

# Health, Environment and Sustainable Development: Interdisciplinary Approach HESDIA 2020

ABSTRACT BOOK



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## CONTENT

Jurgita Andruškienė, Asta Mažionienė	Interdisciplinary Approach in the Studies of Health Sciences: Scientific Literature Review	6
Jurgita Andruškienė, Mehmet Önemli	Role of Speech in Communication Between the Patient and Health Care Service Provider: Literature Review	9
Diana Barragan Ferrer, Jesus Manuel Barragan Ferrer	Selecting the Most Appropriate K Value in K-Nearest Neighbors Algorithm to Develop Healthcare Decision-Making Tools	11
Roberta Bikuličienė	Tai Chi Effect for Prevention of Falls in Older Adults: Literature Review	13
Jurgita Boltutienė, Jurga Kučinskienė, Jurgita Kasparienė, Monika Pocienė	Regional Sustainable Development Using Kneipp Method: Creating Sensory Spaces in the Community Environment	15
Ilze Briza	Workplace-Based Professional Training Programs	17
Ebru Bulut, Zeynep Güneş	Predictive Value of the Interface Pressure and Frequency of Pressure Ulcer in Elderly Patients in the Internal Medicine Intensive Care Units	19
Agnė Čekanauskaitė, Albertas Skurvydas, Rima Solianik	Yoga Improves Balance by Attenuating Brain-Derived Neurotrophic Factor Levels in Older Adults	22
Evelina Daugėlienė, Jurgita Andruškienė, Gitana Rėderienė	Educational Intervention's Effect on Children's Oral Hygiene Status	24
Valentina Demidenko, Greta Eglinaitė	Opportunities And Challengees of Providing Daily Employment Social Services for Eldery People With Parkinson's Disease	26
Dace Erkena, Līga Priede, Aiga Grauduma	Innovations for Improving the Social Services for Clients with Dementia	29
Aurimas Galkontas, Mindaugas Stankūnas	A Study of Pharmacists Motivation and Job Satisfaction in Kaunas Chain Community Pharmacies	31
Viltė Gintilaitė, Milda Gintilienė, Daiva Mačiulienė, Lukas Zinkevičius	Diagnosing and Treating Enamel Hypomineralization: a Survey of Lithuanian Dentists	33
Zeynep Güneş, Demet Çelik	Self-Efficacy and Affecting Factors in Individuals with Cardiovascular Disease	35
Donatas Gužauskas, Saulius Šukys, Inga Mikutavičienė	School Opportunities and Challenges in Promoting Physical Activeness of Primary School Learners: Expert Approach	37

Hulya Yucel	Musculoskeletal Pain Analysis to Health University Students	39
Genovaitė Kazlauskienė, Žibuoklė Senikienė, Daiva Mačiulienė	Analysis of the Relationship Between Oral Hygiene and Oral Pathologies of First-Year Students of Kaunas University of Applied Sciences	41
Mohammadamin Keivan, Jurgita Knašienė	Comparison of Ambulance Nurses and Day Clinic Nurses Sleep Quality	43
Justė Knatauskaitė, Henning Budde	Effect of Acute Exercise on Cognitive Performance in Adolescents – a Role of Cardiorespiratory Fitness	45
Silva Kostyliovienė, Grėtė Seniūnaitė, Rasa Vainutytė, Alina Vaškelytė, Dovilė Grinkevičiūtė	Nursing Activity in Neonatal Pain Management	47
Raulas Krušnauskas, Sigitas Kamandulis	Response Size to Continued Sprint Interval Training Cannot Be Explained by the Exertional Level	50
Edgaras Lapinskas, Raulas Krušnauskas, Aivaras Ratkevičius	The Effect of Repeated Bouts of Fasting on Body Mass and Composition. Mice Model Study	52
Hans Ingemann Lottrup	Social Media Communities and How They Can Be Used for the Support of Different Health Initiatives Within Physical Activity and Sports	54
Marita Mattila, Heli Kesämaa	Co-Creational Events as Learning Environments in Higher Education	56
Viktorija Piščalkienė, Lijana Navickienė	Causes of Nursing Students' Stress During Professional Internship	58
Martynas Ramanauskas, Evelina Kaminskytė, Monika Pocienė, Sergej Sosunkevič	Anterior Knee Pain Prevalence Between 15-17 Years Lithuanian Handball Players	60
Jan-Jaap Reinders, Rasa Tamulienė, Dainė Krasuckienė, Wim Krijnen, Viktorija Piščalkienė, Lijana Navickienė	Do We Feel Part of the Interprofessional Community? Comparing Interprofessional Identity Among Members Of Eight Disciplines in Lithuania	62
Dalė Smaidžiūnienė	The Concept of Nurses' Professional Autonomy, the Motives And Benefit of its Implementation	65
Irma Spiriajevienė	Learning of Dental Hygienists and Assistants: Justification of Competences to Labor Market	68
Anandini Swaminathan, Tomas Venckūnas, Hans Degens	Effect of Methionine Restriction and High Fat Diet on Muscle Hypertrophy And Metabolic Profile During Ageing	70

Gražina Šniepienė, Simona Urbonienė, Simona Kasperavičiūtė	A Quality of Life Evaluation for Women with Cellulite	72
Rasa Tamulienė, Emilė Gedeikytė, Daiva Mačiulienė	Dental Assistant's Work-Related Stress: First-Year Experience in Dental Clinic	74
Rasa Tamulienė, Jan-Jaap Reinders, Wim Krijnen, Viktorija Piščalkienė, Lijana Navickienė, Dainė Krasuckienė	Epis-Lt: Development of a Lithuanian Instrument to Measure Interprofessional Identity	76
Greta Undžytė, Aldona Gružienė, Darijus Skaudickas, Gintautas Vaitiekaitis, Aleksandras Vitkus	Changes in Geometric Shape of Parenchymal Tissue Damage in the Exposure Zones After Radiofrequency Ablation	78
Rasa Volskienė, Ingrida Kraujutienė, Jūratė Kazlauskienė, Lina Ambrožienė	Changes in Blood Glucose Levels in Healthy and Diabetic People After Consumption Dragee of Extruded Corn	81

## INTERDISCIPLINARY APPROACH IN THE STUDIES OF HEALTH SCIENCES: SCIENTIFIC LITERATURE REVIEW

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### Relevance

Interdisciplinary approach has become an important and challenging technique in the modern curriculum. It synthesizes more than one discipline and creates teams of teachers and students that enrich the overall educational experience. Many researchers find many advantages of interdisciplinary studies. The interdisciplinary approach provides many benefits that develop into much needed lifelong learning skills that are essential to a student's future learning. Today, the interdisciplinary approach is a key concept to the advancement of school curriculum at all levels. It has now become debated as to whether an interdisciplinary approach is the best course for a curriculum. Though it has many advantages such as, expanding student understanding and achievement between all disciplines or enhancing communication skills, it also has disadvantages, such as integration confusion and time-consuming curriculum preparation (Jones, 2009).

Interdisciplinary clinical experiences offer students opportunities to develop needed collaboration and communication skills. Educators should create interdisciplinary educational experiences for students to better prepare them for their roles in a clinical setting (Sievers and Wolf, 2006). The healthcare setting is a rich learning environment for students to experience interprofessional working and interprofessional education. However, opportunities for interprofessional working are limited, and student experiences of effective interprofessional education are varied.

**Keywords:** interdisciplinary, health sciences, health care, students.

### Methodology

Scientific literature review was performed in the PubMed data base, using keywords *interdisciplinary education, interprofessional education, interdisciplinary approach in health care education*.

### Results

The question raises how interprofessional working and interprofessional education are valued by health or social care professionals. It is important that health and social care professionals lead by example by working collaboratively and providing students with opportunities for interprofessional education. Identifying the variables influencing attitudes to interprofessional working and interprofessional education may assist in improving interprofessional working and experiences of interprofessional education for students learning in the healthcare setting (O'Carroll et al., 2016).

Providing quality health care is the core purpose for health systems, and it is only possible with adequate capacity among the workforce to provide the required services. Addressing the requirements for, and supply of, the health workforce (workforce planning) is essential for

strengthening health systems. There is a global recognition that interprofessional education is critical to achieving universal health care (Tomblin Murphy et al., 2019).

Interprofessional education provides students with opportunities to learn about the roles and responsibilities of other professions and develop communication and teamwork skills. As different health professions have recognized the importance of interprofessional education, the number of disciplines participating in interprofessional education events is increasing. Consequently, it is important to examine the effect group structure has on the learning environment and student knowledge acquisition during interprofessional education events. When planning an interprofessional education event, faculty should focus on intentional groupings of professions to reflect the social context of healthcare teams so all students can fully participate and experience shared learning (Lairamore et al., 2018).

Interprofessional education, introduced at the beginning of pre-registration training for healthcare professionals attempts to prevent the formation of negative interprofessional attitudes which may hamper future interprofessional collaboration. However, the potential for interprofessional education depends, to some extent, on the readiness of healthcare students to learn together. The findings provide support for introducing interprofessional education at the start of the healthcare students' professional education to capitalise on students' readiness for interprofessional learning and professional identities, which appear to be well formed from the start. However, the students who enter with negative attitudes towards interprofessional learning may gain the least from interprofessional education courses and that an unrewarding experience of such courses may further reinforce their negative attitudes (Coster et al., 2008).

Interprofessional collaboration is an essential approach to comprehensive patient care. Interprofessional education must be integrated in a stepwise, systematic manner in undergraduate health profession education programmes. Given this perspective, first-year interprofessional education is a critical opportunity for building the foundation of interprofessional collaborative practice. Research was conducted at a Japanese medical university, in which different pedagogical approaches were adopted in the interprofessional education programme. Some of these approaches included interprofessional problem-based learning, early exposure, and interactive lecture-based teaching. The study indicated three perspectives of students' learning process at different stages of the interprofessional education, i.e., processes by which students became active and responsible learners, emphasised the enhancement of teamwork, and developed their own interprofessional identities. The findings suggest that the students' active participation in the interprofessional education programme facilitated their fundamental understanding of communication/teamwork and identity formation as a health professional in interprofessional collaborative practice (Imafuku et al., 2018).

### **Conclusions and Significance**

The interdisciplinary approach continues to synthesize the characteristics and methods of multiple disciplines while developing lifelong learning skills. Interdisciplinary curricula are time consuming and takes collaborative team work to create, which can seem like a hard and exhausting disadvantage, but in the end, the interdisciplinary approached inhibits many favoured skills that are sought by future colleagues and employers in health care settings.

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## **ROLE OF SPEECH IN COMMUNICATION BETWEEN THE PATIENT AND HEALTH CARE SERVICE PROVIDER: LITERATURE REVIEW**

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### **Relevance**

The older the history of humanity is, the more ancient it is to have the characteristics of “disabled, disadvantaged, special needs or disabled individuals”. These newborns, children, adults or elderly individuals are sometimes isolated from society due to their inadequacies, abandoned to death, and sometimes crowned with inventions they have created thanks to their superior genius; Sometimes, those who believe in the power of health, education and rehabilitation have been brought to the highest level of their performance and brought to the society. The most basic meaning to be derived from this historical process is that each individual is unique and equal opportunities should be provided. In this sense, significant progress has been made both in the world and in Europe.

**Keywords:** communication, health care services, patient, speech.

### **Methodology**

Scientific literature review was performed in the PubMed data base, using keywords *speech, communication, patient, health care*.

### **Results**

The World Disability Report states that not every country, society and every individual in the world experience disability in the same way. One of the important issues mentioned in the report is based on the need for a sound data collection system in terms of providing services and access to services (WHO, 2020). Language and speech disorders are more difficult to diagnose and make visible according to other medical diagnostic criteria (physical, sensory, mental or neurogenetic disorders). Although much more common, this group is overlooked due to the lack of clear medical symptoms, those in need of speech and language therapy. These individuals; It could be babies, children, teenagers, adults or the elderly. For example, significant delays in communication, language or speech development in the early stages are often overlooked, misled by the advice that children will talk one day, such as "wait, talk", and their access to services is denied. With estimates based on the best statistical prevalence methods (Tomblin et al., 1997), it is claimed that there are 5.8 million children under the age of 18 who need speech and language therapy in Europe (Law, 2020).

On the other hand, young, adult or elderly people who suffer from head trauma or stroke and who have lost language and speech skills, who are doomed to have impaired cognitive communication and swallowing functions, can benefit from a certain service due to their medical needs, however, they have great access to language and speech therapy services that they need for life, they are experiencing problems (Wickenden, 2013).

## Conclusion & Significance

An assessment of communication needs should be done for every patient to determine if patients are able to communicate effectively with healthcare providers or require an intervention (i.e., communication resources). This should be followed by monitoring for changes in the patient's assessment or changes in the effectiveness of the intervention. The interdisciplinary team should consult with professionals who are trained in specific communication interventions (Garett et al., 2008).

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## **SELECTING THE MOST APPROPRIATE K VALUE IN K-NEAREST NEIGHBORS ALGORITHM TO DEVELOP HEALTHCARE DECISION-MAKING TOOLS**

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### **Relevance**

The use of data mining as an emerging technology is gaining more interest in health sciences. This surging interest is due to the ability to analyze, extract, and discover unsuspected trends, relationships, and patterns among clinical information generated by the health organizations. The challenge is to gain knowledge and discover unknown insight which, in turn, helps to make decisions in clinical practice (Holzinger et al., 2014). Thus, the health sector requires health 'knowledge workers' with the ability to build knowledge for clinical practice from huge amounts of healthcare data that is very vast, complex, and extremely varied (Goodwin et al., 2003). To facilitate this task, data mining offers tools and techniques (classification, clustering, and association) for assisting humans in extracting and discovering hidden useful information (knowledge development) (Witten et al., 2016). One of the most used classification algorithms in data mining for knowledge discovery is the k-nearest neighbors algorithm (Han et al., 2011). However, when using this algorithm, the question arises about the k-value that should be considered to obtain a reliable prediction in the classification results. This value would facilitate the creation of predictive models that could serve as a basis for developing healthcare decision-making tools.

**Keywords:** data mining, health data, k nearest neighbor algorithm, WEKA, decision-making tools.

### **Methodology**

To find the most favorable k-value that provides the most accurate classification, a comparative study was carried out. By employing WEKA software data mining, the k-values of 1, 5, 10, and 20 are evaluated using a testing database that includes 20 clinical cases for training and evaluating. The results were compared in terms of classification accuracy (percentage of correctly classified instances).

### **Results**

According to the results of our experimental study, the average of the classifications and the variance in each case, it is noted that k-value = 5 makes a more correct classification and shows a lower variance than the other k-values.

### **Conclusion & Significance**

The k-nearest neighbors algorithm with a k-value of 5 can be used as a choice for discovering and disseminating hidden or unknown useful healthcare information. It is expected that the results of this research may contribute to the development of healthcare decision-making tools using this data mining algorithm.

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## TAI CHI EFFECT FOR PREVENTION OF FALLS IN OLDER ADULTS: LITERATURE REVIEW

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### Relevance

Falls among older adults are common and are major cause of injury morbidity (Bergen, Stevens and Burns, 2016). It affects quality of life and independence of an individual. Treatment for fall related injuries costs and becomes big financial burden for health care system (Burns, Stevens, Lee, 2016). Many falls can be prevented through community-based exercise interventions (Sherrington et al, 2017).

