

# Health, Environment and Sustainable Development: Interdisciplinary Approach HESDIA 2022

ABSTRACT BOOK



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# DETERMINATION AND COMPARISON OF PHENOLIC COMPOUNDS QUANTITY IN HERBAL TEAS OF CAMELLIA SINENSIS L.

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## Relevance

Green tea is one of the oldest types of tea and is made from *Camellia sinensis* L. leaves. This plant belongs to the tea tree Theaceae family, widely distributed in the East, Asian and American regions (ITIS, [www.itis.gov](http://www.itis.gov)). It is known that loose-leaf tea is the freshest and most authentic way to enjoy a drink. Nowadays, people all around the globe consume green tea drink as a way to improve their health, strengthen their immune system and enhance their brain functions (Wang et al., 2021, Mancini et al., 2017). It has been known for a long time green tea's beneficial health effects are highly dependent on the origin and preparation methods.

The present study aimed to evaluate and compare the total phenolic compounds of green tea drink among some available brands in the Lithuanian market.

**Keywords:** green tea, phenolic compounds, whole loose-leaf tea.

## Methodology

The manufacturer's instructions prepared the green tea drinks: whole loose-leaf tea was poured into a glass of hot and/or cool-down water and left to steep for as long as indicated by the manufacturer. The tea drinks were allowed to reach room temperature before the analysis. The total phenolic content was estimated by the colourimetric method using the Folin - Ciocalteu reagent (Alhakmani et al., 2013).

## Results

The green tea drink from the European Union origin demonstrated the highest content of total phenolic followed by the United Kingdom origin and then other origins. The total phenolic content of different origins of tea drinks exhibited the following order: green tea from European Union origin:  $64.92 \pm 0.05$  mg/g –  $137.73 \pm 0.01$  mg/g (steeping time 3 and 5 min at 80°C) > green tea from United Kingdom origin:  $46.63 \pm 0.01$  mg/g (steeping time: 3 min at 100°C) > green tea from Sri Lanka origin:  $10.26 \pm 0.02$  mg/g –  $19.36 \pm 0.03$  mg/g (steeping time 3 and 5 min at 100°C) > green tea from Georgia origin:  $15.94 \pm 0.04$  mg/g (steeping time: 5 min at 90°C) > green tea from Vietnam origin:  $8.08 \pm 0.01$  mg/g –  $10.32 \pm 0.01$  mg/g (steeping time: 3 and 4 min at 90°C) > green tea from China origin:  $6.62 \pm 0.01$  mg/g –  $6.62 \pm 0.01$  (steeping time: 2 and 3 min at 80°C) > green tea from Japan origin:  $5.33 \pm 0.01$  mg/g –  $5.92 \pm 0.01$  (steeping time: 2 and 3 min at 70°C).

## Conclusion & Significance

The study indicated significant differences ( $P < 0.05$ ) in the total phenols of the different brands of tea drinks. The green tea drink from the European Union origin demonstrated the highest content of total phenolic followed by the United Kingdom origin. The lowest content of total phenolic compounds was found in green tea of Japanese origin.

## References

1. Alhakmani, F., Kumar, S., & Khan, S. A. (2013). Estimation of total phenolic content, in-vitro antioxidant and anti-inflammatory activity of flowers of *Moringa oleifera*. *Asian Pacific journal of tropical biomedicine*, 3(8), 623-627. [https://doi.org/10.1016/S2221-1691\(13\)60126-4](https://doi.org/10.1016/S2221-1691(13)60126-4)

2. Mancini, E., Beglinger, C., Drewe, J., Zanchi, D., Lang, U. E., & Borgwardt, S. (2017). Green tea effects on cognition, mood and human brain function: A systematic review. *Phytomedicine*, 34, pp. 26–37). <https://doi.org/10.1016/j.phymed.2017.07.008>
3. Integrated Taxonomic Information System (ITIS). Prieiga per internetą <http://www.itis.gov>
4. Wang, S., Li, Z., Ma, Y., Liu, Y., Lin, C. C., Li, S., Zhan, J., & Ho, C. T. (2021). Immunomodulatory Effects of green tea polyphenols. *Molecules (Basel, Switzerland)*, 26(12), 3755. <https://doi.org/10.3390/molecules26123755>



# EXTRACTION AND CHARACTERIZATION OF DNA FROM *DEMODEX* SPP

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## Relevance

*Demodex* mites are microscopic eight-legged organisms found primarily in the sebaceous and hair follicle glands of a face. There are more than 100 species of *Demodex* mites, many of which are obligatory commensals of mammals, including cats, dogs, sheep, cattle, pigs, goats, deer, bats, rats, and mice. Among many species of *Demodex*, only *Demodex folliculorum* and *Demodex brevis* are found in humans (Lacey et al., 2009 García et al., 2019). A few *Demodex* mites do not cause any symptoms, so they were previously considered non-pathogenic parasites to humans. However, other reports suggest that *Demodex* infestation is a critical factor in many eye diseases, such as blepharitis, conjunctivitis, and rosacea (Huang et al., 2021). These mites are tiny and transparent, which makes them invisible to the naked eye, but under the microscope, their structure is clearly visible. The most important weaknesses of morphological characterization are lack of sensitivity to identify mix-infestation of the simultaneous presence of *D. folliculorum* and *D. brevis* and complexity in the characterization of similar but not the same mites. Molecular techniques can reveal interesting results in subspecies grouping and the mix-infection (Daneshparvar et al., 2017).

**Keywords:** *Demodex*, mites, *Demodex folliculorum*, *Demodex brevis*, eye diseases.

## Methodology

During the study, 62 mites were collected from 15 patients who complained of eye redness, abundant crusting around the eyelashes, and eye itching. Mites were collected by pulling out eyelashes and placing them on a microscope slide. Tick species were identified based on morphological criteria. Genomic DNA from *Demodex* mites was extracted using three different DNA extraction methods. Two PCR analyses were made to assess the molecular identification of mites and the prevalence of pathogens in them. PCR products were resolved through electrophoresis on 1.5% agarose gel with ethidium bromide and visualized under UV light. PCR products of all positive samples were extracted from agarose gel and purified using the GeneJET™ Gel Extraction Kit (Thermo Fisher Scientific, Lithuania). The obtained sequences were edited using the MegaX software package (Kumar et al., 2018) and aligned with each other and with the previously published sequences in GenBank using the ClustalW multiple alignment option and BLASTn.

## Results

Morphological analysis showed that *D. folliculorum* mites were present in all samples examined. *D. brevis* and *D. folliculorum* were detected in only one sample. Mites from each patient were grouped in pools. A total of 15 sample pools (between 5 and 10 mites per pool) DNA from mites was extracted using three different DNA extraction methods (column method, genomic DNA purification kit (Thermo Fisher Scientific, Lithuania), and modified DNA purification kit). The best DNA extraction results were obtained with the column method. The DNA concentration varied between 0.6 - 6.9 ng/μl. *Demodex* spp. molecular identification was performed by PCR using a specific 16Sf and 16Sr primer set to amplify the 16S rRNA gene fragment (390 bp), adapted for *Dermacentor reticulatus* tick identification (Kloch et al., 2017). However, the results did not show positive results, and it is necessary to search for new primers for the molecular identification of *Demodex* mites.

Specific primers 27F and 515R, which amplifies 16S rRNA gene fragment, was used to detect bacteria in *Demodex* mites. A total of two good-quality 16S rRNA gene sequences derived from *Demodex* mites were analyzed. The 16S rRNA sequences obtained from two *Demodex* mites were 100% identical to each other and were 100% identical to the 16S rRNA sequence of *Achromobacter* sp. detected in a soybean sample from Japan (GenBank: LC529453), *Achromobacter xylosoxidans* sequence isolated from pine wood from South Korea (GenBank: MH67165), *Achromobacter marplatensis* (GenBank: MT645251) in mountain plants from Peru, and *Achromobacter delevi* (GenBank: MT271878) isolated from pharmaceutical water from Colombia.

### Conclusion & Significance

Microscopy analyses revealed *D. folliculorum* mite species in all eyelash samples and both mite species in only one sample. The best DNA concentrations of *Demodex* spp. mites were obtained using the column method. *Achromobacter* spp. bacteria was detected in *Demodex* mites samples. According to the authors, this is the first molecular detect bacteriacterial in *Demodex* mites collected from patients in Lithuania.

### References

1. Daneshparvar A, Mowlavi G, Mirjalali H, Hajjarian H, Mobedi I, Naddaf SR, Shidfar M, Sadat Makki M. (2017). Molecular Characterization and Analysis of 16S Ribosomal DNA in Some Isolates of *Demodex folicullorum*. *Iran J Parasitol*;12(2):224-229.
2. Lacey N, Kavanagh K, Tseng SC. (2009). Under the lash: *Demodex* mites in human diseases. *Biochem (Lond)*;31(4):2-6.
3. García VM, Vargas GV, Cornuy M M, and Torres PA. (2019). *Demodicosis ocular: una revisión*. *Archivos de la Sociedad Española de Oftalmología.*; 94(7), 316-322.
4. Huang C, Chen S, Fu S, Li Y, Li Z, Li S, Liang X, Wang Z, Wang Z, Chen Y, Deng Q, Yi G, Fu M. A. (2021). Survey on How Ocular Surface Demodex Infestation Interactively Associates with Diabetes Mellitus and Dry Eye Disease. *Acta Parasitol.*;66(3):1039-1047.

# DIGITAL REHABILITATION THROUGH AN INTERDISCIPLINARY APPROACH: THE DIRENE PROJECT

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## Relevance

The global need for rehabilitation is increasing due to population ageing and increases in chronic health conditions, among other causes (World Health Organization, 2022). Therefore, the need for cost-effective services and solutions for rehabilitation is evident. Digital Rehabilitation (DR) competence and practice are needed to build the resilience of future rehabilitation systems in a global context. The project “Competences for the new era of user-driven digital rehabilitation” (DIRENE) addresses the emerging challenges highlighted, especially during the COVID-19 pandemic and the need for the development of DR through higher education. The DIRENE consortium developed a definition of DR based on the literature (World Health Organization, 2022; Shoneye et al., 2020) “Digital Rehabilitation is defined as the use of digital technologies as part of the rehabilitation process in its different phases. Digital Rehabilitation aims to optimize functioning and reduce disability of individuals in interaction with their environment. Therefore, DR has a strong link with the empowerment of individuals and communities.” This project aims to contribute towards the resilience of rehabilitation systems through developing DR competencies of teachers, students and working life professionals. The project’s objectives are 1) to develop knowledge in DR for teachers and students of higher education and health and 2) to increase the learning opportunities in DR through theory and evidence-based practice.

**Keywords:** digital rehabilitation, DIRENE, health professionals, health science students, higher education, interdisciplinarity.

## Methodology

DIRENE is a two-year Erasmus+ funded project (2020-1-FI01-KA226-HE-092634) which includes four Intellectual Outputs (IO). The project started in the spring of 2021 and will be completed in the spring of 2023. Currently, the first three IOs have been completed. The project consortium consists of five Higher Education Institutions (HEIs), EU partners (Austria, Finland-coordinator, Germany, Greece, Spain) and associated partners from Africa. During IO1, a literature review of rehabilitation studies and focus groups of DR experts was conducted. Data were analyzed and utilized to develop Discussion papers. In IO2, a Framework of the knowledge gaps and continuous learning needs among the teachers, trainers, students and workforce related to the use of digital technologies in rehabilitation was developed based on findings from focus groups with experts and students. In IO3, an Open Pedagogical Handbook on Mobile Education and Training of DR Competences was developed based on findings from focus groups and Delphi consent. During IO4, previous IOs' findings will be utilized to design and pilot a mobile-based learning study module.

## **Results**

Project's expected results are 1) Participant teachers and rehabilitation experts will improve and update their professional and pedagogical competences. Teachers will enhance their international and cultural skills, social skills and digitalization skills; they will deepen their knowledge of the tools and techniques available to develop education and update their skills during times of uncertainty, e.g. COVID-19. 2) University students will develop their digital and professional competences and learn about various opportunities in rehabilitation and the applicability of competences according to various client groups and needs. 3) Health professionals will gain new knowledge on the possibilities of digitalization in their everyday work. They will improve their digital and professional competences and the ability to apply and implement new technologies to the rehabilitation processes based on person-centred needs. 4) Partner HEIs (EU and Africa) will enhance the quality and excellence of their higher education, will be able to provide highly competitive education and develop rehabilitation curricula through digitalization by utilizing the international network. 5) Clients in rehabilitation will benefit from the new knowledge developed in DR processes, as they will gain better access to DR and care that is client-centred and further opportunities to engage in individual rehabilitation processes via digital solutions. 6) Rehabilitation service providers will gain information and tools to easily develop their services and tools. 7) Developers of DR solutions gain new insights on users' needs and possible implementation barriers and challenges.

## **Conclusion & Significance**

The project will provide valuable insights for a global discussion on DR and is expected to lead to many new initiatives to improve rehabilitation globally and contribute to higher education. The outcomes of the DIRENE project will be available as open-access materials for every interested stakeholder, which can be found on the following website: [www.jamk.fi/direne](http://www.jamk.fi/direne).

## **References**

1. WHO - World Health Organization. (2022). Rehabilitation: Key facts. Available from: <https://www.who.int/news-room/fact-sheets/detail/rehabilitation> Retrieved on: June 4th, 2022.
2. Shoneye, C.L., Mullan, B., Begley, A., Pollard, C.M., Jancey, J. & Kerr, D.A. (2020). Design and Development of a Digital Weight Management Intervention (ToDAY): Qualitative Study. *JMIR Mhealth Uhealth*, 8(9), e17919. doi: 10.2196/17919

# SENSORY INTEGRATION DYSFUNCTION IN CHILDREN WITH DISABILITIES FROM PARENTS' PERSPECTIVE

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## Relevance

Sensory integration is “a neurological process that organizes sensation from one's body and the environment and allows the body to function effectively in the environment” (Ayes, 1979). Research shows that sensory integration disorders can be observed as one of the symptoms of a child's developmental disorder (Kane, 2013). Among children without developmental disorders, the prevalence of sensory integration disorders is 10-55 per cent, and among children with developmental disorders, from 40 to 88 per cent (Kane, 2013). Impaired sensory integration manifests inadequate reactions to sensory stimuli and unusual behavioural responses. Disorders of sensory integration lead to difficulties in the child's independence, learning, communication, self-regulation, and adaptation.

Regarding the reasons for the disorder, the exact causes of the sensory integration dysfunction have not been determined. Sensory integration disorders are often observed in premature babies, children with cerebral palsy, autism, and other developmental delay disorders (Ayyash, Barrett, & Ogundele, 2012; Barakat, Elmenawy, & Abdelazeim, 2021). The earlier changes in sensory integration are noticed, the sooner sensory integration corrections can be initiated.

**Keywords:** behaviour, children with disabilities, sensory integration.

## Methodology

Quantitative research was used to conduct the investigation – a survey by compiling a questionnaire for parents raising preschool-age children with developmental disabilities. The questionnaire collected general data about the child (age, gender, educational institution, hobbies, usual behavioural features, living environment) and the diagnosis of his developmental disorder by interviewing the parents. Winnie Dunn's Short Sensory Profile questionnaire and characteristic statements used in Olga Bogdashina's Sensory Profile tool were used to formulate questionnaire statements. The questionnaire was distributed on social networks.

## Results

Seventy-five parents or carers of children with developmental disabilities participated in the survey. Parents described 59 boys and 16 girls who participated in the study. The age distribution is fairly even, with a maximum of 23% answered for children aged 4 to 5 years and 21% aged 3 to 4 years. According to the medical diagnosis of children's developmental disorders, the study collected the most data on Autism spectrum disorders (39.19% of the respondents), mixed specific developmental disorders (36.49%), and 5.41% for Down's syndrome. The informants who answered the most characteristic expressions of children's behaviour (30.23%) indicated that the child is gentle, affectionate, tend to communicate, and smiles a lot. The second most popular characteristic behaviour trait (18.60%) is the child may suddenly stop the activity with a scream, run away from the place of activity, or throw things. 18.28% of the parents/carers who participated in the study answered that the child behaves impulsively; if he doesn't like something, he can hit, bite, spit, or similar.

## Conclusion & Significance

Impaired sensory integration manifests inadequate reactions to sensory stimuli and unusual behaviour; impaired sensory integration manifests as inappropriate responses to sensory stimuli and

unusual behaviour. Children can: act impulsively; if they don't like something, hit, bite, spit, etc.; act aggressively both towards others and towards themselves; make repetitive movements (flapping hands) or very suddenly stop the activity and run away from the place of activity; throw things. The highest level of sensory integration dysfunction, which is manifested in strong behavioural reactions, is characteristic of children with autism spectrum disorders, which include all eight sensory systems, especially pronounced hypersensitivity to taste and sound, touch, and the desire for constant movement and visual stimuli. Children with mixed-specific developmental disorders demonstrate proprioceptive integration challenges and sensitivity to sound. Children with Down syndrome have increased sensitivity to the tactile system and the pursuit of visual stimuli. Children with attention deficit hyperactivity disorder (ADHD) show vestibular sensory seeking. Individuals with cerebral palsy mainly have problems processing vestibular and proprioceptive sensory information.

### References

1. Ayres, A.J. (1979). *Sensory Integration and the Child*. Western Psychological Services; Los Angeles, CA, USA: *Sensory integration therapy*; p. 135-156.
2. Kane, A. E. (2013). *Sensory modulation disorder: Impact on coping and occupational performance*. Virginia Commonwealth University.
3. Ayyash, H. F., Barrett, E., & Ogundele, M. (2012). 243 Sensory Processing of Children with Autism: Uniting Evidence and Practice. *Archives of Disease in Childhood*, 97(Suppl 2), A70-A71.
4. Barakat, M. K. A., Elmenyawy, G. H., & Abdelazeim, F. H. (2021). Sensory systems processing in children with spastic cerebral palsy: a pilot study. *Bulletin of Faculty of Physical Therapy*, 26(1), 1-10.

# PRINTED FOOD: A PERSONALIZED NUTRITION OPPORTUNITY

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## Relevance

Multiple factors, such as climate change, the COVID-19 pandemic, and the increase in energy costs, affect production, distribution, and consumption in the food sector (Noort et al., 2020; Tomašević et al., 2021). These changes are causing inadequate access to healthy food or a poor diet (Derossi et al., 2021; Pulatsu et al., 2021). This situation has been raising the awareness of accessibility and affordability of healthy food. Printing food technology could be an attractive nutrition opportunity to provide the recommended nutritional requirements.

**Keywords:** Printing food technology, snacks, healthy food, personalized nutrition.

## Methodology

This research presents a review and analysis of the application of food printing technology with the aim of creating fruit/vegetable-based snacks.

## Results

Fruit/vegetable-based snacks using printing food technology are presented as an alternative to healthy food to provide the recommended nutritional requirements. This “new food” could maximize the nutritional composition of different fruits and vegetables to personalize an individual's nutrition and energy requirements. Some additional advantages of using this technology are reducing multiple steps in food production, simplifying the distribution of food supply chains, and reducing food waste.

## Conclusion & Significance

Printing food technology offers to food industry a new possibility for personalized nutrition to provide healthy food. This technology is still under development, but it offers a new way to produce, distribute, store, and consume nutritious food. A major challenge in the next years will be to develop meals using printing technology to personalize nutrition.

## References

1. Noort, M. W. J., & van Bommel, K. (2020). Tap to Select: Fully Personalized Printed Food: Advances in 3D food printers provide real opportunity for flavour, texture and nutritional content customization. *World of Food Ingredients*, 26-28.
2. Tomašević, I., Putnik, P., Valjak, F., Pavlić, B., Šojić, B., Markovinović, A. B., & Kovačević, D. B. (2021). 3D printing as novel tool for fruit-based functional food production. *Current Opinion in Food Science*, 41, 138-145.
3. Derossi, A., Bhandari, B., van Bommel, K., Noort, M., & Severini, C. (2021). Could 3D food printing help to improve the food supply chain resilience against disruptions such as caused by pandemic crises? *International Journal of Food Science & Technology*, 56(9), 4338-4355.
4. Pulatsu, E., & Lin, M. (2021). A review on customizing edible food materials into 3D printable inks: Approaches and strategies. *Trends in Food Science & Technology*, 107, 68.

# PERSONAL AND PROFESSIONAL GROWTH – MULTI-PROFESSIONAL AND MULTICULTURAL LEARNING EXPERIENCE

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## Relevance

The education of young professionals is not just a matter of classroom learning anymore. Living in a global society creates a need to explore learning opportunities consisting of multicultural as well as multi-professional components. Therefore it is important to study the impact multicultural and multi-professional learning environments have on future professionals' professional and personal growth. The learning experience in such a setting is not widely studied in Lithuania, and scientific attention to the importance of personal growth in relation to professional development should be increased. This study aims to disclose how professional development and personal growth is influenced by learning experience during international multi-professional short-term courses. Learning courses like this are relatively new phenomena but are extremely popular among students of higher education institutions, so it's worthwhile to gain a deeper understanding of the benefits and shortcomings.

**Keywords:** Learning experience, multicultural, multi-professional, personal growth, professional development

## Methodology

The research was conducted by content analysis of reflective essays prepared after the intensive international multidisciplinary course. Participants were 22 social work, midwifery, landscape architecture and pharmacy students from 5 countries. The participants gave consent to use their essays for research purposes and were informed that they could withdraw from the research at any step. Participants submitted their reflective essays using Google forms with restricted access, and no personal data was collected unless necessary for withdrawal from the research. Researchers acknowledge the limitations of the study due to some main reasons: linguistic competence (English) of the participants and lack of skills in preparing high-quality reflective essays due to different educational profiles.

## Results

The content analysis of reflective essays allows to analyse personal and professional growth of the participants using four main categories.

Participants agreed that they all went through a learning experience. The learning experience in this context is the activity which, due to its' cognitive-emotional impact, is recognized by the participants as being especially relevant (González-Ceballos et al., 2021). The category was divided into subcategories: Content related learning and Confirming previous knowledge/ beliefs. Some of the participants experienced growth of contextual knowledge <... I learned how gardening could be a therapy, a fun hobby or an activity for the community to feel more united and do something good for the city...> R.12. Others recognize it as an opportunity to expand their knowledge <...Green care is familiar for me from the other studies. So urban gardening in this form, meaning Green Care, was not so well known to me. In light of all this, everything was new for me somehow...> R.4

Emotional experiences are ubiquitous in nature and important and perhaps even critical in academic settings, as emotion modulates virtually every aspect of cognition (Tyng et al., 2017). Thus the second category is the emotional response. Emotions comprise complex interactions of subjective



feelings as well as physiological and behavioural responses; therefore, three subcategories could be deduced from individual experiences: positive, negative and mixed feelings. Complications in group interaction and different levels of contextual knowledge mainly triggered negative and mixed emotional responses.

