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Academic Advisors

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The abstract book was prepared by the Student Editorial Team of the Students' Scientific Society at Tbilisi State Medical University. The team coordinated submission review, formatting, and final compilation. Temporary student editors from each faculty also contributed during the editing process. Some team members are also authors in this volume. All editorial decisions were made impartially and in accordance with academic standards.

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- Nino Dilsiz
- Nana Jikia
- Nino Chkhetiani
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IJMS INTERNATIONAL JOURNAL of MEDICAL STUDENTS

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ORIGINAL RESEARCH & STRUCTURED STUDENT REVIEWS

All studies in this section were conducted by student researchers under faculty supervision.

01. Iron deficiency anemia in pregnancy in Georgia; modern approaches to treatment and prevention

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Introduction: Iron deficiency anemia (IDA) is a major global health issue affecting pregnant women, particularly in developing countries, including Georgia. According to statistical data, 20–39% of pregnant women in Georgia suffer from IDA, a rate significantly higher than that reported in many European countries. Although the country has implemented national programs—such as free iron supplementation and relevant clinical protocols—the prevalence of IDA remains high. This ongoing challenge is largely due to the low level of awareness among pregnant women, limited informational support, and insufficient involvement of the primary healthcare system. **Objectives**: This study aims to analyze the contributing factors to IDA prevalence, as well as the modern approaches to its diagnosis and treatment in Georgia. **Methods**: This paper is based on a multi-source narrative review, incorporating both qualitative and quantitative studies conducted in Georgia and internationally. Data collection was carried out using the following scientific databases: PubMed, Scopus, ScienceDirect, and Google Scholar. Additional informational sources included publications and reports from the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the National Center for Disease Control and Public Health of Georgia (NCDC Georgia). The selection strategy was guided by the thematic relevance, reliability, publication date, and target population (pregnant women) of the materials found in the selected scientific databases and reports from the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), and the National Center for Disease Control and Public Health of Georgia (NCDC Georgia). The selection strategy was guided by the thematic relevance, reliability, publication date, and target population (pregnant women) of the materials found in the selected scientific databases. Non-peer-reviewed and duplicate sources, as well as studies that did not focus on pregnant women as the target group, were excluded from the review. **Results**: The high prevalence of IDA among pregnant women are driven by multifactorial causes. Key contributing factors include low socioeconomic status, short intervals between pregnancies, multiple gestations, limited education, and a skeptical attitude toward iron supplementation. A particularly critical issue is the lack of routine ferritin level screening, which hinders early diagnosis of iron deficiency. **Discussion**: Despite the existence of national programs, IDA continues to pose a significant challenge to Georgia's healthcare system, suggesting a need to reassess the effectiveness of current strategies. Evidence indicates the necessity of promoting early diagnosis of iron deficiency in clinical practice, enhancing public awareness campaigns, standardizing counseling procedures, and ensuring consistent involvement of family physicians. National food and nutrition policies, along with postpartum preventive strategies, also play a vital role. **Conclusion**: Improving the prevention and management of iron deficiency anemia in Georgia requires an integrated, evidence-based, and patient-centered approach. It is recommended to introduce mandatory ferritin screening, as well as to strengthen the role of family medicine as the first line of prevention, screening, and education. In addition, the development of educational and social strategies is essential to support the long-term improvement of maternal and neonatal health outcomes.

02. IL-6 Dynamics and Cardiac Arrhythmias in Hospitalized Georgian patients with COVID-19: A Retrospective Cohort Study

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Introduction: Cardiac arrhythmias are common complications in patients hospitalized with COVID-19, contributing significantly to morbidity and mortality during the acute phase. Post-acute COVID-19 syndrome is linked to long-term cardiovascular complications, including persistent atrial fibrillation (AF) and atrial flutter. Elevated levels of Interleukin-6 have been implicated in COVID-19 severity and cardiovascular complications**. Objectives**: The objective of this study was to examine the relationship between IL-6 level fluctuations, clinical severity, and the occurrence of new-onset arrhythmias in patients hospitalized with COVID-19. **Methods**: This retrospective cohort study in 2023 at Chapidze Heart Hospital included 100 patients (aged 40–80) with RT-PCR–confirmed COVID-19 and cardiovascular disease, grouped by AF status. Disease severity was assessed by clinical symptoms, respiratory rate, oxygen saturation, and CT findings. IL-6 was measured via electrochemiluminescence immunoassay at admission, within the first week, and before discharge. Additional labs included CRP, ferritin, and D-dimer. Arrhythmia persistence was evaluated at follow-up. Statistical analyses included repeated-measures ANOVA for IL-6 trends and logistic regression to identify arrhythmia predictors. **Results**: Among 100 patients, new-onset arrhythmias occurred in 23% of patients, most commonly AF, supraventricular tachycardia, and premature ventricular contractions. Among these, 78% exhibited persistent arrhythmias at short-term follow-up, and 56% continued to report arrhythmic symptoms or confirmed arrhythmias after one year. IL-6 levels were significantly elevated in patients with arrhythmias ($P = 0.024$), reflecting stronger inflammatory response. Independent predictors of arrhythmia included older age (OR = 1.13, $p = 0.002$), diabetes mellitus (OR = 7.99, $p = 0.008$), prolonged hospitalization (OR = 1.17, $p = 0.018$), and pre-existing heart disease (OR = 5.93, $p = 0.003$). **Conclusion**: New-onset and persistent arrhythmias are common post-COVID complications, particularly among patients with cardiometabolic comorbidities. These findings highlight the need for long-term cardiovascular monitoring to enable early detection and management of arrhythmic complications.

