livestock systems.

Keywords: antimicrobial resistance- One Health- animal production- antimicrobial stewardship- biosecurity

AI-POWERED CONSUMER INSIGHTS AND THE MARKETING OF GREEN INNOVATIONS: A STEAM APPROACH TO SUSTAINABLE CONSUMPTION IN NIGERIA

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ABSTRACT

This conceptual paper examines the intersection of artificial intelligence (AI), consumer insights, and green marketing within the Nigerian context, proposing a framework for leveraging AI-powered analytics to promote sustainable consumption patterns. Moving beyond traditional marketing paradigms, the paper adopts a STEAM (Science, Technology, Engineering, Arts, and Mathematics) approach that integrates technological innovation with social and humanistic considerations. Drawing on stakeholder theory, signaling theory, and the theory of planned behaviour, the paper argues that AI-driven consumer insights can bridge the attitude-behaviour gap in sustainable consumption by enabling personalised, culturally relevant green marketing interventions. The paper identifies key opportunities and challenges for Nigerian firms, including the potential for AI to enhance transparency, build consumer trust, and drive market differentiation through green innovation. It concludes with a conceptual framework and propositions for future research, contributing to the emerging discourse on AI-enabled sustainability marketing in developing economies.

Keywords: Artificial Intelligence, Consumer Insights, Green Marketing, Sustainable Consumption, steam.

THE ROLE OF REHABILITATION AND ASSISTIVE TECHNOLOGY IN IMPROVING QUALITY OF LIFE AMONG PEOPLE WITH PHYSICAL DISABILITIES

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ABSTRACT

Physical disabilities can significantly affect mobility, independence, participation in daily activities, and overall quality of life. Rehabilitation and assistive technology play an important role in addressing these challenges by supporting functional recovery, improving independence, and facilitating social participation. This paper examines the role of rehabilitation interventions and assistive technologies in improving quality of life among people with physical disabilities. Rehabilitation approaches, including physiotherapy, occupational therapy, exercise-based interventions, and community-based rehabilitation, are considered alongside assistive technologies such as wheelchairs, prosthetic limbs, orthotic devices, mobility aids, and communication technologies. The paper explores how these interventions can improve physical functioning, reduce activity limitations, promote psychological well-being, and increase participation in education, employment, and community life. It also considers barriers that may limit access to rehabilitation and assistive technologies, including high costs, inadequate healthcare infrastructure, limited availability of trained professionals, lack of awareness, and accessibility challenges, particularly in low-resource settings. Evidence suggests that appropriately selected rehabilitation programs and assistive devices can enhance independence, mobility, self-confidence, and participation in society. However, their effectiveness depends on individualized assessment, appropriate training, continued professional support, affordability, and accessibility. A multidisciplinary and person-centered approach is therefore essential to address the diverse needs of individuals with physical disabilities. Greater investment in rehabilitation services, affordable assistive technologies, healthcare professional training, and inclusive policies may help reduce disability-related inequalities. Overall, integrating rehabilitation with suitable assistive technology represents an important strategy for promoting health, independence, social participation, and improved quality of life among people with physical disabilities.

Keywords: Physical disabilities; Rehabilitation; Assistive technology; Quality of life.

DESIGN OF NOVEL HYDRAZIDE–HYDRAZONE DERIVATIVES AGAINST MGC803 GASTRIC CANCER CELLS USING 3D-QSAR, ADMET, NETWORK PHARMACOLOGY, DOCKING AND MD SIMULATIONS

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ABSTRACT

A series of 44 hydrazide-hydrazone derivatives containing 5H-chromen-5-one was analyzed to determine its antiproliferative activity against MGC803 gastric cancer cells. A robust 3D-QSAR model with high predictive capacity (R^2 and Q^2) was developed and used to design new compounds (PR1–PR4). After an ADMET screening, the non-toxic compounds were targeted predicted using PharmMapper. A network pharmacology analysis identified several pivotal genes, of which HSP90AA1 had the highest degree value. Given its central role in stabilizing multiple oncogenic proteins involved in gastric cancer progression, as well as its suitability for structure-based studies, HSP90AA1 was selected for molecular docking and molecular dynamics simulations. The binding behavior of the most active predicted compound was compared to that of geldanamycin, a known inhibitor of HSP90. In addition, molecular docking was performed for the HSP90AA1 protein (1YET) in complex with the predicted molecules (PR1-PR4) in comparison with the most active molecule (34) and the reference medicine, geldanamycin. These results demonstrate a high binding affinity and remarkable interaction profiles within the active sites of the HSP90AA1. To further evaluate the dynamic stability of these complexes, we performed molecular dynamics simulations over a 100 ns period, thus confirming stable attachment modes and durable contact networks. The MM-PBSA approach demonstrated beneficial interactions between the chosen PR1 ligand and the 1YET protein. This comprehensive method underlines the diverse potential of the substances examined and identifies the most promising candidates for ultimate experimental validation in the fight against gastric cancer.

Keywords: MGC803 cells, Gastric cancer, ADMET, Network pharmacology, Docking, Dynamic simulation,

COMPARATIVE ASSESSMENT OF DECONTAMINATION STRATEGIES FOR THE ISOLATION OF MYCOBACTERIUM SPP. FROM DIVERSE ANIMAL SAMPLES

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ABSTRACT

Introduction: Non-tuberculous mycobacteria (NTM) are ubiquitous environmental microorganisms that can act as opportunistic pathogens in both humans and animals. This study aimed to optimize the isolation of Mycobacterium spp. from fecal samples by comparatively evaluating three decontamination protocols.

Methods: Fecal samples collected from different animal species were subjected to the three decontamination protocols and subsequently cultured on Löwenstein–Jensen medium. The effectiveness of each protocol was assessed based on mycobacterial recovery and the extent of residual bacterial and fungal contamination.

Results: Although the overall contamination rate was relatively low, marked differences were observed among the decontamination protocols. The modified Petroff method showed the lowest decontamination efficiency, as evidenced by higher residual contamination and reduced effectiveness in recovering mycobacteria. In contrast, the acid-based protocols using 5% oxalic acid and sulfuric acid demonstrated superior decontamination performance while maintaining or improving mycobacterial recovery.

Conclusion: Acid-based decontamination protocols, particularly those using oxalic and sulfuric acids, appear to be more effective than the modified Petroff method for the isolation of NTM from fecal matrices. Optimizing the decontamination step may improve the recovery and detection of mycobacteria in animal-derived samples, thereby supporting epidemiological surveillance and contributing to a better understanding of the potential public-health significance of environmental and animal-associated NTM.

Keywords: NTM, LJ, decontamination methods, fecal samples.

CORRELATION OF HEMATOLOGICAL INFLAMMATORY INDICES WITH PHYSICAL ACTIVITY LEVEL AND ANGIOGRAPHIC SEVERITY IN PATIENTS WITH CORONARY ARTERY DISEASE

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Introduction: While haematological inflammatory indices have been linked to cardiovascular outcomes, their relationship with habitual physical activity remains less well understood. This study compared five inflammatory indices to evaluate their association with physical activity level, angiographic severity of CAD, and left ventricular ejection fraction (LVEF).

Methods: A cross-sectional study was conducted in 160 patients with angiographically confirmed CAD. Physical activity was classified as sedentary, mild, or moderate-to-vigorous. Neutrophil-to-lymphocyte ratio (NLR), platelet-to-lymphocyte ratio (PLR), systemic immune-inflammation index (SII), systemic inflammation response index (SIRI), and aggregate index of systemic inflammation (AISI) were calculated from routine blood counts. Group comparisons, correlation analyses, and multivariable ordinal logistic regression were performed after adjustment for age, diabetes, and CAD duration.

Results: All five inflammatory indices showed a graded inverse association with physical activity, with NLR demonstrating the strongest correlation ($r = -0.463$, $p < 0.001$), followed by SII ($r = -0.449$, $p < 0.001$). Conversely, inflammatory burden increased with angiographic severity, with SII ($r = 0.346$, $p < 0.001$) and NLR ($r = 0.341$, $p < 0.001$) showing the strongest positive correlations. Higher inflammatory indices were also associated with lower LVEF, particularly NLR ($r = -0.763$, $p < 0.001$) and SII ($r = -0.730$, $p < 0.001$). After adjustment for age, diabetes, and CAD duration, higher inflammatory indices remained independently associated with lower physical activity, with SII showing the strongest association.

Conclusion: Higher inflammatory indices were associated with lower physical activity, greater angiographic severity, and impaired left ventricular systolic function in patients with CAD. Among the five biomarkers evaluated, NLR and SII showed the strongest and most consistent associations, supporting their potential as inexpensive and readily available markers of inflammatory burden in routine cardiovascular practice.

Keywords: Coronary artery disease, Physical activity, Haematological inflammatory indices, Angiographic severity, Neutrophil-to-lymphocyte ratio (NLR), Systemic immune-inflammation index (SII)

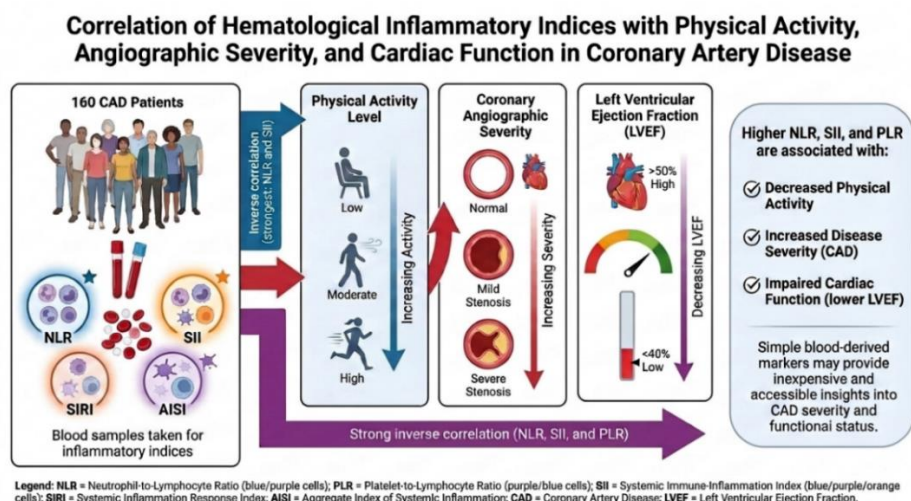


Figure 1: Graphical Abstract

POST-OPERATIVE APPEARANCE AND FACIAL SATISFACTION OUTCOMES AMONG ADULTS WITH REPAIRED CLEFT LIP AND PALATE IN JIGAWA STATE, NIGERIA**Rabiu HARUNA**

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ABSTRACT

Surgical repair of cleft lip and palate (CLP) aims to restore facial aesthetics and symmetry; however, patient-reported postoperative outcomes regarding appearance in adulthood remain under reported in Nigeria. Objective: This study assessed post-operative appearance of the face, lips, nose, nostrils, teeth, and jaws, as well as the overall level of satisfaction with facial appearance among adults with repaired cleft lip and palate in Jigawa State, Nigeria. Methods: A descriptive cross-sectional design was employed among adults aged 18–29 years who had undergone cleft repair through Smile Train-supported missions in Jigawa State. Data were collected using the validated CLEFT-Q questionnaire focusing on appearance scales and the facial satisfaction domain. Descriptive statistics summarized outcomes, while inferential analysis tested associations between facial appearance and health-related quality of life (HRQoL) at $p < 0.05$. Results: Most respondents reported significant satisfaction with their post-operative facial appearance and reduced stigma. High satisfaction scores (weighted mean ≥ 2.5) were recorded for the appearance of the face, cleft scar, and jaws. A statistically significant positive relationship was found between facial appearance and overall HRQoL ($p < 0.05$). However, a subset of participants expressed residual dissatisfaction with nasal symmetry and visible lip scars. Conclusion: Surgical repair significantly enhances aesthetic outcomes and facial satisfaction among young adults. Nevertheless, persistent concerns regarding scarring and asymmetry highlight the importance of viewing cleft treatment as a continuous, multidisciplinary care process rather than a one-time surgical event.

Keywords: Cleft lip, Cleft palate, post-operative outcomes, facial appearance, patient satisfaction, health-related quality of life.

**COMPUTATIONAL STRUCTURE – BIOLOGICAL ACTIVITY AND RETROSYNTHESIS
INVESTIGATIONS OF 1,2,3-TRIAZOLE-QUINOLINE HYBRID MOLECULES AS
POTENTIAL RESPIRATORY VIRUS INHIBITORS**

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ABSTRACT

SARS-Cov-2 has become a severe problem that motivates researchers to find new antiviral drugs as effective therapies. A computational study was carried out for disubstituted 1,2,3-triazole-quinoline molecules as SARS-Cov-2 inhibitors, where 3D-QSAR approach investigated the quantitative structure-biological activity as M^{pro} protease inhibitors. The study of the 3D-QSAR approach was performed for Comparative Molecular Field Analysis (CoMFA) and Comparative Molecular Similarity Index Analysis (CoMSIA), where CoMFA model values ($Q^2=0.53$; $R^2 = 0.97$) and the best values of the CoMSIA model ($Q^2 = 0.67$; $R^2 = 0.93$). Molecular docking and a molecular dynamics analysis were carried out to study the stability of the ligands inside the biological M^{pro} active site, and an in-silico ADMET study explored the pharmacological and physicochemical properties of the proposed molecules as a new anti-viral agent. This exploits good predictability. Subsequently, the CoMFA and CoMSIA models were evaluated by an external validation using the creditors of A. Goldparikh and A. Tropsha. A molecular docking study was carried out for the 18 derivatives of 1,2,3-triazole-quinoline and the five new candidates proposed with the biological target M^{pro}. MD molecular dynamics assesses the reliability of this proposition and ADMET physicochemical properties and drug similarity. Finally, two online platforms were used to suggest the best possible synthesis route based on the retrosynthesis route.

Keywords: Sars-Cove-2, Retrosynthesis, Molecular Docking, ADMET, Molecular Dynamics

COMPARATIVE EFFECTS OF KINETIC CHAIN EXERCISES ON PAIN AND ARTERIAL OCCLUSION PRESSURE IN ACUTE ANTERIOR KNEE PAIN: A RANDOMIZED CONTROLLED TRIAL

ABSTRACT

Background: Anterior knee pain (AKP) is a prevalent and frequently persistent complaint for which exercise is the first-line treatment, although the optimal loading modality is unresolved. Blood flow restriction (BFR) enables a training stimulus at low external loads tolerable to a symptomatic knee and arterial occlusion pressure (AOP); which individualizes BFR prescription, may also show physiological adaptation.

Objective: To compare open kinetic chain (OKC), closed kinetic chain (CKC), and combined OKC+CKC exercises, each delivered with BFR, on pain intensity and AOP in adults with acute AKP.

Methods: In a triple-blind, three-arm randomized controlled trial, 96 adults aged 18-40 years with acute AKP were allocated 1:1:1 to OKC, CKC, or combined groups, all delivered with BFR at 80% of AOP and conventional physiotherapy, three times weekly for four weeks. Pain (measured by Numeric Pain Rating Scale, NPRS) and AOP (measured by Doppler ultrasound) were assessed before and after intervention and analyzed by repeated-measures analysis of variance (ANOVA).