The goal of this literature review is to make an update on the current research evidence regarding therapeutic benefits of Tai Chi practice for prevention of falls in older adults.

**Keywords:** older adults, falls, prevention, risk, Tai Chi.

### Methodology

The investigation was conducted as a scientific literature search. Computerized searches of electronic databases were conducted. Electronic databases included PUBMED, COCHRANE Library. The scientific articles published 2015-2020 in English were selected. The search terms for review included: Tai Chi, older adults, falls, prevention of falls, risk of falls, cost.

### Results

7 scientific articles were selected, were 1 article was a systematic review and meta-analysis, and the rest of the articles – randomized clinical trials and follow-up analysis, non-randomized experimental study, a comparative study and trial-based cost-effectiveness analysis. Tai Chi intervention was associated with significantly lower chance of falling and rate of falls than other interventions or control groups. The preventive effect was likely to increase with exercise frequency. Tai Chi program was the most economically effective, having lower cost and being clinically more efficacious compared with multimodal and stretching exercises.

### Conclusion & Significance

Tai Chi exercises are effective for prevention of falls in older adults. Older adults' participation in a community-based Tai Chi program may lead to improvement in strength, mobility, and confidence in performing functional tasks. The preventive effect is likely to increase with frequency of exercises. It is safe, cost effective, easy to learn practice, which can be used in the community.

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## **REGIONAL SUSTAINABLE DEVELOPMENT USING KNEIPP METHOD: CREATING SENSORY SPACES IN THE COMMUNITY ENVIRONMENT**

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### **Relevance**

The United Nations suggest a model for sustainable development based on three imperatives: satisfying human needs, ensuring social equity, and respecting environmental resources. The model of sustainable development is the desirable health's need in society, which seeks to balance social, environmental, and economic targets (United Nations, 2015).

The purpose of scientific research was to analyse the developing community attitudes for sustainable development and implement the idea of applied research, the creation of a cohesive environment for the community creating sensory spaces. The focal point of research outlines the impossibility to implement sustainable development provisions without the active participation of communities.

The main idea of this study is to analyse the holistic model of health improvement, a health philosophy developed by Sebastian Kneipp, based on five key elements: water, movement in fresh air, healthy nutrition, herbal medicine, and harmony and implement it with community participation.

**Keywords:** Kneipp method, sensory spaces, sustainable development.

### **Methodology**

The current study includes an analysis of information sources, field study, analysis of trail design, implementation, and use. The essential statements about the creation of sensory spaces, their impact on a person's health are based on the analysis of alternative medicine tools and methods, as well as the role of the community in the process of sustainable development. Various methods of complementary medicine based on functional relationships important for treatment are analysed.

### **Results**

Kneipp therapy was the umbrella term for an array of naturopathic treatments. He is credited with introducing a more holistic view into the healthcare of his time which included mental, social, and spiritual aspects. Kneipp cures became (and still are) very popular in Germany. While many of Kneipp's concepts seem to make some common sense, there are hardly any clinical trials to demonstrate that the Kneipp cure is clinically effective in the treatment or prevention of any condition (Sutton, 2010).

Walking the short Kneipp trail is a pleasant procedure that improves blood circulation, activates metabolism, and helps strengthen their immune system. Mr. Kneipp emphasized the importance of foot stimulation on different surfaces and temperatures. This foot stimulation affects the human body reflexively. Therefore, our community pay more attention to the environmental impacts of community activities by creating Kneipp sensory spaces (Nunes ir kt., 2019).

Adoption of these sustainable practices brings benefits for society, which in turn contributes to creating and increasing value (Gomes et al. 2015). Establishing a wellness trail has brought the community together to get to know the environment and themselves. While walking, you can admire nature, smell forgotten smells, and go barefoot for an educational touch.

### Conclusion & Significance

1. The results show that one of the sustainable development purposes in our community primarily focuses on the environmental aspect of sustainable development, thus placing lean thinking into practice and implementing own system for creating the holistic model of health improvement.
2. Our study of creating sensory spaces focus on sustainable practices in the community, thus demonstrating our concern for society in general and focusing on the social domain by managing the value chain.
3. We are concerned about evolving to a continuously improved sustainability, involving the surrounding community, the internal and external environment.

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## **WORKPLACE-BASED PROFESSIONAL TRAINING PROGRAMS**

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### **Relevance**

In recent years, it is no longer a rare student to do paid work on a daily basis. In Latvia and elsewhere in the world, there has been a tendency for a long time that students perform paid work in parallel with their studies. However, at the same time, students have to improve their practical knowledge in study practice, which also means to perform work duties. The most positive learning possibilities for each student are when the study practice goes hand in hand with daily work responsibilities. But unfortunately it is often observed that students have to go through practice places only formally, because daily work is preferred. This daily job is often in no way related to the chosen profession. There are several professions where there is a significant shortage of specialists in the work market. But there is no shortage of students in these vocational training institutions.

Aim - to explore the interaction of the learning and study process based on the work environment.

**Keywords:** lifelong learning, knowledge sharing, working environment, health education, profession.

### **Methodology**

In order to achieve the aim of the study, the research methods were applied using content analysis of theoretical and informative sources, normative documents are used. Medical and pedagogical students are involved in the research from P. Stradiņš Medical College of the University of Latvia and Daugavpils University.

### **Results**

People are very different in their ability to create new knowledge, so their contribution to the knowledge economy will vary. In order for the knowledge society not to undermine its own goals, everyone and every member of it must have a good education (Research in Adult Pedagogy, 2005). There has been a tendency for a long time that students perform paid work in parallel with their studies. However, at the same time, students have to improve their practical knowledge in study practice, which also means to perform work duties. In Latvia, for example, the profession of a nurse is acquired by an average of 30-40 young specialists every year. Representatives of this profession in Latvia are prepared by 5 educational institutions. This means that an average of 200 nurses enter the labor market of our country every year. At the same time, however, the Organization for Economic Co-operation and Development (OECD) 2016 report shows that there are 4.9 nurses per 1,000 inhabitants in Latvia, while the OECD average is 9.1. Out of 240 graduates, only 60 go to work in state and municipal medical institutions. The OECD study published at the end of 2019, which provides an individual analysis of the most pressing health care problems in each EU member state, clearly shows that the largest decline in the number of medical staff in Latvia is observed in the profession of nurse. It has often been said in Latvian public space that the reason for such a shortage of nurses

is low pay, but a number of students come to study and know the labor market and the level of pay for a particular profession. Is the problem possible elsewhere? Specialists with similar qualifications with whom it would be possible to compare the profession of nurses are police officers. There is one educational institution in Latvia for the training of these specialists and there are no observations that there is a shortage of educational institutions. However, there is no shortage of staff in this area either. Unlike the training of nurses, for these specialists the training process is immediately related to the duties of the position. A training process based on the work environment is planned for the training of police officers, because upon entering the Police College, which is currently the only educational institution for police officers at the level of primary education, students are already enrolled in the civil service as employees - cadets. At the end of their studies, students enter the labor market as police officers and continue to perform their duties without breaking the link with their employer.

The competitiveness of a country's economy depends most directly on people's progressive and high-quality education, the expansion of acquired knowledge skills and the ability to adapt to globalization processes. (Ellyard, 2001, 6-7). Often the aforementioned students in this way destroy the state economy, because when learning from the state budget, they do not perform their job duties at all or choose to perform them elsewhere outside Latvia. Here we can talk about certain professions that have to work in their specialty for a certain number of years after obtaining education.

### **Conclusion & Significance**

The daily life of today's students rarely exists without paid work, which provides for the satisfaction of daily needs. Paid work for students can be both a study component and a hindrance or necessity. There are three groups of working students - the student works in a job equivalent to studies, the student performs similar work duties in the respective field, and the student works in a completely different field during his / her studies, performing absolutely unrelated work duties with the chosen profession. It has been said in the public space of Latvia that the reason for the lack of specialists in certain professions in the country is low remuneration. At the same time, however, there is no shortage of students in these professions. In addition, a number of students know the labor market and salary level of a particular profession when they start studying. There is a diversity in the Latvian education system - students of certain professions, such as police officers, become employees in the public sector when starting their studies, thus the learning process is fully integrated with the work process, as a result the student is already an employee of the institution. On the other hand, students of other professions, such as medical representatives, do not have such opportunities. It needs to be explored whether the learning process and paid employment at public sector level should be fully integrated with each other.

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## **PREDICTIVE VALUE OF THE INTERFACE PRESSURE AND FREQUENCY OF PRESSURE ULCER IN ELDERLY PATIENTS IN THE INTERNAL MEDICINE INTENSIVE CARE UNITS**

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### **Relevance**

Pressure ulcer, which is an important problem in elderly people who stay in nursing homes, are hospitalized or who are bedridden, decrease the quality of life of patients, slows down the healing process, prolongs hospital stay, increases the cost of care and mortality. Risk factors need to be identified and evaluated to reduce the frequency of pressure ulcer and to prevent its development (Agrawal and Chauhan, 2012; Coleman et al., 2014).

One of the important risk factors for pressure ulcer is pressure. Under prolonged and constant pressure, the skin becomes thinner and pressure ulcer increases. When the interface pressure on the tissue exceeds 32 mmHg, blood flow to the capillary is blocked and causes tissue ischemia (Baharestani et al., 2010; Sparke et al., 2013). In interface pressure measurements, it was found that the pressure affected a wider area in the deep tissues adjacent to the bone and was reflected to a narrower area on the surface (Supriadi et al., 2014; Wong et al., 2015).

This study was conducted analytically to determine the frequency of pressure ulcer development and predictive value of interface pressure in pressure ulcer development in elderly patients hospitalized in internal medicine intensive care units.

**Keywords:** Geriatric, Intensive Care, Nursing Assessment, Pressure Ulcer, Risk Groups.

### **Methodology**

This study was conducted in an internal medicine intensive care clinic, chest diseases intensive care clinic, coronary intensive care clinic and anesthesia intensive care clinic of a university hospital. The patients who were within the first 24 hours of admission to the clinic and were high-risk and very high-risk according to the Braden Risk Assessment Scale were included in the study. A questionnaire form was applied to these patients. Interface pressure was measured with Palm Q-Portable Interface Pressure Sensor 4 cm below the sacrum while the patients were in supine position (at the beginning of the position: at the 1<sup>st</sup> minute of the position and at the last minute of the 2<sup>nd</sup> hour). Patients were evaluated every two days during their stay in the clinic. In this process, interface pressure was evaluated at least twice (three days) and eight times at the most (15 days). The patients who developed pressure ulcer were evaluated according to the staging system developed by EPUAP and NPUAP and added to the data of that patient and the evaluation of that patient was finished.

Research population of the study consisted of patients aged 65 and over who were hospitalized in the clinics mentioned above for four months. In an earlier study conducted in Turkey on this topic, the prevalence of pressure ulcer seen in the elderly was found to be 10.52% (Kıraner, 2016). 95% confidence interval and 10.52% prevalence were calculated by using an unknown sample calculation method. The number of samples was calculated as 139

and 140 patients were reached. The data of the study were collected by using the Questionnaire Form, Braden Risk Assessment Scale and Palm Q-Portable Interface Pressure Sensor prepared by the researchers in the light of literature. Before starting the study, necessary approval from the Ethics Committee, institutional permission from the hospital where the research was conducted, and verbal consent from the participants / family members were obtained.

Statistical analysis of the data was conducted under the supervision of a statistical expert with the statistical package program “Statistical Package for the Social Sciences (SPSS) 22.0” (PASW Inc., Chicago. IL.USA). Descriptive statistics, -square test, COX Regression (in numerical data), Kaplan Meier - Survival Time (categorical data) test were used in the analysis of the data. Results were evaluated at 95% confidence interval and  $p < 0.05$  significance level.

## **Results**

Pressure ulcer developed in 22.1% of the patients during the period in which they were controlled. The mean time for pressure ulcer development ( $7.62 \pm 1.0$ ) in smokers was found to be significantly shorter than in non-smokers ( $11.55 \pm 0.6$ ) ( $p = 0.002$ ). Pressure ulcer developed in low weight patients ( $4.87 \pm 0.4$  days) in a shorter period and that it developed at the latest in overweight patients ( $12.61 \pm 0.7$  days), and a statistically significant difference was found between them ( $p=0,00$ ).

In patients who developed pressure ulcers, the interface pressure at the beginning of the supine position on the first day of hospitalization was  $40.92 \pm 6.87$  mmHg, after two hours the interface pressure was  $44.41 \pm 7.09$  mmHg. On the third day, the interface pressure was  $42.39 \pm 7.41$  mmHg, after two hours the interface pressure value was  $45.97 \pm 7.50$  mmHg. At the final evaluation of all patients, the interface pressure was  $47.75 \pm 6.79$  mmHg, after two hours the interface pressure value was  $51.25 \pm 6.71$  mmHg.

In the last evaluations made on the first, third and different days, it was determined that one unit increase in the interface pressure value at the beginning of the position increased the pressure ulcer development by one fold ( $p=0.00$ ). In the last evaluations made on the first, third and different days, it was determined that a one-unit increase in the interface pressure value after two hours of position increased pressure ulcer development in the similar way ( $p=0.00$ ).

In all measurements, the relationship between interface pressure and pressure ulcer development was evaluated by COX-Regression Analysis and a statistically significant difference was found between them ( $p=0.00$ ).

## **Conclusion & Significance**

Our results increase the knowledge about the assessment of pressure ulcer risk factors and show that the findings about the patient's BMI, diet, and interface pressure can improve the risk assessment of pressure ulcer and prevent pressure ulcer development. This information may have a positive impact on risk assessment procedures in clinical practice and may provide a more accurate description of patients at risk for pressure ulcer development.

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## **YOGA IMPROVES BALANCE BY ATTENUATING BRAIN-DERIVED NEUROTROPHIC FACTOR LEVELS IN OLDER ADULTS**

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### **Relevance**

World health organisation report drastic increase in aging population, 60 years and older. Aging population is associated with high health care cost primarily consisting because of lack of self-independence, reduced cognitive and motor function as well as difficulties to perform dual-tasks (WHO, 2018). Currently one of the most practised activities among elderly is yoga. However, no studies have examined the effects of yoga on tasks requiring simultaneous performance of balance and cognition (Sivaramakrishnan et al., 2019). While scientific papers and articles have reported the benefits of yoga for motor function and cognitive aspects (e.g. mood, stress management, executive function), research on the effects of yoga on balance, dual-task and the specific mechanisms of positive effects remain unclear (Bisht et al., 2019). Previous studies observed that yoga can increase brain-derived neurotrophic factor (BDNF) levels in young and middle-aged adults. It is well established that low BDNF level is associated with dementia and depression, whereas high levels of BDNF positively affect neurogenesis, cognition and motor learning (Mang et al., 2013; Nguyen et al., 2019). We aimed to investigate the effects of a 10-week yoga program on balance tasks performed concurrently with cognitive working-memory tasks.

**Keywords:** BDNF, dual-task, healthy aging, physical activity.

### **Methodology**

Thirty-three subjects, with no previous experience of yoga, aged  $66.9 \pm 6.0$  years were enrolled for this study and randomly allocated in two groups. In experimental group subjects ( $n=18$ ) had to participate in yoga practice for 10 weeks. In the control group subjects ( $n=15$ ) were asked do not change anything in their living habits. Heart rate and heart rate variability was administrated to assess cardiac autonomy response. Blood samples were collected to determine BDNF level. Postural sway activity and dual motor-cognitive task performance was measured by posturography method using Kistler force plate in two standing conditions.

