

Health, Environment and Sustainable Development: Interdisciplinary Approach HESDIA 2018

ABSTRACT BOOK



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ABSTRACT BOOK

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A COMPARATIVE STUDY OF DATA MINING CLASSIFIERS TO DEVELOP HEALTHCARE DECISION-MAKING TOOLS

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Relevance

In recent years, data mining emerges as an alternative to discover or extract potentially useful information, patterns or relationships from healthcare data that can be used in analysis and decision-making. One of the most used techniques in data mining for this purpose is classification. Classification is used to predict an unknown class data instance with the help of training samples. With the aim to offer to the health decision makers the most appropriate classifier to use, a comparative study of the widely used artificial intelligence classifiers in data mining, namely, C4.5 decision tree, Bayesian networks and k-Nearest Neighbor is conducted.

Methodology

By employing WEKA software data mining, these three classifiers are evaluated using a testing database that included 21 clinical cases for training and evaluating. The results were compared in terms of classification accuracy (percentage of correctly classified instances) using the t-paired statistical test.

Results

According to the results of our experimental study, the C4.5 classifier showed to be the most accurate method. The C4.5 presents the highest average in the instances classified correctly with variance far below that the other classifiers.

Conclusions & Significance

Data mining classifiers can be used as an option for discovering and disseminating hidden or unknown useful healthcare information. The results of this research may contribute towards the development of decision-making tools for physicians and nurse practitioners using the C4.5 classifier.

Keywords: Health data, data mining, classification, WEKA, decision-making tools.

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THE CONTENT OF COMMUNITY PHARMACY CONSULTATION FOR THE COMMUNITY PHARMACY PATIENTS

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Relevance

One of the main roles of pharmacy specialists is to provide pharmacy service: give non-prescription medicines and inform citizens about their health treatment in accordance to governing laws. The use of non-prescription medicines is the part of self-medication, which becomes more popular in a society. However, irrational use of drugs can cause serious health harm. The pharmacy specialists play an important role in the process of ensuring the professional pharmaceutical service is provided. The aim of the study was to assess the information provided by pharmacist to the patients who purchase medication at Lithuanian community pharmacies.

Methodology

The observation method was chosen. The special form with proposed indicators of encounter consultation was used. In total 4198 consultations were observed and 1738 self-medication consultation were analysed.

Results

41.4% of pharmacy patients visit the community pharmacy to obtain the OTC medication the main reasons for this are cold (16.1%), skin issues (13.2%), general pain (25.6%), general well-being (28.7%) and digestion problems (16.2%). 38.2% ask for the advice for this and 37.1% ask OTC medication by brand name. The informational aspect discussed at encounters is how to use non-prescription medicines (79.6%), when to use them (67.1%), the length of usage (36.3%), side effects and contraindications (11%), possible interactions (6%) and none were briefed on alternative treatment methods (10.9%).

Conclusions & Significance

Self-medication is very common for cold, pain, general wellbeing and digestion problems. People purchase the OTC medication and are provided with information about rational use. The amount of provided information varied among encounters. The most popular aspect was “how to use non-prescription medicines”, but rarely inform about side effects, contraindications and possible side effects. The pharmacy professionals could spend some extra time in educating patients regarding the risks of self-medication.

Keywords: community pharmacy, consultation, OTC medication, self-medication.

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THE ATTITUDES, FUTURE ROLE & KNOWLEDGE OF NURSING STUDENTS TOWARDS EUTHANASIA BECAUSE OF UNBEARABLE MENTAL SUFFERING IN BRUSSELS, BELGIUM: A PILOT STUDY

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Relevance

This is the first study that investigates the opinions and attitudes with respect to UMS euthanasia of nursing students. The purpose of this study is to determine the attitudes, future role and knowledge of nursing students regarding UMS euthanasia. Student nurses are involved in the care of psychiatric patients, who may thus be confronted with difficult end-of-life decisions such as UMS euthanasia. Nurses play an important role in the healthcare team and are closely involved in the daily care of patients due to the nature of their work. Therefore, it is relevant to prepare student nurses for their future role, as UMS euthanasia is legal and conducted in Belgium.

Methodology

A monocentre quantitative descriptive survey with a self-administered questionnaire was used for this study. All bachelor and graduate nursing students of an university college in Brussels (Belgium) were invited to participate. A total of 103 students responded to the questionnaire of whom 63 students finalised the questionnaire. The board of the university college approved the study. An introductory text accompanied the online questionnaire. There was a guarantee of anonymity for both organization and respondents.