Results: Pain decreased in all groups (Time: $F(1,93) = 889.03$, $p < .001$) with a significant Time $\times$ Group interaction ($F(2,93) = 37.88$, $p < .001$). The combined group reached a mean of 1.88, versus 4.03 (OKC) and 3.81 (CKC); combined protocol was superior to both ($p < .001$), which did not differ from one another ($p = 1.000$). AOP increased in all groups (interaction $F(2,93) = 59.71$, $p < .001$) but only combined vs OKC comparison reached significance ($p = .001$).

Conclusion: Combined kinetic chain exercise with BFR produced greatest reduction in pain. AOP also increased significantly over time with combined group giving best impact.

Keywords: anterior knee pain; patellofemoral pain; blood flow restriction; kinetic chain exercise; arterial occlusion pressure; pain

HEALTH AND WELLNESS TOURISM IN KERALA: THE ROLE OF AYURVEDA AND MEDICAL SCIENCE

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ABSTRACT

Health and wellness tourism has emerged as an important segment of the global tourism industry, driven by increasing interest in preventive healthcare, holistic well-being, medical treatment, and healthy lifestyles. Kerala has significant potential in this sector due to its well-established healthcare infrastructure, rich Ayurvedic traditions, natural resources, and diverse wellness practices. The integration of modern medical science with Ayurveda provides an opportunity to develop a distinctive and comprehensive health and wellness tourism destination. This paper examines the role of Ayurveda and modern medical science in the development of health and wellness tourism in Kerala. It explores the potential of Ayurvedic therapies, wellness practices, modern healthcare services, preventive healthcare, rehabilitation, and integrated treatment approaches in attracting domestic and international tourists. The paper also identifies key challenges, including quality and standardisation of services, regulatory requirements, infrastructure, skilled human resources, tourist trust, international competitiveness, and the need for effective destination marketing. Particular attention is given to the importance of integrating traditional Ayurvedic knowledge with evidence-based medical practices while maintaining the authenticity and cultural value of Ayurveda. The paper adopts a conceptual and exploratory approach based on a review of relevant literature and secondary sources. It proposes that stronger coordination among healthcare institutions, Ayurvedic centres, tourism stakeholders, policymakers, and local communities can contribute to the sustainable development of health and wellness tourism in Kerala. The study highlights the potential of an integrated health and wellness tourism model to strengthen Kerala's destination competitiveness while promoting preventive healthcare, holistic well-being, and sustainable tourism development.

Keywords: Health Tourism, Wellness Tourism, Ayurveda, Medical Science, Healthcare, Kerala, Sustainable Tourism, Medical Tourism.

EVALUATING THE IMPACT OF MACHINE LEARNING CLASSIFICATION METHODS ON CORRELATION-BASED SSVEP DECODING

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ABSTRACT

Background: Steady-state visual evoked potential (SSVEP)-based brain-computer interfaces (BCIs) have been widely adopted due to their high information transfer rates and minimal training requirements [1], [2]. However, conventional SSVEP decoding methods, particularly canonical correlation analysis (CCA)-based approaches, remain limited in recognition accuracy and robustness when short time windows are used, which restricts real-time BCI performance [3].

Objective: This study aims to evaluate whether integrating machine-learning-based classification blocks enhances the performance of standard CCA and an improved extended CCA with sum of squares correlation (eCCA-SSCOR) for SSVEP recognition [4].

Methods: An enhanced eCCA-SSCOR framework is evaluated with and without an additional classification stage using Support Vector Machines (SVM) and Linear Discriminant Analysis (LDA), with Particle Swarm Optimization (PSO) employed for classifier parameter optimization. For comparison, SVM and LDA are also applied to the standard CCA method. Performance is assessed across multiple time windows using the publicly available San Diego SSVEP dataset, comprising 12 stimulation frequencies recorded from 10 subjects [5].

Results: The inclusion of a classification block in the standard CCA framework yields a notable improvement in recognition accuracy, with average gains depending on the time window length. In contrast, the enhanced eCCA-SSCOR method does not exhibit further accuracy improvements when combined with SVM or LDA, achieving comparable performance with and without a classification block across all evaluated time windows. These results indicate that eCCA-SSCOR inherently provides strong frequency discrimination without reliance on additional machine-learning classifiers.

Conclusion: The findings demonstrate that while machine-learning classifiers can significantly enhance conventional CCA-based SSVEP recognition, they are not necessary for the proposed eCCA-SSCOR framework. This highlights the effectiveness of the enhanced correlation-based approach and supports its suitability for fast, accurate, and computationally efficient real-time BCI applications.

Keywords: Brain-computer interface (BCI), Steady-state visual evoked potentials (SSVEP), Canonical correlation analysis (CCA), eCCA-SSCOR, Support Vector Machines (SVM), Linear Discriminant Analysis (LDA)

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AI-POWERED ENVIRONMENTAL MONITORING FOR SUSTAINABLE ECOSYSTEM MANAGEMENT

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ABSTRACT

Rapid environmental changes caused by climate change, urbanization, industrialization, and pollution have created an urgent need for efficient and real-time environmental monitoring technologies. Artificial Intelligence (AI) integrated with remote sensing, satellite imagery, Internet of Things (IoT) sensors, and environmental databases has emerged as a promising technology for addressing these challenges. Recent research demonstrates that machine learning and deep learning techniques can process large volumes of environmental data and identify complex patterns that are difficult to detect using conventional monitoring methods. AI-based systems can be used for air and water quality assessment, land-use and land-cover change detection, biodiversity monitoring, wildfire detection, climate-change analysis, and prediction of environmental hazards. The integration of AI with high-resolution satellite and sensor data enables automated identification of environmental changes with improved speed, spatial coverage, and predictive capability. Recent developments have particularly emphasized the use of deep learning for extracting information from multi-temporal remote-sensing images and detecting subtle changes in ecosystems. AI can also combine data from multiple sources, including satellites, ground sensors, cameras, and environmental monitoring stations, to provide more comprehensive assessments. In pollution management, smart sensors coupled with AI can facilitate continuous monitoring and early detection of environmental contamination, potentially reducing dependence on conventional laboratory-based measurements. Despite these advantages, challenges remain concerning data quality, model transparency, computational requirements, sensor reliability, privacy, and the environmental footprint of large-scale AI systems. Therefore, future environmental monitoring should focus on energy-efficient AI models, explainable algorithms, low-power sensors, and responsible data management. The convergence of AI and environmental science has significant potential to transform environmental assessment from periodic observation into continuous, predictive, and intelligent environmental management. Such technology can support policymakers, researchers, industries, and communities in making faster and more informed decisions for ecosystem protection and sustainable development.

Keywords: Artificial Intelligence; Environmental Monitoring; Remote Sensing; Machine Learning; Sustainable Development

MICROBIAL FUEL CELLS FOR ENVIRONMENTAL SUSTAINABILITY AND WASTEWATER TREATMENT

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ABSTRACT

The rapid growth of population, urbanization, and industrial activities has resulted in increasing wastewater generation and severe environmental pollution. Conventional wastewater treatment methods are often associated with high energy consumption, operational costs, and the production of secondary pollutants. Therefore, the development of sustainable and energy-efficient wastewater treatment technologies has become an important research priority in environmental science. Microbial Fuel Cells (MFCs) have emerged as a promising bioelectrochemical technology that can simultaneously treat wastewater and recover electrical energy from organic pollutants. MFCs utilize the metabolic activities of electroactive microorganisms to convert the chemical energy present in biodegradable organic matter directly into electricity while reducing the pollutant load of wastewater. In a typical MFC, microorganisms present at the anode oxidize organic substrates and release electrons and protons. The electrons travel through an external circuit toward the cathode, generating an electrical current, while the protons migrate through an electrolyte or membrane. This process enables the simultaneous removal of organic contaminants and energy recovery. MFCs have demonstrated potential for treating municipal wastewater, industrial effluents, agricultural wastewater, and other organic-rich waste streams. Parameters such as chemical oxygen demand (COD), biochemical oxygen demand (BOD), nutrients, and certain toxic compounds can be reduced through appropriate MFC configurations. The technology also provides opportunities for recovering valuable resources from wastewater rather than treating wastewater solely as a waste product. Recent research has focused on improving the performance of MFCs through the development of advanced electrode materials, efficient proton exchange membranes, optimized reactor configurations, and suitable microbial communities. The integration of MFCs with constructed wetlands, anaerobic digestion, membrane technologies, and other biological treatment systems has further increased their potential for sustainable wastewater management. Such hybrid systems can improve pollutant removal while reducing energy requirements and increasing resource recovery. MFC technology can also be integrated with low-power environmental sensors, creating opportunities for self-powered monitoring systems in remote locations. Despite these advantages, several challenges restrict the large-scale application of MFCs. Low power density, high electrode cost, membrane fouling, internal resistance, microbial instability, and difficulties in maintaining consistent performance under real wastewater conditions remain important technical limitations. Future research should therefore concentrate on low-cost and durable electrode materials, membrane-free reactor designs, improved microbial communities, scalable reactor architectures, and optimization using artificial intelligence and advanced process-control techniques. Life-cycle assessment and techno-economic analysis are also necessary to evaluate the overall environmental and economic benefits of MFC-based treatment. Overall, microbial fuel cells represent an innovative approach to environmental pollution control, wastewater treatment, and renewable energy recovery. By converting organic pollutants into useful electrical energy while simultaneously reducing wastewater contamination, MFCs support the principles of a circular economy and sustainable environmental management. Continued advances in materials science, microbiology, and reactor engineering could make MFC technology an increasingly viable option for future low-energy wastewater treatment and environmental applications.

Keywords: Microbial Fuel Cell; Wastewater Treatment; Environmental Sustainability; Energy Recovery; Bioelectrochemical Technology

ENGINEERING STRUCTURE–PROPERTY RELATIONSHIPS IN Eu^{3+} -DOPED STRONTIUM PHOSPHATE GLASSES FOR ADVANCED PHOTONIC AND PHOTOVOLTAIC APPLICATIONS

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ABSTRACT

Europium-doped strontium phosphate glasses (PSrEu_x) were synthesized using the conventional melt-quenching technique with Eu_2O_3 concentrations of 0.0, 0.5, 1.0, and 1.5 mol. at. % to investigate the impact of Eu^{3+} incorporation on their structural, thermophysical, and photoluminescent properties. X-ray diffraction (XRD) confirmed that all compositions were fully amorphous. Fourier-transform infrared (FTIR) spectroscopy revealed the characteristic vibrational modes of the phosphate network, including symmetric and asymmetric P–O–P stretching, symmetric stretching of $(\text{PO}_3)^{2-}$, and P=O bending vibrations. Physical measurements indicated a slight increase in density (from 2.059 to 2.082 g/cm³) alongside a decrease in molar volume (from 62.441 to 62.083 cm³/mol), suggesting progressive structural densification with increasing Eu_2O_3 content. Differential thermal analysis (DTA) demonstrated comparable thermal stability across the series, confirming that these materials are suitable for high-temperature and optoelectronic applications. Photoluminescence (PL) spectra displayed the characteristic emission lines of Eu^{3+} , prominently featuring the intense red $^5\text{D}_0 \rightarrow ^7\text{F}_2$ transition. Judd–Ofelt (J–O) analysis provided key intensity parameters (Ω_λ) and asymmetry ratios (R). The observed increases in Ω_2 and R-values indicated enhanced local structural asymmetry and stronger Eu^{3+} – O^{2-} covalent interactions. Radiative properties, including transition probabilities (A), stimulated emission cross-sections (σ_e), branching ratios (β), and radiative lifetimes, were derived using the J–O formalism. All samples exhibited single-exponential decay curves of the $^5\text{D}_0$ level, confirming homogeneous emission behavior. The CIE 1931 chromaticity coordinates ($x \approx 0.660$, $y \approx 0.340$) closely align with the standard red-emission target (0.67, 0.33). Overall, these findings demonstrate that Eu^{3+} -doped strontium phosphate glasses possess strong and stable red photoluminescence, combined with robust structural

and thermal performance, making them promising candidates for next-generation photonic devices such as solid-state lasers, optical amplifiers, and advanced display technologies.

Keywords: Strontium phosphate glasses; Europium oxide; Melt-quenching technique; Structural characterization; FTIR spectroscopy; Photoluminescence properties; Thermophysical properties; Judd–Ofelt analysis; Radiative properties; CIE chromaticity; Red-emitting materials.

A SYNERGISTIC MULTIPHYSICS AND JUDD–OFELT FRAMEWORK FOR HIGH-EFFICIENCY RED EMISSION IN EU³⁺-DOPED SILICOPHOSPHATE SOL–GEL GLASSES**El Mahdi BOUABDALLI**

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ABSTRACT

Europium-doped silicophosphate glasses have emerged as highly promising materials for next-generation photonic technologies, such as light-emitting diodes (LEDs), optoelectronic components, and laser systems. This study systematically investigates the effects of trivalent europium (Eu³⁺) incorporation on the structural, physical, and optical properties of silicophosphate glasses synthesized through the sol-gel method. Both undoped and Eu³⁺-doped compositions were thoroughly characterized using techniques including X-ray diffraction (XRD), Fourier-transform infrared (FTIR) spectroscopy, UV–visible absorption spectroscopy, steady-state photoluminescence (PL), and time-resolved luminescence decay measurements. XRD analysis confirmed that all prepared samples exhibited a fully amorphous structure. FTIR spectroscopy indicated that the incorporation of Eu³⁺ modifies the silicate phosphate network by disrupting Si–O–Si linkages, resulting in an increased optical band gap. Photoluminescence spectra displayed the characteristic ⁵D₀ → ⁷F_J (where J = 0–4) transitions of Eu³⁺ ions, with broadened emission bands typical of amorphous glass matrices. Judd–Ofelt (J–O) analysis facilitated the determination of optical intensity parameters (Ω_2 and Ω_4) and crucial radiative properties, including spontaneous emission probabilities (A), stimulated emission cross-sections (σ_e), calculated radiative lifetimes (τ_{cal}), and branching ratios (β_R). Notably, the high branching ratio of 52.71% for the hypersensitive ⁵D₀ → ⁷F₂ transition underscores the strong potential of these glasses for red-emitting laser applications. Moreover, the calculated CIE 1931 chromaticity coordinates (x = 0.63, y = 0.36) are situated close to the ideal red-emission point (0.67, 0.33), affirming the generation of bright and spectrally pure red light. Overall, these findings demonstrate that Eu³⁺-doped silicophosphate sol-gel glasses exhibit excellent structural integrity alongside enhanced luminescent performance, rendering them highly suitable for red-emitting photonic devices and solid-state laser applications.

Keywords: Europium; Silicophosphate glasses; Sol–gel process; Optical properties; Structural properties; XRD; FTIR spectroscopy; Band gap energy; Photoluminescence; Luminescence decay; Judd–Ofelt analysis; Radiative properties; Photonic technologies.