03. Statistical Distribution of GERD Spectrum Diagnoses in Georgia: A Prospective Study

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Introduction: Gastroesophageal reflux disease (GERD) is a prevalent condition in modern healthcare. Despite its clinical and public health significance, comprehensive local epidemiological data remains limited in many settings. Thus, the lack of methodical and structured evidence regarding this issue in countries like Georgia raises further difficulties in creating epidemiological statistics. **Objectives**: This study aims to create statistical records of GERD in Georgian patients and point out further gaps in local epidemiological data. **Methods**: We designed a prospective study and gathered consultation records, endoscopy images and biopsy results of the patients who reported to the First University Clinic of Tbilisi State Medical University (TSMU) from March 2025 to June 2025. The statistical analysis was used to assess the prevalence of GERD subtypes (NERD, ERD) and Barrett's esophagus. We analyzed the correlation among GERD, Hiatal Hernia (HH), gastritis and duodenitis using Fisher's Exact Test and Chi-square tests with a 95% confidence interval (CI). Additionally, a systematic review was conducted following PRISMA guidelines. PubMed, Scopus and Web of Science databases were searched and based on inclusion and exclusion criteria key data were systematically collected and examined. **ResultS**: GERD is highly prevalent (>51%) in Georgian patient pool along with strong correlation with HH ($p<0.001$). Our calculations yielded positive correlation with duodenitis and negative correlation with gastritis, however, results were not statistically significant due to the sample size being a limiting factor. **Conclusion**: Further studies with larger and more diverse populations would help validate these findings with more precise results and refine official statistical data.

04. Barriers to Prenatal Care Access in Semi-Urban Settlements of Georgia: A Descriptive Cross-Sectional Pilot Study

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Introduction: Antenatal care (ANC) remains a major public health concern in many developing countries, including Georgia. Inadequate or delayed care has been linked to increased risks of maternal and neonatal mortality, preterm birth, and low birth weight. Despite national efforts to enhance maternal health, women in Georgia's small urban areas still face notable barriers—limited infrastructure, shortage of specialists, and restricted access to essential prenatal services. **Objectives**: The observational, cross-sectional pilot study aimed to assess the accessibility of prenatal care services and to identify the main structural and informational barriers experienced by pregnant women residing in semi-urban municipalities of Georgia. **MethodS**: The study was conducted from March to May 2025 in eight semi-urban municipalities across Georgia. A total of 50 pregnant women were selected using systematic random sampling with a fixed interval method. Inclusion criteria included being currently pregnant and residing in one of the target municipalities. The study focused on access to basic services (e.g., ultrasound, lab testing, consultations), availability of medical specialists (e.g., gynecologists, radiologists, and family physicians) and awareness of government-funded ANC programs. Informed consent was obtained from all participants. **Results**: Most participants (72%) lacked access to basic laboratory tests and standard prenatal ultrasounds in their municipalities. Over half (56%) reported that specialized gynecological care was unavailable locally. Furthermore, 62% were not adequately informed about state-funded prenatal programs, including scheduled check-ups and diagnostic services. These shortcomings were mainly attributed to insufficient communication from healthcare professionals and a lack of community-level health education. being a limiting factor. **Conclusion**: The study indicates significant gaps in prenatal care in Georgia's small urban settlements. Improving infrastructure, providing qualified healthcare professionals and increased public awareness are essential to addressing these barriers.