### **Results**

Yoga practice did not affect ( $p > 0,05$ ) cardiac autonomic activity which shows that there was no perceived stress. Furthermore, BDNF level increased ( $p < 0,01$ ) in experimental group while remained unaffected in control group. A mixed-design ANOVA revealed a significant time $\times$ group interaction for CoP velocity vector in the tandem standing position with eyes open ( $p < 0,05$ ) and eyes closed ( $p < 0,05$ ), whereas balance tasks performance remained unchanged in the control group. In dual-task performance results showed significant effect of time for CoP velocity vector in the double stance position ( $p < 0,05$ ), tandem stance position ( $p < 0,05$ ) while counting with eyes closed and opened in experimental group. BDNF level positively correlated with single and dual task results in experimental group.

## Conclusion & Significance

There was a significant moderate negative relationship between BDNF level and CoP velocity vectors in both conditions was observed, which indicating that greater yoga-induced growth factor increase is associated with better postural control. Thus, while circulating level of BDNF effect vestibular neurons, vestibular nucleus, this factor is involved in neuronal reorganization and it has very important role to improve vestibular compensation process in aging. In conclusion, after 10-week continued yoga practice balance under single- and dual-task conditions improved which were mediated by an increased BDNF level in older adults.

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## EDUCATIONAL INTERVENTION'S EFFECT ON CHILDREN'S ORAL HYGIENE STATUS

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### Relevance

Good oral hygiene habits are very important from early childhood. Dental caries develops not only due to poor oral hygiene and eating habits, but also due to parental attitudes, habits, and knowledge of oral hygiene (Daly et al., 2010; Mahboude et al., 2016). As it is still difficult for young children to brush their teeth properly, they need the help of their parents. Therefore, parents should be involved in all educational programs, where they should be trained the most important principles of oral hygiene. Parental attitudes based on children's oral health strategies need to be developed (Shaghaghian et al., 2015).

The main aim of the study is to assess the effectiveness of oral health education in the sample of 6 year old children and their parents.

**Keywords:** children, education, programs, parents, oral hygiene, skills.

### Methodology

The target of population will be 6 year old children (N=603), residents of Klaipėda district. The final sample will include 14 kindergartens, 357 children and 357 parents. The sample randomly will be divided into equal size groups. Both groups will undergo pretest and posttest investigations. Intervention group will have 45 minutes long educational session, containing individual training of the child and one of the parents, using toothbrush and Piksters Plaque Glo Fluorescing toothpaste. Control group will not have an education session. Effect evaluation data will be collected at the baseline and 1 month after the intervention. The study was approved by Bioethics Committee. Because of the worldwide extreme situation our research will be done until december 2020 and presented later.

### Results

There are a number of educational programs and the main goal of them is to form appropriate oral hygiene skills. But children's oral hygiene is insufficient, teeth are cleaned irregularly, parents do not help children to clean their teeth (Vaikeviciene et al., 2005).

### Conclusion & Significance

Parents must participate in all educational programs, where they should also be trained the basic principles of good oral hygiene skills.

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## **OPPORTUNITIES AND CHALLENGES OF PROVIDING DAILY EMPLOYMENT SOCIAL SERVICES FOR ELDERLY PEOPLE WITH PARKINSON'S DISEASE**

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### **Relevance**

Parkinson's disease is one of the most common neurodegenerative diseases amongst the elderly. The symptoms of the disease affect not only the physical and psychological condition of the individuals but also influence the social problems. Social services are one of the most important services for elderly people, and especially for those with Parkinson's disease.

Employment, active activity, self-realization is one of the basic human needs. In particular, this need clearly exists for certain social matters or health restrictions, when a person is unable to play a full part in social life due to health or social disorders. It is also common in patients with Parkinson's disease. Realizing the opportunities for clients with Parkinson's disease to create social relationships, to be socially active, to make sense of themselves as personalities (Ebersold, 2004; Ruškus, Mažeikis, 2007; Šinkūnienė, 2010). In the context of social work, meeting the employment needs of people with special needs (disabled people, the elderly, people with Parkinson's disease, etc.) is linked to day employment services aimed at restoring or compensating for lost claims, creating or rebuilding due to illness, old age or social networks, excluded broken contacts, help engage in meaningful activities, devote to social participation (Zastrow, 2004). Analysing the practice of foreign countries, it can be stated that working with the elderly with Parkinson's disease actively provides day employment social services, using different methods that improve both the physical and psychological condition of clients. The most commonly used methods are physical exercise, music and dance therapy, language skills development, psychological, nutritional, and social counselling (Pacchetti, Mancini, Aglieri, Fundarò, Martignoni & Nappi, 2000). The prevailing clinical approach to such persons in Lithuania is gradually changing, social service centers, associations and other organizations providing day employment social services for the elderly with Parkinson's disease are becoming more and more active. However, the provision of such assistance to the elderly with Parkinson's disease in Lithuania does not yet have a deep tradition and faces many challenges. In order to gain a deeper understanding of the possibilities of providing day employment social services for the elderly with Parkinson's disease, it is necessary to analyse their views on these services and benefits.

**Keywords:** Social services, day employment, Parkinson's disease, the elderly, old people.

### **Methodology**

A qualitative study approach was chosen for the study. In order to find out the opinion of the elderly and the elderly with Parkinson's disease about the impact of social service day employment, considering that the participants of the study are members of a vulnerable group (both in terms of age and health), it was closed a qualitative case study strategy. A case study helps to delve deeper into the object of research, taking into account its individuality. Using this strategy, it is possible to look at the situation from various perspectives, examining the

peculiarities relevant to a particular case. In this case, it may be the person's age, the influence of the disease on the person's functionality, specific needs, the person's attitude to help, etc. According to Penn, Currie, Hoad, O'Brien (2016), a case study is a complex research tool that helps to find the best answers to research questions by obtaining the most detailed results in the case context.

During the study were interviewed elderly people with Parkinson's disease. Data were collected using a questionnaire method. The study presented closed-ended and open-ended questions in which respondents:

1. Evaluate their fine motor skills.
2. Evaluate their major co-motor skills.
3. Provide an opinion on their functionality.
4. Evaluate the benefits of daily employment of social services.

The study consisted of three phases. In the first stage respondent answered to the questions of the shorter version of the questionnaire. In the second stage, a social service - day employment was provided to them. It was done individually with each study participant, using daily employment methods that met individual needs. In the third phase, an additional questionnaire was submitted again to find out the possible changes in the study participants' skills and functionality in their daily activities, as well as their opinion on the benefits of daily employment.

## **Results**

The data obtained during the study were analyzed according to the evaluated criteria: fine motor skills, co-motor skills, functionality and the benefits of daily employment of social services.

The study found (in the opinion of elderly people), that daytime employment improves their functionality in day-to-day activities, affect fine and major motor skills. It should be noted that the application of daily employment methods not only had a positive effect on elderly people's physical condition, but also improved their emotional state. The feelings of loneliness and helplessness of the participants of the study decreased, the mood improved.

## **Conclusion & Significance**

The study revealed that the opinion of elderly people with Parkinson's disease about the impact of day employment social service, in the context of the case, is positive. After receiving this kind of social services, trends in the improvement of functionality in everyday activities were observed, as well as a slight improvement in the fine and co-motor skills of individuals. The results of the study revealed that the methods used during the daily employment of social services improve not only the physiological, but also the emotional state of people.

According to this, it is recommended to social workers, working with elderly people with Parkinson's disease, use the widest possible range of day employment methods, taking into account the symptoms, physical and psychological conditions of the persons.

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## **INNOVATIONS FOR IMPROVING THE SOCIAL SERVICES FOR CLIENTS WITH DEMENTIA**

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### **Relevance**

Dementia is a brain disorder that causes permanent, multifaceted cognitive impairment (memory, ability to acquire knowledge, language, visual spatial sense, various skills, attention and thinking, judgment and decision-making). Cognitive changes are combined with varying degrees of personality and behavioural changes, which result in a negative impact on an individual's daily activities, reducing his or her quality of life (Gudreniece A., et al., 2017). Researchers estimate that 24,3 million people have dementia on the beginning of 21<sup>st</sup> century, with 4,6 million new cases of dementia every year (one new case every 7 seconds). The number of people affected will double every 20 years to 81,1 million by 2040. Most people with dementia live in developing countries (60% in 2001, rising to 71% by 2040, Ferri C.P., 2005). Dementia affects 5.4% of people over the age of 65 and beyond prevalence with age increases to 20-25% aged 85 years and older. P. Stradins Medical College of the University of Latvia (Latvia) together with 7 partners from higher education institutions and social care service providers in Denmark, Germany and Italy made a pilot study about work Dementia in Work and Education.

Aim of this research is to study social services for clients with dementia and to create an innovative model for the improvement of social services.

**Keywords:** Dementia, prevention, social services, training.

### **Methodology**

Research was done in the framework of ERASMUS+ project KA202 “Approaching Multiethnicity and Dementia in Education and Work”. To get data was used qualitative research method. Research tool – three different questionnaires with partly opened questions for three target groups – clients with dementia, relatives of clients with dementia and health and social care specialists, who work with persons with dementia. All interviews were recorded. Data are saved by each partner of study. Interviews were done in the period between February and May 2020. Questions of interviews were written separate for each country taking into account social, educational and health care background. Questionnaires enclosed questions concerning each target group. For example, clients with dementia were asked to respond about their age, activities during the day, language. Relatives of clients with dementia got questions about biography of their kinsman, experience and challenges that they faced during the period before nursing house or social care institution, about available information how to work with clients with dementia. The last questionnaire was done for health and social care specialists to understand their everyday activities and challenges in the work with client and his/her relatives. Totally 144 interviews were analysed in Italy, Denmark, Germany and Latvia.

### **Results**

Results were analyzed according to the main outcomes of each country interviews. To ensure the care of clients with dementia, Italy, Germany and Denmark offered different kind

of services – home care, nursing home, support centers, projects. Results show different outcomes and problems.

Partners from **Italy** represented that they would like to work on soft skills, how to handling difference in everyday life and in workplaces – more specific for dementia care settings and to do it suitable for home care workers. As health care workers were coming with different background of knowledge and education, they would be inclined to train and learn more about health in cross-cultural perspective. **German** partners indicated that cooperation with relatives was good, but could be more intensified. In relation to information needs they concluded, that cooperation at the care/support interface should be improved, as many health care specialists lack knowledge in the field of dementia. The biggest problem was discrepancy between the school (theoretical) and the reality experienced during the practical training in the institutions. There was need of training modules, that would be suitable for nursing professionals and nursing assistants and caregivers. Training could include – dementia types and effects on behavior, how to deal with challenging behavior, biography work and work with relatives. In **Denmark** colleagues outlined that newly educated health care professionals had not enough skills to care for people with dementia from another ethnic background, they needed more education and experience. Generally, there was a need for the development of intercultural competencies in health care. Research results of **Latvia** showed, that social care specialists lack knowledge of dementia, how to behave in specific situations. Relatives of clients with dementia indicated, that there wasn't enough available information about dementia in Latvian language.

### **Conclusion & Significance**

Examining and analyzing the experience of EU countries in the field of social services for clients with dementia, it can be concluded that specific services have been created for the target group which are available both at the place of residence and in institutions.

Main conclusions after this pilot study are the innovations, that are necessary in the field of dementia. There will be created social service, that is designed for a specific target groups to reduce the disorders caused by the disease. Preventive work will reduce the impact of the disease to a person. As a results there will be created the model that includes all these innovations, to ensure social service framework for specific target groups.

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## **A STUDY OF PHARMACISTS MOTIVATION AND JOB SATISFACTION IN KAUNAS CHAIN COMMUNITY PHARMACIES**

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### **Relevance**

Today pharmacists are interested in highly skilled personnel who would properly carry out their work. Motivation is not the main solution of to recruit and retain such personnel. To attract new employees and to retain them, is impossible without knowledge of the appropriate incentives without knowing what induces the pharmacist to work for an excellent result (Ahmad et al., 2016; Belay, 2016; Jegede, 2017). Job satisfaction is the degree of favourableness with which employees view their work. It is an important contributing factor towards a person's motivation and productivity. Job satisfaction is a factor that influences whether an employee will remain in a position or seek work elsewhere. Furthermore, job satisfaction can influence the quality of work produced. A lower level of job satisfaction is directly associated with lower life satisfaction (Seston, 2009).

**Keywords:** motivation, job satisfaction, pharmacist, pharmacy, pharmacy technician.

### **Methodology**

The study was conducted in September – October 2019. Quantitative research was performed by distributing questionnaires to all branches of one pharmacy's chain in Kaunas. The study involved: pharmacists, pharmacists – managers of pharmaceutical activities and pharmacy technicians. This empirical research was conducted using a structured anonymous questionnaire which included questions about working in a pharmacy, motivation and job satisfaction, and socio-demographic questions. Some questions were used on a Likert-type scale with weighting scores of 1-5 respectively. The data were processed by using SPSS package Version 20. Descriptive statistics were used to analyse the results obtained to assess the distribution of absolute (n) and percentage (%). For the evaluation of quantitative values mean and standard deviation (SD) were calculated. To assess trait relationships a chi-square test ( $\chi^2$ ) was used. The proportion z test was used to compare the paired proportions. Student's t-test was used to compare two independent samples, and the ANOVA test was used to compare three independent samples. The level of significance was set at 0,05.

### **Results**

A total of 121 participants (population size – 139 pharmacists) responded to the questionnaire, giving a response rate of 87%. Majority of the respondents were female (96.7%, n = 117). A large number of respondents had a qualification of Masters of Pharmacy (60.3%, n = 73) followed by Professional Bachelors of Pharmacy (39.7%, n = 48). The total evaluation of all respondents' motivation for their work was 7,24±1,82 points (out of 10 points). Pharmacist' assistants (pharmacy technicians) had the highest average of their motivation ratings, with an average of 7,50±1,65 points (out of 10 points). The analysis showed that most respondents were in favour of the statement that the work of a pharmacist requires high

responsibility ( $4.83 \pm 0.4$ ) (out of 5 points) and high professionalism ( $4.76 \pm 0.43$ ) (out of 5 points). Pharmacists were less likely to perceive their work as being work that is valued by society ( $3.21 \pm 0.89$ ). Age was related to being interested in the work of a pharmacist This was highest among pharmacists age between 41 and 64 years ( $p < 0.05$ ). About 75% ( $n = 91$ ) of respondents say their workload is high and about a quarter of respondents ( $n = 30$ ) answered their workload is optimal. Analysing respondents' opinion on motivational factors, we can say that all influencing factors are rated quite well. However, pharmacists are most positive about flexible work schedule ( $4.65 \pm 0.24$ ) (out of 5 points) and bonuses ( $4.61 \pm 0.43$ ) (out of 5 points). Demotivating factors for working in a pharmacy were low wages for the majority of respondents (83.5%,  $n = 101$ ). Slightly more than half of the respondents said that they were also demotivated by the lack of appreciation of the profession in society (54.5%,  $n = 66$ ) Almost half of the respondents said that they were demotivated by a poor motivation system (48.8%,  $n = 59$ ). Respondents often ( $3.68 \pm 0.63$ ) felt satisfied with their work, and respondents often ( $3.60 \pm 0.80$ ) (out of 5 points) were preoccupied with their work in such a way that they did not even notice how fast time passed during the working day. It is worth noting that respondents aged 41-64 are statistically significantly more satisfied with their job ( $3.79 \pm 0.68$ ) than respondents aged 22-40 ( $3.56 \pm 0.56$ ) (out of 5 points). More than ninety percent (92%,  $n = 111$ ) of respondents replied that their wages were, in their opinion, too low. A significant relationship was established between the respondents' age ( $\chi^2 = 12,280$ ,  $p = 0,01$ ) and the work experience ( $\chi^2 = 10,747$ ,  $p = 0,03$ ) and the motivation measure evaluation "praise".