We developed a questionnaire based on an existing one by Demedts et al. (2018) about the attitudes of mental health nurses towards UMS euthanasia ($\alpha = .76$). A 5-point Likert scale was used in most questions (completely agree to completely disagree). The questionnaire was carried out using LimeSurvey© as an online tool.

Descriptive statistics were used for the analysis using SPSS 21 © (Statistical Package for the Social Sciences, IBM, North Castle, New York, USA). The answers agree and totally agree were combined to agree, with similar treatment of totally disagree and disagree.

Results

The nursing students are supportive towards UMS euthanasia. Furthermore, the nursing students indicated they will have a crucial role in the euthanasia process, once graduated. Two out of three nursing students perceived a lack of knowledge (63.5%) and skills (65.1%) regarding UMS euthanasia. Nursing students report that UMS euthanasia has not been a topic during their education (61.9%). Almost all nurses point out that UMS euthanasia should be addressed in nursing education (87.3%), containing theoretical knowledge and practical skills (88.9%).

Conclusions & Significance

The nursing students in our sample are more supportive towards UMS euthanasia as nursing students in countries where euthanasia is illegal. Furthermore, the nursing students indicated they will have a crucial role in the euthanasia process, once graduated. Besides

practical knowledge and skills directly related to euthanasia, education also needs to cover the broader context of end-of-life care, supportive care and basic skills related to death and dying.

Keywords: euthanasia, nursing students, psychiatry, unbearable mental suffering.

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CREATION OF INTERNATIONAL INTERDISCIPLINARY ONLINE MODULE 'HEALTH PROMOTION OF FAMILIES'

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Relevance

Different health professionals usually operate in separate spheres, but many studies show, that contemporary interdisciplinary approach in health care leads to improvement of safety and quality of patient care. An interdisciplinary approach relies on health professionals from different disciplines, along with the patient, working collaboratively as a team. According to Nancarrow and others [1], the most effective teams share responsibilities and promote role interdependence while respecting individual members' experience and autonomy.

Collaboration between professionals starts with interdisciplinary education and health care students must begin working together before they actually start working as professionals. According to Robert Wood Johnson Foundation, [2] universities and training programs must expand interdisciplinary educational opportunities and programs to help foster collaboration among students before they enter the health workforce. That will lead to more effective communication across disciplines and, ultimately, safer, more affordable, and higher quality care.

Savonia University of Applied Sciences (Finland) as well as Kauno Kolegija / University of Applied Sciences (Lithuania) has many years of experience while successfully preparing professional health care specialists in such areas as public health nursing, oral health care, midwifery, physiotherapy, etc. Developing cooperation skills and competences between different health care study programmes is an important issue in both higher education institutions. However, the comparison of curriculum of health care field study programmes in both partner institutions showed, that in most cases some important competencies when targeting health care area, especially related to health promotion to families are missing. This is why in 2017 spring it was decided to create a joint international module, 'Health promotion of families'.

The partner institutions strongly believe that better understanding of related fields of occupation between dental hygienist, public health nursing, midwifery and physiotherapy students while promoting health care for families who are expecting or with young children would not only support team work for benefits of patients and staff.

Methodology

Taking in mind the World Health Organization (WHO) European Health 21 target 3: 'Healthy start in life': 'By the year 2020, all newborn babies, infants and pre-school children in the Region should have better health, ensuring a healthy start in life' [3], Savonia UAS and Kauno Kolegija UAS has decided to create a multidisciplinary 5 ECTS worth online course 'Health promotion of families' focusing on health care for families who have kids 0–6 years old.

Each partner selected lecturers, who will prepare the content for the module. Topics of lectures were agreed with partner in advance. All administrative procedures were completed according regulations of each university. Lecturers divided into international working groups according to their area and during the study year 2017–2018 prepared the content of the course.

During 2017–2018 academic year two face-to-face meetings at Kauno Kolegija/ UAS and several online partner meetings were organized in order to exchange experiences, discuss content and administration of joint module.

Results

Both universities' long and close cooperation with their social partners (hospitals, health care centers, clinics, etc.) showed that labor market demonstrates not only the need of specialized knowledge and technical skills from the various health care study programs graduates, but also the need for transferable skills, such as problem-solving, effective communication, ability to work efficiently in a team. These necessities helped partner universities to form not only the content but also the objectives for the student knowledge while studying the 'Health promotion of families' module. Partner universities hope, that after finishing this module, the students will be able to:

- Know the main points of prenatal program families and families with children up to seven years, health and oral health care system in Finland and Lithuania;
- Learn motivational interviewing approach;
- Understand the meaning of early interaction;
- Evaluate and apply ethical basis of health promotion;
- Understand sexual health promotion as part of family's wellbeing;
- Learn basic health checks (including oral health checks) of child;
- Learn to advice parents to take care of their children's health and oral health;
- Understand ergonomic principles and use of massage for pregnant women and newborns.