Phillips (2008) asserts that professional development may take many forms, but whatever the delivery method, the major consideration should be how relevant the instruction is. Following such a reasoning third category – Impact on professional development was found containing two subcategories: development of area-specific knowledge/ skills and increase of multi-professional cooperation. Both areas supplement each other and create a great learning experience <...Each new experience complements the knowledge and develops specific skills; in my opinion, professions as unconventional as a garden planner and social worker is a real explosive experience...> R.15

Jain, Chaya & Apple, Daniel (2015) points out that self-growth refers to a lifelong process to improve one's performance, requiring sensitive listening and collaboration skills. The fourth category - Impact on personal growth, emerges with two subcategories: personality traits and multicultural awareness. Participants agree that they have experienced changes in their attitudes and beliefs, and it has increased their multicultural awareness <...This course will definitely support my personal growth and development due to the fact I had to work for a week in an international team with people from different professional fields. It was a bit challenging – speaking in a different language, trying to find something common with my teammates so we could effectively work towards the project, respecting everyone's opinion and in the end, making something we all were happy with...> R.13

### **Conclusion & Significance**

The learning experience during a short-term multidisciplinary international course is overall positive. Multidisciplinary and multicultural “learning ecology” (Barron, 2004) creates opportunities to gain new knowledge and experience many positive emotions and might boost professional development and the growth of personality. However, it also has drawbacks – some information might be repetitive, personal interaction not so smooth as expected and stressful. Responsibility to create a great learning experience lies primarily on teachers – discussing the content and process of the course in detail and preparing the students well in advance could be major factors in achieving success.

Research creates an evidence-based background for the development of international multidisciplinary courses, stresses the benefits and highlights the limitations of such a learning experience. The study reveals the importance of the preparation for similar courses and the role of the developing teachers.

### **References**

1. Barron, B. (2004). Learning ecologies for technological fluency in a technology-rich community. *J. Educ. Com. Res.* 31, 1–37. doi: 10.2190/1n20-vv12-4rb5-33va
2. González-Ceballos I, Palma M, Serra JM and Esteban-Guitart M (2021) Meaningful Learning Experiences in Everyday Life During Pandemics. A Qualitative Study. *Front. Psychol.* 12:670886. doi: 10.3389/fpsyg.2021.670886
3. Jain, Chaya & Apple, Daniel. (2015). What is Self-Growth?. *International Journal of Process Education.* 7. 41-52.
4. Phillips, P. (2008). Professional Development as a Critical Component of Continuing Teacher Quality. *Australian Journal of Teacher Education,* 33(1). <http://dx.doi.org/10.14221/ajte.2008v33n1.3>
5. Tyng CM, Amin HU, Saad MNM and Malik AS (2017) The Influences of Emotion on Learning and Memory. *Front. Psychol.* 8:1454. doi: 10.3389/fpsyg.2017.01454

# PAIN MANAGEMENT IN PRESCHOOL CHILDREN IN PRIMARY CARE

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## Relevance

Pain is a common reason for a child to visit a medical institution (Villacres, Chumpitazi, 2018). It is an unpleasant emotional and sensory experience related to or similar to actual or potential tissue damage (Raja, 2020). Pain should be assessed and treated during primary care visits. Inadequate alleviation of procedural pain in children affects children's experience, and their parents and Chad et al. (2018) indicate that in a study involving 1024 children, as many as 63% of children are afraid of needles. In some cases, this phobia in children has caused parents to postpone vaccinations or visits to the doctor (Chad, 2018). By order of the Ministry of Health of the Republic of Lithuania on the approval of the calendar of preventive vaccinations for children of the Republic of Lithuania, a child must receive 13 intramuscular vaccines up to the age of one and a half. Therefore, the relief of pain caused by the procedures is a particularly important aspect. Medication-free pain relief methods can be used for pain relief (Raja, 2020). Management of procedural pain and anxiety in children is often inadequate (Villacres, Chumpitazi, 2018). The purpose of this study was to reveal pain management in preschool children in primary care.

**Keywords:** nonpharmacological methods, nurse, pain relief, parent's opinion, preschool children.

## Methodology

A quantitative study was conducted using two methods of data collection: survey and observation. The results are interpreted as a numerical percentage. The survey was conducted in order to find out the attitude of parents/carers and their opinion about the activities of nurses in managing the pain of preschool children, using a questionnaire prepared by the authors. The observation was carried out to reveal nurses' activities in managing pain in preschool children. During the observation, the observer observed and evaluated the nurse's pain relief while performing procedures on the child. The study included nurses working in family clinics A, B and C who agreed to participate in the study and performed nursing procedures for preschool children and parents raising a preschool child who agreed to participate in the study and visited family clinics A, B and C during the study. One hundred fifty parents/carers participated, and 150 nursing procedures performed on children were observed.

## Results

Analyzing the results of the survey, it became clear that the majority (83.0%, n=124) of the survey participants indicated that the nurse greeted and introduced himself, explained what procedure would be performed (68.0%, n=102), what tools he would use (58.7%, n=88). Most of the respondents (74.7%, n=112) said that before the procedure, the nurse diverted the child's attention from the upcoming painful procedure by conversation (74.7%, n=112), stickers with cartoon characters (62.7%, n=94), toys (52.7 per cent, n=79), balloon - glove (41.3%, n=62). The parents/carers who participated in the study indicated that the nurse assessed the child's pain during the procedure (48.0%, n=72), talked to the child in a friendly manner (86.7%, n=130), showed a video or a game on the phone during the procedure (44.0%, n=66), gave a booklet (43.3%, n=65). About a fifth (21.7%, n=31) of parents/carers stated that the child did not feel any pain during the procedure (0 – no pain), about a third (34.0%, n=51) stated that the child experienced mild pain (1-3 points), about a fifth (22.0%, n=33) - moderate intensity (4-5 points), severe pain (6-8 points) (18.7%, n=28). More than

half (53.3%, n=80) of parents/caregivers said that they recognize the child's pain from crying, screaming, yelling, about a third recognizes it from the child's tension (31.3%, n=47), kicking (26.7%, n=40). The majority (82.0%, n=123) of those who participated in the survey indicated that the methods used by the nurse helped to alleviate the pain felt by the child.

During the observations, when registering the activities of nurses in clinical practice in the management of children's pain, it was found that in the majority (75.3%, n=113) of observed cases, the nurse introduced himself by name, introduced the parents and the child to the procedure (56.7%, n=85), introduced the tools used for the procedure (58.7%, n=88). Before the procedure, to divert the child's attention from the upcoming painful procedure, the nurse used the patch "friend" (24.0%, n=36) method, almost a fifth (18.7%, n=28) used a toy, communication (18.0%, n=27). In practice, the nurse interviewed the child in a polite and friendly manner during the procedure in the majority (97.3%, n=146) of the observed cases, but in almost all (95.3%, n=143) cases, pain assessment scales were not used. During the procedure, the nurse directed the child's attention, talked to the child in a friendly and cheerful manner (97.3%, n=146), gave a toy (25.3%, n=38), and a "friend" patch (29.3%, n=44). In the majority of observed cases, after the procedure, the nurse rewarded the child with a candy (74.7%, n=112) and, in almost a third, a sticker (43.3%, n=65).

### **Conclusion & Significance**

1. Most of the respondents said that before the procedure, the nurse used a conversation, stickers with cartoon characters, toys, and a balloon glove to divert the child's attention from the upcoming painful procedure. In the opinion of the majority of parents/carers, the nurse usually uses the following methods to relieve the pain caused by the procedure: a conversation, a video or a game on the phone, or a book; about half of the parents said that the nurse assessed the child's pain. Parents/caregivers rated the child's pain with 1-3 points; the child's pain was recognized by crying, screaming, and howling.

2. In clinical practice, before the procedure, the nurse most often used the patch "friend" method, a toy, and communication to direct the child's attention. Almost all observed cases did not use pain assessment scales. To reduce the pain caused by nursing procedures, the nurse's most common non-drug relief methods are conversation, patch "friend", and a toy. In practice, after the procedure, the nurse rewarded the child with candy and a sticker.

### **References**

1. Villacres S, Chumpitazi C.E. (2018). Acute Pediatric Pain Management in the Primary Care Office. *Pediatr Ann.* 1;47(3):e124-e129. doi: 10.3928/19382359-20180222-01.
2. Raja, S.N., Carr, D.B., Cohen, M., Finnerup, N.B., Flor, H., Gibson, S., ... Vader, K. (2020). The revised International Association for the Study of Pain definition of pain: concepts, challenges, and compromises. *Pain*, 161(9), 1976-1982. doi: 10.1097/j.pain.0000000000001939.
3. Chad, R., Emaan, S., & Jillian, O. (2018). Effect of virtual reality headset for pediatric fear and pain distraction during immunization. *Pain Management*, 8(3), 175–179. doi:10.2217/pmt-2017-0040
4. Dėl Lietuvos Respublikos vaikų profilaktinių skiepimų kalendoriaus patvirtinimo (2018 m. rugpjūčio 29 d. Nr. V-955). (2018). TAR, Nr. 13606.

# IMPLEMENTATION OF CERVICAL CANCER PREVENTION POLICY

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## Relevance

Cervical cancer is the fourth most common cancer in women worldwide and the second most common in the European Union. Only in Europe in 2018, 61,000 new cases and 25,000 deaths were reported despite the fact that cervical cancer is preventable when detected in its precancerous state. On 2018 May 19, WHO's Director-General issued a call for action to reduce cervical cancer and called for services to be integrated into strong health systems to ensure universal health coverage. Many European countries have implemented organized cervical screening, and about 70 per cent of EU citizens have the opportunity to participate in an organized programme. Their success is clear: in countries with an organized screening programme, morbidity and mortality have decreased by up to 70 per cent. Nevertheless, cervical cancer is still common and even increasing in several Central and Eastern European countries. Other parts of Europe are also reporting increasing incidence. For example, cervical cancer rates have increased by 15 to 30 per cent in the past decade in the Netherlands, Sweden, and the UK. In Lithuania, the number of cases of cervical cancer is increasing every year, and the mortality rate from this disease is one of the highest in Europe. Although the government is increasing funding for a cervical cancer prevention programme each year, the incidence and mortality rates from cervical cancer in Lithuania are the highest in Europe.

**Keywords:** cervical cancer, increasing cervical cancer cases, morbidity, mortality.

## Methodology

Literature and scientific articles related to cervical cancer, preventive measures and their financing were reviewed. Analyzing previous years' literature sources on cervical cancer policy in Lithuania, several master theses analyzed the opinions and personal experiences of family doctors in carrying out a cervical cancer prevention programme and comparing the attitudes of younger and older family doctors working in the public and private health care sectors to this preventive programme. Another work analyzes the management of the cervical cancer prevention programme in the context of Lithuanian protection policy, reviewing the cervical cancer prevention programme, its management and improvement.

## Results

Cervical cancer is the second most common cancer in women in the European Union, and its incidence is disproportionately high in developing countries. Effective primary (HPV vaccination) and secondary prevention methods (screening and treating precancerous lesions) can help prevent many cases of cervical cancer.

The Cervical Cancer Control Programme is designed to help reduce cancer incidence and improve quality of life. In Lithuania, the cervical cancer prevention programme has been implemented since 2004. Until 2004 the incidence of invasive cancer was quite high. When the implementation of the cervical cancer prevention programme was started, it was noticed every year that there was an increase in the number of cases where it was possible to identify certain precancerous changes or non-invasive cervical cancer.

The COVID-19 pandemic has significantly impacted the prevalence of cervical cancer and the development of later stages of cervical cancer. Delayed treatment increases the incidence of cervical

cancer. Self-collection of a cervical smear as an alternative screening method during a pandemic reduces patient-to-provider contact and the risk of COVID-19 contagion.

### **Conclusion & Significance**

There are 2 main ways to prevent cervical cancer: HPV vaccination to prevent infections in younger women and the detection of carcinogenic HPV in older women. Increasing morbidity and mortality highlights the need for more effective implementation of preventive measures to prevent cervical cancer from becoming a public health problem.

### **References**

1. European Commission, Cervical Cancer burden in EU – 27, Cervical Cancer factsheet (2021), <[https://ecis.jrc.ec.europa.eu/pdf/factsheets/cervical\\_cancer\\_en-Nov\\_2021.pdf](https://ecis.jrc.ec.europa.eu/pdf/factsheets/cervical_cancer_en-Nov_2021.pdf)>
2. HPV Information Centre, Europe: Human Papillomavirus and Related Diseases Report (2021), <<https://hpvcentre.net/statistics/reports/XEX.pdf>>
3. Edoardo Colzani, Kari Johansen, Helen Johnson, Lucia Pastore Celentano (2021). NIH, National Library of Medicine, National Center for Biotechnology Information, Human papillomavirus vaccination in the European Union/European Economic Area and globally: a moral dilemma, <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8728487/>>
4. P.J.Maver, M.Poljak (2020). Science Direct, Clinical Microbiology and Infection, Primary HPV-based cervical cancer screening in Europe: implementation status, challenges and future plans, <https://www.sciencedirect.com/science/article/pii/S1198743X19304914>

# FEATURES OF THE USE OF COSMETIC PRODUCTS AMONG WOMEN

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## Relevance

Over the last century, rapid improvements in technology and science have enabled the cosmetic market to expand. As new methods and materials are being discovered and applied to create new cosmetic products, the cosmetics industry has expanded globally and in Europe (Wang, 20210). To survive in the large cosmetics market, it is important for cosmetics companies to keep an eye on marketing trends, customers' needs and requirements, as well as to be aware of the most common aesthetic problems faced by consumers, and in particular by the largest group of consumers: women (Zhang, & Duan, 2018; Palilingan et al., 2021). This research aimed to assess the use of cosmetic products among women of different ages. The main objective was to find out and compare the views of women aged between 18-30 and 31 to 66 on their cosmetic consumption habits.

**Keywords:** woman, cosmetic products, cosmetic consumption habits.

## Methodology

A written questionnaire consisting of fifteen (15) closed-ended questions, with one or more multiple-choice questions, was used. The study involved 200 women of different ages. 18-31 yrs – 100 respondents, 31-45 yrs – 40 respondents, 46-55 yrs. – 31 respondents, 56-65 yrs – 19 respondents, over 60 yrs – 10 respondents. The study was open to all women, regardless of their skin type or condition.

## Results

A large proportion of women aged 18-30 use cosmetics responsibly and are interested in their ingredients and effects. But a significant proportion of women in this age group do not pay attention to many aspects of safe cosmetic use. Key mistakes include not paying attention to the expiry date of products, not testing the product before buying and not checking them. Older women are less likely to be interested in the composition and effectiveness of cosmetics. In the age group of 31 and 55, women still buy cosmetics in specialized stores by price, composition, and properties.

In contrast, from the age of 56 and over, women mainly buy cosmetics in supermarkets, and the price and various promotions influence their choice. The number of products used daily decreases with age. After 66, only shampoo, shower gel and face cream remain in regular use, and products are purchased only a few times every six months.

## Conclusion & Significance

Younger women aged 18-30 use cosmetics responsibly and are interested in their ingredients and effects. Older women are less likely to be interested in the composition and effectiveness of cosmetics; the price and various promotions influence their choices.

## References

1. Palilingan, L. N., Pangemanan, S. S., & Wangke, S. J. (2021). The influence of product review and source credibility by beauty vloggers on consumer buying decisions of local cosmetic

products in Manado. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 9(3), 1848-1857.

2. Wang, J. (2021). Construction of Reverse Logistics Evaluation System in Cosmetics Industry. *Converter*, 2021(7), 402-407.
3. Zhang, S., & Duan, E. (2018). Fighting against skin ageing: the way from bench to bedside. *Cell transplantation*, 27(5), 729-738.

# INCORPORATING EXPERIENTIAL EDUCATION METHODS IN THE PROVISION OF ASSISTANCE TO REFUGEES

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## Relevance

Modern social work is inseparable from providing timely assistance to vulnerable target groups. Forced migrants, refugees - are among them. In the last decade, there have been a number of “hot spots” in the world - Syria, Yemen, Afghanistan, and Belarus - causing an influx of forced migrants. Increasingly, migrants and refugees are becoming not only exclusive but daily clients of social assistance in various countries of the world, including European countries. The war in Ukraine has further highlighted this trend. And even those countries like Lithuania did not have a large number of forced migrants before now have to organize targeted social assistance for them. According to the state data of the Migration Department, in 2022 (January), 72.539 foreigners received temporary residence permits in Lithuania. This number increased significantly after the war in Ukraine - currently, more than 50.000 Ukrainians have been granted asylum in Lithuania. All of these people are forced migrants who need professional social assistance. Well-trained social workers with intercultural communication skills and knowledge are necessary to provide professional help. Therefore, adequate training of social workers to work with this target group is essential for the successful integration of forced migrants. Experts recommend that such training of social workers should be carried out using experiential training methods.

**Keywords:** experiential training method; refugees and forced migrants, students, integration.

## Methodology

The authors present empirical research that took place in 3 stages. In the first stage, the psychodiagnostics of estimating the communicational preferences of participants were performed before participating in the experiential education programme. In the second stage, participants from both target groups participated in an experiential education programme. In the third stage, the psychodiagnostics of intercultural communication of the study participants after their participation in the experiential education programme were performed. Characteristics of the participants: according to the two-way process of integration, two study groups were selected: representatives of the local community – students of social work at Kaunas University of Applied Sciences, participating in the programme as volunteers (N=10); and forced migrants, living in Jonava, Kaunas municipalities and participating in the programme (N=10). Age of the participants: 20 – 45. Nationality characteristics of the participants – Lithuanians, Afghans, Syrians, Chechen. The methods of analysis: a) observation under controlled conditions and in the presence of observation; b) psychodiagnostics technique of estimating communicational preferences of participants and analyzing their reflections. The process of analysis: research process was divided into several stages. The first stage was to assess the communicational preferences of participants before the start of the activities. The second stage was to monitor experiential education and social participation activities in the local community. The third stage was to repeat the psychological evaluation and analyze the participants’ reflections.

## Results

After analyzing the study results, it should be noted that before the start of the activities, most of the participants in both groups had the middle level of common communicative tolerance (N=6 in the students’ group and N=5 in the forced migrants’ group). It shows a common approach to other



people and general preferences caused by their own experiences, values and attitudes. Similar results showed situational and professional communicative tolerance to specific persons or workers. But the typical communicative tolerance level showing preferences about such groups as immigrants, disabled people, and different nationalities – was low. Five students of social work (N=5) and seven forced migrants were identified (N=7) as having negative preferences and ethnical stereotypes. After participation in the programme, the level of common communicative tolerance increased (N=9 in the students' group and N=8 in the forced migrants' group). The general preferences of participants became more positive. It should be noted that the experiential education programme impact identified in the typical communicative tolerance after a new experience of direct cross-cultural communication, participation in joint local community activities, and multicultural education negative attitudes and ethnic stereotypes of participants decreased. The majority of students noted that participating in the experiential education programme influenced their values reevaluation and provisions' change (), minimized some fears and ethnical stereotypes and improved their intercultural communication skills.

### **Conclusion & Significance**

The results of the empirical research revealed that preparing future social workers (students) to work with forced migrants using experiential education methods can be quite effective in seeking better integration of forced migrants. Integration is a problematic two-way process. That's why it's so important to prepare not only incoming migrants but also to prepare the local host community. We should especially prepare specialists who provide help to forced migrants. Social workers often become the "key persons" who educate forced migrants to acquire new social skills that are important in the host society, provide information relevant to integration, and consult them. All of these functions are difficult to perform without proper preparation. That's why the authors highlight the necessity of experiential education for social work students. The results of the comparison of empirical research suggest that experiential education positively impacts communicative preferences, develops multicultural communication skills, and positively influences future social workers' preparation and the forced migrants' integration process.

### **References**

1. Gurova T., Godvadas P. (2015). Patyriminio ugdymo metodo veiksmingumas dirbant su socialiai pažeidžiamais jaunais žmonėmis. *Socialinis darbas. Patirtis ir metodai*. Vol. no 15(1), p. 97-118.
2. Štuopytė E., Demidenko V. (2021). Kitataučių integracija: patirtinio mokymo metodinės rekomendacijos. *Spaudvita*.

# OCCUPATIONAL THERAPY ACCESSIBILITY FOR THE ELDERLY IN DIFFERENT COUNTRIES

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## Relevance

Based on researchers' insights (Cristea et al., 2020), demographic changes are increasing the number of elderly people worldwide. Population ageing is one of the most pressing public health problems. The growing number of elderly people requires services for the prevention, treatment, care and nursing of their diseases development of care and nursing services. Occupational therapists are important members of the healthcare team in long-term care homes. Occupational therapy's unique scope of practice and skill set is particularly relevant to clients whose functional capacity is typically declining and whose barriers to functioning are due to the common multiple chronic and progressive illnesses they live with (Ontario Society of Occupational Therapists, 2015). Other researchers point to a loss of independence or excessive burden on carers as a cause of institutionalization, mainly in people with dementia and neuropsychiatric symptoms (NPS) (Manni et al., 2018).

**Keywords:** accessibility, elderly, foreign countries, occupational therapy.

## Methodology

An anonymous questionnaire based on scientific literature and a questionnaire to assess the daily activities was used to collect data, which was prepared in electronic form in Lithuanian, English, Portuguese, and German and distributed in the care home. The survey questionnaire aimed to assess: the sociodemographic characteristics of the participants, problems of independence for older people, the opinion of care home staff on the importance of occupational therapists' services in the development of older people's independence skills and the views of care home staff on occupational therapy services availability of occupational therapy for elderly people. The study involved 67 employees working in care homes for the elderly in Lithuania and abroad. 41 participants were from Lithuania, 2 from Germany, 2 from Norway, 9 from Portugal and 13 were from the United Kingdom.

## Results

The survey results showed that when comparing the opinions of Lithuanian and foreign care home workers, the problems of elderly people are similar. There were the same impairment problems in daily living activities in each country. The study showed that occupational therapy services improve the performance of elderly people in their daily activities. Still, occupational therapy services are more accessible to elderly people living in care homes abroad. 69.20 % of the respondents who work in foreign care homes answered that occupational therapist services are available in their institutions, while in Lithuania, only 36.60 % answered that occupational therapist services are available in their institutions.

## Conclusion & Significance

The independence problems of elderly people living in care homes are similar when comparing Lithuanian and foreign experiences. The most problems with independence were observed when eating, going to the toilet, getting dressed and bathing. Most care home staff in Lithuania and abroad believe that providing occupational therapy services improves the performance of daily living activities for older people. Elderly people living in care homes abroad have more access to occupational therapists than those living in Lithuania.