### Conclusion & Significance

This study revealed that pharmacists' assistants (pharmacy technicians) have the highest work motivation compared to pharmacists and pharmacists – pharmaceutical activity managers. In this pharmacy chain the work motivation of pharmacists is mostly enhanced when managers apply motivational measures such as flexible work scheduling, award bonuses, enable the combination of studies and work, and supplement to salary. About a majority of pharmacists feel satisfied with their job. According to the respondents, the main factors that increase job satisfaction are good relationships with colleagues and the manager, as well as pride in one's work and evaluation of the respondents' work for the manager. A majority of respondents argued their workload at the pharmacy is too high.

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## **DIAGNOSING AND TREATING ENAMEL HYPOMINERALIZATION: A SURVEY OF LITHUANIAN DENTISTS**

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### **Relevance**

Molar incisor hypomineralization (MIH) is a clinical presentation of enamel hypomineralization of systemic origin that affects one or more first permanent molars and sometimes incisors (Salantri and et al, 2013) The relevance of MIH lies in its still unknown aetiology and clinical presentation that is often confused with other enamel infractions. The purpose of the research was to assess the knowledge of dentists about the MIH and to compare their experiences in diagnosing and treating this medical condition. MIH is also called as hypomineralized first "molars", moth-molar hypomineralization, idiopathic enamel hypomineralization, nonfluoride hypomineralization, demineralized first permanent molars, and even "cheese molars" (Padavala, Sukumaran, 2018; Krishnan, Ramesh, 2014). MIH is recognized as a growing concern for dental practitioners around the world.

MIH is a global dental problem that affects on average one from six children. And with severe hypomineralization, damaged molars are likely to be up to ten times more likely to develop caries. Due to the high prevalence of MIH, children are at increased risk of caries. Further research into better clinical management and ultimately medical prevention is needed and recommended (Hubbard, 2018).

**Keywords:** Molar incisor hypomineralization, treatment, management, MIH, clinical tactic.

### **Methodology**

A questionnaire survey was conducted among 185 dental practitioners. Survey results were analysed by using descriptive statistics, the chi-square ( $\chi^2$ ) statistic, the T-test, and the multiple response analysis.

### **Results**

The survey has shown that only a quarter (26,0 %) of respondent dentists with five or more years of experience feel "very confident" in recognising MIH-affected teeth ( $p < 0,05$ ). The most common treatment method for mild (84,8 %) and moderate (75,5 %) MIH forms is fluoride varnish. In order to treat severe forms of MIH, 57,6 % of the respondent dentists use glass ionomer restoration. Extraction as a MIH-affected teeth treatment method has been chosen by 9,1 % of the respondent dentists devoting less than 30 % of their weekly working time to child patients and by 28,85 % of the respondent dentists devoting more than 30 % of their weekly working time to child patients ( $p < 0,05$ ). 28,6 % of the respondent dentists with 5 or more years of experience have noticed a difference in behaviour of MIH-affected children when compared with child patients who are not affected by this condition, whereas 75,7 % of the respondent dentists with less than 5 years of experience have not noticed such a difference ( $p < 0,05$ ). Behaviour is a problem when working with children with MIH; their behavior raises problems for 71,2 % of the respondent dentists devoting more than 30 % of their weekly working time to child patients ( $p < 0,05$ ).

## **Conclusion & Significance**

The majority of the respondent dentists recognize enamel hypomineralization more often in first rather than second primary molars. The most common treatment methods for the MIH-affected teeth are fluoride varnish, tooth preparation and glass ionomer cement fillings. Mild and moderate MIH forms are usually treated with fluoride varnish whilst severe MIH forms are usually treated with glass ionomer cement fillings. The majority of dentists have not encountered difficulties when using local anaesthesia on MIH-affected teeth. The expertise of dentists' in the field of enamel hypomineralisation is insufficient; there is a lack of knowledge about the particular treatment of MIH-affected teeth.

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## SELF-EFFICACY AND AFFECTING FACTORS IN INDIVIDUALS WITH CARDIOVASCULAR DISEASE

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### Relevance

Cardiovascular Diseases (CVD) is one of the most important health problems in the world; According to the World Health Organization (WHO) report, it ranks first among the causes of mortality and morbidity (WHO, 2020). In CVD, there are disease groups such as ischemic heart disease, cerebro-vascular disease and other heart diseases (Turkish Statistical Institute, 2018). Morbidity and mortality in CVD are combined with modifiable risk factors. Modifiable risk factors need to be managed to reduce morbidity and mortality. Risk factors, on the other hand, can be reduced by lifestyle changes, and the management of risk factors should be lifelong (Soll, Graaf, Bijl, Goessens, & Visseren, 2006). Self-efficacy is an important determinant in controlling risk factors and initiating and maintaining positive health behaviors. The concept of "self-efficacy" has an important place in achieving and adapting lifestyle changes (Fors, Ulin, Cliffordson, & Brink (2015). Self-efficacy is also a key component in the individual management program of CVD (Katch, Mead, 2010). Determining self-efficacy will enable healthcare professionals, behavioral scientists to create specific care and treatment interventions that will increase patients' self-efficacy in certain situations, thus increasing the activities of patients (Kara, Mirici, 2002). This study was carried out to determine the factors affecting self-efficacy and self-efficacy in patients diagnosed with coronary artery disease.

**Keywords:** cardiovascular disease, nurse, self-efficacy.

### Methodology

The study is analytical-cross-sectional. Patients who were hospitalized between 17.07.2017-25.09.2017 in the cardiology services of the university and state hospitals constituted the universe of the study and 170 patients. The data collection form consists of 3 sections and was completed in 15-20 minutes by face-to-face interview method. "Cardiac efficacy scale" was used to determine self-efficacy. The data obtained from the research were analyzed in SPSS 21 package program. Necessary legal permissions and ethics committee approval were obtained to conduct the research.

### Results

49.4% of the participants are aged 65 and over, and 54.1% are men. The average score obtained from the cardiac efficacy scale is  $29.07 \pm 8.67$ . Having a male, married and high school or higher education level is an important factor affecting the functioning subscale score of the cardiac self-efficacy scale ( $p < 0.05$ ). Those who consume alcohol are significantly better than those who do not consume symptoms, exercise and knowledge about the disease is an important factor affecting self-efficacy ( $p < 0.05$ ).

## Conclusions & Significance

Self-efficacy of individuals with cardiovascular disease is moderate. Self-efficacy of men, married, university graduates, exercisers, and those with knowledge of disease is high. They should take initiatives to increase the self-efficacy of patients to all healthcare professionals, especially nurses. Patients should be educated by the disease and risk actors and the necessary lifestyle changes with the disease.

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## **SCHOOL OPPORTUNITIES AND CHALLENGES IN PROMOTING PHYSICAL ACTIVENESS OF PRIMARY SCHOOL LEARNERS: EXPERT APPROACH**

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### **Relevance**

Insufficient physical activeness is increasingly becoming a major public health problem in many developed countries. The advances in technology and the small need for physical activity in modern society are leading to an increase in the level of sedentary lifestyles among children as well (Gao et al, 2018). Outdoor games have been replaced by the physical activities indoors that demand less effort, and more time is spent on the computer or computer games, TV, mobile phones. Live communication has been replaced by communication on social networks or SMS, which does not require spending time in a usual physical space (Grund et al, 2000). When children start school, their daily routine and the nature of their activities change. Instead of active games, children spend a great part of the day at the school desk, and their physical activeness decreases significantly (Morton et al, 2016). Taking into account the fact that children spend about half of their day at school, the school is identified as one of the most important contexts for promoting their physical activeness (Mueller et al, 2015).

The report aims to uncover the opportunities and challenges of the school in promoting physical activeness among primary school learners from experts' perspective.

**Keywords:** physical activity, primary school learners, school.

### **Methodology**

The research data are based on partially structured interviews with experts involved in Physical Activity policy-making at the national level. The interviews aimed to assess the contextual conditions of the school performance; reveal the measures applied by the PA policy to promote children's physical activeness and its dysfunctions; reveal attitudes towards opportunities and problems of the school performance, as well as the role of the family in shaping children's physical activity habits.

### **Results**

The analysis of the data revealed that the ability of a school to promote children's physical activeness depends not only on its internal resources and physical activities organized. It is also modeled on external contextual conditions. The macro factors such as the lack of a long-term strategic goal of the state to promote physical activity; fragmented, inconsistent physical activity policies and measures; inadequately planned implementation and coordination of the programmes related to children's physical activity, and lack of cross-sectoral cooperation pose many challenges for the school. Experts note that in schools, the provisions regarding physical activity are implemented at different levels.

## **Conclusion & Significance**

The competence of the teachers of Physical Education is insufficient; the responsibility of school managers in creating conditions for children's physical education is unsatisfactory; there are no Physical Education teachers in primary schools; the school does not make full use of the opportunities to involve professional athletes and coaches in children's physical education.

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## **MUSCULOSKELETAL PAIN ANALYSIS TO HEALTH UNIVERSITY STUDENTS**

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### **Relevance**

Posture definition in daily activities are among the fields of study in occupational therapy (Leggat et al; 2008, Yucel&Torun, 2016). We planned this general screening study to implement a protective approach of university students in all departments related to health.

**Keywords:** health departments, musculoskeletal pain, university students.

### **Methodology**

This study was conducted on 520 out of 682 first-year students who had musculoskeletal pain problems at the health-related departments in Istanbul university. A mini questionnaire has been formed. For example, if the students had any musculoskeletal pain, they were asked to mark it on the body diagram.

They were also asked to write down any other symptoms accompanying their pain problems and to indicate the methods they used to relieve their pain.

### **Results**

The mean age of the students was  $19.9 \pm 1.2$  (17-26) years. One hundred and thirty one (25.19%) were male and 389 were (74.80%) female. The pain according to the body diagram was seen mostly in the back/waist area with 471 (90.57%) students, and respectively in shoulders 129 (24.8%), in legs 91 (17.5%), arms 40 (7.69%), neck 35 (6.73%), and chest 18 (3.46%). Four hundred and six (78%) students stated that they knew the origin of their pain. Those were respectively; prolonged sitting by bending the trunk forward in the classroom (254 persons, 48.84%), heavy lifting and carrying (184 persons, 35.38%), long stay at the computer work (103 persons, 19.80%), long period of standing (46 persons, 8.84%), doing excessive sports (31 persons, 5.96%), and wrong positions while watching TV (10 persons, 1.92%).

Other symptoms accompanying the pain were, respectively, limitations of movement with 63 (12.11%) students, difficulty in getting out of bed with 54 (10.38%) students, and difficulty in walking with 37 (7.11%) students. In addition, students stated that they prefer to rest mostly to reduce their pain (354 students, 68.07%), and then use painkillers/muscle relaxants at home (85 students, 16.34%), apply traditional methods such as hot application and herbal products (58 students, 11.15%), and go to their family practitioner (4 students, 0.76%).

### **Conclusion & Significance**

Interestingly most of the students had pain and they treat it symptomatically instead of relying on an expert to relieve it. Approaches to prevent pain in students should be considered into account, and education should be given to students to make them aware of what to do as remedial. Once they encounter a symptom, they should consult the appropriate expert to search

the cause. Corrective interventions should be given to the postures while doing activities they are exposed to for a long period of time, especially in the back and waist area.

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## ANALYSIS OF THE RELATIONSHIP BETWEEN ORAL HYGIENE AND ORAL PATHOLOGIES OF FIRST-YEAR STUDENTS OF KAUNAS UNIVERSITY OF APPLIED SCIENCES.

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### Relevance

Preventive dental care and proper oral hygiene prevent oral diseases and dental problems in a timely manner. Systematic professional dental examination and consultation by dentists is an important and reliable prevention of dental pathologies. The result of patients who take good care of oral hygiene is that they do not experience problems caused by tooth decay, gingivitis, tartar, various infections and other pathologies (Drungilienė *et al.*, 2011). Professional oral hygiene should be performed for the prevention of caries, gingivitis, periodontitis and oral mucosal diseases before starting the planned dental treatment, dental filling, prosthetics, implantation, teeth whitening, oral surgery. Professional oral hygiene should be performed for the prevention of caries, gingivitis, periodontitis and oral mucosal diseases before starting the planned dental treatment, dental filling, prosthetics, implantation, teeth whitening, oral surgery (Gaszynska *et al.*, 2014; Rahman *et al.*, 2013).

**Keywords:** dental caries; malocclusion; oral hygiene; oral pathology.

### Methodology

The 24-question student survey questionnaire was prepared and approved by LSMU. Questionnaires questions were provided on the website [www.apklausa.lt](http://www.apklausa.lt).

During 2014-2019 year 125 first-year students of the Oral Hygiene program of Kaunas University of Applied Sciences were interviewed. The survey involved students - future oral hygienists. It is important to investigate what oral pathologies the students themselves had during their final years of school and how they took care of the condition of their mouth and teeth. The investigation was conducted in accordance with the principles of anonymity and confidentiality. The study was conducted in accordance with the 1975 Principles adopted by the Declaration of Helsinki on the ethics of experimentation with humans.

Statistical data analysis was performed using „IBM SPSS Statistics 23“ version and „Microsoft Excel 2016“ statistical program using data descriptive methodology. Percentage survey data were calculated and data summarized.

### Results

The aim of the analysis was to find out and compare the oral and dental care habits and etiology of oral and dental pathology among BH students at Kaunas University of Applied Sciences, Faculty of Medicine. The student's approach to the oral hygiene, the reasons which caused dental and oral diseases were established by questionnaires.

The 6 years study found that part of the students have different dental pathologies. Some students said that they have had problems such as crooked teeth - from 10,0 to 29,0 percent, malocclusion problems - from 30,0 to 53,8 percent, crooked bite - from 27,7 to 48,0 percent.

The data shows that many of the respondents stated that they have had tooth decay (from 60,1 to 77,0 percent), symptoms of hyposalivation (18,0 – 42,0 percent), hypersalivation (5,0 - 18,5 percent), signs of low calcium (12,0 - 20,5 percent), fluorosis (8,0 – 21,0 percent), vitamin C deficiency signs (24,0 – 41,0 percent), so it can be assumed that accumulation of dental plaque and decay developed due to malnutrition, poor oral and dental hygiene.

The data shows that from 81,5 to 96,3 percent of students look after their teeth, brush regularly, only a few do not it. The majority of students (61,5 – 100 percent) knows what kind of toothpaste they uses: from 12,0 to 35,0 percent use fluorided toothpaste, from 31,0 to 54,0 percent - whitening, from 4,0 to 9,2 - reducing tooth sensitivity, from 3,0 to 7,0 percent - choose the other option.