Conclusions & Significance

The Moodle platform for multidisciplinary 5 ECTS worth online course 'Health promotion of families' focusing on health care for expecting families or families who have kids 0–6 years old has already been created by Savonia UAS. The contents of the course were prepared in working groups formed from the lecturers of the partner universities during face-to-face and online meetings as well as working independently for the assigned topic(s). Course description with learning outcomes, essential contents, methods of learning and suggested material is also at the creation period. The interdisciplinary case study including real life cases was created as one of the evaluation methods to test student knowledge after attending the online course. The piloting of the course is foreseen in 2018 autumn and it is already planned, that the first students would join the course starting in February 2019.

Keywords: joint study module, health promotion of families, co-operation.

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THE eMEDICATION PASSPORT —

ERASMUS+ PROJECT “E-MEDICATION PASSPORT”: HOW IT CONTRIBUTES TO IMPROVEMENT OF NURSING STUDENTS’ MEDICATION COMPETENCES?

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Relevance

Medication safety is getting more and more important issue globally, as medication errors are the most common types of errors in health care and can cause unpredictable consequences and side effects to the patients as well as health care providers. Medication administration and management forms a big part of registered nurses’ daily responsibilities. Because of this, the development of medication competences not only for already graduated and registered nurses, but also for the undergraduate nursing students during their study process, becomes one of the key challenges. Graduated nurses must already have good medication competences to be able to provide safe, efficient and high quality care while taking care of the patient. However, several international studies have indicated that graduating nurse students have deficiencies in their medication competence and there is a need for developing undergraduate education.

Regarding the situation of nurses’ medication competences in Lithuania it is agreed, that nurses are important links in the chain that can help ensure the proper use of medicine by patients. However, the medical aid in Lithuania was formally documented only by medical doctors, the nurses’ medication competences were very narrow and for the long time the main national document, which regulated the registered nurses competences was Medical standard 28, confirmed in 2011 [1]. Finally the new advanced nursing medical standard [2] was introduced in 2017 containing the new concept of “advanced nurse” and result to that, nurses’ medication competences were expanded. This national situation forced to draw more attention to the development of undergraduate nursing students’ medication competences and to review the content of the undergraduate nursing study programmes.

For this reason Kauno Kolegija/ University of Applied Sciences Faculty of Medicine has decided to join Erasmus+ project “eMed-PASS” (Electronical Medication passport), which main goal is to increase patient and medication safety by developing the educational preparation of nurses. The aim of this project is to modify, implement, and evaluate the feasibility of electronic Medication Passport for ensuring the medication competence and adequate working life skills of the graduating nurses [3].

THE eMEDICATION PASSPORT —

Methodology

eMed-PASS project aim is to improve the quality and relevance of higher education in bachelor level nurse education cross-borders in EU-level in the Baltic countries and Finland (3). Four higher education institutions (Tartu Health Care College (Estonia) as project's coordinator, P. Stradins Medical College University of Latvia (Latvia) and Kauno Kolegija/ University of Applied Sciences (Lithuania) as project partners, Turku University of Applied Sciences (Finland) as project expert) form a project network.

The foundations of the e-Medication passport were made by Turku University of Applied Sciences in 2006, when this higher education institution started to develop a learning tool, which was dedicated for supporting and ensuring the development of the required medication competence of nurse graduates. This tool in collaboration with other Finnish HEI was developed and started to be used in all Finnish Universities of Applied Sciences (paper version in 2010, e-version in 2013). After the success of using this tool nationally in Finland, Turku UAS has decided to expend the network and to offer this tool to Baltic countries (Lithuania, Estonia, and Latvia) in order to develop common education and nursing competences in all partner countries. After some modifications according to national health care systems, the tool would be used by nurse teachers, nurse mentors in clinical practice and the nursing students in order to be able to follow students' medication competence development during undergraduate education. The use of the Medication Passport also verifies adequate practice possibilities in medication management making the learning tasks visible to the students and nurse mentors and unifies the undergraduate medication education provided by the universities. It also enhances collaboration between the clinical practice placements and universities.

Results

After one year from project beginning in 2017 September, the e-medication passport is already adapted to each Baltic country (Lithuania, Latvia, and Estonia) national health care system peculiarities, translated into national languages and is already prepared to be uploaded to the e-platform. Expert panels consisting of pharmacology and nursing lecturers at the university, nurses-nursing mentors at the hospitals where the students are doing their practice, in each Baltic partner country evaluated the content of translated national Medication Passport, measuring clarity, relevance and importance to the national system. The MCAF instrument for evaluation of nursing students' medication competence in each country was also reviewed by the national expert panels and the pilot study with the nursing students should start in the upcoming winter.

