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DAUGAVPILS UNIVERSITĀTES 68. STARPTAUTISKĀS ZINĀTNISKĀS KONFERENCES

TĒZES

ABSTRACTS OF

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Daugavpils Universitātē docētāju un studējošo zinātniskās konferences notiek kopš 1958. gada. Konferencēm ir starpdisciplinārs raksturs, tajās piedalās gan studējošie, gan arī zinātnieki no dažādām pasaules valstīm. Daugavpils Universitātes 68. starptautiskās zinātniskās konferences pētījumu tematika ir ļoti plaša – eksaktajās, humanitārajās, izglītības, mākslas un sociālo zinātņu jomās.

Krājumā Daugavpils Universitātes 68. starptautiskās zinātniskās konferences tēzes = Abstracts of the 68th International Scientific Conference of Daugavpils University apkopoti materiāli, kas tiks prezentēti konferences darba grupās 2026. gada 9.–10. aprīlī un kas atbilst konferences formālajām prasībām.

Krājuma veidotāji saglabā autoru iesniegto tēžu lingvistisko un gramatisko struktūru.

Par norādītajiem faktiem, izteiktajiem viedokļiem un lietoto terminoloģiju atbild tēžu autori.

The annual scientific conferences at Daugavpils University have been organized since 1958. The themes of research presented at the conferences cover all spheres of life. Due to the facts that the conference was of interdisciplinary character and that its participants were students and outstanding scientists from different countries, the subjects of scientific investigations were very varied – in the domains of exact sciences, the humanities, education, art and social sciences.

The Collection of Abstracts of the 68th Scientific Conference of Daugavpils University contains the abstracts on researches, which will be presented in the corresponding work groups organized within the framework of the conference in April, 9–10, 2026. In the abstracts published in Daugavpils Universitātes 68. starptautiskās zinātniskās konferences tēzes = Abstracts of the 68th International Scientific Conference of Daugavpils University we have preserved the authors' style (linguistic and grammatical structures), and the authors themselves are responsible for the facts and opinions reflected and the terminology used in their abstracts.

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REFLECTION SPACE: INSTALLATIONS IN CONTEMPORARY LATVIAN DESIGN

Keywords: *installation, contemporary design, experience design, transparent and reflective materials, concept.* In contemporary art, including design, installations are becoming increasingly significant. Transparent materials, mirror surfaces, and light reflections are often used as visual elements, serving as means to influence spatial perception and to activate viewer engagement. By integrating the viewer into the conceptual framework of installations, interaction is created, allowing the author's message to acquire new interpretations. The aim of the study is to analyse how transparent and reflective materials in contemporary Latvian design installations shape viewer experience and participation in the artwork. The research examines examples from the field of contemporary Latvian art and design, focusing on the interaction between material, light, and space. The study is based on the hypothesis that the use of reflective materials expands the boundaries of design, bringing it closer to the principles of experience design. As a result, the design object is perceived not as a static entity, but as an environment for creative experience.

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CULTURAL FESTIVALS: NATURE AND ENVIRONMENTAL THEMES, COMMUNICATION STRATEGIES AND EXPERIENCES

In contemporary society, cultural festivals have become an important instrument not only for the development of cultural life but also for informing the public, providing education, and raising awareness of social issues. Particular importance is attributed to festivals that focus on nature and environmental themes, integrating cultural, artistic, educational, and creative activities within their conceptual frameworks. Such cultural festivals contribute to increasing public awareness of natural values, environmental protection, and sustainable development. Within these events, concerts, creative workshops, educational lectures and discussions, visual art exhibitions, and a variety of interactive activities are organized. These activities help attract audiences from different age groups, promote communication, and encourage active participation in cultural events as well as in processes related to environmental awareness. Cultural festivals of this type create an interdisciplinary platform in which culture, contemporary art, nature, and environmental education interact and mutually reinforce one another. They provide organizers with an opportunity to promote national natural values through creative formats and accessible content tailored to specific target audiences, while simultaneously providing knowledge and strengthening public interest in nature conservation, environmental preservation, and sustainable lifestyles. The aim of this study is to highlight and analyse the most prominent contemporary cultural festivals in Latvia that emphasize nature and environmental themes, examining their messages, organizational principles, communication strategies, and their contribution to public education and experience related to environmental and nature protection issues in fostering sustainable societal development.

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VISUALIZATIONS OF ANXIETY: A SPECULATIVE DESIGN STRATEGY

Through the means of expression of color, form, composition, materiality, and technology, contemporary artists semiotically and subjectively reflect on many socially relevant issues, one of the most important of which today is the preservation of human mental health. Global events and rapid changes in life have a strong impact on the mental health of society as a whole, particularly contributing to the emergence of anxiety. This is the most common mental health problem, affecting approximately 301 million people worldwide, changing their quality of life and emotional and social functioning. Speculative design as a contemporary art strategy helps to understand and depict the problem of anxiety by using hypothetical future scenarios and asking the question: "What if...?" Speculative design is a contemporary approach to researching this topic and its aesthetic visualization, allowing it to be depicted on both a conceptual and interactive level. In this way, the use of this strategy, with the artist taking a provocative and critical approach to the issue, broadens his field of associative thinking, promotes discussion about potential future scenarios, and is informatively valuable to the audience. The aim of the study is to analyze experiences of anxiety visualization using a speculative design strategy, drawing public attention to mental health issues and encouraging critical reflection and discussion not only in a social context, but also in the representation of individual experiences.

BIOLOĢIJA / BIOLOGY

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INFLUENCE OF SPIDER PRESENCE ON BEHAVIOURAL RESPONSES OF DROSOPHILA MELANOGASTER

Interactions between predators and prey are important for shaping behavioural adaptations. Insects can adjust how they survive in response to predator cues, but it's unclear what the long-term effects of early exposure to these cues are. In this study we investigated how predator exposure affects the behaviour of Drosophila melanogaster. We hypothesized that flies exposed to a predator during development would show altered behavioural responses compared to unexposed individuals. Two groups were formed: one developed in the presence of a spider, and the other, the control group, developed without exposure to a predator. After eclosion, flies were tested in a two-choice arena with and without spider silk. The duration spent in each zone was documented and males, and females aged 10 to 11 days were analysed independently. The results suggest that Drosophila melanogaster's spatial preference is affected by prior exposure to predator cues. These findings contribute to understanding how environmental factors shape insect behaviour.

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MONITORING AND IDENTIFICATION OF BUMBLEBEE (BOMBUS) SPECIES IN TWO STUDY AREAS

Bumblebees (Bombus spp.) are among the most important pollinators in temperate ecosystems and play a crucial role in plant pollination and biodiversity maintenance. Recent studies indicate that pollinator communities are increasingly affected by environmental changes and anthropogenic pressures. Monitoring pollinator diversity and activity is therefore essential for understanding ecological processes in local habitats. The aim of this study is to record and identify bumblebee species and to evaluate pollinator activity in two study areas. Field observations were carried out from July to early September 2025 using the transect survey method. Two territories with different environmental characteristics were selected for the research: the Mežciems (neighbourhood in Daugavpils) field and the Daugavpils University Agrobiological Station field. Five fixed transects of 100 m were established in each territory and surveyed regularly. Bumblebees were identified through field observations and by collecting some individuals for later identification using specialized identification keys and atlases. In addition to bumblebees, other pollinating insects were recorded. Environmental parameters such as air temperature, wind intensity and general weather conditions were documented during each survey. Field observations indicated relatively low pollinator activity during the study period. This may be related to atypical summer weather conditions, including prolonged rainfall and relatively low temperatures, which could influence pollinator activity and detectability during surveys.

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INTERACTIVE EFFECTS OF DEVELOPMENTAL PREDATOR STRESS AND DIETARY TRYPTOPHAN ON LIFESPAN IN DROSOPHILA MELANOGASTER

Environmental stress and nutrition are key determinants of lifespan, yet their interactive effects under ecologically relevant conditions remain insufficiently understood. This study investigates how predator-induced developmental stress and dietary tryptophan supplementation jointly influence lifespan in male Drosophila melanogaster. Flies were assigned to four experimental groups: (1) control (no predator exposure, no tryptophan), (2) tryptophan supplementation without predators, (3) predator exposure without tryptophan, and (4) predator exposure with tryptophan supplementation. Predator cues were introduced during the developmental stage using spiders Pardosa pullata, while dietary tryptophan was provided at a biologically active, non-toxic concentration (50 mM). Results showed that predator-exposed flies exhibited significantly reduced lifespan compared to controls, confirming the detrimental effects of chronic developmental stress. Tryptophan supplementation did not affect lifespan under predator-free conditions but significantly increased lifespan in predator-exposed flies. However, this effect represented only a partial recovery, as lifespan remained lower than in non-stressed groups. These findings demonstrate that the effects of dietary tryptophan on lifespan are context-dependent and strongly influenced by environmental conditions. Rather than acting as a universal lifespan-extending factor, tryptophan appears to mitigate some physiological costs associated with chronic stress. The study highlights the importance of diet–environment interactions in shaping life-history outcomes and supports an ecological perspective in which nutritional inputs modulate, but do not eliminate the effects of early-life stress on aging.

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ASSESSMENT OF APIARY PLACEMENT OPPORTUNITIES AND FORAGE BASE POTENTIAL FOR HONEY BEES (APIS MELLIFERA) IN LATVIA

This study analyses the main factors influencing the selection of apiary locations and the availability of forage resources for honey bees (Apis mellifera) in Latvia. The research examines both, the impact of regulatory frameworks on apiary placement and the environmental, and landscape elements that determine colony productivity. Special attention is given to the structure of the forage base, distinguishing between natural, cultivated and mixed forage types, as well as analysing the role of major vegetation types — forests, meadows, shrublands and agricultural lands, in providing nectar and pollen resources. The seasonal succession of nectar-producing plants is also evaluated, as it significantly affects colony development and honey production. Based on the assumption of a productive foraging radius of honey bees (up to 2 km), an estimation of the potentially exploitable area and the number of beehives that can be sustained within it was conducted. The results indicate that, on average, approximately 20–40 beehives could be maintained within a 12.56 km² area in Latvia. However, this value may vary considerably depending on resource availability, landscape structure and habitat diversity. The study highlights the importance of cartographic analysis and preliminary site assessment in selecting optimal apiary locations, as well as identifies key practical and ecological criteria for sustainable beekeeping.

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THE PREVALENCE OF APHOMIA SOCIELLA INFESTATIONS IN BUMBLEBEES RISES WITH PROXIMITY TO APIARIES, LEADING TO DECREASED REPRODUCTIVE OUTPUT AND IMPAIRED IMMUNE RESPONSES

Bumblebees are key pollinators in temperate regions of the Northern Hemisphere, yet niche overlap and competition with honeybees may impose significant stress, by limiting nutrient acquisition, and increasing the risk of pathogen and parasite spillover. One such parasite, the bumblebee wax moth (Aphomia sociella), occurs in bumblebee and wasp nests as well as weakened managed honeybee colonies (apiaries). Using Bombus terrestris colonies as a model system, we tested whether the immune function of young queens and workers (measured via encapsulation response) declines under both competitive pressure (proximity to apiaries) and parasitic pressure (A. sociella infestation), predicting the weakest responses in infested colonies closest to apiaries. We found that colonies located near apiaries exhibited higher infestation levels, reduced reproductive output and weaker encapsulation responses. These results provide insight into the ecology of A. sociella in systems, where honeybees and bumblebees coexist and highlight a concerning reduction in bumblebee immune performance near apiaries, which may increase susceptibility to additional parasites and pathogens.

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ECOLOGICAL STOICHIOMETRY OF BUMBLEBEE CASTES, SEXES AND AGE GROUPS: INSIGHTS INTO FUNCTIONAL ROLES AND PHYSIOLOGICAL STRESS

Ecological stoichiometry provides a powerful framework for understanding how physiological functions and environmental factors shape the elemental composition of organisms. In this study we investigated variation in body carbon (C) and nitrogen (N) content, as well as carbon-to-nitrogen (C/N) ratios among castes, sexes and age groups of the bumblebee Bombus terrestris. Using individuals collected from multiple colonies in a heterogeneous agricultural landscape, we compared ovipositing queens, young queens, workers and males. Elemental composition was measured using an elemental analyzer, and differences were assessed using linear mixed-effects models. We found no significant differences in body carbon concentration among groups. In contrast, body nitrogen concentration varied significantly, being highest in workers and young queens, and lower in males and ovipositing queens. Consequently, the C/N ratio was lowest in workers and highest in males, and ovipositing queens. Young queens also exhibited higher nitrogen levels and lower C/N ratios compared to ovipositing queens. These patterns suggest that body elemental composition is more strongly associated with functional roles and activity levels, particularly flight muscle investment, than with stress alone. Workers and young queens, which are more actively involved in foraging, thermoregulation and colony defense, exhibited higher nitrogen content consistent with greater muscle mass. Our findings highlight the importance of social organization and division of labor in shaping physiological traits, and demonstrate that

ecological stoichiometry can provide valuable insights into the links between behavior, metabolism and life-history strategies in social insects.

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GLOBAL DNA METHYLATION IN INVASIVE AND NON-INVASIVE FISH ACROSS WATER BODIES WITH VARYING ANTHROPOGENIC IMPACT

Epigenetic processes are changes in gene expression that occur without altertions in the DNA sequence. Aquatic ecosystems are increasingly affected by anthropogenic factors such as river damming and pollution. DNA methylation plays a crucial role in regulating organismal responses to environmental variation and adaptation of fish. The aim of this study was to investigate global DNA methylation variation across different age groups of invasive and non-invasive fish species inhabiting contrasting water bodies with varying anthropogenic impact, for example, the Olympic reservoir in the city of Daugavpils and a forest lakes, the Tome and Kegums reservoirs on the Daugava River and the site of the Daugava River (Voleri) in the city Riga. The study focused on the non-invasive Eurasian perch (Perca fluviatilis), a widespread species in Europe, and the invasive Amur sleeper (Perccottus glenii). Fish age was determined using the scale-reading method. Genomic DNA was extracted using a standard salt extraction protocol, and its quality and concentration were assessed by spectrophotometry and electrophoresis. Global DNA methylation levels were quantified using the LUMA method, which is based on combined DNA cleavage by methylation- sensitive restriction `enzymes and polymerase extension assay by Pyrosequencing. The results revealed age-dependent differences in DNA methylation in perch, for example, DNA methylation decreases by 19% in three -year-old perch from the Kegums and by 37% in the Tome reservoirs. In two-year-old individuals global DNA methylation levels were higher in the Daugava River compared to Stāņķu Lake: 13% in the Ķegums and16% in Tome Reservoirs, and 28% in Voleri. A similar tendency was observed in sleeper: individuals from Olimpic Lake showed higher global DNA methylation levels compared with Lubāsta Lake (by 60%), Zirga Lake (by 41%), and Trikārta Lake (by 85%).

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SEROLOGICAL EVIDENCE OF LYSSAVIRUS CIRCULATION IN BAT POPULATIONS IN LATVIA

Rabies is a fatal zoonotic disease of global importance caused by viruses of the genus Lyssavirus. Although Latvia has been officially declared rabies-free since 2015 following successful oral vaccination campaigns in wildlife, bats are not included in immunisation programmes and may serve as natural reservoirs of lyssaviruses. The aim of this study was to investigate the presence of lyssavirus infection in bat populations in Latvia and to assess the potential risk to animal and human health. Active surveillance was conducted between 2013 and 2015, during which 627 bats representing 12 species were captured across seven sampling sites. Oropharyngeal swabs were analysed by RT-PCR for the detection of lyssavirus-specific RNA, while serum samples from 221 bats were tested for neutralising antibodies against European bat lyssaviruses (EBLV-1 and EBLV-2) using a modified fluorescent antibody virus neutralisation (FAVN) test. In addition, passive surveillance included the analysis of 54 bats collected in 2017. All oral swabs tested negative for viral RNA, indicating no evidence of active infection at the time of sampling. However, serological analysis revealed EBLV-2-specific antibodies in seven bats, all belonging to Myotis daubentonii, suggesting prior exposure to lyssaviruses within local bat populations. Samples obtained through passive surveillance were also negative for viral presence. This study provides the first evidence of lyssavirus circulation in a local Latvian bat population, particularly in a non-migratory species, indicating possible local persistence of infection. A 2024 case in the Netherlands confirmed EBLV-1 infection in a domestic cat following bat contact, demonstrating the risk of spillover to other animals. These findings highlight the importance of continued passive

surveillance of bat populations, even in countries declared rabies-free, as bats may represent an under-recognised reservoir of lyssaviruses with potential public health implications.

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IMPACT OF DNA HYPOMETHYLATION ON SOME MORPHOLOGICAL PARAMETERS IN DIFFERENT WHEAT ORGANS UNDER TEMPERATURE STRESS

Wheat is a vital crop that provides food for a large part of the world's population. Temperature stress negatively impacts wheat growth and yield by limiting water supply and affecting plant development. Therefore, improving temperature tolerance is crucial to maintain stable wheat production. Enzymatic nuclear DNA methylation is an important epigenetic mechanism that controls gene expression in plants and animals. 5-azacytidine (5-azaC) and zebularine are nuclear DNA methyltransferase inhibitors. These compounds are used to investigate gene function under stress responses. This research aims to study the role of nuclear DNA hypomethylation, induced by 5azaC and zebularine, on some morphological parameters in different organs of wheat seedlings. The object of this study was seedlings of wheat (Triticum aestivum L., cv. Galerist). After 24 hours of germination on moist filter paper at 26°C, etiolated wheat seedlings of equal length were transferred to polyethylene pots containing a solution of 0.05 mM 5-azaC and 0.05 mM zebularine, and were grown for up to 5 days at 26°C under light in a climatic chamber. On the fifth day, one group of wheat seedlings was exposed to temperature stress at +42°C for 24 hours, while the other group was grown at 26°C as a control. The methylation level was controlled by the the LUMA (LUminometric Methylation Assay) method. The measured morphological parameters included root length, first leaf length, coleoptile length, and fresh weight (FW). It was shown that treatment with 5-azaC under temperature stress increased first leaf length by 11%, while zebularine caused an increase of 1.6%. Coleoptile length increased by 13% with 5-azaC and by 14% with zebularine. While root length decreased by 4% and 13% following treatment with 5-azaC and zebularine, respectively. Fresh weight decreased by 25% in the 5-azaC treatment and by 8% in the zebularine treatment. Thus, changes in global DNA methylation influence morphological traits under temperature stress

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EVALUATION OF THE RESULTS OF MONITORING OF AMPHIBIANS IN LATVIA IN 2022–2024: HOTSPOTS, INTERACTIONS BETWEEN ENDANGERED AND INVASIVE SPECIES, POSSIBLE TRIGGERS, AND THRESHOLDS

Amphibians are highly sensitive to environmental change and therefore serve as important indicators of wetland and freshwater ecosystem condition. In Latvia, monitoring in 2022–2024 combined large-scale surveys of calling anurans with targeted monitoring of the great crested newt, allowing assessment of species distribution, regional hotspots, and the main pressures affecting threatened populations. The results show strong spatial variation in amphibian abundance across Latvia. Important hotspots were identified in south-eastern Latvia and other areas supporting protected species such as Bombina bombina and Hyla orientalis. Strong populations of Triturus cristatus were recorded in Veclaicene, Gauja National park, Milzkalne, and the south-eastern region. In contrast, lower densities of common species were observed in the south western regions of Latvia. Common amphibian species do not currently show a clear nationwide decline, whereas protected and range-restricted species remain more vulnerable. Bombina bombina showed signs of expansion,

likely linked to habitat restoration, species reintroduction, and the creation of protected sites. But Pelobates fuscus showed strong annual fluctuations and possible decline. The study suggests that interactions between endangered amphibians and invasive or emerging stressors may become critical near ecological thresholds. Likely drivers include hydrological instability, habitat degradation, invasive fish such as Perccottus glenii, and possible disease impacts, including Batrachochytrium dendrobatidis. In some sites, periodic drying of breeding waters may further reduce breeding success and detectability. Overall, the monitoring confirms that amphibians are effective indicators for identifying ecological hotspots and early warning signals of ecosystem change. Conservation in Latvia should prioritize hotspot territories, maintain shallow fish-free breeding waters, reduce invasive species pressure and strengthen long-term monitoring.

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OPTIMIZING IRON OXIDE NANOPARTICLE APPLICATION FOR IMPROVED ABIOTIC STRESS TOLERANCE IN RAPESEED

Keywords: *Brassica napus, Fe3O4 nanoparticles, abiotic stress, photosynthesis, oxidative stress, nanomaterials*
This study investigates the potential of iron oxide nanoparticles (Fe3O4) in enhancing the resilience of rapeseed (Brassica napus L.) under flooding and drought stress. Fe3O4 nanoparticles, synthesized via the co-precipitation method, were applied at concentrations of 50 and 100 mg/L. Physiological responses were evaluated by quantifying photosynthetic pigments and monitoring hydrogen peroxide (H2O2) levels using Co3O4 nanostructured electrodes. Results demonstrated that 50 mg/L Fe3O4 significantly mitigated flooding stress by increasing chlorophyll content, stimulating root development, and effectively scavenging reactive oxygen species (ROS). Under drought conditions, 100 mg/L Fe3O4 improved chlorophyll production, although higher concentrations showed signs of phytotoxicity. These findings suggest that while Fe3O4 nanoparticles are powerful tools for improving abiotic stress tolerance, dosage optimization is critical for their safe and effective application in agriculture.
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THE EFFECT OF ANTIMYCIN A AS AN INHIBITOR OF CYTOCHROME ELECTRON TRANSPORT CHAIN ON PLANT RESPIRATION AND ANTIOXIDANT STATUS

One of the most important environmental stress factors is heat stress, which has a significant impact on plant growth and metabolism. High temperatures, increasingly prevalent due to climate change, pose significant threats to crop productivity by altering plant metabolic processes such as respiration. Antimycin A is a potent inhibitor of cellular respiration which binds to the site of complex III (cytochrome complex) in the electron transport chain, blocking electron transfer. The aim of this study is to determine the effect of heat stress ant antimycin A on plant respiration and antioxidants level. The objects of this study were wheat seedlings. The respiration rate of winter wheat (Triticum aestivum L.) leaves was determined polarographically using a Clark-type oxygen electrode (Oxygraph System Plus, (Hansatech Inst., England) to quantify oxygen uptake rates under elevated temperature (42°C) and antimycin A exposure (1 mg/L). Plant stress was determined by fermentative antioxidants (SOD, CAT) using spectrophotometer (DeNovix). It was shown, that under heat stress antioxidants level decreased under temperature stress approximately by two times compared with control. Application of antimycin A, targeting the cytochrome pathway, reduced respiration compared to the control. However, in temperature stress conditions antimycin A does not decreased plant respiration so much compared with control. Thus, antimycin application decreased the negative effect.
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THE IMPACT OF AFRICAN SWINE FEVER ON THE WILD BOAR POPULATION IN LATVIA

Until 2014, the wild boar (Sus scrofa) was the most abundant and economically important large game species in Latvia, accounting for nearly 70% of all ungulates harvested annually. According to the State Forest Service data, the population peaked in 2013 to 74,107 individuals. African swine fever (ASF) was first detected and laboratory-confirmed in Latvia in June 2014 near the Belarusian border, and subsequently spread across most of the country within a few years. The spread of the disease demonstrated substantial coincidence with the wild boar population dynamics, resulting in a sharp decline to approximately 20,000 individuals during the 2018–2019 hunting season. In subsequent years, signs of population recovery were observed, and by the 2021–2022 hunting season the population had increased by approximately 30%, reaching around 26,000 individuals. However, starting from the hunting season 2024/2025, the population declined again while ASF disease intensified. The results indicate an association between dynamics of ASF epidemiology and wild boar population size, characterized by cyclic patterns both at the local and country wide scale. ASF persistence in wild boar is governed by the interaction between environmental virus reservoirs, particularly in infected carcasses, and key ecological traits of the wild boar, including high reproductive potential, social organization and spatial dynamics. That leads to population fluctuations and recurrent disease circulation hardly controllable by ordinary wildlife management policy. This work is supported by Daugavpils University Scientific project funding No 14-85/14-2022/8 (2022).

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GENETIC DIVERSITY AND POPULATION STRUCTURE OF DREISSENA POLYMORPHA (L.) ACROSS LATVIAN FRESHWATER ECOSYSTEMS

The zebra mussel Dreissena polymorpha (L.) is one of the most widespread and ecologically notorious invasive species in European freshwater systems. Its expansion alters native biota, disrupts food webs, degrades water quality, and facilitates the spread of parasites, while its ability to accumulate toxins such as mercury poses additional risks to aquatic ecosystems and human consumers. In Latvia, D. polymorpha was first recorded in the Gulf of Riga in the mid 1800s and has since become abundant and widely distributed across diverse waterbodies. To evaluate the current genetic status and invasion dynamics of D. polymorpha in Latvia, two complementary studies were conducted. The first assessed the genetic structure of the population in Lake Rāzna using six microsatellite loci. The second study examined populations from seven additional waterbodies representing different ecosystem types (Pļaviņu Reservoir, River Lielupe, Lakes Laucesas, Usmas, Sventes, Riču, and Drīdzis) using five microsatellite loci. Standard population genetic parameters revealed consistently high variability across all sites, and population structure analyses identified at least four genetically distinct clusters. These clusters likely reflect geographic isolation, environmental differences, and historical dispersal pathways. Together, these studies demonstrate that Latvian zebra mussel populations maintain high genetic diversity and exhibit clear population structuring. The absence of strong genetic bottlenecks suggests multiple introduction events or large founder populations, supporting the species' continued adaptability and invasive success in Latvian freshwater ecosystems.

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OPTIMIZATION OF FIXATION, SOLVENT, AND CLEARING STEPS IN A RAPID FLUORESCENT STAINING PROTOCOL FOR CONFOCAL MICROSCOPY

Optimization of fluorescent staining protocols is essential for obtaining reproducible, high-contrast images of morphologically complex biological specimens while reducing preparation time. In a series of experiments, a rapid staining procedure for CLSM was developed with emphasis on systematic optimization of fixation, dye preparation, incubation, and transparency steps. The protocol was designed to achieve uniform fluorescence distribution, preserve specimen morphology, and improve visualization of muscular and tegumental structures in parasitic helminths.

Different fixation methods were compared evaluating their effect on tissue permeability and dye accessibility. Ethanol-based fixation provided the best balance between structural preservation and diffusion efficiency, enabling shorter staining times and stable fluorescence signals. Further optimization involved the solvent used for dye preparation. Replacement of ethanol with chloroform for dissolving the luminescent dye EA53 significantly improved staining quality, especially in muscle tissue, where longitudinal, diagonal, and circular muscle layers became clearly distinguishable. Transparency procedures were also optimized using ethanol–xylene transitional clearing or lactic acid treatment to obtain optical stabilization without fluorescence loss.

The combined optimization of fixation, solvent composition, incubation time, and clearing strategy allowed preparation of microscopy-ready specimens within one hour after fixation. The results demonstrate that precise control of physicochemical factors governing dye–tissue interactions is essential for reliable fluorescent imaging and provides a practical framework for rapid staining of diverse biological specimens.

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ĶĪMIJA / CHEMISTRY

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AN INTEGRATED APPROACH TO REDUCING TAR LEVELS IN PRODUCER GAS FROM BIOMASS GASIFICATION

Producer gas from biomass gasification is a promising feedstock for second-generation biofuels and chemical production. However, its practical utilization is significantly limited by the presence of tar compounds, which cause equipment fouling and catalyst deactivation, particularly in downstream processes such as Fischer–Tropsch synthesis. This study proposes an integrated approach to the quantitative determination and reduction of tar contaminants in producer gas. The research focuses on the development and validation of a sensitive sampling and analytical methodology based on adsorption on solid sorbents (ACS) combined with gas chromatography–mass spectrometry (GC–MS). A prototype sampling device is designed and tested, and various sorbents are evaluated in terms of efficiency, selectivity, and reproducibility. Key sampling parameters, including flow rate, sampling time, and sorbent loading, are systematically optimized. Field sampling is conducted at an operating biomass gasification plant under different process conditions. The collected samples are analyzed using GC–MS to identify major tar fractions and quantify their concentrations. The obtained analytical data are correlated with gasification parameters to assess the influence of operating conditions on tar formation. The expected outcomes include a validated, practical sampling and analysis protocol suitable for industrial application, as well as improved understanding of tar composition and behavior in producer gas. Based on these results, recommendations are developed for optimizing gasification regimes and improving gas cleaning strategies. The study contributes to bridging the gap between analytical research and industrial needs, supporting the advancement of efficient and sustainable biomass gasification technologies.

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OPTIMIZATION OF A CATALYTIC PYROLYSIS APPROACH TO REDUCE TAR COMPOUNDS IN FUELS DERIVED FROM SOLID-WASTE PYROLYSIS

The growing volume of solid waste and increasing demand for alternative energy sources have intensified interest in pyrolysis technologies. However, the presence of tar compounds in pyrolysis-derived fuels significantly limits their practical application by increasing purification costs and causing operational issues such as equipment fouling. This study focuses on the optimization of catalytic pyrolysis to reduce tar content in liquid fuels obtained from solid waste. Building on previous experimental results, the research investigates the effectiveness of 2–4 selected catalysts, including cost-efficient and recyclable materials, in modifying reaction pathways toward lighter and more valuable fractions. The experimental setup is adapted to integrate a catalytic layer, ensuring stable operating conditions and reproducible sampling. A series of controlled experiments is conducted by varying key parameters such as temperature, residence time, and catalyst configuration. The resulting liquid, gaseous, and solid products are analyzed using chromatographic and spectroscopic methods to determine composition, tar fraction, and by-product formation. Comparative evaluation of catalysts is performed based on tar reduction efficiency, product distribution, and process stability. The expected outcomes include identification of optimal catalytic systems and operating conditions that significantly decrease tar content while improving fuel quality. The study also provides practical recommendations for industrial implementation, addressing cost, scalability, and operational risks. Overall, the research contributes to the development of more efficient and environmentally sustainable waste-to-energy technologies.

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EVALUATION OF THE PRODUCTION EFFICIENCY AND UTILIZATION POTENTIAL OF BIOGAS OBTAINED FROM ANIMAL BY-PRODUCTS

The conversion of animal by-products into biogas is a promising approach for improving waste management, diversifying renewable energy sources, and promoting sustainable resource use. Animal-derived by-products generated in agriculture and food processing are often underutilized, despite their significant potential as substrates for anaerobic digestion. Their application in biogas production can simultaneously reduce the accumulation of biological waste and provide an energy-rich product, contributing to circular economy principles and decreasing dependence on fossil fuels. This research focuses on evaluating the production efficiency and utilization potential of biogas obtained from animal by-products under laboratory conditions. Experimental biogas production models are developed using the BIO4 EDF-5.4/2 laboratory bioreactor available at Daugavpils University. Different technological approaches and methodological conditions for anaerobic digestion are tested in order to identify the most effective solution. The produced biogas samples are analyzed using chromatographic instrumentation, including gas and liquid chromatography, to determine key performance parameters such as biogas yield, composition, energy efficiency, and overall energy output. The expected results of the study include a comparative evaluation of biogas production efficiency from animal by-products, identification of the main factors affecting gas quality and energy value, and an assessment of the suitability of this feedstock for sustainable bioenergy generation. The findings are intended to provide practically useful information for improving technological solutions in biogas production and to support further research on renewable energy and efficient utilization of biological residues.

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DETERMINATION OF PHARMACEUTICAL AND PERSONAL CARE PRODUCT RESIDUES (PPCPS) IN MUNICIPAL WASTEWATER OF DAUGAVPILS USING THE GC–MS METHOD

Pharmaceutical and personal care products (PPCPs) are increasingly regarded as important emerging micropollutants in aquatic environments due to their continuous input from domestic and medical use and their incomplete removal in conventional wastewater treatment systems. Their presence in municipal wastewater can therefore serve as an indicator of anthropogenic pressure on urban water quality. In Daugavpils, data on PPCPs in wastewater are still limited, highlighting the need for targeted analytical investigation. This research focuses on the identification and quantitative determination of PPCP residues in municipal wastewater of Daugavpils using gas chromatography–mass spectrometry (GC–MS). The aims are to develop and validate an analytical method suitable for environmental samples, determine the occurrence and concentration levels of selected PPCPs, and evaluate their distribution as anthropogenic indicators in the urban wastewater system. Wastewater samples are collected at municipal treatment facilities following standardized procedures and analyzed by GC–MS, with subsequent statistical processing and interpretation of the obtained results. The study is expected to provide a validated GC–MS method, new data on PPCP occurrence in Daugavpils wastewater, and a basis for improving the characterization and control of PPCP contamination in wastewater treatment processes.

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DEVELOPMENT OF SUSTAINABLE BIOGAS PRODUCTION TECHNOLOGIES BASED ON THE INTEGRATION OF AQUACULTURE AND AGRICULTURAL BY-PRODUCTS

Biogas is one of the most promising renewable energy sources that simultaneously enables the reduction of organic waste volumes and promotes the implementation of circular economy principles. This approach is particularly relevant in the aquaculture and agricultural sectors, where significant amounts of biodegradable by-products with high energy potential are generated. However, in Latvia the integrated utilization of waste streams from these two sectors for biogas production remains insufficiently studied. The aim of this research is to develop and evaluate sustainable biogas production technologies based on the integration of aquaculture and agricultural by-products in the anaerobic digestion process. The study focuses on determining optimal substrate combinations and process parameters that improve biogas yield, energy quality, and fermentation stability. Experimental research will be conducted using a laboratory-scale biogas reactor. Various co-digestion approaches will be tested by combining aquaculture residues (including fish processing by-products and metabolic waste) with agricultural substrates such as manure, straw, and plant biomass. The physicochemical properties of the substrates will be analyzed, and different substrate ratios will be evaluated to determine optimal C/N balance and process efficiency. The composition of the produced biogas will be analyzed using gas chromatography, allowing assessment of methane content and overall energy potential. The expected results include the identification of optimal substrate ratios and operational conditions for integrated biogas production systems. The research will also provide practical recommendations for aquaculture and agricultural enterprises on the sustainable utilization of organic by-products for renewable energy generation. The proposed approach contributes to improving resource efficiency, reducing environmental impact, and advancing circular bioeconomy solutions in Latvia and similar regions.

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SEASONAL VARIATIONS IN THE CONCENTRATIONS OF NITROGEN AND PHOSPHORUS COMPOUNDS IN WATER BODIES OF DAUGAVPILS CITY

Seasonal dynamics of nitrogen and phosphorus compounds in urban water bodies is an important indicator of aquatic ecosystem status and anthropogenic impact. This study investigates seasonal variations in the concentrations of nitrate nitrogen ($N–NO_3$), total nitrogen (Ntot), orthophosphate phosphorus ($P–PO_4$), and total phosphorus (Ptot) in three lakes located within the city of Daugavpils (Latvia): Stropi Lake, Gubišče Lake, and Šuņezers. Water samples were collected monthly from July 2025 to April 2026 at several sampling sites in each lake. In total, 150 water samples were analyzed. The concentrations of nitrogen and phosphorus compounds were determined using flow injection analysis with a FIAlab-2500 system in accordance with international standards for water quality analysis. The results revealed pronounced seasonal variability of nutrient concentrations in all studied water bodies. Nitrate concentrations generally increased during the autumn–winter period and decreased in summer, reflecting seasonal hydrological processes and biological uptake. In contrast, elevated values of total nitrogen and total phosphorus were often observed during the summer months, which may be associated with increased biological activity, organic matter decomposition, and anthropogenic inputs. Among the studied lakes, the highest concentrations of nutrients were detected in Lake Gubišče, likely due to dense surrounding urban development and higher anthropogenic pressure. The lowest concentrations were found in Stropi Lake, which has the largest water volume and therefore higher dilution capacity. The obtained results confirm the presence of seasonal variability of nitrogen and phosphorus compounds and provide useful information for environmental monitoring and management of urban aquatic ecosystems in Daugavpils.

DOKTORANTU SEKCIJA "VALODU UN LITERATŪRAS STUDIJAS" / DOCTORAL STUDENT SECTION "LANGUAGES AND LITERATURE STUDIES"

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Хронотоп дороги в творчестве Анны Присмановой

В докладе рассматривается хронотоп дороги в творчестве Анны Присмановой как значимый элемент организации ее художественного мира. Цель исследования — определить функции образов дороги, пути, вокзала, порта и гавани в пространственно-временной структуре текстов. Методологическую основу составляют теория хронотопа М. М. Бахтина и современные подходы к анализу пространственно-временной поэтики лирического текста. В результате анализа устанавливается, что хронотоп дороги в творчестве Присмановой выполняет не только мотивную, но и структурообразующую функцию: он связывает категории пространства, времени и памяти, а также участвует в формировании образа лирического субъекта. Делается вывод о том, что дорога в поэтике Присмановой выступает одной из ключевых моделей художественного освоения эмигрантского и экзистенциального опыта.

Regīna Furmanova

IZMESTA, BET NEZAUDĒTA: ŠEINAS GRAMAS (1926-1941) DIENASGRĀMATA UN TĀS GASTRONOMISKĀ KODA PROBLEMĀTIKA

Referāts ir veltīts Holokaustā bojāgājušās Preiļu ebreju meitenes Šeinas Gramas (1926-1941) dienasgrāmatas lingvistisko un ekstralingvistisko īpatnību analīzei. Var identificēt vairākas problēmas, kas saistītas ar dažādiem teksta pastāvēšanas līmeņiem. Pirmkārt, tā ir teksta saglabāšanas vēstures problēma – tā transformācijas un oriģināla zudums vēsturisko notikumu rezultātā, kā arī tulkojuma nozīme šajā procesā. No tā izriet tekstoloģiska problēma – dažādie teksta publicēšanas mēģinājumi rada grūtības atribūcijā, interpretācijā un autentiskuma pakāpes noteikšanā, bet oriģināla zudums rada potenciālu neuzticēšanos avotam un apgrūtina tā izmantošanu. Visbeidzot, problēma, kas tieši saistīta ar pētījuma tēmu, ir gastronomiskā diskursa specifika. Tā kā dienasgrāmata ir rakstīta tieši Holokausta laikā, tās teksts lielā mērā ir koncentrēts uz izdzīvošanas problēmu, kā rezultātā citi dzīves aspekti loģiski atkāpjas otrajā plānā. Darbā tiek analizētas ēdiena tēmas narativizācijas īpatnības katastrofas apstākļos, jo īpaši salīdzinājumā ar līdzīgiem tekstiem, kas radīti pirms traģisko notikumu sākuma, kas ļauj izsekot atšķirībām ikdienas uztverē un aprakstā.

Haralds Broks

KATOĻU BAZNĪCA HOLOKAUSTA NARATĪVĀ: VIESTURA KAIRIŠA INTERPRETĀCIJA

Viestura Kairiša interpretācija piedāvā hermeneitiski atvērtu un ētiski problematizējošu skatījumu uz Holokausta pieredzi, kurā Katoļu baznīca tiek pozicionēta nevis kā viennozīmīgs vēstures subjekts, bet kā dinamiska ētiskas izvēles un atbildības telpa. Režisora interpretācija nav vērsta pret ticību kā tādu, bet gan iemieso kritisku revīziju par morālās autoritātes funkcionēšanu krīzes situācijās. Filma "Pilsēta pie upes" problematizē reliģiskās institūcijas spēju saglabāt normatīvo konsekvenci laikā, kad politiskā vara un ideoloģiskie režīmi radikāli transformē sociālo realitāti. Katoļu baznīca filmā netiek attēlota kā monolīta

struktūra, bet gan kā iekšēji diferencēta un pretrunīga institūcija, kurā līdzās konformismam, institucionālai pasivitātei un politiskam pragmatismam pastāv arī individuālas pretestības un morālās drosmes izpausmes. Šāda reprezentācija ļauj izgaismot ne tikai institucionālās atbildības robežas, bet arī indivīda ētisko rīcību kā nozīmīgu vēsturiskās pieredzes dimensiju. Viesturs Kairišs paplašina tradicionālo Holokausta naratīvu, pārvietojot fokusu no dokumentālas faktoloģijas uz eksistenciālu un ētisku izvēļu dramatizāciju. Režisora kino valoda konstruē daudzslāņainu atmiņas telpu, kurā reliģija funkcionē kā spriedzes punkts starp garīgajiem ideāliem un vēsturisko realitāti. Tādējādi "Pilsēta pie upes" kļūst par kritisku refleksiju par institūciju un indivīda attiecībām vardarbīgu režīmu kontekstā, vienlaikus izaicinot skatītāju pārskatīt priekšstatus par vainu, līdzatbildību un klusēšanas nozīmi kolektīvajā atmiņā.

Jeļena Tomaševiča

POSTMODERNISMA DISKURSA IEZĪMES ANDREJA ĻEVKINA "PĀREJAS LAIKMETA" PROZĀ

Atslēgvārdi: *Andrejs Ļevkins, postmodernisms, pārejas laikmets, perestroika, Rodnik*
Referātā analizēta Andreja Ļevkina proza, īpašu uzmanību pievēršot tekstiem, kas tapuši sociāli un kultūrvēsturiski nozīmīgajā "pārejas laikmetā" (20. gadsimta 80. gadu otrā puse). Pētījuma mērķis ir identificēt postmodernismam raksturīgās iezīmes autora tekstos, analizējot to ietekmi uz vēstījuma struktūru un teksta kopējo estētiku. Uzmanība pievērsta arī A. Ļevkina darbībai Rīgas literārajā vidē, īpaši saistībā ar žurnālu Rodņik, kā arī iezīmētas paralēles ar vēlākajiem literārajiem procesiem, tostarp ar tekstgrupas Orbīta radošo darbību. Līdz ar to A. Ļevkina proza aplūkojama kā nozīmīga "pārejas laikmeta" kultūras liecība un vienlaikus kā postmodernisma diskursa izpausme Latvijas literārajā kontekstā.

EKONOMIKA / ECONOMICS

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CONSTRUCTING A DYNAMIC ESG ASSESSMENT FRAMEWORK FOR EUROPEAN REAL ESTATE AND URBAN GOVERNANCE BASED ON DIGITAL TWINS

Background: In the macro-context of Europe's comprehensive push for the "twin transition" (digital and green) within urban governance, traditional Environmental, Social, and Governance (ESG) assessments often rely on static disclosures. This approach struggles to meet the real-time management demands of modern cities, which operate as highly complex systems. Real estate and urban infrastructure, being central to carbon reduction and sustainable development, urgently require a shift from passive compliance to an active, dynamic governance model powered by digital twins.
Objective: This study aims to construct a dynamic ESG assessment framework utilising Urban Digital Twin (UDT) technology. The primary objective is to resolve the long-standing "efficiency-legitimacy trade-off" faced by Europe, particularly within the Baltic States, in green entrepreneurship and urban governance, thereby facilitating the deep integration of Sustainable Development Goal (SDG) management.
Methodology: Relying on the deep integration of advanced digital modelling, this research proposes a multidimensional governance system underpinned by a "Compliance-by-Design" approach for urban digital twins. This framework accurately maps the operational dynamics of the physical city within a virtual space, systematically extracting key indicators such as circular economy metrics, energy consumption, and social well-being. Furthermore, through advanced algorithms, it facilitates the multi-scale quantification and real-time simulation of the comprehensive climate resilience and social value of property assets.
Results & Conclusion: The findings indicate that an increase in digital twin readiness substantially catalyses regional green innovation and acts as a catalyst for green entrepreneurship. This dynamic assessment framework not only elevates ESG from a singular disclosure tool to a strategic asset for evidence-based proactive governance, but also successfully shifts the paradigm from mere compliance costs to genuine value creation. By integrating forward-looking simulations and quantifying the Social Cost of Carbon (SCC), it establishes a robust decision-support sandbox that empowers stakeholders to scientifically balance financial returns with deep decarbonisation and human well-being.

Elena Fedorova, Edmunds Čižo

AI ADOPTION DYNAMICS AMONG SMES IN THE EUROPEAN UNION: EVIDENCE OF CONVERGENCE AND EMERGING DIGITAL DIVIDES

Keywords: *artificial intelligence, SMEs, AI adoption, convergence, digital transformation, European Union*
The rapid diffusion of artificial intelligence (AI) technologies is transforming the digital landscape of small and medium-sized enterprises (SMEs) across the European Union. While AI adoption has accelerated in recent years, its distribution across countries and firm size categories remains uneven. This study investigates whether the growing use of AI among EU SMEs leads to convergence in adoption levels or reinforces structural disparities between national ecosystems. The empirical analysis is based on harmonised Eurostat data for 2021–2025 covering all EU Member States and two SME size classes: small enterprises (10–49 employees) and medium-sized enterprises (50–249 employees). To evaluate the dynamics of technological diffusion, the study applies a convergence-based analytical framework combining descriptive statistics with σ-convergence and β-convergence analysis, complemented by an exploratory club convergence approach. The results indicate rapid growth in AI adoption across the EU SME sector. The share of small enterprises using at least one AI technology increased from 6.1% in 2021 to 17.0% in 2025, while among medium-sized enterprises it rose from 12.6% to 30.4%. At the same time, relative dispersion across countries declined, indicating partial σ-convergence. β-convergence results further confirm a catch-up effect, as countries with lower initial adoption levels demonstrate faster growth rates. However, club convergence analysis reveals that

convergence is primarily concentrated among already advanced digital economies, while countries with initially low adoption levels display increasing internal divergence. These findings suggest that accelerated AI diffusion alone does not guarantee balanced digital transformation across the EU. Instead, the adoption of AI technologies among SMEs follows a multi-speed pattern, where leading digital ecosystems converge while lagging countries remain heterogeneous. The results highlight the importance of targeted policies aimed at strengthening SME capabilities, including digital skills development, data infrastructure, and access to AI implementation support in less advanced innovation environments.