## References

1. Cristea, M., Noja, G. G., Stefea, P., & Sala, A. L. (2020). The impact of population ageing and public health support on EU labour markets. *International journal of environmental research and public health*, *17*(4), 1439.
2. Manni, B., Federzoni, L., Lanzoni, A., Garzetta, G., Graff, M., & Fabbo, A. (2018). Occupational therapy in special respite care: a new multi-component model for challenging behaviour in people with dementia. *Geriatric Care*, *4*(3).
3. Ontario Society of Occupational Therapists. 2015. "Occupational Therapy in Ontario Long Term Care Homes: Strategies to Achieve Capacity to Meet Resident Needs." (March): 11–18.

# DYNAMICS OF EXCESS MORTALITY IN EUROPE DURING THE COVID-19 PANDEMIC

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## Relevance

In recent years, various crises have occurred in the world, such as natural disasters, economic and social crises or epidemics, but the coronavirus (SARS-CoV-2 virus) pandemic is the first in 100 years which has so strongly changed the whole world (Maison et al., 2021). On 2020 March 11, the World Health Organization (WHO) declared COVID-19 a global pandemic (The World Health Organization, 2020). A situation like the outbreak of the COVID-19 infection has quickly become the biggest challenge and a major global problem. The entire healthcare system and its staff have significantly contributed to managing this situation. At the beginning of the COVID-19 pandemic, when the situation was rapidly changing, there were no clear operational models or well-established good practices that would teach how to properly respond to the crisis to ensure the organization of healthcare services (Bourdin et al., 2022).

According to the Lithuanian Statistics Department (2021), the COVID-19 pandemic and the disrupted availability of healthcare services negatively impacted the country's death statistics, as significant excess mortality was observed throughout the pandemic. Therefore, after the end of the pandemic, it is very important to pay special attention and prepare in advance for emergencies and, analyse the lessons learned the experience gained and not repeat the mistakes in the future if the world or the country is hit by another pandemic (Eurostat, 2022; Lithuanian Statistics Department, 2021).

**Keywords:** Covid-19, excess mortality, morbidity, pandemic.

## Methodology

The study was conducted in January 2022. The method of this research is the analysis of scientific literature and analysis of data presented in databases. Analysed data provided by World health organization (WHO) reports on COVID-19, Eurostat statistics, Lithuanian statistics department data, European institute of health and sustainable development statistics and scientific publications. The collected data were processed by the Excel 365 programme of the Microsoft office software package.

## Results

Currently, there are almost 610 million recorded COVID-19 cases worldwide, and the COVID-19 disease has caused more than 6,5 million deaths (Worldometer, 2022). Statistics provided by various Lithuanian institutions reveal that during the COVID-19 pandemic, the availability of personal healthcare services in both inpatient and outpatient settings has decreased, which is likely to result in the occurrence of delayed disease cases and an increase in the population's incidence of various diseases, mortality and morbidity. By summing the weekly and monthly excess deaths since the start of the pandemic, the "cumulative excess deaths" is calculated. The cumulative number of excess deaths since the beginning of the pandemic indicates the total number of lives lost to the pandemic or the depth of the health crisis. The change in the total number of deaths since the pandemic's beginning shows the pandemic's dynamics. More than 15.500 people have died in Lithuania since the start of the COVID pandemic compared to the number of deaths in 2019, and the number of lost lives grew every month from the beginning of the pandemic (March 2020) until the end of 2021. The growing number of lost lives means that the health crisis caused by the pandemic

was not contained in either 2020 or 2021. In October, November, and December of 2021, the cumulative number of excess deaths grew faster than in the first quarters of the same year, which means that the crisis peaked at the end of 2021. Lithuania is among the countries where the excess number of deaths in most months was higher than the European average (European institute of health and sustainable development, 2022). To sum up, it can be said that since the pandemic's beginning, more deaths have been registered in Lithuania every month than in the corresponding months of 2019. Since the beginning of the pandemic, more than 15.500 people have died in Lithuania compared to the number of deaths in 2019. The number of lost lives has also increased every month since the beginning of the pandemic, from March 2020 until the end of 2021. In Lithuania, the number of excess mortality in January 2020 compared to the 2016-2019 mortality data was negative (-12.4 per cent). Since then, the number of excess deaths in Lithuania has begun to increase. In April 2020, the Lithuanian average was 2.4 per cent, and the highest peak in the number of excess deaths in Lithuania was in December 2021.

During the peak of the first wave of the pandemic, higher mortality by 25% was recorded in the European Union countries than in previous years. The excess mortality subsequently decreased between May and July and increased again between August and September, when the second wave of the pandemic relaunched in some countries. Eurostat announced that the excess mortality in Europe was 8% in August and September, increased to 18% in October, and peaked in November at 41%. In December, the excess of deaths in the European Union was reduced to 30%. According to Eurostat, although excess mortality was seen throughout most of the year, the peak and intensity of outbreaks varied across countries. The worst situation in Lithuania, unlike in many European countries, was last December. Eurostat announced that in terms of excess deaths by that time, Lithuania was the third (77.5%), and only Slovenia (78.6%) and Liechtenstein (109.5%) surpassed it (Eurostat, 2022).

### **Conclusion & Significance**

Since the beginning of the pandemic, more deaths have been registered in Lithuania every month than it was registered in the corresponding months of 2019. Since the beginning of the pandemic, more than 15.500 people have died in Lithuania compared to the number of deaths in 2019. The number of lost lives has also increased every month since the pandemic began (March 2020) until the end of 2021.

The rapid increase in the excess number of deaths after the start of the COVID-19 pandemic was also noticeable throughout the European Union. Half a million more Europeans than usual died last year. During the peak of the first wave of the pandemic, a higher mortality rate was recorded by a quarter compared to previous years in the countries of the European Union. The excess mortality decreased between May and July and increased again between August and September when the second pandemic wave began in some countries. In August and September, excess mortality in Europe was 8 per cent, which increased to 18 per cent in October and peaked in November, reaching 41 per cent. In December, the excess of deaths in the European Union was reduced to 30 per cent.

### **References**

1. Bourdin, A., Dotta-Celio, J., Niquille, A. & Berger, J. (2022). Response to the first wave of the COVID-19 pandemic in the community pharmacy of a University Center for Primary Care and Public Health. *Research in Social and Administrative Pharmacy*, 18(4), 2706–2710. <https://doi.org/10.1016/j.sapharm.2021.06.010>
2. European institute of health and sustainable development. (2022). *COVID-19. A preliminary estimate of excess deaths in two pandemic years*. <https://eihsd.eu/covid-19-preliminarus-dvieju-pandemijos-metu-perteklinio-mirciu-skaiciaus-ivertinimas/>
3. Eurostat. (2022). *Excess mortality - statistics*. [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess\\_mortality\\_-\\_statistics#Excess\\_mortality\\_in\\_the\\_European\\_Union\\_between\\_January\\_2020\\_and\\_April\\_2021](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Excess_mortality_-_statistics#Excess_mortality_in_the_European_Union_between_January_2020_and_April_2021)

4. Maison, D., Jaworska, D., Adamczyk, D. & Affeltowicz, D. (2021). The challenges arising from the COVID-19 pandemic and the way people deal with them. A qualitative longitudinal study. *PLoS ONE*, 16(10 October), 1–17. <https://doi.org/10.1371/journal.pone.0258133>
5. World health organization. (2020). *COVID-19*. Retrieved June 25, 2022, from <https://covid19.who.int/>
6. Lithuanian statistics department. (2021). *State benefits*.
7. Worldometer. (2022). *Coronavirus Cases*. <https://www.worldometers.info/coronavirus/>

# THE ASSESSMENT OF FIXED-DOSE MEDICINE PRESCRIBING PRACTICE IN LATVIA

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## Relevance

Cardiovascular diseases are the leading cause of mortality (Williams et al., 2018). Adherence to medication among patients with arterial hypertension in Latvia was rated as low (45.9% nonadherence) (Gavrilova et al., 2021). Reducing the number of pills by fixed-dose combinations (FDC) to simplify the drug regimen is endorsed by ESC/ESH guidelines for arterial hypertension management. These combinations should contain drug classes such as angiotensin-converting enzyme inhibitors (ACEIs), angiotensin receptor blockers (ARBs), calcium channel blockers (CCBs) or diuretics, which are safe and effective in treating hypertension. In addition, beta-blockers (BBs) are considered at any treatment step with a specific indication of resistant hypertension, heart failure, angina, postmyocardial infarction, atrial fibrillation and pregnancy (Williams et al., 2018, DiPette et al., 2019). Because of their wide use in practice and availability as a monocomponent and FDC medication on the market, bisoprolol or/and perindopril prescriptions were selected as the analysed study cohort in this study [State Agency of Medicines Republic of Latvia Medicinal Product Register of Latvia, 2022, State Agency of Medicine Republic of Latvia *Statistics on Medicines Consumption, 2018*].

This study aimed to examine and compare the prescribing practice for bisoprolol or/and perindopril and their combination containing reimbursed medicine in two periods (from 1 April 2018 to 31 March 2019 and from 1 April 2020 to 31 March 2021).

**Keywords:** eHealth, electronic prescription, fixed-dose combination, FDC, prescribing.

## Methodology

This retrospective study was performed using the Latvian National Health Service electronic prescription database. All bisoprolol or/and perindopril and their combination prescriptions for arterial hypertension (I10) with reimbursement from 1 April 2018 to 31 March 2019 and from 1 April 2020 to 31 March 2021 were analysed. All reimbursed paper prescriptions data were credited to the NHS prescription database after medicine dispensing at pharmacies. All dispensed medicine prescriptions (paper and electronic) with financial compensation from the government were analysed. Prescribed with reimbursement but not purchased medicine prescriptions data were not obtained due to system limitations. All received records were anonymous and encrypted, which is why reversible identification was impossible.

Each prescription included the following information: patients' data (age, gender and residence area), information related to the prescribed drug (marketing authorisation number, brand name or international nonproprietary name (INN), derivate INN for brand names, dose and information about physician's speciality and workplace location), and dispensed drug (marketing authorisation number, brand name, derivate INN and dose). Statistical data analysis was performed by applying R 4.1.2. programme.

## Results

In the subgroup of bisoprolol or/and perindopril prescriptions for arterial hypertension treatment, male patients' age was  $68.3 \pm 12.5$  years. The ratio of prescriptions for females was higher

(64.8% and 62.6%) than for males in both periods. Family doctors prescribed medicines most often (95.7%), followed by internists in 1.2% and cardiologists in 0.6% of cases. Physicians prescribed FDC medicine containing bisoprolol or/and perindopril in 60.8% of prescriptions during the first period and 66.5% during the second period ( $p < 0.001$ ,  $\phi = 0.059$ ). A significant difference in FDC medicine-prescribing frequency was recorded between younger (<80 years) and elderly patients, in which monocomponent medications were prescribed in 33.9% vs 45.6% of cases ( $p < 0.001$ ,  $\phi = 0.097$ ). Nonetheless, FDC medicines were recommended more commonly than mono components for all age groups. The most popular (22.2%) FDC was ACEI with diuretics, namely perindopril/indapamide. Also, there was a trend of a growing proportion of FDCs containing three active substances, which increased from 17.8% to 23.2%.

### Conclusion & Significance

This study demonstrated relatively high (66.5%) FDC medicine use for arterial hypertension treatment, conceivably because Latvia has a relatively high penetration rate of generics in the market (Kulikovska et al., 2019). Moreover, more varying dosages and new combinations have become available, for example, FDCs with HMG-CoA reductase inhibitors. In general, FDC medicine prescribing was more favoured, which aligned with the ESC/ESH guideline recommendations.

### References

1. DiPette, D.J.; Skeete, J.; Ridley, E.; Campbell, N.R.C.; Lopez-Jaramillo, P.; Kishore, S.P.; Jaffe, M.G.; Coca, A.; Townsend, R.R.; Ordunez, P. Fixed-dose combination pharmacologic therapy to improve hypertension control worldwide: Clinical perspective and policy implications. *J. Clin. Hypertens.* 2019, 21, 4, doi:10.1111/JCH.13426.
2. Gavriloza, A.; Bandere, D.; Logviss, K.; Šmits, D.; Urtāne, I. Adherence Level to Arterial Hypertension Treatment: A Cross-Sectional Patient Survey and Retrospective Analysis of the NHS Prescription Database. *Healthc.* 2021, Vol. 9, Page 1085 2021, 9, 1085, doi:10.3390/HEALTHCARE9081085.
3. Salmane Kulikovska, I.; Poplavska, E.; Ceha, M.; Mezinska, S. Use of generic medicines in Latvia: Awareness, opinions and experiences of the population. *J. Pharm. Policy Pract.* 2019, 12, 1–7, doi:10.1186/s40545-018-0159-5.
4. State Agency of Medicine Republic of Latvia *Statistics on Medicines Consumption 2018*; 2018;
5. State Agency of Medicines Republic of Latvia Medicinal Product Register of Latvia Available online: <https://dati.zva.gov.lv/zalu-registrs/en> (accessed on Jun 29, 2022).
6. Williams, B.; Mancia, G.; Spiering, W.; Rosei, E.A.; Azizi, M.; Burnier, M.; Clement, D.L.; Coca, A.; De Simone, G.; Dominiczak, A.; et al. 2018 ESC/ESH Guidelines for the management of arterial hypertension. *Eur. Heart J.* 2018, 39, 3021–3104.



# THE OCCURRENCE OF BRUXISM IN EXTROVERTS AND INTROVERTS AND THEIR ORAL HEALTH-RELATED BEHAVIORS

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## Relevance

The prevalence of bruxism ranges from 8% to 31% in the general human population (Manfredini, Winocur, Guarda-Nardini, Paesani and Lobbezoo, 2013). The etiology of bruxism is not fully understood. Grinding of the teeth is usually associated with not one but several factors. Bruxism is increasingly identified as a result of stress, drug use, lifestyle changes, poor nutrition and sleep disorders (Demjaha, Kapusevska and Pejkovska-Shahpaska, 2019). Symptoms of bruxism are often referred to as headaches, especially in the temporomandibular region. Other clinical signs in grinding patients include tooth decay and damage to dental restorations (fillings, dentures, crowns, bridges) (Field, Longman, Tyldesley and W. R., 2003). There are suggestions that low-dose botulinum toxin injection into the muscles of mastication may help control chronic pain associated with bruxism. However, the effect of temporomandibular joint pain reduction is short-lived. However, this therapeutic measure should not be considered a cure; it is an additional and optional therapeutic pain control (Fernández-Núñez, Amghar-Maach and Gay-Escoda, 2019).

Most of the research shows the correlation between bruxism and stress. It is concluded that bruxism is associated with several personality traits (mainly neuroticism and extraversion) (Montero and Gómez-Polo, 2017). Since bruxism is associated with personal human characteristics, it was decided to elucidate the manifestation of bruxism between extraversion and introversion and to compare their personal oral hygiene habits.

**Keywords:** Bruxism, tooth grinding, extrovert, extraversion, introvert, introversion, oral health-related behaviour, oral hygiene, oral health.

## Methodology

A quantitative research strategy was chosen. Applied theoretical methods - analysis of scientific literature, empirical research methods. Data collection method - survey. Data analysis methods - calculations of descriptive statistics. The method of sampling the study is non-probably sampling. 184 respondents were interviewed during the study.

## Results

The results of the study revealed that among 184 respondents – 55 (30%) had bruxism, of which 34 (69%) were extroverts and 15 (31%) – were introverts. The extroverts who complain about bruxism the most are in the 21 – 40 age group (n=28). Introverts grinding their teeth are mostly up to 20 years (n=10).

The respondents were asked what symptoms of bruxism are typical for them. They could choose multiple answers to this question. The most common symptom of bruxism among extroverts is tooth grinding (n=17), while introverts are most likely to experience headaches and jaw pain in the morning (n=12). A similar proportion of extroverts and introverts face the problem of disturbed sleep (n=11) (n=10), increased masticatory muscle tone (n=8) (n=9), and pain in the lower jaw joint (n=10) (n=8) accordingly. Both introverts (n=5) and extroverts (n=23) do not treat bruxism. 10 introverts and only 6 extroverts use teeth guards. 4 extroverts turn off electrical devices before going to bed. Only 1 extrovert uses botulinum toxin injections.

41 % (n=26) of introverts first brush their teeth with a toothbrush and then brush between their teeth. 28 % (n=28) of extroverts also use a toothbrush first, then clean with an interdental flosser and brushes. 32 % (n=32) extroverts and 31% (n=20) introverts use only a toothbrush when brushing their teeth.

### **Conclusion & Significance**

The results of the study revealed that the occurrence of bruxism is more commonly characteristic by extraversion. Extroverts mostly grind their teeth from 21 to 40 years, and introverts – up to 20 years. The fact that the respondents have bruxism learned from the ones they slept with or felt it themselves.

The most common symptom of bruxism among extroverts is tooth wear; among introverts – pain in the head or chewing muscles in the morning. Most extroverts and introverts do not receive any treatment for bruxism.

Extroverts and introverts do not use or rarely use additional oral care products. Introverts have longer teeth cleaning process; they clean their teeth with a toothbrush and interdental brushes, and extroverts clean their teeth only with a toothbrush. Extroverts do professional oral hygiene more often than introverts.

### **References**

1. Demjaha, G., Kapusevska, B., & Pejkovska-Shahpaska, B. (2019). Bruxism unconscious oral habit in everyday life. *Open access Macedonian journal of medical sciences*, 7(5), 876.
2. Fernández-Núñez, T., Amghar-Maach, S., & Gay-Escoda, C. (2019). Efficacy of botulinum toxin in the treatment of bruxism: Systematic review. *Medicina oral, patologia oral y cirugía bucal*, 24(4), e416–e424.
3. Field E. A., Longman, L., Tyldesley, W. R. (2003). *Tyldesley's Oral medicine*. Oxford: New York: Oxford University Press.
4. Manfredini, D., Winocur, E., Guarda-Nardini, L., Paesani, D., & Lobbezoo, F. (2013). Epidemiology of bruxism in adults: a systematic review of the literature. *J Orofac Pain*, 27(2), 99-110.
5. Montero, J., & Gómez-Polo, C. (2017). Personality traits and dental anxiety in self-reported bruxism. A cross-sectional study. *Journal of dentistry*, 65, 45-50.

# WHAT DO WE KNOW ABOUT MEDIATORS BETWEEN THE PROFESSIONALS AND THE CHILDREN?

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## Relevance

A mediator is an auxiliary tool for establishing closer contact with children. It can be puppets, objects, or even animals. It is like a mediator between professionals and children. The child has to get used to the puppet or any other subject. This develops the child's ability to understand things from different points of view. Being animated characters, capable of telling stories and engaging in natural dialogues with children, puppets have long been used as a teaching tool in the fields of language, elemental and social sciences and even mathematics (Majaron & Kroflin, 2002). "Therapists have used puppetry therapy, particularly with children under the age of 12, since the beginning of the 1900s (Engen et al., 2020). Puppetry's therapy development aims to help children undergo various difficulties and psychological problems related to the illness or express their feelings and emotions through the mediator".

Research aim: to evaluate the role of mediators between professionals and children.

**Keywords:** emotional state, mediator, occupational therapy, puppet therapy.

## Methodology

A quantitative research strategy was chosen. The data collection method was an anonymous online survey. Descriptive statistics were used for data analysis, and the results were presented graphically. Research criteria: professionals working with children and parents/carers of children were included in the study. Two hundred eighty-three specialists working with children (occupational therapists, teachers, kindergarten teachers, social workers, etc.) and 53 parents/carers of children participated in the study. The questionnaire was designed in two versions, one for professionals working with children and the other for parents/carers of children. The questionnaires were developed and disseminated online. The questionnaire for professionals was distributed in educational, educational/scientific, social services, health, cultural and other institutions in X city. One questionnaire for parents and one for professionals has been published online.

## Results

The results of the study revealed that 278 (98%) professionals indicated that they knew about the possibilities of using the mediator for children, and only 5 (2%) did not know it. 261 (92%) specialists use mediators to achieve a closer relationship with children, and 22 (8%) do not use mediators. 235 (83%) specialists said that after using the mediator, the children became more cheerful, 224 (79%) specialists indicated that the children became braver, and 202 (71%) that the children became more open. Specialists working with children noticed better their involvement in daily activities, learning processes and leisure games. 34 (64%) parents/carers indicated that they use mediators for their children. After using the mediator, 40 (75%) parents/carers indicated that the children became more cheerful, 35 (66%) parents/carers noticed that the children became braver and more open, their independence skills improved in the area of eating, dressing/ undressing, personal hygiene and housework.

## **Conclusion & Significance**

The use of mediators improves children's emotional well-being, develops independence skills in daily activities, and improves children's skills in personal hygiene.

Parents/carers believe that using mediators activates children's involvement in conversations, discussions and daily activities.

According to the opinion of specialists and parents/carers, the use of mediators improves children's emotional state and independence skills.

## **References**

1. Majaron, E., Kroflin L. (2002). *The Puppet – What a Miracle!* Zagreb: the UNIMA Puppets in Education Commission.
2. Engen, M., Soberg B., L., Jensen, M. (2020). Play therapy insights into everyday social pedagogical practice in residential child care. *International Journal of Social Pedagogy*, 9(1): 14.

# ANALYSIS OF SOLID DOSAGE FORMS WITH IBUPROFEN

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## Relevance

The drugs have many different dosage forms for various ways of administration. Solid dosage forms such the tablets and capsules are intended for oral administration, as the suppositories are used for a rectal route (Michael et al., 2017). So, the most commonly used solid dosage forms of ibuprofen are tablets, capsules, and suppositories. The various solid dosage form categories and the type of excipients can be selected for the delivery of active substances (Homayun et al., 2019). Solid dosage form, category and excipients play an important role in the disintegration of preparations. The problem of the research - is how the composition, dosage form and category influence the disintegration of the preparations with ibuprofen (Fuenmayor et al., 2018. Varrassi et al., 2020).

**Keywords:** disintegration test in vitro, excipients, ibuprofen, solid dosage forms.

## Methodology

The research was based on the literature analysis and the composition of the ibuprofen tablets, capsules and suppositories. The disintegration time of these drugs was determined experimentally.

## Results

During the study, solid pharmaceutical forms of medicinal products with ibuprofen and their excipients were analyzed. The available solid dosage forms with ibuprofen on the market are film-coated tablets, soft capsules and suppositories. The widest range is ibuprofen film-coated tablets. There are two types of soft capsules and only one type of suppository. The use of tablets is more popular and more often chosen than capsules or suppositories.

The following excipients are commonly used in the production of ibuprofen preparations: fillers/diluents - microcrystalline cellulose, binders - corn starch, lubricants and lubricants - magnesium stearate, coating materials - talc, colouring materials - titanium dioxide, and solubility-improving materials - starch, microcrystalline cellulose, croscarmellose sodium, colloidal anhydrous silica.