From 21,0 to 41,0 percent of students always use dental floss for teeth interludes to maintain personal oral hygiene, 48,7±5,7 percent use it sometimes, but 46,2±3,8 percent uses mouthwash every day.

18,0 - 46,2 percent of respondents care for nutrition in order not to undermine oral health. As the completed questionnaires have revealed, the majority of students feed healthy, try to avoid eating carbohydrates – 8,0 - 12,3 percent, less sugar – 48,0 - 50,0 percent, do not eat very hot food and do not drink cold drinks – 14,0 - 29,2 percent.

So, many students have had caries. It can be concluded that caries developed due to plaque that accumulated due to malnutrition and poor oral and dental hygiene (Drungilienė *et al.*, 2011; J. Matulionienė 2008).

A large proportion of students have an irregular bite. Most students responded that they have or have had crooked teeth recently.

We found out from the interviewed students that the majority of students take care of their teeth, brush them in the morning and evening, as well as after a meal, only a few of them hardly clean or just forget to brush (Vanagas *et al.*, 2009).

### Conclusion & Significance

The most common oral pathologies in students are tooth decay, irregular occlusion, and crooked teeth. Symptoms of vitamin C, calcium deficiency, or fluorosis are rare among students. The most common causes of oral pathology are unbalanced diet and poor oral and dental hygiene. Most students maintain good oral hygiene by brushing their teeth twice a day, most use dental floss, mouthwash, and visit an oral hygienist for professional oral hygiene.

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## **COMPARISON OF AMBULANCE NURSES AND DAY CLINIC NURSES SLEEP QUALITY**

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### **Relevance**

Sleep is a fundamental human need and one of the key factors in normal metabolism and healthy life style. Moreover, one of the challenges as a nurse will be the lack of sleep and disturb sleep pattern due to the nature of the most working environments that nurses have to work in. As an example, nurses are more likely to suffer lack of sleep and exhaustion than most of the occupations. However, ambulance nurses can be even more likely to suffer from the consequences of night shift and repeated long shift in their schedule.

The relevant studies to this topic had concluded that there are wide range of similar results that have been reached the same results over the key nursing occupation risk factors and the links between this issue and work schedule, frequency of nights shifts and occupational stress.

This study has compared two group of randomly selected nurses sleep and conclude the results of the reach a better understanding about nurse's occupational health and how we can improve the wellbeing of our nurses.

**Keywords:** Nurses health, Sleep quality, occupational health, night shift.

### **Methodology**

A cross-section study was taken by Epworth and Pittsburg test. 20 nurses in two different medical departments (day clinic and emergency medical service) where participated in the study anonymously and voluntarily. In the study the participants were asked to fill out the tests and give data on their sleep quality or possible sleep problems, information of their gender, age, working experience, caffeine consumption, body mass index and work position where also collected.

### **Results**

By analyzing and comparison of the data gathered in this study it concluded that 1 in 3 Ambulance nurses where experiencing moderate to high level of day time sleepiness and exhaustion. Moreover, the results also show that most of the problems where related to the problems link to stress and disturb sleep patterns which had affected higher number of nurses in ambulance than the day clinic, however the day clinic nurse where facing more problems link to sleep quality, problem falling sleep and remain sleep.

### **Conclusion & Significance**

This study highlighted the importance of sleep quality among nurses and the possible hazards and risk it can create which is directly or indirectly link between sleep problems and clinical errors, sensitivity and risk to anxiety disorders and depression.

It is irrelevant to know that a major change at the administration level is needed to solve problem in this nature, working hours, frequency of night shift and duration of shifts are a

major factor in creating a population of nurses and in general healthcare workers who are prone to sleep disturbance and day time fatigue.

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## **EFFECT OF ACUTE EXERCISE ON COGNITIVE PERFORMANCE IN ADOLESCENTS – A ROLE OF CARDIORESPIRATORY FITNESS**

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### **Relevance**

While exercise influences the cognitive functions (Zuniga et al, 2019), school-based exercise intervention is a cost-effective way (Wu et al, 2011) to improve mental health in adolescents. There are findings suggesting cognitive functions to be enhanced with acute exercise at both light (Zuniga et al, 2019) and high (Budde et al, 2012) intensities. However, these mentioned studies analyzed only one type of exercise – aerobic exercise. According to the literature, the motor and cognitive demanding exercises improve the cognitive performance (Koutsandréou et al, 2016). Also, it has been suggested that cardiorespiratory fitness may moderate the cognitive performance (Wenggaard et al, 2017). Thus, this study aimed to compare the acute effect of light and high intensity game-based exercises on cognitive performance and if this effect is influenced by the cardiorespiratory fitness.

**Keywords:** acute intervention, cardiorespiratory fitness, cognition, physical activity.

### **Methodology**

37 adolescents (24 girls and 13 boys; 15–16 years of age) were randomly assigned into three groups: experimental group 1 (EX 1), experimental group 2 (EX 2), and control (CON) group. The Shuttle Run Test was performed a week before the intervention and VO<sub>2</sub>peak was calculated. Cognitive test, Symbol Digit Modalities Test (SDMT), was performed before and after 20 minutes of exercise (light or high intensity). A 2 x 3 repeated-measures ANOVA was used to analyse the SDMT. Pearson's correlation coefficient was used to estimate the relationship between the cognitive performance and cardiorespiratory fitness.

### **Results**

Both experimental groups improved the cognitive performance ( $p < 0.05$ ). There was no relationship between the SDMT test and VO<sub>2</sub>peak neither in light nor vigorous exercise intensity group. Thus, the cardiovascular fitness was not a factor influencing the cognitive performance in adolescents.

### **Conclusion & Significance**

Based on the results, it can be concluded that both light and vigorous intensity acute exercises had a positive effect on cognitive performance in adolescents though it was not influenced by the cardiorespiratory fitness. However, our results support the use of short bouts of exercises at school to improve the cognitive performance and thus mental health.

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## **NURSING ACTIVITY IN NEONATAL PAIN MANAGEMENT**

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### **Relevance**

Newborn infants, requiring intensive care in the hospital experience averagely from 7.5 to 17.3 painful procedures per day (Cruz, MD, Fernandes, AM, Oliveira, CR, 2016). The most common procedures are heel lance, suctioning and venepuncture (Cruz et al, 2016). Repeated painful stimuli cause short-term and long-term outcomes: physiologic, developmental and behavioural (AAP Committee, 2016; Witt, N, Coynor, S, Edwards, C, Bradshaw, H, 2016). It may be challenging for health care specialist to assess pain for premature, critically ill or neurologically disturbed newborn (AAP Committee, 2016). It is recommended to use pain scales for pain assessment. These are: the neonatal infant pain scale (NIPS), the premature infant pain profile (PIPP), neonatal pain, agitation, and sedation scale (N-PAS). For infants, non-verbal young children, and in patients with cognitive impairment the face, legs, activity, crying, and cancelability (FLACC) scale can be used (Witt et al, 2016). The results of studies show, that the scales are not always uses for assessment of neonatal pain (Cruz et al., 2016; Anand et al, 2016; Lim, Y, Godambe, S, 2017). A tiered approach to neonatal pain management, which includes environmental, non-pharmacologic and pharmacologic means is recommended types (AAP Committee, 2016; Lim, Y, Godambe, S, 2017, Witt et al, 2016). The aim of our study was to find out the nurses' knowledge and role in neonatal pain management according to education and experience of the nurse.

**Keywords:** Newborn; nurses activity; pain assessment; pain management.

### **Methodology**

The study took place in the hospitals and maternity homes of city X 2019-11-04 – 2019-12-15 by the anonyms survey of nursing specialists, under the approvals of the heads of all institutions. 120 questionnaires were delivered, 70 questionnaires suitable for analysis were returned. response rate – 58,33 %. Distribution of analysed variables was described in numerical characteristic – percentage frequency. P-values < 0,05 for the differences between variables of analysed groups were interpreted as statistically significant.

### **Results**

The majority of nurses with higher non-university (82.4 %) and university (90.9 %) education and only half (54,8%) of nurses, who received their education in medical school think that pain can cause emotional, behavioural and cognitive disturbances (p=0.009). One fifth (20.0 %) of nursing professionals with the practice experience more than 10 years and nobody with the experience of 5 – 10 and less than 5 years think that pain cause no harm to a newborn (p=0.034).

The study results showed that majority of respondents use PIPP (80.0%) and FLACC (52.9%) scales for the assessment of newborn pain according to their education and experience.

About one tenth (12.5%) of the nurses with 5-10 years of experience indicated COMFORT pain scale for pain assessment, but nobody with the experience of less than 5 or more than 10 years used this scale ( $p=0.031$ ).

The majority of the nurses with less than 5 years' experience (78.6%) and 5-10 years' experience (87.5%) take into account gestational age of newborn while using PIPP scale for pain assessment, but the gestational age of newborn was taken into account only by 47,5 % of the nurses with more than 10 years of experience ( $p=0.008$ ). The major part of the nurses with higher non-university (82.4%) and university (81.8%) education and only one third (38.7%) of the nurses, who received their education in medical school take into account gestational age of a newborn while using PIPP scale for pain assessment ( $p=0.001$ ). Bigger part of nursing professionals with university education (81.8%) in comparison to nurses, who received their education in medical school (51.6%) and higher non-university education (52.9%) use EMLA cream for pain management ( $p=0.049$ ). About one third (30.0%) of the nurses with more than 10 years of experience and nobody with the experience of less than 5 years think that acetaminophen (paracetamol) is not recommended for neonatal pain management ( $p=0.016$ ). Significantly smaller part of the nurses, who received their education in medical school (51.6%) use calm environment and elimination of noise and extraneous sounds for the management of neonatal pain in comparison with the nurses with higher non-university (94,1%) and university (72,7%) education ( $p=0.009$ ).

### Conclusion & Significance

The majority of the nurses with higher non-university and university education and less work experience know the peculiarities of pain assessment using PIPP scale better and use non-pharmacologic modalities for pain management in their clinical practice more often than those with lower-level education and bigger working experience.

There is a lack of knowledge about pain harm to the newborn and means of pain management between the nurses with lower-level of education and more than 10 years of working experience.

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## **RESPONSE SIZE TO CONTINUED SPRINT INTERVAL TRAINING CANNOT BE EXPLAINED BY THE EXERTIONAL LEVEL**

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### **Relevance**

The all-out mode of sprint interval training (SIT) has been identified as one of the most efficient methods for improving aerobic capacity and fitness levels (Helgerud et al, 2007). A big part of the population fails to meet the recommended physical activity guidelines despite the variety of efficient training regimes suggested, including resistance training to improve muscle mass and strength, and endurance training to improve aerobic capacity and reduce the risk of obesity (Dalle Grave et al, 2011). Low levels of adherence to regular physical activity has shifted research toward exercise adherence (Lin et al, 2020). One of the most common explanations for the poor exercise adherence is small improvements in exercise capacity or health markers (Bouchard et al, 2012). Although the positive effects of SIT are well understood, the mechanisms describing the levels of response remain scarcely studied. We aimed to clarify the effects of training exertion on the level of SIT benefits.

**Keywords:** aerobic capacity; anaerobic power; sprint interval training; high responder; low responder

### **Methodology**

The participants were 28 young untrained men (mean  $\pm$  SD age  $25.7 \pm 6.03$  years) who exhibited either a large or small increase in Wingate test average power in response to nine SIT sessions performed over three weeks. All training sessions consisted of four–six bouts of 30 s all-out cycling interspaced with 4 min of rest. Individual responses were evaluated using heart rate (HR) during all exercise sessions. Blood lactate concentration up to 1 h, and the dynamics in maximal voluntary knee extension torque (MVC) up to 24 h after the first and last training sessions were followed. Maximum HR and peak oxygen uptake ( $VO_{2peak}$ ) were recorded before and after training.

### **Results**

Even though all participants benefited from SIT with increased  $VO_{2peak}$ , the increase in anaerobic cycling power varied between participants. We found 17 high responders and nine low responders, whose average power outputs were  $0.80 \pm 0.22$  and  $0.22 \pm 0.19$  W/kg, respectively. Training intensity did not differ between groups in any of the training sessions. Groups did not differ by lactate kinetics and it was not affected by three weeks of training. Both groups showed similar improvement in MVC recovery after training.

### **Conclusion & Significance**

The differences in the responses to SIT cannot be explained by the exertion level during training.

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## THE EFFECT OF REPEATED BOUTS OF FASTING ON BODY MASS AND COMPOSITION. MICE MODEL STUDY

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### Relevance

Caloric restriction and various regimes of fasting are often considered as effective interventions against obesity which has become a major health problem around the world (Varady 2011). Research on fasting has mainly focused on prolonged periods of repeated short cycles of fasting and refeeding, but there is also evidence that a single, but prolonged bout of fasting might improve health in a relatively short period of time (Schöller-Mann et al. 2020). Thus we studied effects of repeated bouts of prolonged fasting and refeeding on body mass and composition. We also studied gene expression in skeletal muscles and liver which are metabolically active components of lean body mass. Despite the benefits of fasting such as improvements in weight, lower prevalence of coronary arteries diseases or diabetes diagnosis and other risk-related outcomes (Horne et al., 2015) there could be risk for health. During fasting the hormonal profile showed low IGF-1 and insulin levels, and elevated IGF-binding protein-1 concentrations (Karbonits et al., 2007). We compared effects of one and eight bouts of 48-h fasting and 120-h refeeding in C57Bl/6J mouse strain which is a popular model of human metabolism.

**Keywords:** fasting, body composition, muscle atrophy, fat accumulation.

### Methodology

The study was performed using 22 weeks old male C57BL/6J mice (n=30) at the animal research facility of the Lithuanian Sports University. Thirty mice were divided into six groups (n=5 each): control (CON1), one bout of 48-hour fasting (FAST1), one bout of fasting and 5-day refeeding (REF1), control before the eighth bout of fasting (CON8), after eight bouts of fasting (FAST8), after eight bouts of fasting and refeeding (REF8).

Body mass of all mice was measured weekly from 14<sup>th</sup> and to 22<sup>nd</sup> week and then before fasting, after fasting and refeeding as appropriate. After sacrifice, hind limb muscles (*gastrocnemius*, *plantaris*, *soleus*, *tibialis anterior* and *extensor digiti longus*), brown (interscapular) and white (gonadal) adipose tissues were dissected, weighed and frozen for later analysis.

Serum IGF-1 levels were determined by ELISA method in a Tecan spectrophotometer following specific commercial assay protocol instructions (Thermo Scientific, Ref. number EMIGF1).

The mRNA levels of p62, Atrogin 1, MuRF1, LC3B, MSTN and GAPDH were assessed using Sybr-green (#4367659, Thermo Fisher Scientific) assay for quantitative PCR (StepOnePlus Real-Time PCR system, Applied Biosystems).

All data represent mean  $\pm$  SD. Statistical analysis was performed on *GraphPad Prism7*. Significance was estimated by analysis of variance Two way ANOVA. The level of significance was set at  $p < 0.05$ .

