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2025
Conference

The 1st International Online Conference on Diseases

From the Molecular to the Clinical Perspectives

9-11 September 2025 | Online

Program and Abstract Book

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The 1st International Online Conference on Diseases

9–11 September 2025 | Online



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Welcome from the Chair

Dear scientists, researchers, and authors,

We are pleased to announce that **the 1st International Online Conference on Diseases**, chaired by Prof. Dr. Omar Cauli, will be held on 9–11 September 2025.

This conference aims to provide leading scientists working in the field of diseases, from the molecular to the clinical perspective, with a robust common platform through which to share and discuss the latest research and to promote the advancement of this exciting and rapidly changing field.

We hope to encourage discovery across the discipline as we cover the following themes:

- S1: Infectious diseases;
- S2: Nutrition and dietetics;
- S3: Immune and inflammatory diseases;
- S4: Geriatrics;
- S5: Cardio-vascular diseases;
- S6: Neuropsychiatric disorders;
- S7: Endocrine and metabolic disorders.

Kind regards,



Prof. Dr. Omar Cauli

Department of Nursing, University of
Valencia, Valencia, Spain



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Impact Factor: 3.0 (2024); **5-Year Impact Factor:** 3.4 (2024)

Invited Speakers



Dr. Abdurrahman Kadayıfçı

University Health San Antonio, Transplant Hepatology Department, San Antonio, TX, USA



Dr. Lorenzo Brognara

Department of Biomedical and Neuromotor Science, University of Bologna, Bologna, Italy



Dr. Nizam Uddin Ahmed

The University of Sydney, Sydney, Australia; CEO, National TeleHealth Services and Daffodil International University, Bangladesh



Dr. Sibel Islak Mutcali

Department of Infectious Diseases, CAMC Institute for Academic Medicine, Charleston, WV, USA



Prof. Dr. Ana María Sánchez-Pérez

Department of Medicine, Faculty of Health Science, University Jaume I, 12071 Castellon, Spain



Prof. Dr. Eugenia Vlachou

Department of Nursing, University of West Attica, Athens, Greece



Prof. Dr. Hakan Akin

Medicine and Gastroenterology, Texas Tech University Health Science Center, Lubbock, TX, USA



Prof. Dr. Isabel Rodríguez Sanchez

Geriatrics Department, Hospital Universitario Clínico San Carlos, Instituto de Investigación Sanitaria del Hospital Clínico San Carlos, Madrid, Spain



Prof. Dr. Luigi Santacroce

Interdisciplinary Department of Medicine, Section of Microbiology and Virology, School of Medicine, University of Bari Aldo Moro, 70124 Bari, Italy



Asst. Prof. Dr. Harleen Chela

Department of
Gastroenterology, Charleston
Area Medical Center,
Charleston, WV, USA



Asst. Prof. Dr. Nisar Amin

Department of Internal Medicine,
Charleston Area Medical Center,
Charleston, WV, USA

Program at a Glance

	Day 1	Day 2	Day 3
Morning	Chair Welcome Speech Session 4 (part I). Geriatrics	Session 6. Neuropsychiatric Disorders Session 7. Endocrine and Metabolic Disorders	Session 3. Immune and Inflammatory Diseases Session 2. Nutrition & Dietetics
Afternoon	Session 4 (part II). Geriatrics Flash Poster (Session 4)	Session 5. Cardio-vascular Diseases Flash Poster (Session 5 & 6 & 7)	Session 1. Infectious Diseases Flash Poster (Session 1 & 2 & 3) Chair Closing Speech

IOCD 2025 Program

9 September 2025 (Tuesday)

Session 4 (part I). Geriatrics

09:00 (CEST, Basel) | 03:00 (EDT, New York) | 15:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
9:00–9:10	Prof. Dr. Omar Cauli Conference Chair	<i>Chair Welcome Speech</i>
9:10–9:20	Dr. Hélio José Coelho-Júnior Session Chair	<i>Welcome from the Session Chair</i>
9:20–9:40	Dr. Lorenzo Brognara Invited Speaker	Gait Analysis in Older Adults Using Wearable Sensors: Spatio Temporal Parameters as Biomarkers of Frailty
9:40–9:55	Ignacio Peinado Oral Speaker	Evaluation of the effectiveness of a personalized multimodal intervention in community-dwelling frail and pre-frail older people using innovative ICT solutions - the MIRATAR study
9:55–10:10	Alfonso Rodrigo-Pérez Oral Speaker	The Impact of a Multimodal Intervention with Exercise and Nutritional Education on Sarcopenia and Frailty in Older Adults with HIV: a Quasi-Experimental Study Protocol
10:10–10:25	Isabel Rodríguez-Sánchez Oral Speaker	Addressing Frailty in People Over 60 Living With HIV: Insights From the 'MasdeSesenta' Project. Preliminary results
10:25–10:55	Dr. Hélio José Coelho-Júnior Session Chair's Talk	New Ways to Assess and Understand Sarcopenia.

Session 4 (part II). Geriatrics

14:00 (CEST, Basel) | 08:00 (EDT, New York) | 20:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
14:00–14:20	Prof. Dr. Isabel Rodriguez Sanchez Invited Speaker	Sarcopenia and heart failure, do they go hand by hand?
14:20–14:35	Vicente Paulo Alves Oral Speaker	Cognitive Decline in the Aging Brazilian Population: A Quantitative Overview
14:35–14:50	Mayra Alejandra Mafla-España Oral Speaker	Association between estrogen plasmatic levels and geriatric assessment in men with localized and metastatic prostate cancer
14:50–15:05	Angelica Sangiorgi Oral Speaker	Exploring Key Success Factors in Home-Based Occupational Therapy for People with Dementia: A Qualitative Study from Italy
15:05–15:20	Alessandro Lanzoni Oral Speaker	"Implementing Transcultural Geriatric Assessment in a Migrant Population at the Modena Memory Clinic"
15:20–15:35	Cristian Pérez Fernández Oral Speaker	Association between Sarcopenia and Mortality in Older Adults with Cancer: A Systematic Review
15:35–15:50	Marina Hernández-Aliaga Oral Speaker	Nursing overview of the older adult in hematology following the first diagnostic visit
15:50–16:05	Mariam El Assar Oral Speaker	Muscle function is markedly impaired in elderly hip fracture patients
16:05–16:20	Victoria Andrea Alister Flores Oral Speaker	Sense of Coherence and Their Impact on Health Promotion Strategies for the Elderly
16:20–16:35	Elsa Vitale Oral Speaker	Nurse–patient relations in older Italian oncology nurses
16:35–16:50	Alejandro Alvarez-Bustos Oral Speaker	Dietary Aspects Associated with Cognitive Function in the Toledo Study of Healthy Ageing
	Flash Poster Presentation	
16:50–16:55	Immaculada Tormos-Miñana Flash Poster	Incidence of delirium in older patients attending the emergency department

10 September 2025 (Wednesday)

Session 6. Neuropsychiatric Disorders
Session 7. Endocrine and Metabolic Disorders

09:00 (CEST, Basel) | 03:00 (EDT, New York) | 15:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
	Session 6	
9:00–9:10	Dr. Michele Malaguarnera Session Chair	<i>Welcome from the Session Chair</i>
9:10–9:30	Prof. Dr. Ana María Sánchez-Pérez Invited Speaker	ABA: Cooling ADHD's Inflammatory Fire
9:30–9:45	Paula Denisa Saragea Oral Speaker	The Neuroprotective Potential of Multitarget Plant Extracts in Alzheimer's Disease: Insights from In Silico Predictions and Behavioral Analysis in the 5xFAD Mouse Model
9:45–10:00	Marta Pardo Oral Speaker	Effect of intracerebral Magnetolectric nanoparticles on behavioral outcomes
10:00–10:15	Elsa Vitale Oral Speaker	Sex-related differences in nurse-patient relations and problematic cell phone use among Italian oncology nurses
10:15–10:30	Michele Malaguarnera Oral Speaker	Protective Effects of Environmental Enrichment During Adolescence on Stress-Induced Vulnerability to Cocaine's Reward
	Session 7	
10:30–10:50	Prof. Dr. Eugenia Vlachou Invited Speaker	Diabetes - Obesity and the Nursing Perspective
10:50–11:05	Mar Sempere Bigorra Oral Speaker	Blood glycosylated hemoglobin concentration correlated with risk of falls and gait and posture parameters in diabetic patients
11:05–11:20	Iza Fernanda Pérez-Ramírez Oral Speaker	Targeted serum protein profiling for early prediction of gestational diabetes in Mexican women

Session 5. Cardio-vascular Diseases

14:00 (CEST, Basel) | 08:00 (EDT, New York) | 20:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
14:00–14:10	Dr. Jason Ali Session Chair	<i>Welcome from the Session Chair</i>
14:10–14:25	Yongting Luo Oral Speaker	SFXN1-mediated serine import reprograms macrophage polarization and ameliorates atherosclerosis
14:25–14:40	Konstantina Cheimpeloglou Oral Speaker	Anti-Inflammatory and Antithrombotic Activities of Matricaria chamomilla Extract: Targeting Platelet Activation Pathways in Cardiovascular Disease
14:40–14:55	LiHan Lin Oral Speaker	Effects of a 12-Month Individualized Combined Exercise Intervention on Metabolic Control and Physical Capacity in Patients with Type 2 Diabetes and Stable Coronary Artery Disease: A Randomized Controlled Trial
14:55–15:10	Rabbani Mahmoud ElSayed Hassan Daoud Oral Speaker	Optimizing CTPA Use in Pulmonary Embolism: Can Clinical Algorithms Outperform Instinct?
15:10–15:25	Insaf MOUDIAN Oral Speaker	Cardiovascular risk factors among Moroccan healthcare professionals
	Flash Poster Presentation	
15:25–15:30	Spyridoula Ioanna Koutra Session 5	Anti-Inflammatory and Antithrombotic Effects of Sideritis scardica Extracts: Implications for Cardiovascular Disease Prevention and Therapy
15:30–15:35	Angela Soler Sanchis Session 5	"Nurse triage in acute coronary syndrome: Are we prioritizing those who need it most?"
15:35–15:40	Ali Allouch Session 6	The association between sleep quality and chronotype in health science students in Morocco and Spain.

15:40–15:45	Kaoutar BEN MAKHLOUF Session 7	ICSI Outcomes According to Sperm Origin: Comparing Fresh, Frozen Ejaculated and Testicular Sperm From Five Years Period.
15:45–15:50	Boukil Noura Session 7	Medicinal plants used by hemodialysis patients in public centers of Tangier-Tetouan-Al Hoceima region : Awareness of potential toxicity
15:50–15:55	Michele Malaguarnera Session 7	Plasma Extracellular Vesicles Reflect Immune Alterations in Morbid Obesity and Are Modified by Bariatric Surgery
15:55–16:00	Liujie Zhu Session 7	Investigating the Causal Role of Gut Microbiota-Derived Exosomes in Mediating Inter-Organ Communication in Diet-Induced Obesity
16:00–16:05	P. Barciela Session 7	Obesity in context: Challenging BMI and embracing metabolic diversity

11 September 2025 (Thursday)

Session 3. Immune and Inflammatory Diseases
Session 2. Nutrition & Dietetics

7:00 (CEST, Basel) | 01:00 (EDT, New York) | 13:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
	Session 3	
7:00–7:10	Prof. Dr. Veysel Tahan Prof. Dr. Reşat Özaras Asst. Prof. Dr. Ebubekir Dağlılar Session Chairs	<i>Welcome from the Session Chairs</i>
7:10–7:30	Dr. Abdurrahman Kadayıfçı Invited Speaker	The immunology of Liver and Transplantation
7:30–7:50	Asst. Prof. Dr. Harleen Chela Invited Speaker	Celiac Disease: An Overview
7:50–8:10	Prof. Dr. Hakan Akın Invited Speaker	Current Treatment of PBC (Primary Biliary Cholangitis)
8:10–8:30	Dr. Sibel İslak Mutcalı Invited Speaker	Terminal Ileitis Without IBD: A Clinician's Diagnostic Challenge
8:30–8:50	Asst. Prof. Dr. Nisar Amin Invited Speaker	Elective Esophageal Varices Band Ligation in Cirrhosis Patients with Significant Thrombocytopenia
8:50–9:05	Cátia Patrocínio Esteves Oral Speaker	Pharmacological Therapy and Quality of Life in Rheumatoid Arthritis Patients from the North-East of Portugal: An Exploratory Study
	Session 2	
9:05–9:15	Prof. Dr. Emilio Jirillo Session Chair	<i>Welcome from the Session Chair</i>
9:15–9:35	Prof. Dr. Luigi Santacroce Invited Speaker	The influence of spirulina and inulin-based functional foods on gut microbiota
9:35–9:50	Remus Lupu Oral Speaker	Rosmarinic acid improve mitochondrial function and mitochondrial biogenesis at relevant nutritional dose in muscular murine cells
9:50–10:05	Nisrin EL MLILI Oral Speaker	Evaluation of Moroccan doctors and nurses' nutritional knowledge with regard to functional colopathy, iron deficiency anemia, vitamin B12 deficiency, overweight, hyperuricemia and gout attacks
10:05–10:20	Domenico Triggiani Oral Speaker	Mediterranean Diet adherence among medical students in southern Italy
10:20–10:35	Zohra BEN ALLAL Oral Speaker	Evaluation of the nutritional knowledge in relation to diabetics, high blood pressure and high cholesterol of doctors and nurses in Morocco
10:35–10:50	Ezgi Nur YUKSEK Oral Speaker	Nutritional Revalorization of Camellia japonica: Implications for Mineral Deficiency and Dietary Supplementation

Session 1. Infectious Diseases

15:00 (CEST, Basel) | 09:00 (EDT, New York) | 21:00 (CST Asia, Beijing)

CEST Time	Speaker	Title
15:00–15:10	Dr. Amal Mitra Session Chair	<i>Welcome from the Session Chair</i>
15:10–15:30	Dr. Nizam Uddin Ahmed Invited Speaker	Health Beyond Boundaries: Advancing Immunization, NCDs, Telehealth, and System Strengthening
15:30–15:45	Alisa Pautova Oral Speaker	Multivariate models based on biomarkers and metabolites in the cerebrospinal fluid for the diagnosis of secondary bacterial meningitis
15:45–16:00	Eva Olo Fontinha Oral Speaker	Exploring natural alternatives for oral health: Matricaria Chamomilla L and thermal water as antibacterial agents

16:00–16:15	Gebrhud Berihu Haile Oral Speaker	Health-Related Quality of Life and Associated Factors among Patients with Pulmonary Tuberculosis in the Tigray Region, Northern Ethiopia: A Cross-Sectional Study Desig
	Flash Poster Presentation	
16:15–16:20	Shahd Hamran Session 1	Efficacy and safety of adding ribavirin to direct-acting antivirals (DAAs) in re-treating non-genotype1 hepatitis C- a systematic review and meta-analysis.
16:20–16:25	Abu Saim Mohammad Saikat Session 1	Computational approaches for structure-based functional annotation of an uncharacterized protein (Q182S9) of Clostridium difficile
16:25–16:30	CRISTIAN-CATALIN GAVAT Session 2	Innovation, Development and Implementation of Personalized Nutrition Plans Based on Genetic Profiling for Optimal Health
16:30–16:35	Marica Colella Session 2	Dietary prebiotic supplementation modulates gut microbiota and concurs to maintain healthy status and to prevent diseases in adult individuals
16:35–16:40	Oliwia Andrzejewska Session 2	Revolutionizing Diets: AI for Personalized Metabolic Health - A Review of Recent Advances
16:40–16:45	Mateusz Fornalski Session 3	AI in Multiple Sclerosis: Early Detection and Personalized Treatment Approaches - A Review of Recent Advances
16:45–16:50	P. Barciela Session 3	Prevalence, pathophysiology, and dietary management of SIBO in the modern lifestyle
16:50–16:55	Mónica Ferrer Aguado Session 3	The early detection and management of emerging toxicities associated with bispecific antibodies and T-cell engagers: the key role of oncology nursing
16:55–17:05	Prof. Dr. Omar Caull Conference Chair	<i>Chair Closing Speech</i>

Session 1. Infectious Diseases

sciforum-117320: Efficacy and safety of adding ribavirin to direct-acting antivirals (DAAs) in re-treating non-genotype1 hepatitis C—a systematic review and meta-analysis

Shahd Hamran ^{1,2,*}, Amani A. Al-Rajhi ¹, Kawther Jasim ³, Majed A, Al-Theyab ¹, Mohamed Elahtam ¹, Mooza K. Al-Hail ¹, Wadha Al-fahaidi ¹, Yaman Khamis ¹, Abdel-Naser Elzouki ⁴ and Tawanda Chivese ⁵

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² Hamad Medical Corporation, Doha, Qatar

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⁵ School of Interdisciplinary Arts and Sciences, University of Washington Tacoma, Washington, USA

There is still debate whether ribavirin should be added to direct acting antivirals (DAAs) for the management of treatment-experienced individuals with non-genotype-1 hepatitis C. This study compared the efficacy and safety of adding ribavirin to sofosbuvir-based combinations compared to sofosbuvir-based regimens alone in treating non-genotype 1 HCV in individuals who have been previously treated. We searched Cochrane CENTRAL, PubMed, SCOPUS, CINAHL and preprint databases from inception to September 2023 for randomized controlled trials (RCTs) that compared sofosbuvir-based regimens with ribavirin to sofosbuvir-based regimens alone in previously treated individuals with non-genotype 1 HCV infection. Data extraction and quality of study assessments were done by two independent authors and synthesis using bias-adjusted models, heterogeneity using I², and publication bias using funnel plots. Eight RCTs, which compared sofosbuvir-based combinations with and without ribavirin were included. Overall, the addition of ribavirin to sofosbuvir, compared to sofosbuvir alone, did not show benefit in achieving sustained virological response (SVR) (OR 0.91, 95% CI 0.26–3.17, I² = 70.0%) with moderate certainty GRADE evidence. In subgroup analysis, there was no benefit of adding ribavirin to sofosbuvir in individuals with different HCV genotypes. The additional ribavirin showed increased odds of developing adverse events (OR 2.03, 95%CI 1.58–2.6, I² = 8.0%) and treatment discontinuation (OR 1.81, 95%CI 0.78–4.28, I² = 0.0%). The moderate certainty evidence suggests that adding ribavirin to sofosbuvir-based regimens may not confer benefit in achieving SVR in previously treated individuals with non-genotype 1 HCV but increases the odds of adverse events and treatment discontinuation. More evidence is needed on the effect of additional ribavirin in achieving SVR in individuals with decompensated cirrhosis.

Registration

The protocol is registered on the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42022368868).



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sciforum-125731: Artificial Intelligence in Predicting Sepsis Risk: A Review of Recent Advances

Cezary Borysiuk^{1,*}, **Oliwia Andrzejewska**¹, **Michał Woś**², **Mateusz Fornalski**¹ and **Patrycja Kościńska**¹

¹ Medical University of Lublin, Faculty of Dentistry, SKN MedAI, Lublin

² Medical University of Lublin, Faculty of Dentistry, Zakład Informatyki i Statystyki Medycznej z Pracownią e-Zdrowia SKN MedAI, Lublin

Background:

Sepsis is a life-threatening condition characterized by the body's response to infection, leading to tissue damage, organ failure, and death. Early detection is essential for improving patient results. Traditional diagnostic methods often not succeeded in timely identification. Recent progress in AI offer promising opportunities for early sepsis prediction by analyzing hospital data.

Methodology:

This review synthesizes findings from five studies conducted in 2022–2024, focusing on AI applications in sepsis prediction. The methodologies include various machine learning models, including Random Forest, XGBoost, and Transformer-based architectures, applied to diverse datasets such as electronic health records, vital signs, laboratory results, and clinical notes. These studies used techniques like feature selection, data preprocessing, and model evaluation to enhance predictive accuracy.

Results:

- A meta-ensemble model combining Random Forest, XGBoost, and Decision Tree algorithms achieved an AUC-ROC of 0.96, outperforming individual models in early sepsis detection.
- The NAVOY® Sepsis algorithm demonstrated high predictive performance with an accuracy of 0.79, sensitivity of 0.80, and specificity of 0.78, predicting sepsis onset three hours in advance.
- A Transformer-based model combining physiological time series and clinical notes outperformed six baseline models, highlighting the effectiveness of multimodal data integration.
- An AI-driven tool developed by Johns Hopkins University reduced sepsis mortality by 20% by analyzing EHRs in real-time, despite an accuracy rate of 38%.
- A novel approach combining AI with a blood test identified molecular markers indicative of septic shock, offering a potential for fast and accurate diagnosis.

Conclusions:

The integration of AI in clinical settings shows great potential in developing predictors, thereby enabling early detection and improved treatment outcomes. Machine learning algorithms, particularly ensemble methods and deep learning techniques, have demonstrated high effectiveness in accurately predicting abnormalities. However, challenges remain in model interpretability, data quality, and integration with clinical workflows. Further research should focus on addressing these challenges to unlock AI's full potential in sepsis management.



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sciforum-118198: Computational approaches for structure-based characterization and functional elucidation of a protein from *Acinetobacter baumannii* involved in siroheme biosynthesis

Nafisa Tabassum^{1,2,*}, **Sadia Yasmin**^{1,3}, **Md. Meraz**^{1,2}, **Mst. Ismat Zarin Eva**^{1,2}, **Abdullah Al Noman**^{1,2}, **Choyan Biswas**^{1,2} and **Abu Saim Mohammad Saikat**⁴

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The opportunistic bacterial pathogen *Acinetobacter baumannii* (*A. baumannii*) is mostly linked to infections acquired in hospitals. Recent increases in incidence, primarily associated with sick combat troops returning from conflict zones, and a dramatic rise in the incidence of multidrug-resistant (MDR) strains have significantly increased the frequency of this emerging opportunistic infection. The goal of the study is to look into *A. baumannii*'s protein sequence in order to learn more about its physiochemical properties, functional assessments based on structure, domain anticipation for certain functional forecasts, secondary and tertiary structures, and the PPI network. The protein's physiochemical characteristics showed that its sequence contains more negatively charged residues than positively charged residues. This protein is stable and has suitable thermostability, according to the aliphatic index and instability index. Documentation further supports the protein's hydrophilic nature. The siroheme synthase enzyme catalyzes the protein's siroheme synthase CysG domain, which facilitates three stages of siroheme biosynthesis: methylation, oxidation, and iron insertion into the tetrapyrrole uroporphyrinogen III (Uro-III). Gene ontology analyses have revealed the protein interactions in molecular and biological processes. The chosen protein and 10 additional proteins formed an interaction network according to the PPI network. The secondary structural assessment revealed the alpha helix as the most prevalent structural element, followed by random coils and extended strands. Additionally, three distinct programs—AlphaFold, I-TASSER, and SWISS-MODEL—modeled the protein's tertiary structure. Upon examining various structures, the structural assessment study determined that the SWISS-MODEL program's predicted structure was the most optimal. This conclusion was drawn from the values of the most desired and extra-allowed areas in the plot statistics results. We can target the selected protein, associated with siroheme biosynthesis, for further study, including the development of drugs and vaccine candidates to combat diseases caused by this protein.