A disintegration test (Ph. Eur. 04/2011:20901) was performed during the study. According to the European Pharmacopoeia, coated tablets should disintegrate within 60 min; investigated tablets should disintegrate much faster than determined. The approximate tablet disintegration time was 5.19 min, soft capsules disintegrate within 30 min, and obtained time was 3.30 min. Suppositories disintegrated within 30 min, and suppositories also deteriorated faster in 2.35 min. Thus, all investigated ibuprofen preparations met the requirements of the disintegration test.

## Conclusion & Significance

In conclusion, comparing the results of the disintegration test, ibuprofen suppositories disintegrated faster compared to other dosage forms, and the film-coated tablets Ibuprofen 400 mg disintegrated the fastest between investigated ibuprofen solid preparations categories. The excipients: microcrystalline cellulose, croscarmellose sodium, colloidal anhydrous silica, potato or corn starch were in the composition of the investigated preparations that influenced the faster disintegration.

## References

1. Fuenmayor, E., Forde, M., Healy, A, V., Devine, D, M., Lyons, J,G., McConville, C & Major, I., (2018). Material Considerations for Fused-Filament Fabrication of Solid Dosage Forms. *Pharmaceutics* 2018 Apr 2;10(2):44. doi: 10.3390/pharmaceutics10020044.
2. Hodayun, B., Lin, X., Choi, H.J., (2019). Challenges and Recent Progress in Oral Drug Delivery Systems for Biopharmaceuticals. *Pharmaceutics*. 2019 Mar; 11(3): 129, doi: 10.3390/pharmaceutics11030129
3. Michael, E., Aulton's., Kevin, M., & Taylor G., (2017). *Aulton's Pharmaceutics: The Design and Manufacture of Medicines* [5th Edition]. Rectal dosage forms Suppositories.
4. Varrassi, G., Pergolizzi, J. V., Dowling, P., & Paladini, A. (2020). Ibuprofen safety at the golden anniversary: are all NSAIDs the same? A narrative review. *Advances in therapy*, 37(1), 61-82.

# COMPARISON OF C-REACTIVE PROTEIN AND MALONDIALDEHYDE PARAMETERS DURING THE USE OF A SUPPLEMENT WITH ANTIOXIDANT PROPERTIES

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## Relevance

Skin cells continuously produce, through metabolic processes and under aggressive external factors, highly reactive molecules oxidation products, generally called free radicals (Sohal, Mockett, Orr, 2022). Enzymatic and non-enzymatic systems immediately neutralize these molecules in a physiological and dynamic balance (Ceconi, Boraso, Cargnoni, Ferrari, 2003). In situations where this balance is broken, various cellular structures suffer structural modifications, triggering or worsening skin state (Addor, 2017). Several substances with antioxidant effects have been offered for oral use, but little is known about their safety, possible associations, and especially their mechanism of action (Borga et al., 2018).

**Keywords:** oxidative stress, C-reactive protein, malondialdehyde.

## Methodology

The study included 70 women aged 35-45 who had no botulinum toxin or tissue filler injections for at least six months before the beginning of the study. They did not take any other food supplements for one month before the study. Women were divided into two groups to assess the influence of the food supplement. The study was single-coded or, in other words, "single-blind". The 35- to 45-year-old women who took part in the study did not know whether they were taking a dietary supplement or a placebo. This method was chosen in order to avoid bias in the research results. Taking a placebo did not affect the participants' health; only healthy women participated in the study. Blood from 70 participants was taken in two vacutainers: one with EDTA and the other with clot activator for general blood determination and biochemical examination. Blood samples were analyzed at the Kaunas Applied Sciences University biochemistry laboratory. The malondialdehyde (MDA) test was made with a diagnostic reagent kit, and optical density was scanned with the StatFax 4700 to obtain the final test result. The method of the high-sensitivity C-reactive protein (hs-CRP) test was immunoturbidimetric.

## Results

During this study, unfortunately, the omicron strain of the coronavirus disease was the companion. 98% of the participants got sick (both groups of participants). The obtained statistically reliable difference suggests that the used supplement with antioxidant properties, additionally stopping ageing processes in the skin, positively influenced the faster body recovery after inflammation. Norms of malondialdehyde have not been established. Ongoing studies evaluate changes in this marker of oxidative stress during the study. It was very interesting to evaluate the change of malondialdehyde during the 15 weeks of the study. One of the reasons why a statistically reliable change was not obtained may be that the study included healthy women aged 35 to 45; in the absence of developing pathology, this indicator remained unchanged.

## Conclusion & Significance

Women who took a dietary supplement with antioxidant properties had statistically significantly ( $p=0.024$ ) lower high-sensitivity CRP after 15 weeks than women who took a placebo.

However, the level of high-sensitivity CRP in the study group and the placebo group was within the normal range at all times.

The oxidative stress marker MDA was not statistically significantly different.

### References

1. Addor, F. (2017). Antioxidants in dermatology. *Anais brasileiros de dermatologia*, 92(3), 356–362. <https://doi.org/10.1590/abd1806-4841.20175697>
2. Borga, M., West, J., Bell, J.D., et al. (2018). Advanced body composition assessment: from body mass index to body composition profiling. *Journal of Investigative Medicine: the Official Publication of the American Federation for Clinical Research*. Jun; 66(5):1-9. DOI: 10.1136/jim-2018-000722. PMID: 29581385; PMCID: PMC5992366.
3. Ceconi, C., Boraso, A., Cargnoni, A., Ferrari, R. 2003. Oxidative stress in cardiovascular disease: myth or fact? *Arch Biochem Biophys*; 420:217e21.
4. Sohal, R.S., Mockett, R.J., Orr, W.C. 2022. Mechanisms of ageing: an appraisal of the oxidative stress hypothesis. *Free Radic Biol Med* 33:575e86.



## ISSUES NURSES FACE IN THEIR CAREER

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### Relevance

Nurses face various problems at work: heavy workload, risk of infections, difficulties when working with patients or co-workers, psychological and physical aggression, criticism, disagreements and so on (Kaburi et al., 2019; Starc, 2018). There is this high expectation for nurses to make correct choices that affect the patient's health by working intensively around the clock, so the psychological and physical strain on HCF staff is beyond what has been stated. So that's the reason why mental health should be a priority when trying to create friendly working conditions for specialists working in HCF (Gokce, Altiparmak, Uzun, & Ozsahin, 2017). High expectations can help to maintain alertness and motivation, but when the pressure exceeds the limits, stress can occur, which could be detrimental to the person's health (World Health Organization, 2020). Stressed nurses have inadequate sleep quality (not sleeping enough), movement (physical inactivity), eating habits (not consuming enough nutritious foods) and addictions (alcohol, nicotine) (Jordan, Khubchandani & Wiblishauser, 2016). Never-ending pressure can cause psychological fatigue, depersonalization symptoms and reduced happiness, which can lead to occupational burnout (Manzano-Garcia & Ayala, 2017).

**Keywords:** issues, nurses, psychosocial risks, psychosocial work climate.

### Methodology

The research was carried out in X Kaunas hospitals in July – August 2021. A non-probabilistic random sampling of a quantitative study sample was used. The subjects were selected on the basis of the following criteria: those who voluntarily signed the consent form to participate in the study, had a valid general practice nurse's license and were working in X Kaunas hospitals during the study period. Direct questionnaires were used, where respondents had to complete written questionnaires themselves. Before the respondents answered the questionnaire, they were all introduced to the purpose of the study. Subjects participated in the study voluntarily. It was explained that the questionnaire was anonymous and that confidentiality was guaranteed. A total of 335 questionnaires were submitted, and 313 were returned, 13 of which were invalid because questions were unanswered. Therefore, 300 responses were analyzed. Descriptive statistics calculations and the statistical data processing programme Microsoft Office Excel 2019 was used for data analysis. Research ethics: permission from LSMU Bioethics Center (No. BEC-KK(B)-06) was obtained for the research.

### Results

The absolute majority of women, 97.33% (n=292), participated in the study; most respondents were 41-60 years old. Participant's work experience in the field of nursing: up to 5 years - 13.33% (n=40); from 5 to 10 years - 8.67% (n=26); from 11 to 20 years - 22.00% (n=66); from 21 to 30 years - 26.67% (n=80); 31 to 40 years - 18.67% (n=56); 41 to 50 years 9.33% (n=28); and over 50 years - 1.33% (n=4). It has been established that conflicts in the work environment were not frequent but remained a recurring phenomenon. Most often, conflicts were related to work-related disagreements and less often to personal disagreements. It is worrying that 8.00% (n=24) of nurses have encountered screaming or insults when resolving conflicts in the work environment, and ethical ways of conflict resolution were missing when trying to reach a common solution. When determining the frequency of unethical behaviour in the workplace of nurses, 59.67% (n=179) of respondents did not encounter the mentioned problem, but 4.66% (n=14) of nurses stated that this problem exists. Since verbal aggression is milder compared to physical aggression, the probability of its occurrence is higher, so

it was important to determine whether unethical verbal attacks prevail among nurses. According to the research data, it can be seen that 15.00% (n=45) of the respondents said that there were situations when curse words or other negative expressions were addressed to them. It was found that as many as 37.00% (n=111) of nurses had to deal with a team member who raised tone, screamed or shouted. It has been observed that verbal aggression has a relationship with a person's lower professional productivity, emotional exhaustion and cynicism. In this study, nurses who have experienced being sworn and yelled at were more likely to state that they feel stress (7.85%, n=24) or irritation (10.46%, n=44) than those who state that they have not encountered verbal aggression. The observed ways of mobbing manifestation were: constant criticism (5.0%, n=15), demonstrative ignoring (3.0%, n=9) and ridicule (1.0%, n=3). The results obtained from the assessment of problematic harassment in the workplace show that situations of sexual harassment do occur, which studies have shown correlates with stress. In this study, the responses of the respondents were distributed as follows: 2.33% (n=7) experienced unwanted sexual attention, 2.0% (n=6) had to deal with non-verbal (visual) sexual harassment, and very few (1.67%, n=5) said that they had experienced physical, sexual harassment.

### **Conclusion & Significance**

1. To sum up, it can be said that attacks of verbal aggression are likely to occur in the environment of nurses' workplaces. Fifteen out of a hundred nurses have encountered negative verbal expressions and curse words, and more than a third of nurses have encountered communication with managers and colleagues in a raised tone.

2. Manifestations of mobbing in HCF do exist, which is worrying because nurses who have experienced mobbing are often very negatively affected psychologically.

3. There were cases of sexual harassment in the workplace of nurses. Cases with unwanted attention were mostly recorded; less often noted was non-verbal sexual harassment and rarely reported – physical, sexual harassment.

### **References**

1. Gokce. B., Altıparmak, H., Uzun, B., & Ozsahin. D. U. (2017). The Effect of Work Safety on Stress in Nursing. *The International Journal of Social Sciences and Humanities Invention* 4(7). doi: 10.18535/ijsshi/v4i7.12
2. Jordan, T. R., Khubchandani, J., & Wiblehauser, M. (2016). The Impact of Perceived Stress and Coping Adequacy on the Health of Nurses: A Pilot Investigation. *Nursing Research and Practice*. doi: 10.1155/2016/5843256
3. Kaburi, B. B., Bio, F. Y., Kubio, C., Ameme, D. K., Kenu, E., Sackey, S. O., & Afari, E. A. (2019). Psychological working conditions and predictors of occupational stress among nurses, Salaga Government Hospital, Ghana, 2016. *The Pan African medical journal*, 33. doi: 10.11604/pamj.2019.33.320.16147
4. Manzano-Garcia G. & Ayala J. C. (2017). Insufficiently studied factors related to burnout in nursing: Results from an e-Delphi study. *PloS one*, 12(4). doi: 10.1371/journal.pone.0175352
5. Starc J. (2018). Stress Factors among Nurses at the Primary and Secondary Level of Public Sector Health Care: The Case of Slovenia. *Open access Macedonian journal of medical sciences*, 6(2), 416–422. doi: 10.3889/oamjms.2018.100
6. World Health Organization. (2020). Occupational health: Stress at the workplace. [viewed 2021-12-08]. Retrieved from: <https://www.who.int/news-room/questions-and-answers/item/occupational-health-stress-at-the-workplace>

# WOMEN'S OPINION ABOUT THE EFFECT ON SKIN, HAIR AND NAILS OF A DIETARY SUPPLEMENT NOAGE

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## Relevance

The development of products based on scientific research allows the user to anticipate what benefits he can expect from using one or another product / dietary supplement. Modern marketing is very aggressive and sometimes misleads consumers (Global Cosmetics, 2018-2023). Balanced dietary supplements can benefit the human body positively (Burke, 2018). The consumption of antioxidants helps neutralize free radicals, which is why they are essential in slowing ageing (Carneiro et al., 2020). This biomedical study is intended to evaluate the effect of the dietary supplement NoAGE, developed by Aconitum UAB, on the facial skin and other body systems. The research aim was subjectively perceptible 35 - 45 years women who use the NoAGE dietary supplement for 15 weeks, changes of the facial skin, hair and nails.

**Keywords:** skin moisture, skin viscoelasticity, facial skin erythema, dietary supplement.

## Methodology

To evaluate the effect of the dietary supplement on the skin condition of 35-45-year-old women before and after use were applied diagnostics procedures and a survey about subjective changes of the facial skin, hair and nails was performed. The study involved 70 women who used the NoAGE dietary supplement for 15 weeks. There were two groups: first - was NoAGE, the women who used the supplement, and second was Placebo. Statistical data analysis was performed using „IBM SPSS Statistics 23“ version and „Microsoft Excel 2016“ statistical programme using descriptive data methodology. The percentage survey data were calculated and summarized.

## Results

During diagnostics, it was found that the results of the facial skin moisture, viscoelasticity and erythema test showed that the indicators of both groups: placebo and NoAGE, women, who used the NoAGE dietary supplement, were similar. After 15 weeks, the results of the women's skin who used the NoAGE dietary supplement showed an increase in facial skin moisture by 20.25 %, and viscoelasticity by 7.38 % compared to the initial results of the study. The indicators of facial skin erythema decreased by 12.96 %. In the placebo group, there were no significant changes in the results compared to the initial results. During the first survey, the study participants complained of decreased hair shine, feeling of hair dryness, decreased skin firmness, increased skin sensitivity and feeling of stretching, decreased elasticity and softness of the skin, wrinkles, decreased nail strength and increased brittleness. Analyzing the survey data after 15 weeks of NoAGE dietary supplement use, significant differences were found between the NoAGE and the placebo groups. Women who used the NoAGE dietary supplement reported more shiny hair (76.5 % and 45.7 %,  $p=0.009$ ), less dryness (73.5 % and 38.2 %,  $p=0.003$ ), increased fluffiness (70.6 % and 42.9 %,  $p=0.02$ ) and improved hair growth (79.4 % and 57.1 %,  $p=0.047$ ), less dry skin (73.5 % and 51.4 %,  $p=0.05$ ), less sensitivity (73.5 % and 45.7 %,  $p=0.019$ ), stronger nails (61.8 % and 31.4 %,  $p=0.04$ ) and less cracking (76.5 % and 45.7 %,  $p=0.009$ ).

## Conclusion & Significance

Women's who use the NoAGE dietary supplement reported a decreased feeling of skin tightening. This result is directly related to objective skin indicators. It was found that the moisture of the facial skin increased. It was established that the subjective results of the survey are directly related to the objective changes in the facial skin indicators: the viscoelasticity of the skin improved significantly, and the redness of the skin decreased, which also affected the subjective: lower skin sensitivity, reduced dryness. It was mentioned an improvement in their hair and nails condition.

## References

1. Burke, K. E. (2018). Mechanisms of ageing and development—A new understanding of environmental damage to the skin and prevention with topical antioxidants. *Mechanisms of Ageing and Development*, 172, 123–130.
2. Carneiro, J., Marques Gm, & Vincente, PA. (2020). Development and Evaluation of an Anti-ageing Cosmetic Formulation Exploring Antioxidant Potential of *Vitis vinifera* L. *International journal of pharmaceutical compounding*, 24(6), 515-518
3. Global Cosmetics Products Market-Analysis of Growth, Trends and Forecasts (2018-2023). <https://marketersmedia.com/global-cosmetics-products-market-expected-to-reach-usd-805-61-billion-by-2023-industry-size-share-analysis/313185>

# PARENTS' KNOWLEDGE OF FIRST AID FOR CHILDREN WHO HAVE SUFFERED A LIMB INJURY

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## Relevance

Childhood trauma - is one of the most common causes of death in children worldwide (Sleet, 2018). Two groups of child injuries stand out: unintentional injuries, such as those suffered during sports, car accidents, falls or colliding with an object, and injuries related to violent acts or self-harm are classified as intentional (Sleet, 2018). A study conducted in Korea (2019) showed a rapid increase in the proportion of injuries related to playgrounds and trampolines. The proportion of outdoor injuries and seasonal differences was more common in older children (Kang, Kim, 2019). Sometimes it's not easy to avoid injuries; parents are usually the first individuals next to the child in case of trauma and can provide assistance. It is important that parents know how to recognize injuries and be able to provide first aid correctly. Research results reveal that parents lack knowledge about first aid actions after the child has suffered trauma (Bánfai, 2015; Naumeri, 2019; Bassam, 2022).

The study aimed to analyse parents' knowledge about first aid actions after a child suffered a limb injury.

**Keywords:** children, first aid, limb injuries, parent's knowledge.

## Methodology

The study was conducted online in 2021. November. A quantitative research method – a survey was used. The study involved 114 parents of preschool children. The distribution of the variables in the sample was described by a numerical characteristic - a percentage frequency (per cent).

## Results

Analysis of the results of the study showed that more than half (65.5%, n = 75) of the cases of children who suffered injuries were skin lesions. It was found that just under half (49.5%, n=45) of the respondents indicated that they regard their knowledge of first aid after limb trauma as incompletely sufficient, as fully sufficient - just over a third (27.5%, n = 25). When asked to evaluate their knowledge with scores from 1 to 10, less than one-quarter of the parents rated their knowledge at seven (24.6 %, n = 28), eight (23.7 %, n = 27) and six (22.8 per cent, n = 26) points.

In the case of closed limb bone fracture, the majority of respondents (93.9 %, n = 107) correctly indicated that they would immobilize the limb, would not try to restore the deformity (92.1 %, n = 105) and would cool the damaged area (88.6 %, n = 101). More than a tenth of parents (12,3 %, n = 14) incorrectly indicated that when the child stretched the ligaments or muscles, they would put warming compresses on the affected limb, less than a tenth (7.1 %, n = 8) would try to keep the affected limb lowered. After the child has suffered lesions of the skin of the limbs, most parents (98.2%, n = 112) would disinfect the wound and apply a sterile bandage (87.7%, n = 100).

Most respondents (82.5 per cent, n = 94) correctly indicated that in case of a burn, they would cool the burned skin of the child for 15 - 30 minutes under a stream of running water and thought that the most suitable for this would be water at room temperature (73.7 per cent, n = 84). More than a tenth of parents incorrectly indicated that they would dip a burned limb into the icy water (14.0%, n = 16) or cool under a stream of ice water (10.5%, n = 12).

## Conclusion & Significance

1. A larger proportion of parents in the study rated their knowledge of first aid actions incompletely sufficient; only a third thought their knowledge was fully sufficient.

2. The vast majority of parents knew the first aid actions in the event of a child suffering damage to the skin of the limbs, burns or closed fractures of the limbs; more than half of parents knew how to immobilize the limb properly. About a tenth of parents lack the knowledge to provide first aid in the event of a sprain of ligaments or muscles or burns.

## References

1. Sleet, D. A. (2018). The global challenge of child injury prevention. *International journal of environmental research and public health*, 15(9), 1921. DOI: 10.3390/ijerph15091921
2. Kang, M. S., & Kim, H. S. (2019). Characteristics and trends of traumatic injuries in children visiting emergency departments in South Korea: a retrospective serial cross-sectional study using both nationwide-sample and single-institutional data. *PLoS one*, 14(8), e0220798. DOI: 10.1371/journal.pone.0220798
3. Bánfai, B., Deutsch, K., Pék, E., Radnai, B., & Betlehem, J. (2015). Accident prevention and first aid knowledge among preschool children's parents. *Kontakt*, 17(1), e42-e47. Prieiga per internetą: <https://www.sciencedirect.com/science/article/abs/pii/S1212411715000021>.
4. Naumeri, F., Ahmad, H. M., Yousaf, M. S., Waheed, K., & Farooq, M. S. (2019). Do parents have knowledge of first aid management of burns in their children? A hospital based survey. *JPMA. The Journal of the Pakistan Medical Association*, 69(8), 1142-1145. Prieiga per internetą: <https://pubmed.ncbi.nlm.nih.gov/31431768/>
5. Bassam, S. E. A. (2022). Evaluate Maternal Knowledge and Attitude Regarding First Aid Among their Children in Buraidah City, Saudi Arabia Kingdom (KSA). *Medical archives*, 76(3): 164-169. DOI: 10.5455/medarh.2022.76.164-169

# “QUOTIENT” OF DIFFERENT TISSUE DAMAGE ZONES AFTER RADIOFREQUENCY CATHETER ABLATION

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## Relevance

Radiofrequency catheter ablation (RCFA) - is a procedure used to treat heart conductive system, prostate and kidney tumours and to denervate liver, lungs and kidneys. Besides, RFCA is used to lower arterial blood pressure (García-Touchard et al., 2020). During the procedure, high temperature is invoked - it permeates tissues' histological structures. It is known that heat diffuses differently in unrelated tissues (Tissue Properties Database); therefore, tissue damage zones after RFCA also differ. Other researches show that damage zones in muscular, nerve or connective and other tissues are smaller when RFCA is performed with irrigation (Sakaoka et al., 2018). Some data shows damage area dependence on cooling solution concentration (Gružienė et al., 2020). It is important to notice that RFCA causes different tissue damage types while moving further from the electrode and tissue's direct contact site; therefore, we are able to distinguish four different damage zones that form after the RFCA procedure (Undžytė et al., 2020). However, the RFCA method is not perfected yet; therefore, it is vastly important to continue developing research about determining the appropriate RFCA method that would cause the least tissue thermal damage after the procedure.

**Keywords:** radiofrequency catheter ablation, irrigation, tissue damage, the circle quotient.

## Methodology

Quadriceps muscle of the thigh and prostate RFCA procedure was performed on thirteen mongrel 4–5-year-old dogs weighing 10–14 kg. Quadriceps muscle of the thigh RFCA was performed by Nakagawa (1995) method, using irrigation speed 16 ml/min and a 2 mm diameter ablation catheter. The length of the procedure was 30 s. Power of RFCA was 40 W.