05. Exploring the Relationship Between Students' Academic Performance and Jungian Psychological Types: A Correlational Study

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Introduction: The aim of this study is to explore the potential relationship between students' academic performance and their psychological types, as defined by Carl Jung's theory. The study also aims to highlight the relevance of Jung's theory of psychological types in understanding individual differences in academic performance. **Objectives**: The key question is whether a person's psychological type influences their learning process, goal setting, and achievement. **Methods**: For theoretical information C. G. JUNG "THE COLLECTED WORKS" Edited by Sir Herbert Read was used. 50 students participated in the correlation study based on informed consent. The inclusion criteria are people with active student status aged 18 to 24 years. Questionnaires were used to collect data. The Myers-Briggs Type Indicator (MBTI) was used to determine the psychological types. SPSS Statistics Program was used to process the data. Four major variables were identified: 1. Gender, 2. University (Tbilisi State Medical University or other), 3. Psychological types, 4. Academic performance for the last 2 semesters (A, B, C, D). A correlation analysis was performed between these variables to determine the Pearson Correlation coefficient. **Results**: As a result of the pilot study the correlation between academic performance with student's psychological type was not confirmed (Pearson Correlation -.132). Given the small cohort, the results cannot be generalized of the general population. **Conclusion**: Aforementioned pilot correlation research shows that a person's professional success, academic performance and the scale of the use of knowledge is not dependent on the psychological type. This calls for further studies with bigger and more diverse cohorts.

06. **Problem of Hypodynamia Among Modern University Students**

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Introduction: Hypodynamia, defined as a significant reduction in physical activity, is a growing health concern, especially among youth. It contributes to increased risks of cardiovascular diseases, obesity, diabetes, and certain cancers. Since young adulthood period is critical for establishing lifelong health behaviors, addressing hypodynamia in university students is essential. **Objectives**: This study aims to raise awareness about hypodynamia among university students and promote physical activity to prevent associated diseases. **Methods**: A quantitative cross-sectional survey was conducted among 40 students aged 18 to 25 from various faculties at Tbilisi State Medical University. The questionnaire included 21 structured items assessing physical activity levels and attitudes. **Results:** Half of the respondents reported engaging in less than 30 minutes of physical activity daily. The primary motivator for minimal activity was body shape and weight control. Despite 90% awareness of health risks associated with hypodynamia, inactivity and unhealthy lifestyle habits were prevalent. **Conclusion:** A sedentary lifestyle is widespread among university students, and awareness alone does not translate into behavior change. Effective interventions should focus on eliminating unhealthy habits and fostering sustainable healthy lifestyles.

Oral Presentation Session
DESCRIPTIVE CASE-BASED STUDIES

All studies in this section were conducted by student researchers under faculty supervision.

01. **Youth Health Risks and Assessment of Medical Services: A Case Study of TSMU Students**

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Introduction: In modern reality, the risks arising from an unhealthy lifestyle have a serious impact on the health of young people. This circumstance necessitates the timely identification of risks and the development of medical services tailored to young people. **Objectives**: The purpose of the study is to precisely study the health risks of young people and to assess how effectively the existing medical services in Georgia responds to their needs. **Methods**: The study was conducted using a cross-sectional quantitative research method, within the framework of which data were collected using a closed-ended questionnaire. The target group of the study was 75 Georgian and Indian students of Tbilisi State Medical University, who were selected using a simple random sampling method. The obtained data were processed using standard statistical methods of quantitative analysis. **Results**: The results of the study showed that 59% of Georgian students and 21.4% of Indian students do not use a student health insurancecard. As a result of the survey of Georgian students, it was determined that in the field of medical services, the issue of financing needs to be improved first, then the qualification of medical personnel, access to medical services and finally timeliness. In the case of Indian students, we got the opposite results. **Discussion:** Based on the data obtained, we can assume that the reason for the low rate of use of student health insurance cards by Georgian students is the problem of financial accessibility. Perhaps this is why improving the financing of medical services was considered a priority. As for the spread of harmful habits among respondents, the percentage of which is approximately 35%, indicates the need to strengthen preventive and educational programs**.** **Conclusion**: The study highlights critical disparities in the utilization and perception of medical services among Georgian and Indian students. Financial accessibility appears to be a significant barrier for Georgian students, impacting their use of available health resources. The findings emphasize the need for improved funding mechanisms, enhanced provider competence, and greater accessibility and timeliness in student health services.