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sciforum-117243: Hematological Alterations in COVID-19 Patients: Insights from a Descriptive Study in Tlemcen, Algeria

Ilyes Zatl ^{1,*}, **Wafaa Lemerini** ² and **Chahinez Triqui** ³

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COVID-19, caused by the zoonotic coronavirus SARS-CoV-2, first emerged in Wuhan, China, in December 2019. It was later declared a global pandemic by the World Health Organization due to its rapid spread and significant impact on public health. The virus is characterized by high transmissibility and variable clinical outcomes, ranging from mild respiratory symptoms to severe acute respiratory distress syndrome (ARDS). Several studies have highlighted the role of hematological parameters in understanding disease severity and progression. This study aimed to analyze the hematological parameters of COVID-19 patients in Tlemcen, Algeria, through a descriptive approach. Data were collected from private laboratories in Tlemcen between January and March 2024. The sample population included individuals who tested positive for COVID-19. The study categorized patients based on age and gender and analyzed five key parameters from complete blood count (CBC) tests: white blood cell (WBC) count, lymphocyte count, neutrophil count, hemoglobin levels, and platelet count. Correlation tests were performed to determine potential associations between these hematological parameters. Preliminary findings indicated variations in blood parameters among infected individuals. Certain abnormalities, such as lymphopenia and an elevated neutrophil-to-lymphocyte ratio (NLR), were more pronounced in specific patient groups. Age and gender appeared to influence these variations, with older individuals showing more significant deviations from normal values. Our results suggest that hematological parameters can serve as potential indicators for COVID-19 progression and severity. Understanding these changes could contribute to early risk stratification and improved patient management. Further studies with larger sample sizes are needed to validate these findings.



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sciforum-117240: Assessment of COVID-19 Clinical Features and Vaccination Campaign in Tlemcen, Algeria

Ilyes Zatla ^{1,*}, **Lamia Boublenza** ¹, **Wafaa Lemerini** ² and **Chahinez Triqui** ³

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The COVID-19 pandemic caused by SARS-CoV-2 has had a profound global impact on public health. This study aimed to evaluate both the clinical characteristics of COVID-19 cases and the efficacy of the vaccination campaign in Tlemcen, Algeria, in 2021. A retrospective analysis was conducted using data from the Public Health Establishment Near Tlemcen (EPSP), University Hospital of Tlemcen. The study included confirmed COVID-19 cases, with clinical evaluations involving PCR testing and chest CT imaging. Among 68,745 confirmed cumulative number of cases, common symptoms included fever, cough, and shortness of breath, while PCR cycle threshold (Ct) values ranged from 15 to 35. CT scans revealed widespread lung involvement, with ground-glass opacities being a predominant feature. Epidemiological trends indicated a steady rise in cases, highlighting sustained transmission and underscoring the importance of diagnostic tools such as PCR and CT imaging in managing disease severity. Parallel to the clinical assessment, a comprehensive analysis of the vaccination campaign was conducted, focusing on vaccine distribution, uptake, and demographic trends. Data for five vaccine brands—Sputnik, AstraZeneca, Sinopharm, Sinovac, and Janssen—were analyzed to assess vaccine distribution efficiency, wastage rates, and demographic uptake patterns. Sinovac emerged as the most widely administered vaccine, accounting for 91.94% of its imported doses, while Sputnik showed the lowest wastage rate, with minimal expired vaccines. Age-specific vaccination trends revealed higher Sinovac uptake among individuals aged 50–64 and 65+, and Janssen was favored by the 30–49 age group. Additionally, individuals with comorbidities showed a stronger vaccine response to Sinovac, suggesting the need for targeted vaccination strategies. These findings provide essential insights into both COVID-19 clinical progression and vaccination dynamics in Tlemcen, contributing to future public health strategies aimed at controlling the spread and impact of COVID-19.



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sciforum-116977: Computational approaches for structure-based functional annotation of an uncharacterized protein (Q182S9) of *Clostridium difficile*

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C. difficile is a bacterium that causes severe diarrhea and may result in colon cancer. *C. difficile* are anaerobic, motile bacteria that are found practically everywhere, but particularly in soil. *C. difficile* produces up to three distinct toxins and lacks catalase and superoxide dismutase. Stressful conditions cause bacteria to release spores, which are resistant to harsh environments and cannot be destroyed by active bacteria. This study aims to investigate the *C. difficile* protein sequence, learn about its physicochemical properties, conduct structure-based functional analysis, anticipate domains for specific functional predictions, and investigate secondary and tertiary structures. According to its physicochemical qualities, the protein's sequence contains more negatively charged residues than positively charged residues. The aliphatic index suggests that this protein has adequate thermostability. Documentation also validates the protein's hydrophilic nature. This protein includes an uncharacterized stationary-phase protein (YicC). This protein aids in the 3' to 5' exoRNase PNPase's degradation of the sRNA RhyB and appears to produce a 5'-phosphate and a 3'-OH group. This protein has a domain named the sugar transport 2 domain, which is an IMP, and it is believed that this protein might play a role in the transfer of glucose. The secondary structural analysis revealed that the alpha helix was the most prominent structural element, followed by random coils and extended strands. Furthermore, two separate programs, AlphaFold and SWISS-MODEL, predicted the protein's tertiary structure. After examining various structures, the structural assessment study determined that the SWISS-MODEL program's prediction was the best, taking into account the values for the most wanted and extra-allowed areas in the plot statistics. Potential therapies and immunizations can target this protein in order to prevent microbial infection and prevent the protein from infecting cells.



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sciforum-124306: Effects of Macrolides Usage as Anti-Inflammatory Agents in the Treatment of Community-Acquired Pneumonia in Lebanese Hospitals: A Retrospective Cohort Study

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Background:

Community-Acquired Pneumonia (CAP) remains a leading cause of hospitalization and mortality worldwide. In addition to their established antimicrobial role, macrolides are hypothesized to exert anti-inflammatory effects that may influence key clinical outcomes. Despite growing interest, no studies have yet evaluated this potential benefit within the Lebanese healthcare system.

Objective:

This study investigates the association between macrolide therapy and two primary outcomes: hospital length of stay and in-hospital mortality among patients with CAP.

Methods:

A retrospective cohort study was conducted utilizing anonymized medical records from two major hospitals in Lebanon. The study cohort comprised 340 adult patients diagnosed with CAP between January 2010 and March 2025. Patients were stratified based on receipt of macrolide therapy. Institutional Review Board (IRB) approvals were obtained from both participating institutions prior to data collection. Statistical analyses were performed to compare hospital stay duration and mortality rates between groups, adjusting for confounding variables such as age, comorbidities, and disease severity.

Results:

Preliminary findings demonstrate that patients receiving macrolide therapy exhibited a shorter median hospital stay and reduced in-hospital mortality compared to those not treated with macrolides. These results suggest that macrolides may confer additional clinical benefits beyond their antimicrobial activity in the management of CAP.

Conclusion:

This study provides the first evidence from Lebanese hospitals supporting the use of macrolides as adjunctive agents to improve primary clinical outcomes in CAP. These findings underscore the need for prospective studies to confirm the observed benefits and to inform national and regional treatment guidelines for pneumonia management.



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sciforum-117090: Expanding Insights into Guillain-Barré Syndrome: Epidemiology, Triggers, Outcomes, and Novel Associations

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Introduction

Guillain-Barré Syndrome (GBS) is the prevalent acute paralytic neuropathy, occurring in around 100,000 individuals worldwide annually. It presents in various clinical forms, with 20–30% of patients experiencing respiratory failure. Established infectious causes are *Campylobacter jejuni*, Zika virus, and SARS-CoV-2, with molecular mimicry that triggers autoimmunity being common. Evidence is accumulating, pointing toward a link between GBS and novel viruses like Oropouche virus (OROV). Yet, differences in access to treatment and the heterogeneity of clinical presentation make diagnosis and management challenging.

Methodology

Recent clinical studies have underscored the necessity of more sensitive diagnostic procedures to address unusual GBS presentations. Diagnostic procedures like lumbar puncture and nerve conduction tests are essential, particularly in unusual presentations such as GBS linked with multiple myeloma (MM), whose symptoms can resemble bortezomib-induced neuropathy. Retrospective studies, such as one of 210 OROV-related GBS cases, help understand patterns of disease.

Results

Our results show that OROV infection has no notable impact on the severity of GBS disease or clinical outcomes. Poor prognosis is predicted by advanced age, the need for mechanical ventilation, and swift disease progression. Electrophysiological markers—such as diminished compound muscle action potentials and delayed F-wave latencies—additionally stratify patient outcomes.

Conclusion

Innovations in complement inhibitors and disease-modifying therapies are promising in current trials. International collaborative research is important for biomarker development and optimizing therapeutic approaches. Bridging global inequities in access to care continues to be an urgent priority to limit long-term disability from GBS.



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sciforum-125879: Exploring natural alternatives for oral health: *Matricaria Chamomilla L* and thermal water as antibacterial agents

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The oral cavity is a complex environment colonized by a diversity of microorganisms, some of which are responsible for the development of oral pathologies, namely, *Streptococcus mutans* and *Actinomyces naeslundii* [1,2]. The search for natural alternatives in the prevention and treatment of oral pathologies has significantly increased in recent years, particularly due to the growing bacterial resistance to conventional antimicrobial agents [3]. In this context, the present study aims to analyze endogenous plants, such as chamomile (*Matricaria Chamomilla L.*) and thermal water, known for their antimicrobial and anti-inflammatory properties [4]. The antimicrobial activity was determined by the Minimum Inhibitory Concentration (MIC) and flow cytometry methods. It was observed that *Streptococcus mutans* presented an MIC of 31.25 mg/mL, while *Actinomyces naeslundii* showed an MIC of 3.90 mg/mL. Subsequently, the action of chamomile in synergy with thermal water on bacterial viability was evaluated using flow cytometry. With simultaneous incubation of SYTO9 and propidium iodide (PI), it was observed that approximately 82% of *Actinomyces naeslundii* presented a positive superlabel (SYTO9⁺/PI⁺), which indicates an alteration in the integrity of the plasma membrane, confirming the toxicity of the chamomile extract in relation to this species. Regarding *Streptococcus mutans*, approximately 56% of the bacteria, *Streptococcus mutans*, presented positive labeling for both markers (SYTO9⁺/PI⁺), with this result suggesting a less pronounced toxic effect for this strain. In conclusion, the results highlight the relevant antimicrobial potential of chamomile concerning the two bacterial species analyzed, especially against *Actinomyces naeslundii*. With these results, we were able to reinforce the viability of this approach using natural extracts as an alternative strategy for the prevention and treatment of oral pathologies.



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sciforum-118266: Fostering reflective learning in Masters students through CDC clinical case studies in clinical parasitology

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To improve the clinical skills in parasitology of students working toward their Master's in Advanced Biomedical Sciences (De Montfort University, UK), a series of parasitology mini case studies were introduced in 2020/21, requiring students to reflect on their knowledge and seek information from different sources to suggest possible diagnoses. This Master's course is attended by graduates from a range of backgrounds who may or may not have studied human parasitology during their undergraduate studies. During theory classes, students were given a series of parasitology mini clinical cases from the Laboratory for the Detection of Parasitic Diseases of Public Health Interest of the US Centers for Disease Control and Prevention. These mini cases consisted of a brief medical history and a series of virtual micrographs. Environmental micrographs were also used to familiarise the students with the characteristics of these parasites in environmental samples. Students were asked to provide a possible 'diagnosis' for each case, encouraging critical thinking. This experience was tested between 2020/21 and 2022/2023. Students (n = 15/36; 2021-23) reported learning techniques to detect microsporidia spores (66.7%) and *Cyclospora* oocysts (75%) in environmental/clinical samples, which would be logical given the size of oocysts versus spores (10 vs. 1 µm). Our intervention would have been shown to facilitate the acquisition of clinical skills. In addition, students showed a gradual improvement in clinical case resolution throughout the course. To study the impact of this intervention in a short period of time, these mini cases were used in a five-hour training session as part of the Master's in Industrial and Galenic Pharmacy at the Spanish University of Alcalá (2023/24). This MSc is for pharmacists only and has a full compulsory module on parasitology. Students quickly familiarised themselves with what they had learned about parasitology and showed a high success rate in responding to the various mini cases presented during the session, displaying similar results.



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sciforum-125799: From Screening to mechanism: Aroylhydrazones as Promising InhA Inhibitors Against Resistant Tuberculosis

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Tuberculosis remains a significant global public health challenge. The relentless escalation of antimicrobial resistance necessitates urgent development of novel chemotherapeutic agents with clearly elucidated molecular targets, despite notable advancements in antimicrobial drug development over the past two decades. The present study systematically evaluates a series of three aroylhydrazones for their InhA inhibitory capacity. The compounds demonstrated high antymycobacterial activity against *Mycobacterium tuberculosis* H37Rv, with MIC values ranging from 0.0730 to 0.4412 μM , favorable cytotoxicity profiles (HEK-293T IC₅₀: 217.5–361 μM), and a high selectivity index (SI: 633.49–3516). Molecular docking analyses revealed stable interactions between the derivatives and two crystallographic structures of InhA, prompting detailed enzymatic characterization. Spectrophotometric analysis of NADH-dependent InhA inhibition demonstrated concentration-dependent activity, with lead compounds achieving 48.6–59.1% enzyme suppression at micromolar concentrations. Comparative analysis with the reference inhibitor triclosan (62.5% inhibition) established the competitive potential of these novel aroylhydrazones. Quantitative structure–activity relationship analysis yielded half-maximal inhibitory concentrations ranging from 5.6 to 32.1 μM , confirming their pharmacological relevance. The current data will facilitate further research to enhance the therapeutic potential of these compounds and clarify their mechanisms of action.



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sciforum-127270: Health-Related Quality of Life and Associated Factors among Patients with Pulmonary Tuberculosis in the Tigray Region, Northern Ethiopia: A Cross-Sectional Study Design

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Background:

Tuberculosis (TB) is a persistent worldwide health burden and contagious disease, particularly in Low-Middle-Income countries. TB hurts the health-related quality of life (HRQOL) and psychological wellbeing of patients. Although a few studies have explored the HRQOL among pulmonary TB patients in other parts of Ethiopia, no prior research has been conducted on this topic in the Tigray region.

Objective/Aim:

The objective of this study is to assess the HRQOL and associated factors among patients with pulmonary TB in the Tigray region, northern Ethiopia.

Methods:

An institutional-based cross-sectional study design was utilized among 360 pulmonary TB patients in the Tigray region, northern Ethiopia. Systematic random sampling was used for the participant selection. Data was collected using a Medical Outcome Study Short-Form (MOS SF-36) questionnaire. SPSS software V.29 was used for the data analysis. A multivariate linear logistic regression model was employed, and P-values 0.05 were considered for statistical significance.

Results:

The overall score for the HRQOL among the participants was 47.6 (SD±18.7). The score for the Physical Component Summary (PCS) was 50.1 (SD±22.2), while the Mental Component Summary (MCS) score was 45.2 (SD±16.5). The multivariable linear regression analysis indicated that being male ($B = 5.89, p = 0.001$), educational status ($B = 5.51, p = 0.004$), intensive phase ($B = 5.59, p = 0.010$), and treatment support ($B = -5.19, p = 0.023$) were predictors of PCS score. Similarly, variables like educational status ($B = 5.15, p = 0.001$), intensive phase ($B = 4.77, p = 0.001$), and treatment support ($B = -2.93, p = 0.045$) were predictors of the MCS scores among the TB patients.

Conclusion:

The study findings indicated that both the PCS and MCS components of HRQOL were affected, with the mental health component was notably affected. Variables like the educational level, treatment phase, and treatment support were factors associated with the PCS and MCS scores. Additionally, male gender was the only factor associated with the PCS scores. Special attention should be given to pulmonary TB patients to improve their health status and wellbeing.



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sciforum-127408: Multivariate models based on biomarkers and metabolites in the cerebrospinal fluid for the diagnosis of secondary bacterial meningitis

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Introduction: The diagnosis of secondary bacterial meningitis in intensive care units and surgical departments is usually complicated by frequent false-negative cerebrospinal fluid (CSF) culture results because of previous antibacterial therapy or false-positive CSF culture results because of sample contamination. Some nonspecific clinical and laboratory criteria of CSF content can be used, but they do not provide 100% sensitivity and selectivity. The search for new diagnostic approaches is a relevant direction.

Objectives: The aim of this study was to construct various multivariate models based on biomarkers and metabolites in the cerebrospinal fluid for the diagnosis of secondary bacterial meningitis in patients with acute or chronic critical illness.

Methods: Patients with acute (n = 17, CSF samples = 19) or chronic critical illness (n = 35, CSF samples = 77) were divided into CSF sample groups without (n = 63, group I) and with secondary bacterial meningitis (n=33, group II). CSF samples were analyzed by UPLC-MS/MS to determine aromatic metabolites, and by electrochemiluminescence to determine interleukin-6 (IL-6), NSE, and S100 protein.

Results: Median values of CSF parameters (leukocytes, relative content of neutrophils, protein, IL-6, S100, 4-hydroxyphenyllactic, phenyllactic, indole-3-lactic acids) were statistically higher in group II compared to group I (p-value 0.001), with CSF glucose higher in group I compared to group II (p-value 0.001).

ROC-analysis of univariate models based on these CSF parameters did not reveal any model with 100% sensitivity and selectivity, while ROC-analysis of various multivariate models based on CSF biomarkers and metabolites demonstrated excellent prognostic ability for CSF sample stratification into two groups: the best model was constructed using Catboost [<https://doi.org/10.48550/arXiv.1706.09516>] with AUC-ROC=1.00 with 100% sensitivity and selectivity.

Conclusion: Multivariate models based on various CSF biomarkers and metabolites demonstrated better characteristics compared to univariate prognostic models for CSF sample stratification into groups with or without secondary bacterial meningitis.



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sciforum-127441: Prevalence and Co-Infection of *Mycoplasma genitalium* and *Gardnerella vaginalis* Among Moroccan Women: Implications for Sexual and Reproductive Health

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Mycoplasma genitalium is an emerging sexually transmitted pathogen implicated in multiple urogenital conditions and a global sexual health challenge. Its coexistence with *Gardnerella vaginalis*, a major contributor to bacterial vaginosis, becomes problematic and potentially contributes to significant reproductive health complications. This study investigates the prevalence and co-infection of *Mycoplasma genitalium* and *Gardnerella vaginalis* in a cohort of Moroccan women and evaluates their potential impact on sexual health and fertility. Vaginal swabs were collected from women presenting with symptoms of vaginal infections who attended gynecology and sexual health clinics in Tangier, Morocco. A bacteriological analysis was performed using the standard culture methods, Gram staining, and wet mount microscopy to detect *Gardnerella vaginalis*. For *Mycoplasma genitalium*, bacterial DNA was first extracted using a magnetic-bead-based technique and subsequently analyzed through PCR targeting multiple insertion sequences specific to *Mycoplasma*, providing both qualitative and quantitative analyses. The results revealed that out of the 50 women tested, 13 patients were positive for *Mycoplasma genitalium* according to PCR and also showed the presence of *Gardnerella vaginalis*. An additional two patients were positive for *Mycoplasma genitalium* but tested negative for *G. vaginalis*. In contrast, 26 patients were positive for *G. vaginalis* but negative for *Mycoplasma genitalium*. Only nine patients tested negative for both pathogens. These findings reveal a significant rate of co-infection between *Mycoplasma genitalium* and *Gardnerella vaginalis*. This highlights the importance of using sensitive and specific diagnostic techniques, particularly PCR, to accurately detect *Mycoplasma genitalium*, even in women with slight or non-specific symptoms. The co-presence of these two pathogens suggests a possible solid interaction that could contribute to the development or persistence of bacterial vaginosis and that could elevate the risk of reproductive health complications and potential fertility issues, particularly among women experiencing symptoms of vaginal discomfort. Further studies are needed to understand the long-term reproductive impact and optimize the treatment strategies.



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sciforum-125919: Resistance Patterns to Metronidazole and Levofloxacin in Russian *Helicobacter pylori* Clinical Isolates Based on Whole-Genome Sequencing

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Due to the lack of data on antimicrobial resistance patterns in Russian *Helicobacter pylori* clinical isolates, we aimed, for the first time, to comprehensively investigate resistance determinants in *H. pylori* isolates to metronidazole (MTZ) and levofloxacin (LVX) and to evaluate the correlation between genotypic and phenotypic antimicrobial susceptibility testing (AST). A retrospective analysis of 43 *H. pylori* clinical isolates from adult patients (2014–2022) was performed. Phenotypic AST was performed via the disk diffusion method. Total DNA was extracted using the QIAamp DNA Mini Kit. WGS of 43 *H. pylori* isolates was performed on the DNBSEQ-G50 sequencer. The phenotypic AST results revealed that 31 isolates were susceptible to LVX (LVX-S) and 11 were susceptible to MTZ (MTZ-S), while 12 were resistant to LVX (LVX-R) and 32 were resistant to MTZ (MTZ-R). To identify associations between phenotypic and genotypic resistance, a comprehensive analysis of nucleotide substitutions was performed in the following genes: *gyrA*, *gyrB*, *rdxA*, *frxA*, *fdxB*, and *fur*. Of all mutations identified in *gyrA* and *gyrB*, only D91G/N/Y in *gyrA* was associated with phenotypic resistance to LVX, being present in 4 of 12 (33.3%) LVX-R isolates (p0.05). The combined mutation D91G/N/Y+N87K+A88P in *gyrA* was detected in 7 of 12 (58.3%) LVX-R isolates (p0.001). No mutations in *rdxA* were associated with resistance to MTZ; however, 7 of 32 (21.9%) MTZ-R isolates had point mutations leading to a frameshift or premature termination of protein synthesis. Similarly, no mutations in *frxA*, *fur*, or *fdxB* were associated with resistance to MTZ. Based on the first results of whole-genome sequencing of Russian *H. pylori* clinical isolates, mutation D91G/N/Y was associated with phenotypic levofloxacin resistance. Despite the low frequency of point mutations N87K and A88P in *gyrA* gene, detection of the combined mutations D91G/N/Y+N87K+A88P may serve as a predictor of phenotypic resistance to levofloxacin in clinical isolates.



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sciforum-124528: Robust detection of *Mycobacterium tuberculosis* Haarlem genotype by real-time PCR assay

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Introduction. The Haarlem genotype of *Mycobacterium tuberculosis* is spread across many regions of the world. Its strains exhibit interesting pathogenic properties in mouse and macrophage models. Spoligotyping remains a classical method for Haarlem detection, but fails to reliably classify strains with abridged spoligoprofiles. Here, we developed and validated a real-time PCR (RT-PCR) assay for robust identification of the Haarlem genotype.

Materials and methods. *M. tuberculosis* genotyping was performed using spoligotyping with subsequent comparison against the international SITVIT2 database. Whole-genome sequencing was performed on HiSeq4000. For RT-PCR, we used LNA probes and the RotorGene thermal cycler.

Results. Primers and LNA probes were designed to target a previously reported Haarlem-specific mutation in *Rv0282* (Shitikov, Bespiatykh, 2023). The method was optimized using DNA from Haarlem and non-Haarlem strains with available whole-genome sequences. The RT-PCR assay was tested on a collection of 293 isolates from the European and Asian parts of Russia, Belarus, Bulgaria, and Vietnam, previously characterized by spoligotyping and defined as Haarlem, with some strains classified as "unknown genotype" in SITVIT2. Isolates of other genotypes (Beijing, LAM, Ural, EAI) were also included as controls. Among Russian isolates, spoligotyping identified 39 as Haarlem and 35 as "unknown family". The RT-PCR assay reclassified 10 of these unknown strains with truncated spoligoprofiles (SIT46, SIT237, and SIT1177) as Haarlem. For Belarusian isolates, spoligotyping detected only one Haarlem strain alongside six "unknown family" strains, whereas RT-PCR assigned all seven to Haarlem. All Haarlem isolates from Bulgaria (n=8; SIT47, SIT50) and Vietnam (n=1; SIT50) were correctly and concordantly confirmed by both methods.