RFCA procedure on muscle and prostate tissues was performed in two sessions. First (control) – with no cooling (NC), second – using 0,1 % 20°C NaCl solution (CO.1). Afterwards, the tissue specimens with necrosis were taken and fixed in 10 % formalin solution.

The quotient equation was used to determine the geometrical shape of tissue damage.  $Q = P^2/4\pi S$ , where Q is the quotient, which means the ratio between mathematical terms, S – an area of the circle and P – circle perimeter.

Statistical analysis of data was performed using IBM SPSS and Statistics-20. Analysis results are presented in a format (mean +/- mean deviation). Student's T-test for independent samples ( $p < 0.05$ ) was used to evaluate the comparison of means.

## Results

Results suggest that performing RFCA on skeletal muscle and prostate parenchymal tissue along the damage zones, Q value changes were different in both sessions. It was noticed that the 3rd and 4th damage zones of skeletal muscle tissue had Q equal to 1; meanwhile, in parenchymal tissue, Q had the same value in the 2nd, 3rd and 4th zones (in both sessions). Performing prostate tissue RFCA NC in the 2nd zone, 80 % of the cases, Q was  $< 1,5$ , whereas in the 3rd and 4th zones, 100 %. Meanwhile, C0.1 group in the 2nd zone, 96,7 % of the cases Q was  $< 1,5$ , whilst in the 3rd and 4th

zones, 100 %. While processing the data of Q and tissue damage perimeter, there was a strong correlation ( $r=0,9$ ) ( $p<0,001$ ) observed between the perimeter and areas with Q (in all groups).

### Conclusion & Significance

After calculating and evaluating Q values of damage zones after the RFCA procedure on skeletal muscle and prostate tissues, it can be concluded that the geometrical shape of thermal tissue damage in parenchymal tissue forms quicker (in the 2nd zone) consistently improves. Whereas in skeletal muscle tissue, it only appears in 3rd zone.

While performing prostate RFCA, there is an increased number of damage zones with the proper shape; also, the damage area and perimeter in all experimental groups tend to depend on one another quite excessively ( $p<0,001$ ).

Lastly, using our result of analyzed data, the authors have formed a linear regression model, which can predict tissue damage zone shape.

### References

1. García-Touchard, A., Maranillo, E., Mompeo, B., & Sañudo, J. R. (2020). Microdissection of the Human Renal Nervous System: Implications for Performing Renal Denervation Procedures. *Hypertension (Dallas, Tex. : 1979)*, 76(4), 1240–1246.
2. Tissue Properties Database V4.0; IT'IS foundation; 15.05.2018
3. Sakaoka, A., Terao, H., Nakamura, S., Hagiwara, H., Furukawa, T., Matsumura, K., & Sakakura, K. (2018). Accurate Depth of Radiofrequency-Induced Lesions in Renal Sympathetic Denervation Based on a Fine Histological Sectioning Approach in a Porcine Model. *Circulation. Cardiovascular interventions*, 11(2), e005779. <https://doi.org/10.1161/CIRCINTERVENTIONS.117.005779>
4. Gružienė, A., Vaitiekaitis, G., Vitkus, A., Skaudickas, D., Kerzienė, S., Lasienė, K. (2020). The Effect of ablation on different tissues. International Lithuanian-Polish Conference on Histology: 28 February 2020, Kaunas, Lithuania. Kaunas: Lietuvos sveikatos mokslų universiteto Leidybos namai, 2020
5. Undžytė, G., Gružienė, A., Skaudickas, D., Vaitiekaitis, G., Vitkus, A. (2020). Changes in geometric shape of parenchymal tissue damage in the exposure zones after radiofrequency ablation. Health, Environment and Sustainable Development: Interdisciplinary Approach - HESDIA 2020: abstract book [of the International Scientific Conference]: 24 September 2020, Kaunas / Kaunas University of Applied Sciences; Editors: Lijana Navickienė, Viktorija Piščalkienė. Kaunas: Kaunas University of Applied Sciences.



# INNOVATIVE NON-PHARMACOLOGICAL PAIN RELIEF METHODS DURING CHILDBIRTH STARTED BEING USED DURING COVID-19 IN LITHUANIA

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## Relevance

In modern society, midwives have a great influence on women's lives. The most important role of midwives for a woman is to provide support (knowledge, advice, and education) from the conception of life to the birth of a newborn and the postpartum period and breastfeeding a newborn (Curry et al., 2018; Matsushima et al., 2017). Without special knowledge or basic training of midwives, which is acquired in the scientific process, midwives cannot function properly and perform their professional duties (Uchmanowicz et al., 2019). Childbirth is increasingly viewed as a family event rather than a medical procedure as it once was. This is due to the changes and the staff's current knowledge, which strives to provide a friendly environment for the birthing woman and to ensure psychological comfort to help relieve the pain experienced during childbirth as much as possible (Smith et al., 2020). During the period of COVID-19, women had to give birth alone, so in many cases, it was said that women experience much more pain during childbirth than when giving birth with relatives (Mayopoulos et al., 2021). Midwives are the most important persons in midwifery who can help women relieve childbirth pain also for the new innovative knowledge and involvement in midwifery and daily midwives' life (Safaringga & Fitrayeni, 2022). The aim is to describe innovative non-pharmacological pain relief methods used during childbirth during COVID-19 in Lithuania.

**Keywords:** childbirth, COVID-19, non-pharmacological method, pain relief, pregnancy, woman.

## Methodology

An observational study was conducted in Lithuanian maternity hospitals. Monitoring has been carried out during the COVID-19 pandemic since 2020. March 20 until 2022 January 1st. Lithuanian maternity hospitals where mothers with COVID-19 infection were cared for were observed. During childbirth, women were offered alternative methods of pain relief: acupuncture, acupressure, self-massage, and phytotherapeutic procedures. The aim was to find out whether during childbirth women want to get involved in the practice of applying new, innovative methods of pain relief during childbirth.

## Results

Analgesia for labour is widely used in high-income countries. Nowadays, there is a large selection of pain relief methods, but not all methods are available to women for economic and social reasons. Non-drug treatments help break the cycle of fear, pain and tension and can reduce physical sensations and emotional reactions to them and the need for medication. Breathing exercises, massage, changing the position and relaxation methods are the most frequently chosen methods of relieving labour pain. Less well-known, but during the COVID-19 pandemic, pain relief methods included in obstetric care were: aromatherapy, acupuncture, acupressure, self-massage, and applications of phytotherapeutic agents on the lumbar part of the back or the lower abdomen.

## Conclusion & Significance

During the observational study, it was found that during the COVID-19 pandemic, women who gave birth sought to try new, non-pharmacological means of pain relief. Most women wanted to try and indicated a positive pain-relieving effect of self-massage using aromatherapy tools.

## References

1. Currey, J., Massey, D., Allen, J., Jones, D. (2018). What nurses and midwives involved in a Medical Emergency Teams consider the most vital areas of knowledge and skill when delivering care to the deteriorating ward patient. A nurse-oriented curriculum development project. *Nurse Education Today*. 68:77-82.
2. Matsushima, M., Yamada, H., Shimamura, Y., Tam, N.M. (2017). Altruism of Healthcare Workers and Job Satisfaction: Findings from a survey in central Vietnam (No. 30). Graduate School of International Cooperation Studies, Kobe University.
3. Mayopoulos, G. A., Ein-Dor, T., Li, K. G., Chan, S. J., & Dekel, S. (2021). COVID-19 positivity associated with traumatic stress response to childbirth and no visitors and infant separation in the hospital. *Scientific Reports*, 11(1), 1-8.
4. Safaringga, M., & Fitrayeni, F. (2022). Development and Implementation of Case-Based Methods in Block 3A. Midwife Care on Pregnancy at the Undergraduate of Midwifery Programme Faculty of Medicine Andalas University in 2021. In 4th International Conference on Educational Development and Quality Assurance (ICED-QA 2021) (pp. 383-388). Atlantis Press.
5. Smith, C. A., Collins, C. T., Levett, K. M., Armour, M., Dahlen, H. G., Tan, A. L., & Mesgarpour, B. (2020). Acupuncture or acupressure for pain management during labour. *Cochrane Database of Systematic Reviews*, 2(2), CD009232. doi: 10.1002/14651858.CD009232.pub2.
6. Uchmanowicz, I., Manulik, S., Lomper, K., Rozensztrauch, A., Zborowska, A., Kolasinska, J., Rosinczuk, J. (2019). Life satisfaction, job satisfaction, life orientation and occupational burnout among nurses and midwives in medical institutions in Poland: a cross-sectional study. *BMJ open*, 9(1), e024296.

# USING SIMULATION TO HELP HEALTH PROFESSIONS STUDENTS LEARN TO TALK TO CLIENTS ABOUT SUICIDE

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## Relevance

Approximately 800,000 people worldwide (ten out of every 100,000) commit suicide every year, making it the 17th leading cause of death in 2019 (World Health Organization [WHO], 2022). It is estimated that for each completed suicide, more than 20 attempts occur (Olsson et al., 2017). Given such a high incidence, it is very likely that students in health and welfare education will interact with clients who have suicidal thoughts.

Healthcare speciality students are educated about the theories of suicide risk assessment and corresponding professional interventions; however, practical training in the needed communication skills is generally lacking (Hagen et al., 2017). Simulation training allows students to practice in a safe, authentic environment in which they are encouraged to learn from mistakes (Palominos et al., 2019).

The authors developed an interdisciplinary simulation training to empower students during their first conversations with clients who struggle with suicidal thoughts. We produced a video showing best practices to address students' feelings of uncertainty, such as fear of making mistakes, which is strongly present among students (Palominos et al., 2019).

**Keywords:** Suicide; suicide prevention; simulation education; healthcare professions students; nursing students.

## Methodology

A total of 633 final-year students in five baccalaureate training programmes (social work, midwifery, special needs education, and two nursing programmes) in two Belgian university colleges were invited. Participants were assigned to the two simulation groups according to their educational background to provide a mix of different professions and to facilitate attending sessions at one or the other campus.

Before the simulation module, participants completed a demographic questionnaire (curriculum, age, experience with simulation training, and experience with suicide) and two 1-hour preparatory evidence-based online learning modules about the detection of suicidal ideations and possible interventions. The simulation module started with a dramatized best-practice video of a caregiver in conversation with a client with suicidal thoughts. After watching this video, students discussed the client's expressed reasons to live and die and the verbal and non-verbal interventions by the caregiver that demonstrated best practices. The second part of the simulation module featured three 20-minute role-played scenarios dealing with suicide, followed by a 40-minute facilitated debriefing. To portray verbal and non-verbal responses in an authentic manner, a peer-to-peer simulation design was developed by the research group and validated by an expert group.

Two group interviews were organized to capture the participants' perceptions about the simulation module. Each group interview was moderated by an experienced researcher (MF) and assisted by a facilitator (JM). A guide with semi-structured questions was used to gauge the participants' perceptions of each phase of the simulation module and the experience module in

general. The group interviews were audio recorded and transcribed verbatim. Two researchers (JM & MF) analyzed the data, generated codes inductively, and grouped them chronologically by the different phases of the simulation experience module. The analysis was reviewed and discussed among all researchers to optimally reflect on the data and refine the analysis before organizing the results and evaluating for integrity and fit with the data.

## **Results**

All students stated that theoretical education about suicidal behaviour was included in their regular learning programmes but that training in practical skills on this topic was non-existent. Students reported that the preparatory online learning modules were easy to understand, transparent, concise, and practice-oriented. Students particularly appreciated the summaries at the end of each module. Most students welcomed the variation in interactive learning methods. Students emphasized the value of the best-practice video that began the simulation module. The examples of good communication gave them authentic confidence for the uncertainty of the upcoming peer-to-peer simulation. The sense of reality in the simulation scenarios was highly appreciated and was considered a sine qua non. Students stated that the length of the scripts of scenarios should be well-balanced, with clear but inviting directions for creative input. The scenarios should be realistic and recognizable. All students valued the opportunity to review the recording to learn about their verbal and non-verbal responses. Students reported that the debriefing immediately after the simulation was essential to enhance learning and unload emotionally.

## **Conclusion & Significance**

The results of this study can support teachers in designing and evaluating simulation training programmes on other mental health topics. Students valued the reassuring effect of a best practice video. The sense of reality in the simulation scenarios was highly appreciated. Although being filmed was stressful for some students, reviewing and discussing key moments in the recordings appeared to be a major advantage. Debriefing was essential to discuss and emotionally discharge the experiences of role players and observers.

## **References**

1. Hagen, J., Knizek, B. L., & Hjelmeland, H. (2017). Mental health nurses' experiences of caring for suicidal patients in psychiatric wards: an emotional endeavour. *Archives of psychiatric nursing*, 31(1), 31-37. <https://doi.org/10.1016/j.apnu.2016.07.018>
2. Olfson, M., Blanco, C., Wall, M., Liu, S. M., Saha, T. D., Pickering, R. P., & Grant, B. F. (2017). National trends in suicide attempts among adults in the United States. *JAMA psychiatry*, 74(11), 1095-1103. <https://doi.org/10.1001/jamapsychiatry.2017.2582>
3. Palominos, E., Levett-Jones, T., Power, T., & Martinez-Maldonado, R. (2019). Healthcare students' perceptions and experiences of making errors in simulation: An integrative review. *Nurse Education Today*, 77, 32-39. <https://doi.org/10.1016/j.nedt.2019.02.013>
4. World Health Organization (WHO). (2022, February 23). Suicide data. Retrieved from <https://www.who.int/teams/mental-health-and-substance-use/data-research/suicide-data>

# STUDY OF ESTONIAN HOSPITAL GREEN OUTDOOR ENVIRONMENT

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## Relevance

The purpose of the landscape as a working tool is to speed up the processes inside the person. Patients with a nature view spent less time in the hospital and needed less pain relief medicine than people without a nature view (Ulrich, 1984). Office workers with a more natural view assess their health more positively than people with less natural views (Kaplan, 1993). Natural scenes sustain attention much more effectively than urban views (Ulrich, 1986).

The goal is to find Estonian outdoor “green room” features by landscape characteristics /fundamentals for healing landscapes/ (Berggre-Bärring et al., 1995), view types by Tyson and use design language. The term “room” conveys a sense that each “green room” consists of a set of distinct spaces separated from each other that visitors experienced. Rooms can be described using a specific characteristic: Serene, Wild, Rich in Species, Space, The Common, The Pleasure Garden, Festive, Culture.

The study shows an overall picture of how the Estonian hospital “green rooms” look like. For example, based on results, you find room characteristics and then are provided varied path views. Although the traditional design is used, it looks Rich in species and Festive.

**Keywords:** design, healing landscape, landscape characteristics, public health, views.

## Methodology

A case study of green spaces in hospital areas was conducted in Saare-, Pärnu-, Viljandi-, Valga-, Tartu and Jõgeva counties. Only the hospitals that offered medical services were selected to study. Altogether, 40 hospital areas were assessed. Landscape characteristics, design orientation and view types were assessed by their presence or not.

The landscape characteristics of Serene are peace, silence and care, sounds of wind, water, birds and insects, no rubbish, no weeds, and no disturbing people. *Wild* - fascination with wild nature, plants seem to be self-sown, lichen- and moss-grown rocks, old paths. *Rich in Species* - a room offering a variety of species or animals and plants. *Space* - a room offering a restful feeling of “entering another world”, a coherent whole, like a beech forest; *The Common* - a green, open place providing vistas and inviting the user to stay. *The pleasure garden* - an enclosed, safe and secluded place, where you can relax, be yourself and also experiment and play; *Festive* - a meeting place for festivity and pleasure; *Culture* - a historical place offering fascination with time. They were assessed as follows: 0-no presence; 1 - low presence; 2 - medium presence; 3 - high presence.

Views were divided to open, half-open and closed views versus trackable views, wandering path, varied path, gate-screens, distance view, forced perspective view, frame line landscaping, gathering circle and vignette by Tyson.

Design orientation was divided among people, botanical or historical orientation.

The collected data were entered into Microsoft Excel and SPSS. The answers were coded 1 and 2 as “yes/no”. Statistically found a correlation, i.e. mutual relations between two variables, shows how strong and believable the relationships are ( $r=?$ ). Pearson’s correlation is one of the most common methods that capture the linear relationship between two variables. In this work, a relationship starting at 0.5 is considered a strong relationship since the relationships are for the same green environment, and there are no different variables.

## Results

Results show that traditional oriented design is correlated with landscape characteristics “Rich in species” ( $r=0.518$ ,  $p<0.01$ ) and “Festive” ( $r=0.568$ ,  $p<0.01$ ). Botanical design is correlated with open views ( $r=0.523$ ,  $p<0.01$ ) and closed views ( $r=0.555$ ,  $p<0.01$ ). Observing views are correlated to characteristic landscape Space ( $r=0.561$ ,  $p<0.01$ ). Varied view type is correlated to characteristic Room ( $r=0.513$ ,  $p<0.01$ ).

## Conclusion & Significance

In conclusion, it can be said that the current method showed that it is the right tool for doing similar research like this. Landscape characteristics are found in the landscape but can be represented on many levels. People are affected more by strong characteristics. Landscape characteristics work in one cultural room at a time. Rich in species and Festive characteristics, it usually goes together in front gardens, close to flag areas. Closed and open views are also expected in the Estonian case.

## References

1. Berggren-Bärring, A.M. and Grahn, P. (1995) Importance of a single park area on experienced characteristics. Ecological aspects of Green Areas in Urban Environments. IFPRA World Congress Proceedings. 110. Antwerp. Flanders. Belgium.
2. Kaplan, R. (1993) The Role of Nature in the Context of the Workplace. *Landscape and Urban Planning* 26, 193-201.
3. Tyson, M. (1998) *The healing landscape: Therapeutic outdoor environments*. McGraw-Hill.
4. Ulrich, R. (1984) View through a Window May Influence Recovery from Surgery. *Science* 224, 420-421.
5. Ulrich, R. (1986) Human response to vegetation and landscapes. *Landscape and Urban planning* 13, 29-44.

# THE IMPACT OF EDUCATION LEVEL ON DIETARY HABITS FORMATION OF MEDICAL STUDENTS

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## Relevance

Obesity is one of the most serious health problems, as it is directly associated with cardiovascular diseases, hypertension, diabetes, osteoarthritis etc. (Wyatt et al., 2006). The dietary habits and obesity situation of Lithuanian people are poor compared to other European countries (Naslene Z, 2016). The most well-known factors contributing to the prevalence of obesity are genetic heredity, long-term increased caloric intake, and decreased physical activity. In addition, poorer dietary habits and declines in physical activity among all age groups are associated with increasing levels of urbanization, increased availability of fast-food restaurants, and, in general, a change in the pace of life (Bellisario et al., 2022; van Erpecum et al., 2022). Studies showed that the level of education has a direct effect on healthy lifestyle habits: individuals with a higher level of education are more physically active and tend to follow a balanced diet: they consume more fibre-rich products, vegetables, fruits, fish, less alcohol, sweets (Azizi Fard et al., 2021; Finger et al., 2013; Spronk et al., 2014). Therefore, in this study, we aimed to investigate the influence of educational level on dietary habits among medical students in the 1st and 6th years.

**Keywords:** educational level, dietary habits, medical students, food ration

## Methodology

A total of 436 medical students at the Lithuanian University of Health Sciences were involved in the present study. Students were divided into two comparable groups: 1st-year students (female: n=144; male: n=76) and 6th-year students (female: n=136; male: 80). The questionnaire was used to gather data from respondents about their BMI, frequency of fast food consumption, and amount of time devoted to physical activity. Furthermore, the students calculated their food ration according to the 24 h survey methodology described elsewhere (Lazauskas R, 2005). Data were collected regarding the food consumed per 24h, and the calorie content of the food was calculated. Respondents assessed their individual energy needs and compared them with the calculated energy intake per 24h. Harris-Benedict's equation was used to estimate individual energy needs. For Windows, statistical analysis was accomplished using IBM SPSS 28.0 software (SPSS Inc., Chicago, IL, USA). A chi-square test was performed to analyse the difference in the distribution. A p-value of <0.05 was considered significant.

## Results

The results showed that most of the 1st year (74.5 %) and 6th year (86.1 %) medical students have normal BMI. Overweight (11.4 %) and obesity (3.2 %) are more common in 1st year than 6th year (overweight 7.9 %, obesity 1.4 %) medical students ( $p<0.05$ ). Comparing the actual food energy intake of first and sixth-year medical students with the estimated individual daily energy requirement (PEP), we found that 51.8 % of first-year medical students and 38.4 % of sixth-year students get energy overly from food. The amount of actual energy intake corresponds to the estimated PEP in more 6th-year medical students (22.7 %) than in the 1st-year (5.0 %) ( $p<0.001$ ). According to the data of the questionnaire, fast food consumption is widespread among 1st and 6th-year students. However, we found that 24.3 % of 1st-year females and only 11.8 % of 6th-year females consume fast food up to 5 times a week. Lower consumption of fast food in the 6th year was also observed

among males: 88.2% of the 1st-year males choose fast food several times a month and only 78.8 % of the 6th-year males ( $p < 0.001$ ). No statistically significant difference between first and sixth-year medical students was found or compared in physical activity.

### Conclusion & Significance

The knowledge gained by students during medical studies has a positive effect on the formation of their dietary habits.

### References

1. Azizi Fard, N., de Francisci Morales, G., Mejova, Y., & Schifanella, R. (2021). On the interplay between educational attainment and nutrition: a spatially-aware perspective. *EPJ Data Science* 2021 10:1, 10(1), 1–21. <https://doi.org/10.1140/EPJDS/S13688-021-00273-Y>
2. Bellisario, V., Comoretto, R. I., Berchiolla, P., Koumantakis, E., Squillacioti, G., Borraccino, A., Bono, R., Lemma, P., Charrier, L., & Dalmaso, P. (2022). The Association between Greenness and Urbanization Level with Weight Status among Adolescents: New Evidence from the HBSC 2018 Italian Survey. *International Journal of Environmental Research and Public Health*, 19(10). <https://doi.org/10.3390/IJERPH19105897>
3. Finger, J. D., Tylleskär, T., Lampert, T., & Mensink, G. B. M. (2013). Dietary Behaviour and Socioeconomic Position: The Role of Physical Activity Patterns. *PLOS ONE*, 8(11), e78390. <https://doi.org/10.1371/JOURNAL.PONE.0078390>
4. Lazauskas R. (2005). *Mityba ir sveikata*.
5. Naslene Z, U. R. Z. A. (2016). LIETUVOS GYVENTOJŲ BŪKLĖ EUROPOS SAJUNGOS ŠALIŲ KONTEKSE. *Higienos Instituto Sveikatos Informacijos Centras*.
6. Spronk, I., Kullen, C., Burdon, C., & O'Connor, H. (2014). Relationship between nutrition knowledge and dietary intake. *The British Journal of Nutrition*, 111(10), 1713–1726. <https://doi.org/10.1017/S0007114514000087>
7. van Erpecum, C. P. L., van Zon, S. K. R., Bültmann, U., & Smidt, N. (2022). The association between fast-food outlet proximity and density and Body Mass Index: Findings from 147,027 Lifelines Cohort Study participants. *Preventive Medicine*, 155. <https://doi.org/10.1016/J.YPMED.2021.106915>
8. Wyatt, S. B., Winters, K. P., & Dubbert, P. M. (2006). Overweight and Obesity: Prevalence, Consequences, and Causes of a Growing Public Health Problem. *The American Journal of the Medical Sciences*, 331(4), 166–174. <https://doi.org/10.1097/00000441-200604000-00002>



# ANALYZING HACKATHON RESULTS - CASE STUDY FROM VILLAGES ON THE MOVE GO -PROJECT

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## Relevance

Rural sports clubs are important actors in promoting the well-being of the citizen in their communities. Development work in these sports clubs is important, especially now after the COVID-19 pandemic. The restrictions because of this pandemic have reduced the number of members in sports clubs. In the Villages on the Move Go -project (Erasmus+ Sport, 613004-FI-SCP), the partners organised co-creational workshops for rural sports clubs, stakeholders and students. The results from the idea workshops and hackathons are meant to help the leaders of the sports clubs to facilitate development work and find new solutions to promote their sport and the well-being of their members.