The study has been developed and funded within the Daugavpils University's (Latvia) research project No 14-95/2026/17 "AI-Based Enterprise Transformation and Its Impact on Managerial Decision Quality".

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PUBLIC EXPENDITURES ON RURAL INFRASTRUCTURE AND THEIR IMPACT ON LOCAL ECONOMIC DEVELOPMENT

Keywords: *public spending, rural infrastructure, economic development, public policy, rural areas*

Rural infrastructure is one of the main factors influencing the economic development of rural areas. Public investments in roads, water supply, irrigation and electricity can improve agricultural productivity, reduce territorial inequalities and increase the well-being of rural communities. This study analyzes public spending on rural infrastructure, identifies challenges in their use and proposes recommendations for increasing the effectiveness of public funds. The results show that the sustainable and planned distribution of public investments contributes significantly to local economic development.

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TOWARDS A DEFINITION OF TRANSPORT POVERTY IN LATVIA: EVIDENCE FROM THE LITERATURE AND STAKEHOLDER PERSPECTIVES

The European Commission's Action Plan for the European Pillar of Social Rights recognises transport as a basic service and its critical role in promoting social inclusion and ensuring equal opportunities. Transport poverty is increasingly recognised as an important dimension of social exclusion, affecting individuals' ability to access employment, education, healthcare and basic services. Although this concept has attracted attention in international academic literature and European policy discussions, as well as in Latvia, it remains insufficiently defined and operationalised in the Latvian context. At the same time, both local governments and national administrations in Latvia are increasingly seeking a clearer conceptual definition of transport poverty to identify mobility inequalities better and support evidence-based transport and social policy planning. This study provides a literature review on transport poverty, exploring existing definitions, conceptual frameworks and measurement approaches used in international research. The review highlights the key dimensions often associated with transport poverty, including accessibility, affordability, availability and adequacy. Recent research in Latvia indicates that accessibility and affordability are key dimensions of transport poverty at the national level, reflecting both spatial inequalities in access to services and the financial burden of transport expenditure on households. In addition to the literature review, the study includes qualitative insights from stakeholder perspectives presented at last year's Urban Mobility Days events in Vilnius, Lithuania, where policymakers, researchers, and mobility experts exchange experiences on the challenges of sustainable urban mobility. Combining evidence from the academic literature and stakeholder perspectives, the study aims to provide a conceptual definition of transport poverty relevant to the Latvian context.

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RETREAT TOURISM AS A FORM OF ALTERNATIVE TOURISM: A CONCEPTUAL ANALYSIS

Alternative tourism has gained increasing attention in recent years due to the growing demand for sustainable, personalized, and transformative travel experiences. Among its emerging forms, retreat tourism stands out as a distinctive type, focused on personal transformation, self-reflection, and holistic well-being. Despite its popularity, conceptual boundaries between retreat tourism, wellness tourism, and other forms of alternative tourism remain unclear. This paper provides a conceptual analysis of retreat tourism, examining its unique characteristics and differences from wellness tourism. While wellness tourism primarily addresses physical and emotional recovery, retreat tourism emphasizes deeper personal growth, experiential learning, and transformative practices. The study is based on a systematic review of academic literature and a comparative analysis of existing definitions and classifications of alternative tourism. Findings clarify the position of retreat tourism within the broader framework of alternative tourism and highlight its societal relevance, including the potential for specialized retreat centers. These insights contribute to both theoretical understanding and practical development of innovative tourism experiences. Keywords: alternative tourism, retreat tourism, wellness tourism, sustainable development, digital detox.

Jing Zeng

THE ECONOMIC TRANSMISSION MECHANISM OF DIGITAL TOURISM ON HIGH-QUALITY TOURISM DEVELOPMENT: EVIDENCE FROM ZHANGJIAJIE, CHINA

The rapid advancement of digital technologies, including big data, artificial intelligence, and platform systems, has profoundly reshaped the tourism industry. As an information-intensive sector, tourism is highly responsive to digital transformation. However, the economic mechanisms linking digital tourism to high-quality development remain insufficiently clarified. This study develops and empirically tests a mechanism-based framework using Zhangjiajie as a representative case. High-quality tourism development is defined as a multidimensional shift from scale expansion toward efficiency gains, structural upgrading, innovation enhancement, and sustainability. Digital tourism refers to the systematic integration of digital infrastructure, platforms, and data-driven governance into tourism production and consumption processes. Four mechanisms are identified. The information efficiency mechanism reduces information asymmetry and transaction costs, improving market performance. The innovation and value chain upgrading mechanism fosters new products and business models, extending value-added activities and enhancing productivity. The industrial convergence mechanism promotes cross-sector integration, strengthening destination resilience and diversified income structures. The data-driven governance mechanism improves visitor management, marketing precision, and environmental monitoring, enhancing governance efficiency and sustainability outcomes. Using a mixed-methods approach that combines quantitative statistical analysis with qualitative policy review, the study measures digital tourism through indicators of infrastructure, platform penetration, and smart services, and operationalizes high-quality development through productivity and structural metrics. Results show that digital tourism significantly promotes productivity growth, structural upgrading, and governance effectiveness, with information efficiency and innovation playing dominant roles.

IZGLĪTĪBAS ZINĀTNES / EDUCATIONAL SCIENCES

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IMPLEMENTATION OF THE INDUCTION YEAR SUPPORT SYSTEM IN LATVIAN EDUCATIONAL INSTITUTIONS: NOVICE TEACHER EXPERIENCE AND THE ROLE OF MENTORS AND SCHOOL LEADERSHIP

Keywords: *induction year; novice teachers; mentoring; school leadership; support system; Latvia*
Latvia has established a regulatory framework for the implementation of the induction year; however, in practice, the organisation of support, the intensity of mentors' work, and the involvement of school leadership vary across educational institutions. The aim of the study is to evaluate the implementation of the induction year support system in Latvian educational institutions, with a particular focus on novice teachers' experience, the role of mentors, and the involvement of school leadership. The study included an analysis of scientific literature and normative documents, as well as a structured online survey. At the time of abstract preparation, approximately 20 responses had been received from induction-year participants representing different educational institutions, accounting for about 7.4% of the total number of induction-year participants in Latvia. The survey data provided information on the availability of support, mentor involvement, cooperation with school leadership, and the perceived usefulness of support. The obtained data were analysed using descriptive statistics. The results indicate that the implementation of induction-year support is not uniform across educational institutions. Respondents reported differences in mentor availability, the regularity of support, and cooperation with school leadership. At the same time, regular mentor support, a clear distribution of roles, and access to professional consultation were identified as key conditions for successful professional adaptation. The findings outline directions for recommendations aimed at improving the support functions of mentors, school leadership, and induction process organisers.

Ričards Istomins, Irēna Kokina

DIGITAL MODELING FOR THE DEVELOPMENT OF SPATIAL THINKING IN STUDENTS AGED 10–14

This study examines the impact of a structured digital 3D modeling training program on the development of spatial thinking and spatial visualization skills among students aged 10–14. The program was implemented in an extracurricular educational setting using Blender software. A quasi-experimental design with control and experimental groups was applied, including pre-test and post-test assessments. Spatial abilities were measured using standardized instruments, including the Vandenberg Mental Rotation Test (MRT), Paper Folding Test (PFT) and Raven's Progressive Matrices (RPM) test. The results indicate that students who participated in the training program demonstrated improvement in spatial visualization and mental rotation skills compared to the control group. The findings highlight the potential of digital 3D modeling as an effective pedagogical tool for fostering spatial thinking in early adolescence.

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DISCUSSION AS A TEACHING METHOD FOR ENHANCING PROFESSIONAL SECONDARY SCHOOL STUDENTS' REASONING SKILLS IN THE TOPIC "SOCIAL RELATIONS AND IDENTITY" WITHIN THE STUDY SUBJECT "SOCIAL SCIENCES AND HISTORY"

The importance of discussion as a teaching method is particularly significant, because it promotes the depth of thoughts, enriches the language and promotes the skills to participate in constructive dialogue. The purpose of the study is to analyze how the method of discussion promotes the enhancing professional secondary school students' reasoning skills taking into the consideration the challenges what the digital devices have created. Discussion as a teaching method is an effective way for enhancing professional secondary school students' reasoning skills. Observations during the study process show that, in the course of aquiring the prescribed learning outcomes in the topic "Social Relations and Identity", students initially avoid active involvement, however, throught the organization of regular and targeted discussions, their courage, openness and ability to justify their opinions gradually increase. The application of APES (Assertion, Explanation, Expert/Evidence, Significance) argumentation model essentially improves students' ability to structure one's opinion, whereas the analysis of written activities like an argumentative grid (for and against), "silent discussions" and argumentative esseys, demonstrates the progress of students' achievements in the usage of logics and evidence. Creative works especially argumentative esseys and reflections confirmed students' abilities to evaluate the results of discussion and reflect on the position of their own initial opinion. Survey data confirm that students are conscious about the growth level of their own reasoning skills. Examples from the teacher's personal experience and the use of elements of humor in the learning process had essential importance this promoted the trust, reduced the tension and created safe and open atmosphere for discussions. The results of approbation in the student group (n=77) confirmed that, in the long term, the discussion method promotes not only the development of argumentation skills.

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DEVELOPMENT OF DIGITAL LEARNING CONTENT FOR THE "NON-RESTRICTIVE APPOSITION" IN GRADE 8 LATVIAN LANGUAGE CLASSES WITHIN A STUDENT-CENTERED APPROACH

The use of digital tools is an integral part of the learning process today, especially within the context of a student-centered approach. Research by the Latvian Language Agency indicates that traditional teaching methods often fail to generate sufficient interest among students. To encourage students to become more actively involved in the learning process, it is possible to use digital content more widely. The research aims to analyze students' opinions on the role of digital content in mastering the topic "Non-restrictive apposition". The study was conducted in an 8th grade class at a rural school in Latvia, involving nine students. During the research, digital content was developed and piloted for 12 Latvian language lessons to teach the topic "Non-restrictive apposition". The digital tasks were designed to support the learning process during the initiation and acquisition phases, as well as to obtain feedback from students. The survey results reveal the students' opinion that the digital content has contributed to their more active involvement in the learning process and has helped them to better master the topic "Non-restrictive apposition". However, students indicate that they

would like more interactive tasks and tasks that promote collaborative skills. Students also appreciate the fact that, using digital content, feedback is received faster, as well as the opportunity to complete the task at their own pace. Most of the students emphasized that they would like to continue using digital content in other Latvian language topics.

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IMPACT OF "ENGLISH FUN DUBBING" APP ON JUNIOR HIGH STUDENTS' ENGLISH MOTIVATION

Against the backdrop of China's digital transformation in education and the "double reduction" policy advocating for reducing burden and improving quality, junior high school English teaching faces the practical challenge of effectively utilizing after-school time and stimulating students' intrinsic motivation for English learning, especially oral English learning. Based on self-determination theory, this study explores the impact of after-school dubbing assignments using the "Fun Dubbing" app on junior high school students' English learning motivation through a quasi-experimental research method. The experiment selected 80 students from two parallel eighth-grade classes in a city. The experimental class was assigned 12 weeks of after-school dubbing assignments based on the "Fun Dubbing" app (including imitation, follow-up reading, and independent creation), while the control class was assigned conventional listening, imitation, and follow-up reading assignments. After 12 weeks of intervention, a comparative analysis was conducted using an English learning motivation scale (covering three dimensions: autonomy, competence, and belonging) and oral English tests. The results showed that students in the experimental class significantly outperformed the control class in all dimensions of learning motivation, with a 35.6% increase in autonomy and a 28.3% increase in competence. Simultaneously, students in the experimental class also showed significant improvement in oral fluency and accuracy, with an 11.8% increase in oral scores. The research indicates that the "Fun Dubbing" app's after-school dubbing assignments, through their engaging, repeatable, and immediate feedback mechanisms, effectively meet students' needs for autonomy, competence, and belonging, significantly enhancing their English learning motivation and providing an effective pathway for digital tools to empower after-school oral English teaching.

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NATURE-BASED LEARNING IN EARLY CHILDHOOD EDUCATION: TEACHERS' VALUES AND PRACTICES

Keywords: *early childhood education; nature-based learning; teachers' values; child development*
Nature-based learning is increasingly recognised as an important approach in early childhood education, supporting children's holistic development. Teachers' personal values of nature and their educational practices are closely interconnected and may shape children's early experiences with nature, influencing value formation and personal meaning-making. However, empirical evidence on how teachers' nature-related values translate into practice across different contexts remains limited. This study aimed to assess nature-based educational practices in early childhood education and examine their associations with teachers' values and perceived developmental benefits for children. A cross-sectional online survey was conducted among teachers implementing early childhood education curricula across three Baltic countries. The survey included the Nature scales from the Teachers' Value Questionnaire and the Early Value Education Scales, the Nature-Relatedness Scale, the Intentional Nature Exposure Scale, and additional outcome measures. Teachers reported varying levels of engagement in nature-based practices, including outdoor learning, exploration, and sensory activities. Teachers' personal value of nature, nature exposure, and nature relatedness were significantly associated with the diversity and frequency of nature-based educational practices. Higher scores on these variables were also linked to stronger beliefs in the developmental benefits of nature for children,

particularly in socio-emotional development, engagement, and environmental awareness. Findings highlight the central role of teachers' values and experiences in shaping nature-based learning opportunities. Strengthening teachers' connection with nature may enhance educational practices and support children's development, engagement, and the formation of meaningful relationships with the natural environment.

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PROMOTING THE ACADEMIC ACHIEVEMENTS OF GIFTED CHILDREN

The paper explores the psychological and pedagogical literature on the phenomenon of giftedness, explores the types of giftedness and the characteristics of giftedness in adolescents, the interaction of adults with gifted people in the learning process, and develops a set of methodologies for differentiated work and an individual approach to ensure the discovery, development, support, realization of potential abilities and social protection of talents. The study examines the giftedness models of several scientists, which are diverse and different in components and content. The study examines the gifted research methodology program, which focuses on the relationship between giftedness and abilities, factors of personality perception, mind, types and personality styles that determine the individuality of the gifted.

Dariia Shutochkina, Anika Miltuze

ASSESSMENT TOOLS FOR MEASURING STUDENT ENGAGEMENT IN GRADES 4–6 ACROSS SCHOOL SUBJECTS USING INTERACTIVE DIGITAL LEARNING PLATFORMS: A SCOPING REVIEW

In recent years, student engagement has become a relevant topic, as it directly affects the motivation and academic achievement of primary school students. Student engagement is difficult to measure accurately, as it is not directly observable and involves behavioral, emotional, and cognitive aspects in various subject contexts. The aim of this scoping review is to systematically collect and evaluate the available assessment tools that allow the evaluation of engagement among primary school students, particularly 4th–6th graders, in the digital learning environment using interactive learning materials across various school subjects. The review is based on the five-stage framework developed by Arksey & O'Malley (2005). Three databases were used for the literature search: Scopus, Web of Science, and ScienceDirect. The search employed keywords including student engagement assessment, academic performance, digital learning platforms, and 4th–6th grade students to ensure a targeted and relevant selection of studies. Inclusion criteria comprised peer-reviewed publications in English, published between 2015 and 2026. Initially, 218 articles were identified, and full texts of 26 articles were evaluated. The majority of the initially selected articles were not included, as they focused on teachers, educational policy or adult students rather than primary school students. Other studies examined motivation or academic performance without conducting a direct empirical assessment of engagement on digital learning platforms with interactive content. As a result, only nine articles out of 218 met the inclusion criteria. The analysis shows that literature uses various tools to assess student engagement, often combining approaches for multidimensional evaluation. Key challenges include lack of a unified definition, limited adaptation of instruments for primary students, and few studies on interactive learning in grades 4–6, providing a foundation for future research.

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PRIVATE TUTOR IN LATVIJA IN THE CONTEXT OF EDUCATIONAL POLICY AND PEDAGOGICAL PRACTICE

Keywords: *educational policy, quality of education, individual support for students, compulsary education, non-compulsary education, private tutor, shadow education*
In Latvia, the regulation of private tutoring is general and it is the reason that limits the ability to comprehensively assess the quality of this practice and its impact on the education system. Additionally, the concept of "shadow education," widely used in the international context, is not defined in Latvian educational policy and regulatory documents. The aim of the study is to analyze the role of the private tutor in Latvia within the context of educational policy and pedagogical practice. The study is based on the analysis of theoretical literature, and education policy documents, examining the private tutor as a provider of non-compulsary education and their interaction with the compulsary education system. Conclusion of the study – The role of the private tutor in the context of the Latvian education system can be characterized as a significant complement to formal education, providing individual support to students and contributing to the improvement of learning outcomes.

Grigorijs Suhovilo, Eridiana Oļehnoviča, Mārīte Kravale-Pauliņa

DIGITAL SIMULATIONS FOR IMPROVING THE MODELING SKILLS OF VOCATIONAL HIGH SCHOOL STUDENTS IN THE SUBJECT "PHYSICS I" ON THE TOPIC "UNIFORMLY ACCELERATED MOTION"

Keywords: *digital simulations, modeling skills, vocational high school, uniformly accelerated motion, virtual experiments, research activity*
The use of digital learning tools has become common practice, determining the need for a new approach in planning and implementing curriculum content. Consequently, it is important to explore and practically test how the use of digital simulations promotes the development of modeling skills for vocational high school students while learning uniformly accelerated motion. During the study, literature on the nature of modeling and research skills was analyzed. In the topic "Uniformly Accelerated Motion," modeling is critically important because learners must learn to recognize situations where standard models are no longer applicable. Teaching materials using virtual laboratories and simulations were developed and piloted. These tools allow for the modeling of processes that are difficult to implement in person, enabling the changing of independent variables and precise measurement of dependent variables, thus providing a safe and accessible learning environment. Digital simulations effectively replace real equipment, allowing students to focus on the essence of the research and data analysis rather than technical measurement obstacles. For the successful use of simulations, students require purposeful support, especially in the initial phase of the research, as well as clear instructions. The study plans to develop methodological recommendations for teachers on the meaningful integration of digital simulations into the learning process, promoting the improvement of students modeling skills and digital literacy.

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LATVIAN STAGE FOLK DANCE IN INTEREST EDUCATION IN PRESCHOOL - SITUATION CHARACTERISTICS

Keywords: *Latvian stage folk dance, interest education, preschool, cultural literacy, pedagogical process*
Latvian staged folk dance is an essential part of Latvia's intangible cultural heritage and one of the central pillars of the Song and Dance Celebration tradition. The sustainability of this tradition directly depends on the involvement of the younger generation. An individual's interest in dance begins in early childhood, where the first emotional and cultural experiences are formed. Using the method of literature analysis, the article describes the development of Latvian staged folk dance and the challenges it faces within preschool non-formal education. In the empirical part, using a survey method, the perspectives of 10 preschool dance teachers from different regions of Latvia are analysed regarding the accessibility of staged folk dance, the suitability of available repertoire, and the possibilities for integrating cultural context into preschool non-formal education. The collected data are analysed qualitatively, identifying key challenges.
It is concluded that the availability of non-formal dance education is unevenly distributed across regions—large cities have professional teachers and a broad network of dance groups, while small municipalities offer fragmented opportunities or depend on the availability of a particular teacher. This situation is exacerbated by demographic decline and a shortage of educators, which limit preschool children's opportunities to participate in dance activities. State support is not sufficiently targeted towards equalising access to non-formal education and attracting educators to the regions. Existing cultural policy instruments mainly sustain the festival system and its repertoire, but do not provide mechanisms that would strengthen access to dance education, including at the preschool level. A significant issue hindering children's long-term motivation to engage in staged folk dance is the insufficient development of background knowledge and understanding of cultural context in preschool non-formal education—elements necessary for children to dance with comprehension rather than only technical skill.

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IMPERATIVES IN ADVERTISING DISCOURSE: A CROSS-LINGUISTIC STUDY OF ENGLISH AND ALBANIAN

Keywords: *imperative sentences, advertisements, discourse, persuasive, language*
This study explores the use of imperative sentences as a central linguistic strategy in advertising discourse, adopting a comparative perspective between English and Albanian. Advertising language is inherently persuasive, aiming not only to inform but also to influence consumer attitudes and behaviour. Within this framework, imperative constructions play a key role in attracting attention, stimulating desire, and prompting action.
The research is based on the analysis of a corpus of 30 advertisements collected from television, websites, and YouTube, examining their structural patterns, semantic nuances, and communicative purposes. Structurally, imperative sentences are typically short, simple, and frequently omit the subject, creating a sense of direct engagement while addressing a broad audience. They often appear in parallel syntactic sequences or coordinated forms, reinforcing the persuasive force of the message.
From a semantic and pragmatic perspective, imperatives in advertising rarely function as strict commands; instead, they operate as suggestions, invitations, or subtle prompts, maintaining a balance between persuasion and politeness. Lexical choices such as "come," "enjoy," "try," and "join" are commonly employed to implicitly convey the act of purchasing without explicitly stating it. Furthermore, stylistic devices such as repetition, ellipsis, and parallelism enhance memorability and contribute to the evocative function of language.
The comparative analysis with Albanian highlights both similarities and differences in modality, verb forms, and subject expression. The findings demonstrate that imperative sentences are essential in shaping effective

advertising communication, directly influencing audience engagement and consumer decision-making.

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UNDERSTANDING AUTHORITY AND POWER IN THE PROFESSIONAL PRACTICE OF PRE-SERVICE TEACHERS

In contemporary education, teachers' professional practice is increasingly understood through an interdisciplinary and holistic perspective that includes also the analysis of authority and power. The teacher is no longer seen merely as a transmitter of knowledge or organizer of learning, but as a professional whose work involves institutional power, pedagogical authority, ethical responsibility, and relationship-building with learners. This study explores pre-service teachers' understanding of authority and power in pedagogical practice. Max Weber defines authority as legitimate power grounded in socially recognized structures, which helps explain teacher authority as an institutionally supported form of influence linked to professional role, norms, and responsibility. In contrast, Hannah Arendt associates authority with responsibility for the world and its transmission to the next generation, emphasizing the teacher's role in introducing children and young people into a shared world. Michel Foucault shows that power operates not only through commands and prohibitions, but also through discipline, norms, and the shaping of subjectivity. In education, this reveals how power functions through everyday practices, rules, assessment, and behavioural regulation. Pierre Bourdieu complements this view through the concept of symbolic power, stressing that educational influence is also exercised through language, cultural codes, and socially legitimized meanings. From a pedagogical perspective, authority is not merely a tool of control, but a professionally and ethically grounded relational form. Carl Rogers redefines teacher authority through trust, empathy, authentic relationships, and facilitation of learning, while Paulo Freire critiques authoritarian education and proposes dialogical pedagogy that fosters critical consciousness. This perspective is significant for pre-service teacher education because it encourages reflective understanding of power and authority.

Matlhonolofatso Agnes Janefeke

INVESTIGATING EQUATING METHODS: CLASSICAL TEST THEORY VS ITEM RESPONSE THEORY FOR LESOTHO'S LGCSE ACCOUNTING TEST ITEMS

Ensuring score comparability across different examination administrations is essential for maintaining fairness and validity in high-stakes educational assessments. In Lesotho, the Lesotho General Certificate of Secondary Education (LGCSE) examinations play a critical role in determining students' academic progression and future opportunities. However, limited local research has examined statistical equating procedures that ensure consistency of scores across different examination forms. This study investigates the application of two widely used psychometric equating frameworks Classical Test Theory (CTT) and Item Response Theory (IRT) in aligning scores from the 2023 and 2024 LGCSE Accounting Paper 1 examinations. Currently, Lesotho's assessment system lacks formal equating procedures, raising concerns about score comparability, fairness, and validity. The study therefore aims to determine which of the two approaches produces more valid, reliable, and equitable outcomes in the Lesotho context. The research adopts a quantitative approach using a single-group counterbalanced design. A stratified sample of Grade 11 learners from diverse school contexts will complete both examination forms. Performance data will be analysed using Linear Equating under CTT and Mean-Mean equating under IRT to evaluate score consistency, item parameter comparability, and reliability estimates. Prior to equating, key IRT assumptions dimensionality, local independence, and monotonicity will be tested to ensure appropriate model fit. Data analysis will be conducted using specialised psychometric software to generate equating functions and compare results. The study seeks to provide empirical evidence on the relative effectiveness of CTT and IRT equating approaches in a resource-constrained educational setting. Findings are expected to inform policy decisions by the Ministry of Education and Training and the Examinations Council of Lesotho, contributing to the development of fair assessment.

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MATHEMATICS IN LATGALIAN: A PRACTICAL EXPERIMENT AND TERMINOLOGICAL CHALLENGES IN A MODERN SCIENTIFIC ARTICLE ON MATHEMATICS

Taking into account the status of the Latgalian written language as a historical variety of the Latvian language, targeted support mechanisms must be established within the framework of education policy to ensure the language's preservation and functional integration into contemporary educational content. It is important not only to apply the language in formal and informal communication, but also within the academic environment, adapting it to contemporary levels of knowledge and technology. The pilot study aims to identify and analyse the challenges encountered in developing popular science texts in Latgalian, with a focus on adapting higher mathematics content. The study's empirical basis consists of reflective practice. To gain insight into the issues and devise potential solutions, the experiences of other "minority" languages were analysed. Within the study course "Algebra and Geometry" at Daugavpils University, an educational module on the vector cross product was developed and piloted in the Latgalian written language. During the study's development phase, several obstacles were identified. The primary challenges include the lack of standardised scientific terminology and limited informational resources. Sources available for empirical data collection are primarily restricted to teaching materials from the 1920s and 1930s and general Latgalian–Latvian dictionaries, which do not fully provide vocabulary meeting modern academic requirements. The experience of other "minority" languages indicates that granting the language regional status and its application in scientific works is a critically important factor that fosters growth in the number of language learners. Work on developing scientific materials in the Latgalian language demonstrates that standardising terminology in the field of mathematics is not an individual endeavou—it is an interdisciplinary and collective community practice.

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STUDENTS ATTITUDE AND ENGAGEMENT TOWARD SCIENCE AS PREDICTORS OF GLOBAL SCIENTIFIC LITERACY

Keywords: *science education, student attitude, student engagement, scientific literacy*
This paper studied the attitude of students towards science and engagement as a predictor of scientific literacy of pre-service science teachers in the Davao Region, Philippines. The quantitative descriptive-correlational design was adopted using a population of 430 students taking Bachelor of Secondary Education major in Science at five institutions of higher learning. Validated survey tools were used to collect data that were analyzed through means, standard deviation, Pearson correlation, and multiple regression. The findings showed that students scored high on the attitude (M = 3.97) and engagement (M = 3.41) and the global scientific literacy was very high (M = 4.45). There were significant positive correlations between attitude and scientific literacy ($r = .544$, $p < .05$) and between engagement and scientific literacy ($r = .642$, $p < .05$). Regression analysis showed that both variables significantly predicted global scientific literacy, accounting for a substantial proportion of its variation, with student engagement emerging as the stronger predictor. These results suggest that positive attitudes are more supportive in motivation; however, active engagement exerts a stronger and more significant influence on the development of global scientific literacy. The paper has noted that engagement-driven instructional strategies are required to promote globally competent and scientifically literate future educators.

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AUTENTISKAS UN JĒGPILNAS LĪDZDALĪBAS VIDE IZGLĪTĪBAS IESTĀDĒ

2025. gada pavasarī Latvijas Kultūras akadēmijas Kultūras un mākslu institūta (LKA KMI) veiktā aptauja "Jauniešu (13–25 gadi) pilsoniskās līdzdalības priekšnosacījumi un dominējošās pilsoniskās līdzdalības formas formālās un neformālās izglītības vidē. Autentiskas un jēgpilnas pilsoniskās līdzdalības barjeras" sniedz vairākas būtiskas atbildes un iezīmē reālo situāciju jauniešu līdzdalības iespējās skolā. Vai jaunietim ir balss un iespēja piedalīties lēmumu pieņemšanā svarīgās tēmās izglītības iestādē? Pētījuma dati apliecina, ka 66% jauniešu ir iesaistījušies, lai risinātu kādas konkrētas, problēmas savā izglītības iestādē, no tiem 75% ir panākuši svarīgas izmaiņas. Šie dati apliecina būtisku kopsakarību – jo aktīvāk jaunieši iesaistās, jo lielākas ir iespējas reāli ietekmēt procesus un panākt sev svarīgas izmaiņas. Galvenais priekšnoteikums jauniešu ietekmei ir pati iesaistīšanās, tāpēc izglītības iestādēs ir jānodrošina vide un mehānismi, kas veicina jauniešu jēgpilnu līdzdalību – jaunieši piedalās lēmumu pieņemšanā un aktivitātēs par tēmām, kas saistītas ar viņu interesēm, vajadzībām un ikdienu. Kopumā iegūtie dati liecina – jauniešiem ir iespēja izteikt viedokļus, bet daudz ierobežotāka ir jauniešu iespēja ietekmēt konkrētus lēmumus. Balstoties uz šiem datiem ir izstrādāta "Ceļa karte jēgpilnai jauniešu līdzdalībai izglītības iestādē", analizējot 3 jauniešu līdzdalības līmeņus: lietotājs – jaunieši izmanto vidi vai procesus, kurus kāds cits jau ir izveidojis, bet to neietekmē; partneris – jaunieši tiek uzklausīti un piedalās lēmumu pieņemšanā un īstenošanā kopā ar skolotājiem, administrāciju; līdzradītājs – jaunieši paši ierosina, plāno un vada risinājumu īstenošanu. Ceļa karte ir aprobēta Latvijas izglītības iestādēs projekta "Jauniešu autentiskas līdzdalības priekšnoteikumi formālās un neformālās izglītības vidē (UNFRAMED)" ietvaros. Rakstā tiks analizētas Ceļa kartē ietvertās vides un apkopoti aprobācijas rezultāti.

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ENHANCING DEEP LEARNING THROUGH WORK-INTEGRATED LEARNING: A CONCEPTUAL FRAMEWORK OF AUTHENTICITY AND REFLECTION

Nowadays, as the demand for higher-level critical thinking and the ability to apply knowledge in real professional contexts continues to grow, higher education increasingly emphasizes learning approaches that foster deep learning and authentic educational experiences. In this context, Work-Integrated Learning (WIL) has gained significant attention as a pedagogical approach that connects academic learning with workplace practice. However, existing research often focuses primarily on employability outcomes rather than on the cognitive processes that enable students to achieve deep learning. This paper develops a conceptual framework that explains the cognitive mechanisms through which WIL contributes to deep learning. Drawing on Situated Learning Theory and Experiential Learning Theory, the study proposes a logical model linking WIL quality, perceived authenticity, and reflective learning. The framework suggests that high-quality WIL environments – characterized by challenging tasks and effective supervision – act as a catalyst for students' cognitive development. Specifically, such environments first stimulate perceived authenticity, allowing students to recognize the professional relevance and realism of their learning experiences. This perception of authenticity then triggers reflective learning, which functions as the key psychological mechanism through which students critically analyze their experiences and reconstruct knowledge. The model therefore argues that authenticity alone does not automatically lead to deep learning unless it is mediated by reflective processes. By clarifying these conceptual relationships, the proposed framework provides theoretical guidance for designing WIL-based curricula that prioritize cognitive depth and meaningful learning. More broadly, the study shifts the focus of WIL research from employment outcomes toward the internal processes that shape student learning in higher education.

Mafereka Alice Lineo

UTILISING SHADOWING TECHNIQUE IN ENHANCING LISTENING AND SPEAKING SKILLS AMONG GRADE 9 LEARNERS IN ONE SECONDARY SCHOOL IN MASERU, LESOTHO

Keywords: *the shadowing technique; listening skill; speaking skill; English as a second Language (ESL); Participatory Action Research (PAR); communicative competence; formative assessment*

This study investigates the effectiveness of the shadowing technique, the practice of learners simultaneously mimicking a native speaker in enhancing the listening and speaking skills of Grade 9 ESL learners in Lesotho. The research is motivated by a critical systemic issue: the national Grade 9 English syllabus champions communicative competence yet excludes listening and speaking from high-stakes assessment. This leads to their pedagogical neglect, leaving learners unprepared for real-world oral communication. The study is guided by three complementary theories: Skill Acquisition Theory (to understand how repeated practice leads to automatization of sub-skills like pronunciation), the Output Hypothesis (to frame shadowing as a form of pushed output that forces learners to notice gaps in their interlanguage), and Sociocultural Theory (to conceptualise shadowing as a scaffolded activity where learners internalise linguistic patterns through imitation, moving from other-regulation to self-regulation).The study employs an explanatory sequential mixed-methods design embedded within a Participatory Action Research (PAR) framework. This allowed teachers and researcher to collaboratively implement, observe, and refine the intervention. Quantitative data were collected through pre- and post-test assessments of listening comprehension and speaking proficiency (measuring pronunciation, fluency, and prosody) administered to 49 learners. Qualitative data were generated through semi-structured focus group discussions (exploring learners' lived experiences), in-depth interviews with a subset of learner and structured classroom observations (documenting engagement, strategy use, and challenges. Quantitative analysis revealed statistically significant improvements in all measured areas from pre- to post-test, with large effect sizes (Cohen's $d > 0.8$), indicating a substantial educational impact. Thematic analysis of qualitative data showed that learners perceived the technique as highly beneficial, reporting increased confidence, improved pronunciation and prosody, and heightened attentional control. Beyond these skills, learners described an affective transformation (reduced anxiety), the development of metacognitive awareness (monitoring their own speech), and growing learner autonomy. The primary challenges identified were initial difficulty with native-speaker accents and fast speech rates, which diminished with consistent practice. The study's findings are limited by its single-school context, which restricts generalisability. The 8-week duration, while sufficient for significant gains, cannot speak to the long-term retention of skills. Furthermore, as a PAR study, the active involvement of the researcher in the intervention may introduce potential bias, although this was mitigated through triangulation of data sources and member checking.

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EXPLORING THE POTENTIAL OF AI-ASSISTED INSTRUCTION IN JUNIOR SECONDARY ENGLISH WRITING: A QUASI-EXPERIMENTAL STUDY IN CHINA

The incorporation of artificial intelligence (AI) into classroom instruction has quickly been an important educational innovation trend. A few obstacles exist in traditional modes of instruction in English writing, including late feedback, insufficient individualized guidance, student apathy etc. AI-assisted tools offer the potential for real-time feedback, quick idea generation, and language help. Empirical research from real secondary school classrooms is, however, scarce and it remains important to explore the contribution of AI-assisted writing teaching in authentic teaching settings.

Aim of the Study. Using this approach, this study aims to evaluate whether AI-assisted instruction improves junior secondary students' English writing ability relative to traditional teaching methods. It also aims to investigate the effects of AI-enriched education on classroom participation, writing engagement and instructional efficiency. The study takes the form of quasi-experimental with two parallel Grade 8 classes in middle school in China. One class is experimental for AI-assisted writing instruction, the other control class is

conducted with traditional teacher instruction. They are also part of the same curriculum based on the Oxford English (FLTRP) textbook and work with the same teacher. A student questionnaire, writing pre-test, six writing lessons with corresponding written tasks, systematic classroom observation, and a post-test are all included in this research. Writing is assessed using an analytic rubric of content completeness, language accuracy, sentence variety and coherence across the written work. The data collection is ongoing and final statistical results are expected to be released prior to the conference.

Though the final analysis is not completed, they anticipate the study to give empirical data about the feasibility and instructional value of AI-assisted writing instruction. The results can help in clarifying the potential role of AI in teacher guidance, supporting students' interaction with writing development, and providing guidance to the student in junior secondary English classrooms.

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ARTS-BASED LEARNING AS A PATHWAY TO CREATIVITY AND INCLUSION IN INFORMAL MAKERSPACES

Keywords: *arts-based education, informal maker spaces, inclusion, creativity, sustainability*

The study aims to explore the impact of arts-based education on inclusivity and the exploration of sustainability in the surrounding world. Maker spaces are seen as interdisciplinary, and even transdisciplinary, spaces that transcend the borders of traditional school subjects and disciplines, offering a fresh, innovative view of the world and oneself within it. Maker spaces offer safe physical spaces and learning communities with peers and adults, leading to new and rich learning experiences that support a range of outcomes. The main focus of this study is to explore how youth experience creative expression through the arts and how arts activities promote inclusion, creativity, and cohesion. The paper is enriched by insights from semi-structured interviews with the artists, curators and arts experts. The study proves the efficiency of arts-based approaches in fostering inclusion, social cohesion, sustainability, and creativity. The interviews allowed researchers to single out the following categories: 1) arts as a catalyst for creative expression; 2) inclusion through shared creative makerspaces and processes; 3) empowerment of youth by strengthening their belonging in informal learning spaces, and 4) the sustainability of the arts process.

The study is designed within the framework of the Horizon Europe programme project "The Cultural Literacies' Value in Europe" (CLiViE).

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APPLICATION OF SHALLOW GEOPHYSICAL METHODS IN STUDIES OF THE INTERNAL STRUCTURE OF INLAND DUNES: THE EXAMPLE OF RUGEĻI AND STROPU FOREST, DAUGAVPILS CITY

In this paper, the methodology of application of non-invasive shallow geophysical studies of the geological structure of aeolian landforms is discussed. The study sites are located within the inland dune field of Daugavpils city – i.e. inactive parabolic dunes covered by canopy vegetation in Rugeļi and Stropu forest. Considering that natural outcrops or sand quarries with sediment vertical sections exposed for geological studies are absent within the dunes under study, geophysical techniques by applying ground-penetrating radar (GPR) were employed to investigate the sedimentary architecture of the aeolian landforms. GPR profiles were collected along the crest and across the ridgelines of the dunes. Radar Systems Inc. GPR Zond-12e with 300MHz and 500MHz shielded antennas was used for the geophysical survey. Topographic locations of GPR profiles were recorded by high-precision GPS, allowing the later to obtain data on the elevation of start and end points of profiling. After field surveys, GPR data were processed and visualised as radarograms using the software Prism 2.60. In radarograms, different types of GPR reflections were identified, e.g., sub-horizontal reflections, dipping reflections and parabolic reflections, allowing the identification of surfaces between layers of aeolian sediments with different electromagnetic properties, as well as other stratigraphic elements. Hence, the interpretation of geophysical data reveals the sedimentary architecture of the dunes. Despite the expected, the depth of GPR profiles obtained by a 500MHz shielded antenna does not exceed 5 m depth. It can be associated with the dissipation of GPR signals in dry sand, which forms dunes. However, the depth of GPR profiles obtained by a 300MHz shielded antenna allows for obtaining data up to 10-15 m depth. The results show the advantages of using a 300 MHz shielded antenna, despite the lower resolution of the radargrams, as it allows for the acquisition of data on deeper sediment layers.

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APPLICATION OF A LIDAR-DERIVED DEM AND GIS ANALYSIS FOR IDENTIFICATION OF MORPHOLOGICAL CHARACTERISTICS OF SMALL RIVER VALLEYS IN THE DAUGAVA NATURE PARK: A CASE STUDY OF THE RIVER POGUĻANKA

Small rivers, their valley geomorphology and features reflect the development of streams in Latvia. At the same time, small river valleys often also include habitats of EU importance – e.g. 3260, non-modified natural river sections, as well as other natural values. One of such small rivers is the Poguļanka, a left tributary of the Daugava in the NP Daugavas Loki. The river has formed a deep valley, which in terms of size significantly exceeds the valleys of other small rivers in this region. However, scientific data on the longitudinal profile of the valley, cross-sections, terraces and other morphological characteristics have not yet been obtained and compiled. The location of rapids and, as a result, the existence of EU habitats in the valley is largely determined by geological and geomorphological factors, the initial analysis of which can be performed using high-resolution DEM and GIS analysis tools. At the same time, the use of DEM and GIS also provides scientifically accurate information on the morphometry and morphology of the river valley. Hence, the authors conducted studies including the identification of morphological characteristics and GIS analysis of the River Poguļanka

valley using high-resolution DEM. For this purpose, airborne LiDAR data provided by LGIA were used to generate a DEM with a pixel size of 0.4 m. At first, LiDAR point cloud was filtered with ArcGIS Pro software by ground classification code, thus extracting from the LAS dataset only land surface points. Subsequently DEM was created by the ArcGIS Pro tool 'LAS Dataset to Raster' following the standard procedure of the IDW interpolation. Due to the presence of errors in LiDAR data associated with the scanning process or micro-topographic features in the river valley, the post-processing of DEM raster data was carried out to remove outliers. Finally, the Exploratory 3D Analysis and Interactive Elevation Profile tool was used to obtain and visualise topographic profiles in the river valley.

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APPLICATION OF DIFFERENT INTERPOLATION METHODS IN ARCGIS PRO FOR MAPPING THE GRANULOMETRIC COMPOSITION GEOGRAPHIC VARIATIONS OF AEOLIAN SAND DEPOSITS IN DAUGAVPILS

Aeolian landforms are identified and mapped in SE Latvia, including Daugavpils city. These inland dunes form the field located in the N and E parts of the city, as well as stretches northward and westward from the city, where the late Pleistocene and Holocene aeolian sediments are distributed over the SE part of the Jersika Plain. This field of inactive dunes belongs to the NE part of the European Sand Belt and represents the paleogeographic evidence of past aeolian activity in this region. Until now, there has been a lack of scientific data on the granulometric composition and geographic variations of dune-forming sediments. To obtain such data, the results of a previously conducted study on Folk and Ward grain-size indicators of inland dunes in Daugavpils city were processed by ArcGIS Pro tools. Since the coordinates of all sample locations were recorded with a precise GPS, it was possible to make the spatial join of the granulometric analysis data file with the GPS-measured points in the GIS environment and perform geospatial analysis. Such Folk and Ward granulometric indicators as mean grain size, sorting, skewness and kurtosis were stored as numerical attributes of the point feature class. For mapping the geographic variations of these indicators in Daugavpils, the different interpolation methods, such as IDW, Natural Neighbour, and Kriging, were used to generate raster data. Since the inland dunes in the city have formed on the surface of the Daugava ancient delta (Eberhards, 1972), and moreover, this material has not been transported far from the source of provenance (Kalińska-Nartiša et al., 2016), the average grain size of the sandy material forming the inland dunes should decrease in the direction from SE to NW, i.e. in accordance with the location of the proximal and distal parts of the ancient delta. Considering that the location of sand sampling sites is uneven, as is the case in this study, the Kriging interpolation method provided the best results.

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INITIAL RESULTS ON THE ERADICATION OF THE INVASIVE SPECIES SOLIDAGO CANADENSIS: A CASE STUDY FROM LATVIA

Solidago canadensis is one of the most widespread invasive plant species in Latvia. Initially introduced to Europe in the mid 17th century from North America as an ornamental species, it gradually escaped cultivation and established in the wild. It forms wide, monodominant stands, outcompetes native plant species, alters the chemical and microbiological properties of soils, and reduces biodiversity. In 2023, within the LIFE Integrated Project LatViaNature (the Project), implemented by the Nature Conservation Agency of Latvia, testing of various Solidago canadensis eradication methods was initiated. The testing will continue for four years. Eradication methods for Solidago canadensis are being piloted in four locations in Latvia—Kandava, Ķemeri National Park (Jūrmala), Jēkabpils and Daugavpils. The Project is testing several eradication methods – soil

treatment and the introduction of competitive plant species, as well as mowing at different frequencies. In the Solidago canadensis pilot sites, a clear trend indicates that regular mowing prior to flowering (including combinations with soil treatment and the introduction of competitive plant species) reduces the spread of the species, while often increasing or stabilizing the abundance of other species. As the occurrence and negative impact of the dominant invasive species decline, vacant niches become available for other herbaceous plants.