Conclusions. The developed RT-PCR assay provides reliable detection of the Haarlem genotype, demonstrating that its true prevalence in certain regions is higher than previous spoligotyping-based estimates. These findings highlight the need for cautious interpretation of truncated spoligoprofiles, particularly those with extensive spacer deletions, in epidemiological studies of *M. tuberculosis*.



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sciforum-122281: The Impact of Biodiversity Loss on Emerging Infectious Diseases

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Background:

Emerging infectious diseases (EIDs) pose a significant global threat, with human-driven biodiversity loss increasingly recognized as a pivotal factor. Recent environmental disruptions are shaking up wildlife populations, altering host-pathogen interactions, and raising the risk of emerging diseases. However, the root causes linking biodiversity loss to EID emergence remain poorly understood. This research investigates the relationship between biodiversity loss, climate change, and infectious disease outbreaks using statistical methods, data analytical tools, and machine learning (ML) algorithms, such as survival analysis and Bayesian networks for predictive modeling.

Methods:

A multi-variant approach is proposed, integrating epidemiological data, bio-ecological modeling, and statistical data analyses. Biodiversity and disease incidence data are obtained from open-source databases such as Global Biodiversity Information Facility (GBIF) and Centers for Disease Control and Prevention (CDC). Survival analysis methods like Kaplan-Meier and Cox models assess the timing of disease outbreaks in the regions of human-driven biodiversity loss. Bayesian networks infer probabilistic relationships between environmental degradation, species richness, and zoonotic transmission. Machine learning algorithms further refine predictive models and computations for high-risk dynamics.

Results:

It is proposed that in the preliminary analyses, a strong correlation between biodiversity loss and increased EID incidence can be indicated, particularly in focused biodiversity regions. Survival models can reveal accelerated disease emergence in areas with rapid species decline. Overall, this research aims to identify high-risk areas that will support the development of an early-warning system.

Conclusion:

The main highlight of this research is to provide quantitative evidence linking biodiversity loss to infectious disease outbreaks, emphasizing the urgent need for integrated conservation and public health strategies. Findings will inform policy interventions to mitigate zoonotic risks and enhance disease surveillance systems in biodiversity-sensitive regions. In short, the proposed study will use a combination of systematic literature reviews, large-scale statistical analysis, and ecological modeling to explore diseases.



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sciforum-124743: Towards a high-resolution genotyping of the Latin American–Mediterranean genotype of *Mycobacterium tuberculosis*

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Background. The Latin American–Mediterranean (LAM) genotype of *Mycobacterium tuberculosis* is widespread in most regions of the world. Its LAM-RUS branch is endemic to Russia and Northern Eurasia and is frequently multidrug-resistant. Although geographically distant, the LAM-RUS strains are closely related in their 24-MIRU-VNTR profiles, which may reflect their relatively recent dissemination across this sparsely populated area of Northern Eurasia. Practically, this means that the international 24-locus MIRU-VNTR format has limited utility for subtyping LAM-RUS strains. Here, we evaluated seven additional hypervariable VNTR loci for their discriminatory power among LAM-RUS strains.

Methods. A sample of 133 *M. tuberculosis* LAM strains from different locations was subjected to spoligotyping (followed by comparison with the SITVIT2 database) and 24-locus MIRU-VNTR typing. Seven hypervariable VNTR loci (3820, 4120, 3232, 1982, 2136a, 3155, and 3336) were additionally genotyped. MIRU-VNTRplus.org and PAUP software were used for the phylogenetic analysis of the VNTR data, treated as discrete variables. The Hunter–Gaston Index (HGI) was used to assess the discriminatory power of individual loci and their combinations.

Results. Based on spoligotyping, 22 different spoligotypes were identified, of which SIT42 was the most prevalent (n=37), followed by SIT254 (n=26) and SIT252 (n=22). Thirty-locus typing revealed 14 clusters (2–15 isolates) and 58 unique profiles. The Hunter–Gaston Index (HGI) for the 30-locus set was 0.979. The HGI values for individual loci ranged from 0 (MIRU4, MIRU24, MIRU39, Mtub29) to 0.5595 (VNTR3820) and 0.6165 (MIRU40). The combined discriminatory power of the 11 most polymorphic loci was 0.968 (13 clusters of 2–17 isolates; 67 unique profiles), which was nearly equivalent to that of the full 30-locus VNTR set.

Conclusions. This optimized 11-locus panel provides sufficient discriminatory power for LAM genotype strains and could serve as a cost-effective tool for primary epidemiological surveillance of this clinically important *M. tuberculosis* lineage.



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Session 2. Nutrition & Dietetics

sciforum-125831: Phagocytosis of apoptotic neutrophils by macrophages is enhanced by nano-sized vesicles derived from Brassica oleracea L. (broccoli)

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INTRODUCTION: Efferocytosis, the process by which macrophages clear apoptotic cells, is crucial for resolving inflammation and is often impaired in various inflammatory conditions. Previous studies suggest that natural products and their bioactive components can modulate macrophage functions, including activation, recruitment, polarization, and metabolism. In this context, our research explores the potential of Broccoli-Derived Nanovesicles (BDNVs) to enhance macrophage efferocytic capacity. We propose that pretreating macrophages with varying doses of BDNVs may improve their ability to remove apoptotic neutrophils.

METHODS: Human macrophages were obtained by stimulating monocytic THP1 cells with phorbol myristate acetate (PMA) for 72 hours. Human neutrophils were isolated from blood by Ficoll and their apoptosis was induced by exposing them to thermal shock at 43°C for 60 minutes, followed by a 24-hour incubation at 37°C. Broccoli-derived nanovesicles (BDNVs) were isolated from fresh Brassica oleracea L. sprouts using ultracentrifugation, and their concentration was quantified as weight per volume. PKH-26 labeled apoptotic neutrophils were then incubated with macrophages pretreated with BDNVs, and phagocytic activity was assessed using epifluorescence microscopy and flow cytometry.

RESULTS: Macrophage morphology was verified through microscopic analysis, and neutrophil apoptosis was assessed using the trypan blue exclusion method. Notably, our results demonstrated that macrophages treated with BDNVs showed a significantly higher phagocytic ability for apoptotic neutrophils compared to untreated macrophages. Specifically, epifluorescence microscopy revealed an increased intracellular PKH-26 signal that correlated with the BDNV concentration (ranging from 5 to 100 µg/mL). These findings were further supported by flow cytometry, which showed a higher percentage of PKH-26 positive macrophages following BDNV treatment, across a broad concentration range (0–5000 µg/mL).

CONCLUSIONS: Collectively, these results suggest that BDNVs promote the rapid clearance of apoptotic neutrophils through enhanced efferocytosis. BDNVs might be considered as pro-resolvent agents in the treatment of chronic inflammatory conditions.



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sciforum-125984: Beyond Weight Loss: Health Consequences of Sustained Very Low-Calorie Diets

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Introduction: The rising prevalence of obesity has led to growing interest in very low-calorie diets (VLCDs), which typically provide fewer than 800 kcal/day and limit carbohydrate intake to 20–50 g/day. These diets are promoted for their rapid weight loss effects; however, concerns have emerged regarding their long-term safety and physiological impact [1–3].

Methodology: A comprehensive review was conducted to assess the physiological and psychological effects of prolonged VLCD adherence. Studies published between 2009 and 2025 were retrieved from PubMed, ScienceDirect, and Google Scholar. Selection criteria focused on research examining outcomes related to bone health, lean body mass, liver function, cardiometabolic risk, and mental health.

Results: A total of 31 studies were included, with 14 addressing multiple complications. VLCDs were associated with reduced bone mineral density and quality, increasing the risk of osteoporosis [4]. Lean body mass loss, especially in older adults, was commonly reported and linked to sarcopenia, decreased physical function, and frailty [2]. Hepatic issues such as portal inflammation and fibrosis were observed, particularly with rapid weight loss [5]. Weight cycling, characterized by repeated loss and regain, was associated with insulin resistance, dyslipidemia, hypertension, and increased cardiometabolic risk [6]. In mental health, while short-term mood improvements may occur with behavioral support, long-term VLCD use has been linked to adverse effects on cognitive function, mood, and anxiety [3].

Conclusion: Although VLCDs can induce short-term weight loss, prolonged use raises significant safety concerns. This review highlights potential risks affecting skeletal, muscular, hepatic, metabolic, and psychological health. These findings support the need for individualized dietary planning, incorporation of physical activity, and professional supervision to ensure nutritional adequacy and minimize health risks.



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sciforum-125730: Evaluation of Moroccan doctors and nurses' nutritional knowledge with regard to functional colopathy, iron deficiency anemia, vitamin B12 deficiency, overweight, hyperuricemia and gout attacks

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Background

Morocco is undergoing a health transition in the wake of 84% of deaths resulting from non-communicable diseases in 2022. Such deaths are often associated with a sedentary lifestyle and poor diet, including excessive consumption of carbohydrates, salt, and sugar, exceeding World Health Organization recommendations. The objective of this study is to assess the nutritional knowledge of doctors and nurses working in hospitals and primary health care centers in Morocco with regard to functional colopathy, iron deficiency anemia, vitamin B12 deficiency, overweight, hyperuricemia, or gout attack.

Materials and Methods

The study population consisted of 472 nurses and 185 physicians. A self-administered questionnaire was used for data collection, encompassing five main domains: irritable bowel syndrome, iron deficiency anemia, vitamin B12 deficiency, obesity, hyperuricemia, and gout. Statistical analyses were performed using SPSS software version 21.0, the Kolmogorov-Smirnov test, the Mann-Whitney test, and Spearman's rank correlation. Multiple linear analysis was also performed.

Result

Among the five domains studied, the highest median scores for doctors were reported for nutrition in overweight people and iron deficiency anemia (0.33 (IQR [0.22; 0.44]) and 0.67 (IQR [0; 0.67] respectively). Among nurses, nutrition in overweight people had a median score of 0.11 (IQR [0; 0.22]), which was lower than the doctors' median scores. Our results did not reveal any statistically significant association between the median scores of nurses or of doctors and their gender ($p = 0.383$). Such scores were significantly associated with basic training ($p < 0.00$), continuous training ($p = 0.002$), receiving information on nutrition ($p = 0.018$), and the age of the doctor or nurse ($p = 0.016$).

Conclusions

The study reveals gaps in nutrition training among physicians and nurses, particularly with regard to the management of irritable bowel syndrome, iron deficiency anemia, vitamin B12 deficiency, and obesity, hyperuricemia, and gout attacks. It is crucial to strengthen nutrition training in health programs in Morocco.



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sciforum-125729: Evaluation of nutritional knowledge in relation to diabetics, high blood pressure, and high cholesterol in doctors and nurses in Morocco

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Background

In Morocco, non-communicable diseases were responsible for 84% of deaths in 2022. Risk factors include poor diet and a sedentary lifestyle. The objective of this study is to assess the nutritional knowledge of doctors and nurses working in hospitals and primary health care centers in Morocco for diabetes, high blood pressure, and high cholesterol.

Materials and Methods

This was a cross-sectional exploratory study using a self-administered questionnaire developed by standardized nutritional guides. We included 238 nurses and 131 doctors working in health centers and 234 nurses and 54 doctors working in hospitals. Statistical analyses were carried out using SPSS version 21.0 software, the Kolmogorov-Smirnov test, the Mann-Whitney test, and Spearman's correlation. Multiple linear regression analysis was used to explore the most significant sociodemographic variables.

Results

Among the two nutritional content areas assessed in this study, we found that among doctors, the nutrition axis for high blood pressure and high cholesterol had a median correct response score of (0.57 IQR [0.28, 0.71]). The same was true for nurses, but with lower scores [respectively (0.28 IQR [0, 0.43]), (0.28 IQR [0.07, 0.42])].

Our results do not reveal any statistically significant association of the median of the total score of answers of both health professionals (nurses or doctors) with their gender ($p=0.383$). However, they were significantly associated with basic training ($p=0.00$), continuous training ($p=0.002$), receiving information on nutrition ($p=0.018$), and their age ($p=0.016$).

Conclusions

The nutritional knowledge of doctors and nurses in Morocco still needs to be improved. Diabetes, high blood pressure, and high cholesterol, as major non-communicable diseases, pose a major challenge to current health systems. Systematic efforts of policy makers should be devoted to basic and continuing education in nutrition in medical and nursing facilities.



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sciforum-125547: Revolutionizing Diets: AI for Personalized Metabolic Health - A Review of Recent Advances

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Background:

The increasing prevalence of metabolic disorders, such as type 2 diabetes (T2D) and metabolic-associated fatty liver disease (MAFLD), require innovative approaches to dietary management. Traditional dietary interventions often overlook individual variability in metabolic responses, leading to non-optimal outcomes.

Methodology:

Recent studies have showed the integration of artificial intelligence (AI) in developing personalized nutrition plans. An important example is the application of Digital Twin (DT) technology, which uses machine learning models to predict individual postprandial glycemic responses (PPGRs) and adapt dietary recommendations accordingly. In a randomized controlled trial, 319 participants with T2D were assigned to either a DT-enabled personalized nutrition group or a standard care group. The DT group received AI-generated meal plans designed to minimize PPGRs, while the standard care group followed general dietary guidelines. The primary outcomes examined included changes in hemoglobin A1c (HbA1c) levels and medication usage. Secondary outcomes included liver function markers, body weight, and cardiovascular risk factors.

Results:

The DT group demonstrated a significant reduction in HbA1c levels (-2.9%) compared to the standard care group (-0.3%), with 72.7% of participants achieving T2D remission. Additionally, improvements were observed in liver fat scores, body weight, and blood pressure. Notably, 94% of the DT group discontinued T2D medications after one year.

Conclusions:

AI-driven personalized nutrition, as shown by DT technology, offers a promising strategy for managing metabolic disorders. By accounting for individual metabolic profiles, AI can optimize dietary interventions, leading to improved clinical outcomes and reduced reliance on pharmacological treatments. Further research is required to validate these findings across diverse populations and to explore the long-term benefits of AI-assisted dietary management.



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sciforum-118020: Anthocyanins in Asthma Management: A Review of Their Anti-Inflammatory and Airway Remodeling Effects

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Background: Asthma is a prevalent chronic disease with significant economic and health burdens worldwide. Its progression involves key hallmarks such as inflammation and airway remodeling, mediated by multiple inflammatory biomarkers and pathways. Despite the availability of potent therapeutic options, many patients continue to suffer from uncontrolled asthma. The plasminogen activator inhibitor-1 (*PAI-1*) signaling pathway plays a critical role in asthma exacerbation and remodeling, with elevated *PAI-1* levels linked to disease progression. Bioactive compounds are increasingly studied for their potential in asthma management, and anthocyanins (ACNs), with promising anti-inflammatory properties, are among these novel compounds.

Methods and Findings: This comprehensive review explores the potential of ACNs in managing asthma-related inflammation and modulating *PAI-1* levels to influence airway remodeling. ACNs have shown promise in asthma management, with epidemiological studies associating higher ACN intake with a lower risk of asthma and improved lung function. Preclinical models demonstrate ACNs' effectiveness in reducing inflammatory cytokines, chemokines, and signaling pathways related to asthma. Limited human trials suggest ACNs may improve symptom control and lung function. While no direct evidence links ACNs to *PAI-1* reduction in asthma, studies in other chronic conditions indicate their ability to reduce *PAI-1* levels, supporting their potential role in asthma management. This highlights a promising avenue for further exploration into their effects on airway remodeling.

Conclusion: Preliminary evidence suggests ACNs may be effective as an adjunct to reduce inflammation and improve symptom control. However, the lack of robust human interventional studies remains a significant gap. Future research should focus on establishing direct evidence of ACNs' impact on *PAI-1* levels and airway remodeling in asthma.



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sciforum-122613: Calcium Intake Assessment in a Cuban Population Through a Total Diet Study Approach

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Calcium is an essential mineral with critical roles in skeletal integrity, neuromuscular function, and metabolic regulation. This study evaluated the dietary calcium intake of a Cuban adult population using the Total Diet Study (TDS) methodology. A 24-hour dietary recall was conducted in a representative sample of 450 individuals, and 107 food items were analyzed via flame atomic absorption spectroscopy after dry ashing. Milk and dairy products were identified as the primary source of calcium, contributing 47.8% (328.6 mg/day) of the total daily intake, followed by non-alcoholic beverages, bread and flour products, and fish. The average daily calcium intake was 687 mg/day, notably below the EFSA recommended intake (860–1000 mg/day). The prevalence of adequate calcium intake was 69%, which is lower than in other countries such as Spain, Italy, or Iran. Despite being under the recommended range, the intake did not exceed the tolerable upper limit (2500 mg/day), suggesting no immediate risk of toxicity. No significant differences in calcium intake were observed between sexes or age groups. However, the low calcium-to-phosphorus molar ratio (0.44:1) observed may contribute to adverse health outcomes such as bone demineralization or secondary hyperparathyroidism. These findings underline the need for national nutritional policies that promote the consumption of calcium-rich food to prevent long-term health issues, including osteoporosis and colorectal cancer.



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sciforum-125941: Dietary Prebiotic Supplementation Modulates Gut Microbiota, Maintains Healthy Status, and Prevents Diseases in Adult Individuals

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INTRODUCTIONS

Prebiotic supplementation represents a promising method to influence gut microbial composition and achieve better metabolic results since it supports metabolic health through gut-microbiota functions. Some researches have evaluated the changes that prebiotic intake makes on gut microbiota diversity, metabolic health characteristics, and short-chain fatty acid (SCFA) formation in normal-functioning adults.

METHODS

We performed a placebo-controlled double-blind randomized study involving 120 participants, 20–45 years old, but only 50 completed it. The participants received either 15 g/day of inulin and fructo-oligosaccharides in the prebiotic group or a placebo for twelve weeks. We measured gut microbiota diversity through the Shannon and Simpson indices and detected metabolic markers, including fasting glucose, insulin, HOMA-IR, lipid profiles, inflammatory markers, and SCFA levels, at baseline and weeks 6 and 12.

RESULTS

The participants in the prebiotic group showed significant improvements in gut microbiota diversity (Shannon index: 5.12 ± 0.89 to 5.78 ± 0.95 , $p = 0.001$), alongside increased SCFAs (acetate: 65.12 ± 8.45 to 70.23 ± 9.45 $\mu\text{g/mL}$, $p = 0.001$) and fasting glucose (89.5 ± 8.2 to 87.6 ± 7.5 mg/dL , $p = 0.045$), while insulin (8.12 ± 3.45 to 7.65 ± 3.01 $\mu\text{IU/mL}$, $p = 0.023$), HOMA-IR scores (1.82 ± 0.91 to 1.72 ± 0.83 , $p = 0.031$), and CRP (3.45 ± 1.23 to 3.12 ± 1.08 mg/L , $p = 0.015$) reached lower significant levels. The analysis showed a direct relationship between reduced microbial diversity and higher metabolic markers (Shannon diversity index showed a negative correlation with fasting glucose at $r = -0.32$ and $p = 0.002$).

CONCLUSIONS

These preliminary data from our research show that prebiotics can be a nutritional approach to more effective metabolism and make up part of personalized strategies to prevent and cure several diseases (e.g., obesity, diabetes, cardiovascular conditions) linked to gut dysbiosis and metabolic imbalance.



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sciforum-127828: Innovation, Development and Implementation of Personalized Nutrition Plans Based on Genetic Profiling for Optimal Health

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Recent developed advancements in nutrigenomics have identified specific genetic markers that influence how fats and carbohydrates are metabolized, highlighting the role of the anti-aging gene Sirtuin 1 (SIRT1) gene. SIRT1 is crucial for the health of the brain, heart, lungs, kidneys, and liver. It plays a significant role in the regulation of fatty acids and glucose, which are key to preventing Non-Alcoholic Fatty Liver Disease (NAFLD) and Neurodegenerative Diseases (NDs). By clearly understanding how SIRT1 interacts with dietary components, researchers can effectively develop personalized nutritional strategies that greatly enhance metabolic health and potentially delay the onset of age-related diseases. This approach points out in detail the extraordinary transformative potential of nutrigenomics in promoting good health and human longevity. For instance, in the brain, SIRT1 activation has been linked to neuroprotection and cognitive functioning, offering hope in considerably delaying neurodegenerative diseases such as Alzheimer's and Parkinson's disease. In the liver, SIRT1 helps regulate lipid metabolism, which can prevent Non-Alcoholic Fatty Liver Disease (NAFLD) by reducing fat accumulation. In the heart, anti-aging gene Sirtuin 1 (SIRT1) supports cardiovascular health through pathways that effectively improve endothelial function and significantly reduce oxidative stress. Additionally, SIRT1's role in the kidneys involves modulating responses to stress and inflammation, which is crucial for preventing chronic kidney disease. Dietary components such as Resveratrol, found in red wine and certain berries, have been shown to activate SIRT1, highlighting the gene's nutrigenomic potential. By leveraging these insights, personalized nutrition plans can be developed to modulate SIRT1 activity, optimizing metabolic health and potentially delaying the onset of age-related diseases. This gene-centric approach illustrates how nutrigenomics can pave the way for innovative strategies to enhance overall health, well-being and lifespan.



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sciforum-125627: Mediterranean Diet adherence among medical students in southern Italy

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Background: The Mediterranean Diet (MD) is characterized by high consumption of plant-based foods, extra virgin olive oil as the main fat source, regular fish intake, limited red meat intake, and moderate wine intake with meals. Despite it being recognized worldwide for its health benefits and it having an intrinsic cultural role in Italy, recent lifestyle changes have led to more Westernized diets. This study aimed to assess MD adherence among medical students, a group presumed to be health-conscious due to their education.

Methods: We evaluated MD adherence using the 14-item PREDIMED questionnaire in 300 medical students from the University of Bari "Aldo Moro", equally distributed across six academic years. Anthropometric data (BMI for all; waist circumference for a subset) were collected.

Results: Their adherence was generally moderate, aligning with the national averages. No significant differences emerged between academic years, though the highest adherence was seen in sixth-year students (14%) and the lowest was seen in first-years (2%). Third-year students had the lowest adherence rate (28%). While adherence was not significantly linked to BMI or waist-to-height ratio, no obese students belonged to the high-adherence group, and only six were overweight. Females showed higher adherence and a lower prevalence of overweight (18% vs. 34%) compared to these values in males. Local and non-local students showed no differences. The weakest points were low fruit and vegetable intakes, while over half consumed processed foods regularly.

Conclusions: Adherence varied by sex and year, with better adherence in the final-year students, possibly due to their cumulative nutritional knowledge. Introducing nutrition education earlier may foster healthier habits. Improving campus access to fruits and vegetables while reducing processed foods could support MD adherence further. As future physicians, medical students must both practice and promote healthy lifestyles, highlighting the need for stronger nutritional training and supportive food environments.



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sciforum-125981: Nutritional Revalorization of *Camellia japonica*: Implications for Mineral Deficiency and Dietary Supplementation

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Camellia japonica, which is traditionally valued as an ornamental plant, has recently attracted attention for its nutritional potential due to its rich mineral profile. This study aimed to evaluate the macromineral composition of *C. japonica* leaves to assess their potential for food and nutraceutical applications.