**Keywords:** co-creation, development work, hackathon, sports clubs, wellbeing.

## Methodology

In the hackathon in Mikkeli 04.04.2022 in Saimaa Stadiumi, nine teams were developing new ideas for rural sports Clubs in rural areas in Europe. The participants were youth work students from South Eastern Finland University of Applied Sciences (Xamk) and international students of social work from Austria, Poland and Wales. Also, some lecturers and representatives from Sports Clubs joined the work in the smaller teams.

The challenge was: How to motivate young people to participate in local sports clubs, and the subtopics were: time, money, information, organisation, accessibility, digitalisation and Covid-19.

The results were delivered in the form of a comic-style picture. The best ideas for the themes were:

- The coach encourages his group athletes to post on social media of their hobbies.
- Organising open practices/training for free.
- Having training outside.
- The facilities are free of charge for children and young people.
- Funny videos of practising sports in a club.
- Promoting equality and telling about equality in the club on social media.
- App for club members to have transportation to training.
- Providing online lessons and Instagram training tips.
- It's time-saving if the club training is connected to school days.
- Organising testing of different sports.
- The pupils and students with special needs can test with a "sports friend".

In this presentation, the results from the VOMGO hackathon organised in Mikkeli are analysed according to the criteria developed for analysing Hackathon results. The main categorization is Usability, cost-effectiveness, resources required, the technology required, readiness for the idea, idea risk factor, novelty value, fitting in the image of the club and speed of the added value of an idea.

## Results

If to think about how quickly small innovative ideas can be put into practice, many of them can be easy to realize in social media. They can also bring fast results. But to get the best possible result, the club leaders should develop a social media plan to cover all the topics they want. If to think about

cost-effectiveness, social media can be a good solution. But to produce, for example, high-quality videos can be costly, too. Many of the suggestions try to lower the costs of organizing sports activities. For example, getting accessible facilities or building cooperation with schools can be time taking and needs time and negotiation skills from the leader of the sports clubs. Taking this kind of target in the club needs more resources.

Media technology and social media platforms are in a constant process of change. Finding the right channels to reach the wanted target group is challenging. Young people quite often change the platforms they use. This is why the clubs should also have young people in their decision-making and take care of the information channels. This can be profitable for the readiness to adopt new ways of working in the club. There is always a risk of losing the existing members/clients of a sports club if the changes in the services, information channels or facilities are too big. For example, transferring the services online too much might cause the member to feel rejected. On the other hand, online services and lessons might bring new members to the club.

It's usually profitable to inform about the actions related to the strong values of the club. For example, if the club is organizing open practices/training for free or promoting equality in some way. Ideas can be evaluated in terms of criteria (by giving the points) as follows: 0 points = The idea does not meet the condition of the criterion at all. One point = The idea partially meets the criterion condition. 2 points = The idea meets the condition well. Three points = The idea perfectly fulfils the condition of the criterion.

### **Conclusion & Significance**

The hackathon results clearly showed an innovative spirit in the event, and the groups had good motivation to work for the challenge given by the local sports clubs. The team suggestions were easily evaluated according to the criteria categories formulated for hackathons. After this kind of short idea workshop/hackathon, it would be profitable to make a more specific action plan to promote the ideas and see the influences on the youth participation in the local sports clubs.

### **References**

1. DIY hack toolkit. 2019. <https://www.diyhackathon.farmhack.nl/toolkit>
2. Higgins, J. M. 2006. 101 creative problem solving techniques: The handbook of new ideas for business. 2nd ed. New Management Publishing
3. Kesämaa, Heli ja Mattila, Marita (toim.); Ideariihi, häkkäys, jamit, yhteiskehittämisen opas opettajille. Kaakkois-Suomen ammattikorkeakoulu 2021. <https://urn.fi/URN:ISBN:978-952-344-321-1>
4. Kokkonen, V-M. (s.a.) Luovan ongelmanratkaisun prosessi. Luentomateriaali. VMK Valmennus.
5. Valtion liikuntaneuvoston kannanotto: Liikkuminen ja liikunta tarvitsevat erityistä tukea korona-ajan jälkeen <https://www.epressi.com/tiedotteet/urheilu-ja-vapaa-aika/valtion-liikuntaneuvoston-kannanotto-liikkuminen-ja-liikunta-tarvitsevat-erityista-tukea-korona-ajan-jalkeen.html>

# ANTIBIOTIC RESISTANCE AND PATHOGENICITY FACTORS OF *STAPHYLOCOCCUS AUREUS* CLINICAL STRAINS

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## Relevance

Infections caused by *Staphylococcus aureus* (*S. aureus*) are among the most common causes of morbidity and mortality worldwide (Figueiredo, Ferreira, Beltrame and Cortes, 2017). To control the spread of this microorganism, studies analyzing the development of its resistance to antibiotics and the prevalence of virulence factors are being conducted (Neopane, Nepal, Shrestha, Uehara and Abiko, 2018). Panton-Valentine leukocidin is regarded as one of the main features and a clinically relevant virulence marker for *S. aureus* (Klein et al., 2020). Studies that analyze its development of antibiotic resistance and prevalence of virulence factors are being held to retain the spread of this microorganism (Piechota, Kot, Frankowska-Maciejewska, Gruzewska, & Woźniak-Kosek, 2018). Such studies help to assess the current epidemiological situation and prevent infectious outbreaks.

**Keywords:** *Staphylococcus aureus*, Panton-Valentine leukocidin, biofilms, antibiotic resistance, methicillin-resistant *Staphylococcus aureus*, methicillin-sensitive *Staphylococcus aureus*.

## Methodology

The study sample consisted of 159 clinical strains of *Staphylococcus aureus*. Antibiotic resistance was assessed using the qualitative antibiotic disk diffusion method. The intensity of biofilm formation was determined using the Crystal Violet method. The prevalence of the Panton-Valentine leukocidin (PVL) toxin coding gene was determined using the polymerase chain reaction method. Statistical data analysis was performed using SPSS Statistics 23.0 programme.

## Results

85 (53.5 %) strains of *S. aureus* were methicillin-sensitive (MSSA), and 74 (46.5 %) strains were resistant to methicillin (MRSA).

28.2 % of MSSA strains were resistant to tetracycline, 18.8 % to fusidic acid, 10.6 % to gentamicin and trimethoprim/sulfamethoxazole and 9.4 % to amikacin. All MSSA strains were susceptible to linezolid, ciprofloxacin and ceftazidime.

All MRSA strains were (100 %) resistant to ceftazidime and benzylpenicillin. Resistance to ciprofloxacin was 86.5 %, gentamicin – 51.4 %, amikacin – 33.8 %, fusidic acid and rifampicin – 29.7 % and tetracycline – 27.0 %. All MRSA strains tested were susceptible to linezolid.

The prevalence of the PVL toxin-encoding gene among the studied *S. aureus* strains was not particularly high (8 %). However, the study found that the luk S/F-PV gene was almost twice as common among MRSA (10.8 %) than MSSA (5.8 %).

Biofilms were formed by 42 % of *S. aureus* strains. 72.9 % of MSSA strains did not produce biofilms, 16.5 % of strains showed moderate and 10.6 % with strong biofilm formation activity.

MRSA strains were more active in forming biofilms compared to MSSA. 40.5 % of MRSA strains did not form biofilms, and 33.8 % of strains showed moderate and 25.7 % strong biofilm formation activity.

## Conclusion & Significance

MSSA strains remain the most resistant to penicillin, their resistance to more commonly used antibiotics is 9.42–8.2 per cent.

All MRSA strains were resistant to ceftazidime and benzylpenicillin, including a high resistance to ciprofloxacin (86.5 %) and gentamicin (51.4 %).

MRSA strains form biofilms 2.2 times more often than MSSA strains.

The prevalence of the PVL toxin-encoding gene *lukS/F-PV* among the studied *S. aureus* strains was not particularly high, but the PVL gene was almost twice as often detected among MRSA than MSSA strains

## References

1. Figueiredo, A. M. S., Ferreira, F. A., Beltrame, C. O., & Cortes, M. F. (2017). The role of biofilms in persistent infections and factors involved in ica-independent biofilm development and gene regulation in *Staphylococcus aureus*. *Critical Reviews in Microbiology*, 43(5), 602-620. <https://doi.org/10.1080/1040841X.2017.1282941>
2. Neopane, P., Nepal, H. P., Shrestha, R., Uehara, O., & Abiko, Y. (2018). In vitro biofilm formation by *Staphylococcus aureus* isolated from wounds of hospital-admitted patients and their association with antimicrobial resistance. *International journal of general medicine*, 11, 25-32. <https://doi.org/10.2147/IJGM.S153268>
3. Klein, S., Hannesen J., Zanger, P., Heeg, K., Boutin, S., Nurjadi, D. (2020) Entry of Pantone–Valentine leukocidin-positive methicillin-resistant *Staphylococcus aureus* into the hospital: prevalence and population structure in Heidelberg, Germany 2015–2018. *Scientific Reports* 10, Article number: 13243. <https://doi.org/10.1038/s41598-020-70112-z>.
4. Piechota, M., Kot, B., Frankowska-Maciejewska, A., Gruzewska, A., & Woźniak-Kosek, A. (2018). Biofilm formation by methicillin-resistant and methicillin-sensitive *Staphylococcus aureus* strains from hospitalized patients in Poland. *BioMed Research International*, Volume 2018, Article ID 4657396. <https://doi.org/10.1155/2018/4657396>

# THE FOOD SUPPLEMENT EFFECTIVENESS AGAINST PREMATURE AGEING AND OXIDATIVE STRESS

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## Relevance

Recently, society's intention to maintain a youthful appearance and general well-being and health has been a noticeable surge. Slowing down the ageing process is relevant to our society. According to recent surveys, 63% of respondents agree that society is obsessed with the cult of youth (Lesko, 2012). More and more people are undergoing invasive and non-invasive skin rejuvenation procedures (Global and Chinese Facial Aesthetic Dermal Filler Industry, 2018), and the global market for products to stop/slow ageing is constantly growing (Global Cosmetics, 2018-2023). Manufacturers of food supplements take these trends into account and offer consumers food supplements designed to improve skin condition and maintain overall body function (Sparavigna et al., 2015). Research and new technologies contribute to improving quality of life and even life expectancy – in the 20th century, the average life span was 65, and lately, it has increased to 80 years. It is no secret that as we age, the condition and health of our skin change, demanding additional care to preserve its youthfulness and beauty (Burke, 2018). Although many factors influence the acceleration of the ageing process, one of the main ones is free radicals, generated mainly by external factors (Ahsanuddin, Lam, & Baron, 2016). Studies have shown that free radicals generated by oxidative stress cause significant damage to the condition of the skin and its integrity and cause visible changes in skin appearance. Due to the pace of modern life and the nature of the average human lifestyle, a healthy diet is often overlooked. The purpose of food supplements is to compensate for the lack of certain components in the body, in this case, antioxidants. The aim of the work: is to evaluate the effect of NoAGE food supplements on women's facial skin parameters.

**Keywords:** food supplements, oxidative stress, facial skin parameters.

## Methodology

A total of 69 women aged 35-45 were enrolled in the study. Subjects were divided into two groups to objectively assess the NoAGE food supplement's effects. The first group of 34 women received the NoAGE dietary supplement, and the second group of 35 received a placebo. To assess the effect of the NoAGE dietary supplement on women's skin changes, dermatological parameters (skin moisture, elasticity, visual and inflammatory changes) were measured with DermaLab Combo and Visio Face diagnostic devices.

## Results

Positive changes in the skin's viscoelasticity, moisture and redness parameters were observed after the food supplement was used for at least 15 weeks. After 15 weeks, viscoelasticity increased by 7.38 %, moisture level increased by 20.25 %, and facial flushing (erythema) decreased by 12.96 % compared to initial values.

## Conclusion & Significance

The results showed that NoAGE food supplements positively affect facial skin elasticity, moisture levels and inflammation. The first positive changes have been observed after five weeks of food supplement intake. Evaluation of parameter improvement correlation with time has indicated

that a prolonged duration of regular food supplement intake causes a gradual increase of positive skin parameters. Food supplement slows down the entire body's inflammatory processes and effectively reduces skin inflammation, especially erythema.

### References

1. Ahsanuddin, S., Lam, M., & Baron E.D. (2016). Skin ageing and oxidative stress. *AIMS Molecular Science*, 3(2), 187-1952.
2. Burke, K. E. (2018). Mechanisms of ageing and development—A new understanding of environmental damage to the skin and prevention with topical antioxidants. *Mechanisms of Ageing and Development*, 172, 123–130.3.
3. Lesko, N. (2012). *Act Your Age!: A Cultural Construction of Adolescence* (2nd ed.). Routledge. <https://doi.org/10.4324/9780203121580>
4. *Global Cosmetics Products Market-Analysis of Growth, Trends and Forecasts (2018-2023)*. <https://marketersmedia.com/global-cosmetics-products-market-expected-to-reach-usd-805-61-billion-by-2023-industry-size-share-analysis/313185>
5. *Global and Chinese Facial Aesthetic Dermal Filler Industry (2018)*. Market Research Report. <https://www.researchandmarkets.com/reports/4599112/global-and-chinese-facial-aesthetic-dermal-filler#src-pos-2>
6. Sparavigna, A., Tenconi, B., & De Ponti, I. (2015). Antiageing, photoprotective, and brightening activity in bio revitalization: a new solution for ageing skin. *Clinical, cosmetic and investigational dermatology*, 8, 57–65

# THE EFFECT OF A FOOD SUPPLEMENT ON THE CONDITION OF WOMEN'S FACIAL SKIN IN RELATION TO LIFESTYLE HABITS

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## Relevance

The concept of eternal youth is very fashionable nowadays. However, ageing is a natural and inevitable process (Bielfeldt, Springmann, Seise, Wilhelm, & Callaghan, 2018). Human skin is one of the first organs in the body to indicate age-related changes. Skin moisture, elasticity and inflammatory process are the main indicators visually showing the skin ageing processes. The most common features of ageing skin include an increase in wrinkles, a decrease in skin tone, a decrease in skin thickness, elastin and collagen components, and colour changes in the skin (Michalak, Pierzak, Kręcis, & Suliga, 2021). Changes in the skin with age depend a lot on lifestyle choices and environmental factors, including smoking, alcohol consumption, exposure to ultraviolet radiation, diet, water intake, quality of rest and skin care. For example, smoking reduces hydration in the epidermis, also increases wrinkles, alcohol consumption promotes dehydration, causes inflammatory processes, and disrupts skin cell reproduction processes. Sunbathing promotes premature ageing of the skin, manifested by skin wrinkling, hyperpigmentation, loss of elasticity and other characteristics. Lack of regular sleep causes inflammatory processes in the skin, the skin becomes less elastic, and wrinkles form. Proper diet, sun protection, and systematic skin care help the skin stay young and healthy for longer (Chaudhary, Khan, & Gupta, 2020). In response to the desire to maintain a youthful appearance and stop ageing, plenty of different food supplements are offered to improve the skin's condition and maintain overall body function.

The aim of the study - is to reveal the links between lifestyle habits and the effect of a food supplement on facial skin condition. For the study, the food supplement NoAge was used.

**Keywords:** food supplement, lifestyle habits, facial skin, facial skin moisture, ageing skin.

## Methodology

The study methodology was based on a few data collection methods. Experiment and observation methods were used to evaluate the impact of the food supplement NoAge on the women's facial skin condition. Women, who followed the selection criteria were selected for the experiment, and used the food supplement for 15 weeks. A primary, an intermediate, and a final diagnosis of the facial skin parameters (moisture, elasticity, visual and inflammatory changes) were conducted to observe the facial skin parameter changes of the survey participants. Diagnostical measurements were made using skin diagnostic devices DermaLab Combo and Visio Face RD). The questionnaire on lifestyle habits was used to assess the links between facial skin condition and lifestyle of women who used the food supplement. Statistical data analysis was performed using SPSS and Excel programmes. The survey target group is 39 women aged 35-45.

## Results

When evaluating the changes in the moisture level of the facial skin in the epidermis (the difference in measurement averages) after the use of the food supplement, it was found out that the moisture level of the facial skin in the epidermis of smokers increased by 46.97  $\mu\text{S}$  units, for non-smokers, it was lower more than twice - 20.72  $\mu\text{S}$  units. The highest humidity increase (51.53  $\mu\text{S}$ ) was found for women with an average sleep duration of 7 hours. The most significant change in facial

skin moisture (42.97  $\mu\text{S}$ ) was observed for women drinking 500 ml-1 l of water per day. Diagnosis of facial skin humidity level after using the supplement showed that the highest effectiveness (91.22  $\mu\text{S}$ ) for facial skin moisture parameter was for women who do not drink coffee. After taking the food supplement, it was observed that it was most effective for women whose diet did not contain sugar. The food supplement has the greatest effect on skin moisture for women more exposed to the sun. The greatest skin improvement was observed for women who used sun cream only on sunny days and those who used sun cream only when sunbathing. The food supplement was most effective for the facial skin moisture of women who had recently started taking care of their skin.

### **Conclusion & Significance**

The food supplement can potentially be effective for the moisture and elasticity of the facial skin of respondents who smoke and do not sleep enough. The food supplement may work better in accordance with the principles of a healthy lifestyle: for women who drink more water per day, do not drink coffee, and refuse food with added sugar. A greater improvement in facial skin moisture levels was observed for them.

The conducted study showed that lifestyle habits have an impact on the effectiveness of the food supplement. Still, more detailed studies with a larger number of study participants are needed to confirm or deny this.

### **References**

1. Bielfeldt, S., Springmann, G., Seise, M., Wilhelm, K.-P., & Callaghan, T. (2018). An Updated Review of Clinical Methods in the Assessment of Ageing Skin - New Perspectives and Evaluation for Claims Support. *International Journal of Cosmetic Science*.
2. Chaudhary, M., Khan, A., & Gupta, M. (2020). Skin ageing: Pathophysiology and current 33 market treatment approaches. *Current ageing science*, 13(1), 22-30.
3. Michalak, M., Pierzak, M., Kręcis, B., & Suliga, E. (2021). Bioactive Compounds for Skin Health: A Review. *Nutrients*, 13(1), 203.



# PREPARATION AND QUALITY EVALUATION OF LOZENGES WITH LIDOCAINE HYDROCHLORIDE AS AN ACTIVE SUBSTANCE

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## Relevance

Lidocaine is a local anaesthetic drug that is most effective when used topically. Because of its activity, while used on the skin or mucous membranes of the body, it is added to a wide variety of pharmaceutical formulations, such as creams, lotions, ointments, and patches, as well as in solutions and lozenges that treat sore throat symptoms (Khodadoostan et al., 2018, Donath et al., 2018). It is always important to model various novel pharmaceutical forms with lidocaine hydrochloride that would be more appealing to patients. Soft medicated lozenges are one of the most suitable pharmaceutical forms to use topically on the mouth mucous tissues. It is in pharmaceutical form, with the texture of soft candy, with a pleasant taste and smell. It is important to model novel pharmaceutical forms and ensure their quality parameters (Hemilä et al., 2022). The study aimed to evaluate the quality of modelled lozenges with lidocaine hydrochloride as the active substance.

**Keywords:** quality evaluation, lidocaine hydrochloride, medicated lozenges, pharmaceutical formulations.

## Methodology

The study was performed using organoleptic, physicochemical, and biopharmaceutical methods to evaluate the quality of modelled soft lozenges. The organoleptic properties of lozenges were evaluated by tasting, touching and smelling. The physicochemical properties, such as mass uniformity, were measured with the digital laboratory scale. The disintegration test was performed using the MRC Scientific Instruments apparatus to evaluate the time needed for the lozenges to disintegrate. The stability and organoleptic properties were assessed visually, as well as measuring the mass of the lozenges after two months while keeping lozenges in the refrigerator (2-8 degrees Celsius) temperature. All the experiments were carried out at least three times. The statistical analysis was performed using SPSS 25.0 software.

## Results

Two batches of soft lozenges with different amounts of lidocaine hydrochloride were modelled during the research. The physical characterization of the lozenges has shown that all of the formulations were soft, with uniform edges, brown colour and with the smell of peppermint and thyme essential oils that were used in the composition. The taste was sweet because of honey which was used as the sweetener in the lozenges, and the anaesthetic feel was prominent because of the lidocaine hydrochloride. The mass of lozenges varied between 0,146 and 0,157 grams. The disintegration time varied from 2 min. 55 sec (P2 series), while lozenges of the P1 series disintegrated in 3 min. 14 sec time. A significant difference in disintegration time was observed between two batches of lozenges ( $p < 0.05$ ). During the stability tests, the mass of the lozenges decreased significantly ( $p < 0.05$ ) because of water loss, the lozenges became less sticky, and the disintegration time increased ( $p < 0.05$ ).

## Conclusion & Significance

Lidocaine hydrochloride is one of the most commonly used topical anaesthetic active substances, and it is important to ensure the pleasurable consumption of the drug for the patient.

Lozenges is a pharmaceutical form which can offer better taste and ease of use for topical drugs for sore throat symptoms. The modelled lozenges' composition had natural ingredients such as essential oils and honey as excipients. The modelled lozenges were uniform, with a mass range which is acceptable according to the European pharmacopoeia; organoleptic and biopharmaceutical properties have met the requirements for lozenges.