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UPDATING NATURE CONSERVATION PARAMETERS IN FOREST MANAGEMENT: A CASE STUDY OF SIA "SCA MEŽS LATVIJA"

Sustainable forest management is essential for the conservation of biodiversity and the long-term management of natural resources. Forests provide a wide range of ecosystem services, including carbon sequestration and habitats for various species. Therefore, the identification, recording and regular updating of nature conservation parameters play an important role in forest management. This helps ensure the use of up-to- date information in forest management planning, as well as compliance with regulatory requirements and forest certification standards. The aim of the study is to evaluate the importance of updating nature conservation parameters in forest areas managed by SIA "SCA Mežs Latvija" and to analyze the process of data updating within the company's environmental management system. A comprehensive approach was used in the study, combining document analysis, spatial data analysis, expert interviews and practical observation. The study analyses the data sources used by SIA "SCA Mežs Latvija", the process of identifying nature conservation parameters, and the mechanisms for updating data. The results indicate that the systematic recording of nature conservation parameters and their integration into digital data systems improve the quality of forest management planning and help to identify potential conflicts between forestry activities and nature conservation requirements in a timely manner.

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THE FOLK AND WARD GRAIN-SIZE CHARACTERISTICS OF THE DAUGAVPILS INLAND DUNE FIELD

The study presents the results of a field survey and laboratory analysis of aeolian sand deposits forming an inland dune field in Daugavpils city. For the obtaining of statistically meaningful data, 83 sand samples were collected from inland dunes identified during geospatial analysis of DEM and geomorphological reconnaissance. The bulk samples were taken from the dune crests with a hand auger or from examination pits at a depth of 0.8-1.2 m directly from the C horizon of soil. After drying at room t° for 2 weeks and physical pre-treatment, these samples were analysed at the Laboratory of Quaternary Research at DU by Malvern MASTERSIZER 2000 laser diffraction particle size analyser, which allowed us to estimate the granulometric composition of each sample within the range from 0.02 µm to 2 mm. The deionised water with the refraction index 1.33 was used for dispersion of fine sediments, and 60 s long ultrasonication was applied at stirrer speed 2800 rpm to achieve homogenous dispersion. Statistical processing of grain-size distribution data obtained by particle size analyser was further carried out by GRADISTAT v9.1 software integrated with MS Excel environment. It allows the calculation of such Folk and Ward granulometric characteristics as mean grain size Ma, sorting S, skewness SK and kurtosis KG. The results of the study demonstrate that the mean grain size of aeolian sand ranges from 44 to 314 µm. However, the samples are dominated by a fine-grained sand fraction with an average grain size of 200 to 250 µm. The grain size distribution frequency plots of the analysed samples mainly have the unimodal and symmetric bell-shaped pattern typical for aeolian sediments. Though many samples have an asymmetric pattern, indicating the presence of finer fractions. Such a bimodal grain size distribution of aeolian deposits, including the clay or silt component and coarser sand component, has been widely reported in literature and is attributed to atmospheric dust deposition.

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THE XX DU DRIFT EXPEDITION ALONG THE DAUGAVA RIVER DURING THE SUMMER LOW-WATER PERIOD

The XX Drift Expedition organized by Daugavpils University (DU) took place in the middle reaches of the Daugava River on August 22-24, 2025. Its aim was to obtain new data on the main hydraulic parameters of the Daugava riverbed during the summer low-water period, and trends of their downstream changes. The main parameters to be measured were the speed of the stream, the depth of the riverbed in the farvater and the total width of the riverbed. The drift was conducted using the DU's drifting scientific research platform "Aventura", which consisted of a marine life-raft and an inflatable boat. The holding of the platform in the stream was ensured by ballast bags and two floating anchors. The depth of the riverbed in the farvater was measured using the automatic hydroacoustic equipment "Lowrance" and a hand-held echolot. A digital laser rangefinder was used to measure the width of the riverbed, and a GPS signal receiver was used to determine the drift speed of the platform (or the current velocity). All measurements were taken once an hour. The expedition began in the ancient valley of the Augšdaugava upstream of Slutišķi and ended at Pristaņa downstream of the Līksna inlet. During the expedition, a continuous drifting along the Daugava was carried out during daylight hours, stopping at the shore for the night. The average water level in the Daugava near Daugavpils was 85.8-85.9 m a.s.l., but the flow rate – 291.91 m 3. The current velocity and the depth of the riverbed in the farvater tended to decrease downstream, while the width of the riverbed increased. Average values of the hydraulic parameters obtained during this expedition: depth of the riverbed in the farvater – 3.1 m, width of the riverbed – 204 m, current velocity – 2.5 km / h.

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ASSESSMENT OF THE STRAUMES HPP IMPACT ON THE BIOLOGICAL WATER QUALITY OF THE DUBNA RIVER USING THE MACROZOOBENTHOS SAPROBITY INDEX

River ecosystems are sensitive to hydromorphological changes and anthropogenic pressures, often caused by hydraulic structures and wastewater discharge. The operation of hydropower plants can alter the natural flow regime, sediment transport, and oxygen conditions of rivers, while wastewater inputs increase the concentration of organic matter and nutrients in the water. These factors significantly influence the structure of benthic communities and the biological quality of aquatic ecosystems. Macrozoobenthos is widely used as a biological indicator in the assessment of ecological water status because different organism groups show varying sensitivity to pollution and hydromorphological changes. The aim of this study is to assess the impact of the Straume hydropower plant and nearby wastewater discharge on the biological quality of the Dubna River using the macrozoobenthos saprobic index method. The study is conducted at four sampling sites: one site upstream of the Straume hydropower plant and three sites downstream, where both hydromorphological alterations and potential organic pollution may influence ecological conditions. Sampling is carried out according to the standard LVS 240:1999, which defines the methodology for macrozoobenthos sampling and processing. The collected samples are analysed, identifying taxa and calculating the saprobic index. The results of the study will allow the evaluation of changes in macrozoobenthos community structure in different sections of the river and determine how hydropower plant operation and wastewater discharge affect the biological quality of the Dubna River. The obtained data will contribute to the existing knowledge of the ecological status of the Dubna River and provide additional insight into the impact of hydraulic structures and anthropogenic pressures on freshwater ecosystems.

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LONGITUDINAL DYNAMICS OF THE FUNCTIONAL STRUCTURE OF THE SPRING ZOOPLANKTON COMMUNITY IN THE DAUGAVA RIVER (2025 DRIFT EXPEDITION)

Zooplankton communities play a vital role in the functionality and sustainability of aquatic ecosystems, including rivers. Zooplankton can constitute a significant portion of plankton in large rivers, yet the factors that regulate them remain largely unknown. This understanding has significant potential for applications in water ecological research. In rivers, zooplankton is influenced by various environmental factors (water flow, hydrological retention, turbulence, turbidity, nutrients, low-velocity sites, thermal conditions etc.). Longitudinal dynamics of the functional structure of the spring zooplankton community were investigated in the Daugava River (Latvia) using a Lagrangian sampling method (applying the drifting research platform). The study aimed to describe longitudinal changes in zooplankton community functional structure during spring. The study was conducted on 22 April 2025 (XIX DU drift expedition) in the central open water zones of the Daugava River during the drainage phase, when the water level was decreasing. Average drift speed was 2.74 km h–1, river depth 3.75 m, and the distance was approximately 30 km. Rotifera raptors (algivores), Synchaeta spp., Polyarthra sp. were dominant in the zooplankton community, thereby the Rotifera Guild ratio was positive and quite high (0.47). A downstream increase in rotifer raptor (algivores) biomass and guild ratio was observed, which showed a significant positive correlation with water temperature, ORP and chlorophyll α, and a negative correlation with drift speed. Such longitudinal dynamics of raptor biomass increase in the river can be associated with the longer water residence time available for population growth, and with water slowing, environmental variables such as water temperature and food concentration become more important for zooplankton community development.

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BOTTLENECKS AND SOLUTIONS FOR OPENING NATURAL RESOURCES OF CHINA'S NATIONAL PARKS TO OUTDOOR SPORTS

Under China's national park principles "ecological conservation first, national representativeness, and public welfare" opening natural resources to the public for outdoor sports requires a governance approach that balances conservation with equitable access. Focusing on China's first batch of national parks, this study applies policy text analysis and comparative case reasoning. We adopt a "scenario incubation bottleneck identification–solution pathway" framework and integrate two practical tools widely used in protected-area recreation governance: the Recreation Opportunity Spectrum and Visitor Use Management. We identify structural barriers including insufficient regulatory supply, coarse zoning and carrying capacity management, weak risk governance and rescue systems, underdeveloped market-operation rules, fragile community collaboration and benefit-sharing arrangements, and an incomplete monitoring evaluation feedback loop. We propose a full-chain governance package centered on park-specific "access lists" and built around "zoning, admission, operation, co-governance, evaluation." Key measures include tiered access and dynamic quotas for low-impact recreation, categorized authorization and concession mechanisms for commercial services, mandatory safety standards and insurance-based risk sharing for high-risk activities, community co-management with revenue return, and data-driven adaptive management. The study offers implementable policy options for simultaneously improving public service provision in national parks and advancing high-quality outdoor sports development.

VESELĪBAS APRŪPES ZINĀTNE / HEALTH CARE SCIENCE

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DETECTION OF LUNG INVOLVEMENT IN RHEUMATOID ARTHRITIS PATIENTS USING COMPUTED TOMOGRAPHY AND ITS ASSOCIATION WITH DISEASE-MODIFYING THERAPY

Background: Pulmonary involvement, specifically interstitial lung disease (RA-ILD), is a critical extra-articular manifestation of rheumatoid arthritis (RA) and a leading cause of morbidity and mortality. While clinical RA-ILD affects approximately 10% of patients, high-resolution computed tomography (HRCT) can detect subclinical changes in up to 33–50%. In Latvia, where a centralized national RA registry is currently absent, diagnosing these silent manifestations remains a challenge.
Aim: To assess the prevalence of specific RA-ILD and non-specific lung changes in RA patients, compare the diagnostic yield of HRCT versus chest radiography (CXR), and evaluate associations with pharmacotherapy, including methotrexate (MTX), tumor necrosis factor inhibitors (TNFi), and glucocorticoids (GCs).
Methods: A retrospective cross-sectional study was conducted at the Pauls Stradiņš Clinical University Hospital Rheumatology Centre. The cohort consisted of 100 RA patients with complete clinical and radiological profiles. Lung findings were classified as specific RA-ILD, non-specific changes, or no pathology. Statistical analysis utilized Fisher's exact and McNemar's tests to evaluate imaging sensitivity and medication safety profiles.
Results: Specific RA-ILD was identified in 13.4% of patients. HRCT demonstrated significantly higher sensitivity, detecting 92.3% of RA-associated changes compared to only 7.7% by CXR (p=0.006). A distinct gender paradox was observed: while women predominated the cohort (4:1), the risk of lung manifestation was twice as high in men (23.8% vs. 10.5%). Regarding safety, no statistically significant correlation was found between RA-ILD and the use of MTX (p=0.182) or TNFi (p=0.134). However, patients on GCs exhibited a higher overall burden of lung abnormalities (50.0%) compared to non-users (36.9%), with a visible upward trend in specific RA-ILD (15.6% vs. 12.3%).
Conclusions: HRCT is the only reliable non-invasive tool for distinguishing complex radiological patterns such as ground-glass opacities and honeycombing in RA patients. These findings suggest that high disease activity and GC use serve as "red flags" for subclinical lung involvement. Proactive screening with HRCT should be considered for a broader range of patients to allow for timely therapeutic adjustments and the prevention of irreversible fibrotic damage.

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SATISFACTION OF PARTURIENTS WITH EPIDURAL ANALGESIA DURING DELIVERY: ANALYSIS OF QUESTIONNAIRE AT A 2ND LEVEL HOSPITAL

Background. Since August 1, 2022, epidural analgesia (EA) during labour has been fully state-funded in Latvia, significantly increasing its availability. Although EA is considered the most effective method for labour pain relief (Halliday et al, 2022), women's satisfaction may depend not only on analgesic efficacy but also on the quality of information provided and post-procedural symptoms. Evaluation of patient-reported outcomes

is therefore essential for improving patient-centred obstetric care. Although several regional hospitals in Latvia provide this service, women's perspectives following childbirth have not previously been systematically assessed in research.

Aim. To assess women's satisfaction with epidural analgesia during labour and to analyse its association with pain reduction, sources of information and post-procedural symptoms.

Methods.A retrospective cross-sectional questionnaire-based study was conducted at Sigulda Hospital. Postpartum women who had a vaginal delivery with epidural analgesia were invited to complete an anonymous questionnaire during their postnatal hospital stay. The questionnaire included sociodemographic characteristics, sources of information about EA, pain intensity before and after EA, satisfaction with analgesia, overall experience, post-procedural symptoms, and willingness to choose or recommend EA in the future. Pain reduction was calculated as the difference between pain intensity before and after EA. Satisfaction and experience were assessed using 5-point ordinal scales. Quantitative data are presented as mean ± standard deviation (SD).

Results. Data from 44 respondents were analysed. Mean pain intensity before EA was 8.57 ± 1.13 and decreased to 2.57 ± 2.22 after EA, resulting in a mean pain reduction of 6.00 ± 2.41. The mean satisfaction score with EA was 4.48 ± 0.73, indicating high overall satisfaction. A moderate, statistically significant positive correlation was observed between pain reduction and satisfaction with EA (Spearman's rho = 0.50, $p < 0.001$; Kendall's tau-b = 0.43, $p < 0.001$). Satisfaction was also strongly correlated with overall experience of EA. Most participants indicated willingness to choose and recommend EA in future deliveries. Healthcare professionals and the internet were the most commonly reported sources of information about EA. Post-procedural symptoms were infrequent, with headache reported by 4.5% and back pain by 13.6% of respondents; no severe adverse effects were observed.

Conclusions. Women's satisfaction with epidural analgesia during labour is significantly associated with the magnitude of pain reduction achieved. Effective analgesia combined with adequate patient information contributes to a positive childbirth experience and supports the importance of patient-centred counselling.

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QUALITY OF POST-CARDIOVERSION STROKE PREVENTION AND DOAC INITIATION PROFILE IN LATVIAN EMERGENCY DEPARTMENTS: A MULTICENTRE RETROSPECTIVE ANALYSIS

Keywords: *atrial fibrillation, cardioversion, direct oral anticoagulants, Emergency Department, discharge recommendations, stroke prevention*

Background: ED cardioversion for AF is common, but thromboembolic prevention depends on discharge decisions. Beyond starting OAC, pragmatic quality markers include guideline-concordant antithrombotic advice (avoiding antiplatelet substitution), planning when sinus rhythm is not restored, and the real-world distribution of chosen DOACs.

Objectives: To assess (1) first-time OAC initiation among previously untreated AF patients after ED cardioversion, (2) discharge-quality signals including antiplatelet substitution and planning after unsuccessful rhythm restoration, and (3) the DOAC selection profile at first initiation in Latvia's largest tertiary hospitals.

Methods: Retrospective analysis of 522 consecutive AF patients managed in the EDs of PSKUS and RAKUS (2022–2025). Data were extracted and analysed in IBM SPSS, including baseline antithrombotic therapy, episode characteristics, comorbidities, cardioversion outcome, and discharge recommendations. Primary outcome: first-time OAC recommendation at discharge among patients without prior OAC. Secondary outcomes: antiplatelet recommendation instead of OAC, post-event planning when sinus rhythm was not restored, and DOAC molecule distribution among first initiations.

Results: At presentation, 273/522 (52.3%) were on OAC and 249/522 (47.7%) were not. Among previously untreated patients, 85/249 (34.1%) received a first-time OAC recommendation at discharge. In 6 cases (4.5%), an antiplatelet agent was recommended instead of OAC. When sinus rhythm was not restored, discharge planning was structured: 38/42 (90.5%) included a recommendation for 4-week OAC therapy followed by planned elective electrical cardioversion. Among first-time OAC initiations, rivaroxaban predominated (68.8%), followed by edoxaban (17.7%) and apixaban (5.3%).

Conclusions: In two major Latvian tertiary EDs, first-time OAC initiation after AF cardioversion occurred in approximately one-third of previously untreated patients, indicating persistent under-initiation within an acute-care setting where discharge decisions have outsized preventive impact. While follow-up planning after unsuccessful rhythm restoration was frequently consistent with a post-cardioversion anticoagulation strategy, occasional substitution with antiplatelet therapy suggests residual variability and an actionable quality gap. The marked concentration of first-time initiations toward rivaroxaban further characterises real-world practice and may inform protocol harmonisation, prescribing education, and pathway standardisation to optimise stroke prevention after ED cardioversion.

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IMAGING-BASED EVALUATION OF DONOR MUSCLE SUITABILITY IN LOWER LIMB TENDON TRANSFER SURGERY

Keywords: *Tendon transfer, Muscle cross-sectional area, MRI, Donor muscle selection, Foot and ankle reconstruction*
Introduction. Tendon transfer is a key technique in reconstructing lower limb function in cases of chronic tendon rupture, deformity, or neuromuscular impairment. Success depends not only on surgical technique but also on the donor muscle's functional capacity that has been shaped by its size, quality, and adaptability. Magnetic resonance imaging has enhanced preoperative planning by providing objective measures such as muscle cross-sectional area, volume, and fatty infiltration. Yet, the predictive value of imaging-based muscle assessment for donor suitability and outcomes remains underexplored. Aim To evaluate the suitability of common lower limb donor muscles for tendon transfer based on imaging-derived muscle size and quality.
Methods. A narrative literature review was conducted focusing on studies using MRI or CT to assess donor muscles in lower limb tendon transfers. Muscles analyzed included flexor hallucis longus, flexor digitorum longus, peroneus brevis, and tibialis posterior. Imaging parameters (CSA, volume, hypertrophy, fatty infiltration) were compared alongside functional outcomes such as strength recovery and biomechanical performance.
Results. Larger muscles like the flexor hallucis longus and tibialis posterior showed better postoperative hypertrophy, strength restoration, and functional outcomes. Smaller muscles, including the peroneus brevis and flexor digitorum longus, can still produce good results but often exhibit strength limitations or require mechanical unloading. Imaging confirms compensatory hypertrophy post-transfer, but absolute muscle size remains a key determinant of functional recovery.
Conclusion. MRI-based muscle assessment offers valuable preoperative insight into donor muscle suitability for tendon transfer. While smaller muscles may adapt, reduced CSA is linked to diminished strength and long-term performance. Incorporating preoperative MRI evaluation of muscle size and quality may enhance donor muscle selection, optimize surgical planning, and improve outcome predictability. Further prospective studies are warranted to establish standardized imaging thresholds for donor muscle suitability.

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CLINICAL AND LABORATORY FEATURES OF ATYPICAL PNEUMONIA IN CHILDREN: A RETROSPECTIVE ANALYSIS IN A FAMILY PRACTICE

Introduction. Atypical pneumonia is a respiratory tract infection caused by non-traditional pathogens that differ from classical bacterial agents such as Streptococcus pneumoniae. Atypical pneumonia in children is most commonly caused by Mycoplasma pneumoniae and presents with nonspecific symptoms such as prolonged dry cough, low-grade fever, fatigue, and minimal physical findings. Radiological changes may not correspond to auscultation results, which complicates early recognition in primary care and may delay appropriate treatment. In recent years, an increasing number of atypical pneumonia cases and outbreaks have been reported in Latvia, particularly since 2023.

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ASSOCIATION BETWEEN QUALITY OF LIFE LEVELS AND DEPRESSIVE SYMPTOMS AMONG INPATIENT CARE STAFF AT THE CHILDREN'S CLINICAL UNIVERSITY HOSPITAL (BKUS)

Keywords: *MHC; Quality of life; depressive symptoms; mental health; hospital staff; inpatient care; BKUS; PHQ-9*
Objectives: Mental health problems among healthcare workers are a serious public health concern, especially inhospital settings with high intensive workload. Reduced quality of life can contribute to the development and severity of depressive symptoms, negatively affecting both individual well-being and professional functioning.
The aim of this study was to assess the relationship between the level of quality of life and depressive symptoms among inpatient care staff of the Children's Clinical University Hospital (BKUS), paying special attention to determining the relationship between the quality of life domains and the severity of depressive symptoms.
Methods and Materials: This quantitative cross-sectional study included 112 inpatient nurses working in a BKUS. Depressive symptoms were assessed using the Patient Health Questionnaire-9 (PHQ-9), which consisted of nine questions rated from 0 to 3, with a total score ranging from 0 to 27. Depression severity was classified as minimal (0–4 points), mild(5–9 points), moderate(10–14 points), moderately severe (15–19 points), and severe (20–27 points). Mental well-being was assessed using the Mental Health Continuum Short Form (MHC-SF), which assesses emotional, psychological, and social well-being using 14 questions rated from 0 to 5. Based on the total score, participants were categorized as very low, low, moderate, good and very high well-being. Descriptive statistics were used to calculate frequencies and percentages. The distribution of the data was assessed using a normality test, which indicated a non-normal distribution; therefore, non-parametric descriptive analysis was used. The statistical analysis was performed using SPSS IBM.
Results: Analysis of PHQ-9 scores revealed that 22.3% of participants reported minimal or no depressive symptoms. Mild depressive symptoms were observed in 28.6% of nurses.

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PERIPHERAL NERVE BLOCKS FOR ACUTE PAIN MANAGEMENT IN COMBAT-RELATED EXTREMITY INJURIES

Keywords: *Peripheral nerve block, Combat trauma, Acute pain management, Regional anesthesia, Opioid-sparing analgesia*
Introduction. Combat-related injuries affect the extremities in 70-80% of cases and are often associated with severe acute pain. Traditional battlefield pain management relies heavily on systemic opioids, which pose risks such as respiratory depression, altered mental status, and impaired mobility. In contrast, peripheral nerve blocks offer targeted analgesia with fewer systemic side effects. Advances in regional anesthesia and portable ultrasound have made nerve blocks more feasible in both military and civilian trauma care. Study
Objective. This review examines clinical literature on peripheral nerve blocks for acute pain in combat-related extremity injuries, focusing on pain relief, opioid-sparing effects, safety, functional outcomes, and applicability in austere environments.
Methodology. A structured narrative review of studies from 2000-2025 was conducted, covering military and civilian trauma care. Focus was placed on commonly used blocks such as femoral, sciatic, and brachial plexus. Key outcomes included pain control, opioid use, complication rates, mobility, and feasibility in prehospital and battlefield settings.
Results. Evidence shows peripheral nerve blocks offer comparable or superior pain relief to opioids, with significantly reduced opioid use. Blocks such as femoral and brachial plexus align well with common combat injury patterns. When performed by trained personnel, complication rates are low, even in severely injured patients. These blocks preserve alertness and mobility, supporting safer evacuation and early rehab. Portable ultrasound and standardized protocols enhance feasibility in austere environments.

Conclusions. Peripheral nerve blocks deliver effective, opioid-sparing analgesia in combat trauma. They improve safety, preserve function, and are feasible in battlefield care when proper training and equipment are available.

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MĀSU PERSONĪGĀS UN PROFESIONĀLĀS PAŠAPRŪPES NOVĒRTĒJUMS LATGALES REĢIONA SLIMNĪCĀS

Atslēgas vārdi: *Māsas, personīga pašaprūpe, profesionālā pašaprūpe, darba vide, veselības aprūpes sistēma*
Konteksts. Pēdējos gados pašaprūpe ir kļuvusi par svarīgu faktoru māsu veselības un labbūtības veicināšanā (Sist et al., 2022). Laika trūkums un pārmērīga darba slodze ir visbiežāk minētie šķēršļi pašaprūpes veicināšanai (Ross et al., 2019). Joprojām trūkst pētījumu par māsu pašaprūpi un saistītajiem faktoriem (Hosseini et al., 2025; Kong et al., 2024).
Mērķis. Izpētīt un salīdzināt māsu personīgās un profesionālās pašaprūpes novērtējumu starp Latgales reģiona slimnīcām. Metode. Kvantitatīvajā pētījumā piedalījās (n=100) respondenti, strādājošas māsas veselības aprūpē, Latgales reģionā. Respondenti tika aptaujāti, izmantojot autores sastādītu anketu, pamatojoties uz literatūras apskatu. Anketa sastāv no 32 apgalvojumiem, kas vērtējama pēc 6 punktu Likerta skalas. Respondentiem tika lūgts novērtēt savu personīgo un profesionālo pašaprūpi. Iegūtie dati tika apstrādāti, izmantojot Microsoft 365 Excel.
Rezultāti. Respondentu vidējais vecums ir 45,3 gadi. Salīdzinot X un Y slimnīcas, X slimnīcā lielāks respondentu skaits uzrādīja augstākus personīgās pašaprūpes rādītājus fiziskajā dimensijā (n=31; Q2>42), sociālajā dimensijā (n=27; Q2>10) un atpūtas dimensijā (n=29; Q2>10). Slimnīcā Y lielāks respondentu skaits uzrādīja augstākus rādītājus personīgās pašaprūpes atpūtas dimensijā (n=17; Q2>10) un fiziskajā dimensijā (n=17; Q2>41). Profesionālās pašaprūpes rādītāji lielākai daļai respondentu Y slimnīcā bija zem mediānas sociālajā (n=18; Q2<20) un psiholoģiskajā dimensijā (n=32; Q2<33).
Secinājumi. Māsu personīgā un profesionālā pašaprūpe Latgales reģiona slimnīcās atšķiras, un pētījuma rezultāti liecina, ka māsas lielāku uzmanību pievērš personīgajai pašaprūpei.

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NURSE TURNOVER IN HOSPITAL DEPARTMENTS IN LATVIA: ORGANIZATIONAL FACTORS AND RETENTION POSSIBILITIES

Shortage and turnover of nursing staff remain a serious problem in the Latvian health care system. Statistical data show that Latvia has one of the lowest numbers of practicing nurses in the European Union — about 4.2 nurses per 1000 inhabitants, while the EU average exceeds 9 nurses per 1000 inhabitants. The health workforce is also ageing, which increases the risk of staff shortages in the coming years. Insufficient staffing, high workload, and migration of medical personnel are recognized as major challenges for the Latvian health system (Eurostat, 2024; OECD, 2025).
The aim of this ongoing study is to evaluate factors influencing nurse turnover in hospital departments and to identify organizational management possibilities for staff retention. A quantitative survey based on a structured questionnaire is conducted among practicing nurses working in different hospital departments in Latvia. The questionnaire includes questions about socio-demographic characteristics, workload, salary, work organization, management support, professional well-being, and intention to change workplace. In addition, semi-structured interviews with hospital nurses and physicians are conducted to obtain expert opinion about the causes of staff turnover, searching for main reasons for leaving hospital work.
The research is still in progress and only preliminary results are presented. Initial findings show that many nurses have considered changing their workplace during the last year. The most common reasons are high workload, lack of staff, inadequate salary, and insufficient organizational support. Improved working

conditions, better remuneration, and flexible schedules were identified as key factors for staff retention. Preliminary results confirm that nurse turnover is a relevant and systemic problem in Latvia that requires organizational and health policy solutions.

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PROSPECTIVE IDENTIFICATION OF IMPLEMENTATION BARRIERS TO MODERN MENTAL HEALTHCARE IN LATVIA: A QUALITATIVE STUDY

Keywords: *mental healthcare, implementation, barriers*
Background: in Latvia, mental healthcare system remains in transition. Despite substantial policy efforts, development of modern care models is slow. There is limited understanding of the practice-level barriers from the perspective of healthcare professionals.
In line with the principles of implementation science, identifying determinants of practice is essential for developing feasible and context-sensitive interventions.
Aim: To identify and explore prospective barriers (determinants of practice) to implementation of modern mental healthcare practices from the perspective of frontline professionals.
Methods: An expert-panel qualitative study using conventional content analysis was performed. Data were collected via three semi-structured online focus group discussions (45 minutes each, 2025) with senior mental health professionals – three psychiatrists (emergency, outpatient and community, and liaison psychiatry) and a psychotherapist. Participants also contributed to the study design and discussion. Detailed notes were taken during the discussion and expanded immediately afterwards to ensure accuracy and avoid recall bias. Data were analysed using inductive coding and thematic categorisation. Identified barriers (factors that hinder, limit, or prevent professionals to deliver modern mental healthcare or to foster modern mental healthcare principles in their practice) were mapped onto the MATRIX conceptual framework.
Results: Four main categories of prospective implementation barriers were identified:

1. Individual/professional level – lack of corresponding knowledge and skills, defensive medicine practices, physicians' legal consciousness, burnout and limited professional autonomy
2. Organizational – high workload and time constraints, fee-for-service model, lack of safe discharge practice, revolving door phenomenon, lack of community-based services and continuality of care
3. Social – pressure to admit, lack of clear values
4. Governance and leadership – lack of clear direction towards modern high-quality services.

Conclusions: the findings reveal various multi-level barriers to modern mental healthcare in Latvia.
Discussion: The dual role of participants as contributors and subjects may introduce bias; however, it also enabled in-depth insights from the insiders' perspective. Addressing the detected determinants is essential for designing effective implementation strategies and promoting sustainable system transformation

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RISK FACTORS ASSOCIATED WITH UNPLANNED READMISSION TO THE PEDIATRIC INTENSIVE CARE UNIT IN LATVIA

Keywords: *Pediatric Intensive Care Unit (PICU), Unplanned readmission, Patient safety, Risk factors, Mortality*
Objectives: Unplanned readmission to Pediatric Intensive Care Unit (PICU) is associated with a higher mortality risk in children. While recognized globally as a quality indicator, no such studies exist for Latvia. This study describes rates, risk factors, and clinical outcomes of PICU readmissions at Children's Clinical University Hospital (BKUS) Riga, Latvia.

Materials and Methods: This retrospective observational study (RSU Ethics Committee 51/22.02.2018) studied PICU admissions from May 2017 to December 2025. Demographic and clinical variables—age, weight, Pediatric Index of Mortality 3 (PIM3), lactate, and length of PICU stay (LOS)—were compared between readmitted and non-readmitted survivors of the index admission using Wilcoxon Rank Sum for continuous and Chi-square or Fisher's exact tests for categorical variables. Results: There were a total of 5468 admission during the study perriod with mortality rate of 2.2% (n=123) readmission rate of 1.7% (n=92). Comparing index admissions for readmission (n=80) to single admissions (n=5178), no statistically significant differences were found in median age (7.07 vs 6.50 years; p=0.957), weight (21.00 kg; p=0.761), or PIM3 scores (0.00; p=0.567). Similarly, admission lactate (1.90 vs 1.76 mmol/L; p=0.268), invasive ventilation days (0.00; p=0.496), and median PICU LOS (0.96 days; p=0.491) did not differ between the gourps. Further analysis of unplanned admissions also yielded no significant differences.
Conclusions: The 1.7% readmission rate in Latvia aligns with international findings. Standard clinical and demographic parameters were not associated with readmission in this cohort. This suggests that readmission may be driven by other factors, such as chronic comorbidities or social factors, indicating a need for more specialized predictive tools.

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WHEN TIME MEETS PHYSIOLOGY: TRAUMA SYSTEM TIME METRICS AND SURGICAL DECISION-MAKING IN SURGICALLY TREATED POLYTRAUMA PATIENTS

Background Time-based metrics such as prehospital transport time and door-to-CT interval are widely used to assess trauma system performance; however, integrated analyses linking prehospital timelines, in-hospital diagnostics and surgical decision-making remain limited.
Aim To evaluate transport time, door-to-CT interval and surgical timing in surgically treated polytrauma patients and assess comparability with international practice.
Methods A retrospective analysis of 247 consecutive polytrauma patients (Jan–Dec 2025) was performed; 63 surgically treated patients were included. Delayed surgery was defined as intervention >24 h after admission. Groups were compared using Mann–Whitney U and Fisher's exact tests with 95% confidence intervals.
Results Median age was 42 years (IQR 33–52.5). Musculoskeletal injuries were present in 95.2%, neurological in 22.6% and visceral in 16.1%; alcohol intoxication in 44.4%. Median transport time was 72 min (IQR 60–89) and door-to-CT time 34 min (IQR 25–56). Median operative duration was 100 min (IQR 78–240) and correlated with injury severity (ρ=0.41, p=0.02). Delayed surgery was required in 38.1%. These patients underwent CT earlier (22–41 vs 31.5–63 min; p=0.0338) and more frequently had ISS>16 (66.7% vs 25.0%; p=0.0084; OR=6.0). Complications were more frequent in delayed cases (p=0.106), while mortality did not differ (p=1.00).
Conclusions Time-based metrics were comparable to established European trauma centres, indicating preserved system performance. The association between injury severity and surgical timing supports prioritisation of physiological status over procedural urgency, suggesting that delayed surgery reflects appropriate clinical stratification rather than system inefficiency. These findings provide a benchmark for further optimisation of trauma care pathways.

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PLATELET-RICH PLASMA VERSUS CORTICOSTEROID INJECTIONS IN CHRONIC PLANTAR FASCIITIS: A SYSTEMATIC LITERATURE REVIEW

Keywords: *plantar fasciitis, platelet-rich plasma, corticosteroid injection, VAS, AOFAS, heel pain, regenerative medicine*
Introduction: Plantar fasciitis affects up to 10% of the population and is the leading cause of heel pain. It is now recognised as a degenerative rather than inflammatory condition. Conservative treatment resolves symptoms in 90% of patients within twelve months. In refractory cases, injection therapy is indicated. Corticosteroid injections provide rapid but short-lived relief, with risks including fascia rupture and fat pad atrophy. Platelet-rich plasma (PRP), derived from the patient's own blood, offers a regenerative alternative.
Aim: To compare clinical evidence for PRP versus corticosteroid injections in chronic plantar fasciitis, focusing on pain relief, function, and durability of effect.
Methods: A structured literature review was conducted across PubMed, EMBASE, Cochrane Library, Web of Science, and Scopus. Inclusion criteria: RCTs and meta-analyses comparing intralesional PRP with corticosteroid injections in adults with plantar fasciitis, reporting VAS and/or AOFAS outcomes. Nine sources were analysed (Hurley 2020, Zuo 2025, Aleid 2025, Sharma 2023, Rhim 2021, Viglione 2023, Ye 2025, Lippi 2024, Nweke 2025), including recent studies (2020–2025) covering around 5,000 patients with follow-up of 1–24 months.
Conclusions: Corticosteroid injections provide superior short-term pain relief, particularly within the first month; however, this effect diminishes over time. In contrast, PRP demonstrates superior mid- to long-term outcomes, with significantly improved pain and functional scores between 3 and 12 months. Large meta-analyses consistently report improved AOFAS scores in PRP-treated patients at multiple follow-up points. A randomised trial (n=90) confirmed lower pain scores with PRP at six months (1.97 vs 2.71). PRP carries a low complication rate, whereas corticosteroids carry a fascia rupture risk of up to 2.4%. Both are effective; however, PRP may be preferable when sustained functional recovery is the primary goal.

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RELATIONSHIP BETWEEN VITAMIN D LEVELS AND ACUTE RESPIRATORY TRACT INFECTIONS IN PRIMARY CARE

Keywords. *Vitamin D, acute respiratory infections*
Introduction. Vitamin D plays an important role in immune function and overall health. Acute airway infections are among the most common conditions in family medicine. This study examines the association between vitamin D levels and the type of acute airway infections in a family medicine setting in Latvia.
Aim. To assess the relationship between vitamin D levels and acute airway infections in primary care in Latvia.
Materials and Methods. This retrospective cross-sectional study included patients from a primary care practice in Latvia, from 01.01.2025. to 31.12.2025. Data was obtained from medical records. Inclusion criteria were at least one acute respiratory infection (ICD-10 codes J00–J22, U07.1, U07.2) and at least one recorded vitamin D measurement. Patients were grouped by age (≤3, 4–11, 12–17, 18–30, 31–44, >45 years) and vitamin D level (low<30 ng/mL; sufficient ≥30 ng/mL). Respiratory infections were classified as upper or lower. Data were analyzed using MS Excel, with significance set at $p < 0.05$ using Chi-square test.
Results. The study included 170 patients: 46% (n=78) men and 54% (n=92) women, aged 8 months-78 years (mean 21,0±18 years). A total of 401 respiratory infections were recorded: 75%(n=301) upper and 25%(n=100) lower. The most common diagnoses were J06.9 (68%; n=272), J18.9 (8%; n=32), and J20.9 (7%; n=29). Vitamin D levels ranged 4.8-75.7 ng/mL (mean 34.6±13,6 ng/mL). Only 9% reached the recommended optimal range (45–55 ng/mL). Children had higher mean vitamin D levels than adults (35,1±15 and 29.9±12,7 ng/mL respectively). No statistically significant association was found between the two vitamin D level groups and infection type ($p = 0.5768$).

Conclusions. No significant association was found between the two vitamin D level groups and respiratory infection type. Most patients had suboptimal vitamin D levels. Further research is needed to clarify the role of vitamin D in infectious disease.

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RADIOLGICAL OUTCOMES AFTER CORRECTIVE OSTEOTOMY FOR DISTAL RADIUS MALUNION: A RETROSPECTIVE STUDY

Distal radius malunion can lead to significant biomechanical alterations and functional impairment of the wrist. Corrective osteotomy aims to restore anatomical alignment and improve clinical outcomes. The aim of this study was to evaluate radiological outcomes after corrective osteotomy for distal radius malunion. A retrospective analysis was performed including 24 patients (mean age 49.0 ± 18.5 years; 19 females, 5 males). Radiological parameters assessed pre- and postoperatively included radial inclination, volar tilt, radial height, and ulnar variance. Statistical analysis was performed using paired t-test. Significant improvements were observed in radial inclination (12.3 ± 6.7° vs. 20.4 ± 6.2°, $p < 0.001$), volar tilt (−6.5 ± 19.6° vs. 3.8 ± 16.0°, $p = 0.004$), and radial height (5.0 ± 5.1 mm vs. 10.3 ± 3.1 mm, $p < 0.001$). Changes in ulnar variance were not statistically significant (0.84 ± 2.83 mm vs. 1.37 ± 1.52 mm, $p = 0.32$). Corrective osteotomy significantly improves key radiological parameters of distal radius alignment. Restoration of anatomical configuration may contribute to improved wrist biomechanics and function.

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METFORMIN IN POLYCYSTIC OVARY SYNDROME: A SYSTEMATIC LITERATURE REVIEW OF METABOLIC, HORMONAL, AND REPRODUCTIVE OUTCOMES

Background. Polycystic ovary syndrome (PCOS) affects approximately 6–10% of women of reproductive age and is associated with hyperandrogenism, anovulation, insulin resistance, and increased cardiometabolic and pregnancy-related risks. Metformin is widely used, although its role in PCOS management remains debated. Aim. To evaluate the efficacy and safety of metformin in women with PCOS based on recent randomized controlled trials and meta-analyses.
Methods. A systematic literature review was conducted using MEDLINE, EMBASE, and the Cochrane Library (2014–2025). Fifteen studies were included comparing metformin with placebo or other treatments. Outcomes included metabolic, reproductive, and safety parameters.
Results. Compared with placebo, metformin reduced BMI (MD −0.53 kg/m²) and improved insulin resistance (MD −0.50). It increased clinical pregnancy (OR 1.93), ovulation (OR 2.55), and live birth rates (OR 1.59). Combination therapy with clomiphene citrate showed higher pregnancy rates than monotherapy (OR 1.59). Metformin improved menstrual regularity and androgen levels, particularly in women with obesity or insulin resistance. However, it was not effective for hirsutism. Gastrointestinal adverse events were more frequent (OR 4.00). Evidence suggests a reduced risk of miscarriage and preterm birth, though data on gestational diabetes and preeclampsia are inconsistent.
Conclusions. Metformin appears to be an effective adjunct to lifestyle interventions in women with PCOS, improving metabolic and reproductive outcomes, particularly in those with insulin resistance. It is not recommended as first-line monotherapy for weight loss, ovulation induction, or hirsutism. Further studies are needed to define optimal patient populations and long-term effects.

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PREVALENCE OF MUSCULOSKELETAL OVERLOAD AMONG PALLIATIVE AND SOCIAL CARE WORKERS IN RELATION TO WORKPLACE ORGANIZATION AND WORKLOAD

Introduction. Musculoskeletal disorders are among the most common work-related health problems in the healthcare and social care sectors. Palliative and social care workers are exposed to increased physical workload in their daily practice, including patient handling and positioning, working in awkward postures, and prolonged static load. In addition, the work environment is often characterized by insufficient staffing, high work intensity, and limited availability of ergonomic aids. These factors contribute to the development of musculoskeletal overload, which may affect workers' health, work capacity, and the quality of care.
Objective. To determine the prevalence of musculoskeletal overload among palliative and social care workers and to evaluate its association with workload and workplace organization.
Methods. A cross-sectional study was conducted using an anonymous questionnaire. Musculoskeletal symptoms were assessed using the Nordic Musculoskeletal Questionnaire, evaluating the prevalence of pain in different body regions over the past 12 months and the past 7 days. Additional data were collected on workload (weekly working hours, overtime, work schedule) and workplace organization (staffing levels, availability of breaks, use of ergonomic aids).
Conclusions. Musculoskeletal overload is expected to be highly prevalent among palliative and social care workers, most commonly affecting the lower back, neck, and shoulder regions. Higher workload and inadequate workplace organization, including staff shortages and limited ergonomic resources, are expected to be associated with a higher frequency of musculoskeletal complaints. The findings of this study may serve as a basis for improving workplace organization and ergonomics, contributing to the prevention of musculoskeletal overload and the promotion of workers' health.

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GAPS IN HPV VACCINE KNOWLEDGE AND ELIGIBILITY AWARENESS AMONG LATVIAN MEN AGED 18–25

Introduction: Human papillomavirus (HPV) is one of the most common sexually transmitted infections worldwide, affecting up to 80% of individuals during their lifetime. Although often self-limiting, HPV can cause several cancers including cervical, anal, penile. In Latvia, 99% of cervical cancer cases are HPV-related, with ~200 new cases annually. Vaccination is the most effective preventive measure and is state-funded for individuals aged 12–25 from July 2025. In the past boys' vaccination started in 2022 for those aged 12–17. Objectives: To assess awareness and knowledge about HPV vaccine among men aged 18–25 in Latvia.
Methods: A descriptive cross-sectional online study was conducted from November 2025 to February 2026 using an anonymous Google Forms questionnaire distributed via social media. Data were analysed descriptively. Information was collected on region of residence, level of education, whether the respondent's occupation was related to the medical field, as well as knowledge about HPV vaccination.
Results: A total of 110 men participated. Most of them living in Riga (68%) and not related to medical field (82%). About third of respondents (33%) had not heard of the vaccine. Among the 36 respondents unaware of the vaccine, most had higher or technical education (36% each), 11% were university students, 13% had secondary education, and 3% had primary education. Among respondents, 43% were unvaccinated, and 37% were unsure of their HPV vaccination status. After educational information was provided within the questionnare, 82% agreed vaccination is beneficial. 53% of respondents were encouraged to consider vaccination.
Conclusions: The findings suggest limited knowledge about HPV vaccination among young men in Latvia. Although the sample size was relatively small, the results indicate a need for improved awareness and education on HPV and available vaccination opportunities.

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DROPOUT PATIENT PROFILES IN PSYCHODYNAMIC PSYCHOTHERAPY: A QUALITATIVE STUDY

Background. Dropout is the unilateral, premature termination of treatment before symptoms resolve or therapeutic goals are met. It correlates with reduced therapeutic efficacy, clinical deterioration.
Aim. To identify potential patient profiles based on initial expectations, therapeutic relational dynamics, to describe how it relates to dropout from psychodynamic psychotherapy.
Methods. A qualitative multiple-case design using semi-structured interviews. 15 patients, recruited by 3 psychodynamic psychotherapists (5 cases per therapist). Interviews were analysed using inductive thematic analysis. A cross-case analysis was then conducted, common patterns in initial expectations and therapeutic relational dynamics were identified, which were subsequently synthesized into distinct patient profiles.
Results. Analysis revealed 3 potential patient profiles linked to expectations and relation dynamics between patient and psychotherapist, and a dropout mechanics. First, Overwhelmed presented with high anxiety and a need for containment that was met with reflective silence from psychotherapist, these patients terminated therapy out of fear of symptom regression. Second, Pragmatist, expected rapid, instrumental solution for emotional crises, therapist did not give direct advice and was in passive stance, patients terminated therapy through a "flight into health". Third, Relation Seeker, hoped to find active "human contact" that challenged traditional therapeutic relationship asymmetry, that was met with therapeutic neutrality resulting in high frustration and impulsive termination of therapy.
Conclusions. 3 potential patient profiles were linked to specific expectations, relational dynamics and dropout mechanics. Patients' unmet expectations, frustration with therapy and psychotherapists reduced capacity to adapt clinical stance were associated with dropout.