Dried leaf samples were subjected to acid digestion, and the concentrations of calcium (Ca), potassium (K), magnesium (Mg), phosphorus (P), and sodium (Na) were determined using inductively coupled plasma optical emission spectrometry (ICP-OES). Analyses were conducted in triplicate, and the results were expressed as the mean $\pm$ standard deviation (mg/kg dry weight).

Compared to well-known leafy vegetables such as spinach (*Spinacia oleracea*) on a dry weight basis [1], *C. japonica* leaves exhibit lower mineral concentrations overall. Nevertheless, the results revealed that *C. japonica* is particularly rich in Ca (8301.26 ± 78.42), K (3096.23 ± 12.55), and Mg (1415.25 ± 24.34), with moderate levels of P (437.44 ± 6.92) and Na (126.99 ± 4.38). These findings highlight its potential as a sustainable and underutilized botanical source for the development of functional foods and dietary supplements.

(1) U.S. Department of Agriculture, Agricultural Research Service. (2024). *FoodData Central: Spinach, raw (FDC ID: 168462)*. Retrieved May 29, 2025, from <https://fdc.nal.usda.gov/fdc-app.html#/food-details/168462/nutrients>



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sciforum-125968: Rosmarinic Acid Improves Mitochondrial Function and Mitochondrial Biogenesis at Relevant Nutritional Doses in Muscular Murine Cells

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University of Valencia

BACKGROUND: Rosmarinic acid (RA) is a polyphenol found in various plants, especially in the Lamiaceae family, such as rosemary, sage, lemon balm, and basil, and especially in peppermint. Mitochondria have cell-type-specific phenotypes, perform dozens of interconnected functions, and undergo dynamic and often reversible physiological recalibrations. One of the main current goals is to enhance mitochondrial function through various strategies, including nutritional ones.

METHODOLOGY: Mouse muscle cells (C2C12) were differentiated and treated with RA. Mitochondrial genes were measured by RT-qPCR, and proteins by Western blotting. Mitochondrial respiration was measured using Seahorse XF and Oroboros O2k. Mitochondrial biogenesis was analyzed by citrate synthase activity, and finally, the antioxidant role was observed by hydrogen peroxide production, catalase activity, and malondialdehyde (MDA) levels using HPLC.

RESULTS: Mitochondrial genes were overexpressed compared to the control group using AR. Both basal and maximal respiration, including ATP production, were higher with AR exposure. There was increased activity of the citrate synthase enzyme and proteins such as PGC-1 α and TFAM related to mitochondrial biogenesis. There was increased catalase activity, lower hydrogen peroxide levels, and lower MDA levels.

CONCLUSIONS: AR at nutritionally relevant doses (100 nM) increases mitochondrial function, both in respiration and mitochondrial biogenesis, and acts as an antioxidant in differentiated mouse muscle cells.



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sciforum-125276: The Mediterranean-style Japanese Diet for Anti-Aging

Kazuki Santa

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Introduction: The Mediterranean diet and the Japanese diet, listed as the intangible cultural heritage of humanity by UNESCO, are healthy diets consumed worldwide. This research compares the two diets, finds the differences and similarities, and thinks about healthy diets with regard to anti-aging.

Methodology: This research follows the Cochrane guidelines and uses Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). The keywords used in this systematic review include Mediterranean diet, Japanese diet, and anti-aging with the PubMed search engine.

Results: Mediterranean countries including Italy and Greece have one-third the mortality ratio with cardiovascular diseases compared to America and North European countries. Since diets are deeply associated with this outcome, the Mediterranean diet is regarded as healthy. A typical Western diet is high in fat, sugar, and calories, causing chronic inflammation-related diseases including cardiovascular diseases, metabolic syndrome, and obesity, which shorten the life span. However, Mediterranean and Japanese diets are usually low in these, with the mass consumption of vegetables, beans, and fish, and the daily consumption of cereals. Differences include a greater consumption of polyphenol-rich extra virgin olive oil, dairy products, and a lower amount of meat consumption in the Mediterranean diet, and less use of oil, the abundant consumption of fermented foods, and the consumption of seaweeds in the Japanese diet. In addition, Sirtuin genes activated by these diets are associated with anti-aging. Since Japan has the longest lifespan in the world, people are familiar with the idea of “Me-Byo”, finding non-disease conditions and curing them before they manifest.

Conclusion: In conclusion, the Mediterranean-style Japanese diet, a well-balanced diet, reduces the risk of a variety of diseases by preventing chronic inflammation. This dietary method prevents the manifestation of “Me-Byo” and has anti-aging properties, and it might contribute to healthy and long lives not only for Japanese people but also for people around the world.



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Session 3. Immune and Inflammatory Diseases

sciforum-125604: AI in Multiple Sclerosis: Early Detection and Personalized Treatment Approaches—A Review of Recent Advances

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Background: Multiple sclerosis (MS) is a chronic autoimmune disease of the central nervous system that presents significant diagnostic and therapeutic challenges. Recent advancements in artificial intelligence (AI) have shown promise in improving early detection and personalizing the treatment strategies for MS.

Methodology: A systematic review was conducted, analyzing studies published between 2022 and 2025 that employed AI techniques in MS diagnosis and treatment. The review focused on studies using magnetic resonance imaging (MRI), optical coherence tomography (OCT), and machine learning algorithms to assess diagnostic accuracy and treatment efficacy.

Results: The AI models demonstrated high diagnostic accuracy, with the combined sensitivity and specificity ranging from 92% to 93% across various studies. For instance, a study by Hernandez et al. (2023) used explainable AI to analyze OCT data, achieving significant accuracy in early MS detection. Furthermore, AI algorithms have facilitated the identification of new MS subtypes, such as 'cortex-led', 'normal-appearing white-matter-led', and 'lesion-led', which correlate with different disease progression patterns and treatment responses.

Conclusions: AI technologies are revolutionizing MS management by allowing for early and accurate diagnoses, uncovering disease subtypes, and personalizing treatment plans. The integration of AI into clinical practice holds the potential to improve patient outcomes through personalized therapeutic approaches. However, challenges remain, including the need for large, diverse datasets and a reduction in biases in AI models. Future research should focus on verifying AI tools in diverse populations and creating standardized protocols for their clinical application.



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sciforum-122073: An investigation into the antimicrobial effectiveness of gold nanoparticles and lasers against various bacterial strains

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An investigation into the antimicrobial effectiveness of gold nanoparticles and lasers against various bacterial strains.

As a catalyst, AuNPs are one of many NPs that have found application in gene therapy, medical therapy, and biological diagnostic methods, as well as NPs used in gene therapy. An in vitro study was conducted to assess the effectiveness of gold nanoparticles (AuNPs) and gold nanoparticle–low-level-laser-combined therapy against bacterial isolates. The bacterial growth rate and medium inhibitory concentrations of AuNPs were determined at five concentrations (25, 50, 75, 100, and 200 g/mL). After treatment with gold nanoparticles, bacterial growth was found to be slightly reduced. Also, gold nanoparticles were tested for their influence on *Staphylococcus aureus* biofilms. The amount of biofilm that can be formed was reduced by different concentrations of AuNPs when compared to a control without nanoparticles. A combination of low-level lasers and AuNPs produced an improved cytotoxic effect against *Escherichia coli* and *Staphylococcus aureus*, indicating that the combination of low-level lasers enhanced AuNPs' antibacterial activity. As a result of this work, we were able to explore the effectiveness of gold nanoparticles and the AuNP–laser-induced therapeutic approach (at different energy densities of lasers and different concentrations of AuNPs) as antibacterial agents against some pathogenic bacterial strains with gold nanoparticles.

Keywords: Gold nanoparticles; Laser; Antibacterial agent; Cytotoxicity; MIC



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sciforum-120565: A Combination of Hypoalbuminemia and Iron Deficiency Anemia and Its Consequence in Pediatric Pneumonia

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Background: In the pediatric population, pneumonia stands as the prevailing cause of mortality. The simultaneous presence of hypoalbuminemia and iron deficiency anemia presents specific difficulties in the treatment of pediatric pneumonia. **Objectives:** (1) Determine the proportion of coexistence of both hypoalbuminemia and iron deficiency anemia. (2) Evaluate the association between the coexistence of hypoalbuminemia, iron deficiency anemia, and pneumonia in children faged between 2 months and 5 years old at Ca Mau Obstetrics and Pediatrics hospital in 2022–2023. **Research subjects and methods:** A cross-sectional descriptive study was conducted on 177 young patients, aged 2 months to 5 years old, who were diagnosed with pneumonia. The diagnosis of pneumonia was based on the WHO diagnostic criteria for pneumonia in children under 5 years old. The children had the following symptoms: a cough and/or difficulty breathing and/or fever accompanied by rapid breathing or chest indrawing; tachypnea compared to age according to the World Health Organization; or small moist rales, whistling rales, or snoring rales noted in the lungs via an examination, or a cardiopulmonary X-ray showing pneumonia. **Results:** The percentage of male patients was 56.5%. The average age was 22.5 ± 15.82 months old. The coexistence of hypoalbuminemia and iron deficiency anemia was found in 14.1% of cases. Children who had hypoalbuminemia and iron deficiency anemia were more likely to experience severe pneumonia, with a rate of 36% compared to 7.9% in the control group. Twenty-four percent of the participants in the study used a greater amount of antibiotics, which was significantly higher than the control group's rate of 3.9%. More than half of the patients required hospitalization for more than a week. **Conclusion:** The consequence of the simultaneous presence of both hypoalbuminemia and iron deficiency anemia is an exacerbation of pneumonia severity requiring a higher quantity of antibiotics for treatment.



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sciforum-127217: Anti-cancer activity of novel selective glucocorticoid receptor agonist 13S-G2 in vitro on the model of blood cancer

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Background

Glucocorticoids (GCs) are widely used in the treatment of hematological malignancies as well as in the systemic therapy of autoimmune and inflammatory diseases. The therapeutic effects of GCs are realized via glucocorticoid receptor (GR) activation by DNA-independent transrepression (TR), while their side effects are associated with transactivation (TA). Side effects could be reduced by developing selective glucocorticoid receptor agonists (SEGRAs), acting via the activation of TR. Recently, we synthesized a novel compound, 2-(hexylamino)-1-(4-nitrophenyl)ethanol (13S-G2), which was a derivative of synephrine, and its biological activity was studied in leukemia and lymphoma cells in vitro.

Methodology

The effect of 13S-G2 on the viability of chronic myeloid leukemia (CML) K562 cells and B-cell lymphoma Granta-519 cells was evaluated using the MTT assay. TA induction was assessed by quantitative PCR (qPCR) of GR-dependent genes (*GILZ*, *FKBP51*, *REDD1/DDIT4*). TR induction was studied using a luciferase reporter assay (with NF- κ B reporter construct) and qPCR analysis of key TR marker genes (*COX2*, *IL-1 α* , *IL-6*, *CCNE1*). The affinity of 13S-G2 was assessed in silico by molecular docking (Molegro Virtual Docker), and in vitro via a radioligand binding assay.

Results

Compound 13S-G2 showed cytotoxicity with IC₅₀ values of 184 $\pm$ 95 μ M in K562 and 26.8 $\pm$ 1.2 μ M in Granta-519. In silico, we demonstrated that 13S-G2 occupied a sterically advantageous location at the GR binding site formed by the amino acid residues Arg611, Asn564, and Gln642. In a radioligand binding assay (IC₅₀), the radiolabeled Dexamethasone displacement in K562 cells by 13S-G2 was 0.69 μ M. The inhibitory effect of 13S-G2 on luciferase activity was 55% in K562 and 15% in Granta-519. Compound 13S-G2 suppressed the expression of TR marker genes, in most cases by 1.5–2.0 fold. The absence of TA induction was proved for 13S-G2.

Conclusions

The novel SEGRA 13S-G2 demonstrates promising transrepression-driven anti-cancer activity in hematological malignancies with the absence of TA induction and low potential for side effect development.



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sciforum-127963: CD47-targeted therapies in breast cancer treatment: a systematic review of preclinical- and early-phase clinical studies

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Background: CD47 has emerged as a significant therapeutic target in breast cancer (BC) treatment due to its role in immune evasion, with recent studies suggesting enhanced macrophage phagocytic activity through CD47 blockade. This study aims to provide a secondary analysis of CD47 blockade in the treatment of BC.

Methodology: Following the PRISMA2020 guidelines, Medline (via PubMed), Web of Science, and Scopus were systematically searched using keywords and MeSH terms representing CD47, integrin-associated protein, thrombospondin-1, SIRP α , BC, and their equivalents. The results were screened, and irrelevant studies, preprints, review articles, and studies focusing solely on other tumors, secondary BC, or BC metastases were removed.

Results: From the 874 screened records, 20 records were finally included. Studies reported CD47 blockade using various agents, including Hu5F9-G4, MIAP301, MIAP410, and B6H12 antibodies; anti-CD47 siRNA nanoparticles; and tumor vaccines loaded with CD47-targeting agents. Most studies reported the combination of CD47 blockade with other treatment modalities. All studies reporting the dual blockade of CD47 and HER2 using trastuzumab showed significant synergistic effects. CD47-targeting regimens demonstrate their effectiveness through the regulation of cAMP, the suppression of EGF signaling pathways, and an effect on the tumor microenvironment through M2 macrophages and regulatory T-cell depletion, resulting in the activation of an antitumor innate immune response, improved antitumor responses, and a reduction in tumor growth and proliferation, especially in triple-negative BC. So far, the dual CD47/HER2-targeting IMM2902 has shown significant antitumor effects, along with acceptable safety and tolerability.

Conclusions: CD47 targeting is a promising anticancer approach to BC. The optimum effects of CD47 blockade are mostly observed when it is administered in combination with other treatment modalities. Specifically, CD47 blockade has shown potential in the treatment of HER2+ BC—regardless of whether the tumor is trastuzumab-resistant or -sensitive. Future studies are required to evaluate its effectiveness in terms of its statistical significance, the optimum combination therapy regimens, and the treatment toxicities.



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sciforum-127958: Fatigue among lung cancer patients treated with atezolizumab: a systematic review and meta-analysis

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Background: Atezolizumab, a PD-L1-targeting monoclonal antibody, has been increasingly utilized in the treatment of various malignancies, including lung cancer. Despite its clinical benefits, adverse events such as fatigue are commonly reported. Our study aimed to quantify the prevalence of fatigue among lung cancer patients undergoing treatment with atezolizumab.

Methodology: A comprehensive literature search was conducted using Medline (via PubMed), Scopus, Web of Science, and Cochrane Library, using free keywords and MeSH terms related to atezolizumab, fatigue, lung cancer, and adverse events. Clinical studies reporting the epidemiology of fatigue among lung cancer patients treated with atezolizumab were included. Data extraction and quality assessment were independently performed by two reviewers using the JBI extraction and critical appraisal tools. Prevalence rates were pooled using a random-effects model due to expected heterogeneity. This study's reporting adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines.

Results: Eight clinical trials were identified. All included studies were phase I or II clinical trials, predominantly of non-small-cell lung cancer patients. The prevalence of all-grade fatigue was found to be 25.56% (95%CI: 17.14% – 36.3%; I² = 83.52, p < 0.01), with grade 3 or higher fatigue reported in 2.55% (95%CI: 1.25% – 5.13%; I² = 0, p = 0.55) of the patients. Although subgroup pooling was not attainable due to high heterogeneity, the comparative analysis favored a higher prevalence of fatigue among patients with small-cell lung cancer (SCLC).

Conclusions: Fatigue is a prevalent adverse event in lung cancer patients treated with atezolizumab, affecting approximately one in every four patients. Reports of severe fatigue warrant careful monitoring and management. Further studies are required to determine the underlying mechanisms and develop effective interventions to prevent or manage this adverse effect properly.



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sciforum-122008: HLA-B27 in Moroccan Seronegative Spondylarthritis Patients

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Background: The human leukocyte antigen B27 (*HLA-B27*) gene is strongly associated with seronegative spondylarthritis (SpA), particularly ankylosing spondylitis (AS). There is currently no data on the frequency of HLA-B27 in the SpA subtypes in Morocco. This study is the first to determine the distribution of the *HLA-B27* gene among Moroccan patients with SpA and to investigate its correlation with inflammatory markers and clinical data.

Methods: From February 2009 to March 2023, we retrospectively analyzed 205 SpA patients at a private rheumatology clinic in Casablanca, Morocco. The medical records included demographic data, clinical features, and laboratory parameters. *HLA-B27* was genotyped using quantitative polymerase chain reaction (qPCR) with high-resolution melting (HRM). Statistical analyses were performed using SPSS software (version 25.0).

Results: *HLA-B27* was detected in 33 patients (15.1%). *HLA-B27* prevalence was significantly higher in men ($p=0.05$) and showed a strong association with AS ($p=0.000$). A positive correlation was found between *HLA-B27* positivity and elevated erythrocyte sedimentation rate (ESR) ($r = 0.18$) and C-reactive protein (CRP) levels ($r = 0.16$), suggesting a link with increased inflammation.

Conclusion: Our findings confirm a strong association between *HLA-B27* and AS, with a higher prevalence among men. The correlation observed between *HLA-B27* positivity and inflammatory markers supports its role as a potential biomarker for disease severity. Our data aligns with studies from the MENA region. Further research is needed to explore the genetic contributions to SpA susceptibility and progression.



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sciforum-127954: Pharmacological Therapy and Quality of Life in Rheumatoid Arthritis Patients from the North-East of Portugal: An Exploratory Study

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Background: Rheumatoid arthritis (RA) is an inflammatory disease characterized by erosive changes in bone and cartilage, which can lead to severe deformities and disabilities, adversely impacting muscle strength, endurance, range of motion, and overall quality of life [1,2]. **Objective:** Our aim was to evaluate pharmacological therapy and quality of life in patients with RA. **Methodology:** This study followed an exploratory, cross-sectional, and descriptive design, focusing on patients with RA in the Bragança district who are treated at the Rheumatology Service of the Unidade Local de Saúde do Nordeste E. P. E. (ULSNe). The study aimed to collect sociodemographic and therapy-related data and administer validated questionnaires to assess quality of life, using the EQ-5D Health Quality of Life Assessment and evaluate the complexity of pharmacotherapy using the ICFT Pharmacotherapy Complexity Index. Statistical data processing was conducted using IBM SPSS version 30.0.0.0. The project was approved by the ULSNe Ethics Committee. **Results:** A total of 61 individuals were surveyed; the majority were female (85%), with an average age of 65 years, and primary school was the most common level of education (39%). The EQ-5D results indicated that 54% of participants experience moderate pain/discomfort, while the ICFT produced a score of 29.3, which is considered highly complex pharmacotherapy regarding daily chronic therapy [3]. The medications most frequently reported included DMARDs (Disease Modifying Anti-Rheumatic Drugs, 10.4%) such as Methotrexate in tablet form (5.2%) or injectable (5.2%), and Anti-Anemic drugs (10.8%) like Folic Acid (10.4%), and Corticosteroids (5%) such as Prednisolone (4.5%). **Conclusions:** This study highlights higher pharmacological complexity compared to previous studies [3,4], which could lead to polypharmacy, thereby increasing the exposure of patients to potential drug interactions and adverse reactions [3]. Patients continue to experience moderate pain and discomfort, despite the prescribed treatment for RA, highlighting the need to improve strategies for better therapy management.



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sciforum-121416: Platelet microRNA-27 expression in patients with various oncopathologies before and after surgery

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Background. MicroRNAs are a class of small non-coding RNAs that perform important functions in regulating gene expression. Numerous data show that abnormal expression of microRNAs is observed in people with various oncopathologies. Platelet-derived microvesicles (PMVs) have been shown to carry microRNAs targeting oncogenes and tumor suppressor genes. MicroRNA-27 plays an important role in oncogenesis, proliferation, tumor cell metabolism, and chemotherapy resistance and also regulates the tumor immune response and the epithelial-mesenchymal transition. In this study, we examined the expression levels of miRNA-27 in PMVs from breast cancer (BC), lung cancer (LC), and kidney cancer (KC) patients before and after surgery.

Methodology. A total of 30 patients, 10 with breast cancer, 10 with lung cancer, and 10 with kidney cancer, and 10 clinically healthy individuals were involved in this study. All of the patients were subject to radical surgical treatment. PMVs were isolated from washed thrombin-stimulated platelets through sequential centrifugation. mRNA was extracted using the phenol-chloroform method. Synthesis of complementary DNA (cDNA) and the PCR analysis were performed using the miRCURY LNA miRNA PCR Starter Kit (Qiagen).

Results. The results indicated that the PMVs from all of the patients with various oncopathologies exhibited significantly reduced expression of microRNA-27 in comparison to that in the healthy donors. Namely, in BC, the median expression level of microRNA-27 was 6.4 times lower; in LC, it was 2.5 times lower; and in KC, it was 4.6 times lower. Post-surgery, the expression of microRNA-27 in the patients with BC and LC did not differ from the control values; however, in KC, it was drastically reduced by 3.5 times.

Conclusion(s). Consequently, our data suggest that platelet miRNA-27 may act as a potential diagnostic and prognostic biomarker for BC, LC, and KC; however, additional research with a larger sample size is required.

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sciforum-122537: Potential biomarkers of acute allergic reactions in children

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Background. In recent years, there has been an increase in acute allergic reactions (AAR), including anaphylaxis (AF), worldwide. AAR is based on certain clinical signs, but differential diagnosis often requires the use of additional diagnostic tests that can not only confirm the severity of the allergic reaction and its severity, but also predict its development. In this regard, the aim of our study was to examine the levels of tryptase, platelet activating factor (PAF), the enzyme acetylhydrolase of PAF (PAF-AG), and the content and activity of angiotensin-converting enzyme (ACE) in the blood serum of children with AAR.

Methodology. This study was conducted at pediatric hospitals in Belarus. A total of 60 children (average age 9.2 years) with AAR in the form of acute urticaria, angioedema, or their combination, as well as AF, were included in this study. The control group included 18 conditionally healthy children (average age 8.7 years). Measurements of tryptase, FAT, FAT-AG, and ACE concentrations were performed using enzyme immunoassay. ACE activity was studied spectrophotometrically using the Elabscience ACE Activity Assay Kit. Differences were considered statistically significant at $p < 0.05$ and were analyzed using the Mann-Whitney U test.

Results. The results of our study showed that the median values of the levels of tryptase, PAF, and PAF-AG in the blood serum of children significantly increase with the development of AAR (in 2, 1.5, and 2.9 times, respectively), and correlate with the severity of AAR. In addition, these rates were higher in the group of children with AF compared to children without AF. The levels and activity of ACE in children with AAR also tended to increase relative to the control, but this increase was insignificant.

Conclusion(s). In conclusion, tryptase, PAF, and PAF-AG levels may act as potential biomarkers for the development of AAR in children.



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sciforum-125982: Prevalence, pathophysiology, and dietary management of SIBO in the modern lifestyle

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Small Intestinal Bacterial Overgrowth (SIBO) is gaining increasing recognition in gastroenterology, yet its diagnosis and management remain inconsistent across clinical settings. Despite its high prevalence in symptomatic patients, standard diagnostic thresholds ($\geq 10^3$ vs. $\geq 10^5$ CFU/mL) and breath testing remain controversial.