02. Spontaneous Hemoperitoneum Secondary to a Rare Ovarian Neoplasm in a Postmenopausal Woman: A Case Report

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Introduction: Ovarian tumors vary from asymptomatic to life-threatening. Rapidly growing adnexal mass with systemic symptoms in postmenopausal women need urgent evaluation due to high malignancy risk. Among rare histological variations, ovarian giant cell tumours are aggressive with unclear histology. Immunohistochemical profiling is crucial for accurate diagnosis. Literature reports remain scarce**. Case Presentation:** The patient presented with increasing back pain, lower abdomen discomfort, weakness, and a pulling sensation, low-grade fever, and minor bloody vaginal discharge. History included uterine fibroids, hypertension, and menopause at age 50. Physical examination revealed peritoneal signs, abdominal distension and positive Shchetkin-Blumberg sign. Imaging revealed bilateral ovarian tumours, including a 27x26 cm right-sided lesion, and an enlarged uterus. Histopathology highlighted malignancy with atypical mitoses, haemorrhage, necrosis, and osteoclasts-like giant cells. Vimentin positivity suggested a mesenchymal origin, CD68 positivity in large cells, high Ki67 indicated aggressive behaviour, and partial muscle differentiation was demonstrated by focal Desmin expression on immunohistochemistry. The tumor's rarity was increased by the lack of mucinous components. the first week, and **Results**: Around 1 litre of haemorrhagic fluid was observed intraoperatively, with active bleeding and necrotic infiltration involving bladder wall, loops of large intestine, lateral peritoneal walls, and omentum. Limited excision was done due to bleeding risk, inaccessible lymph nodes, and poor visualisation. Unfortunately, the patient died six months later. **Conclusion**: This case highlights the rare and aggressive nature of giant cell ovarian tumors. Given their rapid progression and diagnostic complexity, early recognition, precise histopathological evaluation, and timely intervention are crucial, although prognosis maybe poor in advanced cases.

Oral Presentation Session

LITERATURE REVIEWS

01. Antimicrobial Resistance in Cystic Fibrosis-Associated Infections: A Narrative Review

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Introduction: Cystic fibrosis (CF) is an inherited condition that has a life-shortening impact and is characterized by the secretion of dense and sticky mucus, which elevates the likelihood of persistent respiratory infections in affected individuals. Recently, the emergence of antimicrobial resistance (AMR) has become a significant challenge in the treatment of CF, diminishing the effectiveness of standard antibiotics and making clinical management more difficult. Infections caused by resistant bacterial pathogens are significant contributors to adverse health outcomes, highlighting the pressing need for updated understanding and focused strategies. **Objectives:** The purpose of this literature review is to summarize the existing evidence regarding bacterial respiratory infections in CF and to emphasize how spread of AMR, creating considerable challenges for effective treatment. **Methods**: A thorough literature review was undertaken, focusing on articles published in peer-reviewed journals over the last 15 years. The databases searched included PubMed, Scopus, and Web of Science, with keywords such as: "Cystic fibrosis", "Bacterial infection", and "antimicrobial resistance". Studies concentrating on CF-related bacterial pathogens and patterns of AMR were included, also studies which involved humans and were published in English, while Articles unrelated to CF or AMR, non-English publications, and studies lacking primary data were excluded. **Results**: The bacterial pathogens most commonly found in CF include Pseudomonas aeruginosa, Staphylococcus aureus (including MRSA), Burkholderia cepacia complex, and Achromobacter species. **Conclusion**: AMR in infections associated with CF continues to be a significant clinical issue. Continuous monitoring, novel therapies, and prudent antibiotic use are crucial for enhancing long-term outcomes for patients with CF.

02. The Influence of the Musculoskeletal System on the Development of Malocclusion: A Literature Review

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Introduction: Malocclusion affects facial appearance, function, and health. Musculoskeletal disorders like spinal deformities and flatfoot can cause postural changes that may influence jaw development and occlusion. **Objectives:** This literature review aims to explore the relationship between musculoskeletal postural disorders, particularly spinal deformities (lordosis, kyphosis, Text Neck Syndrome) and flatfoot, and the development of dentofacial anomalies, specifically Angle Class II and III maloocclusions. **Methods**: The review analyzed clinical and experimental studies focusing on the correlation between body posture and mandibular position, based on the kinetic chain theory. This systematic literature review followed PRISMA guidelines. Sources were retrieved from PubMed, Scopus, Web of Science, and Google Scholar. Eligibility was based on thematic relevance, full-text availability, and clinical data. Narrative reviews without original data, non-professional sources, and irrelevant studies were omitted. Data was processed manually through thematic analysis. **Results**: The analysis revealed that deviations in postural alignment, such as anterior head posture or spinal imbalance, can alter mandibular positioning and occlusal relationships. These findings support a biomechanical association between musculoskeletal dysfunctions and the emergence of orthodontic anomalies.