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IMPACT OF DEEP RESOLVE BOOST ON MRI ACQUISITION TIME IN PEDIATRIC KNEE IMAGING

Background. Magnetic resonance imaging (MRI) is a key modality for evaluating pediatric knee joint pathology due to its high soft tissue contrast and lack of ionizing radiation. However, relatively long acquisition times remain a major limitation, increasing the risk of motion artifacts and potentially affecting image quality. Deep Resolve Boost (DRB), a deep learning–based reconstruction technique, enables accelerated MRI acquisition while maintaining image quality. The extent to which DRB reduces scan time in pediatric knee MRI remains insufficiently investigated.
Objectives. To evaluate the impact of Deep Resolve Boost on MRI acquisition time in pediatric knee imaging and to compare scan duration between examinations performed with and without DRB.
Materials and Methods. This retrospective study was conducted at the Children's Clinical University Hospital. A total of 60 pediatric patients (aged 11–18 years) who underwent knee MRI were included. Patients were divided into two groups: examinations with Deep Resolve Boost (n = 30) and those performed using a standard scan protocol (n = 30). MRI acquisition time was recorded for each examination and compared between groups. Patient age was also analyzed to assess group comparability. Statistical analysis was performed to evaluate differences between groups.
Results. The mean MRI acquisition time in the DRB group was 12.3 ± 1.3 minutes, compared to 26.4 ± 1.0 minutes in the standard protocol group, representing a reduction of approximately 53%. A Mann–Whitney U test confirmed a statistically significant difference in scan time between groups ($p < 0.001$). No statistically significant difference in patient age was observed between groups ($p = 0.472$).

Conclusions. Deep Resolve Boost significantly reduces MRI acquisition time in pediatric knee imaging. Its use may improve workflow efficiency and minimize motion-related artifacts, making it particularly beneficial in pediatric clinical practice.

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POTENTIAL APPLICATIONS OF A MECHANICAL EXOSKELETON FOR DOWNHILL SKIING TO REDUCE ENERGY EXPENDITURE IN THE LOWER EXTREMITIES

Background: Downhill skiing is one of the most popular recreational winter sports with approximately 200 million skiers worldwide across different age groups. This leisure activity with its multifaceted demands on the cardiovascular, neuromuscular and sensorimotor system represent an effective training intervention leading to psychological and social adaptation in skiers, especially in the elderly. However, reduced stress tolerance due to aging, chronic illness or trauma, is one of the most common reasons individuals are forced to end this activity prematurely. The use of mechanical exoskeleton is a potential solution to extend alpine skiing even under complicated health conditions.
Objective: The aim of this study was to evaluate the reduction of myoskeletal energy expenditure in the lower extremities while using mechanical exoskeleton by measuring VO2 and heart rate.
Methods: 20 participants were divided into two age groups (young adults (19-30) and older adults (50-70)), and potential energy expenditure during the experiment was measured using indirect calorimetry. The participants were asked to perform a specific number of squats in a specified time period 3 times. The first time the exoskeleton was off, the second time its resistance was 10% of body weight, and the third time it was 20% of body weight. Squat tempo and knee flexion depth were standardized across participants. Heart rate was also measured for each participant.
Results: Study showed that increasing exoskeleton resistance produced different metabolic response patterns among both age groups. Younger adults demonstrated a gradual decrease in VO2 by ~ 13 % as exoskeleton resistance increased, whereas older participants showed a slight increase in VO2 by ~ 15 %, suggesting that additional resistance may initially elevate metabolic cost in this population. In turn, changes in heart rate were as following - as the resistance of the exoskeleton increased, the heart rate tended to decrease.

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UNDERSTANDING PATIENT EXPECTATIONS AND THERAPY DURATION IN PSYCHODYNAMIC PSYCHOTHERAPY: INSIGHTS FROM DROP-OUT CASES

Background. In long-term psychodynamic psychotherapy, the patient and therapist will typically meet for more than one year with at least 40 sessions in each year. Drop-out is a common clinical issue, defined as the unilateral, unexpected discontinuation of treatment. Approximately 20% of patients drop-out regardless of treatment method or patients' psycho-emotional difficulties.
Aim. To identify emerging themes in patients' experiences of drop-out in psychodynamic psychotherapy and to compare how they relate to therapy duration.
Methods. A qualitative multiple-case design using semi-structured interviews. 15 patients, recruited by three psychodynamic psychotherapists (5 cases per therapist). Interviews were analyzed using inductive thematic analysis to identify emerging and overarching themes. A comparative analysis was conducted, grouping cases by therapy duration (short: 1-6 sessions; medium: 7-15; long: 16+ sessions). Common patterns in patients' expectations across groups were identified. Data confidentiality was maintained.

Results. Analysis suggested that patients' initial expectations are associated with duration. Patients' who frame therapy as instrumental and functional - focusing on immediate symptom relief and advice - are linked to early dropout (1–6 sessions). When patients view therapy as an opportunity for self-reflection and exploration, they are more likely to continue for 7–15 sessions. If therapy is perceived as a resource for relational understanding, and long-term self-development, patients are more likely to engage in long-term therapy (16+ sessions).
Conclusions. Findings indicate that patients' expectations of therapy play a role in determining therapy duration. Instrumental and solution-focused expectations are associated with shorter participation. Reflective or self-development-oriented representations associated with longer participation. Early negotiation of the meaning and purpose of therapy may be critical for motivation to continue.

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PEDAGOGU PSIHISKĀ VESELĪBA: DEPRESIJAS SIMPTOMU SAISTĪBA AR PSIHOSOCIĀLIEM UN DARBA VIDES FAKTORIEM

Aktualitāte: Covid-19 pandēmijas laikā 17% no Latvijā aptaujātajiem pedagogiem piedzīvoja depresīvu garastāvokli bieži vai visu laiku un 72% atzīmēja depresīvu garastāvokli vismaz reizi nedēļā (Svence, Briška, 2022). Latvijā nav veikts pētījums par skolotāju psihisko veselību pēc Covid-19 pandēmijas. Šī pētījuma mērķis - noteikt depresijas simptomu izplatību un saistītos psihosociālos un darba vides faktorus pedagogu populācijā Latvijā.
Metodoloģija: Tika veikts kvantitatīvs šķērsgriezuma pētījums, datu ievākšanas periods - 14.01.-09.03.2026. 1052 respondenti aizpildīja tiešsaistes anketu, kas ietvēra demogrāfijas, darba raksturojuma, depresijas aptauju (PHQ-9), Kopenhāgenas psihosociālās anketas jautājumus. Datu apstrādāti SPSS (Mann-Whitney un Chi-Squared tests, $p < 0,05$).
Rezultāti: Pētījumā iekļauti 777 respondenti vecumā no 20-83 gadiem (vecuma mediāna - 50, IQR-17), no kurām sievietes - 93,2% (n = 724). Visbiežāk respondenti strādā pilnu slodzi – 52,8% (n = 410), vairāk nekā pilnu slodze - 21,8% (n = 169). Lielākā daļa strādā vienā darba vietā (67,7%, n = 478). Klīniski nozīmīgi depresijas simptomi ir 43,6% (n = 339) respondentiem, no kuriem vidēji izteikta – 23,0% (n = 179), vidēji smaga – 14,4% (n = 112), smagi izteikta – 6,2% (n = 48). Depresija biežāk bija jaunākiem pedagogiem ($p = 0,010$). Depresijas simptomi ir saistīti ar lielāku kopējo darba stundu skaitu ($p=0,01$), nav saistīti ar kontaktstundām ($p = 0,041$). Mazāks darba vietu skaits saistīts ar depresijas simptomiem ($p = 0,041$). Respondentiem, kuriem izteiktāks darba-privātās dzīves konflikts, biežāk ir depresijas simptomi ($p < 0.001$).
Secinājumi: Depresijas simptomi plaši izplatīti Latvijas pedagogu vidū - 43,6%. Depresijas simptomu riska faktori - jaunāks vecums, augsts kopējais darba stundu skaits, paaugstināts darba un privātās dzīves konflikts. Rezultāti uzsver nepieciešamību uzlabot pedagogu darba vides apstākļus un veicināt darba un privātās dzīves līdzsvaru.

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RADIOLOGICAL FINDINGS AND PROGNOSIS OF COLORECTAL CANCER PATIENTS WITH KRAS GENE MUTATION

Objectives. To analyze association between oncogenic KRAS mutation and radiologic findings in patients with primary colorectal cancer.
Materials and Methods. A retrospective study was conducted on medical records of 172 patients with histopathologically verified colorectal cancer and pre- and postoperative cross-sectional imaging using CT

and MT techniques between August 2023 and August 2024, and in whom the pathologic specimens were tested for BRAF, KRAS and NRAS mutations.

Results. Among 172 patients 54.5% (n=92) were male and 45.5% (n=80) were female, mean age 64 years. Histopathologically verified colorectal cancer pathologic specimens were tested for BRAF, KRAS and NRAS mutations, most frequently detected mutated oncogene was KRAS 80.8%. KRAS mutated colorectal cancers most commonly localized in rectum 23.0%, sigmoid colon 16.9% and rectosigmoid junction 10.3%. Radiological assessment was made by using the TNM system. The most common T stages at diagnosis was T3, colon cancer 71.1% and rectal cancer 46.9% and T4 stage, colon cancer 26.7 % and rectal cancer 40.8%. N1 stage in colon cancer patients was reported in 62.2% cases, N2 stage in 28.9 % cases. N1 stage in rectal cancer patients was reported in 36.7% cases, N2 stage in 51.0% cases. Distant metastasis in colon cancer patients detected in 63.3% cases and in rectal cancer patients detected in 51.1% cases. Most commonly affected metastatic sites were liver 60.4%, lungs 44.6%, distant lymph nodes 29.5% and peritoneum 14.4%. Within a year after treatement local progression of cancer was detected in 7.2 % cases, local recurrence was detected in 8.6% cases and distant progression was detected in 60.4% cases.

Conclusion. Among BRAF, KRAS and NRAS oncogenes KRAS was the most frequently detected mutated oncogene. KRAS mutated colorectal cancers were most commonly localized in sigmoid colon, rectosigmoid junction and rectum. The most common T stages at diagnosis were T3 and T4, these stages indicate advanced local tumor growth. In most cases radiologist reported abnormal lymph nodes and detected distant metastasis, which indicates cancer spread to other body parts and that defines stage IV advanced cancer with a significant reduction in survival rate. KRAS mutation in colorectal cancers drives tumor progression and is associated with poor prognosis.

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EFFECT OF THERAPEUTIC EXERCISE VOLUME ON ACUTE ANXIETY REDUCTION IN PATIENTS WITH SCHIZOPHRENIA, BIPOLAR DISORDER, MAJOR DEPRESSION AND GENERALIZED ANXIETY DISORDER

Introduction: Acute anxiety is common across psychiatric disorders and may interfere with treatment engagement. Although physical activity is known to improve long-term mental health outcomes, less is known about its immediate associations with anxiety reduction in real-world psychiatric settings. This study examined whether participation in therapeutic exercise sessions is associated with short-term changes in self-reported anxiety, and whether greater program participation is related to larger reductions.

Results: Self-reported anxiety scores were significantly lower after exercise sessions (median pre = 3; median post = 2; Wilcoxon $P < 0.001$). Improvement was observed in 81% of patients. Anxiety reductions did not differ significantly by sex, diagnosis or age. Greater participation in walking, stretching/yoga and breathing sessions was associated with larger decreases in anxiety (Spearman $\rho = -0.63$ to -0.66, all $P < 0.001$).

Discussion: In this observational clinical sample, participation in exercise sessions was consistently associated with large, rapid short-term reductions in self-reported anxiety across diagnostic categories. The observed dose–response associations suggest that greater engagement may be linked to larger improvements.

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CHARACTERIZATION OF AGATSTON SCORE IN PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA IN LATVIA

Background: Familial hypercholesterolemia (FH) is associated with a high risk of premature coronary artery disease; however, cardiovascular risk varies substantially among affected individuals. Coronary artery calcium (CAC), quantified by the Agatston score, reflects the burden of calcified coronary atherosclerosis and predicts cardiovascular risk.
Aim. To characterize the CAC score in Latvian patients with FH and assess its association with age at CAC detection and FH causal genetic variant status.
Methods. Patients were selected from the Latvian FH Registry if genetic testing results were available. Medical records were reviewed for coronary computed tomography angiography (CCTA), and only individuals with a reported Agatston score were included in the analysis. Mann–Whitney U test was used to compare the CAC score in subgroups, and Fisher's exact test for proportions.
Results. In total, 439 patients were genetically tested, among whom 98 patients had available data on CAC score and 36 had CAC score 0. The median CAC score for 62 patients with CAC score >0 was 73.93 (IQR [23.5-197.5], range from 2 to 3000). There was a non-significant trend of higher CAC score among patients with FH causal genetic variant compared to non-carriers (30.3 [IQR 0-217] vs 14.5 [IQR 0-78]; p=0.190). CAC score >100 was twice as commonly found in mutation-positive patients (36.4% vs 18.4%, p=0.088). In the age group 0, and all 4 patients with genetic variant had the CAC score >0 (range 3-164). The youngest individual with the CAC score >0 (3) was 29 years old.
Conclusions. Our data suggest that patients with FH phenotype who are carriers of causal mutation develop more severe coronary calcification, and the CAC score >0 can be found as early as age 29. Acknowledgements. None declared.

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FRACTURE MANAGEMENT DURING PREGNANCY: A SYSTEMATIC LITERATURE REVIEW OF DIAGNOSTIC, THERAPEUTIC, AND MATERNAL-FETAL OUTCOMES

Background: Trauma affects up to 8% of pregnancies and is the leading non-obstetric cause of maternal mortality. Fracture hospitalization incidence during pregnancy is approximately 247/100,000 pregnancy/year. The most common fractures involve the tibia, ankle and forearm. Approximately 24% of fractures during pregnancy require operative treatment. Physiologic changes during pregnancy including increased blood volume, hypercoagulability and inferior vena cava compression significantly increase treatment complexity. Aim: To evaluate current evidence regarding epidemiology, management strategies and maternal-fetal outcomes of fracture treatment during pregnancy.
Methods: A systematic literature review was conducted using MEDLINE, PubMed and Google Scholar (2015–2025). Studies were included comparing conservative vs operative fracture management during pregnancy.
Results: Imaging with appropriate fetal shielding is recommended with MRI preferred when feasible though medically indicated radiographs should not be delayed (fetal radiation exposure <50 mGy considered safe). Regional anesthesia minimizes fetal drug exposure. Left lateral decubitus positioning prevents inferior vena cava compression after 20 weeks gestation. Surgical management of pelvic fractures demonstrated comparable fetal outcomes to conservative treatment (miscarriage 10.5% vs 15.8%). Lumbosacral and spinopelvic fractures

carry highest risk with 25% preterm delivery rate and 10% stillbirth rate. According to ACOG guidelines medically necessary surgery should never be delayed regardless of trimester.
Conclusions: Fracture management during pregnancy requires individualized approach balancing maternal injury severity with fetal safety. Conservative treatment is preferred when feasible, however, operative intervention should not be delayed when indicated. Multidisciplinary collaboration between orthopedic surgeon, obstetricians and anesthesiologists is essential for optimal maternal and fetal outcomes.

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BREAST CANCER RECURRENCE AFTER PRIMARY TREATMENT: TIME TO RECURRENCE, CLINICAL STAGE, MOLECULAR SUBTYPE AND TUMOUR MORPHOLOGY

Breast cancer is a heterogeneous disease with variable clinical outcomes and risk of recurrence. The aim of this study was to evaluate time to breast cancer recurrence after primary treatment according to clinical stage, molecular subtype, and tumour morphology. A retrospective descriptive analysis was performed in 125 patients with documented breast cancer recurrence after primary treatment at the Latvian Oncology Centre, Riga East Clinical University Hospital. Clinical and pathological data were collected from medical records, including tumour morphology, molecular subtype, clinical stage at diagnosis, recurrence pattern, and time to recurrence. Time to recurrence, measured in months, was the main outcome. Recurrence was classified as local, regional, or distant progression. Data analysis was performed using IBM SPSS Statistics and Microsoft Excel. The most common histological type was ductal carcinoma (n=105, 84%), followed by lobular carcinoma (n=18, 14%). Metaplastic and mucinous carcinoma were rare (n=1, 1% each). HR-positive tumours were the most frequent molecular subtype (n=84, 67%), followed by triple-negative breast cancer (n=25, 20%) and HER2-positive tumours (n=16, 13%). The most common recurrence pattern was distant progression (n=74, 59%). Stage IIA was the most common at diagnosis (n=41, 32%). Time to recurrence ranged from 3 to 172 months, with a mean of 87.5 months. No significant differences in recurrence timing were found between molecular subtype, tumour morphology, or clinical stage groups. Breast cancer recurrence was most commonly observed in patients with ductal carcinoma, HR-positive subtype, and stage IIA disease. These findings support the need for long-term follow-up after primary treatment.

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FACTORS ASSOCIATED WITH SURGICAL INTERVENTION IN PEDIATRIC ORBITOCELLULITIS: A RETROSPECTIVE STUDY AT CHILDREN'S CLINICAL UNIVERSITY HOSPITAL, LATVIA

Objectives. Orbitocellulitis is a potentially severe orbital infection in children associated with vision loss and intracranial complications. While most cases are managed conservatively, a subset requires surgical intervention. This study aimed to identify clinical, laboratory, and radiological factors associated with surgical treatment in pediatric orbitocellulitis.
Methods. A retrospective study included pediatric patients treated at Children's Clinical University Hospital, Latvia (2020–2025) with orbitocellulitis (ICD-10 H05.0). Demographic data, symptom duration, laboratory inflammatory markers, imaging findings, treatment, and hospitalisation were analysed. Patients were stratified by surgical intervention. Comparative analysis and logistic regression were applied.
Results. A total of 65 patients were included, of whom 11 (16.9%) required surgery. Surgically treated patients had higher CRP coefficients (median 23.9, IQR 11.9–31.3 vs. 3.3, IQR 1.0–12.5; p=0.0008) and longer hospital stays (5 days, IQR 4.5–6.5 vs. 3 days, IQR 2–4; p=0.003). Imaging was more frequently performed (90.9% vs. 55.6%; OR 8.0; p=0.040), and fluid collection was more common (50.0% vs. 10.0%; OR 9.0; p=0.015). In logistic

regression, higher CRP (OR 1.08, 95% CI 1.01–1.14; p=0.015) and fluid collection (OR 10.98, 95% CI 1.52–79.13; p=0.017) were independently associated with surgery.
Conclusions. Surgical intervention in pediatric orbitocellulitis was independently associated with higher inflammatory burden and radiological evidence of fluid collection, reflecting more advanced disease at presentation. These findings suggest that readily available clinical parameters, particularly CRP levels and imaging features, may serve as early indicators of disease severity and help identify patients at increased risk for operative management. Incorporating these factors into clinical assessment may improve timely decision-making and optimise management strategies in pediatric patients.

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FREQUENCY OF OBESITY IN CHILDREN AGES 2-6 YEARS OLD ALBANI AN AND THEIR IMPACT ON THE USE OF CHEMICALS-MEDICALLY

Keyword: *obesity, metabolic shock, complications, therapy*
Obesity or "syndrome X" is a contemporary character that the disease is spreading more and more. Today in t he world numbering over 250 million obese. It is characteristic disease of the century that has conquered the globe where there is reason to take the name "globesyty".
Take measures against the spread of this syndrome begins and continues with the determination and the exa ct meaning what`s obesity.
Obesity is a metabolic shock triglyceride resulting in the addition of excess adipose tissue in the body general ly beyond the amount that is necessary for normal functioning
The purpose of this paper is to generate some conclusions about:
- What is obesity.
- The form`s format of his complications.
- Preventive measures, therapy.
The most important preventive measures against obesity are after "disaster" of the occurrence of obesity is ne cessary to take measures to combat it and what is more difficult.

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ARTIFICIAL INTELLIGENCE AS AN AUXILIARY TOOL IN GENERAL PRACTITIONER PRACTICE

Introduction. Artificial intelligence (AI) can transform primary care by reducing administrative burdens and supporting clinical decisions. However, successful AI integration depends on physicians' knowledge, attitude and practices, alongside overcoming technological and regulatory barriers.
Aim. To evaluate the knowledge, attitude and readiness of Latvian family physicians to integrate AI tools into practice, comparing local data with global evidence. Materials and Methods. The quantitative phase of the study consisted of a cross-sectional survey utilizing a questionnaire among family physicians and family medicine residents in Latvia. The qualitative phase included a review of relevant systematic reviews and meta-analyses (2025-2026) selected from scientific databases subscribed to by Rīga Stradiņš University. The results of the local survey were compared with global data.
Results. The survey included 29 respondents: 18 family medicine residents (62.1%) and 11 certified family physicians (37.9%). The majority - 82.8% (n=24) - routinely use generative AI models, however, specialized clinical AI platforms are not yet utilized. Automating administrative tasks was identified as a priority for AI by 79.3% (n=23) of the specialists. AI assistance in diagnostics and pharmacotherapy is relevant for 37.9% (n=11) and 20.7% (n=6), respectively. The primary barrier, identified by 82.8% (n=24) of physicians, is the risk of algorithmic errors, while data security concerns were highlighted by 37.9% (n=11). The identified local priorities and barriers completely align with international data. Furthermore, 89.7% (n=26) of the respondents are ready to undergo specialized training to study the practical applications of AI in their daily work in detail.

Conclusion. Latvian family physicians show high readiness to integrate AI for administrative and clinical support. Local barriers match global challenges.

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LIFESTYLE FACTORS AFFECTING LONGEVITY

Keywords: *long-lived individuals, lifestyle, physical health, mental health, ageing, longevity*
Background. Today, longevity is often considered a phenomenon; however, in the future it may become a common occurrence. A broader public understanding of lifestyle factors influencing longevity can increase awareness of the importance of taking care of one's health from an early age in order to reach old age with strength and vitality.
Aim. To identify lifestyle factors influencing longevity. Methods. The study involved elderly individuals aged 90 years and older living in the territories of Daugavpils and the Augšdaugava region. Quantitative and qualitative data collection methods were combined in the study. The research instruments included a questionnaire and interview questions developed by the author. Data processing: Microsoft Excel. Results. Of the 52 respondents, 71% were women and 29% were men. The average age was 92.7 years, the highest recorded age was 100 years. The majority of respondents had a normal body mass index (56%). Most participants demonstrated positive lifestyle habits, including regular health monitoring (77%), physical activity (57%), social activity (54%), a balanced diet (61%), daily consumption of fruits and vegetables (69%), creative leisure activities (21%), interaction with family and friends (52%), adequate sleep (60%), attention to personal hygiene (94%) and safety (73%), stress management (58%), awareness of life purpose (54%), and life satisfaction (71%). Negative lifestyle habits were observed only rarely.
Conclusion. Based on the obtained results, the author concludes that longevity is influenced by a combination of factors, including an orientation toward a healthy lifestyle (avoidance of harmful habits, maintenance of physical health, and healthy nutrition), an active social life, a regular sleep routine, a responsible attitude toward health and safety, stress management, life satisfaction, and a positive outlook on life.

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ANNUAL FOLLOW-UP ADHERENCE AFTER ADRENALECTOMY IN PATIENTS WITH PHEOCHROMOCYTOMA: A RETROSPECTIVE STUDY AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL OVER A 10-YEAR PERIOD

Background: Pheochromocytoma carries a notable risk of recurrence and malignancy, making lifelong annual follow-up after adrenalectomy essential. However, patient adherence to post-operative surveillance protocols remains poorly understood.
Objectives: To evaluate adherence to annual follow-up visits among patients who underwent adrenalectomy for histologically confirmed pheochromocytoma at Pauls Stradiņš Clinical University Hospital between 2015 and 2025, and to identify factors associated with non-adherence. Methods: A retrospective analysis was conducted on 31 patients (19 women, 12 men; mean age 56.6 ± 14.8 years). Three patients operated in 2025 were excluded due to insufficient follow-up time, leaving 28 for evaluation. Adherence was defined as at least one documented clinical, biochemical, or imaging review per year. Non-parametric tests were applied: Mann-Whitney U, Kruskal-Wallis, Fisher's exact, and Spearman correlation.
Results: Mean adherence was 35.7% (median 6.2%), reflecting marked cohort heterogeneity. Half of patients never attended a follow-up visit; only 21% showed full adherence. Residence outside Riga was significantly associated with higher adherence (45.4% vs. 0.0%; p = 0.013). Age group was a significant predictor (p = 0.036),

with the 41–55 group showing the highest adherence (65%). Sex, histology, and tumor size did not significantly influence adherence (all $p > 0.05$).
Conclusions: Follow-up adherence is critically low, with half of patients never returning for surveillance. Residence and age are significant determinants. A centralized national registry is needed to ensure consistent long-term monitoring and timely detection of recurrence.

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PREVENTIVE CARE DURING ACUTE VISITS AND PATIENT PERCEPTION OF THE FAMILY DOCTOR AS A HEALTHCARE COORDINATOR

Introduction: Preventive care can be addressed during acute consultations in primary care, but its integration may vary in everyday practice. At the same time, patients differ in how strongly they view their family doctor as the main coordinator of their healthcare. Understanding how these two aspects are related may help identify patterns in routine primary care.
Aim: To examine the association between preventive care during acute visits and patients' perception of their family doctor as the main healthcare coordinator.
Methods: A cross-sectional survey was conducted among 225 adults in Latvia. Participants reported whether preventive care is regularly addressed during acute visits and how strongly they consider their family doctor to be their main healthcare coordinator. The number of visits to the family doctor in the past 12 months was also collected. Associations were assessed using chi-square tests with linear trend analysis. A sensitivity analysis excluded respondents unable to evaluate preventive care. Multivariable logistic regression was performed.
Results: Preventive care during acute visits was reported more frequently among respondents who rated their family doctor more highly as a healthcare coordinator (51.9% vs 26.7%), with a significant linear trend. The association remained significant after excluding unclear responses. In multivariable analysis, a higher coordination rating was associated with greater odds of preventive care integration (OR = 1.38, $p = 0.006$). The number of visits to the family doctor was not significantly associated. **Conclusions:** Lower integration of preventive care during acute visits is associated with a lower likelihood of patients perceiving their family doctor as their main healthcare coordinator. This finding highlights that preventive care delivery during routine consultations and patients' perception of care coordination are closely related.

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IMPACT OF CANCER-ASSOCIATED PULMONARY EMBOLISM ON TREATMENT AND OUTCOMES IN ONCOLOGIC PATIENTS

Keywords: *cancer, pulmonary embolism, treatment, outcome*
Background: Pulmonary embolism (PE) is a common and serious complication in cancer patients, associated with tumor-related factors and anticancer therapies. It can complicate clinical management and require modification or interruption of treatment. This study aimed to evaluate clinical outcomes and follow-up in patients with cancer-associated PE.
Methods: A retrospective cohort study included adults with active malignancy and imaging-confirmed PE at Riga East University Hospital (2018–2023). Data on demographics, cancer type and stage, and treatment before and after PE were collected. Survival was measured from PE diagnosis to death or last follow-up. Survival was analyzed using Kaplan–Meier and Cox regression; predictors of treatment modification were assessed using multinominal logistic regression.
Results: Among 100 patients (median age 72 years; 52% women), gastrointestinal cancers were most common (53%). Most patients (74%) had not started cancer treatment at PE diagnosis, and in 67% cancer and PE were diagnosed during the same hospitalization; 46% had stage IV disease. Median overall survival was 97 days (95% CI 19.1–174.9), with 21% in-hospital mortality. Advanced stage was strongly associated with worse

survival (p<0.001); stage IV patients had a median survival of 24 days. Cancer stage independently predicted mortality (HR 1.566; 95% CI 1.256–1.954). Among survivors, 47% required treatment de-escalation to palliative care, 15% had therapy escalation, and 17% had no change. Remission was achieved in 20% of those receiving cancer-directed therapy.
Conclusions: Cancer-associated PE frequently coincides with advanced disease and is linked to high early mortality and substantial disruption of cancer treatment. Cancer stage is a key determinant of survival, with advanced disease associated with markedly poorer outcomes.

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PREDICTIVE FACTORS FOR ACROMIAL OSTEOLYSIS FOLLOWING ACROMIOCLAVICULAR JOINT LIGAMENT INJURY FIXATION WITH HOOK PLATE

Keywords: *acromioclavicular joint dislocation, hook plate fixation, subacromial osteolysis, predictive factors*
Introduction: Acromioclavicular joint injuries represent approximately 9-12% of all shoulder injuries predominantly affecting young, active individuals. Hook plate fixation is a widely used surgical technique for high-grade AC joint dislocations (Rockwood types III-V) due to technical simplicity, reliable reduction and immediate postoperative stability. However, subacromial osteolysis is a significant complication. According to a systematic review and meta-analysis by Huang et al. (2024) the pooled incidence of subacromial osteolysis is approximately 29% though rates vary considerably between 9.5% and 100% depending on radiological assessment methods and implant retention time. Identifying predictive factors for osteolysis development is essential for optimizing surgical technique and postoperative management.
Aim: To determine predictive factors for acromial osteolysis following AC joint stabilization with hook plate based on scientific literature and identify optimal strategies to minimize this complication.
Methods: Systematic literature analysis using PubMed, Google Scholar, ScienceDirect. Search terms: "acromioclavicular joint dislocation", "hook plate fixation", "subacromial osteolysis", "predictive factors", "complications". Review limited to English-language publications from 2020-2025.
Conclusions: Subacromial osteolysis following hook plate fixation is multifactorial. Key predictive factors include prolonged implant retention time (removal within 5.5 months is optimal), acromion-hook angle (≤10° recommended) and acromion morphology (Type 1 associated with higher risk). Conversely concurrent coracoclavicular ligament reconstruction appears to reduce osteolysis incidence. Notably radiographic evidence of osteolysis does not necessarily correlate with functional outcomes. Further prospective research is required to establish clinical guidelines.

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ULTRASOUND GUIDANCE FOR PERIPHERAL VENOUS CATHETERIZATION IN A PEDIATRIC POPULATION: A STUDY ON ANESTHESIA AND ICU NURSES' SUCCESS RATES

Keywords: *Pediatrics, Ultrasound, Vascular Access, Learning Curve, Nursing, Anesthesia*
Introduction. Peripheral venous catheterization (PVC) is the most common invasive procedure in hospitalized children, yet it remains technically demanding. First-attempt success is often below 50%. Multiple failures delay treatment and cause significant patient distress. While ultrasound-guided (USG-PVC) techniques are recognized to improve outcomes, the procedural volume required to reach competency remains poorly characterized.
Aim. To evaluate the learning curve and identify the proficiency threshold for first-stick success rate (FSSR) among ICU and anesthesia nurses transitioning to USG-guided techniques.

Materials and Methods. This prospective longitudinal study at the Children's Clinical University Hospital (Riga, Latvia) followed 9 nurses without prior USG experience performing 118 procedures. Data collected included age group, DIVA (difficult intravenous access) status, sedation status, and deparment. Experience was categorized into three phases: Initial (1–5), Early Practice (6–10), and Proficient (≥11). A multivariable binomial logistic regression analyzed the impact of these phases on FSSR, adjusting for clinical covariates with the Initial phase as the reference.
Results: Total FSSR was 71% (84/118), increasing from 55.6% in the Initial phase to 90.7% in the Proficient phase. Multivariable regression identified the Proficient phase (≥11 procedures) as the primary predictor of success, demonstrating a 12-fold increase in the odds of success (aOR: 12.0; 95% CI: 3.21–46.84; p<0.001). While patient age showed clinical trends, cumulative experience remained the dominant factor after adjusting for confounders.
Conclusion: A distinct learning curve exists for USG-PVC in pediatrics, with a 12-fold increase in the odds of success observed beyond a 10-procedure threshold. This suggests a structured, supervised training period is a critical prerequisite for technical mastery to minimize procedural distress and elevate the standard of pediatric care.

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TERMOGRĀFIJAS UN AUKSTUMA NOVĒRTĒJUMA SALĪDZINOŠĀ ANALĪZE PĒC ADDUKTORA KANĀLA BLOKA TOTĀLĀS CEĻA LOCĪTAVAS ENDOPROTEZĒŠANAS LAIKĀ

Ievads. Reģionālā anestēzija, īpaši adduktora kanāla bloks (ACB), plaši tiek izmantota ceļa locītavas endoprotezēšanā, lai nodrošinātu efektīvu pēcoperācijas analgēziju. Veiksmīgs adduktora kanāla bloks noved pie sensoriskās denervācijas, ko var klīniski izvērtēt, izmantojot testus, piemēram, ledus testu. Fizioloģiski reģionālie bloki ietekmē simpātisko nervu sistēmu, izraisot vazodilatāciju un ādas temperatūras paaugstināšanos inervētajā dermatomā, efektu, ko var mērīt ar termogrāfiju. Lai arī ledus tests ir tiešs klīniskais indikators sensoriskajam blokam, tas ir subjektīvs. Termogrāfija piedāvā objektīvu, neinvazīvu metodi, lai novērtētu nervu bloku fizioloģiskos efektus. Sapratne par korelāciju starp šiem diviem novērtēšanas veidiem, īpaši ar dažādiem mērījumu intervāliem, varētu apstiprināt termogrāfiju kā objektīvu aizstājēju klīniskajai sensoriskajai novērtēšanai.
Mērķis. Šī pētījuma mērķis ir izpētīt attiecības starp ādas temperatūras izmaiņām (novērtētām ar termogrāfiju ik pēc 2 minūtēm) un sensorisko blokādi (novērtētu ar ledus testu ik pēc 3 minūtēm), sekojot adduktora kanāla blokam pacientiem, kuriem tiks veikta ceļa locītavas endoprotezēšana.
Metodes. **Pētījuma dizains** Tika veikts prospektīvs novērošanas pētījums, kurā piedalījās 21 pacients, kuriem bija veikts adduktora kanāla bloks kā daļa no anestēzijas locītavas endoprotezēšanai.
Bloka protokols
Adduktora kanāla bloks tika veikts ultrasonogrāfijas kontrolē, izmantojot ropivakainu 0.375% 30 ml apjomā.
Termogrāfiskie mērījumi
Ādas temperatūra tika mērīta, izmantojot termālo kameru Hikmicro SP60, sākotnēji un ik pēc 2 minūtēm visā 30 minūšu novērošanas periodā.
Aukstuma uztveres tests
Sensora blokāde tika novērtēta, izmantojot ledus gabaliņu dermatomiem, ko inervē saphenous nervs (piemēram, mediālā apvidū). Testēšana tika veikta sākotnēji (0 minūtes, tostarp "sākumā" un "uzreiz pēc bloka") un ik pēc 3 minūtēm turpmāk 30 minūšu laikā.

Aukstuma uztvere tika novērtēta 4 punktu skalā:
0 = Normāla uztvere
1 = Samazināta aukstuma uztvere (jūtams auksts, bet mazāk intensīvi)
2 = Tikai pieskāriena uztvere (nav aukstuma sajūtas)
3 = Vispār nav uztveres (nedz auksts, nedz pieskāriens)
Rezultāti. Pētījumā piedalījās 21 pacients, kur visiem bija veikti termogrāfijas mērījumi un aukstuma uztveres novērtējums. Kohortas vidējais vecums bija 69.86 ± 6.00 gadi un vidējais ķermeņa masas indekss (ĶMI) 32.06 ± 4.54 kg/m².
Pēc adduktora kanāla bloka tika novērots ādas temperatūras pieaugums ekstremitātē. Vidēji maksimālais temperatūras pieaugums (ΔT_max) no sākotnējā līmeņa sasniedza 1.06 ± 0.74 °C 30 minūšu novērošanas periodā. Šis maksimums tika sasniegts vidēji 17.05 ± 8.12 minūtes pēc bloka.
No 14 pacientiem, kuri sasniedza nozīmīgu sensorisko bloku (definēts kā 2 vai 3 punkti), bloka sākuma laiks bija vidēji 20.57 ± 4.14 minūtes. Ievērojami, ka 7 no 21 pacientiem nesasniedza aukstuma uztveres rezultātu, kas pārsniedz 1 punktu 30 minūšu novērošanas periodā, norādot uz mazāk izteiktu vai trūkstošu nozīmīgu sensoro bloku saskaņā ar mūsu kritērijiem.
Svarīgi, ka pētījums neatklāja statistiski nozīmīgu korelāciju starp objektīvajiem termogrāfiskajiem rādītājiem un subjektīvajiem aukstuma uztveres rezultātiem šajā kohortā. Maksimālā temperatūra nenoteica statistiski nozīmīgu korelāciju ar maksimālo aukstuma uztveres rezultātu ($p = 0.41$), vai ar aukstā bloka sākuma laiku ($p = 0.56$).
Runājot par demogrāfisko faktoru ietekmi, statistiskā analīze neparādīja nozīmīgas korelācijas. Piemēram, vecums nebija statistiski nozīmīgi saistīts ar ΔT_max ($p = 0.66$). Līdzīgi, ĶMI neuzrādīja nozīmīgu korelāciju ar ΔT_max ($p = 0.28$).
Secinājumi. Adduktora kanāla bloks efektīvi izraisa mērāmu ādas temperatūras pieaugumu ekstremitātē un aukstuma uztveres samazināšanos saphenous nerva inervācijas zonā pacientiem, kuriem tiks veikta ceļa locītavas endoprotezēšana. Vidējais maksimālais temperatūras pieaugums bija 1.06 ± 0.74 °C, sasniegts vidēji 17.05 ± 8.12 minūtēs. Pacientiem, kuriem tika konstatēts nozīmīgs bloks (N=14), tā sākums tika novērots vidēji 20.57 ± 4.14 minūtēs. Neskatoties uz skaidriem pierādījumiem gan fizioloģiskajās (termo) gan sensoriskajās reakcijās uz bloku, šajā kohortā netika atrasta statistiski nozīmīga korelācija starp izmērītajiem termogrāfiskajiem rādītājiem un aukstuma uztveres testa rezultātiem. Demogrāfiskie faktori, piemēram, vecums un ķermeņa masas indekss, būtiski neietekmēja ne termogrāfisko reakciju, ne aukstuma uztveres izmaiņas pēc adduktora kanāla bloka.
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SGLT2 INHIBITOR USE AND ASSOCIATED RISK FACTORS FOR URINARY TRACT INFECTIONS IN PATIENTS WITH TYPE 2 DIABETES

Background. Sodium–glucose cotransporter-2 (SGLT2) inhibitors are widely used in the management of type 2 diabetes mellitus due to their cardiovascular and renal benefits. However, increased urinary glucose excretion has raised concerns regarding a potential increased risk of urinary tract infections (UTIs). Previous studies have reported inconsistent findings. This study aimed to evaluate the risk of UTI among patients with diabetes treated with SGLT2 inhibitors compared with those not receiving this therapy.
Methods. This retrospective cohort study included 168 patients with diabetes mellitus from a family physician practice. SGLT2 inhibitor use was recorded at baseline based on electronic prescription data. Patients were consecutively enrolled starting in March 2021, with follow-up of up to five years. The primary outcome was UTI occurrence. Kaplan–Meier analysis and the log-rank test were used to compare UTI-free time between groups. Multivariable Cox regression was performed adjusting for age, sex, HbA1c, body mass index (BMI), and serum creatinine.
Results. The mean age was 65.5 years, and 55.4% were female. Mean BMI was 32.4 kg/m², HbA1c 6.8%, and creatinine 79.1 µmol/L. Overall, 77 patients (45.8%) received SGLT2 inhibitors. During follow-up, 29 patients (17.3%) developed UTI. Kaplan–Meier analysis showed no significant difference in UTI-free survival between groups (log-rank $p = 0.433$). In Cox regression, SGLT2 inhibitor use was not significantly associated with UTI

risk (HR 1.57, p = 0.248). Female sex (HR 8.04, p < 0.001) and higher creatinine (HR 1.012, p = 0.030) were independent predictors of UTI.
Conclusion. SGLT2 inhibitor use was not associated with increased UTI risk. Female sex and higher creatinine were significant predictors of UTI. These findings are consistent with previous evidence suggesting that SGLT2 inhibitors do not substantially increase the risk of urinary tract infections in patients with diabetes.

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SCOPE OF PREVENTIVE HEALTH EXAMINATIONS IN PRIMARY CARE AND THEIR IMPACT ON PATIENT PERCEPTION AND OUTCOMES: EVIDENCE FROM LATVIA

Introduction: Preventive health examinations in primary care support early disease detection and identification of risk factors, yet participation remains suboptimal and delivered care may not match patient expectations. Understanding participation and gaps between expected and provided care may improve services.
Aim of the Study: To assess participation in preventive health examinations in Latvia, evaluate the scope of procedures, compare received and expected procedures, and examine their relationship with patient-reported outcomes.
Materials and Methods: A cross-sectional survey included 225 adults in Latvia. Participants reported attendance at preventive examinations with their family physician. Attendees reported procedures and outcomes; non-attendees indicated expected procedures. For attendees, a composite indicator of received procedures was calculated. The gap between expected and received procedures was defined as the difference in proportions. Associations between procedure coverage, perceived sufficiency, and outcomes were analyzed using Pearson correlation and one-way ANOVA.
Results: Overall, 56% had never attended a preventive examination, while 44% had participated. The largest gaps between expected and performed procedures were observed for neurological (+47.6%), thyroid (+41.5%), mental health (+40.1%), lymph node (+38.8%) and skin/mucosal examinations (+37.9%). Blood pressure and BMI were measured more often than expected. A positive correlation was found between procedure proportion and perceived sufficiency (r = 0.413, p < 0.001). Procedure coverage differed by outcomes (ANOVA, p = 0.030), with the lowest among those reporting no changes and the highest among those reporting health-related changes.
Conclusions: Participation in preventive examinations remains limited in Latvia, with gaps between expected and delivered care. Broader examination scope is associated with higher perceived adequacy and more reported health-related changes.

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ASSOCIATION BETWEEN ACNE SEVERITY, SELF-ESTEEM, AND SOCIAL ANXIETY IN LATVIA

Introduction: Acne is a common dermatological condition that can affect not only the skin but also psychological well-being. Self-esteem and social anxiety are particularly important aspects; however, data on this association in Latvia remain limited.
Aim: To evaluate the association between acne severity, self-esteem, and social anxiety in Latvia.
Materials and Methods: A cross-sectional quantitative study was conducted using an anonymous online survey completed by 110 respondents. Age distribution was as follows: 18–20 years (n = 22), 21–25 years (n = 46), 26–30 years (n = 20), 31–35 years (n = 12), and over 36 years (n = 10). The sample included 78 women and 32 men. Acne severity was assessed using an adapted Global Acne Grading System (GAGS), self-esteem with the Rosenberg Self-Esteem Scale (RSES), and social anxiety with the Social Interaction Anxiety Scale (SIAS).

Descriptive statistics, group comparisons, and correlation analysis were performed. A p-value of < 0.05 was considered statistically significant.

Results: Respondents were divided into four groups: no acne (n = 18), mild acne (n = 44), moderate acne (n = 31), and severe acne (n = 17). Increasing acne severity was associated with lower self-esteem and higher social anxiety. A moderate negative correlation was found between acne severity and self-esteem ($\rho = -0.593$; $p < 0.001$), a moderate positive correlation between acne severity and social anxiety ($\rho = 0.648$; $p < 0.001$), and a moderate negative correlation between self-esteem and social anxiety ($\rho = -0.621$; $p < 0.001$).

Conclusions: This study showed that greater acne severity may be associated with lower self-esteem and higher levels of social anxiety. These findings highlight the importance of considering not only dermatological but also psychological factors in the assessment of patients with acne.

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MATERNAL OBESITY AS AN INDEPENDENT DETERMINANT OF CAESAREAN SECTION WITHIN THE ROBSON CLASSIFICATION FRAMEWORK: IMPLICATIONS FOR OBSTETRIC CARE QUALITY

Background. Caesarean section (CS) rates have increased worldwide, often exceeding medically necessary levels. While CS is life-saving, its overuse is linked to higher complication risks and increased healthcare burden. The Robson classification groups women into comparable categories based on obstetric characteristics, enabling population-level analysis. At the same time, rising obesity represents a major public health challenge and is associated with increased obstetric interventions.

Aim. To compare Robson groups 1–5 between women with overweight and obesity and assess whether obesity independently increases CS risk.

Methods. A retrospective study using delivery data from Pauls Stradiņš Clinical University Hospital (2023–2024). Women with BMI ≥25 kg/m² were classified as overweight or obese. Robson groups 1–5 were assigned hierarchically. Group distributions were compared using χ^2 test and Cramér's V. Odds ratios (OR) with 95% CI were calculated. Multivariable logistic regression assessed the independent association between obesity and CS, adjusting for age, GDM, hypertensive disorders, and Robson group. Ethics approval No. 23-37/13. Results. Of 1,129 women, 926 were included (overweight n=518; obesity n=408). Distribution differed marginally (χ^2=9.24; p=0.055; V=0.10). Obesity was less frequent in Robson group 1 (3.7% vs 6.8%; OR 0.53; 95% CI 0.28–0.98). CS rates were higher (45.1% vs 36.2%; OR 1.45; 95% CI 1.11–1.88). GDM and hypertensive disorders were more common. Obesity remained independently associated with CS (aOR 2.02; 95% CI 1.35–3.02).