SOCIOECONOMIC STATUS, MOTIVATION, SELF-ESTEEM, AND NONVERBAL INTELLIGENCE AS DETERMINANTS OF ACADEMIC ACHIEVEMENT: AN INTEGRATIVE STRUCTURAL MODEL

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ABSTRACT

Although numerous studies have examined, in isolation, the relationships between socioeconomic status, academic motivation, self-esteem, intelligence, and academic achievement, few have integrated these variables into a single explanatory model capable of distinguishing direct, indirect, and mediating effects. The present study tests a structural equation model (SEM) integrating parental educational attainment and place of residence (urban/rural) as distal indicators of socioeconomic status, motivation and nonverbal intelligence (Raven's Progressive Matrices) as latent variables, and self-esteem as an observed variable, in order to predict academic achievement (overall grade point average). The sample consisted of 456 Moroccan students aged 12 to 18 years ($M = 13.79$; $SD = 1.57$). The analyses showed that parental educational attainment significantly predicted motivation ($\beta = 0.52$, $p < 0.001$) and intelligence ($\beta = 0.37$, $p < 0.001$), while motivation strongly predicted self-esteem ($\beta = 0.91$, $p < 0.001$) and, most prominently, academic achievement ($\beta = 0.89$, $p < 0.001$), relegating the direct effects of intelligence and self-esteem to a secondary role once motivation was controlled for. The model explained 50.4% of the variance in academic achievement. These findings suggest repositioning motivation as a pivotal variable within the explanatory system of academic achievement and interpreting the effect of socioeconomic status as largely mediated rather than direct. The theoretical, methodological, and practical implications are discussed, along with limitations related to the model's overall goodness of fit.

Keywords: academic achievement; motivation; self-esteem; nonverbal intelligence; socioeconomic status

LEVOTHYROXINE RESCUES HYPOTHYROIDISM- AND SCOPOLAMINE-INDUCED MEMORY DEFICITS IN A RAT MODEL: ROLE OF HIPPOCAMPAL SEROTONERGIC MODULATION

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ABSTRACT

Hypothyroidism is increasingly recognized as a contributing factor to cognitive decline, yet the precise neurochemical mechanisms linking thyroid dysfunction to memory impairment remain incompletely understood. Objective: This study investigated the dose-dependent effects of levothyroxine (LT4) on memory enhancement and explored its restorative potential against hypothyroidism- and scopolamine-induced cognitive deficits in rats, with particular focus on hippocampal serotonergic modulation. Methods: Adult male Wistar rats received LT4 at 50, 100, or 150 µg/kg for 12 days. LT4 was administered at the dose of 100 µg/kg in rats pre-treated with propylthiouracil (PTU) or scopolamine (SCO) for 21 days. Cognitive performance was assessed using Morris water maze (MWM) and novel object recognition (NOR) tests. Levels of neurotransmitters were quantified in hippocampus via HPLC-EC, and antioxidant enzyme activities were measured spectrophotometrically. Results: LT4 produced dose-dependent cognitive enhancement, with 100 µg/kg demonstrating optimal efficacy. PTU-induced hypothyroidism significantly impaired spatial and recognition memory, accompanied by reduced hippocampal serotonin (5-HT) levels and increased oxidative stress. LT4 administration effectively reversed these deficits, restoring 5-HT concentrations and antioxidant enzyme activities (SOD, CAT, GSH-Px) to near-normal levels. Similar restorative effects were observed in scopolamine-treated rats. Conclusion: LT4 rescues hypothyroidism-induced memory deficits through hippocampal serotonergic modulation and attenuation of oxidative stress, suggesting therapeutic potential beyond conventional hormone replacement.

Keywords: Levothyroxine, memory enhancement, dose-dependent effects, cognitive function

LONGITUDINAL STATISTICAL ANALYSIS OF GASTROINTESTINAL SYMPTOM DYNAMICS FOLLOWING HELICOBACTER PYLORI ERADICATION

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ABSTRACT

The growing availability of longitudinal clinical data has created new opportunities for the application of advanced statistical and machine learning methodologies in healthcare outcome assessment. This study investigates the temporal evolution of gastrointestinal symptom profiles in patients diagnosed with *Helicobacter pylori* infection before and after eradication therapy, with emphasis on statistical inference and providing a valuable basis for future predictive modeling rather than clinical characterization.

A prospective dataset comprising 29 patients was analyzed. Symptom intensity and frequency were measured using standardized ordinal scales across multiple upper and lower gastrointestinal manifestations at baseline and two months following treatment. Statistical significance of symptom changes was initially evaluated through paired comparative analysis, while paired statistical comparisons were performed to evaluate longitudinal changes in symptom severity and frequency.

Results revealed a statistically significant reduction in several upper gastrointestinal symptoms following successful eradication, including bitter mouth sensation, belching, globus sensation, fasting epigastric pain, postprandial epigastric pain, nocturnal epigastric pain, right upper quadrant discomfort, postprandial heaviness, and nausea. In contrast, among lower gastrointestinal symptoms, only abdominal pain demonstrated a significant decrease. Patients with unsuccessful eradication exhibited no comparable improvement and showed persistence or worsening of selected symptoms.

From a statistical learning perspective, the findings suggest that symptom trajectories can serve as informative predictors of treatment outcome. The study highlights the potential of longitudinal symptom-based datasets for the development of predictive models capable of classifying therapeutic response and identifying the most influential symptom dimensions associated with eradication success. These results support the integration of statistical modeling and machine learning approaches into clinical decision-support systems for gastrointestinal disorders.

Keywords: Longitudinal data analysis, predictive modeling, Statistical learning, *helicobacter pylori*, treatment response.

GRAPHENE OXIDE/CHITOSAN-LAYERED DOUBLE HYDROXIDES: EFFICIENT DYE DEGRADER AND ANTIBACTERIAL AGENT WITH COMPUTATIONAL VALIDATION**Anum SHAHZADI**

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ABSTRACT

In this research, graphene oxide (GO) and chitosan (CS) modified zinc/aluminum (ZnAl) layered double hydroxide (LDH) were synthesized thru co-precipitation techniques. The aim of the research was to diminish the recombination rate of electron/hole pairs in pristine ZnAl while enhancing its multifunctional efficacy in catalytic dye degradation, oxygen evolution reaction (OER), and antibacterial activity. Moreover, the influence of dopants on the structure, morphology, and optical properties was examined thru sophisticated methodologies. XRD analysis revealed a rhombohedral structure, and an increase in crystallite size was observed with doping. TEM micrographs validated the consistently arranged two-dimensional nanosheets within the layered structure of GO/CS-ZnAl. Furthermore, the results of the catalysis demonstrated an impressive degradation rate of 92.0% for rhodamine B (RhB) dye in a basic medium, underscoring its promising application in the field of environmental decontamination. Among all samples, the 3% GO/CS-ZnAl LDH demonstrated a reduced overpotential, the most favorable Tafel slope, and a minimal Rct value, signifying enhanced OER activity. Furthermore, docking studies were conducted on CS-ZnAl LDH and GO/CS-ZnAl nanocomposites as bactericidal agents to evaluate their potential to inhibit dihydrofolate reductase (DHFR) and deoxyribonucleic acid (DNA) gyrase enzymes in *S. aureus*. (Published in Materials Science in Semiconductor Processing **in 2026**).

Keywords: Catalytic activity, Anti-microbial activity, Molecular docking, RhB, *S. aureus*

NUMERICAL ASSESSMENT OF HEAT EXTRACTION ENHANCEMENT IN PHOTOVOLTAIC–PHASE CHANGE MATERIAL (PV–PCM) COLLECTORS

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ABSTRACT

The thermal management of photovoltaic (PV) modules is essential for maintaining their electrical performance under elevated operating temperatures. In this study, a numerical investigation is conducted to assess the effectiveness of phase change materials (PCMs) in enhancing heat extraction and regulating the operating temperature of photovoltaic–PCM (PV–PCM) collectors. A transient computational model is developed to analyze the coupled thermal behavior of the PV module and PCM layer under realistic operating conditions. The proposed approach enables the evolution of PV temperature, PCM melting fraction, heat storage, and electrical performance to be systematically evaluated over time. Particular attention is given to the interaction between sensible and latent heat transfer mechanisms and their contribution to the thermal regulation of the PV module. The results demonstrate that PCM integration significantly limits the temperature rise of the PV cells by absorbing a considerable portion of the excess thermal energy through latent heat storage. The extent of this thermal regulation depends strongly on the thermophysical properties of the PCM, particularly its melting temperature and latent heat capacity. The reduction in PV operating temperature consequently improves the electrical conversion efficiency compared with the conventional PV configuration. The numerical results highlight the potential of PV–PCM collectors as an effective passive thermal management strategy for reducing PV overheating while simultaneously enhancing energy conversion performance. The findings provide useful insights for the thermal design and optimization of PCM-assisted photovoltaic systems.

Keywords: PVT modules; Energy efficiency; Solar collectors; Nanofluids.

SYNTHESIS AND ANTICORROSION EFFICIENCY OF A BENZO[D]OXAZOLE DERIVATIVE FOR E24 STEEL: INSIGHTS FROM DFT AND MOLECULAR DYNAMICS SIMULATIONS

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ABSTRACT

The synthesized organic compound, namely 6-methylbenzo[d]oxazole (MBO) was tested as an efficient inhibitor for the corrosion of mild steel in acidic medium (1 M HCl), utilizing combined experimental and theoretical approach. Maximum inhibition efficiency of 85.7% was obtained at concentration of 1×10^{-3} M, and corresponding to the sixfold increase in charge transfer resistance which rises from 47.8 to 302.7 $\Omega \cdot \text{cm}^2$ indicating the formation of protective adsorbed film on steel surface. Adsorption investigations also revealed that the inhibition process followed the Langmuir isotherm with adsorption free energy ($\Delta G_{\text{ads}}^\circ$) of $-36.6 \text{ kJ} \cdot \text{mol}^{-1}$ confirming mixed type physisorption and chemisorption. Density Functional Theory (DFT) calculations revealed high electronic reactivity of MBO, characterized by a high HOMO energy, a small HOMO–LUMO energy gap, and pronounced electron density localization around heteroatoms, supported by ESP, ELF, and Fukui index analyses. Monte Carlo and MD simulations provide evidence for the high thermodynamic stability of adsorption on the Fe(110) surface, with very attractive interactions, and on the protective film temperature independent.

Keywords: Adsorption, Density Functional Theory, Electrochemical Impedance Spectroscopy, Mild Steel, Molecular Dynamics, Organic Corrosion Inhibitor

POSTURAL REEDUCATION FOR LOW BACK PAIN IN ELITE ATHLETES: A RANDOMIZED CONTROLLED TRIAL

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ABSTRACT

Background: Low back pain (LBP) is highly prevalent in adolescent athletes, particularly in sports involving high spinal loads such as rhythmic gymnastics, basketball, and football. Postural reeducation interventions, including the Mézières method, have demonstrated potential for improving trunk mobility, reducing pain, and enhancing functional outcomes. This study evaluated the effectiveness of a structured postural intervention in elite athletes with LBP across different sports disciplines. Methods: In this randomized controlled trial, 139 athletes were randomized to intervention (n = 69: rhythmic gymnastics n = 39, football n = 10, basketball n = 20) or **comparison group** (n = 70: rhythmic gymnastics n = 51, football n = 7, basketball n = 12). Baseline assessments included age, pain intensity (VAS), disability (RMDQ), physical (PCS) and mental (MCS) health scores, and trunk flexibility (Sit-and-Reach). The intervention comprised individualized postural reeducation sessions. Outcomes were assessed at 1, 3, and 6 months, with ANCOVA used to adjust for baseline values and evaluate group- and sport-specific effects. Results: At one month, experimental groups exhibited significant reductions in pain and disability compared with controls (VAS: RG, 3.65 ± 0.21 vs 2.69 ± 0.29 , $p = 0.008$; RMQ: $F(2,132)=6.86$, $p = 0.001$), while PCS, MCS, and flexibility were similar. At 3 months, experimental groups showed further improvements in VAS and RMQ scores, alongside enhanced trunk flexibility (Sit-and-Reach, $p < 0.001$) and PCS ($p < 0.05$). Between-group differences exceeded established MCID thresholds for pain intensity and disability, indicating clinically meaningful improvements. These benefits persisted at 6 months, with sustained reductions in pain and disability, improved PCS and MCS, and maintained trunk flexibility across all sports. Conclusions: Targeted postural reeducation effectively reduces pain and disability while improving trunk flexibility in adolescent athletes with LBP. These findings support integrating structured postural and flexibility programs into athletic training and rehabilitation. Future research should explore long-term outcomes, optimal intervention duration, and potential synergy with sport-specific conditioning.

Keywords: posture; mezieres method; elite athletes; basketball; football; rhythmic gymnastics

COMBINED FIXED–REMOVABLE PROSTHETIC REHABILITATION OF THE MAXILLA IN A PARTIALLY DENTATE PATIENT: A CLINICAL CASE REPORT

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ABSTRACT

Aim: Prosthetic rehabilitation of partially dentate patients with extensive tooth loss may be challenging when the number and distribution of the remaining teeth do not allow treatment with an exclusively fixed prosthetic restoration. A combined fixed–removable approach may enable preservation and functional use of the remaining teeth while providing adequate support, retention, function, and aesthetics. The aim of this clinical report is to present the rehabilitation of a partially dentate maxilla using a combined fixed–removable prosthetic treatment approach.

Materials and Methods: Following clinical and prosthetic evaluation, the remaining maxillary teeth were selected as abutments and prepared for fixed prosthetic restorations. Definitive impressions were obtained, followed by successive clinical and laboratory procedures for fabrication of the prosthetic reconstruction. The treatment combined tooth-supported fixed prosthetic components with a removable partial prosthesis designed to restore the missing dental segments. Particular attention was given to the relationship between the fixed and removable components, prosthetic support and retention, occlusal relationships, and aesthetic integration. The clinical and laboratory workflow was documented through representative photographs of the treatment stages and the definitive prosthetic reconstruction.

Results: The combined fixed–removable approach restored the continuity of the maxillary dental arch and provided satisfactory retention, stability, function, and aesthetics. Preservation and appropriate use of the remaining teeth contributed to the support and integration of the definitive prosthetic restoration.

Conclusion: Combined fixed–removable prosthetic treatment represents a valuable therapeutic option for maxillary rehabilitation in patients with reduced dentition when exclusively fixed rehabilitation is not feasible. Careful case selection, treatment planning, and coordination of the clinical and laboratory stages are important for achieving a functional, stable, and aesthetically acceptable prosthetic outcome.

Keywords: combined prosthodontics; fixed–removable prosthesis; maxillary rehabilitation; partial edentulism; removable partial denture; prosthetic rehabilitation; clinical case.