03. The Ozaki Procedure in Valve Surgery – A Literature Review

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Introduction: The Ozaki procedure represents a modern approach to aortic valve reconstruction that reduces the need for artificial prostheses by utilizing the patient's own autologous pericardium. **Objectives**: This paper aims to evaluate the advantages of the Ozaki procedure compared to artificial valves based on clinical and hemodynamic parameters. **Methods**: This work is a descriptive literature review based on an analysis of articles published between 2018 and 2023 in the PubMed and ScienceDirect databases, providing a broad and reliable data set regarding the implementation of the Ozaki procedure. The reviewed studies include clinical records, surgical case reports, and systematic reviews. Inclusion criteria encompassed only articles reporting the use of the Ozaki procedure in human subjects. A total of 32 articles were identified, of which 15 met the inclusion criteria. The primary evaluation criteria included hemodynamic parameters, complication rates, and postoperative valve function. Data analysis was conducted using descriptive statistics, with appropriate statistical tests applied when comparing data sets. **Results**: According to data from 12 studies included in the literature review, the Ozaki procedure is characterized by a significant reduction in transvalvular pressure and improvement in hemodynamic parameters during the postoperative period. Various studies reported a mean postoperative transvalvular gradient reduced to approximately 8.5 ± 2.1 mmHg, which is considerably lower than the 15–20 mmHg registered in patients with mechanical valves. The procedure is applied for degenerative valve pathology as well as for rheumatic and infectious endocarditis cases, demonstrating hemodynamic stability and relatively long durability. **Conclusion:** The Ozaki procedure represents a physiologically tailored alternative to artificial valves, distinguished by biocompatibility and customization according to individual anatomy. Available data suggests improved clinical outcomes, which is particularly important for younger patients. Wider clinical implementation in Georgia requires additional research and increased awareness.

04. FROM SEQUENCING TO SURVIVAL: THE EMERGING ROLE OF CANCER VACCINES IN PERSONALIZED THERAPY - A LITERATURE REVIEW.

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[2,3] PhD, Chief Researcher, Head of the Laboratory of Molecular Medicine, Institute of Biotechnology, Tbilisi State Medical University.

Introduction: mRNA and dendritic cell (DC) vaccines are emerging as promising methods of personalized immunotherapy. They are still in clinical trials and yet to be implemented on a broader scale, despite the FDA approval of Sipuleucel-T (Provenge) (Kantoff Philip W. et al., n.d.), a DC vaccine. **Methods**: This review was conducted using sources from PubMed and Google Scholar. The included articles were published from 2020 onward, all of them focused either on mRNA or DC vaccines within the context of cancer immunotherapy. Articles that supported their findings with large-scale, randomized clinical trials were included and smaller-scale trials were excluded. **ResultS**: Throughout our research, we found multiple personalized cancer vaccines increasing distant metastasis- Free (DMFS), recurrence-free survival (RFS) and overall survival (OS). KEYNOTE-942 trial on mRNA-4157 in resected melanoma patients (Weber et al., 2024) showed a 44% reduction in the risk of recurrence or death compared to pembrolizumab monotherapy, with Grade ≥3 related adverse events only manifesting in 25% of patients. DCVax-L in glioblastoma multiforme (Liau et al., 2023) doubled the 5- year survival rate, from 5.7% to 13% and a median overall survival increase from 16.5 months with standard chemotherapy to 19.3 months with DCVax-L. Grade ≥3 adverse events manifested in less than 3% of administered doses. **Conclusion:** Both vaccine types show promise and impressive results in clinical trials, however a running theme presists: mRNA vaccines are used in early-stage cancers, in combination with first-line agents and DC vaccines are typically reserved for late-stage, advanced and aggressive cancers.

05. Exploring the Therapeutic Capabilities of Quantum Dots in Neurodegenerative Diseases: A Structured Review using Systematic Methods