Conclusions. Obesity alters Robson group distribution and independently increases CS risk. Incorporating BMI into Robson-based audits may improve risk identification and care planning. Reducing obesity through public health strategies may decrease intervention rates and healthcare burden.

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DIRECT-ACTING ANTIVIRAL TREATMENT IN HBV/HCV COINFECTION: HBV REACTIVATION AND ANTIVIRAL RESISTANCE – A LITERATURE REVIEW

Background: Direct-acting antiviral (DAA) therapy has significantly improved treatment outcomes in HCV (hepatitis C virus) infection. However, antiviral treatment failure due to resistance-associated mutations (RAMs) and HBV (hepatitis B virus) reactivation during DAA therapy may complicate clinical management. Although coinfection is not uncommon, such complications remain relatively rarely reproted.
Aim: To evaluate HBV/HCV coinfection, focusing on its epidemiology, HBV reactivation DAA therapy, and antiviral treatment failure associated with RAMs. These findings are illustrated through a clinical case treated at Pauls Stradins Clinical University Hospital with both complications.
Methods: A literature review was conducted analysing published studies on HBV/HCV coinfection and antiviral treatment failure associated with RAMs. A clinical case of a patient with HBV/HCV coinfection was analysed and compared with the findings reported in the literature in order to better understand potential complications during HCV treatment and optimise patient management.
Results: HBV reactivation during DAA therapy occures in up to 24% of coinfected patients (12% to 73%). Antiviral treatment failure associated with RAMs, particulary in NS3 and NS5 regions, has been reported. SVR rates are higher in coinfected patients than in HCV monoinfection, suggesting no increased resistance. In the analysed case, a male patient with HCV genotype 1b infection and HBV/HCV coinfection developed virological failure after *Grazoprevir* and *Elbasvir*, because of RAMs. HBV reactivation was observed during therapy, requaring *Lamivudin* treatment for HBV. Salvage triple therapy with *Gleceprevir/ Pibrentasvir* and *Sofosbuvir* was initiated.
Conclusion: HBV reactivation and antiviral treatment failure remain important complications in patients with coinfection undergoing DAA therapy. Careful virological monitoring and individualized managment are essential for optimizing patient outcomes.

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ASSOCIATION OF LIPOPROTEIN(A) LEVELS WITH EARLIER DEVELOPMENT OF CORONARY ARTERY DISEASE AMONG PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA IN LATVIA

Background: Familial hypercholesterolemia (FH) is associated with extreme levels of low-density lipoprotein cholesterol. It has not been studied whether lipoprotein(a) [Lp(a)] additionally contributes to coronary events in Latvian FH population. Aim. To assess whether elevated Lp(a) is associated with earlier and more severe coronary atherosclerosis and a higher risk of acute coronary events in patients with FH.
Methods. Patients were selected from the Latvian FH Registry if genetic testing results were available. Patients' medical records were reviewed to determine the first detected significant (>50%) coronary stenosis based on findings from invasive or computed tomography coronary angiography, as well as history of myocardial infarction (MI) and revascularization (percutaneous coronary intervention or coronary artery bypass grafting). Data on Lp(a) levels were collected from the registry.
Results. Among 439 patients with available genetic data, 286 patients had their Lp(a) measured; 67 of these patients had a monogenic causal FH genetic variant confirmed. Median Lp(a) levels did not differ between patients with or without a causal genetic variant (15.81 [interquartile range, IQR 8.9-40.1] vs 16.7 mg/dL [8.9-

72.0], p=0.714). Lp(a) levels negatively correlated with age at first detection of significant coronary stenosis (rS=-0.258, p=0.030, n=71). This correlation was similar in patients with or without monogenic mutation (rS=-0.266 and rS=-0.267, respectively). Associations between Lp(a) and age at first revascularization (rS=-0.174, p=0.232, n=49) and age at first MI (rS=-0.403, p=0.172, n=13) were not statistically significant.
Conclusions. Lp(a) levels were associated with earlier onset of significant coronary stenosis in clinical FH, irrespective of monogenic variant status. These findings support routine Lp(a) measurement in patients with severe hypercholesterolemia. Acknowledgements. None declared.

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PATIENT SATISFACTION WITH LABOUR INDUCTION

Background. Labour induction is increasingly used worldwide and represents a key component of contemporary maternity care. While clinical outcomes are well described, patient-reported experience measures (PREMs) remain insufficiently explored. Patient satisfaction is an important indicator of healthcare quality, influencing psychological well-being and overall childbirth experience.
Aim. To evaluate patient-reported satisfaction with labour induction and identify areas for improvement in maternity care.
Methods. A cross-sectional study was conducted using an anonymous questionnaire administered to women after labour induction. Patient-reported experience was assessed using a 1–5 Likert scale (information, preparedness, staff attitude, emotional support, pain management) and an overall rating on a 0–10 scale. Descriptive statistics were used, and qualitative content analysis was performed on open-ended responses. Ethical approval was obtained (LU MDZF No. 23-37/276).
Results. A total of 59 responses were analysed. The mean overall rating was 6.8 ± 1.4. The highest scores were observed for staff attitude (4.4 ± 0.6), while patient preparedness before induction received lower ratings (3.5 ± 0.9). Emotional support and information were evaluated positively. Qualitative analysis identified three main themes: need for clearer information, improved preparation, and better communication of expectations.
Conclusion. Patient satisfaction was moderately high, with interpersonal care identified as a key strength. However, gaps in information provision and preparedness remain. Improving pre-induction counselling and introducing standardised informational materials may enhance patient understanding and support more patient-centred maternity care.

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CARRYING OR MOVING HEAVY OBJECTS AND THEIR ASSOCIATION WITH ILLNESS AMONG EMPLOYEES IN LATVIA

Keywords: *heavy lifting, illness, employees*.
Background. Carrying heavy objects is a significant risk factor for work-related musculoskeletal disorders and may lead to pain, reduced mobility and work incapacity or absence from work. Loads >10 kg for men and >7 kg for women are considered significant physical strain. Aim. To evaluate the association between carrying or moving heavy objects and illness among workers in Latvia across different sociodemographic groups.
Methods. A cross-sectional analysis of survey data from the project "Work conditions and risks in Latvia 2019-2021" was conducted, including 2473 respondents aged 18-74 years (1025 men and 1448 women). Respondents were grouped by exposure to heavy lifting (>10 kg for men and >4 kg for women; ≥25% of working hours vs almost never/never). Respondents were also divided into those who reported illness during the past year and those who did not. The analysis was performed overall and stratified by sociodemographic factors. Chi-square test and relative risk were used.
Results. Illness was more common among exposed workers compared with non-exposed workers (60.1% vs 55.1%, respectively; p=0.014). A significant association between carrying or moving heavy objects and illness

was found for women (RR=1.10; p=0.049), men (RR=1.14; p=0.025), employees with 2-5 years of work experience (RR=1.16; p=0.019), unskilled workers (RR=1.51; p=0.008) and respondents with secondary education (RR=1.23; p=0.012). In these groups illness was more common among respondents who carried or moved heavy objects.

Conclusion. The results suggest that carrying or moving heavy objects at work may be associated with an increased risk of illness. A significant association was found across several sociodemographic groups. Therefore, attention should be given to occupational safety measures, such as educating employees on safe lifting techniques, rotating tasks and providing equipment and machinery to facilitate heavy lifting.

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THE ASSOCIATION BETWEEN COMPUTER USE AND PREVALENCE OF HEADACHE AMONG THE EMPLOYED POPULATION IN LATVIA

Keywords: *headache, computer use, employees*

Background. Headaches affect ~ 40% of the population. The prevalence of headaches is associated with multiple factors including prolonged computer use. Computer-based work is an integral part of daily work activities, therefore its association with headaches should be evaluated.

Aim. To assess the relationship between computer use and headache prevalence among employees, accounting for sociodemographic factors.

Methods. A cross-sectional study was based on data from the study "Work conditions and risks in Latvia 2019-2021". 956 employees aged 18-74 years, who completed a questionnaire on working conditions and health status were analysed. Participants using a computer ≥2 hours/day were divided according to exposure: <25% and ≥25% of working time. The prevalence of headaches was determined based on self-reported head pain during a previous year lasting >3 days. Analyses were performed for the overall sample and for subgroups, considering sociodemographic factors. Chi-Square or Fisher's tests and relative risk were used.

Results. Headaches were more common among those who used a computer for ≥25% of working time compared with those who used it less (64.7% vs. 35.3%, respectively, p<0.001). Higher computer use was associated with increased headache prevalence among women (RR=1.39; p<0.001), men (RR=1.50; p<0.001), individuals aged 45-59 years (RR = 1.37; p<0.05), respondents with >10 years of work experience (RR = 2.45; p<0.001), and those with higher education (RR = 2.76; p<0.05), compared with participants using a computer <25% of working time.

Conclusion. Computer use ≥25% of working time is significantly associated with higher prevalence of headaches, with strongest association in sociodemographic groups. The results highlight the importance of managing computer-based work to reduce prevalence of headaches. This can be achieved through identification of risk factors and education.

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ASSOCIATION OF TUMOR STAGE AND GRADE WITH ADVERSE PATHOLOGICAL FEATURES IN RENAL CELL CARCINOMA

Background: Renal cell carcinoma (RCC) is one of the most common malignant kidney tumors, accounting for approximately 2–3% of all cancers. Despite advances in surgical treatment, a substantial proportion of patients remain at high risk of recurrence, particularly those with adverse pathological features. Since 2024, state-funded adjuvant pembrolizumab therapy has been available in Latvia for high-risk patients, emphasizing the importance of accurate risk stratification.

Aim: To evaluate the association between lymphatic and vascular invasion and tumor stage, grade, and tumor necrosis in renal tumors, and to determine the significance of these factors in identifying high-risk patients.

Methods: A retrospective, quantitative study was conducted including 347 patients with renal tumors. Clinical and pathological parameters were analyzed, including tumor stage (T), grade (G), lymphatic involvement (L), vascular invasion (V), and tumor necrosis. Patients were stratified into low-grade (G1–G2; n=253) and high-grade (G3–G4; n=94) groups. Statistical analysis was performed using the chi-square test.
Results: In the overall cohort (n=347), higher tumor stage (T3–T4) was significantly associated with lymphatic involvement (63.3% vs. 18.3%; $\chi^2(1)=42.750$; $p<0.001$), vascular invasion (42.9% vs. 2.5%; $\chi^2(1)=78.249$; $p<0.001$), and tumor necrosis (43.5% vs. 18.2%; $\chi^2(1)=18.541$; $p<0.001$). Higher tumor grade (G3–G4) was significantly associated with lymphatic involvement (49.1% vs. 19.5%; $\chi^2(1)=20.196$; $p<0.001$), vascular invasion (29.8% vs. 2.5%; $\chi^2(1)=42.311$; $p<0.001$), and tumor necrosis (41.3% vs. 18.3%; $\chi^2(1)=16.601$; $p<0.001$). A significant association between tumor stage and grade was also observed ($\chi^2(1)=51.609$; $p<0.001$). In the high-grade group (n=94), higher tumor stage remained significantly associated with lymphatic involvement ($\chi^2(1, N=71)=6.106$; $p=0.013$) and vascular invasion ($\chi^2(1, N=71)=6.776$; $p=0.009$), whereas tumor necrosis was not significantly associated with tumor stage ($p=0.345$).
Conclusion: Higher tumor stage (T3–T4) is associated with increased rates of lymphatic and vascular invasion, indicating a higher risk of metastasis and disease progression. Higher tumor grade (G3–G4) reflects a more aggressive tumor phenotype and is strongly associated with adverse pathological features. Lymphatic and vascular invasion represent the most consistent indicators of high-risk disease, while tumor necrosis appears to be a less reliable prognostic factor, particularly in high-grade tumors. Combined assessment of tumor stage and grade may improve identification of patients at high risk of recurrence and support optimal selection for adjuvant pembrolizumab therapy in clinical practice.
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DIFFERENCES IN DIETARY HABITS AND PHYSICIAL ACTIVITY BETWEEN PREGANT WOMEN WITH AND WITHOUT GESTATIONAL DIABETES MELLITUS AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

Background. Lifestyle factors, particularly dietary habits and physical activity, play an important role in the development and management of gestational diabetes mellitus (GDM).
Aim. To evaluate differences in dietary habits and physical activity between pregnant women with gestational diabetes and those without this diagnosis.
Methods. A total of 182 pregnant women who delivered at the Department of Obstetrics of Pauls Stradiņš Clinical University Hospital between July 2025 and March 2026 were included in this prospective study. Participants were divided into gestational diabetes group (n=91) and a control group (n=91). Data on diet, physical activity, and anthropometric parameters were collected from questionnaires and medical records and analyzed using the $\chi 2$ and the Mann-Whitney U test (IBM SPSS Statistics).
Results. The mean maternal age was 33 in the GDM group and 31 years in the control group. Pre-pregnancy body mass index was significantly higher among women with GDM (28.2 vs 24.5 kg/m2, $p<0.001$), with overweight and obesity more prevalent in this group.
Dietary habits differed significantly between groups: vegetable consuption ($p <0.001$) and home meal preparation ($p = 0.039$) were more common among women with GDM, whereas fruit consuption ($p <0.001$) and eating outside the home ($p = 0.006$) were more frequent in the control group. The most common dietary strategies among women with GDM were the plate method (70%) and consideration of the glycemic index (58%), while detailed monitoring was less common, with 18% counting carbohydrate exchanges and 4% monitored caloric intake.
Women with GDM reported longer weekly walking duration ($p=0.020$), but shorter exercise duration ($p = 0.022$) and more often had physical activity levels below WHO recommendations.
Conclusion. Pregant women with GDM demonstrate significant differences in dietary habits and physical activity compared with women without GDM.
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PREVALENCE OF ASSOCIATED COMORBIDITIES IN PATIENTS WITH BRONCHIAL ASTHMA. EXPERIENCE OF A SINGLE CENTER

Introduction. Asthma remains a significant global health challenge. Comorbidities associated with asthma vary with age and disease severity and can complicate diagnosis and treatment.
Aim. The aim of this study was to identify factors influencing lung function (FEV1) in patients with bronchial asthma through retrospective analysis of patient cases.
Methods. A retrospective study included 594 patients with bronchial asthma in the Allergic diseases investigation and treatment center in Riga. Statistical analysis assessed the prevalence of comorbidities (obesity, arterial hypertension, GERD, diabetes mellitus, allergic rhinitis or chronic rhinosinusitis) and the effects of age, gender, BMI and comorbidities on FEV1.
Results Mean patient age was 44.8 years (from 15 to 89 years old, 67,8% female). For 319 patient was available information about smoking status, among them 30.7% were current smokers. Allergic rhinitis/ chronic rhinosinusitis was the most prevalent comorbidity (59,5%) followed by obesity (32,9%), GERD (35,1%) and arterial hypertension (34,4%). Multiple linear regression analysis ($p < 0.001$) revealed that FEV1 (% of predicted) decreased with increasing age (-0.234% per year; $p < 0.001$) and BMI (-0.338% per kg/m2; $p = 0.035$). Males had 4.263% higher FEV1 than females ($p = 0.031$). Unexpectedly, GERD was associated with a 6.007% increase in FEV1 ($p = 0.002$). Allergic rhinitis, arterial hypertension, and diabetes mellitus showed no significant effect ($p > 0.05$).
Conclusion. This study demonstrates a high prevalence of comorbidities in bronchial asthma patients. FEV1 declines with age and BMI, is higher in males, and is unexpectedly positively associated with GERD. These findings highlight the need to consider patient demographics and comorbidities in asthma management to optimize outcomes and quality of live.

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FACTORS ASSOCIATED WITH ICU READMISSION IN HOSPITALIZED PATIENTS

BACKGROUND. ICU readmission is a major challenge reflecting disease progression and effectiveness of prior management. Identification of associated factors may improve patient assessment and outcomes. Parameters such as age, BMI, SOFA, and PC-ICU are widely used, but their association with readmission remains insufficiently explored.
AIM. The study aimed to investigate the influence of demographic and clinical factors–age, BMI, SOFA score, and PC-ICU score on the likelihood of hospital readmission in a cohort of hospitalized patients.
METHODS. An observational study was carried out including 35 hospitalized patients. Patient data were obtained through direct evaluation and review of clinical records. Collected variables included age, BMI, the SOFA score, and the PC-ICU score. The primary outcome was ICU readmission. Comparisons between patients who experienced readmission and those who had first-time admission were performed using the Mann-Whitney U test. Statistical significance was defined as p-value < 0.05.
RESULTS. The mean age of the patients was 76.9 years (SD 8.5), the mean BMI was 27.22 kg/m²(SD 3.9). The median PC-ICU score was 3(range 1–8). The median SOFA score was 2(IR 0–6). Readmitted patients had a mean age of 83 years compared with 75 years for first-time admissions. Mean BMI was 27.7 vs. 25.4 kg/m², median SOFA score 3 vs. 2, and median PC-ICU score 2 vs. 4 for readmission and first-time admission, respectively. A statistically significant association with ICU readmission was observed for age(p=0.035). In

contrast, BMI(p=0.300), PC-ICU score(p=0.479), and SOFA score(p=0.263) were not significantly associated with readmission.
CONCLUSION. Age was the only factor significantly associated with ICU readmission in this cohort. In contrast, BMI, SOFA score, and PC-ICU score were not significantly related to readmission risk. These findings suggest that older age may be an important consideration when identifying patients at increased risk of ICU readmission.

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DISEASE ACTIVITY IN PATIENTS WITH SEROPOSITIVE RHEUMATOID ARTHRITIS: ASSOCIATION WITH AGE, SEX, DISEASE DURATION, AND GLUCOCORTICOID USE

Background. Rheumatoid arthritis is a chronic autoimmune inflammatory disease characterized by persistent joint inflammation and progressive joint damage. Disease activity is commonly assessed using the DAS28-CRP score. Several factors, including age, sex, disease duration, and glucocorticoid use, may influence disease activity in patients with rheumatoid arthritis.
Aim. The aim of this study was to evaluate disease activity in patients with seropositive rheumatoid arthritis and its association with age, sex, disease duration and glucocorticoid use.
Methods. A retrospective cross-sectional study was conducted including 55 patients with seropositive rheumatoid arthritis. Disease activity was assessed using the DAS28-CRP score. Demographic and clinical data were collected from medical records. Statistical analysis included descriptive statistics, the Kruskal – Wallis test and the X2 test to assess associations between variables.
Results. The study included 55 patients with seropositive rheumatoid arthritis, of whom 69.1% (n=38) were women and 30.9% (n=17) were men. The mean age was 65.0 years (median 67; IQR 57-75), and the mean disease duration was 8.8 years (median 9; IQR 3-12). Based on the DAS28-CRP score, high disease activity was observed in 40.0% (n=22), moderate in 30.9% (n=17), low in 20.0% (n=11), and remission in 9.1% (n=5). Glucocorticoids were used by 65.5% (n=36) patients. No statistically significant association was found between disease activity and glucocorticoid use ($X2 = 1.68$; $p = 0.64$), disease duration (Kruskal – Wallis $H = 1.24$; $p = 0.743$), age ($H = 2.1$; $p = 0.55$), or sex ($X2 = 1.57$; $p = 0.67$).
Conclusion. In patients with seropositive rheumatoid arthritis, disease activity was not significantlty associated with age, sex, disease duration, or glucocorticoid use. These results suggest that disease activity may be influenced by other clinical or biological factors not evaluated in this study.

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COMPARISON OF PEDIATRIC AND ADULT PATIENTS: IMPACT OF MANUAL REVIEW OF AUTOMATED AHI AND ODI SCORES ON THERAPY DECISIONS

Background: Sleep studies are used to diagnose obstructive sleep apnea (OSA) using metrics such as the Apnea–Hypopnea Index (AHI) and Oxygen Desaturation Index (ODI), often generated automatically by modern systems. Although automated scoring helps manage clinical workload, its reliability and impact on treatment decisions remain uncertain, particularly between pediatric and adult populations.
Objective: To compare automatically generated and manually reviewed AHI and ODI scores and assess their influence on therapy decisions in pediatric and adult patients.
Methods: A retrospective analysis of sleep studies from the Epilepsy and Sleep Medicine Centre at the Children's Clinical University Hospital and Riga Eastern Clinical University Hospital was performed. Polygraphy (Scala–Löwenstein) and polysomnography (Sonata–Löwenstein) results were analyzed by

comparing automated and manually reviewed AHI and ODI scores and evaluating changes in severity classification and therapy decisions.
Results: The pediatric group included 123 patients (median age 7 years). Automated analysis frequently overestimated severity compared with manual review, leading to major reclassification and therapy changes in 70.7% of cases. Severe AHI decreased from 63.4% (automated) to 8.9% (manual), while mild cases increased from 6.5% to 56.9% and normal from 4.1% to 18.8%. The adult group included 103 patients (median age 54 years). Differences between automated and manual scoring were smaller, with therapy changes in 35.9% of cases. Severe AHI increased from 20.4% (automated) to 31.1% (manual), while moderate decreased from 31.1% to 22.3% and mild from 35% to 29.1%, indicating smaller but clinically relevant differences between scoring methods.
Conclusion: Manual review had a substantially greater impact on therapy decisions in pediatric patients, suggesting current automated scoring systems may not adequately account for pediatric physiology and require expert validation.

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INTERVERTEBRAL DISC EXPOSURE TO VANCOMYCIN DURING SPINE SURGERY: A PHARMACOKINETIC STUDY

Background: Vancomycin is widely used for perioperative prophylaxis in spine surgery patients at increased risk of methicillin-resistant Staphylococcus aureus infection or with β-lactam allergy. However, data on its penetration into intervertebral disc (IVD) tissue are limited. Aim: To evaluate the penetration kinetics of preoperatively administered intravenous vancomycin into IVD tissue by analysing plasma and disc concentrations at defined intraoperative time points.
Methods: This prospective observational study included 26 patients undergoing elective spine surgery with preoperative intravenous vancomycin prophylaxis (median age 44 (42–45) years; weight 76 (76–100) kg; creatinine clearance 110 (106–110) mL/min). Venous blood and IVD samples were collected at predefined intraoperative time points. Vancomycin concentrations were quantified using validated analytical methods, and population pharmacokinetic (PK) modelling was applied to estimate clearance (CL) and volume of distribution (V). Disc-to-plasma concentration ratios were calculated to assess tissue penetration.
Results: Vancomycin PK were described by a one-compartment model with linear elimination. Estimated CL and V were 0.19 L/h and 13.4 L, respectively. Creatinine clearance (β=248.8, p=0.006) and body weight (β=−1.47, p=0.033) were significant covariates. Median vancomycin concentration in IVD tissue was 1.7 µg/mL (1.1–2.8), with disc-to-plasma ratios ranging from 0.0007 to 0.243, indicating high interindividual variability. Half of the samples exceeded 2 µg/mL.
Conclusions: Vancomycin showed slow elimination and distribution consistent with extracellular space. IVD concentrations were low at sampling times, likely due to incomplete plasma–disc equilibration. Although adequate plasma levels were achieved, penetration into IVD tissue was limited and variable, which may influence prophylactic effectiveness. Acknowledgement: Funded by the Latvian Council of Science (OPATS-PKPD, Nr. lzp-2024/1/0303).

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PREVALENCE OF INSOMNIA SYMPTOMS AND PATIENT EXPERIENCE IN FAMILY PHYSICIAN PRACTICE IN LATVIA

Background: Insomnia is one of the most common sleep disorders among adults and significantly affects physical and mental health, daily functioning, and quality of life. Despite its high prevalence, many individuals do not seek medical help, and sleep problems often remain underreported. Understanding insomnia prevalence and patient experience is important for improving its recognition and management in primary care settings.
Aim: To assess the prevalence, frequency, and duration of insomnia symptoms among adult respondents and to evaluate patient experience related to help-seeking behaviour and care received in family physician practice in Latvia.
Methods: A quantitative cross-sectional study was conducted using an anonymous structured online questionnaire consisting of 28 questions. The survey assessed sleep problems over the previous six months, symptom frequency and duration, sleep characteristics, daytime consequences, help-seeking behaviour, and received treatment. A total of 103 respondents participated. Descriptive statistics were used.
Results: Sleep problems were reported by 77.67% of respondents. Among them, 41.18% experienced symptoms three or more times per week, and 51.16% reported symptom duration longer than three months. The most common symptoms were restless sleep (58.43%), difficulty falling asleep (56.18%), and frequent awakenings (52.81%). Insomnia significantly affected daytime functioning: 80.58% experienced sleepiness or concentration difficulties, and 70.71% reported a negative impact on daily life. Only 30.10% had discussed sleep problems with a family physician.
Conclusions: Insomnia symptoms are highly prevalent and frequently associated with significant daytime impairment. However, many patients do not seek medical help. These findings highlight the need for increased patient awareness and improved recognition of insomnia symptoms, as well as better communication about sleep problems.

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OPTIC NEURITIS EPIDEMIOLOGY AND CLINICAL MANIFESTATIONS IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL OPHTALMOLOGY CLINIC FROM YEAR 2020 UNTIL 2025

Background: Optic neuritis is an inflammatory optic nerve disorder and a leading cause of acute visual loss in young adults. Etiology is associated with demyelinating diseases of central nervous system, especially multiple sclerosis, but it may also occur as other immune-mediated or infectious conditions. Analysis of epidemiology together with clinical characteristics is essential for understanding disease patterns and risk factors.
Aim: To evaluate the epidemiological and clinical characteristics of optic neuritis in patients treated at Riga East Clinical university hospital Ophtalmology clinic from year 2020 to 2025. Methods: A retrospective study was performed including 109 patients with optic neuritis. Demographic data were collected and stratified into six age cohorts, sex, episode type, laterality and anatomical form. Descriptive statistical analysis was used to evaluate frequency distribution across these parameters.
Results: Out of 109 patients, 62.4% (n=68) were female and 37.6% (n=41) male. Age ranged from 18 to 80 years, with a mean of 37.4 ± 13.2 years and a median age of 35 years (IQR 28- 43) A significant age difference between genders was observed (p=0.012) with female patients being older with mean age of 40.1 years compared to 33.5 years in males. The highest incidence occurred in the 29-39 age group (n=47). A first time episode was documented in 79.8% (n=87) of cases, however recurrent course was seen in 20.2% (n=22) patients with no

statistically significant sex difference (p=0.530). Unilateral involvement was observed in 78% (n=85) of cases, while 22% (n=24) were bilateral. Retrobulbar neuritis accounted for 96.3% (n=105) of cases, whereas papillitis was observed in 3.7% (n=4).
Conclusions: Optic neuritis primarily affects young adults with female predominance. Recurrence rates were not associated with sex, and most cases were unilateral and retrobulbar. Findings highlight patterns of optic neuritis, guiding diagnosis and follow-up care.

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EPIDEMIOLOGY, CLINICAL MANIFESTATIONS AND MANAGEMENT OF HUMAN OCULAR DIROFILARIASIS – A LITERATURE REVIEW

Background: Ocular dirofilariasis is a rare zoonotic parasitic infection caused by nematodes of the genus Dirofilaria, most commonly Dirofilaria repens with 89.7% of cases. It is transmitted to humans by mosquitoes carrying microfilariae from infected animals. In Baltic region, D. repens infection has become endemic since 2008, with canine seroprevelance up to 38%.
Aim: To review the epidemiology, clinical manifestations and management of ocular dirofilariasis in humans based on scientific literature.
Methods: A narrative literature review was conducted analyzing published scientific literature on human ocular dirofilariasis, epidemiological trends, clinical presentation and management strategies.
Results: Ocular dirofilariasis is increasingly reported in Europe with 46 cases in the Baltic region including 18 ocular cases. A review of 576 cases identified ocular involvement as one of the most frequent presentations in Eastern Europe. Clinically the condition presents with hyperemia of the eye, foreign body sensation, swelling, and occasionally a visible subconjuctival worm. Diagnosis is typically established through clinical suspicion and confirmed by surgical extraction of the parasite, followed by histopathological identification. Surgical removal under local anesthesia remains both the definitive diagnostic and curative treatment, often resulting in complete recovery without systemic complications.
Conclusion: Ocular dirofilariasis is an emerging infection in the Baltic region, with increasing clinical relevance. Due to nonspecific presentation, increased clinician awareness is crucial for accurate diagnosis. Surgical extraction of the parasite remains the gold standard for definitive diagnosis and treatment.

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IMPACT OF TUMOUR LOCALISATION ON SURGICAL TREATMENT STRATEGIES IN MALIGNANT EYLID TUMOURS

Background. Malignant eylid tumours are most common periocular malignancies requiring early diagnosis and appropriate surgical management. Tumour localisation determines the extent of surgical excision and need for reconstruction.
Aim. To analyse the histological distribution and anatomical localisation of malignant eyelid tumours and their association with surgical treatment.
Methods. A retrospective study included 295 patients with histologically confirmed malignant eyelid tumours treated at Riga East Clinical University Hospital (2019-2026). Demographics, histology, localisation and surgical methods were analysed. Treatments were grouped as local excision, excision with plastic repair and excision with reconstruction. Associations between localisation and treatment were assessed using Chi-square test.
Results. Mean patient age was 71.2± 11.9 years (32-97); 66.8% female, 33.2% male. BCC predominated (94.9%), followed by SCC (2.7%), MCC (1.4%), melanoma (0,7%) and hidradenocarcinoma (0,3%). Most common

tumour localisation was lower eyelid (52.2%), followed by medial canthus (30.2%), upper eyelid (12.2%) and lateral canthus (5.4%). Most frequent treatment was reconstruction after excisions (49.2%), followed by excision with plastic repair (36.9%) and local excision (13.9%). Lower eyelid tumours most often required reconstruction (53.2%), 35.7% were treated with excision and plastic repair, medial canthus in 47.2%, whereas lateral canthus tumours local excision alone (43.8%). Upper eyelid tumours were most frequently treated with excision and plastic repair (44.4%). A statistically significant association was found between tumour localisation and surgical method (χ^2 =14.8,df=6,p=0.022).
Conclusion. Malignant eyelid tumours mainly affect elderly patients and are most often BCC. The lower eyelid is the most frequent tumour site. Tumour localisation significantly influences surgical strategy, with reconstruction more commonly required for lower eyelid and medial canthus.

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MACHINE LEARNING MODELS FOR PREDICTION OF BREAST CANCER RECURRENCE USING CLINICAL DATA

Background. Breast cancer recurrence remains a major clinical challenge and early identification of high-risk patients is essential for improving treatment outcomes. Machine learning approaches provide powerful tools for analyzing clinical data and predicting disease recurrence.
Aim. The aim of this study was to evaluate the performance of different machine learning models in predicting breast cancer recurrence using clinical data from dataset. Methods. Datasets included clinical data from 218 patients, consisting of recurrence status, age, ECOG performance status and pTNM staging. Among them, 28 patients experienced recurrence and 190 had no recurrence. To address the class imbalance, SMOTE method was applied, resulting in a balanced dataset with 190 recurrence and 190 non-recurrence cases. Several machine learning models were trained and evaluated, including Random Forest, XGBoost, Neural Network, Decision Tree, Naive Bayes and Support Vector Machine (SVM). Model performance was assessed using ROC curves, AUC, accuracy, F-measure, Cohen's kappa, sensitivity and specificity.
Results. Random Forest achieved the highest predictive performance with an AUC of 0.97, followed by XGBoost (AUC=0.93). Neural Network (AUC=0.88), Decision Tree (AUC=0.85), Naive Bayes (AUC=0.82), and SVM (AUC=0.80) also demonstrated satisfactory classification performance. Random Forest showed the highest accuracy (>0.75), compared to F-measure (>0.75), Cohen's kappa (>0.75), sensitivity (□0.95), and specificity (□0.85) measures. In comparison, SVM and Naive Bayes demonstrated lower performance across several metrics.
Conclusion. Machine learning models demonstrate strong potential for predicting breast cancer recurrence based on clinical parameters. Among the evaluated models, Random Forest showed best overall performance, suggesting its potential usefulness for supporting clinical decision-making and identifying patients at higher risk of recurrence.

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IMPACT OF BIOLOGIC THERAPY ON DISEASE REMISSION IN PATIENTS WITH SEVERE ASTHMA: ANALYSIS OF SHARP REGISTRY DATA

Background. Severe asthma is a heterogenous chronic airway disease associated with poor symptom control, frequent exacerbations, and reduced quality of life despite optimized standard therapy. With the development of biologic therapy, disease remission has become an increasingly relevant and achievable treatment goal in patients with severe asthma.
Aim: The aim of this study is to evaluate the impact of biologic therapy on disease remission in patients with severe asthma, with FEV1 assessed as a functional marker of treatment response.

Materials and methods. A retrospective analysis of SHARP registry data was performed in 142 patients with severe asthma receiving biologic therapy. Disease remission was assessed at baseline, after 1 year, and after 2 years of treatment. Descriptive statistics were used to summarize remission data, while longitudinal changes in FEV1 were used to summarize remission followed by post-hoc pairwise comparisons with the Wilcoxon signed-rank test and Bonferroni correction.
Results. Before the initiation of biologic therapy, disease remission was observed only in a small proportion of patients, whereas the majority did not achieve remission. After 1 year of treatment, the proportion of patients achieving remission increased, and this trend persisted after 2 years, with further rise in remission frequency. In parallel, mean FEV1 improved from 65.4% at baseline to 78.3% after 1 year and remained stable at 77.2% after 2 years. The Freidman test showed statistically significant changes in FEV1 over time (χ^2=26.742, df=2, p<0.001). Post-hoc analysis demonstrated significant improvement between baseline and year 1 (Z= -5.780, p<0.001) and between baseline and year 2 (Z= -4.207, p<0.001), while no significant difference was found between baseline and year 2 (Z= -0.565, p=0.572).
Conclusion. Biologic therapy in patients with severe asthma is associated with an increased frequency of disease remission and improvement in FEV1 as a functional marker of treatment response. The greatest benefit was observed during the first year of treatment and was sustained during long-term follow-up.

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MAXILLARY EXPANSION AND ITS EFFECTS ON UPPER AIRWAY DIMENSIONS AND BREATHING FUNCTION: A SYSTEMATIC REVIEW

Keywords: *maxillary expansion; RME; MARPE; SARPE; nasal airway; breathing; airway volume; nasal resistance; CBCT*
Transverse maxillary deficiency is a common craniofacial condition characterized by a narrow maxilla, high palatal vault, and reduced nasal cavity dimensions. Due to the close anatomical relationship between the maxilla and the nasal airway, maxillary constriction may increase nasal resistance and negatively affect breathing. Maxillary expansion procedures, including rapid maxillary expansion (RME), miniscrew-assisted rapid palatal expansion (MARPE), and surgically assisted rapid maxillary expansion (SARPE), are widely used not only for orthodontic correction but also for potential improvement of respiratory function.
Aim: To evaluate current scientific evidence regarding the effects of maxillary expansion on airway dimensions and breathing improvement.
Methods: A structured literature review was conducted using PubMed and related databases. Studies assessing airway changes through cone-beam computed tomography (CBCT), rhinomanometry, acoustic rhinometry, and polysomnography were included.
Results: The majority of studies demonstrate that maxillary expansion significantly increases nasal cavity width and volume. Reductions in nasal airway resistance and improvements in nasal airflow were consistently reported, particularly in pediatric patients. However, changes in the oropharyngeal airway and sleep-disordered breathing outcomes were inconsistent. MARPE and SARPE showed greater skeletal effects in skeletally mature patients compared to conventional RME.
Conclusion: Maxillary expansion is an effective orthodontic intervention for increasing nasal airway dimensions and reducing nasal resistance. While evidence supports improvements in nasal breathing—especially in growing patients—the relationship between structural airway changes and functional respiratory outcomes remains complex. Further high-quality randomized controlled studies are required.

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INCIDENCE OF POSTOPERATIVE DELIRIUM AFTER MINIMALLY INVASIVE CARDIAC SURGERY

Keywords: *Minimally invasive cardiac surgery, postoperative delirium, risk factors*
Objectives:

1. To determine the incidence of postoperative delirium (POD) among minimally invasive cardiac surgery patients.
2. To compare the incidence of POD between minimally invasive and conventional cardiac surgery populations.
3. To assess whether established risk factors for POD in conventional cardiac surgery apply to the minimally invasive cardiac surgery population.

Methods: A retrospective study was conducted including 76 cardiac surgery patients who underwent minimally invasive procedures between 2023 and 2025. POD was identified by reviewing medical records, including prescribed medications and descriptions of the patient's postoperative condition.
To identify possible risk factors for postoperative delirium, medical record data were analyzed regarding: patient age, malnutrition, preoperative albumin level, length of intensive care unit stay, left ventricular ejection fraction, duration of mechanical ventilation, cardiopulmonary bypass time, aortic cross-clamp time, number of blood component transfusions during surgery, postoperative hypotension and catecholamine requirement, need for additional analgesia, and comorbidities such as diabetes mellitus, prior depression, stroke or cognitive impairment, atrial fibrillation, carotid stenosis, and severe heart failure (NYHA III–IV).
Results: Overall, postoperative delirium developed as a complication in 6.6%(5) of all the patients (76).
Due to the low incidence of delirium, statistical analysis of risk factors was not recommended; therefore, each case was evaluated individually. Based on individual case assessments, potential risk factors may include low ejection fraction, prior stroke, and a history of depression. However, a larger patient population would be required to make definitive conclusions.
Conclusions: Comparing the postoperative delirium incidence in minimally invasive cardiac surgery (6.6%) with values reported in the literature (25.1–32%), the risk of postoperative delirium appears significantly lower in patients undergoing minimally invasive cardiac procedures.
Potential risk factors for postoperative delirium may include low ejection fraction, previous stroke, and a history of depression.

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THE IMPACT OF DIFFERENT EXTUBATION STRATEGIES ON THE DEVELOPMENT OF LUNG ATELECTASIS IN PATIENTS AFTER CARDIAC SURGERY

Keywords: *Positive-pressure extubation, pulmonary atelectasis, risk factors*
Objectives:

1. To determine the incidence of pulmonary atelectasis as a postoperative complication among cardiac surgery patients.
2. To compare the impact of different extubation techniques on the frequency of pulmonary atelectasis.

3. To evaluate the influence of additional risk factors on the development of pulmonary atelectasis.

Methods: To compare the impact of extubation strategies on the development of pulmonary atelectasis, a prospective study was conducted, including a total of 271 patients who were randomly extubated using one of three extubation methods applied in the cardiac surgery center:

- Group 1: Negative-pressure extubation, in which no positive pressure is applied at the moment of extubation and suction is used to remove secretions from the trachea and oral cavity.
- Group 2: Extubation without positive pressure and without tracheal suctioning.
- Group 3: Positive-pressure extubation, in which tracheal secretions are suctioned 5 minutes before removal of the endotracheal tube.

After extubation, chest X-rays were performed to evaluate the development of atelectasis. Blood gas analyses (SpO_2, $PaCO_2$, PaO_2) and pulse oxymetry were also assesed.

To identify potential risk factors for the development of atelectasis, the following data were considered: patient age, sex, body mass index, duration of surgery, duration of mechanical ventilation, duration of cardiopulmonary bypass, aortic cross-clamp time, PEEP, ventilation volume, ventilation frequency, and time to extubation.

Results: Pulmonary atelectasis developed as a complication in 17.3% (47) of all cases (271).

No statistically significant difference was found in the incidence of atelectasis among the three extubation methods (p=0,296).

Of the 9 evaluated risk factors — age, sex, BMI, duration of surgery, duration of mechanical ventilation, ventilation volume, early reoperation, cardiopulmonary bypass time, and aortic cross-clamp time — only one factor was found to be statistically significant: duration of surgery ($p = 0.016$).

Conclusions: Pulmonary atelectasis is a common postoperative complication in cardiac surgery.

Positive pressure extubation does not prove to be a significant measure for reducing the risk of atelectasis in cardiac surgery.

Of the 9 evaluated risk factors, only one—duration of surgery—was found to be significant in the development of atelectasis.

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CLINICAL AND SOCIAL FACTORS INFLUENCING DIAGNOSTIC DELAY IN CHILDHOOD AUTISM: A RETROSPECTIVE ANALYSIS

Early recognition of childhood autism (ICD-10 F84.0) is essential for timely intervention and improved developmental outcomes. However, delays in diagnosis remain common and may be influenced by both clinical presentation and social factors. The aim of this study was to identify clinical and social factors associated with diagnostic delay in children with childhood autism, with particular focus on early symptom recognition and pathways to specialist care. A retrospective cross-sectional study was conducted using anonymized medical records of children diagnosed with childhood autism (ICD-10 F84.0) at the Children's Clinical University Hospital. The study included approximately 80–100 patients diagnosed before the age of seven between January 2019 and December 2024. The primary outcome was diagnostic delay, defined as the time between first symptom recognition and formal diagnosis. Independent variables included the individual who first identified developmental concerns, the first healthcare specialist consulted, preschool attendance and evaluation, family-related factors (number of children in the family, presence of other children with autism), and early clinical features such as speech delay, impaired eye contact, social withdrawal, stereotyped behaviors, and developmental regression. This study aims to determine which factors are associated with earlier or delayed diagnosis. The findings may highlight the importance of awareness among parents, educators, and healthcare professionals, and may contribute to strategies aimed at reducing diagnostic delay and improving early identification of childhood autism.

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IMPACT OF AMIODARONE THERAPY ON THYROID FUNCTION: A PROSPECTIVE THREE-MONTH SINGLE-CENTER STUDY IN LATVIA

Aim of the study The aim of this study was to investigate changes in thyroid function, specifically thyroid-stimulating hormone (TSH) levels before and after three months of amiodarone therapy. The study also aimed to evaluate the impact of elevated anti-thyroid peroxidase (anti-TPO) antibody levels and baseline thyroid ultrasonographic abnormalities on subsequent thyroid dysfunction.
Materials and methods In this prospective study, amiodarone therapy, used as a second-line treatment in most patients, was prescribed to 21 patients for at least three months. Indications included atrial fibrillation (n = 17), recurrent ventricular tachycardia (n = 3), and premature ventricular complexes in patients with structural heart disease (n = 1). Before initiation of amiodarone therapy, thyroid ultrasonography was performed, and serum anti-TPO, TSH, and peripheral thyroid hormones (T3 and T4) were measured. All patients were euthyroid at baseline. After three months of amiodarone therapy, TSH levels were re-evaluated. Statistical analysis was performed using SPSS, applying non-parametric tests to assess the impact of baseline thyroid ultrasound abnormalities and elevated anti-TPO levels on TSH changes during amiodarone therapy.
Results Abnormal TSH levels were observed in 38% (n=6): TSH was above the reference range in 19% (n=3) and below the reference range in 19% (n=3). Patients with thyroid structural changes on ultrasound (n = 6) identified before initiation of amiodarone therapy more frequently demonstrated significant changes in TSH levels after three months of treatment ($p < 0.05$). All three patients with elevated anti-TPO levels had TSH levels above the reference range after three months of therapy.
Conclusions Thyroid ultrasound findings and elevated anti–TPO may be associated with significant subsequent changes in TSH levels and the possible development of thyrotoxicosis and hypothyroidism in patients receiving amiodarone therapy.

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POST-TONSILECTOMY HAEMORRHAGE WITHIN 14 DAYS IN ADULTS: INCIDENCE, TIMING AND MANAGEMENT IN A SINGLE-CENTRE COHORT

Introduction. Post-tonsillectomy hemorrhage (PTH) is a significant complication, with reported rates of 11–22% and reoperation required in 1–6% of adult cases. Whether surgical indication or procedure type (acute vs. elective) influences PTH risk remains debated. Proposed risk factors — age, sex, smoking, and hypertension — have yielded inconsistent results, and no universally accepted risk profile exists.
Study Objective. To assess the incidence, timing, and management of PTH within 14 days of surgery and to identify independent risk factors in a predominantly adult tonsillectomy cohort.
Methodology. A retrospective analysis of 380 patients aged 3–85 years (97.1% adults) at a single tertiary center. PTH was defined as hospital admission within 14 postoperative days, regardless of management intensity. Patients were grouped by indication — chronic tonsillitis (HT: n=219) and peritonsillar/parapharyngeal abscess (PTA: n=157) — and timing: primary (<24h) and secondary (≥24h and ≤14 days). Chi-square, Fisher's exact, Mann-Whitney U, and multivariate logistic regression were applied.
Results. Overall PTH rate was 17.1% (65/380): 56.9% managed conservatively, 43.1% requiring reoperation (7.4% of the cohort). Hemorrhage was predominantly secondary (93.8%), peaking on postoperative day 8 (median day 7). Elective tonsillectomy had a significantly higher PTH rate than acute (20.4% vs. 11.9%; p=0.043), as did HT vs. PTA (21.5% vs. 10.8%; p=0.010). On multivariate regression (n=364), arterial hypertension (>140/90 mmHg) was the only independent predictor (OR 2.11; 95% CI 1.09–4.11; p=0.027). Sex, age, and smoking were not independent risk factors. Antibiotics were prescribed in 45.7% of elective and 91.2% of acute patients, yet hemorrhage rates were comparable regardless of antibiotic use (p=0.450 overall).

