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83rd INTERNATIONAL SCIENTIFIC CONFERENCE ON MEDICINE AND HEALTH SCIENCES OF THE UNIVERSITY OF LATVIA: MATERNAL, CHILD HEALTH AND NEUROLOGY

On 25 April 2025, the University of Latvia in Rīga is hosting the International Scientific Conference on Medicine organised within the frame of the 83rd International Scientific Conference on Medicine and Health Sciences of the University of Latvia (see for details: Leja, M., Stonāns, I. 83rd International Scientific Conference on Medicine and Health Sciences of the University of Latvia: Basic Medical Science and Pharmacy, p. 19, this issue).

The section "Maternal, Child Health and Neurology" brings together research dedicated to issues in maternal and paediatric health, as well as advancements in neurological sciences.

Several abstracts in this collection focus explicitly on maternal and infant health, underlining the complex interplay between physical, psychological, and environmental factors. Topics include the psychological impact of childbirth experiences, specifically examining how different modes of delivery influence maternal self-efficacy in breastfeeding and the development of emotional bonding with newborns. Further research explores postpartum depression, identifying critical maternal health indicators and psychological states associated with this prevalent and impactful condition.

In paediatric health, substantial attention is directed toward the early-life microbiome, recognising its profound influence on functional gastrointestinal disorders in infants. Researchers have also addressed the accessibility and utilisation of multisensory therapy for children with developmental disorders, stressing the importance of early, comprehensive therapeutic interventions to improve developmental outcomes.

Several studies address current clinical problems in paediatrics. One contribution is the analysis of histological patterns and clinical presentations of celiac disease in Latvian paediatric populations, providing insights into diagnostic complexities. Another study evaluates the epidemiological and reproductive risk factors associated with endometriosis, emphasising the need for awareness and preventive strategies to mitigate reproductive health burdens among women.

Neurological research within this section presents insights into disease mechanisms, diagnostic tools, and therapeutic interventions. Investigations into epilepsy reveal specific expression patterns of sodium channel NaV1.2 in human brain tissue, contributing to an improved understanding of epilepsy pathology and highlighting potential therapeutic targets. Studies on the side effects of PCV chemotherapy in central nervous system tumour patients address the crucial balance between treatment efficacy and quality of life, offering significant implications for clinical management.

Advances in diagnostic imaging, particularly the reliability of MRI in evaluating treatment responses in brain tumour patients, demonstrate the ongoing refinement of clinical assessment tools essential for precision medicine. Genetic research features prominently, illustrating associations between specific polymorphisms, such as CXCL12 and TNF-α variants, with increased disease invasiveness and susceptibility in conditions like pituitary adenomas and multiple sclerosis, respectively, notably among female patients.

Finally, translational research, exemplified by studies employing Alzheimer's disease mouse models, evaluates novel therapeutic approaches, such as virus-like particle-based vaccines, signalling promising directions for Alzheimer's disease prevention and management.

Daiga Šantare

EXPLORING THE ASSOCIATION BETWEEN STAT4 RS7601754 POLYMORPHISM AND VISION IMPAIRMENT IN MULTIPLE SCLEROSIS

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Background. Multiple sclerosis (MS) is an autoimmune disorder that affects the central nervous system and is characterised by gliosis, demyelination, inflammation, and degeneration of nerve cells [1]. Young adults with MS, usually between the ages of 20 and 30, often present with unilateral optic neuritis, partial myelitis, sensory abnormalities, or brainstem syndromes [2].

MS and Signal Transducer and Activator of Transcription 4 (STAT4) may be interconnected, as MS has been associated with immune system dysfunction [3]. Janus kinases (JAKs) are the proteins that enable members of class I and class II cytokine receptor families to transmit their signals. Once activated, JAKs phosphorylate the STATs. After phosphorylation, the STAT proteins undergo cytoplasmic dimerization before translocating to the nucleus, where they bind to deoxyribonucleic acid (DNA) regulatory elements and initiate gene transcription. Consequently, variations in STAT4 expression or activity may influence the immune system's normal response and function, potentially resulting in immunosuppression or autoimmune disorders [4]. Overall, the connection between the STAT4 gene and MS suggests that dysregulation of the immune system plays a significant role in the development of the disease [3].

Aim. This study aimed to evaluate the association between the STAT4 rs7601754 polymorphism and vision impairment in individuals with MS.

Methods. Altogether, 400 patients were enrolled in the study (MS patients with vision impairment (n = 131), MS patients without vision impairment (n = 69), and healthy controls as a reference group (n = 200)). Blood samples were collected, and the DNA salting-out method was used for DNA extraction from peripheral venous blood. Genotyping of STAT4 rs7601754 was performed using RT-PCR.

Results. We found that the STAT4 rs7601754 A allele was statistically significantly less frequent in MS patients with and without vision impairment compared to the reference group ($p = 0.046$, $p < 0.001$, respectively). Binary logistic regression analysis revealed that the AG + GG genotypes are associated with 2.7-fold increased odds of not having visual impairment in MS patients (OR: 2.656; CI: 1.493–4.724; $p < 0.001$).

Conclusion. This study aimed to enhance the understanding of its role in the development of vision-related symptoms in MS patients, potentially revealing a biomarker for vision impairment in MS. STAT4 rs7601754 AG + GG genotypes are linked to a 2.7-fold increase in the odds of not experiencing visual impairment in MS patients.

Acknowledgment. I sincerely thank my supervisor, Professor Rasa Liutkeviciene, for her guidance and support, and my co-authors for their valuable contributions to this paper.

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GENETIC PREDICTORS OF PITUITARY ADENOMA INVASIVENESS IN FEMALES: INSIGHTS FROM CXCL12 POLYMORPHISMS

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Background. Pituitary adenoma (PA) is one of the most common brain tumours, yet its pathogenesis remains unclear [1]. PA varies in invasiveness; some remain confined to the pituitary gland, while others aggressively infiltrate surrounding tissues, leading to more severe clinical complications [2]. Molecular biomarkers indicate biological and pathological processes or therapeutic responses, offering valuable insights for diagnosis and prognosis [3]. CXCL12, a homeostatic chemokine, induces migration and activation of haematopoietic progenitors, endothelial cells, and leukocytes, regulating the tumour microenvironment by promoting angiogenesis and immune cell recruitment, potentially aiding tumour growth [4]. Polymorphisms within the CXCL12 gene, particularly those influencing its expression or function, may affect PA susceptibility, tumour size, invasiveness, and response to treatment [5]. A deeper understanding of the genetic mechanisms underlying CXCL12 may contribute to developing personalised therapeutic approaches and enhancing prognostic tools for PA management.

Aim. The current study aimed to investigate the associations between the CXCL12 rs1801157, rs2297630 polymorphisms, and the PA invasiveness in females.

Methods. A case-control study enrolled 90 females with PA and 160 healthy females. DNA samples from peripheral blood leukocytes were purified by the DNA salting-out method. Single nucleotide polymorphisms (rs1801157, rs2297630) were determined using real-time polymerase chain reaction (RT-PCR). The results were analysed using the IBM SPSS Statistics 29.1 statistical analysis method.

Results. We found that CXCL12 rs1801157 TT genotype and T allele were statistically significantly more frequent in the non-invasive PA group compared to control group females (8.7 vs. 2.5, $p = 0.043$, 28.3 vs 16.9, $p = 0.014$, respectively). In the invasive PA group, it was found that CXCL12 rs2297630 AA genotype and A allele were statistically significantly more frequent in the control group than in the invasive PA group females (8.1 vs. 0, $p = 0.009$, 29.7 vs. 13.6, $p = 0.002$, respectively). A binary logistic regression analysis evaluated the impact of CXCL12 rs1801157 and rs2297630 on non-invasive/invasive PA development. The analysis revealed that CXCL12 rs1801157 T allele increased the odds of non-invasive PA's development 1.9.-fold under the additive model (OR: 1.951, CI: 1.124–3.386, $p = 0.018$). Moreover, the CXCL12 rs2297630 A allele decreases the odds of invasive PA development 2.8-fold under the additive model (OR: 0.359, CI: 0.183–0.705, $p = 0.003$).

Conclusions. The CXCL12 rs2297630 A allele suggests a potential protective effect against invasive PA development. In contrast, the CXCL12 rs1801157 T allele may be a risk factor for developing non-invasive forms of PA.

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MANAGEMENT AND PREVENTION OF VIOLENCE EXPERIENCED BY NURSES FROM PATIENTS AND THEIR RELATIVES

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Background. Violence against nurses from patients and their relatives is a serious worldwide problem, which leads to significant psychological and physical harm to nurses. Effective management and prevention strategies are crucial to ensuring a safe work environment for nurses and improving the quality of patient care.

Aim. To identify applicable preventive measures for violence experienced by nurses from patients and their rela-

tives and assess their effectiveness from the nurses' perspective.

Methods. A quantitative research method — questionnaire survey was developed by the European Dialysis and Transplant Nurses Association/European Renal Care Association (EDTNA/ERCA). The study included 161 general practice or advanced practice nurses working in two Vilnius healthcare institutions specializing in mental health care. The data was collected from 9 December 2024, to 17 January 2025. The data was processed using Microsoft Excel and the processed data was transferred to IBM SPSS Statistics for analysis. The study was conducted according to the ethical standards.

Results. The highest number of respondents reported the following preventive measures: training on communication skills (94.4%), training on violence avoidance techniques for nurses (91.9%) and written rules or strategies on violence and aggression in the workplace (78.9%). The least used preventive measure is an educational booklet for nurses who have experienced violence and aggression (21.1%).

The most effective measures from nurses' perspective are: periodic training in violence de-escalation techniques, appropriate communication with the patient, including listening, understanding and empathy, and periodic updating of knowledge on the concept of violence management and prevention measures.

Conclusion. The most applicable and effective preventive measures are more practical than theoretical — various periodic training, such as violence de-escalation techniques and appropriate communication with patients, including respect and empathy.

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THE RELIABILITY OF MAGNETIC RESONANCE IMAGING IN EVALUATING TREATMENT OUTCOMES AND COMPLICATIONS OF PRIMARY BRAIN TUMOURS

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Background. The importance of magnetic resonance imaging (MRI) in neuro-oncology is well known by its ability to detect brain tumours earlier than other modalities, provide detailed anatomical context that is vital for accurate diagnosis and treatment planning, but there are certain challenges, including potential false positives and negatives that can arise due to factors such as imaging techniques, patient variability and operator expertise.

Aim. The aim of the study was to understand the accuracy of magnetic resonance imaging in evaluating treatment outcomes and potential treatment complications, using data from perfusion-weighted, diffusion-weighted and contrast-enhanced magnetic resonance imaging, and comparing these findings with histopathological outcomes and disease progression.

Methods. A retrospective observational analysis was performed at a single facility, encompassing 68 patients with 253 MR imaging studies performed, who had histologically confirmed malignant primary brain tumour. Magnetic resonance imaging was performed in the first 48 h after the surgery and the follow-ups were performed every three months.

Results. Among the participants, the most common type of tumour was glioblastoma (n = 44), followed by astrocytoma (n = 13), oligodendroglioma (n = 8), gliosarcoma (n = 1), pleomorphic xanthoastrocytoma (n = 1) and medulloblastoma (n = 1).