## Results

There was a tendency for mice to lose more weight during the 8th bout of fasting compared to a single bout of fasting. This was reflected in a tendency for greater loss of muscle mass during the 8th bout (-14.4%) compared to the single bout (-5.0%) as average values suggesting that there.

Group FAST1 lost 4,98% after fasting and had 3,44% deficit of combined muscle mass after refeeding compare to CON1, meanwhile group FAST8 lost 14,44% and had 10,27% deficit of combined muscle mass after refeeding compare to CON8. Only SOL and EDL muscles decreased in mass after eight bout of fasting.

Both groups FAST1 and FAST8 significantly lost amount of gonadal fat after fasting compare to CON1 and CON8 respectively, moreover there was significantly higher amount of gonadal fat in CON8 and FAST8 groups compare to CON1 and FAST1 groups respectively. The amount of brown fat significantly decreased after fasting in both FAST1 and FAST8 groups.

The level of IGF-1 in serum significantly dropped after fasting in both groups FAST1 and FAST8 and did not reach initial level after refeeding, moreover the level of IGF-1 was significantly higher in CON8 group compare to CON1.

The upregulation of Atrogin 1 and MurF1 mRNA in muscle tissue was observed after fasting in both groups FAST1 and FAST8 as well as downregulation to initial level after refeeding period, however MurF1 mRNA level was significantly higher after fasting in FAST8 group compare to FAST1 group. The p62 mRNA expression level in muscle tissue significantly increased only in group FAST8 and reached initial level after refeeding. The expression of LC3b mRNA did not change significantly in both groups after fasting and refeeding. The expression of MSTN mRNA significantly increased in both FAST1 and FAST8 groups after fasting and reached initial level after refeeding period, however MSTN mRNA level was significantly lower in REF8 group after refeeding compare to REF1.

## Conclusion & Significance

Despite the large accumulation of fat there is tendency of muscle wasting induced by repeated bouts of fasting and refeeding. However, there may be too little time for the atrophy genes to activate greater impact.

Increased level of IGF-1 could be key influencer of fat tissue accumulation. That show negative effect to accumulate energy substrates in form of fat, but not changes in metabolism.

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## **SOCIAL MEDIA COMMUNITIES AND HOW THEY CAN BE USED FOR THE SUPPORT OF DIFFERENT HEALTH INITIATIVES WITHIN PHYSICAL ACTIVITY AND SPORTS**

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### **Relevance**

“Widening”, “deepening”, and “diversifying” are well established strategical focuses for audience development within culture, and social media communities play a significant role. In this case a similar approach is applied in a specific project within sports in a Danish municipality (Bollo, Da Milano, Gariboldi, 2017; Schneidermann, 2014; Given, Forcier, Rathi, 2014).

Vejle municipality in Denmark organized social media networks to a) develop a community among local sports talents, b) attract and develop more talents, and c) bring public attention to the talents’ activities and the municipality’s focus on supporting them – also aiming at bringing inspiration from the talents to all citizens. The case analyze prospects and pitfalls in establishing and developing such networks, also including experience from the use of social media within other health enhancing projects and cultural activities.

General challenges in relation to developing and stimulating reach in terms of fans/followers and group members as well as post views and interaction are described, also taking into consideration content creation and stimulating reach and interaction through paid advertising, partly or fully financed by sponsors.

**Keywords:** social media communities, user-generated content, talent development, health enhancing story telling.

### **Methodology**

Case analysis. Data collected from website and social media insights, media coverage registered and an informal qualitative evaluation involving project management and a group among the 70 sports talents directly involved in the case.

### **Results**

Supported by a limited budget the project brought talents together in a social media group, and used workshops in developing and training a group of member ambassadors to inspire and encourage the group community to share their stories on the community’s public social platforms, which grew substantially both in fans, activity and interaction.

### **Conclusion & Significance**

The case demonstrated a perspective in supporting the impact of targeted social media networks through information, training and communication. Showing also the effect of using the social media platforms commercial approach, where a limited budget can stimulate reach and interaction.

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## **CO-CREATIONAL EVENTS AS LEARNING ENVIRONMENTS IN HIGHER EDUCATION**

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### **Relevance**

Co-creation is the joint, collaborative, peer-like process of producing new value (Galvagno & Dalli, 2014). Integration of co-creation and innovation has been studied from technology-driven, customer-driven and service-driven perspectives (Russo-Spena & Mele, 2012).

Co-creation can also be a pedagogical model in higher education, and it can connect students with companies and organizations. The process can comprise, e.g. stages of co-ideation, co-evaluation or co-design (Russo-Spena & Mele, 2012). Saarijärvi et al. (2013) explain the concept of value co-creation. “Value” describes what kind of value is produced and to whom it is produced (Rintamäki et al, 2007). “Co” defines the resources and actors involved and “Creation” defines the process connecting these resources and actors, where value creation is realized. Ramaswamy & Ozcan (2018), in turn, emphasize the interactional nature of value co-creation. According to Roberts et al. (2014), the participant’s motivator can be, e.g. the development process itself; working together with like-minded people; or the opportunity to feel involved in change.

This paper aims at discussing pedagogical events of co-creation carried out in Xamk. The research problem is what kind of experiences of co-creation are in higher education.

**Keywords:** value co-creation, higher education, pedagogy, Symbioosi-project

### **Methodology**

Both quantitative and qualitative data were gathered in four co-creation events in Xamk between October 2019 and June 2020. In all, the data constituted of five surveys for participants with 91 respondents; personal interviews with 18 participants; one survey for facilitators with 14 respondents; observations in three events resulting in 26 pages text; and personal interviews by phone with 3 partners. In addition, a survey of Xamk students yielded 29 responses.

Experiences of co-creation were analysed and interpreted from the data by qualitative content analysis. The analysis is based on four themes: events as pedagogical means, participants’ motivation, benefits for partners and practical arrangements of events.

### **Results**

#### *Experiences of co-creation events as pedagogical tools*

The participants emphasized learning and developing new things as the most important factors for their participation. They learned also brainstorming-type work and ideation, project work, problem solving, creativity and keeping to the schedule. They might have learned in practice how to design a service, make a video, an application or pitch. Mentor feedback and peer feedback during the process facilitate learning. Of particular importance is the student’s own reflection on what has been done and experienced.

#### *Experiences of the participants’ motivation*



The students participated the events either on voluntary base or as part of their study courses. When joining the events voluntarily, the participants were often interested in the subject and theme of the event. They wanted to make something meaningful together and wanted to join interdisciplinary and multicultural groups to gain experiences. If joining the event was obligatory, the attitudes towards the method were often slightly negative. The feedback, however, was mainly positive.

#### *Experiences of the benefits for the partners*

The partners in the events represented various industries. Their expectations were mainly to try new methods for developing ideas, e.g. to get new customer groups or improve services.

The most satisfied partners did put much effort also by themselves.

#### *Experiences of practical arrangements of the events*

A pleasant working environment creates an innovative atmosphere for the students and the enterprise partners. It is important to show that the work of the students is significant and appreciated by the partners and organizers. The group's ideas are presented to the jury in the form of a “sales pitch”, which also requires guidance.

### **Conclusion & significance**

Co-creation skills are already the norm in working life. It is necessary, therefore, for every student to practice this skill in co-creation events during their studies. It seems that voluntary participation in events would produce better learning. The value experience for students could be characterized as both functional and emotional. The value experience for partners seems to be mainly functional, and in the best case they get useful ideas for the development of their business.

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## **CAUSES OF NURSING STUDENTS' STRESS DURING PROFESSIONAL INTERNSHIP**

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### **Relevance**

In the European Union the nursing education consists of 50 percent of theory and 50 percent of practice. Nursing students do internships from the first to the last year of their studies. Research shows that undergraduate students experience anxiety and stress during their professional internships. Stress is harmful for students' personal and professional wellbeing, demotivating for the studies and profession, and may cause poor academic results and elevated burnout level. Stressors may create difficulties in learning practical skills, allow for unexpected mistakes, lack of concentration etc.

Nursing and health care students experience moderate to high stress during internship. The most common causes of students' stress are the performance of technical procedures, the use of new technologies and equipments, new and unexpected clinical situations, uncoordinated relationships with staff, lack of self-confidence, lack of psychological support, organizational aspects of work, patients who are aggressive or in critical condition (Waled, Badria, 2019; Pareira, Caldini, 2014; Kim et al, 2018; Beh, 2012).

**Keywords:** nursing students, internship, stress, causes of stress.

### **Methodology**

For the study a quantitative research method was used. This manuscript focuses on the causes of stress during internships. The research instrument covered the following 4 areas with 27 items of stress causes: 1) work content and clinical situations (requirements for nursing specialist's competencies, functions, tasks, responsibilities, fear of seriously ill or dying patients, fear of infectious diseases); 2) work conditions and organization (work environment, physical conditions; workload, time management, control); 3) relationships (encouragement, conflicts, support, autonomy); 4) external stressors (health policy, professional status in society, demographic situation). Research instrument also included an open question which was aimed to determine the causes of stress during internships.

The research data was processed using the SPSS software (Statistical Package for Social Sciences, version 21.0). Methods used for statistical analysis included descriptive statistics, Cronbach's Alpha, T-test, Anova test, Chi-Square Test. The data obtained from the open question was analysed using the content analysis method.

145 students of the nursing study program were involved in the study. The research sample is targeted, convenient, and relevant to the research context. Participation in study was based on volunteering principles. The anonymity of study participants was ensured.

### **Results**

Stress among nursing students is caused by a variety of factors during the internship. The most common causes of stress in the area „work content and clinical situations“ are: fear of infection from various infectious diseases (80%), changing requirements for the role and

competencies of a nursing specialist (69%), plenty of reports and documents and completion of them (60%), unclear duties and responsibilities (58.6%), severely ill or dying patients (51%).

The most prominent causes of stress in the field “work organization and conditions” during internships are: lack of staff (90.3%), heavy workload (87.5%), urgent execution of unplanned additional work (82.1%), large number of patients (80.7%), lack of nursing remedies and technical equipment (78.6%).

Communication and collaboration during nursing internship are considered to be a particular problem. The most common situations causing students’ stress are related to: arrogant and disrespectful behavior of patients and their relatives (86,9%), gossips among colleagues (77,9%), public critique of colleagues (75,8%), unconstructive feedback on the work being done (73,1%).

Nursing students are also affected by external stressors. These factors are not directly related to internship, but they are important for the prestige and success in the future profession: health care system reforms (75.9%), negative content information in media about health care specialists (68.3%), negative public attitude towards the activities of a nurse (66.9%), demographics indicators, aging population (54.5%).

No statistically significant differences were found indicating that the course of study is related to stress during internship (Anova test,  $p \geq 0.05$ ). Working students are less affected by stress during internships in these dimensions: „communication and collaboration“, „work content and clinical situations“, „work conditions and organization“ ( $p \leq 0,05$ ).

Content analysis showed that the most common causes of stress during nursing students internship time are linked to negative staff attitude towards the student, lack of knowledge and complex clinical situations, difficulties of adaptation at the place of internship, fear of mistakes and students’ distrust of their own strengths.

### **Conclusion & Significance**

The findings demonstrated that nursing students face stress during their internships. The most frequent stressors during the internships are linked to fear of infection from various infectious diseases, complex clinical situations, and also those related to relationships, work organization and conditions areas. External factors, like health care system reforms, social status in society, also have a negative impact on nursing students’ wellbeing.

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## ANTERIOR KNEE PAIN PREVALENCE BETWEEN 15-17 YEARS LITHUANIAN HANDBALL PLAYERS

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### Relevance

The prevalence of overuse injuries among junior male handball players is high, particularly in the knee because anterior knee pain (AKP) is one of the most frequent reasons for young adults to seek consultation for knee conditions (Aasheim et al., 2018; Sanchis-Alfonso V. et al., 2016). The knee overuse injuries incidence occurs from 20 % to 36 % between Norwegian handball players (Aasheim et al., 2018; Clarsen et al., 2014). The pathophysiology of AKP pain is often multifactorial and this disease process often affects a younger, more active patient population (Rothermich et al., 2015). Overall AKP leads to time loss from sport, costs, and long-term potential consequences (Bere T. et al., 2015).

There is no data about the anterior knee pain prevalence between junior male Lithuanian handball players.

Our study aim was to evaluate anterior knee pain prevalence between junior handball players of Klaipėda Handball Club Dragunas during 2019/2020 Lithuanian Men Handball League mid-season.

**Keywords:** Anterior knee pain, junior handball players.

### Methodology

The Kujala Anterior Knee Pain Scale (AKPS) is recognized as a self-report questionnaire to evaluate patellofemoral disorders in active individuals.

AKPS consists of 13 items documenting response to six activities potentially causing knee complaints (walking, running, jumping, climbing stairs, squatting, sitting with bent knees) and associated symptoms such as limitation of range of motion, limping and swelling. The maximum achievable score is 100 points. Lower scores indicate stronger complaints and limitations of the knee (Schorn et al., 2017).

The knee functional outcomes of 10 physically active junior male handball players (15-17 years) of Klaipėda Handball Club Dragunas were evaluated with AKPS during the 2019/2020 Lithuanian Men Handball League mid-season. The mean and median Kujala AKPS questionnaire values of subjects were calculated.

### Results

Junior male handball players' values of the Kujala AKPS questionnaire ranged from 75 to 94 points. Participants' mean value of the AKPS was 87.9 points. The median value of AKPS was 90 points. AKPS data shows that 7 of 10 participants felt "slight and occasional pain" at rest, 1 participant argued that his knee pain interferes sleeping, 1 participant felt constant and severe pain and 1 participant did not feel any knee pain.

Our study results show that most junior male handball players of Klaipėda Handball Club Dragunas had slight and occasional anterior knee pain during 2019/2020 Lithuanian Men Handball League mid-season.

### **Conclusion & Significance**

15-17 years Lithuanian handball players have slight and occasional anterior knee pain by performing dynamic exercises, such as jumps, squats or stairs climbing.

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## **DO WE FEEL PART OF THE INTERPROFESSIONAL COMMUNITY? COMPARING INTERPROFESSIONAL IDENTITY AMONG MEMBERS OF EIGHT DISCIPLINES IN LITHUANIA**

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### **Relevance**

The level of interprofessional identity is closely related with feeling of being the member of interprofessional community. Thus, synchronizing different professional approaches to optimize care and welfare for the same patient or client is not a part of most regular role perceptions (Blaževičienė, Newland, Čivinskienė & Beckstrand, 2017; Grincevičienė, Voločovič & Grincevičius, 2016). Integrating services of different disciplines to optimize joint outcomes needs to be improved (e.g. Blaževičienė et al., 2017; Grincevičienė et al., 2016; Rodger et al., 2010; Bankauskaite & Jakusovaite, 2006). Care and welfare of patients or clients are often organized in a single and multiprofessional way. This does not have to pose a problem as long as separate and unrelated actions and interventions of different professions do not obstruct, endanger or reduce the effectiveness of care and/or welfare for individual patients or clients (Vliet Vlieland & Hazes, 1997). Interprofessional collaboration is required to overcome the shortcomings of single and multiprofessional collaboration (Reinders, 2018; Reinders, Pesut, Brocklehurst, Paans & van der Schans, 2020). A lack of interprofessional collaboration can lead to errors with serious consequences (Grincevičienė et al., 2016). Since identity can moderate the relationship between team diversity and team performance (Mitchell, Parker & Giles, 2011), interprofessional identity should enhance interprofessional collaboration (Reinders, Lycklama À Nijeholt, van Der Schans, & Krijnen, 2020). In Lithuania several studies report findings on professional, but not interprofessional identity (e.g. Stanišauskienė & Edintaitė, 2016; Daukilas, Mičiulienė, Kovalčikienė, Kasperiušienė, 2016; Eidukevičiūtė & Večkienė, 2014; Rimkienė & Žydžiūnaitė, 2013). The aim of this study was to investigate the interprofessional identity among members of eight health care disciplines in Lithuania.