SMART NANOCARRIERS FOR PERSONALIZED MEDICINE: INTEGRATING NANOTECHNOLOGY, ARTIFICIAL INTELLIGENCE AND TARGETED DRUG DELIVERY

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ABSTRACT

Personalized medicine aims to replace the conventional “one-size-fits-all” therapeutic approach with treatment strategies tailored to individual patient characteristics. However, translating personalized treatment decisions into personalized drug delivery remains a major challenge because conventional dosage forms generally provide limited control over tissue distribution, drug release and patient-specific pharmacokinetic variability. Smart nanocarriers offer an emerging solution by combining nanoscale drug delivery with targeting ligands, stimuli-responsive materials and controlled drug-release mechanisms. At the same time, artificial intelligence (AI) and machine learning (ML) provide computational capabilities for predicting nanocarrier properties, optimizing formulations and integrating complex patient-specific biological information.

This conceptual research paper proposes an AI-integrated Smart Nanocarrier Personalization Framework (SN-PF) in which patient genomic, clinical, physiological and pharmacokinetic information is combined with nanocarrier physicochemical characteristics to design individualized drug-delivery systems. The proposed framework consists of five interconnected stages: patient profiling, AI-based nanocarrier selection, targeted formulation optimization, individualized release prediction and feedback-based therapeutic adaptation. Machine-learning models may be used to predict particle size, surface charge, drug loading, release kinetics, biodistribution and toxicity, while physiologically based pharmacokinetic models can provide mechanistic interpretation of predicted drug disposition. The framework further incorporates molecular targeting and stimuli-responsive release to improve therapeutic selectivity.

The proposed approach has potential applications in oncology, neurological disorders, infectious diseases and chronic conditions requiring individualized pharmacotherapy. However, challenges involving data quality, model interpretability, nanomaterial safety, manufacturing reproducibility, regulatory validation and patient-data governance must be addressed. AI-integrated smart nanocarriers could ultimately establish a transition from standardized drug delivery toward adaptive, patient-specific and predictive nanomedicine.

Keywords: Smart nanocarriers; Personalized medicine; Artificial intelligence; Machine learning; Targeted drug delivery; Nanomedicine; Precision pharmacotherapy; Pharmacokinetics.

BRAKİSEFALİK KEDİLERDE RİNOPLASTİ: CERRAHİ TEKNİKLER VE KLİNİK SONUÇLAR
RHINOPLASTY IN BRACHYCEPHALIC CATS: SURGICAL TECHNIQUES AND CLINICAL OUTCOMES

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ÖZET

Amaç: Brakisefalik kedilerde burun deliği ve nazal vestibül stenozu, inspiratuvar hava yolu direncini artırarak gürültülü solunum, burundan ısıklık sesi, horlama, dispne, aktivite intoleransı ve ileri olgularda ağız açık solunuma neden olabilmektedir. Bu çalışmada, brakisefalik kedilerde burun deliği stenozunun düzeltilmesinde kullanılan rinoplasti tekniklerinin cerrahi özelliklerinin, klinik sonuçlarının ve olası komplikasyonlarının değerlendirilmesi amaçlandı.

Materyal ve Yöntem: Brakisefalik kedilerde burun deliği ve nazal vestibül stenozunun cerrahi tedavisini ele alan güncel veteriner cerrahi yayınları incelendi. Tanımlanan rinoplasti yöntemleri; hedeflenen anatomik yapı, cerrahi uygulama prensibi, bildirilen klinik sonuçlar, avantajlar ve komplikasyonlar yönünden değerlendirildi.

Bulgular: Kedilerde vertikal kama rezeksiyonu, punch rezeksiyon alaplasi, alar vestibüloplasti, tek pediküllü ilerletme flebi, dorsolateral nazal kıkırdığın bilateral kama rezeksiyonu ve alar kıvrımı kaldırma–nazal sulkusu aşağı çekme tekniklerinin uygulandığı belirlendi. Önceki cerrahilere bağlı ileri derecede skarlaşma ve tekrarlayan stenozlarda mukozal greft ile geçici nazal stent kullanımı da tanımlanmıştır. Mevcut klinik kanıtların en fazla alar vestibüloplasti üzerinde yoğunlaştığı görülmüştür. Bu teknik sonrasında burundan ısıklık sesi, horlama, inspiratuvar dispne ve ağız açık solunum sıklığının azaldığı; aktivite toleransı, solunum fonksiyonu ve yaşam kalitesinin iyileştiği bildirilmiştir. Primer cerrahilerde majör komplikasyonlar seyrek olmakla birlikte epistaksis, hipersalivasyon, sütür irritasyonu, kornea ülseri, asimetri, skar kontraksiyonu ve restenoz gelişebilmektedir.

Sonuç: Rinoplasti, klinik belirtileri bulunan brakisefalik kedilerde nazal hava girişini artırabilen ve yaşam kalitesini iyileştirebilen fonksiyonel bir cerrahi tedavidir. Alar vestibüloplasti en geniş klinik desteğe sahip yöntem olmakla birlikte burun deliği stenozu tek tip bir anatomik deformite değildir. Bu nedenle cerrahi teknik; alar kanat, alar kıvrım, ventral deri, dorsolateral nazal kıkırdak ve nazal vestibülün hastaya özgü değerlendirilmesi sonucunda seçilmelidir.

Anahtar kelimeler: Brakisefali, burun deliği stenozu, kedi, rinoplasti, üst solunum yolu

ABSTRACT

objective: Nostril and nasal vestibular stenosis in brachycephalic cats may increase inspiratory airway resistance, resulting in noisy breathing, nasal whistling, snoring, dyspnea, activity intolerance and, in advanced cases, open-mouth breathing. This study aimed to evaluate the surgical characteristics, clinical outcomes and potential complications of rhinoplasty techniques used to correct nostril stenosis in brachycephalic cats.

Materials and Methods: Current veterinary surgical publications addressing the surgical treatment of nostril and nasal vestibular stenosis in brachycephalic cats were examined. The described rhinoplasty techniques were evaluated according to the targeted anatomical structures, surgical principles, reported clinical outcomes, advantages and complications.

Results: Techniques described in cats included vertical wedge resection, punch resection alaplasty, ala vestibuloplasty, single-pedicle advancement flap, bilateral wedge resection of the dorsolateral nasal cartilage and combined alar fold lift-up–nasal sulcus pull-down procedures. Mucosal grafting combined with temporary nasal stenting was also reported for severe scar-related and recurrent stenosis after previous surgery. The largest body of clinical evidence was available for ala vestibuloplasty. Postoperative reductions in nasal whistling, snoring, inspiratory dyspnea and open-mouth breathing, together with improvements in activity tolerance, respiratory function and quality of life, were reported. Major complications were uncommon following primary surgery; however, epistaxis, hypersalivation, suture irritation, corneal ulceration, asymmetry, scar contraction and restenosis may occur.

Conclusion: Rhinoplasty is a functional surgical treatment that may improve nasal airflow and quality of life in clinically affected brachycephalic cats. Although ala vestibuloplasty has the greatest clinical

support, feline nostril stenosis is not a uniform anatomical deformity. Therefore, the surgical technique should be selected following patient-specific assessment of the alar wing, alar fold, ventral skin, dorsolateral nasal cartilage and nasal vestibule.

Keywords: Brachycephaly, cat, nostril stenosis, rhinoplasty, upper airway

FEATURES OF IMMUNOLOGICAL PROCESSES AND INTERACTIONS WITH THE BODY IN THE PATHOGENESIS OF PERIODONTAL DISEASES

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ABSTRACT

Introduction: Periodontal diseases are widespread chronic inflammatory disorders of the oral cavity that develop mainly as a result of bacterial biofilm accumulation and the interaction between microorganisms and periodontal tissues. The relationship between periodontal pathogens and the host immune system plays a significant role in the development and progression of these diseases. The immune response has a protective function by eliminating microorganisms; however, prolonged and excessive activation of immune mechanisms can lead to destruction of periodontal tissues, including periodontal ligaments and alveolar bone.

The pathogenesis of periodontal diseases involves both innate and adaptive immune responses. Innate immunity represents the first line of defense against bacterial infection and includes neutrophils, complement system components, epithelial barriers, and resident immune cells. Neutrophils are the predominant cells in the acute inflammatory response and protect periodontal tissues through phagocytosis and antimicrobial activity. However, excessive neutrophil activation leads to the release of proteolytic enzymes and reactive oxygen species, which contribute to tissue degradation and disease progression.

Adaptive immunity is mainly mediated by monocytes, macrophages, and lymphocytes. These cells participate in antigen recognition, antibody production, regulation of inflammatory processes, and tissue repair. During chronic periodontal inflammation, immune cells release various inflammatory mediators, including interleukin-1 (IL-1), interleukin-6 (IL-6), tumor necrosis factor-alpha (TNF- α), and interferon-gamma (IFN- γ). These cytokines regulate immune reactions but, when produced excessively, contribute to connective tissue destruction and periodontal breakdown.

The complement system is another important component involved in periodontal inflammation. Activation of complement pathways by bacterial antigens leads to the formation of biologically active molecules such as C3a and C5a. These substances stimulate mast cells, increase vascular permeability, and promote the recruitment of inflammatory cells into periodontal tissues.

Modern studies demonstrate that periodontal diseases are not only local oral conditions but also disorders associated with systemic inflammatory responses. Therefore, understanding the immunological mechanisms involved in periodontal disease development is essential for improving diagnosis, prevention, and treatment strategies.

Materials and Methods: This study was based on the analysis of scientific literature, clinical research data, and modern publications related to periodontal immunology. The main objective was to evaluate the interaction between periodontal microorganisms and the immune system, as well as their influence on periodontal tissue destruction.

The study analyzed the role of major immune components involved in periodontal diseases, including neutrophils, macrophages, lymphocytes, mast cells, complement proteins, and inflammatory cytokines. Particular attention was given to mechanisms of immune activation, leukocyte migration, cytokine production, and connective tissue remodeling.

The effects of bacterial factors, especially bacterial lipopolysaccharides, on immune responses were evaluated. The processes of complement activation, vascular changes, transendothelial migration of leukocytes, and inflammatory mediator release were reviewed.

The collected data were analyzed to determine the relationship between microbial infection, immune regulation, and periodontal tissue damage. The results were summarized to identify the main immunological mechanisms responsible for the progression of periodontal diseases.

Results: The analysis demonstrated that periodontal disease development is associated with a complex interaction between bacterial pathogens and host immune responses. Bacterial invasion of periodontal tissues activates the complement system, resulting in the formation of C3a and C5a anaphylatoxins. These mediators increase vascular permeability and initiate inflammatory changes, including edema and erythema.

Activation of mast cells during periodontal inflammation leads to the release of important cytokines such as TNF- α , transforming growth factor-beta (TGF- β), IL-4, and IL-6. These inflammatory mediators stimulate further production of pro-inflammatory cytokines and maintain chronic inflammation within periodontal tissues.

Endothelial cells activated by bacterial products, TNF- α , IL-1, and complement components produce selectins and chemokines, which promote the migration of leukocytes from blood vessels into infected periodontal areas. This process allows neutrophils, macrophages, and lymphocytes to accumulate at the site of infection.

Neutrophils play a key protective role during the early stages of periodontal infection by eliminating bacteria through phagocytosis. However, excessive neutrophil activity results in the release of tissue-damaging enzymes, causing collagen degradation and destruction of periodontal structures. Chronic inflammatory cells, including macrophages and lymphocytes, regulate immune responses and influence both tissue destruction and regeneration.

The results indicate that periodontal disease occurs due to an imbalance between microbial challenge and immune regulation. A controlled immune response protects periodontal tissues from infection, while uncontrolled chronic inflammation promotes tissue destruction and disease progression.

In conclusion, periodontal diseases should be considered complex immunological disorders involving interactions between microorganisms, immune cells, inflammatory mediators, and periodontal tissues. Further investigation of these mechanisms may contribute to the development of more effective diagnostic methods, preventive measures, and therapeutic approaches for periodontal diseases.

Keywords: Periodontal diseases, immune response, tissues, inflammation; bacterial biofilm, TNF- α ; interleukins.

KENDİ KENDİNE UYGULANAN KULAK MASAJININ DEPREMDEN ETKİLENEN KADINLARIN UYKU KALİTESİNE ETKİSİ***THE EFFECT OF SELF-APPLIED EAR MASSAGE ON SLEEP QUALITY IN EARTHQUAKE-AFFECTED WOMEN*****Assoc. Prof. Dr. Sümbüle KÖKSOY VAYISOĞLU**

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ÖZET**Amaç:**Bu araştırma, kendi kendine uygulanan kulak masajının depremden etkilenen kadınların uyku kalitesi üzerindeki etkisini belirlemek amacıyla yapılmıştır.**Yöntem:**Araştırma, tek kör, randomize, sham kontrollü girişimsel bir çalışma olarak gerçekleştirilmiştir. Veriler 24.04.2025–10.09.2025 tarihleri arasında Hatay ilinde bir konteynerkentte yaşayan depremden etkilenmiş kadınlardan toplanmıştır. Araştırmaya 60 kadın dâhil edilmiş ve katılımcılar girişim (n=30) ve kontrol (sham) (n=30) gruplarına atanmıştır. Veri kayıpları sonrasında çalışma 28 girişim ve 26 kontrol grubu katılımcısı ile tamamlanmıştır. Girişim grubuna iki hafta boyunca günde iki kez, her bir kulakta üç dakika süreyle uyku ile ilişkili kulak noktalarına kendi kendine kulak masajı uygulanmıştır. Kontrol grubuna aynı süreçte günde iki kez, birer dakika süreyle sham kulak masajı uygulanmıştır. Veriler dört farklı ölçüm zamanında Pittsburgh Uyku Kalitesi İndeksi (PUKİ), Uyku Öncesi Uyarılma Ölçeği ve Xiaomi Mi Band 9 kullanılarak toplanmıştır. Tekrarlı ölçümlerin değerlendirilmesinde doğrusal karma etkili modeller kullanılmış ve istatistiksel anlamlılık düzeyi $p \leq 0,05$ olarak kabul edilmiştir.**Bulgular:**Girişim ve kontrol gruplarının sosyodemografik özellikleri benzer bulunmuştur ($p > 0,05$). Toplam uyku süresi ile REM, hafif ve derin uyku sürelerinde grup×zaman etkileşimi anlamlı bulunmamıştır. Gece uyanma sayısında grup×zaman etkileşimi anlamlı bulunmuş ve girişim grubunda azalma saptanmıştır ($p < 0,001$). PUKİ toplam puanı girişim grubunda uygulama öncesinde $7,70 \pm 0,313$ iken uygulama sonrasında $5,28 \pm 0,320$ 'ye düşmüş; kontrol grubunda $7,43 \pm 0,313$ 'ten $7,39 \pm 0,327$ 'ye değişmiştir. PUKİ için grup×zaman etkileşimi anlamlı bulunmuştur ($p < 0,001$) ve girişim grubunda ön test-son test farkı anlamlıdır ($p \leq 0,001$). Bilişsel uyku öncesi uyarılmışlık puanı girişim grubunda $29,2 \pm 1,13$ 'ten $17,4 \pm 1,16$ 'ya düşerken, kontrol grubunda $29,0 \pm 1,13$ 'ten $30,8 \pm 1,19$ 'a yükselmiştir; grup×zaman etkileşimi anlamlı bulunmuştur ($p < 0,001$). Somatik uyku öncesi uyarılmışlık puanı girişim grubunda $20,9 \pm 1,29$ 'dan $14,3 \pm 1,31$ 'e düşerken, kontrol grubunda $24,0 \pm 1,29$ 'dan $25,5 \pm 1,34$ 'e yükselmiştir; grup×zaman etkileşimi anlamlı bulunmuştur ($p < 0,001$).**Sonuç:**Kendi kendine uygulanan kulak masajının depremden etkilenen kadınlarda öznel uyku kalitesini ve uyku öncesi uyarılmışlık düzeylerini iyileştirdiği; bazı objektif uyku parametrelerinde de olumlu değişimler sağladığı sonucuna ulaşılmıştır. Kulak masajının afetlerden etkilenen bireylerde uyku sorunlarının yönetiminde tamamlayıcı bir hemşirelik girişimi olarak kullanılabileceği düşünülmektedir.**Anahtar Kelimeler:**Kulak masajı, uyku kalitesi, deprem, kadın, randomize kontrollü çalışma, hemşirelik**ABSTRACT****Aim:**This study aimed to determine the effect of self-applied ear massage on sleep quality in women affected by the earthquake.**Methods:**This study was conducted as a single-blind, randomized, sham-controlled interventional study. Data were collected between April 24 and September 10, 2025, from earthquake-affected women living in a container settlement in Hatay, Türkiye. Sixty women were included and assigned to the intervention (n=30) and sham control (n=30) groups. After data losses, the study was completed with 28 participants in the intervention group and 26 in the control group. The intervention group received self-applied ear massage to sleep-related auricular points twice daily for three minutes on each ear for two weeks. The

control group received sham ear massage twice daily for one minute during the same period. Data were collected at four measurement time points using the Pittsburgh Sleep Quality Index (PSQI), Pre-Sleep Arousal Scale, and Xiaomi Mi Band 9. Linear mixed-effects models were used to evaluate repeated measurements, and statistical significance was set at $p \leq 0.05$.