A total surgical resection was performed for 35 patients (51.5%), while 17 patients (25%) underwent subtotal resection, and 16 patients (23.5%) had a partial resection. Chemotherapy was administered to 49 (72%) patients, 58 (85%) completed radiation therapy, 7 (10%) did not receive radiation therapy, 2 (3%) did not complete it and 1 (2%) patient refused radiation therapy.

In most cases, suspicion of recurrence was detected on the third MRI (41.3%, n = 26) and second MRI (39.7%, n = 25).

A total of 63 patients underwent repeated surgery based on the MRI and clinical findings. Histological recurrence was confirmed in 84% (n = 53) of the cases, while necrosis was found in 16% (n = 10). For patients with confirmed recurrence, MRI conclusion was combined changes or recurrence for 75.5% (n = 40), with perfusion-weighted imaging being most reliable MRI sequence for detection (54% of cases had high blood volume), false negatives were detected for 20.7% (n = 11), inconclusive findings in 3.7% (n = 2). Contrast enhancement was observed in 86.8% (n = 46).

Conclusion. MRI with intravenous contrast administration is the primary method for evaluating the effectiveness of therapy for primary brain tumours. The most reliable sequence for tumour recurrence detection is MRI perfusion. In most cases, recurrence occurs within the first year, often presenting as combined changes.

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EFFECTS OF STRESS ON LEARNING MOTIVATION AND VITALITY OF NURSING STUDENTS

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Background. Stress is a common experience among students in academic activities, and it can have a dual effect — either positive or negative — on a student's physiological and psychological well-being. Due to high academic demands, frequent exams, limited preparation time, students' disorganisation, and poor time management, stress often arises. This can contribute to inhibited cognitive functions, a lack of understanding, and a reduced stimulation of interest. Consequently, concentration, memory, and motivation to learn are affected, making it more difficult to absorb new knowledge and cope with exams.

Aim. This study aimed to investigate the effect of stress on the motivation to learn and the vitality of nursing students.

Methods. After receiving approval from the Ethics Committee of the Institute of Health Sciences of Vilnius University, Faculty of Medicine, a quantitative study was conducted using an anonymous online questionnaire survey. The study applied the Perceptions of Academic Stress Scale [1], the Student Academic Motivation Scale [2–4], and the Subjective Vitality Scale [5]. Statistical data analysis was performed using IBM SPSS Statistics 29.0.2.0. The study involved 188 students from the first to fourth year of the Nursing study programme at Vilnius University.

Results. The stress level of nursing students was moderate, with the highest stressors being the study workload and exams, particularly among second-year students ($p = 0.02$). Stress was caused by uncertainty, perceived high study load, lack of self-confidence, fear, anxiety about the results, and exam stress. Motivation for learning was slightly above average, with extrinsic identified motivation being predominant. Subjective vitality was average, with no statistically significant differences between courses ($p \geq 0.05$). It was found that as stress increased, amotivation increased ($p < 0.05$), and motivation decreased ($p < 0.01$); as vitality increased, motivation to learn also increased ($p < 0.01$). Stress had no statistically significant relationship with subjective vitality ($p \geq 0.05$).

Conclusion. The study showed that nursing students experienced moderate stress during their studies due to study load and exams. Although their motivation to study was above average, their subjective vitality remained. This study revealed statistically significant relationships between stress, learning motivation, and vitality. Higher levels of stress were associated with lower motivation, whereas higher subjective vitality was associated with higher extrinsic and intrinsic motivation.

Acknowledgements. There are no conflicts of interest to declare.

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GENETIC LINK BETWEEN TNF-β RS2229094 AND MULTIPLE SCLEROSIS IN LITHUANIAN WOMEN

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Background. Tumour Necrosis Factor-beta (TNF-β), also known as lymphotoxin-alpha (LT-α), plays a complex role in multiple sclerosis (MS), contributing to both protective and harmful effects by modulating immune responses and promoting inflammatory lesions in the central nervous system. Numerous genetic variants have been associated with susceptibility to MS, and variants located in genes involved in specific pathways, such as those affecting TNF-β, can contribute to the risk of MS. This study investigates the association between the TNF-β rs2229094 polymorphism and MS in a Lithuanian female population.

Aim. To assess the relationship between the TNF-β rs2229094 polymorphism and MS occurrence in women of the Lithuanian population.

Methods. The study included 173 female patients with MS and 174 healthy female controls. DNA was extracted from peripheral blood leukocytes using the DNA salting-out method. Genotyping was performed using real-time polymerase chain reaction (RT-PCR). Statistical analysis was conducted using SPSS version 30.0.

Results. Statistically significant differences were observed in the occurrence of genotypes for TNF-β rs2229094 in relation to MS (p = 0.034). Logistic regression analysis revealed that the CT genotype is associated with a 1.7-fold decreased odds of MS occurrence (OR = 0.604; CI: 0.382–0.956; p = 0.031) under the overdominant model.

Conclusion. This study demonstrates an association between the TNF-β rs2229094 polymorphism and MS occurrence among women in the Lithuanian population.

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ASSESSMENT OF QUALITY OF LIFE IN PATIENTS WITH BACK PAIN

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Background. Back pain is a prevalent issue affecting people worldwide, significantly reducing their quality of life. Chronic back pain leads to movement restrictions, decreased productivity, and higher financial costs due to increased medical expenses. Studies indicate that individuals suffering from chronic pain are three times more likely to experience sleep disorders, further aggravating their condition. Additionally, back pain is associated with heightened stress, anxiety, and a decreased ability to perform daily activities, highlighting the importance of an in-depth assessment of its impact on quality of life.

Aim. This study aimed to evaluate the impact of back pain on quality of life of patients suffering from back pain.

Methods. A quantitative research method was employed — a survey. The questionnaire was designed to assess multiple dimensions of back pain, including pain intensity, frequency, duration, impact on daily life, emotional well-being, and financial burden, as well as respondents' coping strategies, including pharmacological treatments, non-pharmacological interventions, and lifestyle modifications. Data analysis was performed using descriptive statistics, including frequency distributions and cross-tabulations. The participants were Latvian residents who have experienced back pain. The survey was conducted from 12/12/2023 to 05/02/2024, via online platforms, ensuring a diverse respondent base.

Results. In total, 128 respondents participated in the study. The findings revealed that 48.4% of respondents reported moderate back pain, primarily triggered by physical overload and work-related factors (46.9%). Almost 51% experienced restricted mobility, while nearly 50% reported a reduced ability to work. Sleep disturbances were prevalent, with 50% of respondents reporting impaired sleep quality. Emotional distress was common, with 46.1% of respondents expressing dissatisfaction due to their condition. Financial strain was also noted, with 61.7% of respondents reporting increased expenses related to treatment. Among these, 31.3% indicated costs ranging up to euro 150, while 30.4% reported expenses exceeding euro 150. For the remaining 38.3%, costs remained unchanged. Regarding management strategies, 66.4% of individuals opted for vitamin D supplementation, while 50.8% reported using massage therapy as a non-pharmacological treatment.

Conclusions. Back pain significantly affects individuals' quality of life, leading to limitations in mobility, reduced work capacity, financial strain, and emotional distress. The study highlights the need for comprehensive pain management strategies that incorporate both pharmacological and non-pharmacological approaches. Respondents demonstrated awareness of the benefits of nutritional supplements and physical therapies, suggesting that an integrated approach to treatment may be effective in improving well-being.

Acknowledgements. The author declares no conflict of interest or funding related to this study.

IMPACT OF PE3Aβ IMMUNISATION ON COGNITION, AMYLOID-BETA AND PYROGLUTAMATED AMYLOID LOAD IN A TRANSGENIC MOUSE MODEL OF ALZHEIMER'S DISEASE

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Background. Alzheimer's disease (AD), the leading cause of dementia, is a growing global challenge, with dementia cases projected to reach 78 million by 2030 [1]. The accumulation of amyloidbeta (Aβ) peptide plays a significant role in AD pathogenesis [2]. Moreover, pyroglutamate-modified Aβ (pE3Aβ) peptides form stable and soluble low-molecular-weight oligomers and induce neurodegeneration in AD mouse models [3]. Virus-like particle (VLP)-based vaccines have grasped the interest for the past 20 years. In this study, we used active immunisation with a novel VLP vaccine candidate that targets the pE3Aβ3-9 epitope.

Aim. To investigate the efficacy of a bacteriophage AP205 VLP vaccine candidate targeting the pE3Aβ on cognitive performance and biochemical outcomes in 5xFAD female mice.

Methods. At 2 months of age, female 5xFAD mice (n = 39) received four subcutaneous doses of either phosphate-buffered saline (control), AP205 VLPs, or pE3Aβ VLPs (25 μg), mixed with AddaVax™. Titers of anti-pE3Aβ and anti-AP205 antibodies were checked by ELISA. Behavioural tests were done when mice were 6 and 8 months old and included open field, spontaneous alternation, elevated zero maze and Morris water maze tests. Immunohistochemical detection of Aβ42 and pE3Aβ were performed in the neocortex and hippocampal dentate gyrus of mice.

Results. Both vaccinated groups displayed high anti-AP205 antibody titres and pE3Aβ VLP vaccinated group displayed high anti-pE3Aβ titres. No significant differences in behavioural parameters among groups were seen at 6 months. At 8 months, pE3Aβ VLP group showed improvement in working memory performance in the Y-maze compared to their 6-month results ($p < 0.05$). A reduction in Aβ42 area ($p < 0.01$) and plaque count ($p < 0.001$) was observed in the neocortex of both vaccinated groups, while only the hippocampal Aβ42 plaque area was lowered by the treatments ($p < 0.001$). pE3Aβ plaque area and count were not altered by the treatment in any of the regions.

Conclusions. Improvement in working memory and reduction in Aβ42 pathology in 5xFAD mice show that the use of AP205 VLP carrier may offer therapeutic benefits in modulating cognitive function in AD. However, the lack of significant improvement in cognitive outcomes highlights the need to determine the effects of the treatment in the later stages of AD pathology.

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RELATIONSHIP OF STRESS EXPERIENCED BY NURSING STUDENTS TO LIFESTYLE AND SOCIAL FACTORS

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Background. Stressors are diverse and can vary at different stages of life, influencing individuals differently based on personal circumstances, environment, and responsibilities. Nursing students face a demanding academic and clinical environment that often leads to high levels of stress. In nursing education stress is caused by a combination of lifestyle and social factors, which can affect students' well-being, academic performance, and future professional success. Understanding how these lifestyle and social factors impact stress levels is essential for developing effective strategies to support nursing students' mental health, improve their learning experience, and enhance their overall well-being.

Aim. The aim of the current study was to assess the relationship between stress experienced by nursing students and various lifestyle and social factors.

Methods. Altogether 227 1^{st}–4^{th}-year undergraduate nursing students of one Lithuanian university were enrolled in the study. The instrument is a questionnaire consisting of: Reeder's stress assessment scale, the Pittsburgh sleep qual-

ity index questionnaire and questions about the socio-demographic data of the respondents. The analysis of research data was carried out using statistical analyses in SPSS Windows 28.0.1 and Excel 2016 softwares.