THE eMEDICATION PASSPORT —

Conclusion & Significance

The e-Medication Passport is considered to be a solution to create common quality standards for undergraduate nursing student medication competence in Finland and Baltic states. The e-Medication Passport also helps partner higher education institutions to develop their nursing study programmes curriculum by disclosing the main drawbacks in undergraduate nursing students' medication competences. The expected impact is improvement on undergraduate nursing students' medication competence and increased collaboration among education institution and clinical practice placements.

Keywords: medication competences, nursing, medication passport

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THE USE OF SOCIAL MEDIA FOR IMPROVEMENT OF PROFESSIONAL LANGUAGE SKILLS

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Relevance

In the information society, social media provide opportunities of communication and learning for anyone with Internet access. When learning a professional language, students move their activities to virtual space. The media, together with helping to communicate, change the wording of their thoughts, as well as the way of socializing. Media relates to communication tools that are technological in nature. Social media examples include news sites, blogs, wikis, computer games, social networks. The social media broadcasts content through communication and conversation, allowing learners to share, comment and discuss on a wide range of topics. The aim of the research is to analyze and empirically identify the expression of the use of social media for improvement the skills of a professional language in the study process.

Methodology

A quantitative survey of 181 students' opinion was conducted. In the paper methods of analysis of scientific literature and academic documents, students' questionnaires, generalization, interpretation and systematization of their results have been used.

Results

In the opinion of the respondents, inclusion of the social media into personalized learning of professional language is determined primarily by the students' desire to expand the perception of professional language, improvement of the listening comprehension of the language, perfection of pronunciation and consolidating the terminology of the profession. For one third of the interviewed students media helps to be orientated in different contexts of the professional language. One-tenth of the students use media for the development of socio-cultural competences.

Conclusions & Significance

Analysis of the scientific literature and outcomes of the research have shown that students using the social media prefer the interface of the mobile technologies with social networks, as well as the opportunity to learn in cooperation with others. The use of media by students is motivated by their ability to access various resources necessary for the development of the vocabulary, enabling them to acquire diverse language skills not only through the use of information but also by creating it. The research revealed students' favorable assessment of the use of virtual learning environments for the study of professional language.

Keywords: Social media, professional language learning, virtual learning environment.

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EXTENT OF BIOLOGIC STRUCTURE DAMAGE ZONES AFTER RADIOFREQUENCY ABLATION PROCEDURE

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Relevance

Having reviewed the application of RFA method in a global context, we can state that it is widely used modern procedure in many economically developed countries.

Study objective to evaluate morphological prostate changes after cooling radiofrequency ablation procedure and to measure damage areas.

Methodology

Experimental acute study was carried out with 13 healthy non stock 4–5 years old dogs, their weight was 10–14 kg.

Prostate RFA was conducted using standard 4 mm diameter catheter electrode after electrode insertion to prostate. The study was carried out in three groups. In the first control group (160 histological sections) (NC) RFA procedure was carried out without cooling solution, in the second group (120 histological sections) (C.O1) – cooling solution – NaCl 0.1% 20 °C, third group (100 histological sections) (C.O9)NC – cooling solution – NaCl 0.9% 20 °C.

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

Results

RFA causes different effect to prostate tissues when distancing from active electrode center. 4 effect zones were established according to morphological changes.

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

After RFA procedure in prostate in all three experimental sessions (NC, C.O1 and C. 0.9) the damaged tissues according to the damage nature and extent were divided in three zones (the third zone was additionally split into a and b), their areas were marked S1, S2, S3a, S3b respectively. The fourth intact zone was not included in area calculations.

Student criterion for separate samples was used to evaluate differences in experimental sessions damage areas (S) average. The differences RFA damage area (S) averages in all three sessions C.O9, C.O1 and NC indicated in table 1.

Table 1. Tissue damage areas (S) after RFA procedure

Sessions	Tissue damage area (S) after cooling RFA procedure (mm ²)				
	n	S1	S2	S3a	S3b
1 – C.09	100	3.15±0.37*	13.8±1.10*	41.69±0.52*	53.56±0.44
2 – C.01	120	1.18±0.08*	7.31±0.37*	29.60±1.04*	45.61±1.17*
3 – NC	160	1.74±0.11*	10.25±0.95*	39.58±0,25*	53.80±0.86

*Tissue damage areas (S) of in all 3th sessions after RFA procedure deffers statistically significantly (mm²) (p<0.05).