Results: The intervention and control groups were similar in terms of sociodemographic characteristics ($p > 0.05$). No significant group $\times$ time interactions were found for total sleep duration or REM, light, and deep sleep durations. A significant group $\times$ time interaction was found for the number of nighttime awakenings, with a decrease in the intervention group ($p < 0.001$). The mean PSQI score decreased from 7.70 ± 0.313 before the intervention to 5.28 ± 0.320 after the intervention in the intervention group, whereas it changed from 7.43 ± 0.313 to 7.39 ± 0.327 in the control group. The group $\times$ time interaction for PSQI was significant ($p < 0.001$), and the pretest-posttest difference was significant in the intervention group ($p \leq 0.001$). Cognitive pre-sleep arousal decreased from 29.2 ± 1.13 to 17.4 ± 1.16 in the intervention group, while it increased from 29.0 ± 1.13 to 30.8 ± 1.19 in the control group; the group $\times$ time interaction was significant ($p < 0.001$). Somatic pre-sleep arousal decreased from 20.9 ± 1.29 to 14.3 ± 1.31 in the intervention group, while it increased from 24.0 ± 1.29 to 25.5 ± 1.34 in the control group; the group $\times$ time interaction was significant ($p < 0.001$).

Conclusion: Self-applied ear massage improved subjective sleep quality and pre-sleep arousal levels in women affected by the earthquake and was associated with positive changes in some objective sleep parameters. Ear massage may be considered a complementary nursing intervention for the management of sleep problems among individuals affected by disasters.

Keywords: Ear massage, sleep quality, earthquake, women, randomized controlled trial, nursing

ASSOCIATION BETWEEN PTEN GENE DELETION AND TREATMENT OUTCOMES IN PATIENTS WITH SOFT TISSUE SARCOMA

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ABSTRACT

Background. Soft tissue sarcomas (STS) are a rare and biologically heterogeneous group of mesenchymal malignancies for which reliable predictive biomarkers remain limited. PTEN (phosphatase and tensin homolog) is a key tumor suppressor gene that negatively regulates the PI3K/AKT/mTOR signaling pathway, and its genomic loss has been associated with tumor progression, metastasis, and therapeutic resistance in several malignancies. However, the prognostic value of PTEN gene deletion in soft tissue sarcoma remains insufficiently defined. This study aimed to evaluate the association between PTEN gene deletion and treatment response, progression-free survival (PFS), and overall survival (OS) in patients with STS.

Materials and Methods. This retrospective cohort study included 158 patients with histologically confirmed soft tissue sarcoma who underwent surgical resection followed by standard chemotherapy, with or without radiotherapy, between January 2018 and December 2024. PTEN gene status was determined by fluorescence in situ hybridization (FISH) using formalin-fixed, paraffin-embedded tumor specimens. Patients were categorized into PTEN deletion-positive ($n = 89$, 56.3%) and PTEN deletion-negative ($n = 69$, 43.7%) groups. Treatment response was evaluated according to the Response Evaluation Criteria in Solid Tumors (RECIST) version 1.1. Progression-free survival and overall survival were estimated using the Kaplan–Meier method and compared with the log-rank test. Multivariable Cox proportional hazards regression analysis was performed to determine the independent prognostic significance of PTEN deletion after adjustment for age, tumor size, histological subtype, tumor grade, and treatment modality. Statistical significance was defined as $p < 0.05$.

Results. Patients without PTEN deletion demonstrated significantly better clinical outcomes than those with PTEN deletion. The objective response rate was 75.4% (52/69) in the PTEN deletion-negative group compared with 59.6% (53/89) in the PTEN deletion-positive group ($p = 0.009$). Disease progression occurred in 5.8% and 12.4% of patients, respectively ($p = 0.041$). The estimated 3-year progression-free survival was significantly higher in patients without PTEN deletion than in those with PTEN deletion (81.2% vs. 62.8%; log-rank $p = 0.006$). Similarly, the 3-year overall survival rate was significantly greater in the PTEN deletion-negative group (84.3% vs. 66.7%; $p = 0.012$). Multivariable Cox proportional hazards regression analysis identified PTEN deletion as an independent predictor of disease progression (hazard ratio [HR] = 1.92; 95% confidence interval [CI]: 1.14–3.23; $p = 0.014$).

Conclusion. PTEN gene deletion was independently associated with inferior treatment response and poorer survival outcomes in patients with soft tissue sarcoma. These findings indicate that PTEN gene status may serve as a clinically relevant predictive and prognostic biomarker, contributing to improved risk stratification and individualized treatment planning in STS. Further prospective, multicenter studies are warranted to validate these findings and confirm the clinical utility of PTEN-directed biomarker assessment.

Keywords: Soft tissue sarcoma; PTEN; gene deletion; predictive biomarker; progression-free survival; overall survival.

COMPARATIVE ASSESSMENT OF DENTAL DISEASE PREVENTION AMONG PREGNANT WOMEN

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ABSTRACT

Introduction: Pregnancy is a unique physiological condition accompanied by significant hormonal, metabolic, and immunological changes that influence the health of the oral cavity. Elevated levels of estrogen and progesterone increase the vascular permeability of gingival tissues, making pregnant women more susceptible to gingivitis, periodontal disease, and dental caries. Changes in dietary habits, frequent snacking, morning sickness, and altered salivary composition may further increase the risk of oral diseases. Maintaining good oral health during pregnancy is therefore essential for the well-being of both the mother and the developing fetus.

Dental diseases are among the most common chronic conditions affecting pregnant women. Pregnancy gingivitis occurs in approximately 60–75% of expectant mothers and is characterized by gingival inflammation, bleeding, and swelling caused by the exaggerated response of periodontal tissues to dental plaque. If left untreated, gingivitis may progress to periodontitis, which has been associated with adverse pregnancy outcomes, including preterm birth and low birth weight. Dental caries also remain a major public health concern because untreated lesions can cause pain, infection, and impaired nutrition.

Preventive dentistry focuses on maintaining oral health and preventing the development or progression of dental diseases. During pregnancy, preventive measures include professional dental cleaning, fluoride application, oral hygiene education, dietary counseling, and regular dental examinations. Daily tooth brushing with fluoride toothpaste, flossing, and reducing the intake of fermentable carbohydrates are simple yet effective strategies that decrease plaque accumulation and caries risk. Education plays an important role because many pregnant women avoid dental treatment due to misconceptions about its safety.

Recent studies suggest that comprehensive preventive programs are more effective than routine oral hygiene advice alone. Such programs combine professional care with individualized patient education and continuous monitoring throughout pregnancy. They improve plaque control, reduce gingival inflammation, and enhance patients' knowledge and motivation regarding oral health practices.

The present study aimed to compare the effectiveness of routine preventive care with a comprehensive prophylactic program among pregnant women. It was hypothesized that women receiving comprehensive preventive care would demonstrate better oral hygiene, lower plaque accumulation, reduced gingival inflammation, and fewer new carious lesions than women receiving only standard oral hygiene instructions.

Materials and Methods: A comparative prospective study participants were divided equally into two groups of 60 women each. Group A received routine preventive advice, including recommendations for tooth brushing twice daily and maintaining oral hygiene. Group B participated in a comprehensive preventive program consisting of professional dental cleaning, fluoride varnish application, individualized oral hygiene instruction, dietary counseling, and follow-up examinations every eight weeks.

Clinical examinations were performed during the first trimester and repeated during the third trimester. Oral health was assessed using the Decayed, Missing and Filled Teeth (DMFT) Index, Plaque Index (PI), Gingival Index (GI), and Community Periodontal Index (CPI). All examinations were carried out by the same calibrated dentist to minimize examiner variability.

Data were analyzed using descriptive statistics. Mean values and standard deviations were calculated for continuous variables. Comparisons between groups were performed using Student's *t*-test, and a value of $p < 0.05$ was considered statistically significant.

Results: At baseline, both groups showed similar oral health characteristics with no statistically significant differences in DMFT, plaque index, or gingival index values. Following the intervention, Group B demonstrated significantly greater improvements than Group A.

The incidence of new dental caries was lower among women receiving comprehensive prophylaxis (10%) compared with those receiving routine care. Periodontal status also remained more stable in the intervention group, with fewer participants developing periodontal pockets during pregnancy.

Patient compliance with oral hygiene recommendations was higher in the comprehensive prevention group because regular follow-up visits reinforced healthy behaviors and provided continuous motivation. Participants also reported greater awareness of the relationship between oral health and pregnancy outcomes.

Overall, the findings indicate that comprehensive preventive dental programs are significantly more effective than routine oral hygiene advice alone. Professional prophylaxis combined with patient education, fluoride therapy, and regular monitoring contributed to improved plaque control, healthier gingival tissues, and reduced occurrence of dental caries during pregnancy. These results support the integration of preventive dental services into routine prenatal healthcare to improve maternal oral health and potentially reduce pregnancy-related complications associated with poor oral hygiene.

CURRENT APPROACHES TO THE CLINICAL FEATURES, DIAGNOSIS, AND MANAGEMENT OF CUTANEOUS LEISHMANIASIS

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ABSTRACT

Introduction: Cutaneous leishmaniasis (CL) is an endemic parasitic disease caused by protozoa of the genus *Leishmania*. It is transmitted to humans through the bite of infected female sandflies, mainly species of *Phlebotomus* in the Old World regions. The disease is widely distributed in tropical and subtropical areas, including Central Asia, the Middle East, Africa, and parts of South America. Cutaneous leishmaniasis is characterized by localized skin lesions that develop into ulcers and heal with permanent scars. Although the disease is rarely fatal, it causes significant physical and psychological consequences due to disfiguring skin lesions.

The incidence of cutaneous leishmaniasis is closely related to climatic conditions and vector activity. Most cases occur during warm seasons when sandfly populations increase. The main causative agents of different clinical forms are *Leishmania major* and *Leishmania tropica*. *L. major* is responsible for zoonotic cutaneous leishmaniasis, where rodents and other animals serve as reservoirs, while *L. tropica* causes anthroponotic disease, with humans acting as the main source of infection.

The disease usually begins at the site of the sandfly bite with the formation of a small papule or nodule. Over several weeks, the lesion enlarges and develops into an ulcer with raised edges and a necrotic base. Lesions commonly appear on exposed areas of the body, including the face, neck, hands, and legs. Healing may occur spontaneously within several months, but deep ulcers often leave permanent scars. Complications may include secondary bacterial infection, lymphangitis, and lymphadenitis.

Early diagnosis and effective treatment are essential to reduce complications and prevent transmission. The present study aims to summarize the clinical characteristics, diagnostic methods, treatment approaches, and preventive strategies for cutaneous leishmaniasis.

Materials and Methods: This study was based on a review of scientific literature, clinical guidelines, and epidemiological studies related to cutaneous leishmaniasis. Information was collected from medical publications focusing on disease transmission, clinical manifestations, laboratory diagnosis, therapeutic approaches, and prevention methods.

The analysis included data regarding patients with confirmed cutaneous leishmaniasis, laboratory diagnostic techniques, and commonly used treatment methods. Clinical evaluation was based on lesion characteristics, epidemiological history, and laboratory confirmation.

Diagnostic methods reviewed included microscopic examination of skin lesion samples stained by the Romanovsky–Giemsa method, identification of intracellular and extracellular *Leishmania* amastigotes, polymerase chain reaction (PCR), parasite culture, and skin testing (Montenegro test). The effectiveness of different therapeutic approaches, including local and systemic treatments, was also analyzed.

Results: The analysis showed that cutaneous leishmaniasis remains a significant health problem in endemic regions. The majority of patients develop localized skin lesions after an incubation period ranging from several weeks to months. The most common clinical manifestation is a painless ulcer with raised borders and gradual healing with scar formation.

Parasitological examination remains the most specific diagnostic method. Microscopic identification of *Leishmania* bodies in lesion samples confirms the diagnosis; however, sensitivity depends on the stage of the lesion and the species of parasite. PCR demonstrated higher sensitivity and specificity, particularly for identifying different *Leishmania* species.

Treatment outcomes varied depending on disease severity, parasite species, and patient characteristics. Pentavalent antimonial compounds, including meglumine antimoniate and sodium stibogluconate, remain widely used therapies. Other effective treatments include amphotericin B, miltefosine, and azole antifungal drugs. Local treatment methods, such as cryotherapy and thermotherapy, were effective for small uncomplicated lesions.

Preventive strategies based on reducing sandfly exposure showed important benefits. The use of insect repellents, protective clothing, insecticide-treated bed nets, and vector control programs contributed to decreasing infection risk. Early identification and treatment of infected individuals remain essential for controlling disease spread.

In conclusion, cutaneous leishmaniasis requires an integrated approach combining accurate diagnosis, effective therapy, and preventive measures. Continued research is necessary to develop improved treatments and more effective methods of disease control.