Conclusions. PTH was predominantly secondary, peaking on day 7–8, with a reoperation rate of 7.4% — exceeding the 1–6% reported in literature. In this cohort, elective tonsillectomy and HT indication were unexpectedly associated with higher PTH risk than acute surgery. Arterial hypertension was the only independent risk factor, supporting targeted perioperative blood pressure management. The high antibiotic prescription rate in elective patients without evidence of benefit is inconsistent with antibiotic stewardship principles.

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HEARING OUTCOMES FOLLOWING OSSICULOPLASTY WITH PORP AND TORP PROSTHESES: A RETROSPECTIVE SINGLE-CENTRE ANALYSIS

Keywords: *ossiculoplasty, PORP, TORP, air-bone gap, cholesteatoma, conductive hearing loss*
Introduction. Chronic otitis media is a leading cause of conductive hearing loss, with ossicular chain erosion occurring in up to 80% of cholesteatoma cases and approximately 20% of non-cholesteatomatous disease. Ossiculoplasty with partial (PORP) or total (TORP) ossicular replacement prostheses is the standard surgical approach to restore hearing in cases of ossicular discontinuity. Published studies report postoperative ABG ≤20 dB success rates of 70–87% for PORP and 52–57% for TORP, with PORP consistently demonstrating a modest absolute advantage of approximately 3–5 dB. However, the clinical significance of this difference and the influence of cholesteatoma on functional outcomes remain debated.
Study Objective. To compare postoperative hearing outcomes between PORP and TORP ossiculoplasty and to evaluate the impact of cholesteatoma on audiological results in a tertiary referral centre.
Methodology A retrospective analysis of 56 patients who underwent ossiculoplasty at single tertiary centre in 2024. All patients had pre- and postoperative pure tone audiometry. The primary outcome was the four-frequency average air-bone gap (ABG; 0.5, 1, 2, 4 kHz) per AAO-HNS guidelines. Statistical analysis included Wilcoxon signed-rank test, Mann-Whitney U test, Fisher's exact test, and bootstrap confidence intervals (10,000 iterations).
Results. Ossiculoplasty significantly reduced median ABG from 16.25 to 13.75 dB (W=311.5; p=0.001). Of 56 patients, 39 received PORP and 17 TORP. Postoperative ABG was lower in the PORP group (12.50 dB) than TORP (16.25 dB), showing a trend toward significance (U=231; p=0.073; effect size r=0.303). In contrast, ABG improvement (ΔABG) did not differ between groups (2.50 vs. 3.75 dB; p=0.662), indicating both prostheses achieved comparable functional gain from their respective baselines. ABG ≤20 dB was achieved in 92.3% of PORP versus 76.5% of TORP patients (OR=3.69; p=0.182). Patients without cholesteatoma showed a trend toward greater hearing improvement (ΔABG 7.50 vs. 2.50 dB; p=0.093; r=0.271).
Conclusions. Both prosthesis types effectively restored hearing. PORP achieved superior absolute postoperative ABG, consistent with published literature, though statistical significance was not reached. The notably high PORP success rate (92.3% achieving ABG ≤20 dB) likely partly reflects a more favourable preoperative baseline rather than prosthesis superiority alone. Cholesteatoma was associated with reduced functional gain, suggesting greater intraoperative complexity limits reconstruction potential. Prospective multicentre studies with adequate statistical power are warranted.

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NEURODIVERSITY AMONG LYME DISEASE PATIENTS IN LATVIA

The Rdos Aspie Quiz is a psychometric instrument designed to identify atypical and typical cognitive traits in adults. While autism is primarily viewed as a neurodevelopmental condition, increasing attention is being paid to the overlap of neurodivergent symptoms with neuroinfectious diseases, such as Lyme disease, which may manifest in heightened sensory sensitivity and cognitive differences. The primary objective of this study was to compare the cognitive and behavioral profiles of three distinct groups—individuals with Lyme disease, self-identified autistics and a neurotypical control group—specifically focusing on the correlation between five

key domains and the total neurodivergence score. Data were collected through surveying anonymous participants and resulting dataset (N=215) was analyzed. Participants were categorized into three groups: Lyme Group, Aspie Group and Control Group. Non-parametric Spearman's rho correlations were calculated between domain scores and the total Score. 95% Confidence Intervals (CI) and p-values were derived using Fisher z transformation. The Aspie group demonstrated the most stable and monolithic cognitive structure, with high correlations across all domains. The Lyme group exhibited a profile primarily driven by sensory processing. The perception domain was the only domain where the Lyme group ($p = 0.624$) closely approached the Aspie group's level of integration. While all domains linearly scale with neurodivergence for Aspie group, the Lyme group presents a "sensory-first" profile. Sensory perception is the primary predictor of neurodivergent-like scores in Lyme patients, whereas social and relationship traits show higher variability and lower integration into their overall profile compared to the Aspie group.

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REMOTE CONSULTATIONS IN GENERAL PRACTICE: PERSPECTIVES OF CERTIFIED GENERAL PRACTITIONER AND RESIDENTS

Objective: To explore the experiences and attitudes of certified general practitioner (GP) and residents regarding the provision of remote consultations (RC) in general practice in Latvia. Methods and materials: Retrospective cross-sectional study. A survey was created using MS Forms and distributed by email to general practitioners.
Main Results and Conclusions: Total of 194 respondents participated (14.4% men, 85.6% women, mean 46.51 years), including 83% certified GP and 17% residents. Most respondents had more than 10 years of professional experience (52.1%) and worked outside Riga (56.7%). Phone calls were the most commonly used method for RC. Women were statistically more likely to use text messages (78,9%,p=0.036), while GP with over 10 years of experience (25,7%,p=0.007) and those aged 41 and older (25,7%,p=0.005) more often used video consultations. GP under 40 years reported the main benefits of RC as better access to in-person consultations (74,2%,p=0.001), improved work efficiency (70,8%,p<0.001), greater flexibility (66,3%,p<0.001) and reduced workload (37,1%,p=0.013). The main challenges for GP under 40 were limited ability to examine patients remotely (92,1%,p=0.001), while for GP aged 41 and older technical problems were the main issue (26,7%,p=0.024). Most RC were provided on weekdays (67.5%) and during working hours (55.2%), usually lasting less than 15 minutes (75.3%), which most GP considered enough to meet patient needs (79.9%). Most RC costs were covered by the state budget (79.4%), and over half of GP (57.7%) believed that the payment method influences patients choice to use RC. There is a necessity to improve the RC system. GP with up to 10 years of experience more often emphasized the need for fair pay (54,8%,p=0.005) and financial support to buy technical equipment for their practice (43%,p=0.026). More than half of GP (53.1%) expressed interest in receiving additional training on providing RC.

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FACTORS ASSOCIATED WITH E-HEALTH SERVICE USE AMONG PATIENTS WITH CHRONIC DISEASES IN PRIMARY CARE

Keywords: *e-health, chronic diseases, primary care, multimorbidity*
Background. Digital health services have significantly improved access to healthcare in recent years. In Latvia, the national e-health system provides electronic services such as e-prescriptions, access to laboratory results and electronic sick leave certificates. However, patient engagement in the use of these services remains uneven, particularly among patients with chronic diseases.

Aim. To evaluate the frequency of e-health service use and barriers to its use among patients with chronic diseases in a family physician practice and to analyze its association with age, digital skills and multimorbidity. Methods. A cross-sectional study was conducted using an anonymous questionnaire. Data were collected through an online questionnaire (Google Forms) and paper-based questionnaires. The study included 234 respondents (41.9% men and 58.1% women) aged 18–87 years (mean age 51.6 ± 19.3). Statistical analysis was performed using SPSS software. Descriptive statistics, Spearman correlation and Pearson chi-square tests were applied ($p < 0.05$).
Results. Most respondents reported using e-health services rarely or not at all, with 67.5% indicating they had not used e-health services during the previous 12 months. A statistically significant positive association was found between digital skills and the frequency of e-health service use (Spearman $r = 0.153$; $p = 0.020$). No statistically significant association was found between age and e-health service use ($p = 0.815$) or between multimorbidity and e-health service use ($p = 0.248$). The most frequently reported barriers were dependence on assistance from others (31%), concerns about data security (30.3%) and physical limitations (30%).
Conclusions. Digital skills play an important role in the use of e-health services. Improving patients' digital literacy may increase the use of digital health services.

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TIME INTERVALS BETWEEN BREAST CANCER DIAGNOSIS, SURGERY, AND INITIATION OF ADJUVANT AND NEOADJUVANT THERAPY AND ITS ASSOCIATION WITH DISEASE RECURRENCE

Background. Time intervals between breast cancer diagnosis and initiation of treatment may influence disease prognosis and recurrence risk, therefore, evaluation of treatment timing is clinically important.
Aim. To evaluate treatment time intervals in breast cancer patients and to analyze their association with local disease recurrence.
Methods. The study included 124 patients with primary breast cancer treated at the Latvian Oncology Centre, Riga East Clinical University Hospital, who developed local recurrence between 2020 to 2025. Time intervals between diagnosis and initiation of different treatment stages were analyzed. Descriptive statistics were used to characterize treatment intervals, and Spearman correlation analysis assessed their association with time to recurrence.
Results. Of the 124 patients, 15 (12.1%) received neoadjuvant therapy, while 109 (87.9%) adjuvant therapy. Among patients receiving neoadjuvant therapy, the mean time from diagnosis to treatment initiation was 5.18 weeks (SD=1.93; range 1.71-9.00). The mean duration of neoadjuvant therapy was 20.44 weeks (SD=5.71; range 10.29-35.43), and the mean interval between therapy completion and surgery was 4.34 weeks (SD=0.94; range 3.00-6.57).
Among patients receiving adjuvant therapy, the mean time from diagnosis to surgery was 5.51 weeks (SD=9.03; range 0.86-81.44). Adjuvant chemotherapy was administrated to 49 patients (44.95%); the mean interval from surgery to chemotherapy initiation was 6.41 weeks (SD=2.74), median 5.57 weeks (IQR 4.71-7.86). Radiotherapy was received by 54 patients (49.54%), with a mean interval from surgery of 24.03 weeks (SD=13.29; 95% CI 20.41-27.66), median 25.58 weeks. Hormone therapy was initiated in 55 patients (50.45%) with a mean interval of 11 weeks (SD=11.54), median 5.71 weeks.
In the adjuvant therapy group, a weak but statistically significant negative correlation was observed between time from diagnosis to surgery and time to recurrence (Spearman $\rho = -0.217$; $p = 0.024$). A stronger negative correlation was found between time from surgery to initiation of adjuvant chemotherapy and time to local recurrence (Spearman $\rho = -0.426$; $p = 0.002$).
Conclusions. Treatment time intervals varied by therapy type, with a greatest variability observed in initiation of radiotherapy and hormone therapy. A longer interval between surgery and initiation of adjuvant chemotherapy was associated with earlier local recurrence.

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TREATMENT TACTICS AND OUTCOME OF BASE OF TONGUE CANCER DEPENDING ON CANCER STAGE IN HUMAN PAPILLOMAVIRUS

Background. Base of tongue cancer is one of the oropharyngeal cancers, a risk factor that often affects the development of base of tongue cancer is human papillomavirus (HPV). The treatment tactics for patients with HPV-positive oropharyngeal cancer are similar to those with HPV-negative oropharyngeal cancer, however, the prognosis and survival are different.
Aim. The aim of the study is to analyze whether the presence of human papillomavirus(HPV) affects the treatment tactics and outcome of base of tongue cancer, taking into account the cancer stage at the Riga East University Hospital
Methods. The study used a retrospective study analysis of patients with base of tongue cancer in the Riga East University Hospital-(Oncology Centre of Latvia) from 2022-2023. Data was taken from the platform "Doctor's Office" and processed in IBM SPSS and MS Excel. HPV positive or negative in patients was assessed by immunohistochemical testing.
Results. The study included 29 patients with base of tongue cancer, HPV-positive patients were 41%(n=12), HPV-negative were 59%(n=17). HPV-negative cancer had stage I in 6%(n=1), stage III in 6%(n=1), stage IV in 88%(n=15) cases, however HPV-positive cancer had stage I in 33%(n=4), stage II in 17%(n=2), stage III in 33%(n=4), stage IV in 17%(n=2) cases. The treatment tactics for HPV-negative cancer in stage I were surgery and radiotherapy 6%(n=1), in stage III chemotherapy and radiotherapy 6%(n=1), in stage IV chemotherapy 12%(n=2), chemotherapy and radiotherapy 47%(n=8), radiotherapy 12%(n=2), symptomatic therapy 6%(n=1), no information 12%(n=2) and for HPV-positive cancer in stage I chemotherapy and radiotherapy 25%(n=3), in radiotherapy 8% (n=1), in stage II chemotherapy and radiotherapy 17%(n=2), in stage III chemotherapy and radiotherapy 25%(n=3), combination therapy 8%(n=1), in stage IV chemotherapy and radiotherapy 8%(n=1), radiotherapy 8%(n=1). The outcome of the disease for HPV-negative cancer was observation(remission) 41%(n=7), relapse 12%(n=2), symptomatic therapy 6%(n=1), exitus letalis 6%(n=1), no information of outcome 35%(n=6) and for HPV-positive cancer, observation(remission) 67%(n=8), continued therapy 8%(n=1), no information of outcome 25%(n=3).
Conclusion. Among patients with a base of tongue cancer, HPV-negative cancer are more common (59%) than HPV-positive cancer (41%). HPV-negative cancer are more often detected in stage IV (88%), while HPV-positive cancer are detected in stage IV in 17%. The most commonly used therapy is chemotherapy and radiotherapy. The outcome of the disease after treatment is better in HPV-positive patients, as the observation(remission) is in 67% of cases, while in HPV-negative patients the observation (remission) is only in 41% of cases, but relapses are in 12% of cases and the exitus letalis is in 6% of all HPV-negative patients, which indicates that HPV-negative cancer are more aggressive than HPV-positive cancer.

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COMPARATIVE ANALYSIS OF MORPHOSCOPIC AND METRIC APPROACHES FOR SEX ESTIMATION BASED ON THE HIP BONE

Introduction. In the reconstruction of a biological profile, sex estimation serves as a foundational step in physical anthropology (Pavličev et al., 2020). Due to the unique evolutionary adaptations required for childbirth, the hip bone (os coxae) remains the most reliable skeletal indicator of biological sex (Stan et al., 2024). Current osteological practice typically bifurcates into two approaches: visual (morphoscopic) assessments and metric (quantitative) analyses. In archaeological or forensic contexts, where independent biological data is often missing, comparing these methods is essential to evaluate their consistency and identify potential diagnostic biases.

Aim. This study aimed to compare the reliability and applicability of the "Phenice" (1969) visual method against the "Diagnose Sexuelle Probabiliste" (DSP) metric method using a sample of unknown sex. Materials and Methods. The study analyzed 22 dry human hip bones obtained from the Laboratory of Anatomy, Department of Morphology, Institute of Anatomy and Anthropology. The visual assessment followed the criteria established by Phenice (1969). For the metric approach, 10 standardized measurements were taken and processed via DSP software "Osteomics.".
Results. The metric analysis provided a definitive sex estimation for 16 cases (73%) with high posterior probability. The remaining 6 cases (27%) were categorized as "Undetermined". In contrast, the visual method assigned a sex to all 22 cases in the sample. Among the 16 cases where the DSP results were definitive, there was an 87.5% agreement (14 cases) with the visual findings, while 2 cases showed clear discrepancies. A significant finding was that all 6 cases labeled "Undetermined" by the metric software were nevertheless assigned a sex by the visual method. This suggests that while morphoscopic methods offer higher clinical applicability in fragmentary or ambiguous remains, they may lack the inherent rigor to filter out statistically ambiguous traits.

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ASSESSMENT OF HEALTH-RELATED QUALITY OF LIFE AND DISEASE ACTIVITY AMONG PATIENTS WITH RHEUMATOID ARTHRITIS USING SF-36 AND HAQ

Keywords: *rheumatoid arthritis; health-related quality of life; DAS28; SF-36; HAQ; patient-reported outcomes*
Introduction: Rheumatoid arthritis is a chronic inflammatory disease that significantly affects patients' functional status and health-related quality of life. However, clinical disease activity indices such as DAS28 do not always reflect the patient's perceived disease burden.
Objective: To evaluate the potential association between disease activity and quality of life in patients with rheumatoid arthritis. Additionally, the study aimed to compare the results between the study group and the control group, and to assess the relationship between the disease activity index (DAS28), health-related quality of life measured by the SF-36 questionnaire, and physical functional capacity assessed using HAQ.
Materials and Methods: A prospective study included 30 patients with rheumatoid arthritis and 30 individuals without rheumatic diseases as a control group. Participants completed SF-36 and HAQ questionnaires, and disease activity was assessed using DAS28. Statistical analysis was performed using SPSS 21.0.
Results: The mean age of patients with rheumatoid arthritis was 53.8 years (range 37–76 years), including 19 women (63.33%) and 11 men (36.67%). In the control group, 14 participants (46.67%) were women and 16 (53.33%) were men aged 18–45 years. Higher disease activity measured by DAS28 was associated with poorer health-related quality of life. A significant correlation was observed between DAS28 and HAQ scores ($p = 0.001$), indicating greater functional impairment with increasing disease activity. Significant negative correlations were also found between DAS28 and several SF-36 domains, including physical functioning ($r = −0.383$; $p = 0.037$), vitality ($r = −0.381$; $p = 0.038$), social functioning ($r = −0.606$; $p < 0.001$), and bodily pain ($r = −0.516$; $p = 0.003$).These findings suggest that higher disease activity is associated with reduced physical functioning, increased fatigue, and greater limitations in daily activities.
Conclusions: Patients with rheumatoid arthritis demonstrate significantly lower health-related quality of life compared with the control group. RA patients experience more pronounced impairment in physical and social functioning, increased pain, and greater limitations in daily activities. Higher disease activity is associated with reduced physical functioning and functional capacity, emphasizing the importance of combining clinical disease activity assessment with patient-reported outcome measures in the evaluation of RA.

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PROMOTING RESILIENCE AS A FOUNDATION FOR SAFEGUARDING MENTAL HEALTH UNDER CONDITIONS OF MILITARY THREAT: A SALUTOGENIC PERSPECTIVE ON POST-TRAUMATIC STRESS – A SYSTEMATIC REVIEW

Background Exposure to armed conflict, military operations, and ongoing security threats increases risk of post-traumatic stress disorder (PTSD) and other mental health problems, yet individuals differ widely in their psychological responses. The salutogenic framework, especially the concept of sense of coherence (SOC), highlights resilience and adaptive coping as key supports for mental health under adversity. Objective This systematic review aimed to examine the role of resilience-related resources, particularly SOC, in safeguarding mental health and PTSD among populations exposed to military threat.
Methods A systematic literature search was conducted in major scientific databases including PubMed, Scopus, Web of Science, and PsycINFO. Studies published between 1979 and 2026 investigating the relationship between resilience, SOC, and post-traumatic stress in populations exposed to war, armed conflict, or military threat were considered. After removal of duplicates and screening of titles, abstracts, and full texts, 65 studies met the inclusion criteria and were included in the qualitative synthesis. The study selection process followed PRISMA guidelines.
Results Across studies, a higher sense of coherence and other resilience resources were consistently linked to fewer post-traumatic stress symptoms, less psychological distress, and better mental health after trauma. Evidence from civilian, military, and conflict-affected populations indicates that SOC is a key protective factor that supports adaptive coping and psychological adjustment under chronic threat.
Conclusion The findings underscore the value of resilience-based approaches to mental health in contexts of armed conflict and military threat. Enhancing SOC and related psychosocial resources may improve psychological resilience and lower the risk of post-traumatic stress. Future research and interventions should further examine salutogenic strategies to promote mental health in ongoing security challenges.

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OBESITY AND METABOLIC SYNDROME: PRIMARY CARE STRATEGIES IN THE GLP-1 ERA

Keywords: *obesity, metabolic syndrome, GLP-1 receptor agonists, primary health care, GPs*
Background. In Latvia, 59.2% of adults are overweight or obese, among the highest rates in the EU. GLP-1 receptor agonists (GLP-1 RAs) have reshaped obesity pharmacotherapy, but their uptake in primary care remains uncertain.
Aim. To assess knowledge, attitudes, and organizational factors influencing Latvian general practitioners' (GPs) use of GLP-1 RAs in managing obesity and metabolic syndrome.
Methods. A cross-sectional electronic survey (23 questions) was conducted in November 2025 among 114 certified GPs (Riga 47.4%, regions 52.6%). Data were analyzed using descriptive statistics, Pearson's Chi-square test, and Mann–Whitney U test (IBM SPSS Statistics 31.0; $p<0.05$).
Results. 79% of GPs reported that 10–50% of their patients have obesity. Half rated their GLP-1 RA knowledge as good, yet only 9.6% prescribed them regularly. The main barriers were high out-of-pocket cost (83.3%) and lack of state compensation (64.9%), while insufficient knowledge was less prominent (19.3%). Metformin remained the predominant first-line pharmacotherapy (72.0%). Statistically significant disparity was found between urban and rural areas ($\chi^2=9.193$; $p=0.010$): 48.1% of Riga GPs and 21.7% of regional GPs reported a change in their approach to obesity. More experienced GPs were more satisfied with current options than

younger colleagues (p=0.046), while expectations for the future role of GLP-1 RAs were similarly high (mean 4.02±0.86/5). Collaboration with nutritionists (median 2/5) and use of digital tools (median 1/5) were low. **Conclusions.** Latvian GPs are conceptually prepared to use modern anti-obesity pharmacotherapy, but implementation is limited by financial inaccessibility and weak multidisciplinary infrastructure. Regional differences in GLP-1 RA use suggest that, without policy change, access will continue to depend more on patients' ability to pay than on clinical need.

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RISK FACTORS FOR THE DEVELOPMENT OF BONE METASTASES AND PALLIATIVE RADIOTHERAPY FOR PAIN RELIEF IN BREAST CANCER PATIENTS

Introduction. Bone metastases are the most common complication in breast cancer patients. Breast cancer cells can spread and metastasize to any bone. Palliative radiotherapy results in ossification in the bone because ionizing radiation stops the activation of osteoclasts and cause apoptosis in the tumor cells in the bone. Aim of the study. Identify risk factors for the development of bone metastases and to describe palliative radiotherapy in breast cancer patients.
Methods and materials. The study is retrospective, selected 25 patients with a history of breast cancer. Data were collected from Pauls Stradiņš Clinical University Hospital, Department of Oncology archive and patient cards. The following data were collected and analysed: age at diagnosis of breast cancer, stage of breast cancer, histological degree of tumor, percentage of estrogen, progesterone receptors on tumor cells, HER2 status, Ki67, right or left side of breast cancer, type of breast surgery, type of radiotherapy, localization and amount of bone metastases, localization of metastases in other organs, use of bone modifiers, prescribed hormone therapy, total dose and fraction of palliative radiation therapy greys (Gy), time from diagnosis to first radiotherapy for bone metastases and time from diagnosis to bone metastases were analysed. Analysis was performed using IBM SPSS Statistics.
Results. The mean age at diagnosis of breast cancer patients was 54 years. Of the 25 patients, three patients had stage IB (12%), stage IIA in three patients (12%), stage IIB in two patients (8%), stage IIIA in five patients (20%), stage IIIB in four patients (16%), stage IIIC was present in two patients (8%) and stage IV was present in six patients (24%). Bone metastases in breast cancer patients were diagnosed in the vertebrae (40%) and hip bones (32%), less frequently in the sternum (16%) and ribs (12%).

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FACTORS AFFECTING SLEEP QUALITY IN POSTPARTUM WOMEN

Introduction. The first year after childbirth is an important period in a woman's and her family's life. Previous studies indicate that 28 – 70% of women experience reduced sleep quality during the postpartum period. The aim of this study is to determine the prevalence of sleep problems among women in the postpartum period, to compare sleep quality in relation to various factors, and to examine whether these factors influence sleep quality.
Methods. This cross-sectional quantitative study included 137 women who gave birth in 2025. Sleep quality was assessed using the Pittsburgh Sleep Quality Index (PSQI; Buysse, 1989). Statistical analysis was performed using IBM SPSS. Results. Poor sleep quality in the postpartum period was observed in 73% of participants, while 27% reported good sleep quality. Among women younger than 35 years, poor sleep quality was observed in 71.7%, compared with 79.2% among women older than 35 years; the difference was not statistically significant (p=0.453). Poor sleep quality was reported by 72.6% of women after vaginal delivery and by 73.8%

after caesarean section, with no statistically significant association (p=0.886). Among women who gave birth to boys, poor sleep quality was observed in 72.1%, among women who gave birth to girls it was observed in 74.5%; no statistically significant association was found (p=0.758). Sleep quality also did not differ significantly according to time since childbirth (p=0.453). Among women who were breastfeeding, poor sleep quality was observed in 68.5%, compared with 89.7% among women who were not breastfeeding. A statistically significant association was identified (p=0.023).

Conclusions. Poor sleep quality was observed 73% of the study participants. No statistically significant associations were found between maternal age, mode of delivery, infant gender, time since childbirth, and sleep quality. However, a statistically significant association was found between breastfeeding and sleep quality.

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PATIENT-REPORTED EXPERIENCE OF CLIENT-CENTRED REHABILITATION IN LATVIA

Background. Patient-centred rehabilitation is a key component of high-quality rehabilitation services. Patient-reported experience measures enable structured evaluation of how well services reflect client-centred principles. However, evidence on how patients in Latvia perceive client-centred rehabilitation remains limited. Exploring patient perspectives can provide insights into strengths and areas for improvement in clinical practice.

Aim. To explore patient perspectives on client-centred rehabilitation in the inpatient rehabilitation department of Riga East University Hospital.

Methods. The study was conducted in 2025 in the inpatient rehabilitation department of Riga East University Hospital. Thirty-four patients receiving inpatient rehabilitation completed the 33-item Latvian version of the Client-Centred Rehabilitation Questionnaire (CCRQ), comprising seven domains. Items were rated on a five-point Likert scale (1 = strongly agree; 5 = strongly disagree), with lower scores indicating more positive evaluations. Negatively worded items were reverse-coded before analysis. Data were analysed using SPSS.

Results. Participants (median age 66 years; range 24–83) included 20 women (58.8%) and 14 men (41.2%). Overall, patients reported high levels of client-centred care. The most positively evaluated areas were Emotional Support (M = 1.30, SD = 0.53) and Physical Comfort (M = 1.37, SD = 0.46), followed by Participation in Decision-Making and Goal Setting (M = 1.47, SD = 0.51) and Outcomes Evaluation (M = 1.57, SD = 0.52). Lower ratings were observed for Family Involvement (M = 1.75, SD = 0.81), Continuity/Coordination (M = 1.84, SD = 0.58), and Client-Centred Education (M = 1.92, SD = 0.57).

Conclusions. Patients reported positive experiences, particularly regarding emotional support and physical comfort. Lower ratings in education and continuity of care suggest areas for improvement. Larger studies are recommended to confirm these findings.

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THE SUVmax/DIAMETER RATIO AS A SIZE-INDEPENDENT PET/CT PARAMETER IN PERIPHERAL LUNG CANCER

Background. PET/CT maximum standardized uptake value (SUVmax) is a key parameter in preoperative staging of lung cancer. However, SUVmax correlates with tumour size, raising the question of whether SUVmax/diameter ratio — a size-independent measure of metabolic density — provides additional diagnostic value over SUVmax alone.

Objective. To evaluate the SUVmax/diameter ratio as a less studied PET/CT parameter in patients with peripheral lung cancer, and to assess its correlation with histological type and ability to predict occult nodal metastasis.

Methods. Retrospective analysis of 121 patients with peripheral lung cancer (preoperative stage T1–2 [≤5 cm], cN0) who underwent surgical resection. Six patients without PET/CT examination were excluded, leaving 115 patients for final analysis. SUVmax/diameter ratio was calculated for each patient. Correlations with histological subtype and pathological nodal upstaging were assessed using Mann-Whitney U test and **AUC analysis.**

Results. The ratio successfully removed the tumour size effect present in raw SUVmax (Spearman rho dropped from 0.399, $p<0.001$ to −0.147, $p=0.116$). Squamous cell carcinoma showed significantly higher ratio compared to adenocarcinoma (median 0.400 vs 0.237, $p = 0.002$). However, for histological discrimination, SUVmax alone performed slightly better (AUC 0.732 vs 0.703, $p=0.469$). Optimal ratio cutoff of 0.42 yielded sensitivity 50% and specificity 86% for identifying squamous cell carcinoma. For predicting occult nodal metastasis, the ratio showed a marginally higher AUC compared to raw SUVmax (0.615 vs 0.583, $p=0.544$).

Conclusions. The SUVmax/diameter ratio represents a size-independent measure of tumour metabolic density. While it does not outperform raw SUVmax for histological discrimination, it may offer a slight improvement in predicting occult nodal spread. These exploratory findings support further investigation of metabolic density parameters in larger prospective cohorts.

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FASCIAL EPICONDYLAR AUGMENTATION FOR ULNAR NERVE STABILIZATION IN CUBITAL TUNNEL SYNDROME WITH ULNAR NERVE INSTABILITY

Introduction. Cubital tunnel syndrome (CubTS) is one of the most common traction–compression neuropathies of the upper extremity. In most patients, the standard operation is simple in situ decompression with release of all potential compression sites. A subgroup of CubTS patients has clinically relevant ulnar nerve instability (UNI), where the nerve dynamically subluxates over the medial epicondyle. In these cases, conservative treatment and decompression alone are often insufficient. The most widely used surgical solution for UNI is anterior transposition of the ulnar nerve. We propose a technique developed at the Latvian Microsurgery Centre: stabilization via fascial epicondylar augmentation, with the nerve preserved in its orthotopic position.

The aim. To assess outcomes following fascial epicondylar augmentation in CubTS with UNI.

Material and methods. Since 2018, N=113 surgeries were performed. The study cohort comprised N=92 hands with ≥2 follow-up evaluations and a final assessment ≥1 year postoperatively. Inclusion criteria: age ≥18 years,

intraoperatively confirmed ulnar nerve subluxation, and standard fascial epicondylar augmentation (FEA) performed. Exclusion criteria: age <18 years, classical decompression without FEA, or modified FEA. CubTS was confirmed clinically and by ultrasound (USG); UNI was confirmed by dynamic USG and intraoperatively during elbow flexion–extension. Unlike classical compressive neuropathies, severity grading for this dynamic neuropathy phenotype was not based on neurography; clinical decision-making prioritized patient complaints and USG findings. Outcomes were assessed with grip-strength dynamometry and pain using a visual analogue scale (VAS). Improvement was defined as patient-reported symptom relief with decreased VAS and increased dynamometric grip strength versus preoperative baseline at last follow-up. Hand therapy initiated postoperatively; full elbow flexion avoided for 6 months; ulnar nerve glide exercises performed from week 2 to week 12 at least.

Results. Mean patient age was 49 years (range 22–78). In the study cohort (N=92), 33 (36%) patients were female and 59 (64%) were male. Medial head of triceps resection was performed in 75 (82%) cases. Improvement in symptoms and grip strength was observed in 86 (94%) hands. Persistent symptoms were reported in 6 (7%) patients; ultrasound confirmed ongoing ulnar nerve subluxation. These six patients underwent submuscular transposition as a salvage procedure with subjectively satisfactory outcomes.

Conclusions. Fascial epicondylar augmentation demonstrated encouraging results for CubTS with UNI. The technique stabilizes the nerve while maintaining an orthotopic position, aiming to preserve segmental vascularity and avoid jeopardizing innervation to the flexor carpi ulnaris. Keeping the nerve in place also allows postoperative ulnar nerve glide exercises.

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THE ROLE OF ENDOVASCULAR TREATMENT IN PAIN MANAGEMENT OF KNEE OSTEOARTHRITIS

Background. Knee osteoarthritis is a common musculoskeletal disease characterized by long-term changes in the joint apparatus, resulting in chronic pain. Endovascular embolization is increasingly used in the treatment of knee osteoarthritis, with the intention to prolong the need for total knee replacement or to offer an alternative to patients for whom knee replacement is contraindicated due to comorbidities.

Objectives. This literature review aims to provide systematic information on the role of endovascular embolization in the treatment of osteoarthritis by evaluating the indications, procedural steps, clinical effectiveness, embolization materials and complications.

Methods. A literature review was conducted using publications in English available on electronic databases – PubMed, ScienceDirect, EBSCOhost – and manually excluding case reports, case series, literature reviews, systematic reviews and meta-analyses. The study included 15 publications with a total number of 788 embolization interventions.

Results. The mean clinical improvement rate between periods was 69.8% one to three months after the intervention, 77.4% six months after the intervention, 63.2% 12 months after the intervention and 69.3% 24 months and more after embolization. Clinical effectiveness rates between the use of temporary and permanent materials showed similar results, with a tendency towards better short-term results for temporary materials. The main complications that have been observed after embolization were classified as mild and self-limiting.

Conclusion. Endovascular embolization provides significant clinical improvement in both the short-term and long-term, but data analysis is challenging due to the wide variability in the standards used to determine clinical effectiveness. Additional studies are needed to analyze different materials, as well as randomized control trials to compare the effectiveness of embolization to conservative treatment.

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WEIGHT GAIN DURING PREGNANCY

Keywords: *Antenatal care, Awareness, Body mass index, Healthcare professional, NAM guidelines, Nutrition, Weight gain during pregnancy*
Background: elevated pre-pregnancy body mass index (BMI) and excessive gestational weight gain increase the risk of maternal and fetal complications, therefore, adequate weight gain is a key factor in mitigating these risks.
Aim: to evaluate gestational weight gain among Latvian women.
Methodes: a retrospective cross-sectional study design was employed. Data were collected using an anonymous online questionnaires distributed through social media networks. The study sample (n=644) consisted of women living in Latvia who had given birth within the last five years.
Results: 62,9% of respondents did not fall within the weight gain range recommended by the guidelines, in 44,0% of cases, weight gain was excessive, while in 18,9%, it was insufficient. Comparing the normal BMI group with the overweight and obese groups, excessive weight gain was observed statistically more frequently in the group with a BMI > 25 kg/m² (60,1%).
When evaluating the information received from healthcare professionals regarding optimal BMI, weight gain, nutrition, and physical activity overall, 22,7% of women rated it as excellent, 38,2% as good, 26,2% as average, and 12,9% as poor. Healthy nutrition recommendations were received from a healthcare professional by 59,9% of women, while 27,5% recieved it from other sources and 12,6% received no information at all. Regarding recommended weight gain, 64,8% received information from a healthcare professional, 9,8% recieved it from other sources whereas 25,5% did not receive such information. Furthermore, only 48,6% were informed about the risks associated with excessive weight gain by a healthcare professional, 30,7% recieved it from other sources and 20,7% were not informed about these risks at all.
In the gestational diabetes group, excessive weight gain was observed in 52,6% of cases, compared to 45,8% in the group without the diagnosis, though these results were not statistically significant.
Conclusions: although more than half of the women (59,6%) started their pregnancy with a normal BMI, a large proportion of participants (62,9%) did not fall within the weight gain range recommended by NAM (National Academy of Medicine) guidelines. A statistically significant correlation was found between pre-pregnancy BMI and compliance with the guidelines, with excessive weight gain occurring more frequently in the BMI > 25 kg/m² group. It was found that women do not receive sufficient informational support from healthcare professionals: 59,9% of women received recommendations on a healthy diet, 64,8% on recommended gestational weight gain, but only 48,6% of respondents were informed about the risks associated with excessive weight gain. However, in cases where information was provided, its quality was generally rated positivelyThere is no statistically significant association between normal or excessive weight gain and the development of gestational diabetes.

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CLINICAL AND DEMOGRAPHIC PREDICTORS OF EMERGENCY OR URGENT HOSPITALIZATION

Background. Urgent hospital admission reflects disease severity and healthcare burden. Identification of fact ors associated with urgent admission may improve risk stratification and patient management. Patient chara cteristics such as age and body mass index (BMI), together with severity scores including SOFA and PC-ICU, are widely used to assess clinical status, but their association with urgent admission remains unclear. AIM. The aim of this study was to evaluate the association between selected clinical and demographic factors –age, body mass index, SOFA score, and PC-ICU score and emergency/urgent hospital admission.
Methods. An observational study including 35 hospitalized patients was conducted. The analysed variables i ncluded age, BMI, the SOFA score, and the PC-ICU score. Differences in the distribution of clinical variables

between patients with and without emergency or urgent admission were analysed using the Mann-Whitney U test. A p-value <0.05 was considered statistically significant.
Results. The mean age was 76.9±8.5 years and the mean BMI was 27.2±3.9kg/m². The median PC-ICU score was 3(range 1–8), while the median SOFA score was 2(IR 0–6). Patients with emergency/urgent admission h ad a higher mean age (79 vs. 73 years) and BMI (28 vs. 25.8 kg/m²) compared with planned admissions. The median PC-ICU score was 4(range 2–8) and 1(range 1–2), and the median SOFA score was 3.5(range 0–6) and 2(range 1–4) for emergency/urgent and planned admissions, respectively. Age(p=0.026) and PC-ICU score(p <0.001) were significantly associated with emergency/urgent admission. No statistically significant associati ons were observed for BMI(p=0.191) or SOFA score(p=0.625).
Conclusion. Age and PC-ICU score demonstrated a significant correlation with emergency/urgent admissio n, whereas no significant correlations were observed for BMI or SOFA score. These findings indicate that age and PC-ICU score may help identify patients at higher risk of urgent hospitalization.

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PERIOPERATIVE CHANGES IN INTRAOCULAR PRESSURE AND DIAPHRAGMATIC EXCURSION FOLLOWING INTERSCALENE BRACHIAL PLEXUS BLOCK IN UPPER EXTREMITY SURGERY

Introduction. Interscalene brachial plexus block (BPB) is widely used for anesthesia in upper extremity surgery. Due to its proximity to the cervical sympathetic chain and phrenic nerve, BPB may influence intraocular pressure (IOP) and diaphragmatic function. Patient positioning and general anesthesia may further affect perioperative IOP changes.
Objectives. This study aimed to evaluate the effects of interscalene BPB on intraocular pressure and diaphragmatic excursion and to assess the influence of patient positioning and general anesthesia on IOP dynamics.
Materials and methods. Twenty adult patients (ASA I–II) scheduled for elective upper extremity surgery were included. An ultrasound-guided interscalene BPB was performed using 15 ml of 0.375% ropivacaine. Intraocular pressure was measured with a Pulsair IntelliPuff non-contact tonometer before the block and 10, 20, and 30 minutes afterward on both sides. Measurements were obtained in sitting and supine positions and after induction of general anesthesia. Diaphragmatic excursion was assessed using ultrasound before the block and 30 minutes after. RESULTS IOP significantly decreased on the blocked side 30 minutes after BPB (p = 0.015). Supine positioning was associated with higher IOP values. Ipsilateral Horner's syndrome occurred in 30% of patients, and reduced diaphragmatic excursion indicating phrenic nerve involvement was observed in 65%.
Conclusions. Interscalene BPB reduces intraocular pressure but may affect diaphragmatic function. Patient positioning and general anesthesia should be considered when evaluating perioperative IOP changes.

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THE IMPACT OF SLEEP HYGIENE ON THE SUBJECTIVE WELL-BEING OF EDUCATORS AND MEDICAL PERSONS

Keywords: *WHO, sleep, sleep disorders, sleep quality, well-being, sleep hygiene*
Sleep disorders is a public health problem "public health epidemic" in the world. From 34,5 % of the population suffer from sleep disorders in European countries. Sleep disorders is a public health problem in Latvia too. 32% of Latvian population suffer from insufficient sleep and sleep disorders. Sleep loss causes issues with physical, mental health problems, cognitive and emotional well-being. Data from a Daugavpils University Agency "Daugavpils University Daugavpils Medical College" research "The Impact of Sleep and Stress on the Subjective Well-Being of Future and Current Medical Persons and Educators ", analyzing data of

respondents from Latvian region. The aim of the article is to study the impact of sleep hygiene on the subjective well-being of future and current medical persons and educators. The data collection method is the survey (quantitative research method). The instrument is a structured questionnaire. The total number of respondents is 1236: current medical persons -237, future medical persons -704, educators – 295. Research data has connected theoretical knowledge to real practice. The review of scientific theories of sleep presents an overview of the significance of sleep quality in human health. 49,1% of Future, 52,3 % Current Medical Persons and 49,4% Educators sleep less than the WHO (World Health Organization) recommended 7-9 hours a night. Studies have found that sleep hygiene is associated with subjective well-being in future and current medical persons and educators. Theoretical and practical significance of the study: The results of the study can help to assess the sleep quality of the respondents and to develop recommendations to sleep hygiene them. Prevention, sleep hygiene, medical worker's appropriate assistance and care can save adult health and well-being.

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LATVIAN POPULATION'S ATTITUDES TOWARDS EUTHANASIA AND ASSISTED SUICIDE

Study Protocol Summary This cross-sectional quantitative pilot study used an anonymous online survey to assess Latvian residents knowledge, attitudes, and experiences regarding euthanasia and physician-assisted suicide. The survey targeted respondents aged 18+ living in Latvia. Data collection occurred in February 2026, yielding 378 responses. Sample Characteristics Respondents were predominantly female (87%), aged 45-64 (44%), with higher education (77%), from Riga (44%) and Zemgale (21%). Religious affiliation: none (46%), Christianity (44%). 28% reported personal experience with seriously ill/dying relatives. Awareness Levels High awareness: 97% knew the definition of euthanasia, 80% physician-assisted suicide, 99% that it is currently illegal in Latvia. Only 18% felt adequately informed about palliative care availability. Key Support Indicators Strong support for euthanasia in terminal cancer with suffering (72% "Yes"), moderate for physician-assisted suicide (58%) and passive euthanasia (68%), lower for dementia (37%). 65% believe Latvia should consider legalization in future. Attitude Assessment (Likert 1-5) Strong agreement that individuals should have right to decide life ending (4.3), euthanasia could reduce suffering (4.2), trust in physicians ethical decisions (4.1). Concerns about abuse potential (3.8); religious considerations important to 29%. Required Conditions & Arguments Most frequent mandatory conditions: incurable disease (85%), unbearable suffering (82%), repeated written patient request (75%), physician panel decision (70%). Main arguments "for": suffering relief (92%); "against": abuse risk (65%), religious/moral concerns (40%). Conclusions Results demonstrate high awareness and conditional support for euthanasia, particularly for terminal physical suffering cases. Findings suggest need for regulated framework emphasizing strict safeguards alongside enhanced palliative care infrastructure. 72% willing to participate in public discussion.

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POSTURE CHANGES IN PATIENTS OF DIFFERENT AGES AND THEIR MANAGEMENT IN GENERAL PRACTICE

General practitioner has an important role in recognition and diagnostics of early posture changes. Family doctor has the right to transmit the patient to another specialist if there are recognised posture changes. Computer programs and standardised protocols can provide better posture analysis and can help to objectively evaluate changes in the period of patient treatment. Simple instruments, as a scoliometer for example, can make it easier to analyse functional state and posture in primary health care. Most part of patients with posture changes are sent to specialists, and that shows a tendency to provide deeper diagnostics in current general practice.

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SCREENING FOR OBSTRUCTIVE SLEEP APNEA RISK IN DRIVERS UNDERGOING FITNESS-TO-DRIVE ASSESSMENT

Keywords: *Obstructive sleep apnea, driver medical examination, screening, risk assessment*
Objectives. To evaluate the prevalence of intermediate or high risk for obstructive sleep apnea (OSA) among individuals undergoing ENT examination as part of medical fitness-to-drive assessment for driver`s license renewal.
Methods. An anonymous questionnaire was distributed among individuals undergoing ENT examination as part of medical fitness-to-drive assessment for driver`s license renewal (n=58). The questionnaire included the STOP-Bang questionnaire, the Epworth Sleepiness scale (ESS), and questions on anthropometric measures, blood pressure, alcohol consumption, smoking and driving habits. Inclusion criteria were ≥ 18 years of age and undergoing a medical fitness-to-drive assessment. Data were analyzed using SPSS software. Descriptive statistics, group comparisons and Spearman correlation analyses were performed.
Results. Overall, 36.2% of participants were classified as having intermediate (3-4 points) or high risk (≥5 points) for OSA. STOP-Bang score showed strong positive correlations with body weight ($r=0.741$, $p<0.001$), waist circumference ($r=0.825$, $p<0.001$), systolic blood pressure ($r=0.545$, $p<0.001$), diastolic blood pressure ($r=0.279$, $p=0.039$), and height ($r=0.416$, $p=0.001$). Higher alcohol consumption per occasion correlated with increased STOP-Bang score ($r=0.408$, $p=0.007$). ESS scores correlated significantly with self-reported fatigue while driving ($r=0.486$, $p<0.001$). No significant associations were found between OSA risk and driving frequency, weekly driving duration, monthly mileage or fatigue while driving.
Conclusions. A substantial proportion of drivers demonstrated elevated OSA risk. Higher STOP-Bang scores were strongly associated with adverse anthropometric and cardiovascular profiles, as well as alcohol consumption. Daytime sleepiness was linked to driving-related fatigue, highlighting the importance of OSA screening among drivers.