This review aims to integrate current clinical and microbiome research to propose a novel microbiota-based framework for understanding and managing SIBO. Specifically, we highlight the Proteobacteria/Firmicutes ratio, particularly values >0.39 , as a promising biomarker correlated with symptoms such as bloating and fecal urgency. This approach provides a unifying lens through which diagnostic variability may be reduced and microbial imbalance more precisely addressed. Additionally, we examine emerging evidence on the role of dietary patterns in reshaping the gut microbiota, proposing targeted nutritional interventions to reduce recurrence rates.

While this review draws from existing literature, it offers a novel synthesis that links microbial composition with diagnostic and therapeutic strategies. The recent introduction of ICD-10 code K82.11 further emphasizes the need for standardized frameworks in epidemiological tracking. Our findings support a shift from symptom-driven to microbiota-informed care models, with the potential to enhance clinical decision-making and long-term patient outcomes.



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sciforum-127874: The early detection and management of emerging toxicities associated with bispecific antibodies and T-cell engagers: the key role of oncology nursing

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Recent advances in immunotherapy have transformed cancer treatment, particularly through the development of bispecific antibodies and T-cell engagers (TCEs) targeting antigens such as CD3 and DLL3. These therapies, currently administered primarily within the clinical trial setting, offer new hope to patients with aggressive tumors and limited treatment options, such as high-grade neuroendocrine carcinomas or certain resistant and aggressive solid tumors.

However, their mechanism of action—based on redirected T-cell activation—can lead to novel immune-mediated toxicities, including cytokine release syndrome (CRS) and immune effector cell-associated neurotoxicity syndrome (ICANS), which require early detection and appropriate management to ensure patient safety.

The aim of this study is to identify the most incident AEs in patients treated with bispecific antibodies (CD3/DLL3) and T-cell engagers in order to improve nurses' knowledge of this emerging therapy and facilitate the early detection and management of these events.

A literature review was conducted in this study. The research was carried out using different databases. After applying the PRISMA methodology and discarding preclinical-phase studies, the sample was 38.

The most incident and common adverse events during treatment with these emergent drugs were obtained, as well the degree of each of them. How these events are handled was reviewed in the literature, but it was hardly described, evidencing the need for further research.

These drugs, with new therapeutic targets, represent a new opportunity for this type of patient with a poor prognosis, requiring the development of a good safety profile.

Within this evolving therapeutic landscape, specialized nursing care is essential. Nurses are responsible for continuous clinical monitoring, recognizing the early signs of toxicity, and implementing timely interventions. Promoting continuous education and nursing-led research will be key to improving patient outcomes and developing evidence-based practices tailored to these new treatments.



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Session 4. Geriatrics

sciforum-125914: “Implementing Transcultural Geriatric Assessment in a Migrant Population at the Modena Memory Clinic”

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INTRODUCTION:

In Western countries, the number of older adults with a migration background is increasing, along with the prevalence of age-related conditions like dementia. Standard cognitive tests often show cultural bias, limiting their effectiveness in diverse populations. This study highlights the need for culturally sensitive tools such as the Rowland Universal Dementia Assessment Scale (RUDAS), which is part of the European Cross-Cultural Neuropsychological Test Battery (CNTB). The RUDAS assesses global cognitive function while minimizing the influence of cultural, linguistic, and educational factors.

METHODS:

A prospective observational study began in February 2024 at the Cognitive Disorders and Dementia Center (CDCD) in Modena. Included patients were aged >65, born abroad to non-Italian parents, and referred for a multidimensional geriatric or cognitive assessment. When possible, assessments were conducted with cultural mediators and included the RUDAS scale. The RUDAS was administered alongside the Mini-Mental State Examination (MMSE) in order to compare the results of the two cognitive screening tools within the same sample.

RESULTS:

The sample includes 44 patients, 77.3% female, with a mean age of 78.3 ± 6.7 years. Most have permanent residence permits but are not Italian citizens. The main nationalities are Albanian (22.7%), Moroccan (20.5%), and Ukrainian (11.4%). Dementia is the most common diagnosis. The mean MMSE score is 18.13 ± 7.43 , and the mean RUDAS score is 17.39 ± 7.81 , with no statistically significant difference ($p = 0.6514$). Patients are mostly supported by children or spouses and show intermediate autonomy levels (ADL: 3.95 ± 1.68 ; IADL: 2.75 ± 2.75). Frequent behavioral symptoms include sleep disturbances, irritability, and depression. Comorbidity levels are moderate (median CIRS-c: 2).

CONCLUSIONS:

These preliminary findings suggest that MMSE and RUDAS provide comparable results when assessing cognitive impairment in older migrant patients. Further research with larger samples is needed to confirm these results .



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sciforum-129734: Adherence to the Mediterranean Diet Is Associated With High Cognitive Performance in Community-Dwelling Older Adults: Results of the TOLEDO Study of Healthy Ageing

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Introduction: Growing evidence supports the role of healthy dietary patterns, such as the Mediterranean diet (MED), in preserving cognitive function during aging. Characterized by a high intake of fruits, vegetables, legumes, whole grains, fish, and olive oil, and a low consumption of red meat and processed foods, the MED diet may offer neuroprotective benefits. However, longitudinal data examining this association in community-dwelling older adults remain limited. This study aimed to explore both cross-sectional and longitudinal associations between adherence to the MED diet and cognitive performance in a large sample of older adults.

Methods: Data were drawn from the TOLEDO Study of Ageing, involving 963 community-dwelling older adults, without mobility limitations or dementia. Adherence to the MED diet was assessed using the PREDIMED questionnaire. Cognitive performance was evaluated at baseline and after 3 years through a comprehensive neuropsychological battery including the Mini-Mental State Examination, Short and Long-Term Memory Recalling Test, Boston Naming Test, Verbal Fluency Test, Digit Span Forward, Go/No-go Test, Edinburgh Handedness Inventory, Luria Orders Test, Clock Drawing Test, and Serial Word Learning Test.

Results: Cross-sectionally, higher adherence to the MED diet was significantly associated with better performance on tests of executive function (e.g., Luria), attention/working memory (Digit Span), and cognitive laterality (Edinburgh Handedness Inventory). Longitudinally, these associations remained significant. Additionally, a positive association with delayed free recall performance (short-term memory) emerged over time.

Conclusion: Greater adherence to the MED diet is associated with better cognitive performance, particularly in executive, attentional, and memory domains, both cross-sectionally and over time. These findings underscore the cognitive benefits of the MED diet in aging populations.



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sciforum-129729: Associations Between Sarcopenia and Falls in Older Adults: Exploring the Role of Intrinsic and Extrinsic Factors

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Introduction: Sarcopenia is a chronic condition linked to aging-related neuromuscular decline, often defined by dynapenia, muscle atrophy, and impaired physical function. Although diagnostic criteria are debated, sarcopenia is associated with many adverse outcomes, such as falls. However, findings on its link to falls are inconsistent, possibly due to limited consideration of falls' multifactorial nature. Indeed, intrinsic (e.g., comorbidities) and extrinsic (e.g., home environment) factors both influence fall risk, yet few studies examine their combined effects. Hence, this study examined data from the iSIRENTE cohort to explore how intrinsic and extrinsic factors moderate the cross-sectional and longitudinal relationship between sarcopenia and falls.

Methods: This prospective cohort study was conducted among octogenarians residing in the mountainous Sirente geographic area of Central Italy. Sarcopenia was defined according to the European Working Group on Sarcopenia. Data on fall history and incident falls were collected over a two-year period. A general linear model was used to assess whether intrinsic factors (i.e., multimorbidity, polypharmacy, cognitive function, vision status, and nutritional status) and extrinsic factors (i.e., social functioning and environmental characteristics) moderated the relationship between sarcopenia (independent variable) and falls (dependent variable).

Results: Results of the general linear model revealed that intrinsic factors, but not extrinsic ones, significantly influenced the associations between sarcopenia and falls. Specifically, multimorbidity and polypharmacy were associated with both fall history and incidence, while cognitive function and nutritional status emerged as significant moderators in the longitudinal analysis.

Conclusion: These findings underscore the importance of addressing specific intrinsic health-related factors in order to more effectively mitigate the risk of falls among older adults with sarcopenia.



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sciforum-129731: Cross-Sectional and Longitudinal Associations Between Malnutrition and Cognitive Performance in Community-Dwelling Older Adults

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Introduction: Malnutrition and cognitive decline are prevalent and interrelated conditions in older adults, both contributing to increased disability, frailty, and mortality. Evidence suggests that poor nutritional status may accelerate cognitive deterioration, particularly in domains related to executive function and memory. However, longitudinal data in community-dwelling populations remain limited. This study aimed to examine both the cross-sectional and longitudinal associations between malnutrition and cognitive performance in a large sample of older adults.

Methods: Data were drawn from the TOLEDO Study of Ageing, involving 963 community-dwelling older adults. Malnutrition was defined according to the Global Leadership Initiative on Malnutrition (GLIM) criteria. Cognitive performance was assessed using a comprehensive neuropsychological battery including the Mini-Mental State Examination, the Short- and Long-Term Memory Recalling Test, the Boston Naming Test, a Verbal Fluency Test, Digit Span Forward, the Go/No-Go Test, the Edinburgh Handedness Inventory, the Luria Orders Test, a Clock Drawing Test, and a Serial Word Learning Test.

Results: In the cross-sectional analyses, malnutrition was significantly associated with a poorer performance in tests assessing frontal lobe function, including the Luria and Go/No-Go tasks. Longitudinally, malnutrition at the baseline predicted lower scores over time in frontal lobe tasks, the Boston Naming Test (BNT), and global cognitive functioning.

Conclusion: Malnutrition is associated with a poorer cognitive performance, particularly in executive function and naming tasks, both at the baseline and over time. These findings underscore the importance of early nutritional screening and intervention to support cognitive health in aging populations.



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sciforum-129724: Reassessing Calf Circumference as a Marker of Muscle Mass in Sarcopenia and Malnutrition: Influence of Albumin Levels

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Introduction: Sarcopenia and malnutrition are common among older adults, both characterized by the presence of low muscle mass. Early detection is essential to prevent adverse outcomes. Although international guidelines support the use of calf circumference (CC) as an alternative to gold-standard methods (e.g., dual-energy X-ray absorptiometry [DEXA]), supporting evidence remains limited. Moreover, CC values may be affected by clinical factors such as hypoalbuminemia, which alters oncotic pressure and may cause edema, potentially leading to false-negative results. This study examined the agreement between CC and DEXA in diagnosing sarcopenia and malnutrition, and assessed the moderating effect of albumin on CC.

Methods: Data from 1,048 older adult (>65) participants in Wave 2 of the National Health and Nutrition Examination Survey (NHANES) were analyzed. Appendicular skeletal muscle mass (ASM) was estimated using both CC and DEXA. Sarcopenia was defined by low muscle mass and reduced walking speed. Malnutrition was identified using GLIM criteria. Urinary albumin was measured via fluorescent immunoassay. Pearson's correlation, Kappa analysis, and adjusted linear regression were used.

Results: CC ($r = 0.592$) and the ASM derived from CC ($r = 0.592$) showed a moderate correlation with DEXA-based ASM. This correlation weakened ($r = 0.355$) when values were adjusted for height² (skeletal muscle index). Regression analysis showed that each one-unit decrease in urinary albumin was associated with a 0.437 cm increase in CC. Kappa analysis showed moderate agreement for malnutrition ($\kappa = 0.635$) and poor agreement for sarcopenia ($\kappa = 0.372$) when comparing CC-based and DEXA-based assessments.

Conclusion: CC may not be a valid proxy for muscle mass in older adults, especially in the presence of hypoalbuminemia. Assessments based on CC and DEXA may classify different individuals as sarcopenic or malnourished.



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sciforum-125967: A nursing overview of older adults in hematology following the first diagnostic visit

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Introduction: Patients over the age of 65 are more likely to develop aggressive and variable forms of lymphoma. A nursing assessment of the information provided at the initial diagnostic visit helps identify relevant clinical factors and plan personalised care. The aim of this study is to equip nursing professionals with the ability to identify clinically relevant risk patterns from the initial diagnostic consultation.

Methods: This was a retrospective observational study including patients aged 65–90 years with lymphoma selected by consecutive sampling between January 2020 and December 2022 in the Hematology and Hemotherapy Department of a tertiary hospital in Valencia. Demographic variables, functional status, comorbidities, laboratory parameters, and disease clinical indicators were recorded. The statistical programme used was R Studio®.

Results: A total of 61 patients were included, with a median age of 76 years (p25–p75=69.50–82.50), high comorbidity (Charlson Index ≥ 3 in 100%), and a performance status ≤ 2 (ECOG) in 85.20% (n=52). At the first visit, 54.10% (n=33) presented Lugano stadification IV, 44.30% (n=27) presented B symptoms, and 37.70% (n=23) reported recent weight loss. Extranodal involvement occurred in 50.80% (n=31) of cases. Diabetes and hypertension were present in 27.90% (n=17) and 62.30% (n=38), respectively. Central nervous system infiltration was infrequent (n=5; 8.20%). Analytical findings reflected moderate systemic inflammation (CRP= 18.40 mg/L (p25–p75=7.10–66.87); LDH=457 U/L (p25–p75=347.50–778.50)) and mild anemia (Hb=11.80 g/dL (p25–p75=10.25–12.85)). Nutritional markers showed a median albumin of 3.5 g/dL (p25–p75=3.20–4.00). Kidney and liver functions were generally preserved (urea=41.00 mg/dL (p25–p75=31.00–55.50); creatinine=0.87 mg/dL (p25–p75=0.665–1.065); GPT=19.00 U/L (p25–p75= 12.50–27.50) and GGT= 42.00 U/L (p25–p75=21.00–64.50)).

Conclusions: Nursing care plays a key role in the early identification of key clinical parameters. Older adults diagnosed with lymphoma exhibit a distinct clinical profile, characterised by a higher burden of comorbidities, more advanced disease at diagnosis, greater functional impairment, systemic inflammation, and signs of nutritional vulnerability.



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sciforum-131591: Addressing Frailty in People Over 60 Living With HIV: Insights From the 'MasdeSesenta' Project. Preliminary results.

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Background: People living with HIV (PLWH) experience an accelerated aging due to different mechanisms (immune activation and chronic inflammation, greater loss of muscle mass due to both the disease itself and antiretroviral therapy, among other factors). This accelerated aging is characterized by an increased risk of developing frailty, leading to a higher likelihood of adverse events and worse quality of life.

Objective: The main goal of this pilot study is to evaluate the effect of a 6-month multidomain intervention on changes on functional performance over an one-year follow-up of pre-frail and frail PLWH aged 60 and above (OPLWH).

Materials and methods: OPLWH followed at the Infectious Disease Unit of Hospital Universitario Clínico San Carlos with ≥ 1 Fried criteria were included in this quasi-experimental study. Functional, physical performance (Short Physical Performance Battery-SPPB-, walking speed-WS), sarcopenia parameters (hand-grip-HG, dynamic muscle strength-DMS) and sarcopenia according to European Working Group on Sarcopenia in Older People (EWGSOP2) criteria, nutritional (adherence to Mediterranean diet) and body composition variables (rectus femoris ultrasound), as well as quality of life were assessed at baseline and at 3 months. A multicomponent intervention, which included physical exercise, nutritional intervention, and pharmacological optimization, was conducted. Differences between pre- and post-intervention moments were examined using the independent t-test.

Results: Seven prefrail OPLWH (72.1 ± 1.8 yo) were included. At follow-up, 3 of them improved to a robust status and 4 remained prefrail. The multidomain intervention significantly increased DMS [16.33 kg (95%CI 4.45-28-22; $p=0.02$)] and muscle thickness [1.77 mm (95%CI 0.11-3.44; $p=0.04$)]. A clinically, although no statistically, significant difference was observed in SPPB [1 (95%CI 0.31-2.31; $p=0.11$)]. Nevertheless, significant improvements were detected when a sensitivity analysis was conducted examined only those with worse SPPB scores (10) at baseline.

Conclusions: A multidomain intervention in prefrail OPLWH improves sarcopenia parameters (strength muscle and muscle mass) and physical performance.



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sciforum-127917: Association between estrogen plasmatic levels and geriatric assessment in men with localized and metastatic prostate cancer

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Although the role of androgens in prostate cancer has been extensively investigated, the possible involvement of estrogens, such as estradiol and estrone, in the localized and metastatic stages of this disease remains little explored. The aim of this study was to analyze the association between plasma estradiol and estrone levels and different indicators of geriatric assessment in men diagnosed with prostate cancer, both in localized and metastatic stages. **Methods:** We included 67 men with a confirmed diagnosis of prostate cancer, divided into two groups: 34 with localized disease and 33 with metastatic disease. Comprehensive geriatric assessment included evaluation of sleep quality (Athens Insomnia Scale), depressive symptoms (Yesavage Geriatric Depression Scale), cognitive function (Mini-Mental State Examination, MMSE) and perception of general health status. **Results:** In the metastatic group, statistically significant correlations were observed between estradiol levels and Gleason index ($Rho = 0.49$, $p = 0.03$), Charlson comorbidity index ($Rho = 0.51$, $p = 0.01$) and the subscale of the Athens Scale assessing difficulty sleeping through the night ($Rho = -0.62$, $p = 0.003$). No significant correlations were found between estrone levels and any of the parameters evaluated. In the group with localized disease, a significant correlation was found between estradiol levels and the Charlson index ($Rho = -0.46$; $p = 0.02$), with no associations observed with the other geriatric variables or with estrone levels. **Conclusion:** Estradiol shows relevant correlations with indicators of tumor progression, comorbidity and sleep quality in prostate cancer patients, particularly in the metastatic stage. These results suggest the need to deepen the potential role of estrogens in the clinical and geriatric context of this disease.



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sciforum-127936: Association between estrogen plasmatic levels and geriatric assessment in men with localized and metastatic prostate cancer

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Although the role of androgens in prostate cancer has been extensively investigated, the possible involvement of estrogens, such as estradiol and estrone, in the localized and metastatic stages of this disease remains little explored. The aim of this study was to analyze the association between plasma estradiol and estrone levels and different indicators of geriatric assessments in men diagnosed with prostate cancer, both in the localized and metastatic stages. **Methods:** We included 67 men with a confirmed diagnosis of prostate cancer, divided into two groups: 34 with localized disease and 33 with metastatic disease. The comprehensive geriatric assessment included evaluations of sleep quality (using the Athens Insomnia Scale), depressive symptoms (using the Yesavage Geriatric Depression Scale), cognitive function (using the Mini-Mental State Examination, MMSE) and perception of general health status. **Results:** In the metastatic group, statistically significant correlations were observed between estradiol levels and the Gleason index ($Rho = 0.49$, $p = 0.03$), the Charlson comorbidity index ($Rho = 0.51$, $p = 0.01$) and the subscale of the Athens Scale assessing difficulty sleeping through the night ($Rho = -0.62$, $p = 0.003$). No significant correlations were found between estrone levels and any of the parameters evaluated. In the group with localized disease, a significant correlation was found between estradiol levels and the Charlson index ($Rho = -0.46$; $p = 0.02$), with no associations observed with the other geriatric variables or with estrone levels. **Conclusion:** Estradiol shows relevant correlations with indicators of tumor progression, comorbidity and sleep quality in prostate cancer patients, particularly in the metastatic stage. These results suggest the need to deepen the potential role of estrogens in the clinical and geriatric context of this disease.



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sciforum-127440: Association between Sarcopenia and Mortality in Older Adults with Cancer: A Systematic Review

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Background:

Despite the increasing attention that sarcopenia has received in the field of oncology, particularly in relation to treatment tolerance and functional decline, most existing reviews have either focused on general cancer populations or included mixed age groups without specifically addressing older adults. Furthermore, considerable heterogeneity exists across studies regarding the diagnostic methods for sarcopenia, cancer types, and reported outcomes. To date, no systematic review has exclusively examined the association between sarcopenia and mortality in older adults with cancer using validated sarcopenia criteria. Given that individuals aged ≥ 65 represent the majority of cancer patients and are more vulnerable to adverse outcomes, there is a clear need to synthesize evidence specifically for this population. This systematic review aimed to synthesize current evidence of the association between sarcopenia and mortality in elderly cancer patients.

Methods:

We systematically searched PubMed, Web of Science, and Scopus up to October 29, 2024. The inclusion criteria encompassed observational studies reporting mortality outcomes in adults with cancer, with a mean age above 65 years and sarcopenia assessed using validated tools. Reviews, case reports, and studies lacking sufficient methodological quality were excluded. Two reviewers independently screened records and assessed methodological quality using the Joanna Briggs Institute checklist.

Results:

Nineteen studies comprising 6,555 participants were included. Most studies used CT at the L3 level to assess muscle mass, with sarcopenia prevalence ranging from 15.6% to 65.1%. Across studies, sarcopenia was consistently associated with increased overall or cancer-specific mortality. Reported hazard ratios ranged from 1.51 to 4.5, with the highest risk observed in patients with head and neck cancer. Quality assessment rated 15 studies as high-quality and 4 as moderate-quality.

Limitations:

The limitations of this review included heterogeneity in cancer types, diagnostic criteria, and follow-up periods, which may affect comparability across studies.



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sciforum-129966: Cognitive Decline in the Aging Brazilian Population: A Quantitative Overview

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Introduction:

Cognitive decline is a growing public health concern in Brazil due to its rapidly aging population. According to the Brazilian Institute of Geography and Statistics (IBGE), individuals aged 60 and over represented 14.7% of the population in 2022, with projections indicating this figure will reach 25.5% by 2060. Epidemiological data suggest that up to 20% of Brazilians over 60 experience some form of cognitive impairment, with approximately 7% meeting the criteria for dementia (Alzheimer's Disease International, 2021).

Methods:

A cross-sectional analysis was conducted using national health survey data (Pesquisa Nacional de Saúde, PNS, 2019) and secondary sources, including DATASUS and IBGE demographic projections. The prevalence rates of cognitive impairment were analyzed by age group, sex, region, and educational level. The statistical analysis included chi-square tests for categorical variables and logistic regression for risk factor associations.

Results:

The prevalence of self-reported cognitive decline increased significantly with age, affecting 4.1% of individuals aged 60–69 and 12.7% of those over 80. Women reported higher rates of cognitive complaints (9.8%) compared to men (6.3%). Lower educational levels were strongly associated with increased cognitive decline (OR = 2.3, 95% CI: 1.8–2.9). Regional disparities were evident, with higher prevalence in the North and Northeast regions.

Conclusions:

Cognitive decline among older adults in Brazil presents significant social and health system challenges. Educational attainment and regional inequality are key determinants of cognitive health. These findings highlight the need for targeted public health interventions, early screening programs, and greater investment in geriatric care infrastructure, particularly in underserved regions.



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sciforum-129727: Comparison of Muscle Strength and Power in Short Physical Performance Battery for Predicting Negative Outcomes in Older Adults with Mobility Limitations

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Introduction: Sarcopenia affects over 20% of adults aged 65+, increasing the risk of falls, disability, and death. While current definitions rely on muscle strength loss, evidence suggests that muscle power declines earlier and is a stronger predictor of adverse outcomes, warranting its consideration as a key diagnostic criterion. Hence, the present study compared sex-specific associations between sarcopenia indexes operationalized according to lower-limb muscle strength and power and the occurrence of negative events in older adults with mobility limitations.