Results. According to the students, the most common causes of stress are lack of sleep (61.23%) and lack of time to relax (59.03%). Lack of entertainment (40.97%) and financial (37.89%), dietary problems (36.56%) and work (35.24%) were also among the most common stressors. More than half of the respondents (60.79%) indicated that the place where they most often feel stressed is the educational institution. Stress was statistically significantly (p = 0.004) more frequent in students who reported that their financial situation was average (34.00%) or bad (76.92%) compared to those who reported that their financial situation was good (17.65%). Most students (77.53%) indicated that engaging in enjoyable activities helps them cope with stress. About half of them also indicated that sleeping (52.42%) and eating more (43.61%) also help them to cope with stress and improve their well-being.

Conclusion. Student stress is mostly caused by lack of sleep, lack of time to relax, lack of entertainment and financial difficulties. Academic environment is also important for students' emotional well-being, as it is the place where they are most likely to feel stressed. Most students cope with stress by engaging in enjoyable activities, sleeping and eating more.

Acknowledgements. No conflicts of interest to declare.

A PILOT STUDY INVESTIGATING THE COMPARATIVE EXPRESSION OF NAV1.2 IN THE CEREBELLUM AND HIPPOCAMPUS OF EPILEPSY PATIENTS

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Background. Although the cerebellum is rarely the focus of epilepsy research, evidence suggests its involvement in various seizures. While unlikely to be the origin of ictal discharges, studies report changes in cerebellar volume, perfusion, functional connectivity, and morphology. Increased cerebellar blood flow during seizures in focal epilepsy further indicates heightened activity. Voltage-gated sodium channels (VGSCs) drive physiological action potentials and are implicated in ictal discharges. NaV1.2 is predominantly expressed in excitatory neurons of the central nervous system (CNS), with spatial and temporal variations reflecting functional diversity. However, data on VGSC isoform expression in human epilepsy remains limited.

Aim. To investigate and compare the expression of NaV1.2 in the cerebellum and hippocampus of epilepsy patients.

Methods. Post-mortem cerebellar and hippocampal tissues from four epilepsy patients were obtained from the Netherlands Brain Bank. Immunohistochemical staining was performed to detect NaV1.2 expression, followed by semi-quantitative analysis. Immunoreactivity (IR) was evaluated in distinct structural layers using a grading system, where a score of 1 indicated 0–10% IR, 2 indicated 11–50% IR, and 3 indicated 51–100% IR.

Results. Uniform immunoreactivity (IR) was observed in the hippocampus across regions CA1 to CA4, predominantly localised to the nuclei of pyramidal cells. The pyramidal cell layer was assigned a score of 2 (n = 60), while all other cell layers showed no detectable IR and were assigned a score of 1. In the cerebellum, IR was identified within the granular cell layer, corresponding to a score of 2 (n = 60). Additionally, prominent staining was observed in the neuropil of the granular cell layer. No IR was detected in other cerebellar cell layers.

Conclusions. Comparable NaV1.2 immunoreactivity was observed in both the hippocampus and cerebellum of epilepsy patients, indicating similar pathological effects of epilepsy in these regions.

ANALYSING ADVERSE OUTCOMES IN ADULT CNS TUMOUR PATIENTS TREATED WITH PROCARBAZINE, LOMUSTINE, AND VINCRISTINE (PCV) CHEMOTHERAPY

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Background. Radiation therapy along with multi-drug chemotherapy involving procarbazine, lomustine, and vincristine (PCV) is suggested to be an effective regimen in patients with central nervous system (CNS) tumours. Typically, patients undergo six cycles of this regimen, with each cycle spanning approximately six weeks. However, this regimen is associated with a high rate of toxicity and adverse effects. In Latvia, the regimen was approved in 2019, though it is currently not supported as a standard-of-care for all patients.

Aim. We aimed to analyse the prevalence and association of adverse outcomes in patients with CNS tumours who were prescribed PCV chemotherapy regimen.

Methods. A single-centre retrospective analysis of clinical data was conducted for 43 adult patients diagnosed with CNS tumours who received PCV chemotherapy. All patient cases were discussed during the Pauls Stradiņš Clinical University Hospital's Oncology Clinic Consilium from 2019 to 2024. The study was approved by University of Latvia's Ethics Committee (Nr. 23-37/3, dated 09.01.2025). Descriptive statistics and association testing using Fisher's Exact test were performed using SPSS v29.0.

Results. In our cohort, 14 (32.6%) patients were female. The median age was 45 years (range 21 to 84 years), with no significant differences in the distribution of age between male and female participants (median 45 years vs. 42 years; $p = 0.622$). Histologically, the most prevalent form of CNS malignancy was oligodendroglioma (49%), followed by astrocytoma (47%) and oligoastrocytoma (4%). Isocitrate dehydrogenase (IDH) mutation was observed in 33 (77%) patients. Among patients with oligodendroglioma, 1p/19q co-deletion was observed in 48% of the patients, while 10% of the patients had a negative result. Co-deletion data was not available for other patients with oligodendroglioma. Two-thirds of the patients had completed the 6-cycle regimen, though 10 (23%) patients had completed three or fewer cycles. Apart from the four patients who recorded no adverse effects, adverse effects were documented in all other patients, with the most prevalent being neurological (67%), haematological (54%), allergic (35%), gastrointestinal (33%), and musculoskeletal (21%) adverse effects. No associations were identified between experiencing any form of adverse effects and patient sex ($p = 0.286$), histological type ($p = 1.000$), IDH mutation status ($p = 0.492$), or number of cycle-regimens completed ($p = 1.000$).

Conclusion. Our findings are consistent with other reports indicating the high rates of adverse effects associated with PCV regimen. Further studies are needed to elucidate patient outcomes to ascertain the risk-to-benefit ratio associated with this regimen.

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WORK-RELATED MUSCULOSKELETAL DISORDERS FOR SURGEONS AND SURGEON NURSES: A SYSTEMATIC LITERATURE REVIEW

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Background. Healthcare workers perform physically demanding tasks that put them at risk for soft tissue injuries and musculoskeletal problems. Reducing the incidence of WRMSDs is a major challenge for researchers in ergonomics because their origin is more related to biomechanical factors, such as repetitive movements, excessive force and awkward postures [1]. Work-related musculoskeletal disorders (WRMSDs) among surgeons and surgeon nurses have a high prevalence and significant impact [2]. These disorders, often resulting from prolonged static postures, repetitive movements, and the physical demands of surgical procedures, lead to chronic pain and disability [3].

Aim. The aim was to perform systematic literature review on work-related musculoskeletal disorders for surgeons and surgeon nurses.

Methods. The search of the Scopus database was conducted, focusing on peer-reviewed articles published between 2010 till 2025. Keywords included "work-related musculoskeletal disorders," "surgeons," "surgeon nurses," and "ergonomics". A total of 15 scientific publications were selected based on relevance and methodological quality.

Results. The review revealed that surgeons and surgeon nurses frequently experience WRMSDs due to prolonged

static and awkward body positions, repetitive movements, and physical overexertion [2, 4]. Surgery poses for both surgeons and surgeon nurses lead to increased physical strain and injury risks [5]. Another significant research results were on poorly designed equipment and workspaces that affect surgeons and surgeon nurses into uncomfortable postures, increasing the risk of injury. Issues include unclear symbols on devices, improper positioning of equipment, unpredictable patient care attitudes, and cluttered workspaces with cables and tubes creating tripping hazards [6, 7].

Conclusion. Literature analysis proved that most occupational disease cases are caused by WRMSDs, which are closely associated with ergonomic risks. Potential solutions, such as adjustable surgical tables, ergonomic tools, and regular breaks, including micro-breaks were found to reduce the prevalence of WRMSDs. These measures not only improve the health and productivity of healthcare professionals but also enhance the overall quality of patient care.

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IDENTIFYING RISK FACTORS FOR HAEMORRHAGIC TRANSFORMATION AFTER EVT IN ACUTE ISCHEMIC STROKE

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Background. Haemorrhagic transformation (HT) is a frequent complication following endovascular thrombectomy (EVT) in acute ischemic stroke patients and can lead to worsened clinical outcomes, increased disability, and higher mortality.

Aim. To identify clinical, imaging, and procedural predictors of HT in successfully recanalised ischemic stroke patients.

Methods. 471 (mean age 71.62 ± 11.64 y, 47% male) ischemic stroke patients treated with EVT at Pauls Stradiņš CUH Stroke Centre, Rīga, from 2015 to 2024 were selected based on successful TICI scores (2b and 3). Presence of HT was assessed on control CT scans performed 24 h after the treatment. HT was identified in 120 patients (25%).

Results. Sixteen potential predictors of HT in successfully recanalised patients, including demographic, procedural, patient-specific, and comorbidity-related variables were suggested: time-to-needle, wake-up stroke, admission NIHSS, EVT duration, number of EVT passes, use of bridging thrombolysis, anaesthesia method, stroke aetiology, CTA collateral status, platelet count, age, sex, as well as hypertension, diabetes, AFib and smoking history.

Six predictors were statistically significant in univariate analysis:

- Time-to-needle: 280.22 ± 143.51 vs 304.03 ± 148.80 min (p = 0.047, Mann–Whitney)
- Admission NIHSS: 14.72 ± 5.73 vs 16.27 ± 4.44 (p = 0.002, Mann-Whitney)
- EVT procedure duration: 38.85 ± 24.41 vs 47.69 ± 28.82 min (p = 0.002, Mann–Whitney)
- Number of EVT passes: 1 vs ≥ 3 ($p < 0.001$, Mann–Whitney)
- Sex: Males (n = 227) had HT in 31% of cases, while females (n = 244) had HT in 20% of cases (p = 0.01, Chi-square)
- CTA collateral status: HT occurred in 15% of patients with good (n = 163), 27% with poor (n = 222), and 48% with malignant collaterals (n = 52) ($p < 0.001$, Kruskal–Wallis).

Multivariate logistic regression model identified the most significant predictors (Acc 76.8%, Se 17.1%, Sp 95.8%, AUC: 0.713, 95% CI: 0.651–0.775, $p < 0.001$; Hosmer-Lemeshow: $p = 0.494$; Nagelkerke $R^2 = 0.15$):

- CTA collateral status ($p = 0.003$):
- Poor vs. good: OR = 4.99 (95% CI: 1.98–12.55, $p < 0.001$)
- Malignant vs. good: OR = 2.39 (95% CI: 1.19–4.80, $p = 0.015$)
- Number of EVT passes ($p = 0.025$):
- ≥ 3 vs. 1–2: OR = 2.08 (95% CI: 1.10–3.95, $p < 0.001$)

Conclusion. HT remains a significant complication following successful EVT. Our analysis confirms that poor and malignant collaterals significantly increase the risk of HT, while multiple EVT passes further contribute to its occurrence. Recognising these risk factors is essential for optimising patient selection, refining procedural strategies, and improving post-thrombectomy management.

We express our gratitude to the medical staff at Pauls Stradiņš CUH Stroke Centre and Department of Radiology for their invaluable support in patient care, data collection and assistance in imaging analysis.

THE IMPACT OF NURSE'S PERSONALITY TRAITS TO PREPARE THE PATIENTS WITH CORONARY HEART DISEASES FOR THE TESTS

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Background. The importance of the theme is determined by the high mortality from the heart diseases and the significant contribution of nurse's work to the improvement of the treatment process by preparing cardiology patients for heart check tests. Nurses are expected to ensure a high quality of work as they constitute the largest group of health professionals and are often the first ones, who come into contact with patients, when providing them with healthcare services. High-quality care depends not only on nurses' professional knowledge and skills, but also on their personalities.