**Keywords:** interprofessional identity, Extended Professional Identity Scale (EPIS), health care professionals.

### **Methodology**

In this study 575 health care students and practitioners from Kaunas University of Applied Sciences took part. The following health care disciplines were included: Nursing and Midwifery, Oral Health, Social Work, Rehabilitation Therapy, Medical Technology, Cosmetology, Pharmacy, and Dietetics. An online as well as hard copy questionnaire has been distributed. In order to investigate the interprofessional identity among these disciplines the adapted EPIS-LT scale has been used. The EPIS-LT scale consists of 12 items. Every item can be ranked from 1 (strongly disagree) to 5 (strongly agree). Data collection started after permission by the Review Board of Kaunas University of Applied Sciences and ended on the

2th of February 2020. Data were analyzed calculating ANOVA with a Bonferroni test to compare differences between all pairs of disciplines. This was performed on the overall index and for each subscale separately.

## Results

The results revealed, that on average, interprofessional beliefs tend to be stronger than interprofessional belonging and interprofessional commitment. Respondents of all disciplines had similar interprofessional identities with the exception of two disciplines: Pharmacy and Dietetics. Pharmacy and Dietetics students and practitioners had a weaker overall interprofessional identity compared to members of other disciplines. However, interprofessional beliefs did not differ among all disciplines. Pharmacy students and practitioners report less interprofessional belonging and interprofessional commitment compared to members of other disciplines. Among Dietetics students and practitioners, only a weaker interprofessional belonging was found compared to those of others.

## Conclusion & Significance

The results show that interprofessional belonging and interprofessional commitment of health care professionals seem weaker than interprofessional beliefs. This means, educational interventions should especially concentrate on enhancing these two weaker dimensions. Even more so, contextual factors and professional identity might explain differences of Pharmacy and Dietetics compared to other disciplines. More research is needed to explore antecedents of interprofessional identity formation and its predictive validity.

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## **THE CONCEPT OF NURSES' PROFESSIONAL AUTONOMY, THE MOTIVES AND BENEFIT OF ITS IMPLEMENTATION**

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### **Relevance**

**Relevance.** Nursing profession is hard, responsible and not appreciated enough by society. Due to the development of nursing science, increasing demand of nursing services and even the Covid-19 pandemic, the job of nurses is becoming more and more respected. Today nurses have the opportunity to get good education, their competencies are constantly increasing, they are delegated with new activities as well as functions, however they are required to be a leader, make their own decisions related to patients' care, take responsibility for their actions, take part in scientific researches and the creation of nursing policies (Greater leadership, autonomy and flexibility predicted for nurse of the future, 2016). Nurses' professional autonomy is the main concept that defines the role of nurses in providing care to patients (Oshodi, 2019), it is gaining in importance. Strategies of nursing autonomy increasement are being created (Weston, 2010), since this gives a real benefit to nurses, patients as well as medical establishments (Rao,2017; Labrague, L. J.,2019).

**Keywords:** nurse, professional autonomy.

### **Methodology**

Methodological analysis of the literature. Comparative analysis. All articles in PROQWEST and EBSCO data bases written by various scientists in the last 20 years, which match the queries 'nurse' and 'autonomy', were analyzed. 147 articles were examined. The majority of articles were rejected because they did not provide full content or only matched one of the queries – usually, the word 'autonomy', whereas the word 'nurse' was used in other context. To implement this research, 21 articles, which in various aspects describe nurses' professional autonomy, were selected. The authors of these articles have created adaptive questionnaires and/or carried out significant researches in the nursing autonomy fields during the last 20 years.

### **Results**

The issue of nursing autonomy has been studied by researchers in many countries over the period of last twenty years – Finn Varjus, Leino-Kilpi; Greeks Papathanassoglou, E. D. E, Iliopoulou K, Pavlakis A.; Japanese Kyoko Asakura and Nariko Kuvano; Americans Ruelens – Trinkaus Donna and authors of other nationalities, who carried out significant researches and presented the results in their articles. No article of this topic written by Lithuanian authors was found in the mentioned databases. From the list of authors, who carried out comprehensive analysis of nursing autonomy researches, Weston, Maria J.R.N., PhD. (2009) could be singled out.

The concept of nursing autonomy is complicated and multifarious, same as nursing activity, so many authors describe it differently (Kyoko Asakura, 2016). For this reason, researches of nursing autonomy usually do not cover all the aspects of nurses' professional

activity. Usually, the fields of nurses' professional autonomy, which authors study, are organizational: how nurses' autonomy interrelates with, for example, job satisfaction, what benefit does it give to organization or nurse. The studied fields can also be clinical: for example, how does autonomy influence nurses' activity, decision making when working in intensive therapy unit, in society and in palliative care, or what is the real benefit of nurses' autonomy to patient care results? Nurses' autonomy definitions, that are found in scientific literature, are very different because autonomy interrelates with many professional, managerial, legal, personal and value subjects, also, because nurses understand autonomy differently and their professional autonomous behavior is different (Oshodi T.O,2019).

Around 70 percent of nurses are autonomous when making decisions (Iliopoulou, 2010). Nursing autonomy is related to risk (Oshodi,T, 2019) and the nurse himself decides if and how much the principles of autonomous behavior should be applied. Nurses' motivation depends on attitude (Motamed-Jahromi M, ir kt. 2015), competence, comprehension, values, trust, mood (Manal M., 2014; Papathanassoglou, E. D. E., 2005; Papathanassoglou, E. D. E., 2017; Ruelens-Trinka, D., 2017), support of doctors, collaboration of nurses (Petersen,P. A., 2017; Weston, M. J., 2010) and other organizational factors (Manal, 2014).

The content of researches depicted in scientific literature usually reveals nurses' professional autonomy benefits to the nurse himself, patient as well as medical establishment where it is applied. It is also underlined that in high quality services providing establishments autonomy is higher (Verkaaik, C. A., 2007).

### **Conclusion & Significance**

Definitions of professional nursing autonomy found in scientific literature are usually short and do not reflect many components provided by scientists: '...ability, power, right, responsibility, control of your work' and others that could be included in the definition of nursing autonomy. Distinguishing phrases of definitions, which form the conception of nurses' professional autonomy, are: the possibility to independently make decisions that excel standard nursing practice, the right and freedom to take action to achieve goals, in order to provide benefit to patient and control your activity.

Nursing autonomy is induced by good working environment, the support of the authority as well as doctors, the absence of bureaucratic barriers that hinder to work according to you competencies, the inducement of trust and mood, constant knowledge gain and learning by making clinical decisions in practice.

Nurses' autonomy boosts the prestige of nursing profession. Organizations that induce nurses' autonomy provide better patient care results and lower patient death rate. In these organizations, work satisfaction of employees is higher, stress is not that common and staff turnover is lower.

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## **LEARNING OF DENTAL HYGIENISTS AND ASSISTANTS: JUSTIFICATION OF COMPETENCES TO LABOR MARKET**

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### **Relevance**

During these times of higher education reform, the inquiry into the labour market becomes the main concern assuring the quality of higher education (Spiriajeviėnė et al., 2019). The students are trained at the Klaipėda State University of Applied Sciences, Faculty of Health Sciences, Department of Oral Care according to the programs of Dental Assistant and Oral Hygiene. A scientific analysis of the relationship between the labour market and the study programs would provide a direction for competence improvement. Competences of graduates should closely correspond to the needs of the current labour market (Berlin et al., 2016; Block, 2013; Pukelis et al., 2012; Raudeliūnienė, 2016; Tamulienė et al., 2016). The aim of the study – to analyze the attitudes of employers and/or social partners towards the agreement between graduates' competences among dental assistant and dental hygiene study programs, and the requirements within the labor market.

**Keywords:** Dental assistant, dental hygienist, competences, labor market.

### **Methodology**

Scientific literature, document analysis and focus group research were conducted to analyze the topic. Qualitative (content) analysis of empirical data was performed (Bryman, 2016; Gaižauskaitė et al., 2016). In employers focus research group participated three men and eight women – eleven people in total. Ten participants of both researches are working in Klaipėda, one – in Kaunas.

### **Results**

Nine categories have been identified in the qualitative analysis of the research of employers, which were subdivided into subcategories. After analyzing the data of qualitative research, the following categories have been distinguished:

1. The basics of professional competence acquired at a higher education institution are developed and improved by working skills (19 statements);
2. Social competence is concentrated in the segment of professional communication with clients and colleagues (19 statements);
3. Prospects for improving general competences (6 statements);
4. The importance of graduates' motivation for the development of their competences – priority value (6 statements);
5. The competence of emotional intelligence is focused on flexibility and adaptation to the doctor (6 statements);
6. Communication and other competences are attributed to continuous competence in life and work without focusing on a specific educational institution (5 statements);
7. Polarity of dental hygiene and dental assisting professions and perspectives for balancing competences (5 statements);

8. Development of new, progressive educational areas and strengthening of relevant competences (4 statements);

9. Need of a discussion of the compliance of graduates' competences with a labor market (7 statements).

The discussion of the participants of the study focuses on the following main subcategories:

Priority for Professional Communication Competence (9 statements);

Need for Practical Skills and Practice Opportunities (6 statements);

The Purpose of Improvement Motivation – the Need for a Permanent Learning Society (4 statements);

Work importance and development of excellence in the team (4 statements).

The formation of all other subcategories was determined by lower concentration of respondents' claims (2–3 statements).

### Conclusion & Significance

Employer research categories focused on the improvement of psychological and professional competences, the importance of graduates motivation, prospects for the realization of other competences.

In the research of employers, most of the claims are applied subcategories relating to the need for communication and practical skills, flexibility and adaptation to the doctor, and motivation for improvement.

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## EFFECT OF METHIONINE RESTRICTION AND HIGH FAT DIET ON MUSCLE HYPERTROPHY AND METABOLIC PROFILE DURING AGEING

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### Relevance

The incidence of loss of muscle function (sarcopenia) during ageing is exacerbated by obesity. Although it has been established that methionine restriction (MR) increases lifespan and lowers inflammation during ageing (Wanders et al., 2018) (Orentreich et al., 1993; Orgeron et al., 2014) little is known about the effect of MR on skeletal muscle during ageing and how it affects the atrophic and hypertrophic response. Therefore, the aim of this study was to assess the effects of MR on skeletal muscle mass, hypertrophy and glucose tolerance in young and old mice fed an obesogenic high-fat diet. To investigate this we studied the effect of MR (10% kCal fat, 0.17% methionine) and MR + high fat diet (HFD) (45% kCal fat, 0.17% methionine) on glucose tolerance, hind limb muscle mass, overload-induced hypertrophy, and denervation-induced atrophy in young and old mice.

**Keywords:** glucose tolerance, Hypertrophy, Methionine restriction, Sarcopenia

### Methodology

All experiments were approved by the Lithuanian Republic Alimentary and Veterinary Public Office (Nr. G2-90 in 2018). Male C57BL/6J mice had free access to water and standard chow until the age of 6 (young-adult mice, n=38) or 22 months (old mice, n=32). They were then sub-divided into control (10% kCal fat, 0.49% methionine), methionine restricted (MR) (10% kCal fat, 0.17% methionine), high fat diet (HFD) (46% kCal fat, 0.61% methionine) and MR+HFD (45% kCal fat, 0.17% methionine) groups. Diets were purchased from Research Diets Inc. (New Brunswick, NJ, USA).

At the age of 8.5 (young) or 25.5 (old) months, compensatory hypertrophy of the right plantaris muscles was induced in all mice by cutting the branches of the *n. Ischiadicus* supplying the *m. gastrocnemius* and *m. soleus* as close to their point of entry to the belly of the muscle and a portion of each branch was removed to prevent reinnervation. Surgery was performed under anaesthesia (isoflurane – 4% and O<sub>2</sub> at 2 L/min until the animal did not respond to foot-pad-pinch and then maintained with 1.5% isoflurane and 1 L/min O<sub>2</sub>) under aseptic conditions. Hypertrophy of the *m. plantaris* was expected 6 weeks post the denervation surgery as observed by Ballak et al., 2016.

One week before the terminal experiment, glucose tolerance was measured. The animals were fasted overnight (16 h) and then subjected to an intraperitoneal injection of glucose (2 g glucose/kg body mass). Blood glucose was measured from samples taken from an incision made in the tail vein before (0 min) and at 15, 30, 60, 90, and 120 min after the injection using a glucometer (Glucocard X-mini plus, Japan).

## Results

Although muscle mass per body mass was lower in old mice compared to the young ( $p < 0.009$ ), the *m. gastrocnemius* and *m. plantaris* mass per body mass were higher in animals fed control, MR and MR+HFD compared to the HFD group ( $p < 0.001$ ), irrespective of age. MR fed mice had greater *m. soleus* mass per body mass compared to the HFD group ( $p = 0.026$ ), irrespective of age. The % atrophy of *m. gastrocnemius* was larger in animals on MR than on a control diet ( $p = 0.009$ ), irrespective of age but diet did not impact the % atrophy of *m. soleus*. Old mice on MR had larger % hypertrophy of *m. plantaris* than control, HFD and MR+HFD groups ( $p < 0.027$ ). Irrespective of age, MR and MR+HFD had significantly better glucose tolerance compared to the control and HFD groups ( $p < 0.003$ ).

## Conclusion & Significance

In conclusion, MR in combination with resistance exercise may be used as an intervention to improve skeletal muscle health and glucose tolerance in sarcopenic obesity.

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## A QUALITY OF LIFE EVALUATION FOR WOMEN WITH CELLULITE

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### Relevance

Cellulite is a multifactorial condition that is present in 80% to 90% of postpubertal women and is one of the most intolerable esthetic imperfections (Sadick, 2019). It is a condition in which the skin appears dimpled, bumpy and "orange peel-like" (Alomairi, 2018). It's caused by changes in the structure of the connective tissues and fat cells that lie underneath the skin's surface (Baryluk, 2017). The following factors are important for the development of cellulite: unbalanced diet, sedentary lifestyle, stress, genetic factors, hormonal imbalances (Wanitphakdeedecha et al., 2015). Cellulite can affect physical beauty of women, negatively impact women's self-esteem, and derogate their quality of life (Bauer et al., 2020). Numerous studies have been conducted to evaluate the effectiveness of various methods in solving this aesthetic problem (Sadick, 2019; Freire et al., 2019). *However, in Lithuania there is comparatively little discussion in the literature of quality of life in this area.*

**The aim** of the study was to evaluate the quality of life of women with cellulite.

**Keywords:** cellulite, quality of life, women.

### Methodology

A quantitative survey was performed; data collection method - written survey, a *validated* questionnaire was used to evaluate the quality of life of women with cellulite according to Hexsel et al. (2011). The study was conducted in Klaipėda Beauty and SPA salons, 2019. 341 women who participated in aesthetic body care procedures at various stages of cellulite were interviewed. The statistical program SPSS 25 was used to analyze the data.