### References

1. Donath, F., Mallefet, P., Garreffa, S., & Furcha, R. (2018). Efficacy of 8 mg lidocaine and 2 mg cetylpyridinium chloride (CPC) fixed-combination lozenges on sore throat pain intensity compared with 1 mg lidocaine and 2 mg CPC fixed-combination lozenges in subjects with sore throat due to upper respiratory tract infection: a randomized double-blind parallel-group single-dose study. *Trials*, 19(1), 1-8.
2. Hemilä, H., Chalker, E., & Tukiainen, J. (2022). Quantile treatment effect of zinc lozenges on common cold duration: a novel approach to analyze the effect of treatment on illness duration. *Frontiers in pharmacology*, 13.
3. Khodadoostan, M., Sadeghian, S., Safaei, A., Shavakhi, A. R., & Shavakhi, A. (2018). Viscous lidocaine solution versus lidocaine spray for pharyngeal local anaesthesia in upper gastroesophageal endoscopy. *Journal of Research in Medical Sciences: the Official Journal of Isfahan University of Medical Sciences*, 23.

# PROVIDING HEALTH CARE SERVICES FOR PEOPLE WITH INTELLECTUAL DISABILITY IN THE EQUAL TREATMENT CONTEXT

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## Relevance

According to the data of the World Health Organization (World Health Organization, 2015), approximately 15 per cent of the world's population have some form of disability. People with an intellectual disability have neurodevelopmental deficits characterized by limitations in intellectual functioning and adaptive behaviour 1 and 3% of the population has an intellectual disability.

People with intellectual disability may have more physical and mental health conditions in midlife and old age compared to the general population. Many physical and mental health conditions, including epilepsy, immune conditions, cardiovascular disease, sleep disorders, gastrointestinal disorders, neurologic conditions, psychiatric disorders, deafness and visual impairment, obesity, and trauma, were highly prevalent in the group of people with ID (Sappok, 2019; Whittle et al.2018; Fellingner et al., 2020; Landes et al., 2021). Adults with ID had a substantially higher risk of death from pneumonitis, influenza/pneumonia, choking, and heart disease. Adults with mild/moderate ID also had a higher risk of death from diabetes mellitus.

Health accessibility in relation to people with an intellectual disability has identified several common deficits in mental health services, including a lack of training for practitioners, specialized services, and ineffective service collaboration (Whittle et al., 2018).

Healthcare professionals need to develop their skills and knowledge to better support the health literacy and communication needs of patients with intellectual disabilities. The quality of the services as gaps in clinical knowledge and diagnostic overshadowing contributed to poor recognition of a need and subsequent inadequate treatment. Healthcare professionals need to develop their skills and knowledge to better support the health literacy and communication needs of patients with intellectual disabilities.

Recent EU policy developments and initiatives gathered below include actions and recommendations focused on the issue of people with disability's health and their right to access health care services; directly related to their equal access to such services and the barriers PWID face. "Equal Treatment" project is an ERASMUS+ funded project to improve the access of people with intellectual disabilities to secondary and tertiary health care through inclusive European policies in healthcare services, training of healthcare staff on interacting with patients with intellectual disabilities, and; stronger collaboration between healthcare staff and professional supporters. For this reason, this project will focus on one main objective: supported rights and access of people with intellectual disabilities (PWID) to secondary and tertiary healthcare services.

Research aim. To reveal providing health care service for people with intellectual disability in the „Equal treatment“ context.

**Keywords:** People with intellectual disability, healthcare professionals, the project “Equal treatment”.

## Methodology

Articles on people with intellectual disability (PWID) health issues, ensuring equality, and providing health care services for PWID were searched in the Medline and Google scholar electronic databases using the keywords “Intellectual Disability mental, physical health problems, medical staff communication with PWID, health care services for PWID” in the period of 15 June 2022–15 August 2022. Fifty articles were analyzed. Project “Equal treatment” results, target groups presented from

project application. Project duration 2022-2024 year (Erasmus2027 programme project „EQUAL TREATMENT“ No. ERASMUS-EDU-2021-PCOOP-ENGO-101049115). The project is presented using the description of the project application.

### **Results**

Persons with an intellectual disability have high rates of mental and physical health problems. Persons with ID do experience fear and anxiety, and have epilepsy. Persons with ID are more often hospitalized compared to the general population. The prevalence of being overweight and obese among adults with ID is high. Persons with ID often experience sensory impairment. Persons with ID are less likely to receive preventive health care. Persons with ID had a substantially higher risk of death from pneumonitis, influenza/pneumonia and choking. Persons with ID are in poorer health and experience healthcare access problems. Persons with intellectual disabilities form a vulnerable group within the healthcare system whose needs can be poorly understood due to their cognitive and communicative challenges. The treatment and nursing of persons with ID are complex and need an interdisciplinary approach and healthcare professionals' special knowledge and skills.

### **Conclusion & Significance**

People with intellectual disability are more vulnerable to mental ill-health for several complex reasons, ranging from biophysical to psychosocial. Despite the effort made at policy levels, the data shows that respect for the rights of people with disabilities and their full access to the Health Care system and health services are still a long way off.

### **References**

1. Fellingner J., Linzner D., Holzinger D., Dall M., Fellingner M., Fogler J. (2020). Development of Deaf Adults with Intellectual Disability in a Therapeutic Living Community, *The Journal of Deaf Studies and Deaf Education*, Volume 25, Issue 3, Pages 261–269, <https://doi.org/10.1093/deafed/enz056>
2. Landes S. D, Stevens J. D, Turk M. A. (2021). Cause of death in adults with intellectual disability in the United States. Volume 65, Issue1, Pages 47-59, <https://doi.org/10.1111/jir.12790>
3. Sappok T, Diefenbacher A, Winterholler M. (2019). The Medical Care of People With Intellectual Disability. *Dtsch Arztebl Int.* 29;116 (48):809-816. doi: 10.3238/arztebl.2019.0809. PMID: 31888794; PMCID: PMC6947689.
4. Whittle E.L., Fisher K.R., Reppermund S., Lenroot R., Trollor J. (2018). Barriers and Enablers to Accessing Mental Health Services for People With Intellectual Disability: A Scoping Review, *Journal of Mental Health Research in Intellectual Disabilities*, 11:1, 69-102, DOI:10.1080/19315864.2017.14087247.

# IMPACT OF OCCUPATIONAL THERAPY BASED ON ANIMAL-ASSISTED ACTIVITIES FOR PATIENTS WITH DEMENTIA

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## Relevance

“Animal interventions improve social behaviour and reduce behavioural and psychological symptoms in people with dementia” (Wordly, 2010). „Animal-assisted therapy (AAT) can be defined as a goal-directed intervention in which an animal meeting specific criteria is an integral part of the treatment process (Klimova et al., 2019). AAT is usually performed by health or human service providers. The aim of the study was to assess the impact of occupational therapy based on animal-assisted activities for patients with dementia. Objectives of the study: 1. To determine the emotional state of people with dementia before and after the study. 2. To assess the independence of participants before and after the study. 3. To compare the changes in emotional state and independence of people with dementia after occupational therapy based on animal-assisted activities.

**Keywords:** animal-assisted activities, dementia, emotions, independence, occupational therapy.

## Methodology

Research design: quantitative research with elements of qualitative research. Data collection methods: testing (before and after the study, patients were assessed using the HAD scale to assess their emotional state and the FIM Functional Independence Test to assess their independence), observation (throughout the study, patients were observed according to an observation protocol developed by the author). Methods of data analysis: descriptive statistics calculations, content analysis. The participants were 12 people (average age 83.6 years) living in a care home with a diagnosis of dementia and an MMSE score of at least 11.

## Results

The mean pre-test FIM total sum score was  $58.8 \pm 6.05$ . Post-test, the mean FIM total sum score was  $65.8 \pm 6.15$ . This improvement in independence functions was statistically significant ( $p < 0.05$ ). Before the study, the mean total sum score of the HAD scale, the anxiety subscale, was  $8.8 \pm 1.41$ , indicating that the patients had a high level of anxiety. The post-test anxiety subscale had an overall mean score of  $7.5 \pm 1.26$ , indicating that anxiety was not expressed in the patients. This change was statistically significant ( $p < 0.05$ ). Patients became calmer, more focused, and no longer asked many fear-related questions. Before the study, the mean total sum score of the HAD scale, the depression subscale, was  $11.25 \pm 1.41$ , indicating that the subjects had high anxiety levels before the study. At post-test, the mean total sum score at reassessment was  $9.75 \pm 1.41$ , indicating that, on average, the patients were depressed, but in a few patients, the depressive symptoms had decreased significantly. This change was significant ( $p < 0.05$ ).

## Conclusion & Significance

1. Pre-study assessment of the participant’s emotional state showed they were anxious and depressed. Anxiety and depression decreased after the test.

2. A pre-test assessment of the independence of patients with dementia identified that independence was impaired. After the study, patients with dementia were more independent.

3. Based on the observational results, the participants' emotional state and independence varied throughout the study: at the beginning of the study, the subjects were agitated, anxious, indifferent, and struggled to perform daily activities. At the end of the study, participants felt relaxed, calmer, and willing to engage in the activities offered.

### References

1. Klimova, B., Toman, J., & Kuca, K. (2019). Effectiveness of the dog therapy for patients with dementia - a systematic review. *BMC psychiatry*, 19(1), 276. Access through internet: <https://doi.org/10.1186/s12888-019-2245-x>
2. Worldley, A. M. (2010) Old man's best friend: animal-assisted intervention for older people with dementia. School of Psychology, the University of Adelaide, 394 p.

# GRANTS FOR YOUNG RESEARCHERS UNDER THE UMBRELLA OF THE CA19104 COST ACTION

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## Relevance

In the 21st century, when globalization pervades several areas of everyday life, including higher education, the era of student mobility and student exchange programmes arrived. Moreover, supporting young researchers is a high priority as the number of PhD students and post-doctoral fellowship mobility has grown worldwide.

**Keywords:** COST Action, higher education, mobility, PhD/young researcher's grant.

## Methodology

This article introduces the short study and conference attendance support opportunities for young European researchers and PhD students. The Marie Skłodowska-Curie Actions, OeAD, DAAD, ERASMUS programmes, Campus Mundi, Stipendium Hungaricum Scholarship, and COST Action grand awarding are the scholarship programmes whose aim is to serve the growth of the EU's intellectual capital. Since the European Union has realized the importance of intangible assets, such as intellectual capital, they have started to provide a supportive environment for student mobility. Therefore, addressing the importance of the offered scholarship in Europe, in this paper, we attempted to present the potentiality of the addressed scholarship programmes connected with the EU and help them improve their policy. Moreover, an example from the COST Action, CA19104-advancing Social inclusion through Technology and EmPowerment (a-STEP), has addressed various supporting activities.

## Results

The main objectives of the CA19104 COST Action (a-STEP) are to (i) evaluate and synthesize research among the PanEuropean network and beyond on enhancing social inclusion through AT in an international context, (ii) connect and promote knowledge transfer between the users, researchers, practitioners, and SMEs, (iii) integrate ongoing research in an interdisciplinary (social sciences, rehabilitation, psychology, medical, engineering, technology), inter-country, and intersectoral (research, industry, policy) network, (iv) bring together research projects in a collaborative activity among pan-European network and beyond. This Cost Action has several awards: Short Term Scientific Mission (STSM), Virtual Mobility, Virtual Networking, and Inclusive Target Countries (ITC) Conference Grant.

ITC Conference Grant: The COST Action CA19104 "Advancing Social inclusion through Technology and EmPowerment" encourages and supports PhD students and Early Career Investigator researchers (ECI = PhD + up to 8 years) from Participating Inclusiveness Target Countries (ITC) to attend international science and technology related conferences. Inclusiveness Target Countries are Albania, Bosnia and Herzegovina, Bulgaria, Cyprus, Czech Republic, Estonia, Croatia, Hungary, Lithuania, Latvia, Luxembourg, Malta, Moldova, Montenegro, North Macedonia, Poland, Portugal, Romania, Slovenia, Slovakia, Republic of Serbia and Turkey.

An applicant can be considered an ECI when the time that has elapsed between the award date of the applicant's PhD and the date of the applicant's first involvement in the COST Action 19104 does not exceed eight years. The application must be submitted at least 45 days before the conference

start date. The COST Action CA19104 can support about 4-5 ITC Conference Grant applicants per year, a maximum of EUR 1,000 per conference.

STSM Grant: Short Term Scientific Missions allows researchers participating in a COST Action to visit an institution or laboratory in another participating COST Country/an approved COST Near Neighbor Countries (NNC) institution or an approved International Partner Countries (IPC) institution. The full list of NNC is as follows: Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Jordan, Kosovo, Lebanon, Libya, Morocco, the Palestinian Authority, Russia, Syria, Tunisia, and Ukraine.

The purpose of an STSM is: to strengthen existing networks and foster collaborations, contribute to the overall scientific objectives of the COST Action, enable eligible Researchers to learn new techniques, and gain access to specific expertise, instruments and/or methods not available in their institutions.

An STSM applicant must be engaged in a research programme as a PhD student or postdoctoral fellow or can be employed by, or affiliated with, an Institution or legal entity which has within its remit a clear association with performing scientific research depending on which country their primary affiliation is held. In-time applications are preferred (minimum 30 days before the start of the STSM).

The COST Action CA19104 can support about 4-5 STSM Grant applicants per year, a maximum of EUR 2,000 per application.

### **Conclusion & Significance**

This paper aimed to empirically investigate the potentiality of several scholarship programmes offered throughout Europe. According to past studies and from the perspective of several open-source resources, such as national and international representative datasets, seven long-term and short-term scholarship programmes are accepted and popular for international and EU students in Europe. Of these seven programmes, COST Action is an effective programme discussed/highlighted in this study. The details about CA19104 COST Action reveal this programme's implications that facilitate grantees, students, universities, organizations, researchers, scientists, and policymakers at their carrier development in both early and advanced levels of carrier.

### **References**

1. Marie Skłodowska-Curie Actions, <https://marie-sklodowska-curie-actions.ec.europa.eu>
2. Stipendium Hungaricum, <https://stipendiumhungaricum.hu/>
3. DAAD, <https://www.daad.de/en/>
4. ERASMUS programmes, <https://erasmus-plus.ec.europa.eu/>
5. OEAD, <https://oead.at/en/>
6. Campus Mundi, <https://tka.hu/english>
7. COST Actions, <https://www.cost.eu/cost-actions/what-are-cost-actions/>
8. CA19104 – advancing Social inclusion through Technology and EmPowerment: <https://www.cost.eu/actions/CA19104/#tabs|Name:overview>
9. a-STEP project, <https://www.a-step-action.eu/project/>



# NURSES' VIEWS ON DYING PATIENTS AND THEIR RELATIONSHIP WITH NURSES' VALUES AND RELIGIOSITY

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## Relevance

In recent decades, death has become much more institutionalized in modern society, as most deaths occur in hospitals or long-term care facilities (Salum M., 2017). In their direct work, medical workers often encounter seriously ill and dying patients (Smaidžiūnienė D., 2020). How a dying patient is treated depends on each person's approach to death (Hagan, 2015). Nurses play an important role in assessing patients' care needs and implementing care, and they also provide services to patients' relatives (Paul, Renu & Thampi, 2019). A positive attitude towards the care of dying patients is an important element of good nursing practice (Browall M., 2020), and the quality of services depends on the attitude of nurses towards death (Smaidžiūnienė D., 2020). The level of death anxiety experienced by nurses depends greatly on their age, gender, religion and experience of the nurses (Sharif N.H., 2016). Nurses must be properly prepared for the relationship with the patient's death (Faronbi J., 2021). Professional and personal values influence nurses' actions, behaviour and decision-making. A nurse's values depend on many factors, such as individual personal characteristics, family situation, living environment, level of education, the institution where they work, and experience (Ilaslan E., 2020). Schroeder and Lorenz (2018) distinguished the following values in palliative care: communicating with the patient and his family members and providing compassion. The nurse must be able to explain complex information to the patient and family members, as patients need clarity about disease progression, medication use, and care planning. Compassion helps to gain trust. (Schroeder, K. 2018). Research problem: What is the attitude of nurses towards dying patients? The purpose of the study: is to determine the nurses' attitude towards the dying patient and its connections with the nurses' values and religiosity. Research objectives: 1. To determine the attitude of nurses towards the care of a dying patient, according to Frommelt. 2. To determine the influence of values and religion on nurses' attitudes towards dying patients.

**Keywords:** Frommelt, FATCOD, nurse's attitude, dying patients, nurse's values.

## Methodology

The research is quantitative. Two hundred general practice nurses participated in the survey. With the permission of Jane Österlind, a short version of Frommelt's Attitudes toward Dying Scale (FATCOD) was used for this study. The authors of the article created other questions in the questionnaire. The selected survey method is a direct questionnaire. To ensure the principles of bioethics, Bioethics permit no. BEC-KK(B)-42 was received. The obtained data were analyzed using the statistical programme IBM SPSS Statistics 28.0.

## Results

Respondents most agreed with the FATCOD statement: "I would be disappointed if the patient under care lost hope of feeling better" (3.86±0.81). Believing respondents most agreed with the FATCOD statement: "When the patient asks if he is going to die, I change the topic of the conversation to more pleasant things" (3.46±1.10). Non-believing respondents disagreed with this statement (2.37±0.98). The statement "I would be disappointed if the patient I cared for lost hope of feeling better" had connections with most values of nurses.

## Conclusion & Significance

1. It was found that, on average, the largest number of nurses who participated in the study agreed with the statements of Frommelt's scale of attitude towards the care of the dying, reflecting the patients' well-being: having a sense of hope and a good emotional state. Nurses, on average, least agreed that it is difficult to connect with patients' relatives and provide professional care with their participation and that the addiction of dying patients to painkillers is a problem.

2. It was found that believing respondents agreed with the statement: "When a patient asks if he is going to die, I change the topic of conversation to more pleasant things." Non-believing respondents disagreed with this statement statistically significantly. A strong statistical relationship was found between nurses' values: willingness to help, compassion, caring, sensitivity, communication, trust and honesty, with the attitude that the nurse would be disappointed if the patient lost hope of getting better.

## References

1. Browall M., Pakpour A.H., Melin-Johansson C., Lundh Hagelin C., Österlind, J., Hénoch I. Development and Psychometric Evaluation of a New Short Version of the Swedish Frommelt Attitudes Toward Care of the Dying Scale. (2020) *Cancer Nursing*, Vol. 00, No. 0, 2020, 1-9.
2. 20. Faronbi, J., Akinyoola, O., Faronbi, G., Bello, C. , Kuteyi, F. & Olabisi, I. (2021). Nurses' Attitude Toward Caring for Dying Patients in a Nigerian Teaching Hospital. *SAGE Open Nursing*, (7), 1–8. DOI: 10.1177/23779608211005213.
3. Hagan, J. C. (2015). Getting Comfortable With Death: Medicine at Death's Door: One Chance to Get It Right. *Missouri Medicine*, 112(3), 148-150.
4. 26. İlaslan, E., Geçkil, E., Kol, E. & Erkul, M. (2020). Examination of the professional values of the nurses and the associated factors. *Perspectives in Psychiatric Care*. DOI: 10.1111/ppc.12524.
5. Paul, S., S., Renu, G. & Thampi, P. (2019). Creating a Positive Attitude toward Dying Patients among Nursing Students: Is the Current Curriculum Adequate? *Indian J Palliat Care*, 25(1), 142-146. DOI: 10.4103/IJPC.IJPC\_148\_18.
6. Salum, M., Kahl, C., Cunha, K.S., Koerich, C., Santos, T.O. & Erdmann, A.L. (2017). The process of death and dying: challenges in nursing care for patients and family members. *Rev Rene*, 18(4), 528-535. DOI: 10.15253/2175-6783.2017000400015.
7. 67. Schroeder, K. & Lorenz, K. (2018). Nursing and the Future of Palliative Care. *Asia Pac J Oncol Nurs.*, 5(1), 4–8. DOI: 10.4103/apjon.apjon\_43\_17.
8. Sharif, N.H., Lehto, R.H., Ebadi, A. & Peyrovi, H. (2016). Death Anxiety among Nurses and HealthCare Professionals: A Review Article. *IJCBNM*, 4(1), 2-10.
9. Smidžiūnienė, D. (2020). Slaugytojų bendradarbiavimo patirtis su sunkiai sergančių ir mirstančių pacientų šeimomis. *Sveikatos mokslai*, 30(6), 159-164. DOI: 10.35988/sm-hs.2020.158.

# THE EFFECT OF DIFFERENT WARM-UP METHODS ON FLEXIBILITY, AGILITY AND BALANCE IN OLDER MALE VOLLEYBALL PLAYERS

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## Relevance

In volleyball, as in any other sport, it is necessary to prepare the body for future activities before the match and before training. This is done during the warming up, which is especially important for the elderly. With age, balance changes develop the range of joint motions decreases, and the vision and hearing reactions associated with agility and coordination weaken. Also, due to the muscle elasticity decreasing with age and the loss and stiffening of connective tissue, older people are prone to exercise-related and musculoskeletal system injuries. Properly-selected exercise improves the level of physical preparation, flexibility, strength, joint stability, biomechanics of movement, balance, and agility and is necessary to reduce the risk of injury associated with these factors (Barbosa et al., 2020; Mansur et al., 2019; Turki et al., 2019; Takeuchiet al., 2021). What are the effects of different warm-up methods on flexibility, agility and balance in older male volleyball players? This study aimed to determine the effects of different warm-up methods on flexibility, agility and balance in older male volleyball players.

**Keywords:** agility, balance, elderly, flexibility, volleyball, warm up.

## Methodology

Eighteen older male volleyball players were divided into two groups: I – dynamic stretching exercise group (67.43 ± 3.82 years, 182.86 ± 4.56 cm height, 87.14 ± 12.64 kg weight), II - foam rolling exercise group (64.57 ± 3.65 years, 185.86 ± 8.63 cm height, 88.64 ± 12.01 kg weight). Both groups performed general warm-up exercises for 10 min. After that, the I group performed dynamic stretching exercises for leg muscles for 8 min, and the II group – foam rolling for leg muscles for 8 min. Before and after the warm-up intervention, the flexibility, which was estimated with the Sit and Reach test; the agility, which was estimated with the 10x5m Shuttle test; the static balance, which was estimated with the Flamingo Balance test; and the dynamic balance, which was estimated with the Modified Star excursion balance test, were evaluated.