Aim. The main purpose of this research paper is to explore the trends in the impact of aspects of nurses' personality traits and to find out whether there is a relationship between the nurses' personality trait of openness and readiness to proceed studies in advanced practice nursing course.

Methods. Altogether 39 female nurses working in health institutions in five biggest cities of Latvia, whose main duty is recording electrocardiograms for the outpatients, were enrolled in the study (n = 39). The qualitative method of content analysis and the quantitative non-experimental, cross-sectional, descriptive and comparative data analysis method were carried out when analysing nurses' responses provided in interviews and questionnaire. The personality test's "Big Five Inventory" (BFI–10 (LV)) questionnaire was used to measure the following personality traits of nurses: neuroticism, extraversion, openness, agreeableness, and conscientiousness. The collected data was analysed using Microsoft Office Word, Excel and IBM SPSS-29 softwares.

Results. Nurses from 23 to 75 years old (the mean age 59 years (M = 47.49; SD = 14.37)) have evaluated their personality traits using the BFI-10 subscale scores. The results are as follows: highest in extraversion (n = 33; 84%), agreeableness (n = 35; 90%), consciousness (n = 37; 95%) and lowest in the neuroticism subscale (n = 21; 55%). The obtained results show that the nurses have good collaboration and communication skills, are reliable and emotionally balanced.

Conclusion. It was concluded that low neuroticism subscale scores (55%) indicate on emotional stability and resilience to stress in nurses. Extraversion scores higher above average (84%) characterise nurses' orientation to socialise and social activity. Openness to a new experience (90%) indicate nurses' interest and readiness to absorb new knowledge, readiness for change and intellectual challenges. Most nurses are open to acquire new experiences, but majority of them are not ready to start studies in the advanced nursing programme.

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THE PREVENTION AND MANAGEMENT OF COMPLICATIONS IN TYPE 1 DIABETES

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Background. Type 1 diabetes (T1D) is an autoimmune disease that leads to destruction pancreatic beta-cells and lifelong dependence on insulin therapy. Despite advances in diabetes management, complications remain a major concern. Chronic hyperglycaemia is the primary factor leading to cardiovascular, renal, neurological, and ocular complications. Early recognition of risk factors and patient education on glycaemic control are critical for preventing severe outcomes.

Aim. To assess the prevalence of complications in patients with type 1 diabetes and evaluate the effectiveness of preventive measures in reducing their occurrence.

Methods. A qualitative semi-structured interview study was conducted with 11 patients diagnosed with T1D for at least five years. The study focused on identifying the most common complications experienced by patients and evaluating their knowledge and strategies for prevention. Participants were asked about their experiences with diabetic complications, the effectiveness of their preventive efforts, and the challenges they faced in avoiding complications. Data were analysed using content analysis to determine key patterns in complication management and prevention.

Results. The study found that while most participants were knowledgeable about diabetes complications and engaged in preventive measures such as glycaemic control, dietary adjustments, and physical activity, many still developed chronic complications. The most frequently reported complications included cardiovascular diseases, diabetic retinopathy, nephropathy, and neuropathy. Although acute complications like severe hypoglycaemia or ketoacidosis were largely avoided, persistent challenges in long-term glycaemic management contributed to the development of chronic issues. Psychological stress, stigma, and difficulties in maintaining consistent self-care were identified as significant barriers to effective prevention.

Conclusion. The study highlights that despite patients' efforts in managing type 1 diabetes, chronic complications remain prevalent, indicating that preventive strategies are not always sufficient. While proper glycaemic control, a well-balanced diet, and regular physical activity play a crucial role in reducing complications, psychological and social factors significantly influence long-term disease management. The findings suggest that in addition to medical interventions, increased focus on patient education, emotional support, and access to advanced glucose-monitoring technologies is necessary to enhance the effectiveness of complication prevention. Routine screening for early signs of complications should be emphasised to enable timely interventions and minimise long-term health risks.

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FACTORS AFFECTING SELF-CARE IN THE EARLY POSTOPERATIVE PERIOD AFTER DISTAL METAPHYSIS OF THE RADIUS FRACTURE

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Background. According to the scientific literature, fractures of the distal end of the radius account for 10–12% of all skeletal fractures. Fractures of the distal ends of the radius and ulna account for 75% of all forearm fractures. Epidemiological rates are on average 26 cases per 100,000 of both sexes per year in the population under 45 years of age. In women aged 50–70 years the prevalence of these injuries incidence is 56 per 10,000 population per year.

Aim. The aim of the this study was explore factors affecting self-care in the early postoperative period after distal metaphysis of the radius fracture.

Methods. The empirical material consisted of 47 questionnaries. Prospective study includes patients who were hospitalised in Rīga Hospital with trauma profile and where in the early postoperative period after osteosynthesis surgery for distal metaphyseal fracture of radius from 16.02.2024. till 15.04.2024.

Results. The majority of the study participants, 59.57% (n = 28) were female, while males accounted for the remaining 40.43% (n = 19). In the postoperative period, woman in the age groups 31–40 and 41–50 needed more help with self-care activities such as morning hygiene, showering and dressing both parts of the body than men. In the 61–70 and 71 and over age groups, both women and men needed help with self-care activities, including using the facilities and transferring from one seat to another. Of all respondents, 41 said that immobilisation was the factor affecting self-care the most. Fear and discomfort ranked second, with 15 respondents noting this as factor. The most popular answers, as recorded by the respondents themselves, are the numbness of the hand, the leading hand and age. 74.47% (n = 35) a clear majority, said that they had received enough information on self-care in the postoperative period. The same respondents answered that they did not have any questions on postoperative self-care for medical staff.

Conclusion. Factors affecting patient self-care include patient age, compliance with immobilisation and communication with medical staff. Patients improved more quickly with immobilisation and rehabilitation while without immobilisation oedema did not decrease and pain was more pronounced. However, immobilisation makes self-care activities more difficult. Communication with medical staff is reflected in the lack of questions from patients. In the other words, they are informed about everything, know their condition and can be confident about the actions they are taking when they leave hospital.

Paediatrics, Gynaecology, and Obstetrics

THE ASSOCIATION OF REPRODUCTIVE FACTORS AND ORAL CONTRACEPTIVE USE WITH THE RISK OF DEVELOPING ENDOMETRIOSIS

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Background. Endometriosis is often diagnosed late. On average, diagnostic delay is 7 years from the symptom onset. This can be attributed to several aspects including lack of awareness about the disease and its symptoms among both patients and medical professionals. The etiology of the disease is not yet fully understood, and multiple factors are involved in its pathogenesis. Thus, endometriosis-associated risk factors are widely studied. Some studies have shown the association between number of pregnancies, parity, and prior oral contraceptive use with the risk of developing endometriosis.

Aim. The aim of this study is to investigate the association of reproductive factors and oral contraceptive use with the risk of developing endometriosis.

Methods. A retrospective study was conducted through the analysis of medical records of 150 patients, aged from 19 to 80 years, divided into two groups. The study group consisted of patients with surgically confirmed endometriosis (n = 75). The control group consisted of patients, who underwent surgical procedures for different gynaecological conditions, with no endometriotic lesions identified during surgery (n = 75). Data analysis was performed using Chi-square test and binary logistic regression.

Results. The data on prior pregnancies were available from medical records of 149 patients: 75 (50.3%) in the study group and 74 (49.7%) in the control group. The differences in the number of pregnancies between study and control groups were found to be statistically significant in Chi-square test (p = 0.0001), therefore variables were included in binary logistic regression model. The results indicate that a higher number of pregnancies increases the odds of developing endometriosis. Women who reported one pregnancy had OR of 3.4 (95% CI 1.391–8.202; p = 0,007) and women who reported two or more pregnancies had OR of 4.2 (95% CI 1.868–9.629; p = 0.001). No statistically significant association was observed between parity and the risk of endometriosis (p = 0.935). Unfortunately, data on the use of oral contraceptives was available only from 28 patients' medical records: 8 (28.6%) in the study group and 20 (71.4%) in the control group and no statistically significant association was found (p = 0.843).

Conclusion. The results of the present study indicate that a higher number of pregnancies is associated with a greater risk of developing endometriosis. This finding was inconsistent with previously published data, which showed an inverse association between the number of pregnancies and the risk of developing endometriosis. Possibly, the results were affected by a small sample size.

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COLPOSCOPIC FINDINGS IN PATIENTS WITH ASCUS CYTOLOGY: A RETROSPECTIVE ANALYSIS

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Background. Atypical Squamous Cells of Undetermined Significance (ASCUS) represent the most frequently reported cytological abnormality in cervical screening (Pap smear). This designation indicates subtle nuclear abnormalities in squamous cells without definitive evidence of a high-grade lesion, necessitating further diagnostic assessment. The primary concern in ASCUS cases is the potential presence of underlying high-grade cervical intraepithelial neoplasia (CIN). Current clinical guidelines recommend colposcopic evaluation for patients with ASCUS who test positive for high-risk human papillomavirus (HPV), given the established association between persistent HPV infection and cervical carcinogenesis.

Aim. The aim of the current study was to evaluate colposcopic findings in patients with ASCUS cytology and assess the detection rate of high-grade cervical lesions (CIN2, CIN3).

Methods. A retrospective study was conducted on 139 patients diagnosed with ASCUS who subsequently underwent colposcopy. Colposcopic assessments were performed using Reid's Colposcopic Index and Schiller's test, categorising findings as low-risk (suggestive of CIN1) or high-risk (suggestive of CIN2 or CIN3). Additionally, demographic and clinical patient characteristics, including age, smoking status, and parity, were also analysed.

Results. The average age of the patients was 36 years. Among the participants, 30.2% (n = 42) were nulliparous, whereas 69.8% (n = 97) had at least one prior childbirth. Regarding smoking status, 79.9% (n = 111) were nonsmokers, and 20.1% (n = 28) were active smokers. Colposcopic evaluation revealed that 79.9% (n = 111) of cases exhibited low-risk changes (suggestive of CIN1), while 20.1% (n = 28) demonstrated high-risk findings — 15.1% (n = 21) suggestive of CIN2 and 5.0% (n = 7) suggestive of CIN3.

Conclusion. The majority (79.9%) of ASCUS cases were associated with low-risk colposcopic findings, indicating a lower likelihood of significant cervical pathology. However, 20.1% of patients exhibited high-grade lesions (CIN2 or CIN3), underscoring the necessity for thorough follow-up, particularly in HPV-positive individuals. These findings highlight the role of colposcopy in the risk stratification and clinical management of ASCUS cases, aiding in the early detection of pre-malignant cervical lesions and informing appropriate treatment strategies.

Acknowledgements. The authors declare the absence of a conflict of interest.

INITIAL EXPERIENCE WITH THE FONTAN PROCEDURE IN LATVIA

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Background. The first Fontan procedure at the Children's Clinical University Hospital in Riga was performed in 2012. Since then, both perioperative management and surgical expertise have improved significantly. However, maintaining high-quality outcomes remains challenging in a country with a population of 1.8 million, given the low annual volume of Fontan procedures.

Aim. Our aim was to evaluate the perioperative outcomes and early postoperative results of the Fontan procedure performed at the Children's Clinical University Hospital in Latvia between 2012 and 2024.