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Introduction: Quantum dots (QDs) are modifiable nanocrystals with size-dependent fluorescence. Due to nanoscale size and modifiable surface properties, QDs can efficiently traverse the blood-brain barrier, making them promising candidates for targeted drug delivery and diagnostic imaging in neurological disorders. **Objectives:** To assess the therapeutic and diagnostic potential of quantum dots in the treatment and management of neurodegenerative diseases. **Methods**: Studies were identified through reputable electronic databases (PubMed, The Lancet, RSC Publishing, ACS Publications) using predefined keywords: "graphene quantum dots", "Alzheimer's", selenium quantum dots", "neurodegenerative disease". In vivo and in vitro studies were included, in English, from 2015-2025. Non-English, evidence lacking, and opinion-based papers were excluded. Risk of bias assessment was performed using the ROBINS-I V2 tool. The study implementing graphene QDs was judged to have a low risk of bias. However, only the abstract was assessed in the selenium study resulting in an incomplete assessment with a low to moderate risk of bias. **Results**: In a 2025 study, graphene quantum dots (GQDs) exhibited attenuation of the amyotrophic lateral sclerosis (ALS) phenotype in animal models by inhibiting the formation of pathogenic amyloid fibrils. TDP-43 peptide NMR spectroscopy revealed ~20% signal intensity reduction upon the addition of GQDs. Similarly, a 2021 study reported the therapeutic potential of selenium QDs (SeQDs) in Alzheimer's disease (AD). SeQDs were shown to effectively inhibit the pathologic aggregation that Leads to AD cascades, and their intrinsic fluorescence allows for monitoring AD progression. Additionally, SeQDs persist and accumulate in the brain, further improving memory and learning over time in AD mouse models. **Conclusion:** Despite the promising potential of quantum dots in addressing the complex pathogenesis of neurodegenerative diseases, their routine medical application remains limited. This is due to the small number of available studies, their predominantly preclinical nature, and incomplete risk assessments. Concerns regarding potential toxicity-particularly long-term effects and mechanisms of brain entry-highlight the need for further comprehensive research

06. NEUROLOGICAL DEGENERATION IN THE CONTEXT OF SARS-C0V-2 and VACCINATION

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Introduction: Since 2019 pandemic there has been a significant number of people in few thousands (as per the limited research conducted) that have developed neurological disorders in a raise impacting one's ability to demonstrate cognitive thinking, memory recall of their past and conditions being progressive to a degree not limited to known neurological disorders like Parkinsons, Alzheimer's and Dementia. Vaccinations - Astra Zeneca, Pfizer and Moderna and potential impacts on the neurological conditions. **Objectives:** Objectives were to understand SARS-CoV-2 and/or it's vaccination(s) impact on neurological abilities, evaluate research methods used and studies conducted and identify gaps based on problem-based learning methods. **MethodS**: Methods used on literature review was systematic and meta-analysis backed with a quantitative assessment of clinical data over a period between Sep 2022 and Feb 2024 and about 3 articles were reviewed as per the reference [1],[2] & [3]. There were just over 2100 sample patients' assessments during the said period with various clinical conditions. **Results:** Patients with over 60 years have exhibited cognitive decline majority being vaccinated (1 to 2 doses of Astra Zeneca, Pfizer or combination of both) and about 10% not vaccinated. There were about 120 patients that were below 60 years that exhibited neurological disorders with no previous history or known conditions. Research review suggests that the quantity and the type of assessment used in the clinical research was not effective to draw a conclusion on the impacts of SARS-CoV-2 on neurological disorders. **Conclusion:** Comprehensive clinical and non-clinical studies are deemed necessary to understand and remediate long-term implications of SARS-COV-2 on humans for facts outlined in this abstract. The results were inconclusive as to whether the neurological disorders were associated with SARS-COV-2 or Vaccinations or combination of both.

07. Approaches to Oncological Rehabilitation After Mastectomy for Breast Cancer and Strategies for Managing Lymphedema Problem of Hypodynamia Among Modern University Students

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Introduction: Breast cancer is one of the most prevalent diseases worldwide. Fortunately, various treatment methods have been developed. However, mastectomy remains a commonly used approach and is often associated with a range of complications. Among them, lymphedema is one of the most frequent and challenging conditions to manage. Lymphedema is characterized by impaired lymphatic drainage from tissues, leading to swelling. **Objectives:** The aim of our study is to explore contemporary oncorehabilitation methods and strategies for lymphedema management. Furthermore, we seek to raise awareness about the significance of this issue across Georgia. **Methods**: We combined a structured literature review with a systematic collection of data on current national approaches to post-mastectomy oncological rehabilitation and lymphedema management. Sources included national and international guidelines, institutional protocols and peer-reviewed publications. Comparative analysis was conducted to identify gaps in current framework. **Results:** Currently, oncological rehabilitation offers several methods for its management. According to our literature review, oncological rehabilitation includes specific procedures for lymphedema management, prescribed based on patient needs. These procedures include manual lymphatic drainage, physical therapy, compression bandaging, occupational therapy, and psychological support—from both psychotherapists and family members. Our review revealed that, in the management of lymphedema, MLD in combination with compression therapy results in an average volume reduction of approximately 60.7 mL, corresponding to a 7.1% decrease. Physical exercise had a minimal effect on volume reduction (0.1–0.2 mL), although improvements in pain and heaviness were observed. **Conclusion:** In light of these findings, the next phase of our research will focus on the comprehensive investigation of contemporary oncorehabilitation methods, their potential integration into the national healthcare system, and the promotion of public and professional awareness regarding the critical importance of post-mastectomy rehabilitation in enhancing the quality of life for breast cancer survivors.