**THE CHEMISTRY OF ADDICTION: PSYCHOACTIVE PLANT METABOLITES,
NEUROBIOLOGICAL TARGETS, AND THE DUALITY OF THERAPEUTIC POTENTIAL
AND TOXICITY**

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ABSTRACT

Psychoactive secondary metabolites produced by plants — including morphinan alkaloids from *Papaver somniferum*, nicotine from *Nicotiana tabacum*, tropane alkaloids from *Erythroxylum coca*, phytocannabinoids from *Cannabis sativa*, indole alkaloids from *Psilocybe* species and *Tabernanthe iboga*, and the oxindole/indole alkaloid mitragynine from *Mitragyna speciosa* — have shaped both pharmacotherapy and public health for centuries. These compounds act on discrete neurobiological targets, including mu-opioid receptors, nicotinic acetylcholine receptors, the dopamine transporter, cannabinoid CB1/CB2 receptors, and serotonin 5-HT_{2A} receptors, and converge functionally on the mesolimbic dopaminergic reward circuitry that links the ventral tegmental area to the nucleus accumbens and prefrontal cortex. This review synthesizes current pharmacological and neurobiological evidence on these plant-derived agents, examining the chemical basis of receptor selectivity and the shared neuroadaptive processes — tolerance, sensitization, and withdrawal — that underlie compulsive use. Particular attention is given to the duality inherent in these molecules: the same structural features that confer analgesic, anxiolytic, antiepileptic, or antidepressant efficacy also confer liability for dependence, tolerance, and organ toxicity. Case examples include morphine's analgesic-versus-respiratory-depressant profile, cannabidiol's anticonvulsant use alongside tetrahydrocannabinol's psychotomimetic risk, and the re-emerging psychiatric application of psilocybin and ibogaine against a backdrop of cardiac and psychological risk. We argue that advancing biased agonism, receptor-subtype-selective ligands, and pharmacogenomic screening represents the most promising path toward preserving therapeutic benefit while narrowing the margin for toxicity and addiction. Implications for clinical practice, drug policy, and future medicinal chemistry are discussed.

Keywords: addiction pharmacology; plant alkaloids; opioid receptors; cannabinoids; mesolimbic dopamine; neurotoxicity

FROM MOLECULES TO MIND: THE GUT–BRAIN AXIS AS A MOLECULAR LINK BETWEEN MICROBIOTA, NEUROTRANSMITTERS, INFLAMMATION, AND MENTAL HEALTH

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ABSTRACT

The gastrointestinal microbiota has emerged as a central regulator of central nervous system function, communicating with the brain through a bidirectional network known as the gut–brain axis. This review synthesizes current evidence on the molecular pathways linking intestinal microbial communities to mood, cognition, and psychiatric disease. Microbiota-derived short-chain fatty acids (SCFAs), including butyrate, propionate, and acetate, regulate microglial maturation, blood–brain barrier integrity, and histone acetylation in neurons, while microbial metabolism of dietary tryptophan governs substrate availability for host serotonin synthesis and generates kynurenine-pathway metabolites with direct neuroactive properties. Enteroendocrine and enterochromaffin cells translate luminal microbial signals into vagal afferent activity, providing a fast neural route by which gut contents influence brainstem and limbic circuits. In parallel, disruption of intestinal barrier integrity — often termed increased intestinal permeability — permits translocation of bacterial lipopolysaccharide and peptidoglycan into systemic circulation, activating toll-like receptor signaling and a pro-inflammatory cytokine cascade implicated in the pathophysiology of major depressive disorder, generalized anxiety, and neurodegenerative disease. The hypothalamic–pituitary–adrenal axis further integrates microbial and immune signals, with germ-free animal models demonstrating exaggerated corticosterone responses to stress that are normalized by microbial colonization. We review clinical and preclinical evidence for these mechanisms, evaluate the therapeutic rationale for psychobiotic and dietary interventions, and identify methodological limitations — including reliance on rodent models and heterogeneity in human microbiome sequencing — that currently constrain translation to clinical psychiatry. We conclude that the gut–brain axis represents a molecularly tractable and modifiable pathway of substantial relevance to future precision psychiatry.

Keywords: gut–brain axis; microbiota; short-chain fatty acids; neuroinflammation; tryptophan-kynurenine pathway; psychobiotics

ILLEGAL WILDLIFE HUNTING PATTERNS, TECHNIQUES, AND LOCAL COMMUNITY ASPECTS IN THE CASE OF JIKAW DISTRICT, SOUTHWEST ETHIOPIA**Melkamu ADAMU**

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Melkenh WONDIE**ABSTRACT**

Hunting and consumption of wild meat are particularly common in developing countries. This study aims to explore hunting patterns, technique and community aspects in the jikaw District, south west Ethiopia. Fieldwork was conducted from February to June 2025 and utilizing semi-structure questionnaires to gather information from local households in Nibnib, Olang, and Teluth kebeles regarding conservation threats. A total of 384 households, 20 key informants, and 6 focus group participants were from three kebeles. Data analysis was performed using (SPSS) statistical software, including chi-square test to examine relationships between categorical variables and ANOVA to compare means across different groups among age groups and hunting frequency. Results indicated that individual aged 25-35 were the most Active participants in hunting activities, with a statistically significant difference in hunting frequency among age groups ($df = 2$, $P < 0.05$). The analysis also highlighted that firearms, particularly automatic weapons, are predominate used for hunting in the area. Furthermore, a significant variation in the number of hunting species was observed across seasons, with statistical analysis showing a significant difference in hunting frequency, with a p-value of <0.017 ($df = 2$). Male are more participate in illegal hunting because of dominance and responsible of providing response for household, societal attitude. Effective wildlife conservation policies should and establish clear guideline is essential for sustainability practices.

Keywords:-Ecological knowledge, human–wildlife interactions wildlife conservation, socioeconomic,factors

ERGENLİK DÖNEMİNDE SIK GÖRÜLEN RUHSAL BOZUKLUKLARDA HEMŞİRELİK YAKLAŞIMLARINA GÜNCEL KANITLAR DOĞRULTUSUNDA İNCELENMESİ**AN EXAMINATION OF NURSING APPROACHES TO COMMON MENTAL DISORDERS IN ADOLESCENCE IN LIGHT OF CURRENT EVIDENCE****Assoc. Prof. Dr. Havva KAÇAN, RN**

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ÖZET

Amaç: Ergenlik dönemi, biyopsikososyal değişimlerin yoğun olarak yaşandığı ve ruhsal bozuklukların sıklıkla ilk kez ortaya çıktığı kritik bir gelişim dönemidir. Dünya Sağlık Örgütü (DSÖ), dünya genelinde her yedi ergenden birinin ruhsal bozukluk yaşadığını; depresyon, anksiyete ve davranış bozukluklarının ergenlerde hastalık yükünün başlıca nedenleri arasında yer aldığını bildirmektedir. Ayrıca intihar, 15–29 yaş grubunda önde gelen ölüm nedenlerinden biridir (WHO, 2024). Ergenlik döneminde en sık görülen ruhsal bozukluklar arasında depresyon, anksiyete bozuklukları, dikkat eksikliği ve hiperaktivite bozukluğu, yeme bozuklukları ve madde kullanım bozuklukları yer almakta olup, erken tanı ve uygun hemşirelik girişimleri uzun dönem ruh sağlığı sonuçlarının iyileştirilmesinde kritik öneme sahiptir. (National Institute for Health and Care Excellence, 2022). Bu bildirinin amacı, ergenlik döneminde sık görülen ruhsal bozukluklarda güncel hemşirelik yaklaşımlarını kanıta dayalı literatür doğrultusunda değerlendirmektir. **Yöntem:** Bu derleme çalışmasında PubMed, Scopus, Web of Science, CINAHL ve Google Scholar veri tabanlarında 2020–2026 yılları arasında yayımlanan ulusal ve uluslararası çalışmalar incelenmiştir. İnceleme kapsamında ergen ruh sağlığı, psikiyatri hemşireliği, depresyon, anksiyete, dikkat eksikliği ve hiperaktivite bozukluğu, yeme bozuklukları ve hemşirelik girişimlerine ilişkin sistematik derlemeler, meta-analizler, randomize kontrollü çalışmalar ve güncel klinik rehberler değerlendirilmiştir.

Bulgular: Güncel kanıtlar, psikiyatri hemşirelerinin ergen ruh sağlığının korunması ve geliştirilmesinde önemli rol üstlendiğini göstermektedir. Hemşire liderliğinde yürütülen ruh sağlığı taramaları, psikoeğitim, bilişsel davranışçı terapi temelli girişimler, aile merkezli bakım, okul temelli ruh sağlığı programları, stres yönetimi ve duygu düzenleme becerilerinin geliştirilmesine yönelik uygulamalar depresyon ve anksiyete belirtilerini azaltmakta, psikolojik iyi oluşu ve tedaviye uyumu artırmaktadır. Ayrıca intihar riskinin erken değerlendirilmesi ile okul temelli tele-ruh sağlığı uygulamalarının bakımın sürekliliğini desteklediği ve ruh sağlığı hizmetlerine erişimi kolaylaştırdığı bildirilmektedir (Gray et al., 2024; Wang et al., 2024; García-Fernández et al., 2024).

Sonuç: Ergenlik döneminde görülen ruhsal bozuklukların erken dönemde belirlenmesi ve kanıta dayalı hemşirelik girişimleriyle yönetilmesi, ruh sağlığının korunması ve geliştirilmesinde önemli rol oynamaktadır. Hemşire liderliğinde yürütülen tarama programları, psikoeğitim uygulamaları, aile katılımının desteklenmesi ve okul temelli ruh sağlığı hizmetlerinin yaygınlaştırılması; ergenlerin psikolojik iyilik hâlinin artırılması, riskli davranışların azaltılması ve yaşam kalitesinin geliştirilmesine katkı sağlayacaktır. Bu doğrultuda çocuk ve ergen ruh sağlığı hizmetlerinde multidisipliner ekip yaklaşımının güçlendirilmesi ve kanıta dayalı hemşirelik uygulamalarının yaygınlaştırılması önerilmektedir.

Anahtar Kelimeler: Ergenlik, Ruhsal Bozukluklar, Psikiyatri Hemşireliği, Ruh Sağlığı, Hemşirelik Girişimleri.

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LIVER LACERATION, HEMOPNEUMOTHORAX AND MULTIPLE COMPLICATIONS DURING A PROLONGED INTENSIVE CARE COURSE FOLLOWING POLYTRAUMA: A CASE REPORT

POLİTRAVMA SONRASI GELİŞEN KARACİĞER LASERASYONU, HEMOPNÖMOTORAKS VE UZAMIŞ YOĞUN BAKIM SÜRECİNDE MULTİPL KOMPLİKASYONLAR: BİR OLGU SUNUMU

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ABSTRACT

Objective: Multiple organ injuries following high-energy trauma are associated with high morbidity and mortality. In particular, liver injuries due to blunt abdominal trauma accompanied by thoracic trauma constitute emergencies requiring rapid and accurate decision-making. In this study, we aimed to present the diagnostic and treatment process of a patient who suffered severe polytrauma after a traffic accident and recovered at the end of a complicated intensive care course lasting approximately two months.

Material and method: A 30-year-old female patient was brought to the emergency department with impaired consciousness following a pedestrian-vehicle traffic accident. The patient, who had a Glasgow Coma Scale score of 8 and was tachycardic and hypoxemic, underwent bilateral tube thoracostomy and was intubated. Emergency laparotomy was performed after active intra-abdominal bleeding was detected on FAST ultrasonography and computed tomography; primary suturing and packing were applied due to a deep laceration in liver segments 6-7. Simultaneous thoracotomy with right upper lobectomy and middle lobe wedge resection was performed. The case was retrospectively evaluated in terms of the complications and treatment approaches that developed during the intensive care course.

Results: Depacking and liver segmentectomy were performed on postoperative day 2. During intensive care follow-up, the patient developed ventilator-associated pneumonia due to multidrug-resistant *Acinetobacter baumannii*, candidemia, deep vein thrombosis, focal epileptic seizures, and persistent bile leakage; due to the bile leak, ERCP was performed three times, and a biliary stent was placed twice. Tracheostomy was performed on day 38 due to the need for prolonged mechanical ventilation; cardiac arrest occurred on day 43 due to inadequate ventilation through the tracheostomy cannula and on day 46 during cannula exchange, and emergency endotracheal intubation performed via the stoma on day 46 was lifesaving. Following an unplanned extubation due to a secretion plug on day 47, the patient was observed to be breathing spontaneously without requiring reintubation. The patient was discharged in good health without neurological sequelae on the 86th day of hospitalization.

Conclusion: Early damage-control surgery is lifesaving in combined thoraco-abdominal injuries following severe polytrauma; however, it should be kept in mind that respiratory, infectious, biliary, neurological, and thromboembolic complications may develop during the intensive care course of these patients, and a continuous multidisciplinary approach with close nursing observation should be maintained.

Keywords: Polytrauma, Liver laceration, Tracheostomy complication, Damage control surgery, Intensive care

ÖZET

Amaç: Yüksek enerjili travmalar sonrası gelişen çoklu organ yaralanmaları yüksek morbidite ve mortalite ile seyretmektedir. Özellikle künt batın travmasına bağlı karaciğer yaralanmaları ile eşlik eden toraks travmaları, hızlı ve doğru karar verilmesini gerektiren acil durumlardır. Bu çalışmada, trafik kazası sonrası ağır politravma geçiren ve yaklaşık iki aylık komplike bir yoğun bakım süreci sonunda iyileşen bir olgunun tanı ve tedavi süreciyle birlikte sunulması amaçlanmıştır.

Materyal ve Yöntem: Otuz yaşında kadın hasta, araç dışı trafik kazası sonrası bilinç bulanıklığı ile acil servise getirildi. Glasgow Koma Skalası 8 olan, taşikardik ve hipoksemik hastaya bilateral tüp torakostomi uygulanarak entübe edildi. FAST-USG ve bilgisayarlı tomografide batın içi aktif kanama saptanması üzerine acil laparotomi yapıldı; karaciğer segment 6-7'de derin laserasyon nedeniyle primer sütür ve packing uygulandı. Eş zamanlı torakotomi ile sağ üst lobektomi ve orta lob wedge rezeksiyonu gerçekleştirildi. Olgu, yoğun bakım süreci boyunca gelişen komplikasyonlar ve tedavi yaklaşımları açısından retrospektif olarak değerlendirildi.

Bulgular: Postoperatif 2. günde depacking ve karaciğer segmentektomisi yapıldı. Yoğun bakım izleminde çoklu ilaç dirençli *Acinetobacter baumannii*'ye bağlı ventilatör ilişkili pnömoni, kandidemi, derin ven trombozu, fokal epileptik nöbet ve persistan safra kaçağı gelişti; safra kaçağı nedeniyle üç kez ERCP yapıldı ve iki kez biliyer stent yerleştirildi. Uzun mekanik ventilasyon ihtiyacı nedeniyle 38. günde trakeostomi açıldı; 43. günde trakeostomi kanülünden yetersiz ventilasyona bağlı, 46. günde ise kanül değişimi sırasında olmak üzere iki ayrı kardiyak arrest gelişti, 46. günde stoma yoluyla yapılan acil endotrakeal entübasyon hayat kurtarıcı oldu. 47. günde sekresyon tıkaçına bağlı planlanmamış ekstübasyon sonrası hasta reentübe edilmeden spontan solunumda izlendi. Hasta yatışının 86. gününde nörolojik sekelsiz olarak şifa ile taburcu edildi.