Methods. We conducted a retrospective review of medical records for all patients who underwent a Fontan procedure at the Children's Clinical University Hospital in Latvia between 2012 and 2024.

Results. A total of 22 patients underwent the Fontan procedure at our institution between 2012 and 2024. Since November 2020, these surgeries have been performed independently, without the guidance of a mentor surgeon from a more experienced centre. For this patient cohort, the median time from Glenn surgery to Fontan completion was 13.5 months, with an interquartile range (IQR) of 15.25 (Q1 = 8.25, Q3 = 23.5).

At the time of surgery, the mean age was 6.1 ± 2.1 years (range: 4–12 years), and the mean weight was 18.5 ± 3.9 kg (range: 12–25 kg). Preoperative mean pulmonary artery

pressure was 9.2 ± 3.5 mmHg (range: 4–17 mmHg). The main ventricle was the right ventricle in five patients, the left ventricle in 15 patients, and both ventricles in two patients. Aortic occlusion was required in five cases for additional surgical interventions beyond the Fontan procedure. Four patients did not receive a Fontan tunnel fenestration for various reasons. The mean cardiopulmonary bypass duration was 142 minutes. Fourteen out of 22 patients were extubated in the operating room. The mean time to chest drains removal was 6.9 ± 2.7 days (range: 3–15 postoperative days). Patients extubated in the operating room had significantly earlier chest drain removal (until postoperative day 7) compared to those extubated later ($p = 0.005$). The mean intensive care unit stay was 7.1 ± 2.8 days (range: 3–16 days). There were no recorded deaths among patients during the follow-up period to date.

Conclusions. Performing the Fontan procedure in a country with a relatively small population is achievable with satisfactory outcomes. Since 2018, most patients have undergone fast-track extubation, leading to earlier chest drain removal.

Acknowledgements. The authors declare no conflicts of interest related to this research.

MAJOR SHIFTS IN GUT MICROBIOTA FOLLOWING CONCOMITANT ANTIMICROBIAL THERAPY IN PAEDIATRIC PATIENTS

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Background. Gut microbiota development in childhood can be shaped by various factors, especially antibacterial treatment. However, infants and toddlers frequently receive antibiotics that could lead to notable shifts in microbiota composition.

Aim. The study aims to assess the effects of antibacterial therapy on gut microbiota composition in infants/toddlers up to 36 months of age.

Methods. The study is part of a longitudinal investigation into the gut microbiota of children. Parents of children who were prescribed antibacterial treatment due to a concomitant disease were asked to answer a questionnaire and bring a child's stool sample at three time points: before treatment, one week after initiation, and finally one month after the treatment. Bacterial DNA was extracted and 16S rRNA gene sequencing was performed to analyse bacterial composition. The changes in Median Relative Abundance (MRA, %) of bacterial taxa in baseline and post-treatment samples were analysed (Wilcoxon tests).

Results. In total, 21 patients (F/M: 13/8) with an average age of 19.94 months (range: 5–39 months), treated with sulfamethoxazol/trimethoprim, clarithromycin and amoxicillin were included.

The mean Shannon Index (SI) was 4.53 (SD ± 1,55) at baseline compared to 4.14 (SD±1.83) and 5.13 (SD±1,08) one week and one month after the treatment, respectively ($p = 0.511$).

One month after the treatment, significantly lower MRA of Bifidobacteriaceae (27.360 vs 40.281; $p = 0.049$) and Eggerthellaceae (0.017 vs 0.038; $p = 0.014$) was observed compared to the baseline levels. Further, MRA of Veillonellaceae was higher compared to the baseline level (0.058 vs 0.005; $p = 0.005$), while the following taxa showed a non-significant increase: Lachnospiraceae (22.053 vs 40.559; $p = 0.196$); Ruminococcaceae (0.817 vs 1.747; $p = 0.568$); Peptostreptococcaceae (0.081 vs 0.161; $p = 0.210$), and Clostridiales (0.079 vs 0.185; $p = 0.605$). Additionally, Coriobacteriaceae decreased significantly just one week after the treatment (0.016 vs 0; $p = 0.026$), whereas Enterobacteriaceae declined from 0.019 vs 0.001 ($p = 0.605$).

Conclusion. Several changes in gut microbiota after antimicrobial treatment in children were identified, depletion of Bifidobacteriaceae being among the most significant. Further, an increase of several anaerobes (Lachnospiraceae, Ruminococcaceae, Veillonellaceae) as well as opportunistic pathogens (Peptostreptococcaceae) was also noted.

These shifts suggest that antibiotics not only reduce key bacterial populations but could also promote microbial overgrowth.

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THE CHALLENGES OF DISEASE MANAGEMENT IN CHILDREN WITH TYPE 1 DIABETES

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Background. Type 1 diabetes is one of the most common chronic diseases of childhood and is caused by insulin deficiency due to damage and destruction of the insulin-producing beta cells in the pancreas. Good disease control is important for children who develop type 1 diabetes, as knowledge, skills and attitudes to control the disease determine whether other organ damage will occur later in life, or whether complications will arise that will further impair the child's health status. The scientific literature emphasises that good disease control delays or prevents chronic complications, but that poor control leads to irreversible health consequences, and that it is therefore essential to manage the disease well in order to maintain optimum health status.

Aim. To explore the challenges of disease management in children with type 1 diabetes.

Methods. The methods used in the study were: theoretical — analysis, synthesis, and systematisation of scientific literature; empirical — semi-structured interview method used for data collection; content analysis method used for data analysis. The semi-structured interviews were conducted with eight children aged between 12 and 16 years.

Results. The study found that children with diabetes try to control their disease themselves, but face significant challenges in controlling their disease. Children find it difficult to maintain stable blood glucose levels, make appropriate food choices and accurately calculate their insulin requirements. In addition, the children in the study were found to experience a lack of attention and support from their dads in managing their chronic disease. These challenges point to the need to strengthen communication between children and their families and public health professionals to discuss diabetes control and to encourage greater involvement of parents, especially dads, in the daily care and management of the disease.

Conclusion. The results of the study showed that the children with type 1 diabetes in the study are able to control their disease independently but have difficulties with diet and insulin dose calculation. Greater parental involvement can improve glycaemic control. It is recommended that public health professionals strengthen the education of children and their families on disease management and encourage more active parental support for child management.

Acknowledgements. No conflicts of interest to declare.

INTEGRATING TYPE 1 DIABETES TECHNOLOGY INTO CHILDREN'S SELF-MANAGEMENT

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Background. Type 1 diabetes is the most threatening chronic disease of childhood, as inadequately controlled type 1 diabetes increases the risk of acute and chronic complications, reduces quality of life and can lead to premature mortality. Innovative diabetes management technologies developed in recent decades, including continuous glucose monitoring (CGM) systems, insulin pumps and hybrid closed-loop (CloL) systems, offer the potential for more precise glycaemic control and a reduced risk of hypoglycaemia and hyperglycaemia. The integration of technology into the daily self-management of diabetes in children not only helps to optimise the management of the disease, but also promotes the development of autonomy, psychosocial adaptation and long-term quality of life.

Aim. To highlight the use of technology in the management of type 1 diabetes, based on the experiences of children with diabetes.

Methods. The methods used in the study were: theoretical — analysis, summarisation, and systematisation of scientific literature; empirical — semi-structured interview method used for data collection; content analysis method used for data analysis. The semi-structured interviews involved 15 children with type 1 diabetes. The children were aged between 14 and 17 years.

Results. The study reveals that children with type 1 diabetes use a range of diabetes technologies to self-manage their disease, including glucometers and sensors to track their blood sugar levels. For insulin injections, children commonly use insulin pumps or insulin pens. The study also found that children with type 1 diabetes use artificial intelligence (AI), a range of smart apps on smartphones and watches, to help them self-manage their disease.

Conclusion. The results of the study showed that children with type 1 diabetes actively use a range of technologies to self-manage their disease — glucometers, sensors, insulin pumps, and smart apps. These tools not only facilitate diabetes management, but also promote children's autonomy and responsibility for their own health. The integration of technology helps to reduce the risk of hypoglycaemia and hyperglycaemia, improves quality of life and increases children's involvement in disease control.

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EMERGENCY MEDICAL SERVICE CALLS FOR PAEDIATRIC BURN INJURIES IN LATGALE REGION (2020–2022)

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Background. Burns are recognised as one of the most severe childhood injuries. The incidence of burns among children is higher compared to adults. Infants are the least protected and most vulnerable to burns, as they cannot consciously avoid or move away from potentially dangerous heat sources.

Aim. The aim of the current study was an analysis of statistical data from the Emergency Medical Service on paediatric burns in Latgale region in 2020–2022.

Methods. Descriptive, retrospective study. Data were collected from electronic call card records about calls in the Latgale region from January 2020 to December 2022. In total, during this time period, there were 13,308 calls to children in the Latgale region, from which the author selected 238 electronic call cards, according to the criteria.

Results. For the entire period, 60.9% (n = 145) of calls were to boys and 39.1% (n = 93) to girls. In all age groups, the highest indicators were observed in the male population. The Emergency Medical Service was most frequently called for one-year-old children — 29.8% (n = 71). Apartments were the most common locations for calls, accounting for 77.3% (n = 184) of all calls, $p < 0.0014$. The most common motives for calls in 58.4% (n = 139) of cases were burns, and in 12.6% (n = 30) cases — poisoning with household chemicals. The rarest reason for the call was fire, which was found in 0.4% (n = 1) of cases.

Data analysis revealed that 67.2% (n = 160) of the calls were in cities, and 32.8% (n = 78) of all calls were completed in the counties, $p < 0.0074$. According to the type of accident, 88.7% (n = 211) of the calls involved a domestic injury. Domestic burn injuries were more often registered in cities, accounting for 59.7% (n = 142) of all accidents, $p < 0.0195$. The Emergency Medical Service was not required in 1.3% (n = 3) of calls, $p < 0.0019$.

Conclusion. The prevalence of burns was 1.79% of the calls received by the Emergency Medical Service in Latgale region from 2020 to 2022. Burns were more common among boys. 77.3% of burns occurred at home. Domestic burn injuries were more often registered in cities.

Acknowledgements. The authors do not have a conflict of interest. These results are part of another study titled “Paediatric Burn Injuries in the Latgale Region (2020–2022)”.

CERTAIN RISKS TO CHILDREN AND NATIONAL SUSTAINABILITY DUE TO SHORTCOMINGS OF EDUCATIONAL SYSTEM IN THE SITUATION OF GLOBAL THREATS

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Background. As the risks of disaster hazards increase, a unified, research-based approach to identifying and preventing deficiencies in public education is needed. Our previous research shows that students lack knowledge about public health. The UN Convention on the Rights of the Child (UNCRC) describes the state's obligation to ensure the health, life and development of every child. National security and sustainability are determined by the knowledge and understanding of each member of society about responsibility towards themselves and the state, which must be provided in children's educational institutions.

Aim. To identify the shortcomings of the children's education system that pose risks to public safety and the sustainability of the state and to prepare proposals for eliminating these shortcomings.

Methods. This is part of an interdisciplinary study addressing children's rights at the level of health, education, and participation in state/local policy planning. Questionnaires developed at the Department of Paediatrics of the University of Latvia were completed by 1209 students from 11 faculties, of which 81.1% were 17–25 years old, 78.7% women. Students were introduced to UNCRC and the results of the previous study covering 2009–2021.