The Cronbach's alpha coefficient was calculated to measure the internal consistency of the ordinal scale. In order to find out how the variables correlate with each other, a statistical method of exploratory factor analysis was used. The variables were measured on a scale and the Spearman's rangular correlation coefficient was calculated to measure the strength of their relationship, and Descriptive statistical analysis was performed. The study followed ethical principles: anonymity, voluntariness, respect and confidentiality.

### Results

The study showed that 20.2% of respondents indicated that this aesthetic problem had a strong impact on their quality of life; 33.4% - the negative impact on the quality of life of the respondents was slightly noticeable; 37% of respondents - cellulite does not affect their quality of life. Cellulite had relatively the greatest negative impact on women's satisfaction with their body appearance and their leisure or physical activities in public places of all the aspects studied. A direct relationship of dependence between factors was observed, with increasing negative influence in one area of life, and increasing in others.



## Conclusion & Significance

The study has shown that for a large proportion of women, cellulite affects their quality of life, with almost one in three women suffer from this aesthetic problem. Holistic strategies are needed in the management of cellulite. New strategies that include education, awareness, health, treatment programs for specific stages of cellulite etc., should be developed.

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## **DENTAL ASSISTANT'S WORK-RELATED STRESS: FIRST-YEAR EXPERIENCE IN DENTAL CLINIC**

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### **Relevance**

Work-related stress is the second work-related health problem in European Union, which affects 28 percent of the EU workforce (Florea & Florea, 2016). Medicine and health care workers have an increased risk to experience work-related stress. This is explained by workload, work requirements, working overtime, responsibility for other people health and life, and stressful communication with patients and it's relatives (Grover, 2018). Work-related stress tends to be extremely high during the first-year of employment because of the "reality shock" caused by the discrepancy between expectations and the reality of the workplace (Kodama, 2017). The analysis of scientific research has showed that the biggest part of research about work-related stress during the first year of employment concentrates on nurses professional field (Kaihlanen et al., 2018; Geun et al., 2018; Bonczek et al., 2016), and occupational therapy specialists (McCombie & Antanavage, 2017). However, research on dental assistants is very limited. A higher level of work-related stress is experienced by younger dental assistants with little work experience (Šatrauskaitė et al., 2014). So far, there exists no data on how work-related stress among dental assistants during the first year of their employment. The aim of this study is to reveal how work-related stress is experienced during the first year of employment among dental assistants.

**Keywords:** dental assistant, work-related stress, first year employment.

### **Methodology**

Qualitative methodology was applied in order to explore how work-related stress is experienced during the first year of employment among dental assistants. Seven dental assistants, who have one-year work experience, took part in the research. Data was collected by using semi-structured interviews, which lasted approximately about 30 minutes. Content analysis was used for the analysis of the research data. The research was carried out in February-April 2020.

### **Results**

Three categories were found associated with work-related stress among dental assistants: relationships, lack of professional knowledge and skills, specifics of dental assistant's work. The category "relationships" consisted the following subcategories: relationship with the doctor, relationships with other colleagues in the dental clinic and integration in the work team. The category "lack of professional knowledge and skills" consisted "the lack of assisting skills to the doctor", "too much theoretical knowledge in curriculum" and "difficulties by applying practical skills, acquired during studies" subcategories. The category "specifics of dental assistant's work consisted following subcategories: "multifunctionality of dental assistant's work" and "high work intensity".

## Conclusion & Significance

The results of the research showed that work-related stress during the first-year employment of the dental assistants is caused by three factors: relationships with colleagues, the lack of professional knowledge and skills and such specifics of dental assistants' work like multifunctionality and high intensity of work. The result of the research can be useful for higher education institutions in order to improve the curriculum of dental assistants and to prepare them better for reality shock during the first-year of employment. The results of the research can be also used by dental clinics in order to make the integration of the first-year dental assistant easier and smoother.

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## **EPIS-LT: DEVELOPMENT OF A LITHUANIAN INSTRUMENT TO MEASURE INTERPROFESSIONAL IDENTITY**

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### **Relevance**

Interprofessional identity becomes an important part of health care specialists' education. Interprofessional identity is, in contrast to professional identity, not limited to a specific multidisciplinary team but applies to feeling a member of an interprofessional network. In order to make the curriculum of health care specialists more interprofessional, instruments for measuring the level of interprofessional identity of practitioners and prospective health care specialists are needed. In March 2018 a new psychological theory on interprofessional identity was published in the *European Journal of Work and Organizational Psychology: the Extended Professional Identity Theory* (Reinders et al., 2018). Based on this theory, a new psychological instrument was developed. This instrument measures interprofessional identity: the Extended Professional Identity Scale (EPIS; Reinders, Lycklama À Nijeholt, Van der Schans, & Krijnen, 2020). Even though this new measurement instrument has robust psychometric properties, its current English version is less useful for Lithuania. In Lithuania professional identity of several disciplines has been investigated, but not interprofessional identity (e.g. Stanišauskienė & Edintaitė, 2016; Daukilas, Mičiulienė, Kovalčikienė, Kasperiušienė, 2016; Eidukevičiūtė & Večkienė, 2014; Rimkienė & Žydžiūnaitė, 2013). The purpose of the following study was to develop a cross-cultural adaptation of the Extended Professional Identity Scale (EPIS) translated into Lithuanian and to investigate the psychometric properties of this new and adapted version: EPIS-LT.

**Keywords:** interprofessional identity, Extended Professional Identity Scale (EPIS), EPIS-LT.

### **Methodology**

The methodology of this study consisted from two stages. During the first stage a cross-cultural adaptation of the Extended Professional Identity Scale (EPIS) was translated into Lithuanian. The guidelines for cross-cultural adaptation of self-reported measures were used to develop the Lithuanian version of the EPIS (Beaton, Bombardier, Guillemin, & Ferraz, 2000). During the second stage, the psychometric properties of this new and adapted version EPIS-LT were investigated. The reliability and construct validity of the EPIS-LT were calculated. An online survey was distributed, to which 575 students and practitioners of health care responded. The research has been carried out at Kaunas University of Applied Sciences. To determine whether the EPIS-LT has a similar construct validity as the original EPIS, a confirmatory factor analysis (CFA) was carried out on all data. Four different goodness-of-fit indexes were calculated. Internal consistency of the subscales and overall EPIS-LT scale were analyzed using a Cronbach's alpha.

## Results

All factor loadings were more than adequate ( $> 0.40$ ; Stevens, 1992) and varied between 0.49 and 0.66. The correlations between the factors (0.52, 0.54 and 0.84) were sufficient for construct validity ( $> 0.50$ ; Cohen, 1988), but not too strong with respect to discriminant validity ( $< 0.85$ ; Hair et al., 2017). All of the goodness-of-fit indexes of the three-factor model met their standard : CFI ( $= 0.938 > 0.90$ ), the RMSEA ( $= 0.077 < 0.08$ ), and the SRMR ( $0.045 \leq 0.08$ ). This is similar to the original EPIS (Reinders et al., 2020a).

The internal consistency of overall 12 item EPIS-LT index was 0.87, with 95% CI 0.86, 0.89 confidence interval. The internal consistency of Interprofessional belonging was 0.76 with a 95% confidence interval between 0.73 and 0.79. For Interprofessional commitment this internal consistency was 0.79 with a 95% confidence interval between 0.76 and 0.82. The internal consistency of the third and final subscale, Interprofessional beliefs, was 0.84 with a 95% confidence interval between 0.82 and 0.86.

## Conclusion & Significance

The original version of EPIS has been successfully adapted to the Lithuanian version, the EPIS-LT. Findings show very high reliability and construct validity. The EPIS-LT can be applied as a measurement instrument for Lithuanian higher education. It's a robust instrument useful for designing, implementing and evaluating interprofessional curricula. Future research in Lithuania is needed in order investigate its predictive validity in both the educational context as well as in practice. Furthermore, it seems the construct as described by the Extended Professional Identity Theory is culturally independent since the EPIS and EPIS-LT are psychometrically similar. However, more research is needed to confirm whether these results also can be replicated in other countries.

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## **CHANGES IN GEOMETRIC SHAPE OF PARENCHYMAL TISSUE DAMAGE IN THE EXPOSURE ZONES AFTER RADIOFREQUENCY ABLATION**

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### **Relevance**

In recent decades, one of the most common non-pharmaceutical treatment methods for patients with dysfunctional tissues has been thermal tissue destruction (Enver et al., 2010). Knowing how tissue damage develops and how different conditions during radiofrequency ablation (RFA) procedure could affect lesion size and geometric shape, would allow proper selection of RFA procedure parameters such as procedure time, power, and concentration of the cooling solution (Vaitiekaitis et al., 2017; Vaitiekaitis et al., 2012). Also, these parameters are important for the safety and efficacy of RFA procedures in clinical practice (McCarty et al., 2018).

**Keywords:** prostate, radiofrequency ablation, RFA, tissue damage

### **Methodology**

An experimental acute study was carried out with 13 healthy non-stock 4-5 years old dogs, their weight was 10-14 kg. Prostate RFA was conducted using a standard 4 mm diameter catheter electrode after electrode insertion to the prostate. The duration of RFA was 30 seconds, ablation power was 40W, the frequency was 500kHz, and the resistance varied from 110 to 210 Ω. The study was carried out in three groups. In the first control group (160 histological sections) (NC) RFA procedure was carried out without cooling solution, in the second group (120 histological sections) (C.O1) – cooling solution – NaCl 0.1 % 20 °C, third group (100 histological sections) (C.09) NC – cooling solution – NaCl 0.9 % 20 °C.

For fixation of bioplates 10 % formalin solution was used. Histological sections (hystotopograms) were 2-3 μm thick and stained using hematoxylin and eosin staining techniques. A total of 380 hystotopograms were evaluated using an automatic video analysis system connected to Olympus BX-40 microscope and processed using computer programs.

To determine the geometric shape of the damaged area, we applied the circle quotient (Q) formula  $Q = P^2/4S$ , where Q is the ratio between two mathematical quantities, S is the area of the circle, and P is the perimeter of the circle. If  $Q=1$ , the geometric shape of the damaged area is a regular circle.

### **Results**

RFA causes different effects on prostate tissues when distancing from the active electrode center. Four effect zones were established according to morphological changes.

Zone I – application zone, zone II – central zone, necrosis zone, zone III – intermediate zone which was split into two sections: 3a – it is in the prostate section limit and 3b – it takes intersection tissue and goes to the parallel section area. Zone IV – inactive, it is formed of common epithelium and stroma.

After the prostate RFA procedure in all three experimental sessions (NC, C.01 and C.0.9) the damaged tissues according to the damage nature and extent were divided into three zones (the third zone was additionally split into a and b), their areas were marked S1, S2, S3a, S3b respectively. The fourth intact zone was not included in area calculations.

Student criterion for separate samples was used to evaluate differences in mean size of damage areas (S) during experimental RFA sessions.

### Conclusion & Significance

It was established that damage areas, perimeters, and geometric shapes in all zones after cooled RFA procedure depend on the cooling solution concentration:

a. The least damaged areas in all zones after the RFA procedure are formed when the ablation electrode is cooled using 0.1 % NaCl solution, and only in zone 3b, the geometric shape is most similar to a regular circle.

b. The damage areas in NC and C.09 sessions differ slightly but in the NC experimental session, the geometric shape is most similar to a regular circle in all damaged tissue zones whereas in the C.09 session the shape of the damaged area is the least similar to a regular circle.

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## **CHANGES IN BLOOD GLUCOSE LEVELS IN HEALTHY AND DIABETIC PEOPLE AFTER CONSUMPTION DRAGEE OF EXTRUDED CORN**

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### **Relevance**

The amount of carbohydrates, their type and fibres are one of the most important aspects of nutrition that controls and maintains stable and balanced blood sugar levels. Onwulata et al. (2010) claim that the extrusion process opens up unlimited possibilities for the creation of new high-fibre foods. According to Fuller et al. (2015); Asgary et al. (2017) nutritional fibres can reduce blood glucose level by slowing down digestion and absorption of carbohydrates. The results of a study conducted by Phanindra et al. (2018) show that a reduction in blood glucose levels has been observed with prolonged use of extruded products. Meynier et al. (2015) found that reducing glycaemic response is crucial for the prevention of metabolic diseases. Goux et al. (2020) found that the greater the slowly digestible starch content, the greater the improvements in postprandial glycaemic response parameters.

A new product by using the extruded grain was produced in the Department of Food Technologies, Kaunas University of Applied Sciences, but the influence of this product on the amount of glucose in the capillary blood is unknown. The aim of research: to ascertain the influence of the dragées candies, made from extruded products, on the amount of glucose in the capillary blood.

**Keywords:** nutrition, blood, glucose, extruded products.

### **Methodology**

A study of glucose levels in capillary blood involved 57 volunteers (23 nondiabetic, 34 diabetic (I type diabetes N 5; II type N 29) aged 18 to 84 years. Participants of the research were asked to arrive in the morning on an empty stomach (not having eaten breakfast or drunk water), without having consumed alcohol a day before, avoiding heavy physical exercises and sweet dishes. Glucose concentration in capillary blood was measured using Bayer's ContourPlus" systems, single-use automatic lancets for puncture of the finger skin in accordance with aseptic rules. After determination of glucose concentration in capillary blood, the participant was given 40 g of the product (No.1 – dragées candies coated with chocolate of 4 % sugar, No. 2 – dragées candies coated with chocolate of 30 % sugar). Subsequently, glucose concentration in capillary blood was measured 5 more times (after 15 min, 30 min, 60 min, 90 min and 120 min) program.

### **Results**

It has been observed that when the non-diabetic participants of the research were given to taste dragées No. 1, their glucose level in capillary blood 15 min after a meal increased to 0.85 mmol/l, followed by a gradual downward curve. After two hours of the consumption of the product, the capillary blood glucose concentration was the same as before the products. In patients with type 1 diabetes, the maximum change in capillary blood glucose was 3 mmol/l

after 30 minutes, after which the change in glucose gradually decreased and 2 hours after use of the product. Capillary blood glucose levels were the same as before the products. In participants with type 2 diabetes, the maximum change in capillary blood glucose was 2.2 mmol/l (after 15 minutes) and after 30 minutes the blood glucose level started to decrease and after 2 hours it was 0.85 mmol/l lower than before use of the products.

When the non-diabetic participants of the research were given to taste dragées No. 2 the maximum change in capillary blood glucose was 1.8 mmol/l (after 30 minutes) and after two hours of the consumption of the product, the capillary blood glucose concentration was the same as before the products. In patients with type 1 diabetes, the maximum change in glucose concentration was 1.75 mmol/l (after 15 minutes) after which the glucose change curve gradually decreased and after 2 hours capillary blood glucose levels were the same as before product consumption. In patients with type 2 diabetes, the maximum change in capillary blood glucose is 2.5 mmol/l (after 30 minutes) and after 2 hours capillary blood glucose levels were the same as before product consumption.

### **Conclusion & Significance**

Consumption of dragées made from extruded corn and dark chocolate does not cause jumps in blood glucose levels in either healthy or diabetic people. Therefore, we can say that this new product is suitable for people with high blood glucose.

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