Sonuç: Ağır politravma sonrası gelişen kombine toraks-batın yaralanmalarında erken damage-control cerrahisi hayat kurtarıcıdır; ancak bu hastaların yoğun bakım sürecinde solunumsal, enfeksiyöz, biliyer, nörolojik ve tromboembolik komplikasyonların gelişebileceği unutulmamalı, sürekli multidisipliner yaklaşım ve yakın hemşirelik gözlemi sürdürülmelidir.

Anahtar Kelimeler: Politravma, Karaciğer laserasyonu, Trakeostomi komplikasyonu, Hasar kontrol cerrahi, Yoğun bakım

THE INFLUENCE OF CLIMATIC FACTORS AND THE CULTIVATION SYSTEM ON THE PHYSICOCHEMICAL CHARACTERISTICS OF OLIVE OIL FROM THE MOROCCAN VARIETY PICHOLINE (OLEA EUROPAEA L.) CULTIVATED IN THE NORTHERN AND CENTRAL REGION OF MOROCCO

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ABSTRACT

The Moroccan olive sector is characterized by a great varietal diversity of which the *Moroccan Picholine* is the dominant variety with nearly 96% of crops. This work sets as objective the physicochemical characterization of the olive oil of the *Moroccan Picholine* variety cultivated in two large regions of Morocco, the northern region represented by three stations (Tetouan, Chaouan and Ouazzane) and the central region represented by the stations of Settat, Kelaa of Sraghna and Marrakech. In each station, we took a sample of 250 ml of olive oil to pass the physicochemical analyzes with 40 g of crushed olives from each station to determine the moisture content and the oil content compared to the fresh and dry matter. Four characters were studied, the moisture content, the oil content, the absorbance in the infrared and the chemical composition in fatty acid. The results obtained showed that the humidity rate has high values at the irrigated stations compared to the rain-fed stations. On the other hand, the oil content in relation to the fresh and dry matter is rather higher in the rain-fed stations compared to the irrigated stations. The absorbance does not show any significant difference in all the stations studied. As for the fatty acid composition, the analysis showed a significant difference between all the stations studied with the predominance of oleic acid (32.43-59.96%).

HEMŞİRELERİN TIBBİ HATALARI FARK ETME, DURDURMA VE DÜZELTMEDEKİ ROLÜ *THE ROLE OF NURSES IN IDENTIFYING INTERRUPTING AND CORRECTING MEDICAL ERRORS*

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ABSTRACT

Medical errors are an important cause of preventable patient harm. Nurses, who ensure continuity of care and closely monitor patients, are also a safety barrier against errors reaching patients. Medical error recovery involves identifying, interrupting, and correcting errors to prevent patient harm. This review examines nurses' roles in these stages and the factors influencing the recovery process in light of current literature. This study was structured as a narrative review of current literature. Studies examining nurses' roles in medical error recovery were considered. Findings were synthesised according to the identification, interruption, and correction of errors, together with individual and organisational factors influencing these processes. This synthesis focused on the nursing contribution throughout the recovery process. The literature indicates that nurses have a distinctive, yet often invisible, role in preventing medical errors from reaching patients. Knowing the patient, care plan, and clinical environment; recognising unexpected changes in the patient's condition; and clinical reasoning are prominent in error identification. Once an error is recognised, questioning orders, communicating with team members, voicing safety concerns, and interrupting an intervention when necessary are key nursing behaviours. Near-miss events are considered opportunities to identify system vulnerabilities and prevent future errors, rather than merely events without harm. Nurses constitute a critical safety barrier against patient harm from medical errors. Improving patient safety requires strengthening nurses' capacity to identify, question, interrupt, and correct errors, alongside efforts to reduce error rates. Healthcare organisations should develop a non-punitive safety culture that supports learning from near misses and enables nurses to raise safety concerns without hesitation.

Keywords: Medical error, patient safety, nursing, near miss.

ÖZET

Amaç: Tıbbi hatalar, sağlık hizmetlerinde önlenabilir hasta zararının önemli nedenlerindendir. Hasta bakımının sürekliliğini sağlayan ve klinik durumu yakından izleyen hemşireler, yalnızca hata riski taşıyan sağlık profesyonelleri değil, aynı zamanda hataların hastaya ulaşmasını engelleyen önemli bir güvenlik bariyeridir. Tıbbi hata kurtarma; hatanın fark edilmesi, durdurulması ve hasta zararını önlemek amacıyla düzeltilmesini içeren bir süreçtir. Bu derlemenin amacı, hemşirelerin tıbbi hataları fark etme, durdurma ve düzeltmedeki rollerini ve bu süreci etkileyen faktörleri güncel literatür doğrultusunda incelemektir.

Materyal ve Yöntem: Bu çalışma, güncel literatürün anlatı derlemesi olarak yapılandırılmıştır. Hemşirelerin tıbbi hata kurtarma sürecindeki rolünü inceleyen çalışmalar değerlendirilmiştir. Bulgular; hatanın fark edilmesi, durdurulması ve düzeltilmesi aşamaları ile bu süreçleri etkileyen bireysel ve örgütsel faktörler doğrultusunda sentezlenmiştir.

Bulgular: Literatür, hemşirelerin tıbbi hataların hastaya ulaşmasını önlemede özgün ancak çoğu zaman görünmeyen bir role sahip olduğunu göstermektedir. Hata kurtarma sürecinin ilk aşamasında hastayı, bakım planını ve klinik çevreyi yakından tanıma; hastanın durumundaki beklenmedik değişiklikleri fark etme ve klinik muhakeme becerisi ön plana çıkmaktadır. Hata fark edildiğinde istemi sorgulama, ekip üyeleriyle iletişim kurma, güvenlik endişesini dile getirme ve gerektiğinde uygulamayı durdurma, hatanın hastaya ulaşmasını engelleyen temel hemşirelik davranışlarıdır. Güncel literatürde ramak kala olaylar, yalnızca zarar oluşmayan olaylar olarak değil, sistemdeki güvenlik açıklarının belirlenmesi ve gelecekteki hataların önlenmesi açısından önemli öğrenme fırsatları olarak değerlendirilmektedir.

Sonuç: Hemşireler, tıbbi hataların hasta zararına dönüşmesini önleyen kritik bir güvenlik bariyeridir. Hasta güvenliğinin geliştirilmesinde yalnızca hata oranlarının azaltılmasına değil, hemşirelerin hataları fark etme, sorgulama, durdurma ve düzeltme kapasitelerinin güçlendirilmesine de odaklanılmalıdır.

Sağlık kurumlarında ramak kala olaylardan öğrenmeyi destekleyen, cezalandırıcı olmayan ve hemşirelerin güvenlik endişelerini çekinmeden dile getirebildiği bir güvenlik kültürünün oluşturulması önerilmektedir.

Anahtar Kelimeler: Tıbbi hata, hasta güvenliği, hemşirelik, ramak kala olay.

SAĞLIK HİZMETLERİNDE ALARM YORGUNLUĞU VE HASTA GÜVENLİĞİ *ALARM FATIGUE AND PATIENT SAFETY IN HEALTHCARE*

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ABSTRACT

Clinical alarms play an important role in patient safety by enabling the early recognition of changes in patients' physiological condition. However, frequent exposure to repetitive and clinically nonactionable alarms, particularly in technology-intensive settings such as intensive care units, may contribute to alarm fatigue among healthcare professionals. This review examines the implications of alarm fatigue for patient safety and current approaches to its reduction. This study was structured as a narrative review of current literature. Research articles and reviews concerning alarm fatigue, clinical alarms, nursing, intensive care, and patient safety were examined. Findings were synthesised in relation to contributing factors, safety implications, and alarm management approaches. The literature indicates that alarm fatigue remains an important problem, especially in intensive care units. Frequent clinically insignificant alarms, false alarms, inappropriate thresholds, simultaneous use of multiple medical devices, and demanding work environments contribute to alarm burden. Repeated exposure is associated with desensitisation, reduced attention, cognitive workload, and stress, potentially delaying responses or allowing critical alarms to be overlooked. Current studies report positive associations with nurses' stress and negative associations with perceptions of safety climate and teamwork. Alarm management approaches include individualised parameters, reduction of unnecessary alarms, staff education, technological filtering, standardised protocols, reminders, and multicomponent intervention bundles. Alarm fatigue extends beyond staff discomfort and represents a system-level risk that may threaten patient safety. Alarm management should be supported by institutional policies, patient-specific settings, education, and technological improvements, with clearly defined responsibilities across the healthcare team. These measures should be implemented together, while preserving the detection of clinically important events and monitoring whether meaningful safety outcomes improve.

Keywords: Alarm fatigue, patient safety, clinical alarm, nursing, intensive care.

ÖZET

Amaç: Klinik alarmlar, hastaların fizyolojik durumundaki değişikliklerin erken fark edilmesini sağlayarak hasta güvenliğinde önemli rol oynamaktadır. Bununla birlikte özellikle yoğun bakım gibi yüksek teknolojiye sahip bakım ortamlarında sık, tekrarlayan ve klinik olarak eylem gerektirmeyen alarmlara maruz kalmak sağlık profesyonellerinde alarm yorgunluğuna yol açabilmektedir. Bu derlemenin amacı, alarm yorgunluğunun hasta güvenliği üzerindeki etkilerini ve alarm yorgunluğunun azaltılmasına yönelik güncel yaklaşımları incelemektir.

Materyal ve Yöntem: Bu çalışma güncel literatürün anlatı derlemesi olarak yapılandırılmıştır. Alarm yorgunluğu, klinik alarm, hemşirelik, yoğun bakım ve hasta güvenliği kavramları çerçevesinde yayımlanan güncel araştırma ve derlemeler değerlendirilmiştir.

Bulgular: Güncel literatür, alarm yorgunluğunun özellikle yoğun bakım ünitelerinde önemli bir sorun olmaya devam ettiğini göstermektedir. Sık ve klinik açıdan önemsiz alarmlar, yanlış alarm oranlarının yüksekliği, uygun olmayan alarm eşikleri, çok sayıda monitör ve tıbbi cihazın eş zamanlı kullanımı ile yoğun çalışma ortamı alarm yükünü artıran başlıca faktörlerdir. Tekrarlayan alarm maruziyeti; hemşirelerde duyarsızlaşma, dikkat azalması, bilişsel yük ve stresle ilişkilendirilmekte, bu durum alarm yanıtlarının gecikmesine veya kritik bir alarmın gözden kaçırılmasına zemin hazırlayabilmektedir. Güncel çalışmalar alarm yorgunluğunun hemşirelerin stres düzeyleriyle pozitif; güvenlik iklimi ve ekip çalışması algılarıyla ise olumsuz ilişkili olduğunu göstermektedir. Alarm yönetimine ilişkin güncel girişimler; alarm parametrelerinin hastaya özgü bireyselleştirilmesi, gereksiz alarmların azaltılması, alarm yönetimi eğitimleri, teknolojik filtreleme sistemleri, standart protokoller, hatırlatıcı sistemler ve çok bileşenli alarm yönetim paketlerini kapsamaktadır.

Sonuç: Alarm yorgunluğu yalnızca sağlık çalışanlarının çalışma konforunu etkileyen bir sorun değil, hasta güvenliğini doğrudan tehdit edebilen sistem düzeyinde bir risk faktörüdür. Alarm yönetiminin bireysel hemşire sorumluluğuna bırakılmaması; hasta özelliklerine göre bireyselleştirilmiş alarm

ayarları, eğitim, teknolojik iyileştirmeler ve kurum düzeyinde standart alarm yönetimi politikalarının birlikte uygulanması önerilmektedir.

Anahtar Kelimeler: Alarm yorgunluğu, hasta güvenliği, klinik alarm, hemşirelik, yoğun bakım

ADSORPTION TECHNOLOGIES AND THE HEALTH EFFECTS OF HEAVY METALS: A MULTIDISCIPLINARY REVIEW WITH EXAMPLES FROM THE WORLD AND TURKEY**Nilgün ONURSAL**

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ABSTRACT

Heavy metals and toxic pollutants are among the contaminants that seriously affect the health of living organisms through biomagnification and bioaccumulation, exhibiting persistence in both environmental and biological systems. Industrial activities, mining, rapid urbanization, fossil fuel consumption, and inadequate waste management practices have accelerated the release of toxic elements such as lead (Pb), arsenic (As), cadmium (Cd), mercury (Hg), chromium (Cr), nickel (Ni), antimony (Sb), and thallium (Tl) into the environment. These metals can exert toxic effects even at low concentrations; since they cannot be eliminated through the body's excretory pathways (kidney, liver, intestine, lung, skin) without specific support, they accumulate in biological organisms and, upon reaching effective doses, may lead to serious health problems—including thyroid disorders, neurological diseases, cardiovascular and renal damage, carcinogenic effects, autism, and infertility—or even death. In this review, the environmental transport and bioaccumulation properties of heavy metals, along with the pathological effects of each metal on human health, are addressed individually; the physical and chemical mechanisms of adsorption, together with the Langmuir and Freundlich isotherms, are explained. Furthermore, the role of activated carbon, zeolites, iron-oxide-based, and metal-organic framework (MOF)-based adsorbents in water treatment and air quality applications is examined, along with clinical/biomedical applications such as activated charcoal, hemoperfusion, and nanoscale drug delivery systems. Finally, this study aims to provide a current and holistic evaluation of the subject through global case examples such as Minamata disease, the Bangladesh arsenic crisis, and Itai-Itai disease, as well as examples from Turkey including the Ergene Basin, İzmit Bay, and the Kütahya-Euphrates Basin.

Keywords: Heavy metals, adsorption, heavy metal toxicity, water treatment, environmental pollution

HEAVY METAL POLLUTION AND BIOLOGICAL EFFECTS IN MARINE ECOSYSTEMS**Nilgün ONURSAL**

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ABSTRACT

Heavy metal pollution remains an important environmental problem in marine ecosystems because these pollutants can persist for long periods, be taken up by organisms and move through food chains. The harmful effects of thallium (Tl), mercury (Hg), lead (Pb), cadmium (Cd), arsenic (As), chromium (Cr), nickel (Ni) and manganese (Mn) can vary depending on their chemical form, pH and oxygen-related conditions in the environment, organic matter content and the characteristics of exposed organisms. Methylmercury is of particular concern because it can move efficiently through aquatic food webs and accumulate in organisms at higher levels of the food chain, creating a possible route of human exposure through seafood consumption. This review examines how heavy metals enter marine environments, how they are taken up and accumulated by organisms, their main effects on invertebrates, fish and higher-level consumers, and current approaches to monitoring and risk management using verifiable scientific and institutional sources. The evidence shows that total metal concentration alone may not always be enough to explain ecological risk. Chemical form, biological responses and long-term monitoring data should therefore be considered together. This integrated approach can improve the assessment of biological effects and potential human exposure. In Türkiye, the Marmara Sea case highlights the need to reduce pollution sources, strengthen wastewater control and maintain continuous environmental monitoring.