Results. Students indicated: would like to have been taught more useful life skills and knowledge at school (95.4%),

teaching the history of the country and the region is necessary in order to be able to make the right choice when making important decisions (85.5%). Only 63% had been taught about the differences between democratic and totalitarian regimes in observing human rights principles in different regions of the world, 46.3% about Russia's military aggression in Europe and against sovereign states since 1989, 70–74% about the obligation of states to organise an International Tribunal against Russia for repeated crimes against children and adults during 1940–2025 with subsequent payment of reparations. Meanwhile, 87% still lack professional health education in schools, but 41% do not feel ready to provide first aid. Only 16% admit that respect for children's opinions is at least partially ensured in decision-making at various levels.

Conclusion. Children make up a quarter of Latvia's population and educational deficiencies in modifiable disease risk factors, first aid in critical situations, and lack of historical knowledge that prevents strategic thinking in cases of national threats are a credible threat to the country's sustainability and national security. Quality education on modern history, emergency assistance and health risks is necessary.

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AVAILABILITY OF MULTISENSORY THERAPY IN LATVIA

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Background. Receiving multisensory therapy immediately after speech delays and related developmental issues are diagnosed is crucial because early intervention can significantly improve outcomes for a child's overall development. During early childhood, the brain is highly adaptable and capable of forming new neural connections. This period of plasticity is critical for addressing developmental delays. Multisensory therapy leverages this adaptability, strengthening pathways that support communication, motor skills, and sensory integration. The sooner multisensory therapy is initiated after a diagnosis, the better the chances of mitigating developmental challenges, building essential skills, and supporting a child's full potential. Early action is a critical step toward long-term success and well-being.

Aim. The purpose of this study was to investigate the accessibility of multisensory therapy for children with developmental challenges in Latvia.

Methods. A field research was conducted to evaluate policies and programme descriptions, aiming to understand how multisensory therapy is implemented and supported in Latvia. The study assessed various factors, including the types of approaches offered, availability of services, and associated costs.

Results. In 2022 and 2023, 666 patients with a diagnosis from the group of diagnoses "Specific speech and language development disorders" were admitted to the Children's Clinical University Hospital. 395 of them had not received logopaedic therapy. 607 had speech delay as the basic diagnosis. State-funded early intervention services have a waiting period of at least one year. As of December 2024, five institutions in Rīga and three outside of Rīga were currently providing this therapy, with average 119 patients on the waiting lists. In contrast, private providers offer quicker access to multisensory therapy — the average waiting period is 11 days. However, the median cost is 35 euros per 40-minute session. A child on average requires three sessions per week resulting in an annual expense of 5460 euros.

Conclusion. The study highlights significant barriers to accessing state-funded multisensory therapy for children with developmental challenges in Latvia. The prolonged waiting time of at least one year both in Children's Clinical University Hospital and ambulatory facilities limits timely intervention, which is crucial for speech and language development. While private providers offer significantly faster access, the high costs make it unaffordable for many families. This gap highlights the need for increased state support and expanded service capacity to ensure that all children receive the necessary therapy without long delays.

Acknowledgements. The authors declare the absence of a conflict of interest.

PREMATURE BABIES WITH BPD (BRONCHOPULMONARY DYSPLASIA) CHARACTERISTICS AT CHILDREN'S CLINICAL UNIVERSITY HOSPITAL IN RĪGA IN THE PERIOD FROM 2019 TO 2021

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Introduction. Bronchopulmonary dysplasia (BPD) is a chronic lung disease that primarily affects premature infants who have received prolonged mechanical ventilation and oxygen therapy. Several other risk factors (gestational age, birth weight, surfactant production) can increase the likelihood of developing BPD. The severity of BPD is classified in three groups — mild, moderate, and severe. BPD can lead to a range of complications, especially in more severe cases.

Aim. To evaluate neonatal outcomes and identify the factors influencing BPD severity and complications. Neonatal outcomes in infants with BPD are influenced by multiple factors. However, the association between these variables remains insufficiently explored. Each year Children's Clinical University Hospital in Rīga (BKUS) treats patients with BPD, but still there is no data about the most common complications. Respiratory support for BPD patients may vary, and it is very important to choose the best option.

Methods and materials. This is a retrospective study from April 2019 to December 2023. Data is gained from BKUS patient cards and analysed anonymously. The data were proceed using IBM-SPSS-Statistics-29 software.

Results. In this study there were included 221 clinical cases, median gestation weight was 1100 g and median gestation week 28. Between the gestation week and te stage of BPD there was a moderately strong negative correlation ($p < 0.001$; r = –0.650). Severe BPD cases were most common in neonates ≤ 25 weeks gestational age. No severe BPD cases were recorded in neonates > 1500 g. Infants with severe BPD required significantly more surfactant therapy ($p < 0.001$). Correlation between BPD stage and total oxygen and respiratory support day count was strong and positive ($p < 0.001$; r=0.838). Highest day count of oxygen and respiratory support was detected in severe BPD stage (Me = 85.50, q1 = 57.5, q3 = 105.75), but in mild BPD stage (Me = 44.50, q1 = 33.25, q3 = 56.50). PDA can affect respiratory function, so it is important to exclude this diagnosis. PDA and BPD severity is statistically significant ($p = 1.20\times10^{-1}$). Medically closed PDA was the most common closure method (63%). Surgical PDA closure was required in 18% of cases, primarily in extremely preterm infants. Severe BPD cases had higher surfactant administration (average-2.0 doses) compared to mild cases (on average 0.82 doses). There is a highly significant association between BPD severity and pulmonologist consultations. Severe BPD patients in 53.3% cases received a pulmonologist follow-up after discharge compared to mild BPD — 20%.

Conclusion. Lower gestational age, birth weight were significant predictors of severe BPD. Severe BPD cases required notably higher surfactant doses, longer respiratory support. Treatment of PDA with medical closure being the most common, followed by surgical closure in extremely preterm infants. Pulmonologist consultations were significantly more frequent among severe BPD patients.

TRENDS IN ANTERIOR FONTANELLE'S CLOSURE AND PRIMARY TEETH ERUPTION IN RĪGA'S INFANTS BASED ON LONGITUDINAL STUDY'S DATA

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Background. Closure of the anterior fontanelle is an important diagnostic criterion, which is widely used by general practitioners and neurologists who work with infants. Most physicians can measure the size of the fontanelle, however, no published statistical data for Latvian infants was found. During the search it was revealed that no data on trends in teeth eruption, which is another important milestone in a child's development, in Latvian infants was published as well; therefore, the data was included in this research.

Aim. The aim of the current study was to determine trends in anterior fontanelle's closure and primary teeth eruption in Rīga's infants based on longitudinal study's data.

Methods. The data for this research was taken from the data gathered for a longitudinal study (Dž. Krūmiņa, 1998), which was unused within the original research. The data covers the anterior fontanelle's closure time and first primary tooth eruption time and localisation in 240 infants (128 boys and 112 girls) born in Rīga.

Results. The average first tooth eruption time was 7 months in boys and 7.3 months in girls. The difference between the localisation of the first tooth to emerge in boys and girls is statistically insignificant, most frequently it was the right mandibular central incisor in both sexes. The anterior fonta-

nelle was closed in 45.4% and open in 54.6% of infants at 12 months of age. In three children the fontanelle closed at 3 months of age. At 12 months the fontanelle was still open in 57 (44.5%) boys and 74 (66%) girls.

Conclusion. The average amount of teeth present at 12 months was equal to 6 (rounded to the closest integer) in both girls and boys. Most frequently, the first tooth to erupt was the right mandibular central incisor. The anterior fontanelle in girls closes later than in boys. The correlation between the anterior fontanelle's closure and the first primary tooth eruption was not revealed.

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CELIAC DISEASE IN LATVIAN CHILDREN: INSIGHTS FROM THE MARSH CLASSIFICATION

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Background. Celiac disease (CD) is a significant global public health concern.

Endoscopic biopsy of the small intestine remains the gold standard diagnostic method. Histological classification of CD-related lesions follows the Marsh–Oberhuber system, which categorises them into five stages. Type 1 and type 2 lesions feature increased intraepithelial lymphocytes (IELs), with or without crypt hyperplasia, while the villi remain intact.

The classic celiac lesion, categorised as type 3 in the Marsh–Oberhuber classification, is characterised by villous atrophy, a shift in the villi-to-crypt ratio (from :1 to 1:1), and increased IELs. Type 3 lesions are further classified into three subtypes based on the degree of atrophy: mild (3a), partial (3b), and subtotal atrophy (3c).

Aim. The aim of this study was to identify the most frequently observed stage within the Marsh classification system by analysing duodenal biopsy samples obtained from children diagnosed with celiac disease in Latvia.

Methods. Altogether 100 children were included in the study. The respective histologic slides were examined to determine the presence and type of Marsh classification.

Results. Among all the patients included in the study, 13% (95% Confidence Interval (CI): 6.4–19.6%) were classified as having Marsh type 1, which is characterised by an increase in intraepithelial lymphocytes without crypt hyperplasia, while the villi remain structurally normal. Notably, there were no patients diagnosed with Marsh type 2 in this study.

Furthermore, 26% (95% CI: 13.9–30.1%) of patients were found to have Marsh type 3a, which is associated with mild villous atrophy. A larger proportion, 37% (95% CI: 27.5–46.5%), presented with Marsh type 3b, where partial villous atrophy is observed. Meanwhile, 24% (95% CI: 16.7–33.2%) of patients were classified as having Marsh type 3c, which is characterised by subtotal villous atrophy.

In terms of gender distribution, most of the patients diagnosed were female, accounting for 66% (95% CI: 56.2–74.5%), while male patients comprised 34% (95% CI: 25.5–43.7%) of the total study population.

Conclusion. This study indicates that Marsh classification type 3b is the most prevalent among newly diagnosed histological cases of celiac disease in children. Additionally, celiac disease exhibits a slight female predominance in the Latvian children population.

Acknowledgements. The authors have no conflict of interest to declare.

THE CHARACTERISTICS OF GUT MICROBIOME IN CHILDREN WITH INFANCY-PERIOD FUNCTIONAL GASTROINTESTINAL DISTURBANCES

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Background. The problem is of outstanding importance since functional gastrointestinal disorders (FGIDs) are common in infancy, affecting a significant proportion of otherwise healthy newborns. Conditions such as colic, regurgitation, and constipation can cause discomfort, distress, and parental concern, yet their exact etiology remains unclear.

Aim. This study explores the relationship between gut microbiome and the FGIDs.

Methods. Healthy infants coming to prophylactic visits were included in the study. Parents of infants answered the questionnaire and brought two faecal samples: at the age of 0–6 months and 12–15 months. Further, metagenomic sequencing was performed to detect taxonomic entities. The median relative abundance of taxa was compared among children with and without functional gastrointestinal disturbances. Statistics: Wilcoxon test. *p*-value 0.001 was considered significant.

Results. A total of 66 participants were enrolled. Of these, 30% (20/66) had colic; 8% (5/66) had constipation, and 40% (26/66) experienced regurgitation between 0 and 6 months of age.