## Results

After applying dynamic stretching warm-up, exercises improved the flexibility by 1.72 cm ( $p < 0.05$ ), agility by 0.37 s ( $p < 0.05$ ), static balance – 0.57 trial/min ( $p < 0.05$ ), and dynamic balance by 4.96 cm ( $p < 0.05$ ). Post foam rolling warm-up exercises improved the flexibility by 2.64 cm ( $p < 0.05$ ), agility by 0.15 s ( $p < 0.05$ ), static balance – 0.14 trial/min ( $p < 0.05$ ), and dynamic balance by 4.64 cm ( $p < 0.05$ ) for older male volleyball players. No statistically significant differences were found between groups ( $p > 0.05$ ).

## Conclusion & Significance

No differences were found among different warm-up groups in improving male volleyball players' flexibility, agility, and static and dynamic balance.

## References

1. Barbosa, G. M., Dantas, G. A. F., Pinheiro, S. M., Rêgo, J. T. P., Oliveira, T. L. C., Silva, K. K. F., ... & Brito Vieira, W. H. (2020). Acute effects of stretching and/or warm-up on neuromuscular performance of volleyball athletes: a randomized cross-over clinical trial. *Sport Sciences for Health*, 16(1), 85-92.
2. Mansur, M., Irianto, S., & Kurniawan, F. (2018, December). The effect of plyometric training to speed of volleyball athletes. In *2nd Yogyakarta International Seminar on Health, Physical Education, and Sport Science (YISHPESS 2018) and 1st Conference on Interdisciplinary Approach in Sports (CoIS 2018)* (pp. 357-358). Atlantis Press.
3. Takeuchi, K., Takemura, M., Nakamura, M., Tsukuda, F., & Miyakawa, S. (2021). Effects of Active and Passive Warm-ups on Range of Motion, Strength, and Muscle Passive Properties in Ankle Plantarflexor Muscles. *Journal of Strength and Conditioning Research*, 35(1), 141–146.
4. Turki, O., Dhahbi, W., Padulo, J., Khalifa, R., Ridène, S., Alamri, K., ... & Chamari, K. (2019). Warm-up with dynamic stretching: positive effects on match-measured change of direction performance in young elite volleyball players. *International Journal of Sports Physiology and Performance*, 15(4), 528-533.

# QUALITY OF VIRTUAL STUDIES: WHAT TEACHERS CAN DO TO IMPROVE ONLINE LEARNING?

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## Relevance

Virtual learning has been the priority of the European higher education area for a long period. However, the Covid-19 pandemic forced higher education institutions to switch to online learning immediately. Many lecturers needed to develop effective online lessons quickly (Hew et al., 2020). Despite the profound experience of working online during the Covid-19 pandemic, teachers today face challenges in designing online learning courses. They are still unfamiliar with online learning tools, and have many doubts about motivating students and selecting the most appropriate learning and assessment methods during online learning. There is a need for a methodology whereby teachers can effectively choose the appropriate tools and methods for virtual studies and provide information inclusively and understandably. To date, there is no generalized methodology to ensure the quality of a virtual course so that studies are conducted in an engaging and motivating way (Nuere-Salgado et al., 2021). The aim of this research is to build guidelines for teachers to improve the quality of virtual studies.

**Keywords:** online learning, quality of virtual studies.

## Methodology

The research has been implemented in the framework of the Erasmus+ project "Quality of Virtual studies" (2020-1-LT01-KA226-HE-094740). The analysis of scientific literature, international best practices and documented regulations for virtual studies in five countries (Lithuania, Finland, United Kingdom, Spain and Croatia) have been applied to create guidelines for teachers to improve the quality of virtual studies.

## Results

The guidelines for teachers to improve the quality of virtual studies consist of four areas: designing a virtual learning environment course; teaching and learning virtually; supporting and motivating students in an online learning environment; and regulations. The area "Designing a virtual learning environment course" consists of three parts: learning design, creating a course plan and choosing learning methods. "Teaching and learning virtually" consists of the most appropriate teaching and learning methodologies for virtual studies (for example, flipped classroom, gamification, cooperative learning, etc.). "Supporting and motivating students" consists of student support, guidance and motivation methods that are the most appropriate for online learning. The area "Regulations" consists of five parts: academic ethics, plagiarism prevention, copyright, accessibility, and GDPR.

## Conclusion & Significance

The guidelines for teachers to improve the quality of virtual studies have been created using scientific literature, international best practices and documented regulations; thus, the created model is based on theoretical assumptions and should be tested during virtual course implementation in different cultural backgrounds.

## References

1. Hew, K. F., Jia, C., Gonda, D. E., & Bai, S. (2020). Transitioning to the “new normal” of learning in unpredictable times: pedagogical practices and learning performance in fully online flipped classrooms. *International Journal of Educational Technology in Higher Education*, 17(1), 1-22.
2. Nuere-Salgado, J. Pérez-Miranda, A. Khün, S. Ryhänen, A. Savolainen, A. Hietanen, R. Tamuliene, L. Šarlauskienė, K. Bepalova, A. Juodeika, T. Grmuša, N. Šipić, Ž. Zavišić, S. Rocco, A. Manny, L. Ungureanu (2021). VLE teaching/learning and assessment methods analysis report. Erasmus+ K2 Project. European Union.

# MOBBING AMONG ORAL HEALTH CARE PROFESSIONALS AND DENTISTS: THE CASE OF LITHUANIA

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## Relevance

Mobbing isn't a new concept in the research literature. It is noticed that mobbing tends to appear more often in bureaucratic companies (Tigrel and Kokalan, 2009), such as educational institutions or health care services. In the research literature, there is a lot of research on mobbing among medicine workers (Karsavuran and Kaya, 2017), thus mobbing in oral healthcare professionals and dentists' work is poorly analyzed (Šušmelj, 2018; Yılmaz and Söyük, 2017). To date, there wasn't any research about mobbing in oral health care and dentists' work in Lithuania. The aim of this research is to reveal the manifestation of mobbing among oral healthcare professionals and dentists' work.

**Keywords:** mobbing, oral health care professionals, dentists.

## Methodology

Two hundred sixty-five oral healthcare professionals and dentists working in Lithuania took part in the research. An online survey was used to collect the data. The research data were analyzed by using descriptive statistical analysis methods.

## Results

The research results revealed that 67,7% of all participants had experienced mobbing at their workplace, and women tend to experience it more often than men. Oral health care professionals and dentists who work in private and public dental clinics and are younger experience mobbing more often than other professionals. The most common type of mobbing among oral health care professionals and dentists is vertical mobbing, and a manager psychologically terrorizes employees. The research results showed that workplace mobbing mainly occurs by expressing remarks that made no sense, were made with excessive demands, insulting, ridicule and humiliation. According to the opinion of the majority of respondents, the main organizational reasons for mobbing are the lack of professional ethics in the workplace, incompetent managers and the lack of clear consequences in the workplace for those who psychologically terrorize other employees.

## Conclusion & Significance

The results of the research have shown that the biggest part of oral health care professionals and dentists have experienced workplace mobbing. Most often, employees are psychologically terrorized by a manager. The lack of professional ethics in the workplace and poor organizational culture are the key reasons for mobbing appearance. It is important to educate employees and prospective oral health care professionals and dentists about mobbing and its prevention in the workplace, to teach them how to behave when faced with it.

## References

1. Karsavuran, S., & Kaya, S. (2017). The relationship between burnout and mobbing among hospital managers. *Nursing ethics*, 24(3), 337-348.
2. Šušmelj, D. (2018). *Pojavi mobinga in konfliktov v zobnem laboratoriju* (Doctoral dissertation, Univerza v Ljubljani, Zdravstvena fakulteta).

3. Tigrel, E. Y., & Kokalan, O. (2009). Academic mobbing in Turkey. *International Journal of Behavioral, Cognitive, Educational and Psychological Sciences*, 1(2), 91-99.
4. Yılmaz, E., & Söyük, S. (2017). Mobbing Behavior and Two Public Hospitals Survey for Employees. *Bosphorus Medical Journal*, 4(2), 55-61.



# IDENTIFICATION, ASSESSMENT OF MALNUTRITION AND THE PROBLEM SOLUTION BY HEALTHY EATING

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## Relevance

Malnutrition is a health condition with certain symptoms caused by inadequate nutrition, nutrient imbalance or lack of protein and energy (Gečionienė et al., 2020). Malnutrition affects body composition and cell mass changes, which impacts an individual's physical and mental functions (Cederholm et al., 2017). Malnutrition is common among young adults, and the main reasons for malnutrition are insufficient food intake and poor eating habits (Bede et al., 2020). The problem of undernutrition is quite widely studied, especially in the elderly and persons suffering from oncological or other chronic and/or acute diseases. Still, there is a lack of studies where the problem of undernutrition would be solved with the help of healthy eating among young and healthy persons with identified malnutrition. This study is the first to examine how healthy, balanced nutrition according to an eating plan can change body weight, BMI and body composition of young, healthy, but malnourished persons. The research aims to assess the impact of healthy eating on the weight, body mass index and body composition of individuals with identified malnutrition.

**Keywords:** malnutrition, undernutrition, underweight, body mass index, eating behaviour.

## Methodology

The study was conducted from September 2021 to April 2022. A quantitative strategy was chosen for the empirical research, and an experimental diagnostic study was performed. Used data collection method was diagnostic examination, data analysis method – descriptive statistics calculations: frequencies and averages. The study involved ten individuals with  $\leq 18.5$  kg/m<sup>2</sup> BMI at the beginning of the study and who voluntarily ate according to the given nutritional plan for three months. The subjects were weighed three times (at the beginning, in the middle and at the end of the study) during the study period using a professional body scale Tanita DC-360 S and were monitored and evaluated changes in weight, body mass index and body composition (fat mass, muscle mass, bone mass, visceral fat, metabolic age, phase angle).

## Results

The results of the study showed that the average BMI of the subjects increased by 0.97 kg/m<sup>2</sup> and at the end of the study was 17.98 ( $\pm 1.45$ ) kg/m<sup>2</sup> (at the beginning was 17.01 ( $\pm 1.09$ ) kg/m<sup>2</sup>), the minimum BMI increased by 0.3 kg/m<sup>2</sup> and the biggest BMI change was 2.2 kg/m<sup>2</sup>. A positive trend was also observed in participants' weight during the study period. All individuals gained weight during the study period. On average, the subjects gained 2.72 kg; the maximum gain during the study period was 6.5 kg, and the minimum was 0.9 kg. At the end of the study, the average fat mass of the subjects was 8.13 ( $\pm 4.37$ ) kg (7.56 ( $\pm 4.15$ ) kg at the beginning), and the average gain of fat was 0.57 kg. The maximum gain was 1.8 kg, and the two subjects lost fat mass by 1.2 kg and 0.8 kg, respectively. All subjects' muscle mass increased during the study period; the subjects gained an average of 1.87 kg, the maximum gain of muscle mass was 4.7 kg, and the minimum was 0.3 kg. The metabolic age of all ten participants was lower than their actual age at the study's beginning and end. The average metabolic age at the beginning was 13.5 ( $\pm 4.09$ ) years, and at the end of the study, 14 ( $\pm 4.14$ ) years (while the average actual age was 23.8 ( $\pm 6.1$ ) years). Only two individuals had an increase in metabolic age during the study period. There were no changes in visceral body fat during

the study period. The bone mass increased for half of the (n=5) subjects. The average bone mass at the end of the study was 2.12 ( $\pm 0.23$ ) kg compared to 2.06 ( $\pm 0.21$ ) kg at the beginning. The maximum gain of bone mass is 0.2 kg. The phase angle was left stable for eight participants during the study period but decreased for two participants.

### **Conclusion & Significance**

The study's results have proven that healthy and balanced nutrition helps to gain weight for individuals with identified undernutrition. The nutrition plan given to the individuals was prepared with a daily energy intake of up to 2100 kcal. Consuming at least 25–30 kcal/kg per day is necessary to gain weight. An eating regimen is very important for consuming more calories. We recommend eating five times a day, keeping intervals no longer than 2–3 hours between meals. It is important as energy is proportionally distributed throughout the day, reducing the risk of consuming fewer calories than necessary and experiencing unpleasant symptoms of overeating. Three main meals (breakfast, lunch, and dinner) and two snacks are recommended. It is important to ensure that the amount of protein consumed should be not less than 20 per cent of daily energy intake or 0,8–1 g/kg/d. To meet the need for all amino acids, consuming various protein-rich products (both of plant and animal origin) is important. The fat should not exceed 30 per cent of the total daily energy, ensuring a sufficient amount of omega – 3. A substantial part of the daily energy (50 per cent) should be obtained from carbohydrates: full grain products, fresh and dried fruits, and vegetables.

### **References**

1. Bede F., Cumber, S. N., Nkfusai, C. N., Venyuy, M. A., Ijang, Y. P., Wepngong, E. N., Nguti Kien, A.T. (2020). Dietary habits and nutritional status of medical school students: the case of three state universities in Cameroon. *Pan Afr Med J.* 2020 Jan. <https://pubmed.ncbi.nlm.nih.gov/32341736/>
2. Cederholm, T., Barazzoni, R., Austin, P., Ballmer, P., Biolo, G., Bischoff, S. C., Compher, C., Correia, I., Higashiguchi, T., Holst, M., Jensen, G. L., Malone, A., Muscaritoli, M., Nyulasi, I., Pirlich, M., Rothenberg, E., Schindler, K., Schneider, S. M., de van der Schueren, M. A., Sieber, C., Valentini, L., Yu, J.C., Van Gossum, A., Singer, P. (2017). ESPEN guidelines on definitions and terminology of clinical nutrition. *Clin Nutr.* 2017 Feb; 36(1):49-64. <http://doi:10.1016/j.clnu.2016.09.004>
3. Gečionienė, A., Gavelienė, E., Petereit, R. (2020). Mitybos terapija aktyviuoju priešvėžinio gydymo metu. *Leidiny skirtas gydytojams, rezidentams, slaugytojams, studentams. Lietuvos dietologų draugija.*

# THE SIGNIFICANCE OF THE NUTRITIONAL RHYTHM FOR THE BLOOD PARAMETERS AND VISCERAL FAT CONTENT OF MEMBERS OF THE X COMMUNITY

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## Relevance

According to Neeland et al. (2019), there is increasing evidence that visceral adipose tissue is a major health risk: visceral adipose tissue has metabolic properties that differ from subcutaneous adipose tissue, and excess visceral adipose tissue causes inflammation. As claimed by Garcia et al. (2019), atherogenic dyslipidemia, which is often found in abdominal obesity, is associated with an increase in serum cholesterol. Wimalawansa (2016) states that obese individuals have reduced bioavailability of vitamin D, thus requiring higher doses of vitamin D. Sun et al. (2019) found that individuals with higher serum levels of vitamin B12 were less obese. According to Obeid (2013), adequate phosphorus intake can protect against the growing obesity epidemic worldwide. Meal timing determines the accumulation and mobilization of body fat and affects the effectiveness of weight loss (Lopez-Mingues et al., 2019). Eating at certain times can have beneficial effects on human health, including long-term weight loss, improved sleep patterns, reductions in blood pressure and oxidative stress markers, and increased insulin sensitivity (Queiroz et al., 2021).

**Keywords:** cholesterol, circadian nutrition, visceral adipose tissue, vitamin D, weight.

## Methodology

To evaluate the effect of the circadian rhythm on nutrition on members of the X community, diagnostics procedures were applied. The study involved 78 participants from the X community. Subjects were asked to keep prepared food diaries for 14 days. The information provided in the diary allowed us to understand the circadian type of nutrition of the subjects. Body composition measurements were performed at Kaunas University of Applied Sciences with the Tanita DC-360 S body composition analyzer (manufactured by TANITA Health Equipment H.K. Limited, Japan. The equipment is CE marked). Blood samples were analyzed at the Kaunas University of Applied Sciences biochemistry laboratory.

## Results

In the study, almost half of the subjects were 31–50 years old. The other two age groups were equally distributed. In the age group of 30–50 years, the biological age of subjects was the closest to their actual age. The largest discrepancy between biological and actual age was recorded in the group of subjects under 30 years of age. Mixed circadian eating individuals had a normal body mass index and normal visceral fat. In contrast, both morning and evening circadian eating individuals had increased visceral fat mass, were overweight, and had first-degree obesity.

The majority of subjects' immunological, biochemical, and general blood parameters corresponded to the normal limits. In contrast, the cholesterol and glucose levels in the blood were found to be elevated in some subjects. More than half of the subjects were diagnosed with vitamin D deficiency, and the rest had vitamin D insufficiency. The blood glucose level of individuals with normal visceral fat content was normal. Only 2.5 % had elevated glucose. Whereas among individuals

with dangerously high levels of visceral fat and very high levels of visceral fat, 50 % and more than 50 % of subjects had higher glucose levels.

### Conclusion & Significance

Eating plans that include mealtime restrictions (skipping breakfast or dinner 1–2 times a week) lead to lower body mass, younger metabolic age, lower visceral fat in the body, and better blood parameters.

### References

1. Garcia-Estevez, L., & Moreno-Bueno, G. (2019). Updating the role of obesity and cholesterol in breast cancer. *Breast cancer research: BCR*, *21*(1), 35. <https://doi.org/10.1186/s13058-019-1124-1>
2. Obeid O. A. (2013). Low phosphorus status might contribute to the onset of obesity. *Obesity reviews: an official journal of the International Association for the Study of Obesity*, *14*(8), 659–664. <https://doi.org/10.1111/obr.12039>
3. Queiroz, J., Macedo, R., Tinsley, G. M., & Reischak-Oliveira, A. (2021). Time-restricted eating and circadian rhythms: the biological clock is ticking. *Critical reviews in food science and nutrition*, *61*(17), 2863–2875. <https://doi.org/10.1080/10408398.2020.1789550>
4. Lopez-Minguez, J., Gómez-Abellán, P., ir Garaulet, M. (2019). Timing of Breakfast, Lunch, and Dinner. Effects on Obesity and Metabolic Risk. *Nutrients*, *11*(11), 2624. <https://doi.org/10.3390/nu11112624>
5. Neeland, I. J., Ross, R., Després, J. P., Matsuzawa, Y., Yamashita, S., Shai, I., Seidell, J., Magni, P., Santos, R. D., Arsenault, B., Cuevas, A., Hu, F. B., Griffin, B., Zambon, A., Barter, P., Fruchart, J. C., Eckel, R. H., International Atherosclerosis Society, & International Chair on Cardiometabolic Risk Working Group on Visceral Obesity (2019). Visceral and ectopic fat, atherosclerosis, and cardiometabolic disease: a position statement. *The lancet. Diabetes & endocrinology*, *7*(9), 715–725. [https://doi.org/10.1016/S2213-8587\(19\)30084-1](https://doi.org/10.1016/S2213-8587(19)30084-1)
6. Sun, Y., Sun, M., Liu, B., Du, Y., Rong, S., Xu, G., Snetselaar, L. G., & Bao, W. (2019). Inverse Association Between Serum Vitamin B12 Concentration and Obesity Among Adults in the United States. *Frontiers in endocrinology*, *10*, 414. <https://doi.org/10.3389/fendo.2019.00414>
7. Wimalawansa, S. J. (2016). Vitamin D deficiency is a surrogate marker for visceral fat content, metabolic syndrome, type 2 diabetes, and future metabolic complications. *J. Diabetes Metab. Disord. Control*, *3*(1), 1-10. <https://doi.org/10.15406/jdmdc.2016.03.00059>

# COMPUTERIZED WORKPLACE ERGONOMICS AND RELATED HEALTH PROBLEMS IN LIBRARY EMPLOYEES

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## Relevance

Current studies looking at physical inactivity and sedentary behaviour have shown that over the past 40 years, musculoskeletal pain and dysfunction complaints have increased significantly (Vos et al., 2016). Musculoskeletal disorders, especially shoulder, neck and lower back pain, are the most common complaints from office workers worldwide (Shariat, 2016). People working in libraries are no exception because a major part of their workday is computer-based activities. Back pain is one of the most debilitating conditions causing anxiety, discomfort and disability. It negatively affects a person's mental well-being and efficiency in daily activities and reduces work productivity (Hanna et al., 2019). Ensuring workplace ergonomics may help prevent work-related health problems. Despite several studies on the correct sitting position that maintains optimal spinal curves (Waongenngarm et al., 2015), there is still a lack of consensus on this issue. The correct sitting position is individual for each person (Claus et al., 2016), so it is essential that employees know the general principles of computerized workplace ergonomics and correct posture and are able to evaluate them critically. This study aimed to analyze the ergonomics of the computerized workplace of library employees and related health disorders.

**Keywords:** computerized work, ergonomics, neck pain, sedentary work.

## Methodology

One hundred seventy-one individuals (168 women and three men) working in public libraries in the Kaunas region participated in the study. The mean age of participants was  $49.5 \pm 11.2$  years. Participants were invited to respond to a survey. The main questions were as follows: (1) How many hours a day and what kind of work do you have to work on a computer? (2) What ergonomic factors of the work environment are related to your workplace? (3) What are the health-related factors of computer work? (4) What health-related complaints do you experience, and how often? (5) How do you rate your health?

## Results

Respondents had a work with computer experience of  $14.3 \pm 5.5$  years and spent  $4.4 \pm 2.3$  hours a day working on a computer. The majority of respondents rated the ergonomics of their workplace positively. Still, the main problem with ergonomics in the workplace (64%) was that the screen was not protected from reflections from light sources, windows or light walls. Sixty per cent of respondents attributed deterioration in health to computer use. Respondents most often reported impaired vision (68%) and neck and shoulder pain (74%). 57 per cent of respondents rated their health as average.

## Conclusion & Significance

Employees of public libraries in the Kaunas region considered the ergonomics of the computerized workplace positively. Still, more than half of the respondents experienced neck and shoulder pain and indicated impaired vision.

## References

1. Claus, A. P., Hides, J. A., Moseley, G. L., & Hodges, P. W. (2016). Thoracic and lumbar posture behaviour in sitting tasks and standing: Progressing the biomechanics from observations to measurements. *Applied Ergonomics*, 53, 161–168.
2. Hanna, F., Daas, R. N., El-Shareif, T. J., Al-Marridi, H. H., Al-Rojoub, Z. M., & Adegboye, O. A. (2019). The relationship between sedentary behaviour, back pain, and psychosocial correlate among university employees. *Frontiers in Public Health*, 7, 80.
3. Shariat, A., Sb, M. T., Arumugam, M., Danaee, M., & Ramasamy, R. (2016). Musculoskeletal disorders and their relationship with physical activities among office workers: A review. *Malaysian Journal of Public Health Medicine*, 16(1).
4. Vos, T., Abajobir, A. A., Abate, K. H., Abbafati, C., Abbas, K. M., Abd-Allah, F., ... & Criqui, M. H. (2017). Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet*, 390(10100), 1211–1259.
5. Waongenngarm, P., Rajaratnam, B. S., & Janwantanakul, P. (2015). Perceived body discomfort and trunk muscle activity in three prolonged sitting postures. *Journal of Physical Therapy Science*, 27(7), 2183–2187.

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