08. **Ergonomics in Nursing: Narrative Review**

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Introduction: Nurses are fundamental to the healthcare system, providing essential care while confronting a range of physical and mental challenges daily. The ability to effectively manage these demands is closely linked to the design of their work environment. Ergonomics, the study of the relationship between humans, their workplace, and the tools they use, plays a vital role in creating safe, comfortable, and efficient conditions that support nurses' well-being and performance. **Objectives:** The objectives of this study are to explore the principles of ergonomics as they relate to nursing work environments, evaluate how ergonomic interventions can reduce physical and mental strain experienced by nurses, and emphasize the importance of ergonomically designed workplaces in enhancing nurse safety, comfort, and efficiency. **Methods**: Literature review was conducted by systematically searching relevant databases and scholarly sources. Key studies on nursing ergonomics, workplace design, and occupational health were selected and critically analyzed to gather current knowledge o creating safe and efficient nursing work environments**. Results:** A meta-analysis across 12 European countries, involving 5,153 nurses, revealed that 87.8% experience work-related musculoskeletal disorders (WMSDs), which substantially impair job performance and the quality of patient care. In contrast, data from the United States demonstrate that the implementation of ergonomic training programs, including education on proper movement techniques and the use of supportive equipment have effectively reduced work-related injury risks by 70–80%. **Conclusion:** Ergonomics remains an underexplored yet critical area within the Georgian healthcare system. Promoting ergonomic knowledge through dedicated training programs and further research is essential to improving nursing practice. Enhanced ergonomic literacy will empower nurses to utilize assistive devices effectively, leading to safer, more efficient work environments and better overall performance.

09. **The Review of the Impact of Toxic and Narcotic Drugs on Human Health**

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Inroduction: The recreational use of intoxicating and/or narcotic substances is a global problem that remains insufficiently adressed in Georgia. Generally, these substances are typically prescribed to alleviate pain associated with severe diseases such as cancer, multiple sclerosis, schronic pain, parkinson's disease, narcolepsy, etc. However, their inappropriate use can lead to often irreversible health consequences like drug addiction, which remains a significant social challenge for the population. [1] **Objectives**: The main goal of this review was to raise awareness and educate the young generation and future health specialists at TSMU about the extensive and harmful health effects associated with intoxicating and narcotic substances. Particular focus was on stimulants, which trigger the release of body's natural energy- regulating neurotransmitters- EPI, NE and dopamine. **Methods:** The review was conducted through a comprehensive peer-reviewed literature using detabases such as Scope, NIH. Emphasis was on randomized studies and high-quality review articles that examined both the theraeutic and harmful aspects of psychoactive substance use. By exploring both sides of the issue—clinical benefits and risks associated with recreational use—the review aimed to provide a balanced and evidence-based perspective. **Results:** According to a number of scientific studies devoted to the medical use of amphetamines and cannabinoids, there is broad consesus regarding their therapeutic potential.Nonetheless, their phramaceutic use must be carefully monitored by medical professionals. For example, cannabis is associated with pshychotic symptoms, including detachement from reality, severe anxiety and panick attacks. Our literature review highlights that, despite those risks, a significant portion of population remains insufficiently informed about the dangers associated with the recreational use of phsychoactive substances. **Conclusion:** To conclude, it is important to raise the awareness of the population by giving the knowledge in a well-founded manner, brochures, information sheets and public talks to protect adolescents from these substances.

10. The Problem of Microplastics in Environmental Medicine (Literature Review)

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Introduction: Microplastics represent one of the most significant challenges in modern environmental medicine due to their widespread distribution and potential adverse effects on human health. These compounds enter the environment through various routes, including marine and freshwater sources, ambient air, and food products, increasing human exposure. **Objectives:** The study aimed to analyze the main sources, global distribution, and pathophysiological effects of microplastics on human health based on recent scientific literature. **MethodS**: This study is based on a narrative literature review conducted in accordance with PRISMA guidelines to ensure methodological transparency and accuracy. A comprehensive search was performed in the PubMed and Google Scholar databases, covering the period from 2014 to 2024. The following keywords were used: "microplastics," "human health," "bioaccumulation," "microplastics ingestion," and "toxicology of microplastics." The Inclusion criteria were peer-reviewed studies focusing on the impact of microplastics on human health, systematic reviews, meta-analyses, and original research articles. After the initial screening of 134 articles, 37 met the final eligibility criteria and were analyzed in depth. Literature management was conducted using Zotero, while Microsoft Excel was used for data synthesis and thematic organization. **Results:** The findings indicate that microplastics have bio accumulative properties and are linked to serious health effects, including endocrine disruption, inflammation, immune dysfunction, cancer risk, and neurodegenerative diseases. **ConclusioN:** Strengthening control measures across drinking water, food, and air quality to mitigate microplastic exposure, supported by coordinated efforts in environmental regulation, public health, and education.