In children with colic, lower levels of several bacterial families were detected at 0–6 months of age: Erysipelotrichaceae (median 0.31 vs 0.03; $p = 0.0007$), Tannerellaceae (median 0.13 vs 0.00; $p = 0.0004$), UBA660 (0.00 vs 0.10; $p < 0.001$). Additionally, in children without colic aged 0–6 months, the Anaerotignaceae family was found in higher levels (median 2.36 vs 0.27; $p = 0.001$).

In children with regurgitation, several bacterial families were present in lower amounts at 0–6 months, including Atopobiaceae (median 0.11 vs 0.03; $p = 0.009$), Pasteurellaceae (median 0.17 vs 0.01; $p = 0.0001$), Peptostreptococcaceae (median 0.94 vs 0.05; $p = 0.0003$), Propionibacteriaceae (median 0.29 vs 0.03; $p = 0{,}016$), UBA660 (median 0.11vs 0.02; $p = 0.001$); $p < 0.001$.

Conclusion. This study suggests a potential link between gut microbiome composition and functional gastrointestinal disorders (FIGDs) in infants.

Lower levels of specific bacterial families were observed in infants with colic and regurgitation at 0–6 months of age. In contrast, the Anaerotingnaceae family was found at higher levels in infants without colic. These findings highlight the need for further research on the role of gut microbiota in FGID development and potential microbiome-targeted interventions.

THE EPIDEMIOLOGY AND MORPHOLOGICAL FEATURES OF PAEDIATRIC APPENDICITIS IN LATVIA

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Background. The diagnosis of acute appendicitis is not easy in young children, and remains a challenge as most of such patients present late with complications.

Aim. The goal of the present study was to assess trends in the incidence of paediatric appendicitis and pattern of variation with age, sex, and seasons of the year in Latvia. Additionally, morphologic stages of appendicitis were also assessed.

Methods. This retrospective study was conducted at the Faculty of Medicine and Life Sciences, University of Latvia, and included a review of patients operated in the Children's Clinical University Hospital between the years 2005–2015 with a diagnosis of acute appendicitis. The hospital's database was used to identify patients who were admitted with acute appendicitis. Demographic data as well as histology reports were reviewed. A total of 2279 patients were enrolled and divided into four age groups: infants and toddlers (ages 0–3 years), preschool age children (4–6 years), early school-age children (7–13 years), and late school-age children (ages 14–17). Tissue sections were stained for S100 protein, calretinin, alpha-smooth muscle actin (alpha-SMA) and CD 68. Age, sex, and population ad-

justed incidence rates of appendicitis for each month and year were calculated for the relevant month and year as the denominator. The collected data was analysed using the Statistical Package of Social Sciences (SPSS).

Results. Among the seasons, appendicitis incidence was highest in the spring. The peak incidence of appendicitis is in late school-age children. Boys are affected more often than girls. Microscopically, catarrhal appendicitis is marked by vascular congestion and purulent exudate in the lumen. If this condition progresses further, the inflammation progresses outwards from the mucosa with the formation of multiple abscesses in the wall. This condition is designated as phlegmonous appendicitis. The gangrenous appendicitis is characterised by the mucosal necrosis and full-thickness suppurative inflammation of the muscularis propria. Microscopic examination of appendix samples from children who had eosinophilic appendicitis revealed dense and diffuse eosinophilic infiltrate in the mucosa and muscularis propria.

Conclusion. Our study showed that phlegmonous appendicitis mostly affects children between 7 and 17 years old. We hypothesise that the seasonality of acute appendicitis is associated with dehydration and constipation attributed to warmer weather and seasonable vitamin D variations. In addition, seasonal allergies may contribute to inflammation and infection of the appendix.

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THE IMPACT OF BIRTH EXPERIENCE ON BREASTFEEDING SELF-EFFICACY AND MOTHER-INFANT BONDING

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Background. Breastfeeding self-efficacy and mother-infant bonding are crucial factors influencing maternal and neonatal health outcomes. Birth experiences may significantly impact these aspects, necessitating further research to understand their relationship.

Aim. The aim of the current study was to evaluate the impact of birth experience on maternal breastfeeding confidence (BSES-SF) and bonding with the infant (MIBS) during the postpartum period.

Methods. A longitudinal study was conducted with data collection at two time points: immediately postpartum (1–3 days after postpartum) and during the second postpartum phase (6–8 weeks postpartum). Breastfeeding self-efficacy was measured using the BSES-SF scale, while mother-infant bonding was assessed with the MIBS scale. The Wilcoxon test was applied to assess statistical significance.

Results. Significant improvements were observed in most BSES-SF items in the second postpartum phase. Confidence in knowing if the baby is receiving enough milk increased from 3.33 (0.9) to 3.86 (1.1) ($p < 0.001$). Ability to handle breastfeeding as a challenging task rose from 3.22 (0.9) to 3.67 (1.2) ($p < 0.001$). Exclusive breastfeeding confidence increased from 3.67 (1.3) to 3.97 (1.50) ($p = 0.019$). Overall BSES-SF scores increased significantly from 50.11 (10.1) to 53.66 (16.2) ($p < 0.001$). The bonding experience showed mixed changes, with increased joyful bonding (0.30 (0.6) to 0.40 (0.6), $p = 0.046$) but also a rise in resentment (0.08 (0.3) to 0.18 (0.6), $p = 0.019$) and frustration (0.09 (0.3) to 0.17 (0.4), $p = 0.004$). The overall MIBS score increased significantly (1.09 (1.8) to 1.43 (2.1), $p = 0.008$).

Conclusion. Birth experience plays a crucial role in shaping maternal breastfeeding confidence and emotional bonding with the infant. These findings highlight the importance of holistic postpartum care strategies that enhance breastfeeding self-efficacy while addressing emotional challenges in bonding.

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THE IMPACT OF POSTPARTUM DEPRESSION ON MATERNAL MENTAL AND PHYSICAL HEALTH

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Background. Postpartum depression (PPD) is a significant mental health condition affecting maternal wellbeing, with potential consequences for both psychological and physical health. Early identification of depressive symptoms and their impact on overall health is essential for improving postpartum care. This study explores the relationship between PPD and maternal mental and physical health to highlight its broader implications.

Aim. This study aims to assess postpartum depression and its association with maternal mental and physical health.

Methods. A total of 218 postpartum women participated in the study. Postpartum depression symptoms were assessed using the Edinburgh Postnatal Depression Scale (EPDS), while maternal health was evaluated using the Patient-Reported Outcomes Measurement Information System (PROMIS-10), which includes both physical and mental health subscales. Statistical analyses included descriptive statistics and Spearman's correlation to examine relationships between EPDS scores and maternal health indicators measured by PROMIS-10. A statistical significance level of $p < 0.05$ was considered for all analyses.

Results. The mean depression score among participants was 6.4 (SD = 3.4), with 18.8% exceeding the threshold for increased PPD risk. The mean mental health score was 50.2 (SD = 9.8), while the physical health score averaged 49.9 (SD = 10.0). A significant negative correlation was observed between PPD severity and maternal mental health ($r = –0.32$, $p < 0.001$), indicating that higher depressive symptoms were associated with poorer psychological well-being. A weaker but still statistically significant correlation was also found between PPD severity and physical health ($r = –0.15$, $p = 0.024$), suggesting a modest impact on physical well-being.

Conclusion. Postpartum depression is associated with poorer maternal mental health and may also influence physical well-being. These findings highlight the need for comprehensive postpartum screening and holistic health assessments to improve maternal care. Integrating mental health evaluations into routine postpartum follow-ups may aid in early intervention and better support for affected mothers.

Acknowledgements. The authors declare no conflicts of interest. This study received no external funding.

TRADITIONAL CYTOLOGY VERSUS LIQUID-BASED CYTOLOGY FOR EVALUATION OF CERVICAL SMEARS: FIVE-MONTH EXPERIENCE IN DAUGAVPILS REGIONAL HOSPITAL IN 2021

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Background. The number of newly detected cervical cancers in Latvia in 2023 was 178 cases [1]. Screening for cervical cancer prevents invasive cancer cases. It has been carried out in Latvia since 2009. Initially, traditional smears were used for screening. Since June 2021, the traditional smear has been replaced by liquidbased cytology. This study demonstrates the experience of introducing liquid-based cytology in Daugavpils Regional Hospital in 2021 for five months (June – October) as a screening tool for cervical cancer in comparison with overlapping traditional smears.

Aim. To compare the traditional method and the liquid cytology method by assessing the ability to detect pathology, evaluate inflammation, and to identify pathogens.

Methods. Retrospective study of material from 131 patients. For each patient, slides from the archive were evaluated: 1st slide prepared in the traditional way (the material was smeared on a slide by a clinician and stained in the laboratory using the Romanovsky stain), the 2nd — liquid cytology slide (slide was prepared in laboratory by using Liquid-based Cytology instrument LTS-3000A and material from BD SurePath™ collection vial). To compare the two techniques, the following parameters were taken into account: age group, presence of atrophy, microflora and pathogens (cocci, rods, lactobacilli, fungi, trichomonas, leptothrix), pathology presence (by using current Bethesda classification), severity of inflammation.

Results. Of the total number, only 4 (3%) pathological cases were detected (2 – LSIL, 1 – HSIL, 1 – AGC-NOS). Dense inflammation was observed in 19 (14.5%) slides in case of tradicional smear and 8 (6.10%) — in case of liquid cytology. In case of traditional smears, fungi were found in

14 slides, leptothrix in 18 slides, cocci — in 41 slides, rods — in 108 slides. In case of liquid cytology fungi were found in 13 slides, leptothrix in 17 slides, cocci — in 40 slides, rods — in 104 slides.

Conclusion. The number of pathologies does not correspond to global studies [2]. It shows the importance of more sensitive methods. For example, dual stain cytology. Inflammation background and pathogens finding was greater in traditional smears. It corresponds to the liquid cytology`s requirements – detect anormal cells and minimise distracting background. In case of pathogen detection, both methods showed similar results.

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THE MOST COMMON BREASTFEEDING DIFFICULTIES, THEIR CAUSES, CONSEQUENCES AND POSSIBLE SOLUTIONS IN GENERAL PRACTITIONER'S PRACTICE

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Background. Breastfeeding provides significant health benefits both for infants and mothers. Many mothers experience breastfeeding difficulties, leading to early cessation. An Italian study found that 70.3% of mothers experienced a variety of breastfeeding difficulties. In Latvia (2023), of 14,121 births, only 2526 infants were exclusively breastfed for six months, and 4574 were breastfed for twelve months. Given these low breastfeeding rates, it is crucial to identify the underlying causes and improve support.

Aim. To determine how many mothers experienced breastfeeding difficulties, the most common issues, and what kind of support they received from general practitioners. The study also aimed to assess whether frequent breastfeeding difficulties increased the likelihood of permanent discontinuation.

Methods. In this retrospective descriptive cross-sectional cohort study, 208 of 224 responses were included. Mothers aged 18–45 years provided information about their breastfeeding experiences trough an anonymous questionnaire. The study was conducted in family doctors' offices and via internet forums from 9 to 22 February 2025. All data were collected and analysed using Microsoft Excel and IBM SPSS 2.0 software.