Methods: This is a prospective study. Data on older adults (70+ years) with mobility limitations (SPPB scores ranging from 3 to 9) from 11 European countries were analyzed. Sarcopenia was operationalized according to the Short Physical Performance Battery (SPPB). Muscle power measures were estimated according to the results of the 5-time sit-to-stand (5STS) test using validated equations. Then, four sarcopenia indexes were created by replacing the 5STS test results with muscle power measures. The outcomes were assessed after 24 months of randomization and included mobility disability, hospitalization, and death.

Results: Data from 1,422 participants were analyzed. Cox regression models revealed sex-specific associations between sarcopenia indexes and adverse outcomes. Sarcopenia indexes incorporating muscle strength or power were significantly associated with mobility disability in both sexes, and with hospitalization and death in women. According to Akaike's Information Criterion, sarcopenia indexes based on muscle power showed the strongest associations with negative outcomes.

Conclusions: Sex-specific associations exist between modified sarcopenia indexes and adverse outcomes in older adults with mobility limitations. Notably, sarcopenia operationalizations incorporating muscle power measures demonstrated stronger associations with adverse outcomes in comparison to traditional diagnosis methods.



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sciforum-131584: Evaluation of the effectiveness of a personalized multimodal intervention in community-dwelling frail and pre-frail older people using innovative ICT solutions - the MIRATAR study

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Background: Frailty is a condition characterized by an age-related decrease of physiological reserve, which increases vulnerability to stressors, leading to higher risk of negative health events. Evidence has demonstrated that frailty can be reversed through a multidisciplinary approach that encompasses multicomponent exercise, nutritional advice and medication management. However, the role of Information and Communication Technologies (ICTs) in the implementation of such programs has been scarcely explored in the scientific literature. We describe the rationale and methods of a multimodal intervention in frailty using innovative ICTs, the MIRATAR study.

Methods/design: The MIRATAR study is a quasi-experimental, longitudinal, multicentre, clustered, superiority, and prospective study. A sample of 50 community-dwelling older adults (aged > 65 years), identified as pre-frail or frail according to the Fried Frailty Phenotype (FFP), will be recruited in two Spanish sites (Getafe and Albacete). Our primary objective is to evaluate if a personalized multi-modal intervention supported by the MIRATAR technological ecosystem can improve frailty status after 6 months, either based on a reduction in more than 2.5 points in the 5-item Frailty Trait Scale (FTS-5) and/or a reduction in more than 1 points in the FFP score. Secondary outcomes include participant's autonomy, nutritional status, quality of life and cost-effectiveness. The core of the MIRATAR ecosystem is an AI-powered virtual assistant/carer that will interact with participants via an intelligent mirror, enabling natural interaction. It will provide guidance on physical exercise and nutrition, tailored to each participant's functional status and characteristics. Additionally, MIRATAR will use multiple sensing technologies to gather supplementary information like physiological data (e.g., weight, blood pressure), environmental data (e.g., temperature, presence), and activity tracking through wearable sensors.

Conclusions: The MIRATAR study will provide evidence on the usability, acceptance, and clinical and functional effectiveness of a personalized multi-modal intervention for frail and pre-frail older people provided through innovative ICTs.



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sciforum-129730: Exploring the Associations Between Dysphagia and Health-Related Outcomes in Older Adults: Results from the ilSirente Study

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Introduction: Dysphagia, or difficulty swallowing, is a multifactorial condition prevalent in older adults, with estimates ranging from 15% to 30.5% among community-dwellers. Causes include neurological disorders, dementia, and certain medications. Dysphagia can lead to reduced nutrient intake, malnutrition, muscle loss, and, ultimately, sarcopenia, increasing the risk of frailty, falls, hospitalization, and mortality. Additionally, swallowing dysfunction may be linked to cognitive decline, as both share overlapping neural pathways. Despite these risks, few studies have examined the broader health impacts of dysphagia in community settings. Hence, the present study examined cross-sectional and longitudinal associations between dysphagia and a variety of health-related parameters, including physical performance, cognitive function, malnutrition, sarcopenia, disability, frailty, falls, hospitalization, and mortality in a cohort of octogenarians living in the mountainous Sirente region of Central Italy.

Methods: Dysphagia was operationalized as the need to modify the diet to facilitate swallowing and/or the exclusive consumption of specific food consistencies due to swallowing difficulties according to self-report and physician examination. Physical performance, cognitive function, malnutrition, disability, falls, and hospitalizations were assessed via the Minimum Data Set for Home Care. Sarcopenia was defined as the coexistence of low muscle mass and dynapenia according to the cutoff points described by the European Working Group on Sarcopenia, while frailty was operationalized according to the Fried's phenotype. Falls history and incident falls, as well as disability, were tracked over two years, while survival status was followed for up to ten years.

Results: Data of 362 older adults were analyzed. Our results indicated that dysphagia was significantly and cross-sectionally associated with poor physical performance and reduced cognitive function. In contrast, no longitudinal associations were observed.

Conclusions: Dysphagia appears to be linked to deficits in physical and cognitive domains, underscoring the value of comprehensive geriatric assessment and the development of multidomain intervention strategies.



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sciforum-125977: Exploring the Key Success Factors in Home-Based Occupational Therapy for People with Dementia: A Qualitative Study from Italy

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Introduction: Dementia is a neurodegenerative disorder characterized by progressive cognitive decline and increasing care needs. Occupational Therapy (OT) is recommended by the Italian guidelines for Mild Cognitive Impairment and dementia as an effective intervention to support functional abilities and to manage non-cognitive symptoms through structured, person-centered approaches. In this context, the Cognitive Disorders and Dementia Center of Modena (Italy) provides home-based OT aiming to enhance engagement in meaningful daily activities and actively involve caregivers in the therapeutic process. While this intervention is increasingly recognized as beneficial in dementia care, its specific impact on caregivers' experiences within home settings remains unclear.

Methods: This qualitative, exploratory study involved semi-structured interviews with five caregivers of individuals with dementia who had completed a successful cycle of home-based OT. The interview guide was developed using a structured qualitative framework. Collected data were analyzed thematically and organized into key categories to identify common and unique experiences among caregivers, with particular attention to perceived success factors.

Results: The caregivers reported a high perceived value of home-based OT. Key success factors included the acquisition of practical strategies for managing daily routines, a holistic and individualized approach to care, improved awareness of and access to local support services, and a diminished perception of disease-related burden. These aspects contributed to strengthening the caregivers' abilities to support autonomy and communication in their relatives with dementia. Additionally, the caregivers expressed a greater sense of involvement, reassurance, and emotional well-being. Some participants also highlighted the need for continued support and follow-up, especially in the face of disease progression.

Conclusions: These results align with the current literature and suggest that the identified success factors can help shape more effective home-based OT programs. Further research is needed to expand these findings and explore the long-term outcomes across different settings and populations.



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sciforum-132418: Impact of Dual-Task Resistance Training on Klotho Levels in Institutionalized Older Adults

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Introduction: Aging is associated with chronic inflammation and metabolic dysfunction, contributing to functional and cognitive decline, especially in institutionalized older adults. Klotho, a longevity-associated protein with antioxidant and anti-inflammatory effects, may serve as a biomarker of healthy aging. Exercise programs integrating physical and cognitive components, such as dual-task resistance training (DTRT), may improve immunometabolic regulation, yet their effects in institutional settings remain underexplored.

Objectives: To investigate the effects of 12 weeks of DTRT followed by detraining on circulating Klotho levels in institutionalized older adults.

Methodology: This quasi-experimental, longitudinal study spanned 42 weeks and was divided into four phases: baseline (week 1), control (weeks 2–13), DTRT intervention (weeks 16–27), and detraining (weeks 29–41). Eleven older adults (5 men, 6 women) with a mean age of 81.9 ± 3.0 years, BMI of 23.8 ± 4.1 kg/m², and Mini-Mental State Examination (MMSE) score of 21.5 ± 5.8 were included. Serum Klotho levels were measured by ELISA. Data were analyzed using repeated-measures ANOVA with Bonferroni post hoc and Holm correction.

Results and Discussion: Post-intervention, a significant increase in serum Klotho levels was observed ($p = 0.001$), which remained elevated after detraining ($p = 0.05$), suggesting sustained immunometabolic adaptations induced by DTRT. Improvements were also observed in adiponectin, irisin, and sestrin-2 levels, alongside reduced IL-18, indicating an anti-inflammatory and metabolic benefit. These results highlight DTRT as a viable strategy to enhance biological resilience in institutionalized older adults, even after exercise cessation. **Conclusion:** DTRT proved effective in increasing and maintaining Klotho levels, supporting its use as an intervention to improve the health of institutionalized elderly individuals. Exercise strategies are essential for promoting metabolic resilience and addressing the challenges of aging.



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sciforum-131594: Living Well Beyond 60 With HIV: Early Findings From the 'MasdeSesenta' Quality of Life Study

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Background: Individuals over 60 living with HIV (OPLWH) face a form of premature aging driven by multiple biological and clinical factors. This phenomenon increases their vulnerability to frailty, which in turn negatively impacts overall well-being and significantly diminishes quality of life.

Objective: This pilot study aims to assess the impact of a 6-month multidomain intervention on quality of life over a one-year follow-up in prefrail and frail OPLWH.

Materials and methods: This quasi-experimental study included OPLWH attending the Infectious Disease Unit at Hospital Universitario Clínico San Carlos who met at least one FRAIL criterion. After a comprehensive geriatric assessment, frailty according to Fried criteria, physical performance, sarcopenia, and quality of life (WHOQOL-VIH-Bref) were assessed at baseline and at 3 months. A multicomponent intervention (physical exercise, nutritional intervention, and pharmacological optimization), was conducted in prefrail and frail participants. Differences between pre- and post-intervention moments were examined using the independent t-test.

Results: A total of six robust (67.2 ± 6.2 years) and seven pre-frail (72.1 ± 1.8 years) OPLWH were included. At baseline, robust participants reported higher overall perception of quality of life compared to their pre-frail counterparts (3.6 ± 1.5 vs. 2.8 ± 0.4 ; $p=0.006$). Following the multicomponent intervention in prefrail individuals, no significant changes were observed in global quality of life or in its specific domains, including physical health, psychological well-being, independence, social relationships, environment, and spirituality.

Conclusions: Prefrail OPLWH have lower quality of life than robust counterparts. However, in this pilot study, a multidomain intervention in prefrail OPLWH does not improve quality of life.



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sciforum-125264: Molecular indicators of the efficacy of isometric exercises in early rehabilitation of older adults following their total hip replacement

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Introduction. The development of isometric exercise (IE) protocols for the early rehabilitation of older adults following total hip replacement (THR) and molecular methods for assessing their efficacy was our aim.

Methods. Eight female patients aged 73-77 years were randomized before a THR into two groups of four patients each. During the first 12 days after the THR, the patients performed daily rehabilitation exercises following the standard protocol in the control group and following the standard protocol supplemented with a complex of IE in the experimental group. The clinical parameters of the blood, ESR, CRP, and the concentrations of certain pro-inflammatory interleukins in the blood were evaluated before the THR, as well as 1 day and 12 days after the THR, for each patient. At these times, rectus femoris biopsies of the operated limb were performed in each patient for a transcriptomic analysis.

Results. The indicators of the clinical blood analysis, ESR, muscle injury, and CRP did not reveal any significant difference between the groups. The concentrations of IL-6, IL-8, and IL-1b recovered to the normal range by 12 days after the THR in the experimental group but not in the control group. The transcriptomic analysis of the muscle biopsies revealed significant up-regulation of the processes associated with inflammatory and immune responses as compared to that in the preoperative state in both groups at day 1 and in the control group by 12 days after the THR, while there were no signs of such activation in the experimental group by 12 days after the THR.

Conclusions. The concentrations of IL-6 and IL-8 in the blood, as well as transcriptomic signatures of the processes and signaling pathways associated with inflammatory and immune responses, can be interpreted as molecular indicators of IE's efficacy for the early rehabilitation of older adults after a THR.



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sciforum-135784: Muscle function is markedly impaired in elderly hip fracture patients

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Hip fracture is a leading cause of abrupt functional impairment in individuals aged 65 years and older. Skeletal muscle involvement seems to be a key factor in the functional recovery of older patients with hip fractures. However, it has been minimally studied under this specific situation.

The aim was to evaluate and compare muscle function in older adults without hip fractures (e.g., those undergoing hip arthroplasty) with muscle function in individuals with hip fractures.

Muscle biopsies were collected from the gluteus maximus derived from patients over 65 years (mean age: 77.92±6.62 years; 83.33% female) during elective orthopedic interventions for hip arthroplasty (coxarthrosis, N=7) or urgent interventions for hip fractures (N=5). Muscle function was assessed using DMT 820M muscle myograph chambers. Frequency-response curves were generated at stimulation frequencies of 10, 25, 50, 75, and 100 Hz, measuring the maximum contraction force for each 5-second stimulus. Additionally, contractile responses to increasing caffeine concentrations (0.3 mM–30 mM) were evaluated. Complete stimulation- and concentration response-curves were analyzed by using two-factor ANOVA.

No significant differences were observed between the two groups in terms of age (mean age: 76.86± 7.33 for coxarthrosis vs. 79.40±5.94 for hip fracture; $p>0.05$). Muscle strips from the gluteus maximus of patients undergoing hip fracture surgery exhibited significantly lower neurogenic contraction in response to electrical stimulation compared to those from patients undergoing coxarthrosis surgery ($p= 0.0104$). However, the contractile response to increasing caffeine concentrations showed no significant differences between the two patient groups ($p= 0.1775$). Elderly patients with hip fractures experience substantial skeletal muscle function impairments compared to those with coxarthrosis. This muscle dysfunction appears to be more closely related to the deterioration in neuromuscular function rather than damage to muscle receptors. These findings may help explain in part the poor functional recovery observed in older adults following hip fractures.



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sciforum-123349: Nurse–patient relations in older Italian oncology nurses

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Background: Oncology nurses should meet specific caring needs requested from cancer patients and their related families. Thus, oncology nurses suffer from several stressful working conditions, heavy working conditions like relationships with other healthcare professionals and dealing with patient conditions, insufficient training and a lack of time for end-of-life care, unresolved cumulative grief and loss, and a low expression of emotions. This study aimed to assess nurse–patient interactions, especially among older oncology nurses who reported longer work experience in oncology settings.

Methodology: An online nationwide investigation was carried out among older Italian oncology nurses. The “Caring Nurse–Patient Interactions Scale” (CNPI) was administered. The CNPI explored 4 sub-dimensions: clinical, relational, humanistic, and comforting care.

Results: A total of 16 older Italian oncology nurses (aged 55–64 years) were enrolled and very low levels of nurse–patient interactions were found (clinical: 31.81 ± 8.05 ; relational: 22.69 ± 5.30 ; humanistic: 13.25 ± 3.86 ; comforting care: 10.38 ± 2.60).

Conclusions: Oncology settings could decrease nurse–patient relations, since the oncology nature of the relationship could negatively affect them. Thus, further intervention, especially among older nurses, will be performed to improve this relationship.



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sciforum-125781: Sense of Coherence and Their Impact on Health Promotion Strategies for the Elderly

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Introduction:

The aging population presents a growing challenge for global health systems. The Sense of Coherence (SOC) is a psychological resource that enables individuals to perceive life as comprehensible, manageable, and meaningful. Strengthening SOC in older adults is essential to enhance their well-being and reduce the risk of disease. Understanding the personal factors associated with SOC is crucial for developing effective health promotion strategies tailored to this demographic.

Methods:

This quantitative, descriptive, and correlational study was conducted between March and June 2025. A total of 166 older adults participated in the study. All participants were enrolled in the "Más Adultos Mayores Autovalentes" program at primary health care centers in Talcahuano, Chile. Data collection involved a sociodemographic questionnaire, the Sense of Coherence Scale (SOC-13), and the Self-Transcendence Scale (STS), both validated in Spanish-speaking populations.

Expected Results:

The study aims to provide significant evidence on the relationship between personal factors and Sense of Coherence (SOC) among older adults. It is expected that a significant relationship will be found between personal factors (biological, psychological, social, and spiritual) and SOC in this population. The findings are anticipated to inform nursing professionals in designing more effective interventions focused on strengthening SOC, thereby improving quality of life and preventing diseases in older adults.

Conclusions:

Identifying personal factors associated with SOC in older adults will contribute to optimizing health promotion and disease prevention strategies, tailored to the specific needs of the elderly population. This study will offer a solid foundation for the development of public policies and clinical practices aimed at enhancing geriatric care.



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sciforum-129633: The Impact of a Multimodal Intervention with Exercise and Nutritional Education on Sarcopenia and Frailty in Older Adults with HIV: a Quasi-Experimental Study Protocol

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Older adults living with HIV are highly susceptible to sarcopenia and frailty. Both conditions are linked to a higher risk of mortality, hospitalizations, loss of functional independence, and a worse quality of life. This research aims to evaluate the effect of a 6-month multicomponent intervention (nutritional education, pharmacological treatment optimization, and structured multicomponent physical exercise at home) on the sarcopenia risk and frailty progression in pre-frail and frail adults aged 60 and above with HIV. This quasi-experimental study will be conducted at Hospital Clínico San Carlos (Madrid, Spain) with 12 months of follow-up. It will assess functional performance (changes in the Short Physical Performance Battery (SPPB)); frailty according to Fried phenotype; sarcopenia, using the EWGSOP-2 criteria; and changes in handgrip strength, nutritional parameters (adherence to a Mediterranean diet, malnutrition according to the GLIM criteria, and body composition parameters: bioimpedance and muscle ultrasound), quality of life (EQ-5D-5L), and biomarkers (IL-6, TNF- α , HOMA-IR). The intervention includes personalized educational nutritional sessions, as well as oral nutritional supplementation when required, and a tailored multicomponent exercise program based on the Vivifrail® protocol, with regular in-person and telephone follow-ups. The expected outcomes include significant reductions in sarcopenia and frailty, improvements in physical function and quality of life, and fewer hospital admissions. The intervention also seeks to be a cost-effective strategy applicable in clinical settings. This proposal addresses key research gaps regarding integrated, long-term interventions in frail older adults with HIV and aims to generate evidence to optimize their clinical and functional management.



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sciforum-125786: The Incidence of Delirium in Older Patients Attending the Emergency Department

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INTRODUCTION: Delirium is an acute and reversible neuropsychiatric syndrome characterized by alterations in consciousness, attention, and cognitive functions, which increases morbidity and mortality and leads to prolonged hospital stays and higher economic costs. Between 8 and 17% of patients aged 65 years or older who attend the Emergency Department (ED) may suffer from delirium. One of the axes of delirium research is based on early detection including validated scales.

OBJECTIVES: This study aimed to analyze the incidence of patients aged 65 years or older attending the ED of the Hospital Universitario de la Ribera (HULR) who are diagnosed with delirium. It also aimed to analyze sociodemographic characteristics and variables related to triage, emergency department, and discharge destination.

METHODS: A retrospective observational study was conducted, including patients aged 65 years or older who attended the ED from January 1, 2024 to December 31, 2024.

RESULTS: During the year 2024, 132,370 patients attended the Emergency Department of HULR. A proportion of 27.87% (n=36,893) were patients aged 65 years or older with a mean age of 77.68 (SD 7.98). A proportion of 0.07% (n=27) of patients had delirium as the primary diagnosis and 0.05% (n=2) had it as the secondary diagnosis, with urinary tract infection being the primary diagnosis with the highest percentage of 5.53% (n=2040). A proportion of 54.98% (n=20285) were women. The diagram most frequently used in triage was “limb problems” at 16.75% (n=6180), followed by “adult with poor general condition” at 16.39% (n=6046). A proportion of 66.4% (n=24493) were triaged as least urgent (priority P4) and 60.18% (n=22204) of the patients were placed in the consultation area. A proportion of 32.5% (n=8991) were admitted with a mean length of stay of 6.12 days (SD 7.31).

CONCLUSIONS: The percentage of patients diagnosed with delirium in the Emergency Department of HULR is below those of previous studies. Screening with scales such as the 4AT, which is easy and quick to apply, may help identify delirium in the ED and reduce its impact.



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Session 5. Cardio-vascular Diseases

sciforum-125785: “Nurse triage in acute coronary syndrome: Are we prioritizing those who need it most?”

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Introduction:

Acute myocardial infarction is one of the leading causes of morbidity and mortality worldwide, representing a time-dependent emergency that requires prompt and prioritized care. In this context, nurse triage plays a crucial role by classifying patients early according to their clinical severity. Accurate priority assignment helps reduce critical care delays and optimizes management, particularly in high-incidence cardiovascular conditions such as acute coronary syndrome.

Objective:

This study aimed to describe the distribution of triage priority according to principal diagnosis, age, sex, and mode of arrival to the hospital in patients treated in the emergency department and analyze its potential association with these variables.

Methodology:

A descriptive, observational, and retrospective study was conducted in the emergency department of Hospital Universitario de La Ribera between January 1 and December 31, 2024. Adult patients triaged using the Manchester Triage System were included. Sociodemographic, clinical, and operational variables were analyzed. The study was approved by the Ethics Committee.

Results:

A total of 554 patients were included, with a mean age of 67.09 years (SD: 15.85); 70.9% (393) were male. The most frequent triage level was P3 39.0% (216), followed by P2 28.9% (160). The most common diagnoses were angina pectoris 32.3% (179), ST-elevation myocardial infarction 30.5% (169), and non-ST-elevation myocardial infarction 29.1% (161). The most frequently used triage diagram was chest pain 68.8% (381), followed by adult with general malaise 14.3% (79). Of all patients, 54.3% (301) arrived by ambulance—most classified as P1–P2—while 45.7% (253) arrived by their own means, mainly classified as P3–P4 ($p = 0.001$). Significant differences in care times were also observed based on triage level ($p = 0.05$).

Conclusion:

This study reinforces the essential role of nursing in initial clinical decision-making, demonstrating consistent priority assignment aligned with clinical severity and resource mobilization. Ongoing evaluation and improvement of nurse triage are key to ensuring patient safety and emergency care efficiency.



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sciforum-124006: SFXN1-mediated serine import reprograms macrophage polarization and ameliorates atherosclerosis

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Atherosclerotic cardiovascular diseases (ASCVDs) remain the primary cause of morbidity and mortality. Macrophages are involved in the progression and regression of atherosclerosis, and macrophage amino acid metabolism is important during this process. Here, we identified that the expression of cellular serine importer SFXN1 was upregulated by oxidized low-density lipoprotein and specifically enhanced in the macrophages of atherosclerotic plaques. Macrophage-specific SFXN1 knockout in ApoE-null mice attenuated atherosclerotic lesions and increased the plaque stability under a 16-week Western diet. ApoE-/-SFXN1-KO displayed unchanged blood lipids, decreased inflammatory cytokines, and increased antioxidant capacity. Mechanistically, SFXN1-mediated serine uptake and synthesis inhibited classical activated macrophage (M1) polarization via reducing Stat1 phosphorylation and promoted alternatively activated macrophage (M2) polarization by enhancing Stat6 phosphorylation. Macrophage-targeting lipid nanoparticles loaded with serine modulated macrophage polarization and ameliorated the procession of atherosclerosis. These findings reveal the critical role of SFXN1 in phenotypic switching in the macrophages and indicate that SFXN1-mediated amino acid metabolism could be utilized as a novel therapeutic strategy in the prevention of ASCVDs.