11. Does Gut Microbiome Dysbiosis Contribute to the Early Onset of Type 1 Diabetes Mellitus in Children? A systematic review.

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Introduction: Early onset type 1 diabetes mellitus (T1DM) in pediatric patients is a rising worldwide health concern. Increasing evidence shows environmental factors like gut microbe alterations may trigger autoimmune β-cell destruction resulting in T1DM (Brown 2020). However, the exact mechanism connecting them is partially understood. **Objectives:** This paper evaluates associations between gut microbiome dysbiosis and early-onset T1DM, identifying potential microbial markers for early detection and intervention. **Methods**: 15 peer reviewed studies (2015-2025) in English, were systematically reviewed using PRISMA guidelines. Studies were from PubMed and Scopus, including the TEDDY cohort and longitudinal studies using 16S Rrna sequencing and metaproteomics. Studies on children from infancy to T1DM onset with microbiome profiling were included; non-human studies and reviews were excluded. NewCastle-Ottawa Scale was used for assessing the risk of bias and a descriptive synthesis of results was done. **Results:** Children with early-onset type 1 diabetes mellitus (T1DM) have a simpler gut microbiome and a particular shortage of butyrate-makers like Faecalibacterium prausnitzii and Roseburia (Smith 2019) has been found. Simultaneously, an increase in pro-inflammatory and pathogenic species, including several strains of Bacteroides, Proteobacteria and Escherichia coli was noted. This interrupt synthesis of short-chain fatty acids, bile acids, and vitamins while increasing lipo polysaccharide production. Animal studies revealed development of hyperglycemia and pancreatic inflammation after receiving T1DM gut microbiota. Interventional studies show several benefits with probiotics, prebiotics, and even fecal microbiota transplantation. However, strong clinical evidence is still upcoming. **Conclusion:** Imbalance of gut microbiome may play a role in early-onset T1DM, delivering promise for early diagnostics and interventions. Further research into personalized microbial therapies is warranted.

12. Biofilm-Inspired Encapsulation of Beta Cells: A Literature Review on a Novel Strategy for Immune Protection in Type 1 Diabetes

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Introduction: Type 1 diabetes mellitus (T1DM) results from autoimmune destruction of pancreatic beta cells, leading to absolute insulin deficiency. Although islet transplantation exhibits therapeutic potential, primary limitations encompass immune rejection (Calafiore 2003). Inspired by bacterial biofilms' immune evasion mechanisms, researchers have developed biofilm-like encapsulation systems to protect transplanted beta cells, whilst avoiding the necessity for immunosuppression (Gao 2022). **ObjectiveS**: This literature review evaluates the effectiveness of biofilm-inspired encapsulation strategies in protecting beta cells from immune destruction, with prospects of enhancing transplant viability. **MethodS**: Following PRISMA 2020 guidelines, an extensive literature search was executed using PubMed, Scopus, and Google Scholar for articles published between 2010 and 2024. Researched terms included: "beta cell encapsulation," "biofilm mimicry," "immune evasion," and "Type 1 diabetes." Approximately 35 peer-reviewed, English-language studies were included in accordance with encapsulation materials and immunoisolation (de Vos, Spasojevic and Faas 2010). Non-peer-reviewed and non-English articles were excluded. **Results**: Materials such as hydrogels and polyethylene glycol (PEG) derivatives provide selective permeability to glucose, insulin, and cytokines, whilst inhibiting immune penetration (Ghasemi 2021). Their mechanical strength, low endotoxin levels, and fibrotic resistance, confer to encapsulation stability (Marikar et al. 2022). These characteristics enhance beta cell viability, oxygenation, and glucose responsiveness. Moreover, nanoscale coatings promote immune invisibility, and durability (Gao 2022). Notably, recent clinical studies have demonstrated glucose control using encapsulated stem cell–derived β cells (Keymeulen et al. 2024). **Conclusion:** This review highlights biofilm-inspired encapsulations' potential in shielding beta cells without eliciting an immune response, thereby enhancing transplant viability (Gao 2022). However, long-term compatibility and functionality are obstacles needed to be addressed (de Vos, Spasojevic and Faas 2010). Future directions prioritise improvement of biocompatibility, manufacture, and implantationmethods (Marikar et al. 2022).

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