Results. Overall, 208 breastfeeding experiences were analysed. The mean breastfeeding duration was 13.65 months (SD ± 9.48 months), while the mean duration of exclusive breastfeeding was 4.44 months (SD ± 2.19 months). The most common breastfeeding duration was 12 months. Of the births, 164 (79%) were vaginal, and 44 (21%) were via Caesarean section. 96.15% of mothers experienced at least one difficulty during breastfeeding. The most common issues included breast pain, redness (71.15%), nipple cracking (55.77%), engorgement (53.37%), and insufficient milk supply (34.13%). Despite these challenges, 79.81% continued to breastfeed. 54.33% sought help, most often turning to their general practitioners, who provided guidance on physiological breastfeeding, proper baby positioning, recommendations for increasing milk supply, and monitored infant growth and weight dynamics. The study found a statistically significant association between the frequency of breastfeeding difficulties and the likelihood of permanently discontinuing breastfeeding ($\chi^2 = 8.32$, $p = 0.0398$). Also, breastfeeding was initiated earlier in the vaginal group than cesarean section group ($\chi^2 = 46.20$, $p < 0.0001$).

Conclusion. Most mothers experienced breastfeeding difficulties, mainly breast pain, nipple cracking, engorgement, and insufficient milk supply. Mothers most often turned for help to general practitioners and received support. Mothers who gave birth vaginally initiated breastfeeding earlier. Frequent difficulties increased the likelihood of permanent breastfeeding discontinuation.

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INVASIVE CERVICAL MANIPULATIONS AS A RISK FACTOR FOR SHORT CERVIX IN THE SECOND TRIMESTER OF PREGNANCY

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Background. One of the risk factors for a preterm birth is premature cervical shortening. Likewise, according to the available literature, premature labour and late miscarriage in patient's anamnesis are associated with an increased possibility of a recurrent preterm birth.

Aim. The aim was to investigate the association between a history of invasive cervical manipulations, premature labour, and late miscarriage prior to the current pregnancy in patients undergoing preterm shortening of cervix in the second trimester of pregnancy.

Methods. Patients with a prematurely shortened cervix in the second trimester of pregnancy were enrolled in longitudinal observational study, previous history collected and cervical shortening followed up by scheduled regular transvaginal ultrasound exams. The study was performed from 2016 to 2024 at the University Hospital.

Statistical analysis was performed using SPSS IBM.

Results. 40 pregnant women participated in the study from 2016 to 2024. Inclusion criterion for the study was shortened cervix (< 25 mm) in the second trimester of pregnancy. A Chi-square test revealed a statistically significant association between invasive cervical manipulations and cervical shortening (Chi-square = 4.9, $p = 0.027$). The majority of those manipulations was curettage (n = 20), but also other cervical manipulations (e.g., cervical conisation, hysteroresectoscopy, cervical cerclage). This study did not show a correlation of previous premature labour or late miscarriage with the risk of a recurrent preterm birth.

Conclusion. This study demonstrates that the history of previous invasive cervical manipulations is associated with a higher risk of early cervical shortening in future pregnancies.

Acknowledgements. The data from this study are consistent with data from some other authors that invasive cervical manipulation is a risk factor for early cervical shortening; however, there is no caution or attempts to decrease surgical manipulations for childbearing-age women. Further research is needed to assess risks, and if the risk of invasive manipulations is proven, possible cautions and measures should be issued to minimise invasive manipulations in childbearing-age women.

ANALYSIS OF BIRTH OUTCOMES IN ROBSON GROUP 2: THE ROLE OF DEMOGRAPHIC AND CLINICAL FACTORS

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Background. The Robson Classification serves as a globally recognised tool for evaluating and comparing cesarean section rates across different healthcare settings. It categorises women into 10 distinct groups based on key obstetric characteristics, making it easier to monitor and analyse trends in cesarean deliveries. Robson Group 2 includes nulliparous women with a single cephalic pregnancy at term undergoing labour induction or elective cesarean section. Maternal factors such as age, BMI, diabetes, and hypertension may influence birth outcomes, but their specific impact remains unclear.

Aim. The rising rate of cesarean sections has become a major concern in modern obstetrics, as unnecessary procedures increase maternal and neonatal risks. In Europe, cesarean rates continue to rise, particularly among nulliparous women with a single cephalic pregnancy at term, making Robson Group 2 a critical focus for intervention. Given the global trend of increasing maternal BMI, understanding the influence of demographic and clinical factors on delivery outcomes is essential for optimising obstetric care.

Methods. This retrospective case study included 262 patients from Robson Group 2 who underwent labour induction or elective cesarean section at a tertiary care hospital in Latvia throughout 2023. Data were collected from patients' medical records over the entire year.

Results. The most significant factor identified in the study was the impact of maternal obesity on the condition of newborns. Obesity was correlated with lower Apgar scores in newborns, and the difference between the groups was statistically significant ($p = 0.043$).

Among the 262 participants in Robson Group 2, 83.6% (n = 219) underwent labor induction (2A), while 16.4% (n = 43) had elective cesarean sections (2B). The average maternal age in group 2A was 30 years, whereas in group 2B it was higher — 33 years ($p = 0.036$), suggesting a possible association between age and the choice of elective cesarean delivery.

No significant differences were observed in BMI, Apgar scores at 1 and 5 minutes, or educational levels ($p > 0.05$).

Conclusion.This study highlights demographic and clinical differences in Robson Group 2, showing that maternal age was higher in the elective cesarean group, while obesity correlated with lower Apgar scores. These findings emphasise the importance of assessing maternal characteristics when planning labour induction or cesarean delivery.

ASSOCIATION BETWEEN UTERINE FIBROID LOCATION AND PATIENT AGE

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Background. Uterine fibroids are one of the most common benign tumours affecting women of reproductive age. Their location within the uterus may vary depending on patient age, potentially influencing clinical symptoms and treatment decisions. Understanding these patterns could contribute to improved diagnosis and management strategies.

Aim. The study aimed to analyse the association between patient age and the location of uterine fibroids, identifying potential trends across different age groups.

Methods. This retrospective study included 115 patients diagnosed with uterine fibroids from one regional hospital. Patients were divided into four age groups (25–34, 35–44, 45–54, and 55+ years). Fibroid location was categorised into anterior wall, posterior wall, lateral walls, fundus, cervix, or diffuse involvement. The prevalence of each location within the age groups was analysed and presented as percentages.

Results. The distribution of fibroid location varied across age groups. The anterior wall was the most common location for fibroids among women aged 35–45 years (45.1%), while posterior wall fibroids were predominant in the 45–55 age group (40.5%). Lateral wall fibroids were less frequent, with a slight increase in the 45–55 and 55+ age groups. Fundus fibroids were primarily observed in the 35–45 age group (13.7%) but were absent in older patients. Diffuse fibroids, involving multiple regions of the uterus, were more prevalent in the 55+ age group (25%), suggesting a higher likelihood of widespread fibroid growth with increasing age. In the youngest age group (25–35 years), fibroids were the least common overall, with a relatively low occurrence across all uterine regions, indicating a lower prevalence or that fibroids are at an earlier stage of development in this cohort.

Conclusion. The findings suggest that fibroid location may be influenced by patient age, with posterior wall involvement increasing with age and anterior wall location being more common in younger patients. These insights may help in refining diagnostic approaches and treatment planning for uterine fibroids.

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PREVALENCE OF RARE STRUCTURED ANOMALIES, 2009–2023

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Background. Congenital anomalies (CA) affect approximately 3% of births in Europe. CA, including structural defects, chromosomal anomalies, and genetic syndromes, are the leading cause of perinatal, neonatal, and infant mortality.

Aim. To assess the rate of rare structural congenital anomalies in 15-year period.

Methods. A cross-sectional retrospective study of rare structural CA from the database of the Register of Patients with Particular Diseases regarding Patients with Congenital Anomalies. Data from 2009–2023 about live birth with rare structural CA (n = 557) regarding European Surveillance of Congenital Anomalies (EUROCAT) coding guide. The live birth prevalence rate was calculated for the subgroups of CA per 10,000 live births.

Data from 2009–2023 about live birth with rare structural CA (n = 557) regarding European Surveillance of Congenital Anomalies (EUROCAT) coding guide. The live birth prevalence rate was calculated for the subgroups of CA per 10,000 live births.

Results. The live birth 15-year prevalence rate of rare CA was 19.4/10,000 (95% CI 17.8–21.1), 6.8% (n = 38) of them died in first year of live. Among the most common rare structural CA, the urinary system was the highest rate 5.4/10,000 (95%TI 4.6-6.4), (n = 156). This group includes CA like unilateral renal agenesis (n = 62), accessory kidney (n = 51) as well as bladder exstrophy; epispadias; posterior urethral valves. The nervous system group follows closely with 128 cases 4.5/10,000 (95% TI 3.7–5.3), most frequently registered anomalies of the corpus callosum (n = 110). As the third most common are congenital heart defects (n = 91) with prevalence rate 3.2/10,000 (95%TI 2.6–3.9), and notable subgroups include Ebstein's anomaly (n = 21) and pulmonary valve atresia (n = 14). Other rare structural CA subgroups include the digestive system (n = 53 with 1.8/10,000 (95%TI 1.4–2.4), the most common being Hirschsprung's disease (n = 34), and the eye CA group (n = 49 with 1.7/10,000 (95%TI 1.3–2.3), where anophthalmos/microphthalmos and congenital glaucoma are the most common. Several other groups are less frequent. The ear, face, and neck group consist solely of anotia (n = 16), while the genital group reports four cases of indeterminate sex. The respiratory system has 44 cases with anomalies of intestinal fixation (n = 37) being the most frequent in this subgroup. Lastly, the other anomalies category, including conditions like arthrogryposis multiplex congenita (n = 6), situs inversus (n = 5), and VATER/VACTERL (n = 5).

Conclusion. The most frequent congenital anomalies are found in the urinary, nervous system, and congenital heart defects categories, while the genital, ear, face and neck, and other anomalies groups are much rarer, with relatively few cases. The results of this study can be used to promote preventive policies to provide better counselling for women and families who are dealing with the diagnosis of a foetal structural anomaly.

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OVERVIEW OF SIMPLE CONGENITAL HEART DEFECTS IN LATVIA FROM 2004 TO 2023

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Background. Congenital heart defects (CHDs) are one of the most common birth defects (1% births per year), and predominantly simple CHD nowadays have an excellent prognosis because of early diagnosis of pathology and excellent treatment as outcomes in cardiac surgery are improved. Understanding the prevalence of simple CHDs is essential for better healthcare planning, early intervention, research advancements, and improved patient outcomes despite current prominent results in the treatment of simple CHD.

Aim. The current study aimed to determine and compare simple congenital heart defects in 20 years in Latvia.

Methods. Patients born in 2004–2023 with only simple congenital heart defect based on C. Pfitzer *et al.* [1] classification (patent *d. arteriosus*, PDA; atrial and ventricular septal defect, ASD, VSD, pulmonary valve stenosis, PVS) were searched in the hospital patient database using the SSK-10 code for 2004–2023.

Results. Between 2004 and 2023, there were 1392 patients with simple congenital heart defects in Latvia. ASD had 306 patients (22%), VSD had 600 (43%), PDA had 372 (27%), and PVS had 115 (8%). Between 2004 and 2008, there were 518 patients (37%), 2009–2013 had 375 (27%), 214 in 2018 (23%), and 2019–2023 (13%).

Conclusion. VSD is the most common congenital heart defect (43%). follows at 27%, then ASD at 22%. PVS is the least common at 8%. In these 20 years, a decrease in simple CHD can be associated with a diminution in the birth rate.

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