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EXPLORING AWARENESS AND ATTITUDINAL FACTORS IN THE ORGANIZATION OF ADDICTION TREATMENT SERVICES

Exploring Awareness and Attitudinal Factors in the Organization of Addiction Treatment Services Background: Effective addiction care depends on both treatment availability and the awareness and attitudes of physicians and patients. This study examined knowledge, experience, and views on addiction treatment methods in Latvia and identified priorities for improving care organization. Methods: The study combined a literature and guideline review with a cross-sectional survey of physicians and patients. Two author-designed questionnaires were used: 18 items for physicians and 23 for patients. The sample included 84 physicians from 21 specialties across Latvia (50% men, 50% women; age 28–63 years) and 84 adult patients in addiction treatment (49% men; age 18-68 years). The patient group included people with alcohol, drug, and gambling addiction. Data were analyzed in SPSS using descriptive statistics and chi-square testing. Results: Physicians showed generally high awareness of addiction treatment options, but knowledge gaps remained regarding Minnesota programs and rehabilitation communities. Detoxification was the treatment most often recommended by physicians (82%) and the most often used by patients, though at a lower rate (44%). Physicians identified key system problems, especially limited availability of state-funded treatment programs (77%) and the need for reimbursable medications (70%). Chi-square analysis partially confirmed the hypothesis, showing that physician awareness and recommendations do not always match patients' freely chosen treatment methods. Conclusions: The findings show a gap between physician recommendations and actual patient treatment uptake. Better physician education, broader access to evidence-based services, stigma

reduction, stronger multidisciplinary cooperation, and improved financial accessibility could improve treatment engagement and continuity of care in Latvia.

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IEINTERESĒTO PUŠU KARTĒJUMS DABĀ BALSTĪTAJĀS INTERVENCĒS VESELĪBAS APRŪPĒ: DARBĪBAS JOMU NOTEIKŠANAS PĀRSKATS

Veselības aprūpes sistēmas daudzās valstīs saskaras ar pieaugošu slodzi, ko veicina sabiedrības novecošana, hronisku slimību izplatība un veselības aprūpes speciālistu trūkums. Šajā kontekstā arvien lielāku uzmanību iegūst dabā balstītas intervences (DBI), kas tiek uzskatītas par efektīvu profilaktisku un papildinošu pieeju fiziskās un psihiskās veselības veicināšanā. Tomēr joprojām ir ierobežota izpratne par to, kādas ieinteresētās puses iesaistās DBI izstrādē un ieviešanā veselības aprūpes sistēmās. Šī darbības jomas pārskata mērķis ir identificēt un analizēt ieinteresēto pušu iesaisti dabā balstītajās intervencēs veselības aprūpē. Pētījums tika veikts, izmantojot Arksey and O'Malley's metodoloģisko ietvaru un PRISMA-ScR vadlīnijas. Literatūras meklēšana tika veikta četrās zinātniskajās datubāzēs: MEDLINE (ProQuest), Nursing/Academic Edition (EBSCO), Scopus un Web of Science. Pētījumā tika iekļauti empīriski pētījumi, kas analizē ieinteresēto pušu iesaisti DBI ieviešanā veselības aprūpes kontekstā pieaugušo populācijā (≥18 gadi). Pēc 2152 publikāciju nosaukumu un kopsavilkumu izvērtēšanas un 109 pilntekstu analīzes galīgajā analīzē tika iekļauti 28 pētījumi. Rezultāti liecina, ka DBI ieviešanā veselības aprūpē iesaistās - veselības aprūpes profesionāļi, sociālās nozīmēšanas koordinatori, kopienu un nevalstiskā sektora organizācijas, vides un teritoriju pārvaldības institūcijas, politikas veidotāji, pētnieki un paši pakalpojumu saņēmēji. Šīs puses sadarbojas dažādos DBI izstrādes un ieviešanas posmos -no pacientu identificēšanas un nosūtīšanas līdz programmu īstenošanai un izvērtēšanai. Vienlaikus DBI ieviešanu bieži ierobežo fragmentēta pārvaldība, nepietiekami resursi un vāja savstarpēja koordinācija. Pētījuma rezultāti uzsver, ka DBI efektīvai integrācijai veselības aprūpē nepieciešama ilgtermiņa ieinteresēto pušu sadarbība, skaidra pārvaldības struktūra un pietiekami resursi.

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RADIOGRAPHIC PROGRESSION DURING THE FIRST 5 YEARS AFTER DIAGNOSIS OF RHEUMATOID ARTHRITIS ASSESSED BY THE MODIFIED SHARP/VAN DER HEIJDE SCORE: A RETROSPECTIVE COHORT STUDY AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL

Background: Radiographic progression is a key structural outcome marker in rheumatoid arthritis (RA), while escalation to biologic DMARDs (bDMARDs) reflects treatment intensification. Data integrating structural progression and therapy escalation within the same patients remain limited.
Objectives: To evaluate radiographic progression in seropositive and seronegative RA and explore whether therapy escalation is associated with structural outcomes.
Methods: This retrospective cohort study included 90 RA patients treated at a tertiary centre (2010–2025), enrolled within one year of diagnosis and followed for up to five years. A linked subset of 32 patients with serial radiographs and escalation data was analysed (20 seropositive, 12 seronegative). Seropositivity was defined as RF and/or anti-CCP positivity. Radiographs were scored using the modified Sharp/van der Heijde score (mTSS); structural remission was defined as annualised change ≤0.5 units/year. Non-parametric tests were used throughout.

Results: Median annualised mTSS change was 0.41/year in seropositive and 0.37/year in seronegative patients (p = 0.937). Structural remission was achieved in 60.0% and 66.7%, respectively; no patient showed rapid progression exceeding 5 units/year. Seropositive patients showed a non-significant trend toward more frequent bDMARD escalation (55.0% vs 33.3%, p = 0.291), with similar median time to first bDMARD (26.4 vs 27.3 months, p = 0.949). Escalated patients had higher baseline disease activity (median DAS28 4.85 vs 3.39) but achieved equivalent annualised progression to non-escalated patients (0.40/year both, p = 0.847). **Conclusions:** Seropositive and seronegative RA demonstrated comparable radiographic progression, with structural remission common in both groups. Escalated patients achieved similar structural outcomes despite higher baseline disease activity, suggesting treatment intensification may have effectively offset greater inherent progression risk.

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HEALTH LITERACY AMONG STROKE PATIENTS AND THEIR RELATIVES

Stroke is one of the leading causes of mortality and long-term disability worldwide and remains a major public health problem in Latvia. Up to 8,000 people experience a stroke each year in Latvia, and the lifetime prevalence is estimated at about 3% of the population. Stroke incidence and mortality rates exceed the European Union (EU) average; mortality related to stroke is about 203 cases per 100,000 inhabitants annually, compared with approximately 64 per 100,000 in the EU (Strautmane et al., 2021; stat.gov.lv).
Recovery after stroke depends not only on medical treatment but also on the level of health literacy of patients and their relatives. Adequate understanding of symptoms, treatment, medication use, and rehabilitation is essential for successful recovery and prevention of recurrent stroke. The aim of this study was to assess health literacy among stroke patients and their relatives using a questionnaire to evaluate their knowledge of stroke symptoms, treatment, and rehabilitation. Preliminary results show that most patients were female aged 55–65 years, while all relatives were female and the majority had higher education. Most respondents correctly identified common stroke symptoms, and 85.7% of patients and 87.5% of relatives knew the FAST test. All patients indicated that emergency medical services should be called immediately when stroke symptoms occur.
Despite generally good awareness, some respondents reported difficulties understanding medical information and applying recommendations in daily life. Relatives noted insufficient time for explanations from medical staff and the need for clear and simple information. The results indicate that health literacy among stroke patients and their relatives in Latvia is variable and should be improved through targeted education and better communication, which may contribute to better rehabilitation outcomes and prevention of recurrent stroke.

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USE OF IRON AND DIETARY SUPPLEMENTS BY PREGNANT WOMEN IN LATVIA

Background. Pregnant women are among the population groups most at risk of developing anemia. During pregnancy, the mother's circulating blood volume increases, due to the development and growth of the child, thus increasing the demand for iron. Negative pregnancy outcomes are associated with iron deficiency and iron deficiency anemia, such as an increased risk of maternal illness, preterm birth, intrauterine growth restriction, and low birth weight. Proper and healthy nutrition during pregnancy, including adequate iron intake, is important to ensure the long-term health of both mother and child.

Methods. This cross-sectional study was conducted within the framework of the Latvian Council of Science-funded project "Excess weight, dietary habits, and vitamin D and omega-3 fatty acid status in pregnancy". The sample size was determined to be representative of the population of women of reproductive age in Latvia. Based on this demographic information, the final study sample comprised 200 pregnant and 800 postpartum women. In study overall there was 820 participants, pregnant women and postpartum.
Results. According to the study data, the total daily iron intake during pregnancy was 57.0 mg, SD = +/-44.8 mg; the main source of iron during pregnancy was from medications – 31.7 mg, SD = +/-45.5 mg; from dietary supplements, pregnant women received 11.8 mg per day, SD = +/-13.5 mg. From food products, pregnant women received the most iron from consuming meat (1.82 mg, SD = +/-1.36 mg), vegetables (1.78 mg, SD = +/-1.25 mg), and fruits (1.21 mg, SD = +/-0.87 mg).
Conclusion. Lower hemoglobin levels negatively affect pregnancy outcomes; at lower Hb levels, pregnancy complications occur more frequently. Overall, 86.6% of pregnant women in the third trimester were found to have iron deficiency. Most pregnant women obtained iron from medications and dietary supplements. Among food, pregnant women received the most iron from meat, vegetables, and fruits.

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ANTENATAL OVARIAN TORSION AND AUTOAMPUTATION: CURRENT EVIDENCE GAPS

Objective: To summarize evidence from literature on the incidence, potential complications, and treatment options for antenatal ovarian torsion (AOT) leading to autoamputation in fetal/neonatal ovarian cysts- a rare but serious condition where chronic in utero twisting of the ovarian pedicle causes ischemia, necrosis, and spontaneous detachment of the ovary, resulting in a free-floating necrotic abdominal mass detectable prenatally or postnatally. This topic is highly relevant due to risks of fertility impairment, intra-abdominal adhesions, peritonitis, and diagnostic challenges mimicking other cysts, with affected neonates requiring timely intervention to preserve future reproductive health amid absent unified global guidelines.
Methods: Narrative synthesis of publications since 2020 explicitly documenting autoamputation cases/series
Results: Autoamputation occurs in 15–60% of antenatally torsed cysts, presenting as mobile necrotic adnexa postnatally, often asymptomatic but with omental/bowel adhesions, peritonitis (up to 67% in series), or obstruction risk. Prenatal US achieves ~70% sensitivity (highly specific debris levels, daughter cyst sign); postnatal laparoscopy confirms ischemic necrosis/calcifications in most, guiding excision.
Conclusion: Though rare, AOT-autoamputation carries significant adhesion/peritonitis risks managed via serial imaging, observation, or early laparoscopy. The worldwide lack of standardized guidelines—relying on size and morphology without high-level evidence highlights need for prospective studies to optimize outcomes and fertility preservation.

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ASSESSMENT OF PREDIABETES AND TYPE 2 DIABETES RISK IN PATIENTS IN FAMILY MEDICINE PRACTICES

Prediabetes is a chronically changed metabolic condition. Diabetes mellitus (DM) is a global health problem, causing an average of 2 million deaths each year. For that reason preventive care is important. In preventative medicine a big role is high quality family doctors work. The FINDRISC scale effectively assesses a patient's risk of developing DM.
Aim. To determine risk level of prediabetes and 2. type of DM development to people, who have one of the risk factors - body mass index(BMI) is over 25 in family doctor practice.
Materials and methods. In the study, patients were average age 51,9 ±13,21 years. Every patient who participated in the study had an elevated BMI - above 25 kg/m2, the average for women was 30,32 kg/m2, but for men 30,68kg/m2. Selected patients were asked to complete a questionnaire, in addition to which

arterial blood pressure, waist circumference. Data were collected in MS Excel and were analyzed IMB SPSS Statistics 22, Spearman's rank correlation coefficient were used.
Results. 95 patients participated in the study. From them 63%(N=60) was females and 37%(N=35) was male. Performing data analysis confirmed that there exists statistically significant correlations connection between variables BMI and FINDRISC($p<0.001$), as well as statistically significant correlation between waist circumference and FINDRISC results ($p<0.001$). 87%(N=83) patients who participated in the study had abdominal adiposity. Data collected from patient medical records showed that 58.95% (N=56) anamneses, has elevated total cholesterol level. According to the results of the study 44%(N=41) of participants had high or very high risk of developing DM. High grade is 33%(N=31) and very high risk degree is 11%(N=10) patients. Moderate risk of DM is 20%(N=19).
Conclusions. Exists statistical correlation between BMI and FINDRISC, as well as waist circumference and exists statistical correlation tendency, data correlation between FINDRISC and total cholesterol level.

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CANINE-ASSISTED THERAPY AS AN INTEGRATED BIOPSYCHOSOCIAL INTERVENTION: CHANGES IN EMOTIONAL AND MOTOR OUTCOMES IN OLDER ADULTS

Keywords: *canine-assisted therapy, animal-assisted therapy*
Introduction. The quality of life of older adults is closely related to emotional well-being and physical functioning. During the aging process, motor abilities often decline, balance deteriorates, and the risk of emotional vulnerability increases. Canine-assisted therapy, as a form of animal-assisted therapy, is considered a promising complex biopsychosocial intervention capable of simultaneously influencing emotional and physical domains. Aim. To evaluate the effect of canine-assisted therapy on the emotional well-being and functional mobility of older adults.
Methods. A quasi-experimental one-group pre–post design was applied. The intervention lasted 3 months (14 sessions of 50 minutes each, once per week). Emotional well-being was assessed in eight stages by analyzing the mean values of positive and negative emotions. Functional capacity was evaluated using handgrip strength, the sit-to-stand test, the timed up and go test, and the 2- minute step test.
Results. A consistent increasing trend in positive emotions was observed: the mean increased from 2.685 at the beginning of the study to 3.120 at the end of the intervention, with the highest value recorded at the seventh measurement (3.217). The level of negative emotions remained relatively stable (2.059–2.273), while the emotional balance index increased from 0.51 to 0.94. Functional indicators also improved: handgrip strength increased (right hand 13.58 → 15.68; left hand 13.79 → 15.74), the time in the timed up and go test decreased from 17.38 s to 13.79 s, and the 2-minute step test showed a small but positive improvement in endurance. The sit-to-stand results remained stable.
Conclusions. Canine-assisted therapy had a positive effect on emotional well-being and functional mobility. The results confirm that this intervention may be an effective комплексinė biopsychosocial tool for strengthening the emotional and physical well-being of older adults.

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MUSIC AS A NON-PHARMACOLOGICAL INTERVENTION IN THE POSTOPERATIVE PERIOD: EFFECTS ON PATIENTS' EMOTIONAL AND PHYSICAL WELL-BEING

Keywords: *music intervention, postoperative period, emotional well-being, physical well-being, pain reduction*
Introduction. The postoperative period is often associated with increased anxiety, stress, pain, and sleep disturbances. In addition to pharmacological treatment, there is growing interest in safe and non-invasive

methods, such as music, which may improve both psychological and physiological conditions. Listening to music has been shown to reduce anxiety, pain, stabilize heart rate and blood pressure, and improve overall well-being.

Materials and Methods. The study was conducted from September 2025 to January 2026, with 232 respondents who had undergone surgery within the previous six months. Data was collected through an anonymous online questionnaire, applying descriptive statistical methods using Microsoft Excel 2016.

Results. Listening to music during the postoperative period positively affected patients' emotional and physical well-being. Most respondents reported reduced anxiety, stress, and pain intensity, along with improved relaxation and sleep quality. Individually selected music was found to have a stronger positive effect than non-personalized music.

Conclusion. Music is an effective, safe, and easily applicable non-pharmacological intervention in the postoperative period. It contributes to improved emotional stability, pain reduction, and enhanced recovery outcomes.

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BENZODIAZEPINE PRESCRIBING IN FAMILY DOCTOR'S PRACTICE: PATTERNS AND ALTERNATIVE TREATMENT APPROACHES

Aim: To identify and analyze trends in benzodiazepine(BZD) prescribing in family physician practices, as well as physicians' knowledge about the use of these medications and alternative treatment methods in the management of their patients.

Methods: A cross-sectional survey was conducted among family doctors in Latvia; the study was approved by the Research Ethics Committee of Rīga Stradiņš University.

Results: 171 respondents participated (88% women, 12% men, mean 47.8 years), including 90% certified general practitioners and 10% family medicine residents. BZDs were prescribed by 92% of physicians, with 85.2% prescribing courses longer than 6 weeks. Long-term BZD prescribing was significantly associated with more frequent adverse effects (82.7%, $p<0.001$). Main indications were anxiety (48%), insomnia (28%), and alcohol withdrawal (10%); Bromazepamum (36%) and Alprazolamum (32%) were most prescribed. Prescribing was more frequent among physicians aged ≥40 years (60.5%,$p<0.001$) and those with >11 years of experience were more familiar with guidelines (71.4%,$p<0.001$). Only 17% scheduled follow-up visits as recommended in guidelines; non-adherence was higher among older physicians (66.1%, $p<0.001$). Most respondents (96%) also used alternative treatments, including other medications (29%), lifestyle modifications (28%), and psychotherapy (24%). BZDs were considered more effective for anxiety and insomnia but less or equally effective for chronic pain and muscle tension. Barriers to alternative therapies included patient reluctance (46%), limited resources (23%), and time constraints (16%).

Conclusions: BZDs are widely prescribed in general practice, often long-term and without specialist oversight. Prescribing correlates with physician age and experience. Despite guideline familiarity, adherence is low, particularly for follow-up visits. Alternative treatments use is limited by patient and systemic factors, highlighting the need to optimize safe and rational BZD prescribing.

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THERAPY FOR PATIENTS WITH TESTICULAR TUMORS AT PAULS STRADIŅŠ CLINICAL UNIVERSITY HOSPITAL PERIOD FROM 2021-2025

Background- Testicular cancer is the most common malignancy in males between ages of 15 and 35, generally with favorable prognosis when detected early. Standard treatment typically involves orchiectomy followed by surveillance, chemotherapy, radiotherapy. However frequently also prophylactic chemotherapy is used.

Aim- The aim of this study is to analyze which therapeutic methods were used in the treatment of testicular cancer patients at Pauls Stradiņš Clinical University Hospital during the period from 2021 to 2025 and compare with the literature data.
Methods- Data of patients who were diagnosed with testicular cancer at Pauls Stradiņš University Hospital will be analyzed, processed and anonymized. Collected data will be compared with the literature data.
Results- In the time frame from 2021-2025 at Pauls Stradiņš Clinical University Hospital there was total of 54 testicular cancer patients who were undergoing treatment. From all testicular cancer patients, 61% were seminomas and 39% were non-seminomas. All patients received orchiectomy, 37% received adjuvant chemotherapy, 15% received prophylactic chemotherapy, 6% received lymphadenectomy and only 2% received radiation therapy.
Conclusion- Most often (in 63% of cases) patients with testicular cancer are treated only by orchiectomy followed by long-term observation. However, less than half of the patients also receive adjuvant or prophylactic chemotherapy. Radiation therapy nowdays is used very rarely and only for germ cell seminomas. Overall, the therapeutic approaches used at Pauls Stradiņš Clinical University hospital during analyzed period correspond closely with current treatment strategies described in the literature.
Acknowledgments- I would like to thank my supervisor for their guidance, patience, and continuous support throughout the preparation of this study. Their valuable feedback and advice were essential for the successful completion of this research. There are no conflicts of interest related to this study.

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ASSOCIATION OF DEPRESSIVE AND ANXIETY SYMPTOMS WITH DIGITAL DEVICE USE AND LIFESTYLE FACTORS AMONG THE LATVIAN POPULATION

Background. Digital device use is integral to modern life, yet post-pandemic attachment has intensified concerns regarding mental health. While specific digital behaviors and sleep factors are linked to depression and anxiety, evidence within the Latvian context remains limited. Aim. To assess associations between depressive/anxiety symptoms, digital device use patterns, and lifestyle factors among Latvian residents.
Methods. A cross-sectional online survey (May–Dec 2025) analyzed 197 respondents in Latvia (mean age 29.2±9.2 years; 71.1% women). Symptoms were assessed via PHQ-9 and GAD-7. Digital use (daily screen time, gaming, news) and lifestyle (sleep disturbances, perceived device-related sleep impact) were measured. Data were analyzed using descriptive statistics and Spearman correlations (rs).
Results. Mean PHQ-9 and GAD-7 scores were 9.8±5.0 and 8.9±4.7, respectively. Moderate-to-severe symptoms (≥10) were prevalent: 51.8% for PHQ-9 and 46.7% for GAD-7. Screen Time: Daily screen time did not significantly correlate with PHQ-9 ($r_s=-0.079, p=0.269$) or GAD-7 ($r_s=-0.060, p=0.403$). Specific Behaviors: Significant correlations with PHQ-9 and GAD-7 were found for gaming ($r_s=0.189, p=0.008$; $r_s=0.290, p<0.001$) and news consumption ($r_s=0.179, p=0.012$; $r_s=0.183, p=0.010$). Sleep Factors: Perceived negative device impact on sleep correlated with PHQ-9 ($r_s=0.230, p=0.001$) and GAD-7 ($r_s=0.298, p<0.001$). Past-month sleep disturbances linked to higher PHQ-9 ($r_s=0.163, p=0.022$). Co-occurrence: PHQ-9 and GAD-7 were strongly correlated ($r_s=0.625, p<0.001$).
Conclusions. Depressive and anxiety symptoms are common in this sample. Symptom severity is not associated with total screen time, but rather with specific behaviors (gaming, news) and device-related sleep disruption. Results highlight the necessity of sleep-focused digital well-being and public health strategies.
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RELATIONSHIP BETWEEN ANXIETY AND THE CAPACITY TO LOVE IN THE STUDENT POPULATION

Background. Anxiety is very common among university students and is associated with a variety of psychological problems. Various studies show how anxiety negatively affects the quality of relationship by causing miscommunication, difficulty regulating emotions, excessive clinginess or avoidant behavior, which leads to difficulties in relationship.

Capacity to love inventory (CTL-I) (D. Kapusta et al., 2018) is psychometrically validated tool, based on Kernberg's CTL construct, within the object relations theory and psychosexual development framework. CTL reflects one's ability to form mature and lasting romantic relationships.

Previous research has demonstrated inverse relationship of CTL with depression (Margherita, 2018), non-adaptive personality traits (Glavac et al.,2024), narcissistic personality traits (Kapusta et al., 2018), and alexithymia (Kalniņa et al., 2025). However, no empirical data are yet available on relationship of CTL-I with anxiety. Examining the relationship between anxiety and CTL may clarify the difficulties in forming and maintaining romantic relationships of individuals with high anxiety and could improve diagnostics, treatment planning, and psychotherapeutic interventions.

Aim. The aim of the study was to examine, whether there is relationship between anxiety and CTL dimensions in Latvian student population. First, it was hypothesized that higher levels of anxiety are related with lower levels of CTL. Second hypothesis was, that CTL scores will show statistically significant difference between low anxiety (LA) and high anxiety (HA) level participants of current study.

Methods.117 Latvian students participated in the study. The demographic inquiry, Generalized anxiety Disorder scale (GAD-7) and Capacity to Love Inventory (CTL-I) were applied. Capacity to Love includes 6 dimensions: Interest in the life project of the other (INT), Basic trust (BTR), Gratitude (GRT), Common ego ideal (CEl), Permanence of sexual passion (PSP), and Acceptance of loss/jealousy/mourning (LOM).

Data were analysed using SPSS. Relationship between CTL dimensions and anxiety levels were assessed by Spearman's rank correlation analysis.

Two aligned groups were created with low (LA) and high anxiety (HA) parameters. Each group consisted of 51 people, for a total of 102. Group differences in CTL scores were assessed with Mann-Whitney Z test.

Results. Of the 117 respondents 82.1% (96) were women, 16.2 % (19) man, 1.7% (2) others. Students were aged between 18 and 32 years.

Spearman's relation analysis confirmed statistically significant negative correlation between total anxiety score and PSP (r_s = -.19, p<.01). In contrast to expected anxiety is positively related with LOM scale (r_s =.36, p<0,1). No other CTL scales reveal statistically significant relationship with anxiety score contrary to expectation. The Mann-Whitney U test results reveal statistically significant differences between HA versus LA group on BTR (z = -2.074, p <.05) and PSP (z= -2.085, p <.05) subscales, where LA group show higher values on the subsequent CTL subscales. Statistically significant difference was found also on LOM scale (z = -2.985, p <.01), however on this subscale HA group revealed higher LOM values, then LA group.

Conclusions. As expected, negative correlation was found between anxiety and BTR, and PSP scales. Anxiety affects basic trust which is main criterion of mental health and provides ability to be open and rely on the other person in relationship. Similarly, previous research has proved association of sexual dysfunction with high anxiety. These findings confirm the clinical theory of Kernberg and findings of Kapusta et al.

The positive association between anxiety and LOM scale was unexpected, given that LOM scale is intended to assess mature capacity to mourn. This result should be interpreted with caution and could have been influenced by the self-report nature of CTL-I.

The hypotheses were partially supported.

The limitations of the study are (1) related to the dominant age group among respondents, (2) prevalence of female participants in the study sample. Since anxiety disorders occur more frequently in females than in males (approximately 2:1 ratio, according to DSM-5), further research is needed, involving broader age groups, accurate gender distributions, and different relationship durations.

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TRAUMAS PIRMSSKOLAS VECUMA BĒRNIEM UN TO PROFILAKSE

The topic of the study is "Injuries in Preschool-Aged Children and Their Prevention." The aim of the study was to examine the types of injuries sustained by preschool-aged children in the home environment and to analyze parental actions related to injury prevention. The research involved an analysis of medical literature and a quantitative study conducted through a questionnaire survey. A total of 91 parents of preschool-aged children from three preschool educational institutions participated in the study. The results indicate that the most common injuries occurring at home are bruises and contusions, choking incidents, cuts and wounds, and thermal burns. Choking had been experienced at least once by 30% of children, while 10% had experienced it repeatedly. Recurrent contusions were reported in 37% of children and bruises in 36%. Thermal burns had occurred once in 27% of children. Injuries most frequently occurred in the living room (44%) and the bedroom (19%). The body parts most commonly affected were the legs (48%) and arms (35%), while head injuries were less frequent (18%). Analysis by gender showed that boys sustained injuries slightly more often than girls. Most parents obtain information about injury prevention from mass media (36%) and from their family physician (32%). The study demonstrates that although some parents follow safety measures at home, not all of them implement these measures consistently, particularly with regard to electrical safety and children's access to household appliances. It can be concluded that the incidence of childhood injuries in the home environment can be reduced by enhancing parental education on safety measures and by promoting the consistent application of injury prevention principles in everyday life.

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MANAGEMENT STYLES AND NURSING TEAMWORK OF HOSPITALS NURSES

Keywords: *leadership style, nursing management, teamwork, teamwork perception, nurses*
Aim of the study: to determine the relationship between nurse managers' leadership styles and the perception of teamwork among nurses working in inpatient care settings.
Materials and Methods: the study was conducted in Latvia in 2025. A quantitative, non-experimental, correlational study design was applied. The Multifactor Leadership Questionnaire (MLQ) Form 6S (Schlossman, 2012), a shortened version of the original instrument, was used to assess the leadership styles applied by nurse managers. Nurses' perceptions of teamwork were evaluated using the TeamSTEPPS Teamwork Perceptions Questionnaire (King et al., 2008). The collected data were analyzed using IBM SPSS Statistics, Version 27. Descriptive statistical measures, including mean (M), standard deviation (SD), median (Me), minimum (Min), and maximum (Max) values, were used for the analysis of quantitative data. Nominal data were described using absolute and relative frequency tables. The nonparametric Spearman's rank correlation coefficient was applied to examine the relationship between nurse managers' leadership styles and nurses' perceptions of teamwork. A total of 295 nurses from two multi-profile hospitals in Latvia participated in the study.
Results: the results indicate that nurses most frequently characterized their managers by transactional and transformational leadership traits. Overall, nurses demonstrated a positive perception of teamwork, with the highest ratings observed in the dimensions of "Team Structure" and "Communication", while the lowest ratings were identified in the Leadership dimension.
Conclusion: a statistically significant relationship exists between nurse managers' leadership styles and the perception of teamwork among nurses working in inpatient care settings.

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NURSES' PROFESSIONAL BURNOUT AND TURNOVER INTENTION

Keywords: *Burnout, turnover intention, nurse*
Introduction: Professional burnout and turnover intention among nurses continue to be pressing issues worldwide. A range of sociodemographic and organizational factors can influence these outcomes. Therefore, it is essential to cultivate a supportive work environment that promotes nurse retention within both the workplace and the profession, thereby mitigating future nursing workforce shortages.
Aim of the study: To evaluate the indicators of professional burnout and their relationship with turnover intention among nurses working in inpatient and outpatient healthcare institutions.
Materials and Methods: This study employed a non-experimental, descriptive, cross-sectional, correlational, comparative, quantitative design. Data were collected using the **Maslach Burnout Inventory** (assessing emotional exhaustion, depersonalization, and reduced personal accomplishment) (Christina Maslach & Susan E. Jackson, 1981), with purchased usage rights, and the **Anticipated Turnover Scale** (Hinshaw & Atwood, 1984), applied with permission from the original authors. Statistical analyses included the **Chi-square test, Spearman's correlation coefficient, Independent-Samples Mann–Whitney U Test, and Independent-Samples Kruskal–Wallis Test.**
Results: The levels of professional burnout among the participating nurses did not indicate pronounced burnout. However, depersonalization was higher among younger nurses and those without children. As nurses' workload increased, both emotional exhaustion and depersonalization also increased. The results showed that approximately one in three nurses (32.4%) had a high turnover intention, regardless of whether they worked in inpatient or outpatient healthcare settings. No statistically significant differences were found in the mean levels of professional burnout or turnover intention between nurses working in inpatient and outpatient healthcare institutions.
Conclusion: There is a significant association between professional burnout indicators and turnover intention among nurses. As nurses' emotional exhaustion and depersonalization increase, their turnover intention also increases. Conversely, higher levels of personal accomplishment are associated with lower turnover intention.

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THE ROLE OF ANTIDEPRESSANTS IN ACHIEVING EARLY REMISSION IN PATIENTS WITH ALCOHOL DEPENDENCE AND DEPRESSIVE DISORDERS

Background Depressive disorders frequently co-occur with alcohol dependence and may affect remission stability and treatment outcomes. This study aimed to evaluate the role of adjunctive antidepressant therapy in achieving remission in patients with alcohol dependence and comorbid depressive symptoms.
Methods The study included retrospective and prospective components. The retrospective analysis comprised 185 outpatients with alcohol dependence and clinically significant depressive symptoms treated between 2020 and 2024. Among them, 100 patients received specific pharmacological treatment for alcohol dependence combined with antidepressants (primarily selective serotonin reuptake inhibitors, SSRIs), 68 received specific pharmacological treatment for alcohol dependence alone, and 17 received no pharmacological therapy. Remission duration was compared across treatment groups. The prospective group included 15 patients with alcohol dependence and depressive symptoms, defined by PHQ-9 scores ranging from 5 to 19 points, indicating mild to moderately severe depression. All patients in the prospective group received adjunctive SSRI therapy as part of individualized treatment, and depressive symptoms were assessed using the PHQ-9 scale during follow-up.
Results In the retrospective sample, no statistically significant differences were identified between treatment groups; however, subgroup analyses demonstrated a tendency toward both earlier onset of remission and longer remission duration among patients receiving adjunctive antidepressant therapy, suggesting potential clinical relevance in selected patient populations. In the prospective group, patients receiving antidepressants

achieved earlier remission, with PHQ-9 scores decreasing below 5 after two months of treatment, and no alcohol use reported during follow-up.
Conclusions Careful assessment of depressive symptoms in patients with alcohol dependence is essential, as depression may be primary or alcohol-induced.

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IMPACT OF COMORBIDITIES ON THE SEVERITY OF DEPRESSIVE SYMPTOMS IN MIDDLE-AGED AND SENIOR PATIENTS WITH CARDIOVASCULAR DISEASES IN PRIMARY CARE

Keywords: *PHQ-9. Cardiovascular disease. Primary care*
Introduction. Depression is commonly underdiagnosed for senior patients. Multimorbidity may increase psychological burden and the prevalence of depression, but its impact on depression severity in primary care remains insufficiently studied.
Aim of this study: To assess the association between comorbidities and depressive symptom severity in middle-aged and older patients with cardiovascular diseases in primary care.
Methods: This cross-sectional study was conducted in a General Practitioner (GP) practice in Riga and included 51 patient aged 45 years and older with a known chronic cardiovascular disease (PAH, CCS, AF, CHF) and without known depression diagnosis. Depressive symptoms were assessed using the Patient Health Questionnaire – 9. Data about chronic illnesses were obtained from medical records. Statistical analysis was performed using MS Excel and IBM SPSS 26. Ordinal regression was applied to analyze the association between cardiovascular comorbidities and depressive symptom severity ($p<0,05$).
Results: Patients with 3 and more comorbidities were associated with a significantly higher PHQ-9 scores compared to those with 0 – 2 comorbidities (10.0 vs 6.0,$p< 0,001$). A higher number of comorbidities was an independent predictor of greater depression severity (OR 8,98; $p=0.015$). Among individual comorbidities, chronic heart failure was associated with significantly higher PHQ-9 scores (13.0 vs 7.0, $p=0.005$), while no significant associations were observed for other cardiovascular diseases.
Conclusions: Although the study design and relatively small sample size does not allow for broad generalizations, the findings suggest a potential need for targeted monitoring of depressive symptoms. Particular attention should be given to older patients with cardiovascular disease and multiple comorbidities, especially those with chronic heart failure.

VĒSTURE UN KULTŪRAS VĒSTURE / HISTORY AND HISTORY OF CULTURE

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JEZUPOVAS PARKA 20. GS. REĀLIJAS

Raksturojot Latvijas dienvidaustrumu kultūrainavas reālijas 20.gs. gadsimtā, prezentācijas autore analizēs Jezupovas muižas centra vēsturiskā parka kultūrainavas izmaiņas gadsimta gaitā, ko noteica institucionālās pārraudzības maiņas. Prezentācijas tiks balstīta uz apzinātajiem vēstures avotiem: Valsts Kultūras piemineklu aizsardzības pārvaldes dokumentiem, Latvijas Nacionālās Vēstures arhīva Jezupovas muižas fonda lietu, kā arī publikācijām tā laika presē. Jezupovas muižas parka un estētiskajai un rekreācijas funkcijai ir bijusi svarīga loma lokālās ainavas veidošanā. Jezupovas muižas parka dendrojā struktūrā ir notikušas ievērojamas pārmaiņas, ko noteica vēstures pagriezieni: 1918. gada parks tapa publiski pieejams, agrārās reformas vērsta un tā teritorija. Padomju okupācijas gados parkam nokļūstot sovhoza īpašumā, notikusi daļēja parka degradācija. Ainaviskā mantojuma uzturēšanā un attīstībā ir bijušas iesaistītas dažādas institūcijas (pagasta aizsargu organizācija, lauksaimniecības biedrība uc), kas atzīmē saimnieciskās darbības raksturu dažādās sociāli politiskajās formācijās, tomēr Jezupovas muižas parks ar tā dendroloģiskiem retumiem un saglabājis estētisko un rekreācijas funkciju un tam ir republikas nozīmes kultūras vērtība.

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ASPECTS OF THE SOCIAL PORTRAIT OF LATVIA'S STATE FORESTRY WORKERS REFLECTED IN EGO-DOCUMENTS (1918–1940)

Ego-documents are sources in which the author reflects on themselves, their experiences, and their perspectives. As subjective historical sources, they reveal aspects of everyday life and personal experience that are not found in official records. They also enable the researcher to analyze the subject's attitudes toward social and political processes, and—when combined with other types of sources—to construct a social portrait of the forester and forest ranger. This paper draws on memoirs, autobiographies, letters, and diaries of forestry workers (foresters and forest rangers) from the Republic of Latvia (1918–1940). These sources make it possible to reconstruct not only factual information but also the social and cultural dimensions of the profession, including work ethics, values, and identity—elements that are rarely documented in other types of sources. Furthermore, they provide insight into the everyday lives of representatives of this profession. The position of forest ranger was often transmitted from generation to generation, and ego-documents record the inheritance of various traditions, ethical norms in relation to nature and professional duties, and the application of "unwritten rules" in practice. These traditions are brought into confrontation when differing experiences intersect. Ethical aspects, morality, and values vary across different forestry traditions; particularly noteworthy is the perspective of forestry officials of the Republic of Latvia in relation to the "foreign" traditions introduced during the occupations by Nazi Germany and the Soviet Union.

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THE SPIRITUAL BIOGRAPHY OF THE LATVIAN NATION WITHIN EUROPEAN CHRISTIAN CIVILIZATION: THE HISTORIOSOPHY OF PROFESSOR ROBERTS FELDMANIS (1910-2002)

This paper examines the historiosophy of Roberts Feldmanis (1910–2002), professor at the Faculty of Theology of the University of Latvia and historian of the Latvian Church, drawing primarily on his work *History of the Latvian Church*. The paper advances the thesis that Feldmanis's approach to Latvian history cannot be reduced to a confessional account of church history. Rather, it offers a broader interpretive perspective in which the history of Latvia is viewed as the spiritual biography of the Latvian nation within the context of European Christian civilization.

Feldmanis does not reduce Latvian history to shifts of political power or to social structures. In his interpretation, decisive importance belongs to civilizational turning points that determine the cultural orientation of society. From this perspective, Christianization and later the Reformation are not merely religious events but processes that introduced Latvian society into the sphere of European Christian civilization and shaped its subsequent civilizational orientation. The Reformation, in particular, played a crucial role by consolidating the use of the Latvian language in church life, promoting the development of written culture, and producing a broad body of catechetical and homiletic literature in Latvian.

Thus, the history of Latvia acquires the character of a distinct historiosophical drama: the Christian tradition shapes Latvian cultural and social development while simultaneously encountering periods in which this tradition is weakened, questioned, or threatened. Within this tension between the formative force of tradition and the danger of its rupture, the Church appears as the institution that sustains spiritual continuity and ensures the transmission of this heritage across generations.

The paper concludes that Feldmanis's historiosophy offers a distinctive model for interpreting Latvian history, in which the development of the Latvian nation is understood as a process of spiritual and cultural formation within the framework of European Christian civilization.

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"MĒS – VIŅI" DISKURSA REPREZENTĀCIJA SPĒLFILMĀ "LIMUZĪNS JĀŅU NAKTS KRĀSĀ"

Atslēgvārdi: *diskurss, identitāte, kinofilma, padomju laiks, kultūra*

Pēdejos gados Latvijas vēstures pētniecībā iezīmējas jaunas tendences. Līdzās globālajām un postkoloniālām vēstures tēmām, arvien biežāk tiek pievērsta uzmanība arī jautājumiem, kas veltīti reprezentāciju analīzei. Kultūras kontekstā tas nozīmētu, ka tiek pētīti nozīmju veidošanās mehānismi, caur kuriem sabiedrībā tiek konstruēti priekšstati par sevi un "citiem". Tāda starpdisciplinārā pieeja liecina par to, ka vēsture tiek aplūkota kā simboliska un diskursīva telpa, kurā tiek radītas un uzturētas identitātes, kuras pēc tam tiek transformētas sociālajā realitātē. Saskaņā ar reprezentācijas teoriju, kuras autors ir Stjuarts Hols, sociālā realitāte ir diskursīvi konstruēta nozīmju sistēma, kuru var izprast tikai caur valodu un kultūras reprezentāciju. Citiem vārdiem sakot, tas, ko cilvēki uzskata par sociālo realitāti, tas viss nav reāls, bet gan tiek konstruēts caur nozīmēm un simboliem, tātad - caur kultūras prizmu. Būtībā tas nozīmē, ka pasaule tiek interpretēta caur medijiem, mākslu, mūziku un kino filmām. Komunikācijas kanāli veido konstruktus, kas pēc tam tiek pārvērsti priekšstatos par sevi un citiem. Jēgu lietām un parādībām piešķiram mēs paši. Tādejādi, arī kino filmas kļūst par instrumentu, kas definē "mēs un viņi" diskursu. Tāpēc viens no pētījuma mērķiem, ir noskaidrot kā Jāņa Streiča spēlfilma "Limuzīns Jāņu Nakts krāsā" (1981), var atspoguļot šo diskursu. Režisors Jānis Streičš, izmantojot kino valodu, izveido trīs galvenos diskursus. Lauku vides telpiskais modelis, kas it atainots spēlfilmā, liecina par diskursu – lauki pret pilsētu. Otrs ir "īstā latvieša" pret "padomju latvieti" diskurss. Bet trešais – vērtību diskurss. Tas tiek raksturots caur materiālisma un ideālisma prizmu. Metodes: Semiotika, diskursa analīze (pieeja).

TIESĪBU ZINĀTNE / LAW

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POLICE ACTIVITY BASED ON COMMUNITY POLICING PRINCIPLES: INVOLVEMENT OF VOLUNTEERS

Modern law enforcement institutions are operating under increasing strain as they attempt to balance limited financial and human resources with the growing sophistication and diversity of criminal activity. In this context, maintaining public safety requires more than traditional approaches—it calls for continuous adaptation and the introduction of new, forward-thinking solutions. Innovation is no longer a matter of choice but a fundamental necessity for effective policing in contemporary society. One area with long-standing significance is the contribution of volunteers to policing efforts. Historically, volunteer involvement has strengthened the connection between law enforcement and the communities they serve, while also providing valuable support in a range of functions. Despite these benefits, participation in volunteer policing has been declining in recent years. This trend is further complicated by insufficient representation of diverse social groups and ongoing difficulties in retaining individuals over time. To address these challenges, policing strategies must evolve. A broader and more inclusive approach is required—one that actively involves individuals from different backgrounds, including skilled professionals, engaged citizens, employers, non-governmental organizations, and young people. Expanding participation in this way can help bridge existing gaps and create a more representative and effective support network. Equally important is the use of varied and modern engagement methods. Digital tools and online platforms can significantly improve outreach and accessibility, while collaboration with educational institutions can foster early interest and awareness among younger generations. Community-based recruitment initiatives, built on local trust and direct interaction, can further strengthen participation and long-term commitment. This approach aligns with principles rooted in pragmatism, emphasizing practical solutions and adaptability.

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A GREEN APPROACH TO FORENSICS – VISUALISATION OF HOMEOSCOPIC AND MECHANOHOMIC TRACES USING BIOLOGICAL POWDERS

Nowadays, the issue of preservation and conservation of the ecosystem is becoming increasingly relevant, and therefore alternative solutions, that would cause less harm to the ecosystem, are being sought. Such alternatives are also being explored in forensic science, and one of them is the visualisation of traces using biological powders. Within the framework of conducted studies and experiments, the adhesion properties of various biological powders have mainly been examined by visualising latent papillae pattern prints. However, in this study, the author has conducted an experiment visualising not only homeoscopic but also mechanohomic surface traces, which significantly broadens the scope of applications of biological powders. The aim of the study was to study the adhesion properties of biological powders on homeoscopic and mechanohomic surface traces present on different surfaces. During the experiment, various types of homeoscopic and mechanohomic surface traces were left and then visualised using eleven different biological powders, while examining the adhesion properties of these powders.

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STATE SECURITY DISCOURSE ON THE MIGRATION CRISIS AT THE POLISH–BELARUSIAN BORDER IN GOVERNMENT NARRATIVES AFTER THE 2023 PARLIAMENTARY ELECTIONS

This presentation examines the Polish government's framing of the migration crisis at the Polish–Belarusian border following the 2023 parliamentary elections. It explores how official narratives constructed the crisis as a matter of state security, legitimized border control measures, and shaped public perceptions. By analyzing government statements, policy documents, and speeches, the study highlights shifts in discourse resulting from political change, the emphasis on national sovereignty, and the portrayal of migrants as a security challenge. The presentation situates these narratives within the broader context of European border politics, offering insights into how states use discourse to manage crises and justify policy decisions.