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sciforum-127782: Anti-Inflammatory and Antithrombotic Activities of *Matricaria chamomilla* Extract: Targeting Platelet Activation Pathways in Cardiovascular Disease

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Cardiovascular diseases (CVDs) are driven by chronic low-grade inflammation and heightened platelet reactivity, which contribute to endothelial dysfunction, atherogenesis, and thrombotic complications. *Matricaria chamomilla* extract (MCE), a traditional medicinal herb, contains amphiphilic bioactive compounds with potential anti-inflammatory and vascular-protective properties.

This study aimed to investigate the antioxidant, anti-inflammatory, and antithrombotic effects of MCE, with a focus on mechanisms relevant to CVD pathophysiology. Bioactive profiling was performed using liquid chromatography-mass spectrometry (LC-MS) and Fourier transform infrared (FTIR) spectroscopy. Antioxidant activity was quantified using DPPH, ABTS, and FRAP assays, with all samples exhibiting potent radical-scavenging capacity. Total carotenoid content (TCC) and total phenolic content (TPC) were also measured to assess phytochemical richness.

The anti-inflammatory and antithrombotic potential of MCE was evaluated ex vivo in human platelets by measuring inhibition of platelet-activating factor (PAF)- and ADP-induced platelet aggregation. Significant inhibition was observed across all extracts, indicating a strong modulatory effect on both inflammatory and pro-thrombotic signaling pathways.

These results suggest that MCE exerts clinically relevant biological activities that may support its use as a complementary therapeutic agent in the prevention or management of inflammation-driven cardiovascular conditions such as atherosclerosis and thrombosis. Further in vivo and clinical validation is warranted to explore its translational potential in cardiovascular medicine.



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sciforum-127694: Anti-Inflammatory and Antithrombotic Effects of *Sideritis scardica* Extracts: Implications for Cardiovascular Disease Prevention and Therapy

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Chronic inflammation and platelet hyperactivity are central contributors to the pathogenesis of cardiovascular diseases (CVD), including atherosclerosis and thrombosis. *Sideritis scardica* (Greek mountain tea), a medicinal herb endemic to the Balkans, is rich in polyphenols, flavonoids, carotenoids, and polar lipids—compounds known for their anti-inflammatory and vascular-protective properties.

This study investigated the potential of *S. scardica* extracts to modulate key molecular processes associated with cardiovascular inflammation and thrombotic risk. Phytochemical profiling via liquid chromatography–mass spectrometry (LC-MS) and Fourier transform infrared (FTIR) spectroscopy revealed a high content of bioactive secondary metabolites. Antioxidant activity was confirmed through DPPH, FRAP, and ABTS assays, indicating strong free radical scavenging capacity. Crucially, anti-inflammatory and antithrombotic activities were evaluated using ex vivo human platelet aggregation assays. The extracts significantly inhibited platelet-activating factor (PAF) while mildly inhibited ADP-induced platelet aggregation—two major pathways implicated in vascular inflammation and thrombus formation.

These findings suggest that *S. scardica* extracts may offer a novel, natural therapeutic approach for mitigating inflammatory and thrombotic mechanisms in CVD. Given their favorable safety profile and bioactivity, these phytochemicals warrant further exploration in preclinical and clinical models as adjuncts in cardiovascular disease prevention and management.



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sciforum-124406: Cardiovascular risk factors among Moroccan healthcare professionals

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Introduction

Cardiovascular diseases (CVDs) are modulated by a complex interaction between genetic, behavioral, and social factors. Healthcare professionals (HCPs), despite their medical knowledge, are often exposed to unique occupational and lifestyle factors, which can significantly increase their risk of CVDs. This study aimed to assess the association between these risk factors and CVD predisposition among a Moroccan cohort of HCPs.

Methods

A cross-sectional study was conducted among 156 HCPs using a structured questionnaire covering sociodemographic data, personal and family history of CVDs, fast-food consumption, alcohol consumption, smoking, drug use, physical activity, sleep quality, insomnia, and anxiety. Statistical analysis was performed by SPSS v20, including correlation, binary and multinomial logistic regressions, chi-square tests, and correspondence analysis.

Results

CVD predisposition was positively correlated with age ($r_s = 0.194$, $p = 0.016$), comorbidities ($r_s = 0.326$, $p = 0.001$), drug use ($r_s = 0.213$, $p = 0.008$), alcohol consumption ($r_s = 0.168$, $p = 0.038$), and insomnia ($r_s = 0.206$, $p = 0.01$). In contrast, family history of CVDs and fast-food consumption were negatively associated ($r_s = -0.191$ and $p = 0.017$, and $r_s = -0.206$ and $p = 0.01$, respectively). Logistic regression highlighted age, family history, and insomnia as potential predictors. These associations were visually confirmed by correspondence analysis.

Conclusion

Our data highlights the influence of behavioral and occupational factors on CVD risk among HCPs, underlining the role of work-related stress. Hence, targeted prevention strategies are strongly recommended to promote healthier behaviors in this high-risk group.



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sciforum-127090: Effects of a 12-Month Individualized Combined Exercise Intervention on Metabolic Control and Physical Capacity in Patients with Type 2 Diabetes and Stable Coronary Artery Disease: A Randomized Controlled Trial

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Background: Coexisting type 2 diabetes mellitus (T2DM) and coronary artery disease (CAD) substantially increase cardiovascular risk. While exercise is beneficial, long-term randomized controlled trials (RCTs) in this high-risk population are limited.

Methods: In this single-center RCT, 158 patients with T2DM and stable CAD post-PCI were randomized (1:1) to a 12-month individualized aerobic-resistance exercise program or a usual-care control. Prescriptions were based on ACSM guidelines and CPET-derived VO_2 peak. The intervention group trained three times per week (~150 min/week) using moderate-to-high intensity protocols, monitored using Polar heart rate devices. Primary outcomes were changes in HbA1c and VO_2 peak; secondary outcomes included ventilatory threshold (VT) and time to exhaustion (TTE). Both ITT and PP analyses were conducted. Subgroup analysis was based on prior myocardial infarction (AMI) and the presence of diabetic microvascular complications.

Results: A total of 124 patients completed follow-up (intervention: $n=52$; control: $n=72$). The intervention group showed significantly greater improvements in HbA1c ($-0.28 \pm 0.47\%$ vs. $-0.05 \pm 0.50\%$, $p=0.024$) and VO_2 peak ($+1.27 \pm 2.15$ vs. $+0.11 \pm 1.92 \text{ mL}\cdot\text{kg}^{-1}\cdot\text{min}^{-1}$, $p=0.037$). VT ($+2.39 \pm 3.52$ vs. $+0.09 \pm 3.14$, $p=0.046$), and TTE ($+55 \pm 98$ vs. $+10 \pm 85$ sec, $p=0.034$) also improved significantly. Subgroup analysis revealed stronger effects in patients without prior AMI or microvascular complications (HbA1c: $p=0.012$; VO_2 peak: $p=0.018$), while benefits were attenuated in those with such conditions. A negative correlation was found between changes in HbA1c and VO_2 peak ($r = -0.30$, $p = 0.024$). Greater improvements were observed in participants with lower baseline VO_2 peak (p for trend = 0.038).

Conclusion: A 12-month individualized combined exercise intervention significantly improved glycemic control and physical capacity in T2DM patients with stable CAD, especially in those with lower vascular burden and baseline fitness.



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sciforum-127292: Latent Class Profiles of Comorbidity and Cognitive Function Among Hypertensive Adults in China: Evidence from CHARLS 2020

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Background:

Hypertension in older adults is often accompanied by multiple comorbidities and cognitive impairment. Identifying subtypes based on comorbidity and cognition may inform tailored management strategies.

Objective:

This study aimed to identify latent subgroups among Chinese hypertensive adults based on comorbid conditions and cognitive function and to explore differences in sociodemographic, functional, psychological, and social characteristics across subgroups.

Methods:

Data were drawn from the 2020 China Health and Retirement Longitudinal Study (CHARLS), including 4,661 individuals aged ≥ 45 years with hypertension. Thirteen chronic diseases and three cognitive domains (memory, orientation, and executive function) were analyzed using latent class analysis (LCA). Group differences were examined through univariate and multinomial logistic regression analyses.

Results:

Four latent classes emerged. Class 1 (17.2%) included the oldest individuals, mostly female, with the highest comorbidity burden, poorest functional status, highest depression levels, and lowest social participation. Class 2 (46.7%) was the healthiest group with the youngest age, minimal comorbidities, high life satisfaction, and favorable mental health. Class 3 (18.5%) showed psychological vulnerability, moderate functional status, high depressive symptoms, and limited social participation. Class 4 (17.5%) had good physical function and high social engagement but low life satisfaction, short sleep duration, and a higher proportion of male and urban residents. Significant differences in demographic, health, and behavioral characteristics were confirmed across groups.

Conclusion:

Hypertensive adults exhibit distinct patterns of comorbidity and cognitive function. Recognizing these subtypes supports stratified care and highlights the need to integrate mental health into hypertension interventions, particularly for psychologically vulnerable individuals.



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sciforum-127493: Maternal Peri-Conceptional Sleep Quality and Risk of Congenital Heart Disease in Offspring: An Exploratory Case–Control Study

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Background: Sleep is essential to maternal health during pregnancy, yet nearly half of all pregnant women—49.4% in India and 45.7% globally—experience sleep disturbances. Poor sleep quality (PSQ) during the periconceptional period remains underestimated, despite emerging evidence linking it to adverse maternal and fetal outcomes, including birth defects such as neural tube defects and congenital heart diseases (CHDs).

Objective: Our study aimed to investigate the association between maternal PSQ and the risk of CHDs in offspring.

Methods: A case–control study was conducted involving 587 mothers of 1-year-old infants who underwent echocardiographic evaluation at a free-of-cost tertiary pediatric cardiac hospital in 2024. The participants included 402 CHD cases—categorized as acyanotic (n=234) and cyanotic (n=168), as well as simple (n=214) and severe (n=188) defects—and 185 controls. Maternal sleep quality during the periconceptional period was assessed using the Pittsburgh Sleep Quality Index (PSQI) questionnaire. Data was analyzed using SPSS software.

Results: The prevalence of PSQ was markedly higher in mothers of CHD patients (77.3%) compared to controls (56.7%). Subgroup analysis revealed PSQ rates of 78.6% in acyanotic CHD, 75.5% in cyanotic CHD, 78.9% in simple CHD, and 75.5% in severe CHD. PSQ was associated with significantly increased odds of CHDs: a 2.8-fold increase for acyanotic CHD ($p = 0.0001$; 95% CI: 1.83–4.29), 2.4-fold for cyanotic CHD ($p = 0.0002$; 95% CI: 1.49–3.73), 2.9-fold for simple CHD ($p = 0.0001$; 95% CI: 1.85–4.44), and 2.4-fold for severe CHD ($p = 0.0001$; 95% CI: 1.51–3.66).

Conclusion: This is the first comprehensive Indian study to link maternal PSQ and CHDs. The findings underscore the urgent need for targeted interventions, including adequate night-time sleep, mindfulness yoga, regular physical activity, a healthy diet, psychoeducation, counseling, limited caffeine and sugar intake, therapies such as continuous positive airway pressure and cognitive behavioral therapy for insomnia, maintaining a left-side sleep posture, and the careful use of medications for mental health and sleep disorders.



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sciforum-127916: Optimizing CTPA Use in Pulmonary Embolism: Can Clinical Algorithms Outperform Instinct?

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Background:

Pulmonary embolism (PE) is a life-threatening diagnosis that often prompts urgent imaging with CT Pulmonary Angiography (CTPA). While CTPA is highly sensitive, its liberal use in low-risk patients raises concerns around unnecessary radiation, contrast exposure, and resource strain. This study investigates whether validated clinical algorithms can outperform clinicians' judgment in guiding CTPA use.

Methods:

We retrospectively reviewed all patients who underwent CTPA for suspected PE at a major tertiary center in Bahrain between December 2019 and August 2024. Pre-test probability was retrospectively calculated using the Wells score, and D-dimer testing was analyzed for compliance with NICE-recommended diagnostic pathways.

Results:

Among the 743 patients evaluated, only 18.7% had CTPA-confirmed PE; this was significantly lower than the 15.4–37% diagnostic yield benchmark recommended by the Royal College of Radiologists. Notably, 47.3% of patients with a low Wells score and negative D-dimer underwent CTPA despite being eligible to avoid imaging per the existing guidelines. Additionally, the Wells score was undocumented in nearly two-thirds of cases, indicating that clinical intuition frequently overrode structured decision-making tools.

Conclusion:

Our data reveal a substantial gap between guideline-based diagnostic pathways and real-world clinical practice. The overuse of CTPA not only inflates healthcare costs but also exposes patients to avoidable harm. This study supports the integration of algorithm-based tools into electronic ordering systems to standardize decision-making, reduce low-yield scans, and enhance diagnostic accuracy. As imaging technology advances, so too must our frameworks for using it wisely—not as a reflex, but as a deliberate, evidence-informed step in patient care.



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sciforum-122091: Prevalence and Risk Factors of Left Atrial Thrombus in Mitral Stenosis: A Cross-Sectional Study

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Background

Mitral stenosis, primarily caused by rheumatic heart disease, is a progressive valvular disorder with a significant risk of left atrial (LA) thrombus formation. Identifying the prevalence and associated risk factors of LA thrombus is crucial for improving clinical management and preventing thromboembolic complications. This study aimed to determine the prevalence of LA thrombus in patients with mitral stenosis and to identify associated risk factors, including hypertension, diabetes, atrial fibrillation, and smoking.

Methodology

A cross-sectional study was conducted at the Department of Cardiology, Mardan Medical Complex, KP Pakistan from April to October 2024. A total of 100 patients diagnosed with mitral stenosis were enrolled. Demographic, clinical, and echocardiographic data were collected, and transesophageal echocardiography (TEE) was performed to detect LA thrombus. Statistical analyses were conducted to determine associations between thrombus formation and potential risk factors, including hypertension, diabetes, atrial fibrillation, and smoking.

Results

The mean age of the participants was 43.7 ± 13.4 years, with a nearly equal gender distribution (49.0% males, 51.0% females). LA thrombus was detected in a significant proportion of patients. Hypertension, diabetes, atrial fibrillation, and smoking were found to be strongly associated with thrombus formation ($p < 0.05$). Patients with severe mitral stenosis had a higher prevalence of LA thrombus compared to those with moderate stenosis.

Conclusion

LA thrombus is a notable complication in mitral stenosis, particularly in patients with metabolic and cardiovascular comorbidities. Routine TEE screening and aggressive management of risk factors, including hypertension and diabetes, are essential for reducing thromboembolic events in these patients.



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Session 6. Neuropsychiatric Disorders

sciforum-125366: Protective Effects of Environmental Enrichment During Adolescence on Stress-Induced Vulnerability to Cocaine's Reward

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Background: Stress is a major risk factor for the development of depression, anxiety, and addiction. One of the most widely used animal models to study the effects of social stress is the social defeat (SD) procedure. Few studies have examined whether environmental enrichment (EE) effectively mitigates the increase in cocaine's conditioned rewarding effects induced by SD. Furthermore, the impact of EE on stress-induced depressive- and anxiety-like behaviors remains largely unexplored.

Methodology: Adolescent C57BL/6 mice were housed under either standard or enriched conditions from adolescence until the final SD session (PND 56). Depressive-like and anxiety-like behaviors were assessed using the social interaction test (SIT) and the elevated plus maze (EPM), respectively. On PND 77, conditioned place preference (CPP) was evaluated using a subthreshold dose of cocaine (1.5 mg/kg).

Results: EE did not modify coping strategies during SD but significantly reduced the proportion of mice displaying depressive-like behaviors (67% in standard housing vs. 47% in enriched housing). However, EE did not attenuate the increase in anxiety induced by SD. Notably, only socially defeated mice housed under standard conditions developed cocaine-induced CPP, confirming the protective effects of EE against drug reward vulnerability.

Conclusion: Our findings indicate that environmental enrichment during adolescence acts as an effective protective factor, promoting resilience against stress-induced vulnerability to drug reward and depression did not significantly affect anxiety-like behavior.

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sciforum-125792: Solid lipid nanoparticles for Anle 138b administration in Parkinson disease: towards an industrial scale up with nutraceutical formulations

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INTRODUCTION Anle 138b, a novel drug for geriatric application in Parkinson's disease (PD), suffers from low water solubility and, hence, low bioavailability (1-2). Therefore, the research on novel water-soluble products as a vehicle for Anle 138b still represents a challenge for the neurological disorder of PD. The current study focused on some formulations consisting of solid lipid nanoparticles (SLNs) allowing the administration of Anle 138b combined with nutraceutical components, evaluated in vitro for their stability under storage in different conditions (3).

METHODS Via dynamic light scattering apparatus, the particle size evolution of the SLNs over 2 months was monitored during the storage time. Furthermore, via spectrophotometric quantification, drug content analysis allowed us to monitor the changes in the Anle 138b concentrations in order to identify the most promising formulation among the tested ones. For cytocompatibility assessment, by using the MTT test, differentiated SH-SY5Y cells were treated for 24 hours with SLN-Anle 138b in the presence of a multicomponent nutraceutical formulation.

RESULTS Viscous vegetal extract combined with SLN-Anle 138b was difficult to handle after seven days, whereas a less dense tested formulation was flocculated after one month of storage at 4 °C. In differentiated SH-SY5Y cells, a multicomponent nutraceutical formulation was well tolerated for 24 h, when combined with SLN-Anle 138b in the range of 1 and 10 µM.

CONCLUSIONS Candidate industrial products combining nutraceuticals and SLN-Anle 138b were evaluated for administration via the nasal route in PD patients, indicating the potential of a multicomponent preparation for non-invasive treatments.

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sciforum-120954: The association between sleep quality and chronotype in health science students in Morocco and Spain

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Introduction: Variations in chronotype influence sleep quality in humans. Insufficient sleep can have adverse consequences for students' health and academic performance. The aim of our study was to measure the associations between chronotype and sleep quality in a population of 1210 students of health sciences in Morocco and Spain. **Methods:** The study variables were assessed using the Horne and Ostberg Morningness–Eveningness Questionnaire (MEQ) and the Pittsburgh Sleep Quality Index (PSQI). **Results:** This study revealed that the majority of the students belonged to the "neutral" chronotype (73.9%) and that the prevalence of poor-quality sleep was high (74.0%). Associations were found between chronotype and subjective sleep quality ($p=0.006$), sleep duration ($p=0.005$), sleep disturbances ($p=0.013$) and the use of sleeping medication ($p=0.003$). Chronotype was also associated with gender ($p=0.009$), country of study ($p=0.001$), field of study ($p=0.001$) and chronic health problems ($p=0.001$). The associations between chronotype and field of study ($p=0.001$ for an evening chronotype) and between chronotype and sleep disturbances ($p=0.001$ and $p=0.026$ for evening and morning chronotypes) were confirmed in the multivariate analysis. **Conclusions:** We have highlighted the influences of chronotype on sleep quality, which point to the need to undertake educational activities on sleep hygiene, taking chronotype into account among science students, in order to improve the mental health of future health professionals.



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sciforum-127836: An Investigation of the Effects of Mansorin on Memory Processes in a Zebrafish (*Danio rerio*) Animal Model

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Alzheimer's disease (AD) is a progressive neurodegenerative disorder with a major global impact. Due to the limitations of current treatments and adverse effects, there is increasing interest in natural compounds with therapeutic potential. Mansorina (MA), a coumarin from *Mansonia gagei*, has antioxidant and anti-inflammatory properties. The present study aims to evaluate the effects of MA on memory, using zebrafish as a preclinical model for AD.

To induce an Alzheimer's disease-like amnesia model, zebrafish (*Danio rerio*) were exposed to okadaic acid (OKA, 10 nM) for 4 days. Six groups (n = 10/group) were formed: control (DMSO), GAL (1 mg/L), OKA, and OKA co-treated with mansorine (MA) at 1, 3, or 6 µg/L. MA was administered for 7 days, every 3 days, during water changes. Cognitive functions were assessed by Y-maze tests (spatial memory and locomotor activity) and novel object recognition (NOR). Behavioral data were analyzed with one-way ANOVA and Tukey's test (GraphPad Prism 9, p 0.05).

OKA treatment significantly impaired spatial memory and object recognition in zebrafish, as evidenced by decreased time spent in the novel arm (Y-maze) and novel object preference (NOR) (p 0.0001). GAL improved both parameters, confirming its cognitive effects. Co-treatment with MA (3 and 6 µg/L) significantly reversed these deficits (p 0.001 – p 0.00001), increasing exploration of the novel arm and object. MA also increased locomotor activity, suggesting a stimulant effect. The results support the neuroprotective role of MA.

The results of this study show that the administration of mansorine (MA) to okadaic acid (OKA)-treated fish increased exploratory behavior, as evidenced by novel arm preference in the Y-maze test, and improved recognition memory in the NOR test. MA also contributed to the restoration of cholinergic deficit and the improvement of dementia symptoms, supporting its neuroprotective potential.



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sciforum-127470: Effect of intracerebral Magnetolectric nanoparticles on behavioral outcomes

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INTRODUCTION: Current neuromodulation technologies face significant limitations in terms of invasiveness, spatial precision, and long-term compatibility. Recently developed magnetolectric nanoparticles (MENPs) offer a promising alternative by enabling wireless and localized stimulation through external magnetic fields. Previous studies have demonstrated that a single 1 µg intracerebral dose of MENPs can induce motor activity and trigger intracellular calcium release, indicating neuronal activation. However, no evaluation post anesthesia or stimulation was assessed. **METHODS:** In the present study, we evaluated the behavioral and neurobiological effects of varying intracerebral doses of MENPs in a rat model. Behavioral assessments were conducted to detect potential alterations in motor and cognitive performance. Histological analyses were also performed to evaluate cellular integrity and detect any signs of neurotoxicity. **RESULTS:** Our findings indicate that MENPs (0.5–3 µg) do not produce detrimental behavioral outcomes or induce cell death across the tested dose range. These results support the safety profile of MENPs and underscore their potential for future applications in non-invasive neuromodulation therapies. **CONCLUSIONS:** Given the role of dysregulated neural activity in psychiatric and neurodegenerative disorders, MENPs may offer a novel, targeted approach for modulating the brain circuits implicated in conditions such as depression, Parkinson's disease, and Alzheimer's disease



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sciforum-117134: Neuro-Mapping Through Occupational Therapy: A Personalized Approach to Executive Function Rehabilitation

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Introduction

Deficits in executive functions represent a fundamental challenge in various neuropsychiatric conditions, impairing cognitive flexibility, working memory, and inhibitory control. Conventional occupational therapy (OT) interventions often rely on standardized rehabilitation protocols, which may not sufficiently accommodate the heterogeneous neural profiles of individuals with executive dysfunction. This study introduces a novel, data-driven framework that integrates real-time neuroimaging with personalized occupational therapy interventions, aiming to optimize executive function rehabilitation through individualized neuroadaptive strategies.

Methods

This study employs a multimodal neuroimaging approach, combining portable electroencephalography (EEG) and functional near-infrared spectroscopy (fNIRS) to monitor cortical activation during occupational therapy sessions. Participants with executive function impairments will undergo baseline assessments, including standardized neuropsychological tests and neuroimaging measures. Occupational therapy tasks will be dynamically tailored based on individual neural activation patterns, with real-time modifications guided by neurophysiological feedback. Data analysis will evaluate longitudinal changes in functional connectivity, task performance, and executive function outcomes over a 12-week intervention period.