Keywords: heavy metals, marine pollution, bioaccumulation, biomagnification, ecotoxicology

THE IMPORTANCE OF ANTIOXIDANT PROPERTIES OF FRUIT SPECIES FOR HUMAN HEALTH*MEYVE TÜRKLERİNİN ANTİOKSİDAN ÖZELLİKLERİNİN İNSAN SAĞLIĞI AÇISINDAN ÖNEMİ***Prof. Dr. Melekber Sülüoğlu DURUL**

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ABSTRACT

Phenolic compounds are secondary metabolites produced by plants in response to stress and for protective purposes. Due to their aromatic structures containing hydroxyl groups, they are referred to as phenolic substances. These compounds, mainly consisting of flavonoids and phenolic acids, are abundantly found in various fruit species, and their concentrations may vary depending on ecological conditions and cultivation practices. Phenolic compounds play a crucial role in human health due to their strong antioxidant properties. By neutralizing free radicals, they help prevent cellular damage, support the immune system, and reduce the risk of chronic diseases. Additionally, they are known to exhibit protective effects against cardiovascular diseases, cancer, and aging processes. In this study, the antioxidant properties of different fruit species were examined in relation to their growing conditions and evaluation methods. The results are expected to contribute to the promotion of healthy nutrition and the maintenance of an active and balanced lifestyle.

Keywords: Fruit species, phenolic compounds, antioxidant, immune system**ÖZET**

Fenolik bileşikler, bitkilerin stres ve korunma durumları için ürettikleri sekonder metabolitlerdir. Hidroksil grubuna sahip aromatik yapılarından dolayı fenolik maddeler olarak adlandırılırlar. Flavonoidler ve fenolik asitlerden oluşan bu bileşikler meyve türlerinde yoğun olarak bulunmaktadır. Ekolojik koşullara ve yetiştirme tekniklerine bağlı olarak miktarları değişebilmektedir. Fenolik bileşikler, sahip oldukları güçlü antioksidan özellikler sayesinde insan sağlığı açısından vazgeçilmez bir öneme sahiptir. Serbest radikalleri etkisiz hale getirerek hücre hasarını önler, bağışıklık sistemini destekler ve kronik hastalıkların oluşum riskini azaltır. Ayrıca kalp-damar hastalıkları, kanser ve yaşlanma süreçleri üzerinde koruyucu etkiler gösterebildiği bilinmektedir. Bu çalışmada, farklı meyve türlerinin antioksidan özellikleri yetiştirme koşulları ve değerlendirme şekilleri ile ilişkili olarak ele alınmıştır. Sonuçların sağlıklı beslenme ve aktif, düzenli bir yaşam tarzının sürdürülmesine katkı sağlayacağı düşünülmektedir.

Anahtar Kelimeler: Meyve türleri, fenolik bileşikler, antioksidan, immün sistem

THE ROLE OF ESOPHAGOGASTRODUODENOSCOPY IN THE DIAGNOSIS AND TREATMENT OF POSTOPERATIVE COMPLICATIONS

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ABSTRACT

Introduction: Early postoperative complications following surgery in the gastroduodenal region remain one of the major challenges in modern abdominal surgery. Early diagnosis and appropriate therapeutic management play a crucial role in preventing the progression of complications, accelerating patient recovery, and significantly improving treatment outcomes. Esophagogastroduodenoscopy (EGDS), a highly informative and minimally invasive diagnostic procedure, enables direct visualization of the upper gastrointestinal tract, identification of the source of bleeding, and assessment of the integrity of the anastomotic site, surgical sutures, and mucosal lining.

EGDS is widely used not only as a diagnostic procedure but also as a therapeutic modality. It allows endoscopic hemostasis, removal of blood clots and foreign bodies, decompression of the gastrointestinal tract, sanitation of the anastomotic site, and other minimally invasive interventions. Therefore, EGDS is considered an effective and safe approach for the management of postoperative complications.

The aim of the study was to analyze the outcomes of EGDS according to the type of postoperative complication and to evaluate its diagnostic and therapeutic effectiveness.

Materials and Methods

The study included 535 patients. In the early postoperative period, patients were diagnosed with bleeding (n=323), anastomosis (n=104), motor-evacuation disorder (n=31), anastomotic leakage (n=27), and residual choledocholithiasis (n=50).

The numerical data obtained in the study were statistically analyzed using the non-parametric – Wilcoxon (Mann-Whitney U) test to determine differences between the study groups.

Results and Discussion

The study demonstrated that no postoperative complications were detected by EGDS in 33 patients (6.2%) during the early postoperative period. These findings indicated that no additional invasive diagnostic procedures or emergency surgical interventions were required in these patients. Further analysis according to the type of complication showed that EGDS did not confirm postoperative bleeding in 27 patients (8.4%) with suspected hemorrhage or anastomotic leakage in 6 patients (22.2%) with suspected leakage. In other words, EGDS findings excluded these complications, thereby eliminating the need for additional invasive diagnostic procedures or unnecessary surgical intervention in these patients.

Overall, therapeutic endoscopic interventions were successfully performed in 451 patients (84.3%). According to the type of postoperative complication, the effectiveness of endoscopic treatment was 83.6% (n=270) in patients with bleeding, 92.3% (n=96) in those with anastomosis, 87.1% (n=27) in patients with motor-evacuation disorders, and 96.0% (n=48) in patients with residual choledocholithiasis. These findings demonstrate that endoscopic treatment is highly effective in the management of most postoperative complications. However, its effectiveness was considerably lower in patients with anastomotic leakage, reaching only 37.0% (n=10), compared with other types of complications.

In some patients, endoscopic treatment was insufficient, necessitating additional surgical intervention. According to the study results, relaparotomy was performed in a total of 51 patients (9.5%). Among these patients, relaparotomy was performed for bleeding in 26 cases (8.0%), anastomosis in 8 cases (7.7%), motor-evacuation disorders in 4 cases (12.9%), anastomotic leakage in 11 cases (40.7%), and residual choledocholithiasis in 2 cases (4.0%). The results demonstrated that relaparotomy was required most frequently in patients with anastomotic leakage.

Conclusion

The findings of this study demonstrate that EGDS plays an important role in the diagnosis and management of postoperative complications.

EGDS enables early detection of complications, accurate assessment of their nature, and selection of the most appropriate treatment strategy. Furthermore, its therapeutic capabilities allow successful management of most postoperative complications, thereby reducing the need for repeat surgical intervention. Overall, EGDS can be considered a reliable and effective diagnostic and therapeutic modality in the management of postoperative complications.

Keywords: surgery, esophagogastroduodenoscopy, postoperative complications, relaparotomy

DIGITAL PATHOLOGY AND ITS APPLICATIONS IN MODERN MEDICINE**S. M. YAGUBOVA**

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ABSTRACT

In the modern era, pathology one of the most important disciplines of medical science, dedicated to investigating the causes of diseases, their mechanisms of development, and the structural and functional changes occurring in organs and tissues – is undergoing rapid advancement. Currently, the widespread application of molecular analyses, immunohistochemical techniques, artificial intelligence, and, in particular, digital technologies is creating new opportunities for the development of pathology. As a result of these advances, pathology has evolved beyond a purely diagnostic discipline and has become one of the key driving forces of personalized medicine.

Digital pathology is an emerging field based on the application of modern information technologies to pathology, enabling the acquisition, management, analysis, storage, and sharing of digitized histopathological images.

In digital pathology, prepared histological slides are scanned and digitized within seconds, after which they are stored, visualized, and analyzed on computer workstations using specialized software and artificial intelligence technologies. These digital slides can be rapidly evaluated by pathologists in an electronic environment. One of the principal advantages of digital pathology is its ability to facilitate faster and more accurate diagnosis.

One of the most important branches of digital pathology is telepathology. Through this technology, digitized pathological images can be securely shared with specialists working in different countries around the world, enabling remote consultations, expert second opinions, and international multidisciplinary collaboration. This expands collaboration among specialists, greatly facilitating international multidisciplinary consultations for complex clinical cases, remote expert consultations, and the acquisition of second opinions from leading pathologists worldwide. Telepathology not only reduces the rate of diagnostic errors but also provides patients living in remote and underserved areas with access to highly qualified pathology specialists and expert diagnostic services.

Digital pathology also plays a significant role in improving medical education and enhancing the efficiency of scientific research. By using digital slides, students and researchers can study the morphological features of various diseases and the pathological changes occurring in organs and tissues more effectively. This technology provides convenient access to high-quality teaching materials, facilitates interactive learning, and supports the development of research skills through detailed morphological analysis. At the same time, digital pathology plays a pivotal role in disease research, the development of novel therapeutic agents, and the design of advanced treatment strategies.

The application of artificial intelligence in digital pathology significantly improves the quality and efficiency of healthcare services provided to patients. In recent years, advances in artificial intelligence have further expanded the capabilities of various fields of medicine, including digital pathology, and artificial intelligence has become an integral component of digital pathology. Artificial intelligence

enables automated analyses to be performed. AI algorithms can analyze millions of cells within a short period of time, distinguish normal from pathological tissues, identify atypical cells, detect tumor cells, count the number of mitotic figures, and assess their type, size, degree of differentiation, invasiveness, and biological characteristics. They can also determine the presence of lymph node metastasis and assess the status of surgical margins.

Furthermore, by analyzing pathological data, artificial intelligence systems can predict disease progression and assess the risk of complications, recurrence, and, in oncological diseases, even metastasis. These technologies do not replace pathologists; rather, they accelerate their work, improve diagnostic accuracy, and contribute to the establishment of a more accurate diagnosis. At the same time, they support physicians in making more precise clinical decisions and developing individualized treatment and follow-up plans for each patient. This, in turn, accelerates the development of personalized medicine.

The fundamental principle of personalized medicine is to develop a treatment plan tailored to each patient's individual characteristics and the biological features of their disease. One of the areas in which digital pathology is most widely used is surgery. During surgical procedures, tissue specimens obtained from the patient are immediately sent to the pathology laboratory. One of the most important stages during surgery is intraoperative histological examination. Digital pathology further accelerates this process. Based on the pathologist's assessment, the course of the surgical procedure – including the removal of additional tissue and the precise determination of surgical margins – can be established. This not only reduces the need for repeat surgical procedures but also increases the likelihood of successful patient recovery.

The application of digital pathology in oncological surgery is particularly important. In modern oncology, virtually all diagnoses are based on pathological examination. The combined use of digital pathology and molecular analyses enables the identification of specific genetic mutations and biomarkers in tumor tissue. For example, in breast cancer, the status of HER2, estrogen (ER), and progesterone (PR) receptors is assessed; in lung cancer, EGFR and ALK mutations are evaluated; while in colorectal cancer, alterations in the KRAS, NRAS, and BRAF genes are identified. Digital analysis of these immunohistochemical markers not only facilitates the personalization of treatment but also supports the selection of the most appropriate subsequent targeted therapeutic strategies for each patient, including chemotherapy, radiotherapy, or other treatment modalities. This approach helps reduce adverse effects, improves treatment efficacy, and increases the likelihood of patient survival.

Digital pathology is also of great importance in the diagnosis of gynecological diseases. The morphological features of tumors can be examined in greater detail using digital slides. Digital evaluation of immunohistochemical analyses enables more accurate determination of the tumor origin, histological type, degree of malignancy, and likelihood of metastasis. Pap tests and cervical biopsies are used to evaluate dysplasia and cervical intraepithelial neoplasia (CIN), while endometrial biopsies are used to assess endometrial hyperplasia, polyps, endometritis, and early malignant changes. Based on these findings, decisions can be made regarding conservative treatment, conization, or surgical intervention, as well as determining the extent of the surgical procedure. This enables the disease to be detected at an early stage, treatment to be initiated in a timely manner, and, most importantly, an appropriate treatment plan to be developed.

Conclusion

Thus, digital pathology is one of the most promising and innovative fields in modern medicine. The application of such modern technologies helps reduce errors associated with human factors and accelerate the diagnostic process. In particular, it improves the accuracy and efficiency of diagnosis, reduces the time required for analysis, and, most importantly, facilitates the selection of an appropriate treatment strategy. Today, the continued development of artificial intelligence and digital pathology, together with the integration of digital pathology with genomics, proteomics, and other molecular research approaches, is undoubtedly expanding the potential of personalized medicine and is expected to further broaden its capabilities in the future. As a result of these advances, not only the treatment of diseases but also their early detection, identification of risk factors, and planning of preventive measures will be carried out more accurately and in a timely manner.

This, in turn, may contribute to improving the effectiveness and quality of treatment and, most importantly, to reducing the incidence of diseases.

Keywords:digital pathology, diagnostics, specimen, analysis, artificial intelligence, telepathology, immunohistochemistry



İlgili makama;

Ispec 12. Uluslararası Tıp Ve Sağlık Bilimleri Kongresi , 23 Ağustos -1 Eylül 2026 tarihleri arasında Japonya’da 30 farklı ülkenin (Türkiye 119 bildiri- Diğer ülkeler 154 bildiri) akademisyen/araştırmacılarının katılımıyla gerçekleşmiştir Kongre 16 Ocak 2020 Akademik Teşvik Ödeneği Yönetmeliğine getirilen “Tebliğlerin sunulduğu yurt içinde veya yurt dışındaki etkinliğin uluslararası olarak nitelendirilebilmesi için Türkiye dışında en az beş farklı ülkeden sözlü tebliğ sunan konuşmacının katılım sağlaması ve tebliğlerin yarıdan fazlasının Türkiye dışından katılımcılar tarafından sunulması esastır.” değişikliğine uygun düzenlenmiştir. Bilgilerinize arz edilir, Saygılarımla

Prof. Dr. H. Turan AKKOYUN
Head of Conference

A handwritten signature in blue ink, appearing to read "Dr. H. Turan Akkoyun", with a long horizontal line extending from the end of the signature.



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Sayın Prof. Dr. Mahire BAYRAMOĞLU AKKOYUN
Öğretim Üyesi

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İlgi yazınız ile Bölümünüz personeli Prof. Dr. Mahire BAYRAMOĞLU AKKOYUN için talep etmiş olduğunuz olur alınmış olup yazımız ekinde sunulmuştur. İlgiliye tebliği hususunda;
Bilginize rica ederim.

Prof. Dr. Kıvanç İRAK
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Üniversitemizin, İktisadi Kalkınma ve Sosyal Araştırmalar Enstitüsü iş birliğinde 23 Ağustos-1 Eylül 2026 tarihleri arasında Japonya'da düzenlenecek olan Ispac 12.Uluslararası Tıp Ve Sağlık Bilimleri Kongresi'nin iş ve işleyişinin yürütülmesi için **Kongre Başkanı** olarak Fakültemiz akademik personelinde Prof. Dr. Mahire BAYRAMOĞLU AKKOYUN'un kurulda yer alması hususunu;
Olurlarınıza arz ederim.

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Dekan V.

OLUR

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