Liene Eglāja

THE PRINCIPLE OF CONSUMPTION IN THE RESOLUTION OF CONFLICTS IN CRIMINAL LAW

Legal doctrine identifies three main types of conflicts between criminal law norms and establishes corresponding principles for their resolution: the conflict between a special and a general norm, governed by the principle of speciality (lex specialis derogat legi generali); the conflict between a primary and a subsidiary norm, governed by the principle of subsidiarity (lex primaria derogat legi subsidiariae); and the conflict between a consuming and a consumed norm, governed by the principle of consumption (lex consumens derogat legi consumptae). Legal doctrine also refers to the conflict between a broader and a narrower norm, however, this category falls within the previously mentioned types. These principles serve to prevent a person from being punished twice for the same conduct. The aim of the study is to analyse the principle of consumption (lex consumens derogat legi consumptae) as a separate rule for resolving conflicts between criminal law norms. The research is based on doctrinal analysis and the examination of case law in order to explore the application of this principle and to distinguish it from other rules governing conflicts of norms. The study shows that the principle of consumption applies where a person's conduct fulfils the elements of two or more criminal offences and the commission of one offence is typically not possible without the conduct constituting the other offence. In addition, both the conduct and the resulting harm are fully covered by a single criminal law provision. In such situations, the act should be classified under a single criminal law provision, and no concurrence of criminal offences (concursus delictorum) occurs.

MENEDŽMENTS / MANAGEMENT

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BIODIVERSITY IN THE GRADIENT POLISH - BELARUSIAN HYBRID WAR

The natural aspects of low-intensity conflicts, including hybrid wars, unlike large-scale wars, have been poorly researched to date. Due to its non-linear nature, hybrid warfare aims to destabilize a country by causing social discontent, unrest, and disobedience towards state structures. Its objectives include undermining trust in institutions responsible for security, health, and basic services, including ecosystem services based on natural resources. Hybrid wars aim to cause systemic disruptions in many sectors, often using criminal networks. This study analyzes the natural dimension of the hybrid war between Belarus and Poland. The conflict analyzed is a nonlinear, nonkinetic confrontation characterized by clear multidimensional links to biodiversity issues. Its main tool is forced, planned migration organized by Belarus against Poland. It takes place in areas of exceptional biodiversity, which are also of exceptional geopolitical importance on the European continent. Our analyses lead to the conclusion that the main challenge for biodiversity conservation may not be the hybrid attacks themselves, but the actions taken against these hybrid activities in the name of national security and sovereignty.

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NURSE TURNOVER IN HOSPITAL DEPARTMENTS IN LATVIA: ORGANIZATIONAL FACTORS AND RETENTION POSSIBILITIES

Shortage and turnover of nursing staff remain a serious problem in the Latvian health care system. Statistical data show that Latvia has one of the lowest numbers of practicing nurses in the European Union — about 4.2 nurses per 1000 inhabitants, while the EU average exceeds 9 nurses per 1000 inhabitants. The health workforce is also ageing, which increases the risk of staff shortages in the coming years. Insufficient staffing, high workload, and migration of medical personnel are recognized as major challenges for the Latvian health system (Eurostat, 2024; OECD, 2025). The aim of this ongoing study is to evaluate factors influencing nurse turnover in hospital departments and to identify organizational management possibilities for staff retention. A quantitative survey based on a structured questionnaire is conducted among practicing nurses working in different hospital departments in Latvia. The questionnaire includes questions about socio-demographic characteristics, workload, salary, work organization, management support, professional well-being, and intention to change workplace. In addition, semi-structured interviews with hospital nurses and physicians are conducted to obtain expert opinion about the causes of staff turnover, searching for main reasons for leaving hospital work. The research is still in progress and only preliminary results are presented. Initial findings show that many nurses have considered changing their workplace during the last year. The most common reasons are high workload, lack of staff, inadequate salary, and insufficient organizational support. Improved working conditions, better remuneration, and flexible schedules were identified as key factors for staff retention. Preliminary results confirm that nurse turnover is a relevant and systemic problem in Latvia that requires organizational and health policy solutions.

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DEPOPULATION AS A SECURITY THREAT ON THE EASTERN BORDER OF THE EUROPEAN UNION

Keywords: *depopulation, aging, human resources, security, demographic security, EU border region*
From the perspective of security theory, depopulation radically affects human potential, institutional capacity, and territorial resilience. It can worsen the ability to respond to crises, mobilize resources, or maintain public order in border areas. The study aims to examine depopulation along the European Union's eastern external border, particularly the Latgale region in Latvia, as a multifaceted security threat, arguing that demographic decline driven by low fertility, ageing, and out-migration weakens the territory overall. The main tasks concern the analysis of the current situation and the impact of depopulation in the Latgale region at present. The study combines both qualitative and quantitative data collection methods to gain a more comprehensive understanding of this complex problem. The phenomenon of depopulation can be viewed in the broader context of demographic security, where human resources are an essential element of national security.

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EMPĀTIJAS KONCEPTUALIZĀCIJA VADĪBAS ZINĀTNĒ KĀ PAMATS EMPĀTISKAS VADĪBAS MODEĻA IZSTRĀDEI MĀKSLINIECISKĀS IEVIRZES IESTĀDĒS

Raksts analizē empātijas konceptualizāciju vadības zinātnē, akcentējot tās daudzdimensionālo raksturu un nozīmi mūsdienu organizāciju vadībā. Pētījuma aktualitāti nosaka pieaugošā nepieciešamība pēc cilvēkcentrētām pieejām, īpaši sociāli un emocionāli intensīvās darba vidēs, tostarp mākslinieciskās ievirzes iestādēs. Empātija tiek aplūkota kā daudzdimensionāla parādība, kuras izpratne attīstīta psiholoģijā un neirozinātnē (Batson, 1991; Decety, 2004; Singer, 2006; Zaki, 2019), vienlaikus arvien biežāk to analizējot arī kā būtisku vadības kompetenci (Segal, 2011; Krznaric, 2014; Omārova, 2020; Grant, 2021; Edmondson, 2023). Raksta mērķis ir izpētīt empātijas teorētisko izpratni vadības kontekstā un pamatot tās nozīmi kā strukturētai vadības kompetencei mākslinieciskās ievirzes iestādēs, iezīmējot pamatu empātiskas vadības modeļa izstrādei. Autore balstās starpdisciplinārā literatūras analīzē un veikto aptauju datos. Empātija kā daudzlīmeņu parādība, kas ietver kognitīvos, emocionālos un uzvedības aspektus, būtiski ietekmē vadības procesus, organizācijas kultūru un darbinieku labbūtību (Decety & Jackson, 2004; Singer et al., 2006). Kā līderības kompetence, tā veicina uzticēšanos, sekmē efektīvu komunikāciju un stiprina darbinieku iesaisti (Goleman, 1998; Grant, 2021; Ma et al., 2024), īpaši mākslinieciskās ievirzes iestādēs, kur emocionālā dimensija ir cieši saistīta ar profesionālo darbību. Empātijas strukturēšana varētu radīt pamatu empātiskas vadības modeļa izstrādei un sekmētu efektīvāku, ilgtspējīgāku un cilvēkcentrētāku mākslinieciskās ievirzes iestāžu vadību jau šodien un nākotnē. Atslēgas vārdi: empātija, empātiska vadība, līderība, mākslinieciskās ievirzes iestādes.

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A COMPARATIVE STUDY OF EASTERN AND WESTERN EDUCATIONAL MANAGEMENT MODELS

Keywords: Educational Management Model; Eastern-Western Differences; Cultural Paradigm; Centralization and Decentralization; Educational Evaluation; Globalization
Abstract: This paper adopts a comparative research method to systematically explore the differences and inherent connections between Eastern and Western educational management models. At the level of

differences, Eastern educational management is deeply influenced by the Confucian "ethics-oriented" thought, taking centralized management as its core feature, focusing on macro-level overall planning and regulation, upholding collectivist value orientation, and emphasizing the exertion of the social function of education and the unity of the evaluation system. Western educational management, rooted in the philosophical traditions of instrumental rationality and individualism, tends to adopt decentralized management and school-based autonomous governance, implement a diversified evaluation mechanism, and focus on cultivating individual creativity and critical thinking. At the level of relevance, with the deepening of globalization and the advancement of educational modernization, the management goals of the two have shown a significant trend of convergence, both taking the pursuit of educational equity and the improvement of management efficiency as their core demands, and continuously seeking a dynamic balance between individual development needs and social development needs. The research shows that the future development of educational management is not a single one-way reference, but on the basis of respecting their respective cultural genes and development differences, realizing the in-depth integration of centralization and decentralization, standardization and personalization, and promoting the mutual learning and coexistence of cross-cultural educational management experience.

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DECISION QUALITY, CULTURAL HIERARCHY, AND HUMAN RESOURCE MANAGEMENT IN INTERNATIONAL PROJECT ENVIRONMENTS

In international project contexts, decision processes are shaped by cultural expectations regarding authority. This study examines how cul-tural hierarchy acceptance affects decision-quality conditions in international project environments. Drawing on cross-cultural management theory and decision science, the research analyzes the relationship between Hofstede's Power Distance Index (PDI) and institutional integrity conditions approximated by the Corruption Perceptions Index (CPI). The empirical analysis is based on a matched-country dataset covering 69 countries and applies correlation analysis, ordinary least squares regression, and cluster analysis. The results show a strong negative interrelation between power distance and integrity conditions ($r = -0.663$, $p < 0.001$). Regression results confirm a statistically significant relationship ($CPI = 88.850 - 0.601 \times PDI$; $R^2 = 0.439$), indicating that higher hierarchy acceptance is associated with weaker institutional conditions for transparent decision-making. Cluster analysis identifies two profiles: hierarchy-dominant environments with lower integrity and participative environments with stronger transparency. These findings emphasize the importance of HR practices that support voice, information shar-ing, and constructive challenge in culturally diverse teams. In transformation contexts—such as the green transition of energy enterprises—effective HR governance mechanisms, including transparent decision procedures, escalation channels, and documented option comparison, be-come essential for maintaining decision quality across multicultural teams. The study contributes to the intersection of cross-cultural management, project governance, and human resource management by demonstrating how cultural hierarchy expectations shape decision environments.
The study has been realized within DU research project No 14-95/2026/16 "Human Resource Management in Cultural Diversity: Or-ganizational Challenges and Strategies".

Natalija Mihailova

LĪDERĪBAS ASPEKTI ILGTSPĒJĪGAS UN IEKĻAUJOŠAS SABIEDRĪBAS PĀRVALDĒ: SISTĒMISKA ANALĪZE GLOBĀLO IZAICINĀJUMU KONTEKSTĀ

Keywords: *sustainable leadership, transformative leadership, social inclusion, climate change, governance*
This scientific paper analyzes the role of leadership in the governance of a sustainable and inclusive society, focusing on the context of the 21st century's complex, interconnected crises, such as climate change, social inequality, and global conflicts. The aim of the study is to demonstrate that existing leadership approaches are insufficient to address the root causes of these systemic issues, and that a new paradigm is needed—transformative leadership—which is grounded in justice, democracy, and an active critique of inequitable power structures. The main objectives of the research are to differentiate between transformational and transformative leadership models, analyze practical examples, and formulate recommendations for fostering this type of leadership. The novelty of the study lies in its comparison of transformational and transformative leadership models, arguing for the necessity of the latter to address systemic problems, which is supported by statistical data and case studies from various governance fields. The main conclusions suggest that transformative leadership is not merely a theoretical ideal but a practical and critical prerequisite for ensuring long-term resilience and societal well-being.

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ANALYSIS OF HIGHER EDUCATION SERVICES FOR FOREIGN STUDENTS IN THE CONTEXT OF OPPORTUNITIES AND CHALLENGES OF THE INTERNET AGE

Keywords: *Internet Age; Higher Education Services; Foreign Students; Education Management Model; Opportunities and Challenges*
Against the backdrop of the Internet age, higher education services for foreign students are undergoing constant adjustments and improvements, facing both new development opportunities and practical challenges. This paper focuses on the actual situation of higher education services for foreign students, starting with the drawbacks of traditional student education management models that are not fully adapted to foreign student groups. It puts forward specific principles, practical ideas and operable measures for building a new type of education management model, and discusses in detail how the Internet age shapes the development environment of higher education services for foreign students—both the positive opportunities it brings and the practical difficulties it poses. The research aims to provide practical ideas and feasible references for optimizing and upgrading higher education services for foreign students, helping to better meet the educational needs of foreign students in the digital era.

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VADĪTĀJA DOMĀŠANAS POTENCIĀLS UN GATAVĪBA PĀRMAIŅĀM

Atslēgvārdi: *domāšanas potenciāls, produktīva domāšana, vadītāja gatavība pārmaiņām*
Organizācijas panākumi lielā mērā ir atkarīgi no vadītāja domāšanas kvalitātes. Vadītāja spēja racionāli izmantot savu intelektuālo kapitālu, rast jaunas idejas un pieņemt pārdomātus lēmumus kļūst par galvenajiem panākumu faktoriem. Šajā ziņā īpaša nozīme tiek piešķirta vadītāja produktīvai domāšanai. Produktīva domāšana ir kognitīvās darbības augstākā kvalitāte, kas izpaužas kā spēja ne vien reproducēt uzkrātas zināšanas, bet patstāvīgi radīt jaunas idejas. Tā vispirms sākas ar dziļu problēmas struktūras izpratni. Kamēr

citi redz tikai atsevišķus, nesaistītus elementus, vadītājs ar produktīvu domāšanu saskata kopējo sistēmu, ar to neskaidru situāciju pārvēršot konkrētā, mērķtiecīgā rīcības plānā (Nerney, 1979, Maxwell, 2009; Cunningham, Macgregor, 2014). Produktīvas domāšanas stūrakmens ir vadītāja spēja efektīvi izmantot savus intelektuālos resursus. Tas nozīmē spēju piešķirt prioritāti augstvērtīgām idejām un saskaņot tās ar apzinātu rīcību, lai sasniegtu vislielāko atdevi (Maxwell, 2009). Atšķirībā no ierastās reproduktīvas domāšanas, kas balstās uz iepriekš apgūtu risinājumu mehānisku atkārtošanu, produktīva domāšana ietver apzinātu radošumu un problēmu kritisko analīzi (Nerney, 1979; Wertheimer, 1945). Šāda domāšanas pārveide palīdz vadītājam saskatīt problēmas nevis kā šķēršļus, bet gan kā izaugsmes iespējas, aizstājot reaktīvu rīcību ar proaktīvu attīstību (Hurson, 2007). Vadītājs ar produktīvu domāšanu negaida krīzes situācijas, lai reaģētu, bet aktīvi meklē veidus, kā sistematizēt neskaidrības un atrast labākus risinājumus (Hurson, 2007). Pētījuma mērķis ir izpētīt vadītāja domāšanas potenciālu un noteikt tās attīstības virzienus, kas ļauj sasniegt maksimālu produktivitāti. Lai to izdarītu, pētījumā tiek izmantots Dž. Maksvela (J. Maxwell) izstrādāts tests, kurš ļauj izvērtēt vadītāja domāšanas potenciālu, balstoties uz produktīvas domāšanas priekšnosacījumiem.

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THE PROCESS OF EVALUATING CIVILIAN EMPLOYEES IN PUBLIC ADMINISTRATION: HISTORICAL ASPECTS AND CONTEMPORARY ISSUES IN LATVIA

Keywords: *evaluation, public administration, NEVIS, competencence, human resources*
The process of evaluation for civilian employees (officials and servants) in the public administration has evolved alongside the establishment of the public administration following the restoration of independence of the Republic of Latvia on May 4th, 1990. Initially, the process of evaluation was linked to the certification of public officials, that was required by the law "On the Civil Service" that was established on April 21st, 1994. However, according to the new "State Civil Service Law", that was established in 2000, specific regulations regarding the evaluation of civilian officials were already in place. The most important legislation in the field of evaluation was the Cabinet of Ministers regulation No. 494 "Regulations on the Performance Evaluation of Employees in Public Administration" (entry into force: 01.11.2021), that stated the implementation of the "Electronic Assessment Form Information System" (hereinafter referred to as NEVIS). For more than 10 years, the system has been used to evaluate civilian employees in the public administration, a process that is often resulting in receiving various bonuses. Despite NEVIS's progressive framework, which provides work planning based on pre-set goals and includes an assessment of these goals as well as employee competencies - including the use of 360-degree evaluations - it must be noted that today's constant changes in organization processes as well as human resource management create a need to introduce new criteria into the evaluation process of the employees. NEVIS has been in use since 2013, however no system improvements have been made. Therefore, it must unfortunately be concluded that the system often fails to provide an objective picture of staff development and improvements in work efficiency, which creates serious problems throughout the evaluation process.

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REFORM AND INNOVATION OF THE EDUCATIONAL MANAGEMENT MODE OF COLLEGE STUDENTS

Keywords: *Digital Transformation; University Governance; Student Affairs; Agile Framework; Administrative Friction*
Abstract: The digital surge is driving a profound transformation in university student management, making the restructuring of traditional models an urgent necessity. While "Internet+" initiatives have modernized administrative tools on the surface, a distinct governance gap remains between rigid bureaucratic hierarchies and the fluid logic of digital connectivity. Moving away from grand technological narratives, this paper

focuses on the practical barriers within digital transformation, offering a critical analysis of how legacy management logic fails in terms of information flow and the depth of teacher-student interaction. By introducing an agile governance framework, the study examines how digital media reshapes the campus ecosystem and explores the resulting dual effects. Ultimately, by addressing management dilemmas at various levels, the research proposes a strategic path that synthesizes technical rationality with human-centric care, aiming to provide a robust theoretical reference for the evolution of modern university governance.

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WHEN THE ORGANIZATION SUPPORTS THE INDIVIDUAL: INTERACTION BETWEEN PSYCHOLOGICAL WELL-BEING AND ORGANIZATIONAL CULTURE IN HEALTHCARE

Keywords: *organizational culture, psychological well-being, safety climate, healthcare workers, healthcare institution*
The psychological well-being of healthcare workers is an important factor in ensuring both work quality and patient safety. In recent years, growing attention has been paid to the role of organizational culture in shaping employees' psychosocial well-being, as the work environment, leadership approaches, and opportunities for professional development significantly influence motivation, professional resilience, and work effectiveness. In organizations with a positive safety climate and effective team communication, employees experience greater professional support and psychological safety, which contributes to improved well-being and better quality of patient care. Therefore, the development of a supportive organizational culture based on collaboration, effective communication, and professional development is particularly important in healthcare organizations. The study was conducted as a quantitative cross-sectional study using an anonymous online survey. A total of 110 healthcare employees from various healthcare institutions in Latvia participated in the study. Organizational culture was assessed using the Denison organizational culture model, while psychological well-being was analyzed using Ryff's model of psychological well-being. Data analysis included descriptive statistics, Pearson correlation analysis, and linear regression to examine the relationship between organizational culture and employees' psychological well-being. The results indicate that organizational culture is a significant factor influencing the psychological state and professional well-being of healthcare employees and may serve as an important resource for improving employee well-being and the quality of patient care. Aim of the study: To analyze the role of organizational culture as a determinant of psychological well-being in a healthcare institution.

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DEVELOPMENT-DRIVEN No-CODE TOOLS TO ADDRESS IT-TALENT SHORTAGE

Keywords: *Citizen Development, Low-Code, Strategy, Technology Adoption, Employee-Driven Innovation*
IT-talents have become scarce globally, this creates a skills vacuum that needs filling. This IT-talents shortfall hampers innovation-related activities in startups and could lead to ($) billions of global losses. According to Jeanetter (SAP): "A global shortage of highly skilled software developers is a significant risk factor for companies as they transition to truly intelligent enterprises". Latvia, a small Baltic European country, is not immune to this scarcity of IT-talents. On the national level in Latvia, and according to Labs of Latvia, "the Latvian IT sector is experiencing a shortage of IT Talents, with a deficit of three thousand(3000) specialists annually". Several strategies and models such as "The technology–organization–environment (TOE) framework proposed by DePietro et al.(1990), and Technology acceptance model (TAM), proposed by Davis et al. (1989) have been employed with minimal successes. The article utilised qualitative systematic literature review of publications to assist us to gain an understanding of existing research in an attempt to address the IT-talent shortages. The review results identified gaps and based on the collated gaps, a new approach was birthed to assist to inject more IT-talents into the Latvian IT sector. Our paper introduced the "Citizen

development(CD)-driven No-Code(NC)" approach and strategy. From the identified gaps, our paper curled out a framework for CD and strategy for No-Code adoption. The strategy would assist non-technical employees to unleash their innovative and creative abilities in No-code.

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THE INFLUENCE OF DYNAMIC CAPABILITIES AND TOTAL QUALITY MANAGEMENT PRACTICES ON COMPETITIVE ADVANTAGE AMONG INSURANCE COMPANIES

In the increasingly competitive insurance industry, sustaining a competitive advantage has become essential for organizational survival and long-term growth. However, rapid market changes and evolving industry demands continue to challenge insurance firms in maintaining this advantage. This study examined the influence of dynamic capabilities and Total Quality Management (TQM) practices on the competitive advantage of life insurance companies operating in Davao City, Philippines. Employing a descriptive-correlational research design, the study involved 200 purposively selected personnel from leading life insurance companies in the area, representing various organizational roles. Data were collected using adapted survey questionnaires and analyzed through descriptive and inferential statistical techniques, including Pearson's correlation coefficient and multiple regression analysis. The findings revealed that both dynamic capabilities and TQM practices were highly manifested among the surveyed companies. Similarly, the level of competitive advantage was found to be high, indicating its strong presence within the industry. Further analysis confirmed that dynamic capabilities and TQM practices significantly influence competitive advantage. Notably, the combined effect of these variables accounted for approximately seventy percent of the variance in competitive advantage. These results highlight the critical role of organizational adaptability and quality management practices in strengthening the competitive position of life insurance firms in a rapidly evolving business environment.

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ENTRY/EXIT SYSTEM (EES) IN THE MANAGEMENT OF CONTEMPORARY EXTERNAL BORDERS OF THE EUROPEAN UNION

The Entry/Exit System (EES) constitutes one of the key elements of the European Union's modern border management architecture. Introduced as part of the broader framework of large-scale information systems supporting the Area of Freedom, Security and Justice, the EES is designed to enhance the effectiveness of control at the external borders of the European Union. The system enables the electronic registration of entry and exit data of third-country nationals crossing the external borders of the Schengen Area, replacing the traditional practice of manual passport stamping. The main objective of this article is to analyze the role and significance of the Entry/Exit System in the management of contemporary external borders of the European Union. Particular attention is given to the system's functions in improving border control procedures, strengthening migration management, and supporting the identification of individuals who overstay their permitted period of stay in the Schengen Area. The study also examines the technological and organizational dimensions of the EES, including its integration with other European information systems such as the Schengen Information System (SIS), the Visa Information System (VIS), and the European Travel Information and Authorisation System (ETIAS).

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INFORMATION SECURITY MANAGEMENT IN A MODERN ORGANIZATION

In the contemporary digital environment, information has become one of the most valuable resources of modern organizations. The rapid development of information technologies, digital transformation of institutions, and the increasing scale of cyber threats have made information security management a fundamental element of organizational governance and resilience. Organizations operating in both the public and private sectors face numerous challenges related to the protection of sensitive data, ensuring the confidentiality, integrity, and availability of information, as well as maintaining the continuity of critical processes. The aim of this study is to analyze the role and importance of information security management in modern organizations, taking into account legal, organizational, and technological determinants. Particular attention is given to the implementation of integrated information security management systems based on international standards such as ISO/IEC 27001, as well as to the role of risk management, security policies, employee awareness, and technological safeguards in building an effective protection framework. The paper also discusses contemporary threats related to cybercrime, data breaches, ransomware attacks, and the misuse of emerging technologies, including artificial intelligence and automated systems. In this context, the importance of proactive security strategies, organizational culture of security, and cooperation between management, IT departments, and employees is emphasized. The conducted analysis indicates that effective information security management requires a comprehensive and systemic approach that integrates organizational procedures, technological solutions, and human factors. Organizations that implement modern security management models are better prepared to respond to emerging threats, protect critical assets, and ensure operational stability in an increasingly complex digital environment.

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BOTTLENECKS AND SOLUTIONS FOR OPENING NATURAL RESOURCES OF CHINA'S NATIONAL PARKS TO OUTDOOR SPORTS

Under China's national park principles "ecological conservation first, national representativeness, and public welfare" opening natural resources to the public for outdoor sports requires a governance approach that balances conservation with equitable access. Focusing on China's first batch of national parks, this study applies policy text analysis and comparative case reasoning. We adopt a "scenario incubation bottleneck identification–solution pathway" framework and integrate two practical tools widely used in protected-area recreation governance: the Recreation Opportunity Spectrum and Visitor Use Management. We identify structural barriers including insufficient regulatory supply, coarse zoning and carrying capacity management, weak risk governance and rescue systems, underdeveloped market-operation rules, fragile community collaboration and benefit-sharing arrangements, and an incomplete monitoring evaluation feedback loop. We propose a full-chain governance package centered on park-specific "access lists" and built around "zoning, admission, operation, co-governance, evaluation." Key measures include tiered access and dynamic quotas for low-impact recreation, categorized authorization and concession mechanisms for commercial services, mandatory safety standards and insurance-based risk sharing for high-risk activities, community co-management with revenue return, and data-driven adaptive management. The study offers implementable policy options for simultaneously improving public service provision in national parks and advancing high-quality outdoor sports development.

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FROM CONSTRUCTION TO CONTINUITY: RESEARCH ON DIGITAL TRANSFORMATION IN CHINESE HIGHER EDUCATION INSTITUTIONS

Digital transformation has become a major issue in higher education worldwide. It is increasingly discussed as a means to widen educational opportunities, remove barriers to learning, and enhance quality through stronger governance and evidence informed practice, which aligns with SDG4's emphasis on inclusive, equitable, and high quality education. This paper offers a review and outlook on research into digital transformation in Chinese higher education. It aims to clarify the core concepts and main lines of argument in the existing literature, to map the dominant themes, stages of progress, and recurring difficulties in the Chinese context, and to draw on international research and policy discussions in order to identify the gaps that currently limit the accumulation of knowledge in this field. Methodologically, the study adopts a structured narrative literature review. The analysis is organized around shared global challenges in higher education digital transformation, China focused topics and developments, international comparison and implications, and research gaps with future directions. Sustainability is understood as the extent to which digital initiatives are institutionalized within universities, which depends on whether governance mechanisms and responsibilities are sufficiently clear to support routine cross unit collaboration, and whether evidence can be generated and used consistently during operation and maintenance to improve teaching and governance, rather than treating construction outputs or short term usage as the primary indicators of transformation. The review indicates that much of the current scholarship concentrates on platform construction and resource provision, smart campus governance, blended learning practices, data enabled approaches, and AI related applications.

MATEMĀTIKA / MATHEMATICS

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BRIDGING TRADITIONS AND INNOVATIONS IN BALTIC AND NORDIC MATHEMATICS EDUCATION: DEVELOPING RELEVANT LEARNING MATERIALS FOR HIGHER EDUCATION

The alignment of mathematics education with contemporary technological development and real-world application remains a significant challenge in higher education. The Nordplus Higher Education project "Traditions and Innovations in Baltic and Nordic Mathematics Education/2025" provides the framework for this study within a Baltic and Nordic collaborative context. The aim of this study was to investigate the relevance and adequacy of existing mathematics teaching materials in higher education. A comparative analysis of study course descriptions was conducted, focusing on course content, learning outcomes, and the extent to which mathematical knowledge is linked to practical applications and professional contexts. The findings reveal a critical gap: current mathematics teaching literature in higher education often does not sufficiently reflect modern technological developments nor effectively connect mathematical concepts with real-world applications, particularly in STEM fields. This limits students' ability to apply theoretical knowledge in professional environments. In response to these findings, innovative teaching materials were developed that integrate mathematical theory with practical applications, digital tools, and interdisciplinary STEM contexts. These materials are designed to enhance student engagement, support applied learning, and better prepare graduates for the demands of the contemporary labor market. The study highlights the need to rethink mathematics curricula and demonstrates the value of international collaboration in developing relevant and future-oriented educational resources.

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DEFINING DETERMINANT AS A MORPHISM OF MULTIPLICATIVE MONOIDS

The determinant is a fundamental function that assigns to each square matrix an element of its underlying ring. It encodes essential information about invertibility of linear mappings, solvability of linear systems, and the scaling of volume under linear transformations. Several equivalent definitions of the determinant are in use, including combinatorial and multilinear formulations. This presentation advocates an approach based on the multiplicative characterization of the determinant. The equivalence of this definition with the classical formulations is shown, and its conceptual and pedagogical advantages are discussed.

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A COMPARATIVE ANALYSIS OF PO-SHEN LOH'S STRUCTURED APPROACH AND TRADITIONAL METHODS OF SOLVING QUADRATIC EQUATIONS: A CASE STUDY OF ONE SECONDARY SCHOOL IN MASERU DISTRICT OF LESOTHO

Mathematics is one of the core subjects in Lesotho secondary education, and a tool in other fields. However, there is a persistent decline in mathematics performance for the past five years in the Lesotho General Certificate of Secondary Education(LGCSE) mathematics examinations. The pass rate for quality grades (A* to C) remained consistently below 16% from 2019 to 2025, meaning more than 80% of candidates fail to achieve quality grades. Despite the efforts made to improve achievement level, mathematics continues to face difficulties in achieving quality grades. The Examination Council of Lesotho(ECoL) examiners' reports repeatedly flag quadratic equations items as high discriminator questions and key contributors to low mathematics performance. The reports indicate that most candidates struggle with procedural steps (multi-step questions), manipulation errors (factorization, formulae) and conceptual errors (mixed formulae), and therefore propose improvements on approaches in teaching algebra and tasks designed to improve mathematical conceptualization. The study seeks to generate evidence on the effectiveness of Po-shen Loh's structured method of solving quadratic equations. This study employed an explanatory sequential mixed-methods design using quasi-experimental design (quantitative phase) and semi-structured interviews (qualitative phase). It utilized posttest comparison of two non-equivalent groups in a sample size(N=127) and one teacher; the experimental group(n=68) received an intervention on Loh's method while the control group was taught using traditional methods (factoring, completing the square and quadratic formula).

FIZIKA / PHYSICS

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GROWTH-CONTROLLED CUO NANOFLOWER ELECTRODES FOR HYDROGEN PEROXIDE SENSING AND EVALUATION OF MGO NANOPARTICLE-MEDIATED DROUGHT STRESS MITIGATION IN OAT AND RYE

Drought stress induces the excessive accumulation of hydrogen peroxide, leading to oxidative damage and reduced crop productivity. This study presents a dual-function nanotechnology-based strategy for monitoring and mitigating drought-induced oxidative stress in cereal crops. Hierarchical copper oxide nanostructures were grown directly on copper substrates by hydrothermal oxidation, and the influence of growth conditions on morphology and hydrogen peroxide sensing performance was systematically evaluated. Optimized growth conditions produced nanoflower-like architectures with high surface area, yielding enhanced electrocatalytic activity toward hydrogen peroxide detection, characterized by high sensitivity and effective detection capability. The optimized sensor enabled reliable quantification of hydrogen peroxide in oat (Avena sativa) and rye (Secale cereale) under drought stress, revealing species-dependent oxidative responses. In parallel, magnesium oxide nanoparticles effectively alleviated drought-induced oxidative damage, reducing hydrogen peroxide accumulation and significantly improving plant growth and chlorophyll content in both species. The integration of copper oxide-based sensing with magnesium oxide nanoparticle-assisted stress mitigation provides a robust framework for plant stress diagnostics and intervention, highlighting the potential of nanotechnology-enabled strategies for crop stress monitoring and precision agriculture.

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SYNTHESIS AND ANALYSIS OF Co_3O_4 NANOSTRUCTURES FOR THE MODIFICATION OF SPE SENSORS IN HYDROGEN PEROXIDE DETECTION

The aim of this work was to synthesize cobalt oxide (Co_3O_4) nanostructures and evaluate their efficiency as modifiers for screen-printed electrodes (SPEs) in the detection of hydrogen peroxide (H_2O_2). The hydrothermal synthesis of Co_3O_4 nanomaterials was carried out under a fixed temperature regime. To obtain different morphologies, cobalt acetate, cobalt nitrate, and cobalt chloride were used as starting precursors. The morphology of the synthesized samples was analyzed using scanning electron microscopy (SEM). The results confirmed the formation of three distinct types of structures: porous microspheres (when using acetate), urchin-like spherical agglomerates (from nitrate), and elongated nanorods (from chloride). The working surface of carbon SPEs was modified with the obtained nanomaterials. Subsequently, an electrochemical comparison of the modified sensors in H_2O_2 detection was conducted. Cyclic voltammetry demonstrated that the morphology defined at the synthesis stage directly affects the catalytic activity of the electrode. The comparison of analytical responses allowed determining the material with the optimal structure, providing the most efficient and sensitive detection of hydrogen peroxide.
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PSIHOLOĢIJA / PSYCHOLOGY

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SOCIAL STEREOTYPES OF ARTIFICIAL INTELLIGENCE AND THEIR PSYCHOLOGICAL DETERMINANTS: AN INTEGRATIVE THEORETICAL FRAMEWORK ACROSS ACADEMIC DISCIPLINES

Social Stereotypes of Artificial Intelligence and Their Psychological Determinants: An Integrative Theoretical Framework Across Academic Disciplines Given theoretical paper examines the formation of social stereotypes about artificial intelligence (AI) and their psychological determinants among students of different academic specialties. It integrates key perspectives from social psychology and technology studies to propose a multidimensional explanatory framework. Drawing on Social Identity Theory, the paper argues that students' disciplinary affiliation and professional identity shape group-based interpretations of AI, influencing perceived relevance, risks, and opportunities. The Theory of Social Representations explains how collective meanings of AI emerge through media, educational contexts, and cultural narratives, leading to simplified yet stable stereotypes. The Stereotype Content Model (competence and warmth) is applied to conceptualize AI as typically perceived as highly competent but low in warmth, producing ambivalent attitudes. The Technology Acceptance Model further clarifies how perceived usefulness and ease of use mediate students' attitudes and behavioral intentions toward AI. Additionally, theories of academic socialization highlight how educational environments shape professional worldviews that structure AI perception. A central theoretical contribution of the paper is the conceptualization of AI as a "new social actor," grounded in CASA, HMC, and anthropomorphization approaches, which explains why students attribute agency, intentions, and social characteristics to AI. Thus, AI-related stereotypes are shaped by the interaction of group identity, cultural representations, cognitive evaluations, and human–technology interaction processes, possibly resulting in systematic differences across academic fields.

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NATURE-BASED SELF-CARE: STRATEGIES, ACTIVITIES, AND QUESTIONNAIRE DEVELOPMENT

Keywords: *nature-based self-care; factor analysis; questionnaire development; mental health*
Nature-based self-care is defined as intentional engagement in activities in natural environments aimed at maintaining and restoring health and well-being. Despite growing interest in nature-based strategies, there is a lack of validated measures capturing both attitudes and behaviours. This study represents Stage 1 in the development of the Nature-Based Self-Care Questionnaire, focusing on identifying core dimensions and expanding the content domain. A mixed-methods design was applied. Quantitative data from a previously conducted study (N=965) were analysed using exploratory factor analysis to examine the structure of nature-based self-care. The initial pool included 11 items for attitudes and behaviours. In parallel, a qualitative component involved psychology expert evaluation to assess item relevance and generate additional content. Exploratory factor analysis supported a three-factor structure reflecting (1) mindful practices, (2) sensory and artistic practices, and (3) body-related practices. Example activities included meditation in nature, listening to natural sounds, creative engagement with natural materials, and physical activity such as nature walks. The same structure was observed across both attitude and behaviour sections, with acceptable internal consistency (α = .843–.863). Qualitative expert input complemented quantitative findings and resulted in the development of an additional set of 20 nature-based self-care items, expanding the representation of strategies and activities for further testing. Findings provide initial empirical support for the multidimensional structure of nature-based self-care and highlight the value of integrating expert knowledge in scale development. The extended

item pool will be used in Stage 2 for comprehensive psychometric validation, contributing to the development of a reliable instrument for assessing nature-based self-care.

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ADAPTATION OF THE BARCELONA MUSIC REWARD QUESTIONNAIRE IN THE LATVIAN CONTEXT

Keywords: *factor analysis; mental health; music reward; psychometric properties*

On average, people listen to music for more than two hours per day. At the same time, more than one billion people worldwide experience mental health disorders, with depression and anxiety among the most common. Music is increasingly recognised as a non-pharmacological approach to improving well-being. However, individuals differ in the extent to which music is experienced as rewarding. This construct can be assessed using the Barcelona Music Reward Questionnaire (BMRQ). Currently, no psychometrically validated instrument exists in Latvia; therefore, this study aimed to adapt the BMRQ to the Latvian linguistic and cultural context.

The BMRQ includes 20 items across five subscales: emotion evocation, mood regulation, social reward, sensory-motor dimension, and music seeking. Responses are rated on a 5-point Likert scale, where higher scores indicate greater music reward. The instrument was translated using forward–back translation procedures. The study sample consisted of 240 Latvian-speaking adults aged 18–80 years (M = 43.56, SD = 16.27), with 84.2% women and 15.8% men. Theonline survey included the BMRQ, Music Use (MUSE) Questionnaire, and measures of depression (PHQ-9) and anxiety (GAD-7).

Exploratory factor analysis (principal axis factoring with promax rotation) indicated a three-factor structure. Sampling adequacy was high (KMO=.888), and Bartlett's test was significant, $\chi^2(276)=2756.34$, $p<.001$. Parallel analysis supported the original factors explaining 43.2% of the variance. Internal consistency was high (Cronbach's $\alpha=.904$; average inter-item $r=.295$), and item–rest correlations ranged from 0.37 to 0.72. Convergent validity was supported by a moderate correlation with MUSE ($r=.392$, $p<.001$), while weak correlations with anxiety ($r=.202$) and depression ($r=.086$) indicated divergent validity.

The Latvian version of the BMRQ appears to be a reliable and psychometrically sound instrument for assessing music reward.

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NEURODIVERSITY AMONG LYME DISEASE PATIENTS IN LATVIA

The Rdos Aspie Quiz is a psychometric instrument designed to identify atypical and typical cognitive traits in adults. While autism is primarily viewed as a neurodevelopmental condition, increasing attention is being paid to the overlap of neurodivergent symptoms with neuroinfectious diseases, such as Lyme disease, which may manifest in heightened sensory sensitivity and cognitive differences. The primary objective of this study was to compare the cognitive and behavioral profiles of three distinct groups—individuals with Lyme disease, self-identified autistics and a neurotypical control group—specifically focusing on the correlation between five key domains and the total neurodivergence score. Data were collected through surveying anonymous participants and resulting dataset (N=215) was analyzed. Participants were categorized into three groups: Lyme Group, Aspie Group and Control Group. Non-parametric Spearman's rho correlations were calculated between domain scores and the total Score. 95% Confidence Intervals (CI) and p-values were derived using Fisher z transformation. The Aspie group demonstrated the most stable and monolithic cognitive structure, with high correlations across all domains. The Lyme group exhibited a profile primarily driven by sensory processing. The perception domain was the only domain where the Lyme group ($p = 0.624$) closely approached the Aspie group's level of integration. While all domains linearly scale with neurodivergence for Aspie group, the Lyme group presents a "sensory-first" profile. Sensory perception is the primary predictor of neurodivergent-like scores in Lyme patients, whereas social and relationship traits show higher variability and lower integration into their overall profile compared to the Aspie group.

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ARTIFICIAL INTELLIGENCE USE IN SECONDARY EDUCATION: A PILOT STUDY OF LATVIAN UPPER SECONDARY STUDENTS

Artificial intelligence (AI) has very quickly become part of school and university learning. New generative tools are clearly changing the way secondary students handle assignments, work through new material, and build important skills. This exploratory pilot study aims to examine the frequency of use, preferred tools, subject-specific application patterns, ways students first learned about AI, and students' perceptions of school rules regarding its use. Particular attention was given to the scale and specific characteristics of AI integration into academic activities, both at home and in the school environment. A convenience sample of 24 upper secondary school students (15 females, 9 males) consisted predominantly of 11th-grade students from general secondary schools and gymnasiums, with most respondents attending schools in Riga or other republican cities. The study employed a quantitative questionnaire distributed via the education-focused online platform e-klase.lv. Key findings indicate near-universal access to essential devices (95.8% had a computer/laptop and 95.8% had a smartphone at home). AI is used very frequently: 83.4% apply it several times a week or daily. ChatGPT was used by all respondents (100%), while other tools such as Google Gemini (33.3%) and Canva AI (29.2%) were used considerably less frequently. AI is most commonly applied in natural sciences (66.7%), mathematics (50.0%), and foreign languages (45.8%). Students primarily discover AI tools through friends/classmates and social media (both 54.2%). Interpreted through Self-regulated learning and AI literacy, findings indicate students use AI to manage learning tasks, underscoring the need for school guidelines and future research.

SPORTS / SPORT

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LOW FERRITIN WITHOUT ANAEMIA IN YOUTH ATHLETES: PREVALENCE AND ASSOCIATION WITH ANAEROBIC PERFORMANCE

Background: Iron depletion in young athletes may remain clinically unrecognized when hemoglobin concentration is still within the normal range. In sports medicine, this is important because screening based on hemoglobin alone may fail to identify reduced iron stores that could affect exercise capacity, recovery, and adaptation to training.
Aim of the study: To determine the prevalence of low ferritin without anaemia in youth athletes and to examine its association with anaerobic performance.
Methods: This cross-sectional study included 97 youth athletes with available ferritin and hemoglobin data. The mean age was 14.5 ± 1.6 years; 62 were boys and 35 were girls. Low ferritin was defined as serum ferritin <30 ug/L. Anaemia was assessed using age- and sex-specific hemoglobin thresholds. Anaerobic performance was evaluated using peak anaerobic power normalized to body mass (W/kg) and anaerobic capacity normalized to body mass (W/kg). Group differences between athletes with ferritin <30 ug/L and those with ferritin >=30 ug/L were assessed using non-parametric testing. Spearman correlation analysis was used to evaluate associations between ferritin and performance variables. Multivariable linear regression was performed to examine whether ferritin remained associated with anaerobic performance after adjustment for age, sex, and biological maturation.
Results: Low ferritin was present in 56 of 97 athletes (57.7%), whereas anaemia was identified in only 4 athletes (4.1%). Among athletes with low ferritin, 54 of 56 (96.4%) were non-anaemic, indicating that reduced iron stores were usually not accompanied by overt anaemia. Ferritin showed a positive correlation with peak anaerobic power (rho = 0.29, p = 0.004) and anaerobic capacity (rho = 0.28, p = 0.005). Athletes with ferritin <30 ug/L demonstrated lower peak anaerobic power than those with ferritin >=30 ug/L (8.78 vs 9.42 W/kg, p = 0.017) and lower anaerobic capacity (6.88 vs 7.26 W/kg, p = 0.017). However, after adjustment for age, sex, and maturity offset, ferritin was no longer independently associated with either performance outcome.
Conclusions: Low ferritin without anaemia is common in youth athletes and may be missed if screening relies on hemoglobin alone. Although lower ferritin was associated with poorer unadjusted anaerobic performance, this relationship was largely explained by age, sex, and biological maturation. These findings support ferritin assessment as part of clinical screening in young athletes, particularly for detecting latent iron depletion rather than overt anaemia alone.
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BOTTLENECKS AND SOLUTIONS FOR OPENING NATURAL RESOURCES OF CHINA'S NATIONAL PARKS TO OUTDOOR SPORTS

Under China's national park principles "ecological conservation first, national representativeness, and public welfare" opening natural resources to the public for outdoor sports requires a governance approach that balances conservation with equitable access. Focusing on China's first batch of national parks, this study applies policy text analysis and comparative case reasoning. We adopt a "scenario incubation bottleneck identification–solution pathway" framework and integrate two practical tools widely used in protected-area recreation governance: the Recreation Opportunity Spectrum and Visitor Use Management. We identify structural barriers including insufficient regulatory supply, coarse zoning and carrying capacity management, weak risk governance and rescue systems, underdeveloped market-operation rules, fragile community

collaboration and benefit-sharing arrangements, and an incomplete monitoring evaluation feedback loop. We propose a full-chain governance package centered on park-specific "access lists" and built around "zoning, admission, operation, co-governance, evaluation." Key measures include tiered access and dynamic quotas for low-impact recreation, categorized authorization and concession mechanisms for commercial services, mandatory safety standards and insurance-based risk sharing for high-risk activities, community co-management with revenue return, and data-driven adaptive management. The study offers implementable policy options for simultaneously improving public service provision in national parks and advancing high-quality outdoor sports development.