Results

Preliminary findings indicate that real-time neuroadaptive occupational therapy facilitates neuroplastic changes in cortical regions implicated in executive functions, particularly within the prefrontal cortex. Participants demonstrate statistically significant improvements in cognitive flexibility, working memory, and task-switching efficiency compared to conventional OT protocols. Neurophysiological markers, including enhanced functional connectivity and optimized cortical activation patterns, provide empirical support for the efficacy of this individualized intervention model.

Conclusions

This study presents a pioneering neuro-mapping paradigm within occupational therapy, leveraging real-time neuroimaging to inform personalized intervention strategies. Findings underscore the potential of neuroadaptive occupational therapy to enhance executive function rehabilitation beyond traditional methodologies. Future research should investigate the durability of these effects and explore broader clinical applications across diverse neurocognitive conditions.



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sciforum-123350: Sex-related differences in nurse-patient relations and problematic cell phone use among Italian oncology nurses

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Background: Smartphone use is rapidly increasing, enhancing both communication and computing capabilities while offering additional services to users. This study aimed to explore potential sex-related differences in nurse-patient interactions and problematic smartphone use among oncology nurses in Italy.

Methods: An online nationwide investigation was carried out among Italian oncology nurses. The "Caring Nurse-Patient Interactions Scale" (CNPI) and the Mobile Phone Problem Use Scale (MPPUS) were proposed. The CNPI investigated a further 4 sub-dimensions, specifically clinical, relational, humanistic, and comforting care. The MPPUS assessed 2 sub-dimensions, specifically the "Withdrawal and social aspects" and the "Craving and escape from other problems" dimensions.

Results: There were no significant sex-related differences in both patient-nurse interaction sub-dimensions (CNPI _clinical: $p=0.973$; CNPI_relational: $p=0.051$; CNPI_humanistic: $p=0.683$; CNPI_comforting care: $p=0.875$) and in the MPPUS ones (MPPUS_total_score: $p=0.525$; MPPUS_Withdrawal and social aspects: $p=0.446$; MPPUS_Craving and escape from other problems: $p=0.840$).

Conclusions: Our findings suggested no sex-related differences in nurse-patient interaction and mobile phone problematic use sub-dimensions, despite the literature suggesting that females tend to display more empathy, whereas males are often described as more assertive and technically oriented. However, further researchers reported differences in male and female preferences in smartphone use and its related apps.



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sciforum-127748: The Impact of Trauma Exposure on Addictive Behaviors: A Study Among Youth Populations

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Introduction: Early experiences of abuse, neglect, parental conflict, a parent's addiction to substances, or conditions of relational and emotional instability can impair the normal development of emotional self-regulation. If not processed, this fragility can lead to a resort to dysfunctional coping strategies, including substance abuse, problematic alcohol use, and behavioral dependence on the Internet or other compensatory stimuli.

Method: The current study used a convenience sampling method and recruited 50 young adult participants (18–30 years old) who completed Adverse Childhood Experiences (ACE), Alcohol Use Disorders Identification Test (AUDIT), Drug Use Disorders Identification Test (DUDIT), Internet Addiction Test (IAT), and The Love Addiction Inventory (LAI) and Yale Food Addiction Scale (YFAS).

Results: Person Correlation analyses showed significant links between adverse childhood experiences and various forms of substance use: alcohol ($r=0.38$, $p=0.0078$), drug use ($r=0.54$, $p=0.0001$), and food addiction ($r=0.35$, $p=0.0124$). Additionally, food addiction showed a strong correlation with internet addiction ($r=0.48$, $p=0.0004$) and love addiction ($r=0.30$, $p=0.037$). However, no significant associations were found between Internet or love addiction and substance use. These patterns suggest that there are distinct clusters between substance-related and behavioral dependencies.

Discussion: Findings indicate that early adverse experiences are more closely linked to substance-related and food-related dependencies, suggesting a compensatory function for unprocessed emotional dysregulation. Behavioral addictions such as Internet and Love addiction appear to operate through different psychological mechanisms, possibly linked to unmet relational needs rather than trauma-related self-regulation deficits. Gender differences also emerged: males were more likely to struggle with substance-related dependencies, while females showed a higher prevalence of behavioral addictions. These differences suggest that gender might play a role in how individuals choose to cope with their emotional challenges.



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sciforum-128128: The Neuroprotective Potential of Multitarget Plant Extracts in Alzheimer's Disease: Insights from In Silico Predictions and Behavioral Analysis in the 5xFAD Mouse Model

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Alzheimer's disease (AD) is a multifactorial neurodegenerative disorder marked by progressive cognitive decline and pathological hallmarks such as amyloid- β plaques and neurofibrillary tangles. Despite current therapies, effective treatments remain elusive. Phytochemicals have emerged as promising neuroprotective agents, while transgenic models such as 5xFAD mice enable rigorous preclinical evaluation.

This study aimed to evaluate the pharmacokinetic properties, predicted molecular targets, and behavioral effects of seven phytochemical extracts derived from *Rubus fruticosus* (FT, FH, and LH), *Abutilon pannosum* (A2), *Abutilon grandifolium* (A1), *Rheum palmatum* (R), and *Zingiber officinale* (G), using a 5xFAD murine model expressing five AD mutations.

Pharmacokinetic parameters, including gastrointestinal absorption, blood–brain barrier (BBB) permeability, cytochrome P450 interactions, and P-glycoprotein efflux, were predicted using SwissADME and ADMETlab. Molecular interactions with AD-relevant targets, including β -secretase, acetylcholinesterase, GSK3 β , A β , and tau, were assessed via SwissDock and SwissTargetPrediction.

In vivo, 5xFAD mice (n = 80) were divided into treatment groups (n = 10 per extract, administered at 50 mg/kg and 100 mg/kg) and controls (NaCl, n = 5; Galantamine, n = 5). Extracts were administered via oral gavage for seven consecutive days and one hour prior to behavioral testing. Cognitive and anxiety- and depression-related behaviors were assessed using the Y-Maze, Open Field, Novel Object Recognition, Elevated Plus Maze, Forced Swimming, and Radial Arm Maze tests.

Our results revealed extract-specific behavioral effects. *Rubus fruticosus* extracts exhibited an inverse dose-dependent profile, with lower doses yielding superior cognitive performance and improvements in anxiety- and depression-related behaviors, often outperforming Galantamine. FH and A2 showed classical dose-responsiveness, with enhanced cognition at higher doses and increased locomotor activity at lower ones.

These findings underscore the neurotherapeutic potential of selected plant extracts—especially *Rubus*, *Abutilon*, and *Zingiber*—and highlight the value of integrating in silico and behavioral methodologies in AD research. Future work will include biochemical, genetic, and histological analyses to validate these preliminary findings and further investigate underlying mechanisms.



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Session 7. Endocrine and Metabolic Disorders

sciforum-127825: ICSI Outcomes According to Sperm Origin: Comparing Fresh and Frozen Ejaculated and Testicular Sperm Collected Over a Five-Year Period.

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Introduction

In ART (Assisted Reproductive Technology), the origin of the sperm as well as its condition before retrieval impact fertilization and pregnancy rates. The objective of this study was to assess the clinical and biological results of ICSI cycles based on the sperm source in a Moroccan fertility center. The sperm sources included fresh and frozen-thawed ejaculated sperm along with frozen testicular sperm.

Methods

This was a retrospective study at Boudra Fertility Center, Fez, Morocco, which included all ICSI cycles completed between January 2019 and December 2024. A total of 745 ICSI cycles from 502 infertile couples were analyzed. Cycles were classified into three groups based on the sperm sources: fresh ejaculated sperm: 662 cycles; frozen–

thawed ejaculated sperm: 24 cycles; and frozen testicular sperm obtained via biopsy: 59 cycles. The outcomes included rates of fertilization, embryo development, clinical pregnancy, and live births.

Results

The rates of fertilization were as follows: fresh sperm: 59.83%; frozen sperm: 48.53%; and testicular sperm: 45.96%. The clinical pregnancy rates were 32.63% with fresh sperm, 25.00% with frozen sperm, and 25.42% with testicular sperm. Birth rates were 30.36% (fresh sperm), 25.00% (frozen sperm), and 20.34% (testicular sperm). While outcomes were slightly lower with frozen and testicular sperm, viable pregnancies and live births were achieved across all groups.

Conclusion

This five-year analysis shows that ICSI outcomes are affected by the origin and cryopreservation of the sperm used. Fresh sperm clearly had the highest rates of fertilization and live births; however, clinical outcomes maternally and perinatally, as concerns maternal health, were satisfactory with both frozen and testicular sperm. These findings allow for increasing the use of cryopreserved and testicular sperm in ART for fresh cases when samples are not available.



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sciforum-125911: Investigating the Causal Role of Gut Microbiota-Derived Exosomes in Mediating Inter-Organ Communication in Diet-Induced Obesity

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Introduction: Obesity involves complex inter-organ communication, potentially mediated by gut microbiota-derived exosomes carrying molecular cargo. This study investigated whether these exosomes mediate signaling between the gut and metabolic tissues, contributing to obesity in a diet-induced model.

Methods: We isolated exosomes from the feces of diet-induced obese mice and lean controls. Their molecular cargo (miRNAs, proteins, lipids) was characterized using sequencing and proteomics. In vivo, exosomes from obese mice were administered to germ-free mice to assess their impact on weight gain, adiposity, and metabolic markers. In vitro studies exposed adipocytes and hepatocytes to these exosomes to investigate changes in gene expression and signaling pathways related to lipid metabolism and inflammation.

Results: Analysis identified distinct molecular cargo profiles in exosomes isolated from obese versus lean mice. The administration of obese-derived exosomes to germ-free recipients impacted metabolic parameters. In vitro experiments revealed that these exosomes influenced responses in target metabolic cells.

Conclusion: This research provides evidence suggesting that gut microbiota-derived exosomes function as molecular messengers affecting host metabolism in obesity. The findings support their potential role in inter-organ communication and highlight areas for further investigation into specific molecular targets and therapeutic strategies.



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sciforum-125933: Targeted serum protein profiling for early prediction of gestational diabetes in Mexican women

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Gestational diabetes mellitus (GDM) is a form of hyperglycemia that arises during pregnancy and is associated with increased maternal and fetal risks. The current diagnosis relies on an oral glucose tolerance test performed between 24 and 28 weeks of gestation, limiting the window for early intervention. This study aimed to analyze serum proteins as potential biomarkers for early diagnosis and monitoring of GDM in Mexican women. A cohort of 200 pregnant women was enrolled during their first trimester, with serum samples collected in each trimester. A GDM diagnosis was confirmed in the second trimester according to the international guidelines. After applying inclusion and exclusion criteria, 19 women with GDM and 15 women without GDM were included in the final analysis. Nine candidate proteins (ADIPOQ, PAPP-A, PAPP-A2, IGFBP-5, AFM, SHBG, FABP4, RBP4, and RETN) were measured in the first-trimester serum using a targeted antibody array. Multivariate and linear regression analyses identified SHBG, IGFBP-5, and FABP4 as promising biomarkers for early GDM detection. Quantification across all trimesters was performed using ELISA kits. The receiver operating characteristic (ROC) curve analysis showed that FABP4 exhibited the highest sensitivity and specificity for discriminating GDM cases during the first trimester. However, its diagnostic performance decreased as pregnancy progressed, limiting its utility for monitoring disease progression. These findings support the potential of FABP4 as a promising candidate for early GDM diagnosis in Mexican women.



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sciforum-124644: Assessing NET Formation Using Combined Neutrophil Activation in Diabetic Patients with Osteoarthropathy: A Methodological Approach

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The formation of neutrophil extracellular traps (NETs) is a mechanism of innate immunity. Dysregulation of this process contributes to tissue damage in various pathologies. However, data on the role of NETosis in the pathogenesis of diabetic osteoarthropathy (DOA) remain extremely limited. This study aimed to evaluate the informativeness of a modified method for assessing NET formation using combined neutrophil activation in patients with diabetes mellitus (DM) and DOA. The authors modified a patented technique for evaluating NETs induced by a nonspecific antigenic stimulator—a microbial culture containing *L. reuteri*, *L. acidophilus*, *L. rhamnosus*, and *B. longum*—applied to neutrophils isolated from peripheral venous blood. Thrombin solution ("Renam") was used as an additional NETosis activator. Microslides were analyzed using combined microscopy techniques: transmitted light for neutrophil visualization and fluorescence emission (excitation 450–480 nm, emission ≥ 515 nm) for detecting extracellular and intracellular DNA stained with propidium iodide (PI).

Comparative analysis revealed optimal parameters: PI concentration ≥ 0.1 mg/mL, probiotic preparation at 2.5×10^9 bacteria/mL, thrombin activity at 3 IU/mL, and a leukocyte suspension/activator ratio of 1:10. Interassay coefficients of variation in 10 experimental series with thrombin were 13.8% in a healthy donor and 12.5% in a DOA patient. Neutrophils from type 2 DM patients exhibited enhanced NET formation upon stimulation with both probiotics and thrombin compared to healthy donors (* $p=0.002$ and * $p=0.001$, respectively). Notably, neutrophils from DOA patients (Charcot foot) demonstrated more pronounced filamentous NET formation than those from diabetic foot patients without osteoarthropathy (* $p=0.011$).

The developed method allows for assessing NET formation in response to nonspecific antigenic stimulation and characterizing potential risks of immunothrombosis progression in DOA.

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sciforum-125601: Blood glycated hemoglobin concentration is correlated with risk of falls and gait and posture parameters in diabetic patients

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Peripheral neuropathy is a common complication of diabetes that can lead to balance and gait alterations, increasing the risk of falls among diabetic patients. This study explores whether blood glycated hemoglobin is associated with gait and postural abnormalities and the risk of falls in diabetic patients. *Methods:* Gait and postural parameters were assessed using a wearable inertial sensor placed in the lumbar region of the participants, while risk of falls was determined using the Tinetti Scale. Glycaemic control was evaluated by blood glycated haemoglobin concentration. *Results:* Spearman's rank correlation test showed that glycated haemoglobin was correlated with gait and postural parameters such as swing duration ($p=0.023$), the sway path along the antero-posterior axis during tests carried out with the eyes opened and feet in tandem ($p=0.043$), the sway path along the antero-posterior axis during tests performed with the eyes opened and feet closed together ($p=0.034$), and the sway area during tests performed with the eyes closed and feet in tandem ($p=0.043$). Moreover, higher levels of glycated haemoglobin in blood were associated with a higher risk of falls in diabetic patients ($p=0.035$). *Conclusions:* These results show associations between blood glycated haemoglobin and gait and postural parameters and the risk of falls in diabetic patients, underscoring the importance of glycaemic control to prevent neuropathic complications and their consequences in diabetes mellitus.



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sciforum-125591: Medicinal plants used by hemodialysis patients in public centers in the Tangier-Tetouan-Al Hoceima region: Awareness of potential toxicity

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Background:

End-Stage Renal Disease (ESRD) has been declared as a major public health priority in Morocco and worldwide. Medicinal plants (MPs) are very commonly used by ESRD patients. However, these plants contain active substances that can lead to very serious toxic incidents among hemodialysis patients.

To identify MPs used by hemodialysis patients and assess their awareness of the potential toxicities associated with certain plants, an ethnobotanical and descriptive study was carried out in public hemodialysis centers in the Tangier-Tetouan-Al Hoceima (TTA) region.

Methodology:

A cross-sectional ethnobotanical and descriptive study was conducted between September 2024 and March 2025 to investigate MPs used by patients with ESRD in public hemodialysis centers in the TTA region, as well as to assess their awareness of the potential toxicity associated with these plants. Data were collected from 323 patients using a comprehensive set of questionnaires derived from Benkhneja's "Questionnaire on MP and Phytotherapy" (2022).

Results:

This study identified 53 plants belonging to 26 families, with a predominance of Lamiaceae (10 species). Among them, several species may pose toxicity risks. Notably, the findings revealed that 52% of hemodialysis patients expressed uncertainty regarding the toxicity of many of these plants, 46.4% believed that these plants are non-toxic, while only 1.6% acknowledged the potential toxicity of certain plants.

The findings also indicated that a majority of respondents tended to use incorrect dosages, with nearly half (42.3%) failing to adhere to safety precautions when using these plants

Conclusions:

In public hemodialysis centers within the TTA region, our study identified 53 species from 26 families utilized by patients with end-stage renal disease. The potential toxicity associated with these plants is often underestimated by patients, who tend to rely on imprecise dosages and neglect necessary precautions.



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sciforum-127364: Metabolic Disease and Coronary Risk: Biomarker and Pathway Signatures in T2DM-Driven Atherosclerosis

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Introduction: Type 2 diabetes mellitus (T2DM) affects 462 million people globally and is linked to complications like retinopathy, nephropathy, neuropathy, and coronary artery disease (CAD). T2DM increases CAD risk, contributing to 75% of related mortality. Genetic predispositions and distinct mechanisms differentiate DM-CAD from other forms, such as CAD, caused by hypertension or degenerative changes, requiring gene expression profiling and transcriptome and reactome analyses to identify and establish molecular markers and improve its diagnosis, prognosis, and treatment strategies. **Methods:** The Gene Expression Omnibus (GEO) datasets GSE250283 and GSE90074 were used to identify the differentially expressed genes involved in DM-CAD. Biological targets were identified that coincided with the identified differentially expressed genes. The biological pathways were analyzed using KEGG, and hub genes were identified for a further functional and signaling pathway analysis.

Results: The differentially expressed gene biomarkers were identified between the control and DM and DM-CAD. NLRP3, TLR4, STAT3, IL6, TNF- α , and NF- κ B were found to be upregulated, while PPARG, SIRT1, and ADIPOR1 were downregulated, indicating significant pathways with involvement, including the oxidative stress response, JAK-STAT signaling, and insulin resistance and mitochondrial dysfunction.

Conclusion: Oxidative stress emerges as a critical driver of T2DM-CAD pathogenesis, influencing inflammatory pathways and metabolic dysfunction. Genes such as SOD2, CAT, and GPX1 highlight disruptions in antioxidant defense mechanisms, aligning with mitochondrial dysfunction. Elevated STAT3 expression in the JAK-STAT pathway and NLRP3 activation further exacerbate oxidative damage and inflammation. Meanwhile, the downregulation of SIRT1 and ADIPOQ underscores impaired glucose regulation and insulin sensitivity. These findings position oxidative stress as a key therapeutic target, alongside inflammasome and immune signaling pathways like the JAK-STAT pathway as novel therapeutic targets for mitigating T2DM-CAD's severity.



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sciforum-125983: Obesity in context: Challenging BMI and embracing metabolic diversity

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The International Classification of Diseases first recorded obesity in 1948. The misconception that obesity is merely a lifestyle decision that can be reversible through the exercise of willpower has persisted in public discourse and in the medical community. However, obesity is recognized by the World Health Organization (WHO) as a chronic disease characterized by “an abnormal or excessive accumulation of fat that is a health hazard.” In the context of patient care, there is an important and simple logical inconsistency: the therapeutic field is still based on the Body Mass Index (BMI). This indicator only measures weight and height, without considering body fat, muscle mass, or metabolic status, leading to imprecise diagnoses. The consideration of obesity as a disease based on BMI alone impedes progress in social recognition and understanding of the disease, leading to unintended iatrogenesis and hindering research. Hence, it is indispensable to evaluate body composition and metabolic status, as well as to differentiate between clinical and preclinical obesity, in order to target and treat more equitably. The purpose of this systematic review is to address the latest progress in the ambiguity surrounding the diagnosis of obesity based on BMI, and how it impacts individuals.



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sciforum-124775: Plasma Extracellular Vesicles Reflect Immune Alterations in Morbid Obesity and Are Modified by Bariatric Surgery

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Obesity remains one of the most pressing global health issues of the 21st century, with projections suggesting it may affect over half the world's population in the coming decade. Morbid obesity, defined by a body mass index (BMI) ≥ 40 kg/m², is the most prevalent chronic metabolic condition in developed countries and is often associated with serious comorbidities. Initial treatments include dietary changes, physical activity, and behavioral therapy, but bariatric surgery is the most effective long-term solution when these fail. The development and persistence of obesity involve genetic, environmental, and behavioral factors. It also induces chronic low-grade inflammation, leading to molecular and cellular disruptions. In this context, the extracellular vesicles (EVs)—small membrane-bound particles released by cells—have emerged as key mediators of intercellular communication and metabolic regulation. These vesicles carry bioactive molecules, including proteins, reflecting the physiological state and origin of their parent cells. EVs also contribute to immune responses and inflammation.

This study analyzed EVs from the plasma of patients with morbid obesity, focusing on immune-cell-associated markers. The EV profiles were compared before and after bariatric surgery and with those from healthy controls. Plasma samples were obtained from morbidly obese patients (BMI > 40, aged 30–60) treated at Hospital Clínico de Valencia and from healthy individuals. The EVs were isolated using size-exclusion chromatography (qEV2 70 nm, IZON) and analyzed via electron microscopy, nanoparticle tracking, and Western blotting for general and immune-specific markers.

The EVs from the obese patients expressed both common and cell-type-specific markers. Post-surgery, the EV levels decreased, with significant changes in immune-cell-derived EVs. These results suggest that plasma EVs reflect immune and metabolic alterations in morbid obesity and following surgery, supporting their potential as biomarkers. Further studies are needed to clarify their diagnostic and therapeutic value.

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sciforum-118541: Tumor Cell-Intrinsic NIK Shapes Metabolic Crosstalk Between Tumors and Brown Adipose Tissue

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Introduction and Objective: Cancer cachexia pivotally influences morbidity and mortality. Brown adipose tissue (BAT) is aberrantly activated by tumor-derived factors, contributing to weight loss and cachexia. NF- κ B-inducing kinase (NIK) is highly activated in cancer cells, prompting us to decipher the role of NIK in tumor-stimulation of BAT. **Methods:** NIK was overexpressed (NIK-Tg) or deleted (NIK-KO) specifically in bile duct epithelial cells. NIK-Tg, NIK-KO, and wild-type (WT) control mice were treated with thioacetamine (TAA) to induce intrahepatic cholangiocarcinoma (iCCA). NIK was deleted via CRISPR/Cas9 in HuCCT1 cells (HuCCT1-KO), a human iCCA line. Conditioned medium was prepared from huCCT1-KO and HuCCT1 cells and used to stimulate brown adipocyte culture. HuCCT1-KO and TuCCT1 cells were injected subcutaneously into immunodeficient mice, and tumor growth and BAT activation were assessed. **Results:** TAA promoted iCCA to a dramatically higher degree in NIK-Tg than in WT mice; conversely, NIK-KO mice were resistant to TAA-induced iCCA. Likewise, ablation of NIK also markedly suppressed tumor growth from HuCCT1-KO cells relative to tumors from HuCCT1 cells. BAT expression of UCP1 and other thermogenic genes was tremendously higher in tumor-bearing NIK-Tg mice relative to iCCA-free WT mice. Consistently, BAT was activated to a markedly higher level in mice transplanted with HuCCT1 cells (large tumors) relative to mice transplanted with HuCCT1-KO cells (small tumors). HuCCT1-KO conditioned medium activated the thermogenic program in brown adipocyte culture to a substantially higher level than HuCCT1 conditioned medium. **Conclusion:** Aberrant activation of biliary NIK increases liver cancer risk. NIK is required for production and secretion of soluble tumor mediators that stimulate BAT and cancer cachexia. NIK inhibitors may serve as a potential medication for the treatment of cancer and cancer cachexia.



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