Conclusions & Significance

1. If cooling RFA procedure is applied for prostate, four separate clearly distinguished zones are formed.
2. It was established that damage areas in all zones after RFA cooling procedure depend on cooling solution concentration.
3. The least damaged areas in zones after RFA procedure are formed when ablation electrode is cooled using 0.1% NaCl solution; the biggest damage areas were detected when 0.9% NaCl cooling solution was used.

Keywords: radiofrequency ablation (RFA), electrode cooling solution concentrations, prostate

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EFFECTS OF A 7-MONTH EXERCISE INTERVENTION PROGRAMME ON THE PSYCHOSOCIAL ADJUSTMENT AND DECREASE OF ANXIETY AMONG ADOLESCENTS

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Relevance

The positive effect of exercise intervention programme, physical activity (PA) on psychosocial adjustment and anxiety is a widely held and accepted belief among scholars and practitioners alike (Paluska & Schwenk, 2000). Several cross-sectional studies have supported the association between physical self-perception and self-reported levels of exercise (Fox, 2000). Although evidence of the positive effects of exercise and exercise training on depression and anxiety is growing, the clinical use-at least as an adjunct to established treatment approaches like psychotherapy-is still in its infancy (Strohle, 2009).

Methodology

This study investigated the psychosocial adjustment and anxiety of adolescents during a 7-month exercise intervention programme. In addition, extensive research on the psychosocial adjustment of adolescents during intense physical activity was performed. The experimental group included adolescent girls (n=110) and boys (n=107) aged between 14 and 15 years while the control group included adolescent girls (n=99) and boys (n=112) of the same age group attending the same school. The girls and boys in the EG participated in modified physical education lessons two times a week. Once a month they received a theory class where they were taught about communication disorders of adolescents and ways of preventing them by means of physical activities. In practical classes, the girls and boys in the EG had sports and games (basketball, volleyball and football) as well as Pilates, enhancing physical abilities. The measurement of psychosocial adjustment included the modification method developed by Roger and Daimond. The measurement of anxiety, the methodology of Reynolds and Richmond.

Results

The results of the alteration of the levels of the psychosocial adjustment of the adolescents (girls and boys) in the experimental and control groups were compared before and after the intervention programme. Before the experiment (pretest), there was no significant difference in the score of the psychosocial adjustment scale comparing both the groups EG and CG (54.74 ± 9.85 vs. 55.11 ± 9.27 ; $F=0.174$; $p>0.05$; $P=0.065$). The analysis of the data demonstrated that when comparing the psychosocial adjustment of the adolescents (girls and boys) in the experimental group pretest and post-test, a significant difference in the psychosocial adjustment score was observed (54.74 ± 9.85 vs. 59.69 ± 11.20 ; $F=21.99$; $p<0.05$; $P=0.792$), although this cannot be said about the results of the psychosocial adjustment in the control group.

When dealing with the results of the anxiety of personality, we established that pre-test and post-test, the results of CG students were not statistically significantly different (2.45 ± 0.73 points and 2.27 ± 0.73 points correspondingly) ($F=0.127$; $p>0.05$; $P=0.047$). When analysing EG

personality anxiety results pre-test and post-test we established that after the intervention programme, EG personality anxiety results decreased (3.27 ± 1.00 points and 2.55 ± 0.82 points correspondingly) ($F=5.501$; $p<0.05$; $P=0.684$).

At the pre-test the level of social anxiety CG showed was 4.09 ± 1.18 points. The post-test CG result was statistically significantly lower (3.82 ± 1.09 points) ($F=3.845$; $p<0.05$; $P=0.687$). When analysing the levels of the social anxiety of EG pre-test and post-test results decreased after the intervention programme (5.91 ± 1.00 points and 4.45 ± 1.27 points correspondingly) and were significantly different ($F=7.086$; $p<0.05$; $P=0.702$)

Conclusions & Significance

It was established that the properly construed and purposefully applied complex of the 7-month exercise intervention programme of enhancing psychosocial adjustment and its components (self-esteem, evaluation by others, internality) caused the statistically significant changes in the dependent variables: increased psychosocial adjustment and decreased anxiety.

Keywords: physical activity, psychosocial adjustment, anxiety, adolescent

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EVALUATION OF CLINICAL PRACTICE RESULTS IN PHYSIOTHERAPY: SUPERVISORS' AND STUDENTS' ASSESSMENT

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Relevance

Clinical education and the supervisory process it involves is an important and distinct part of health care education. Professional qualification practice in the professional bachelor's study program "Physiotherapy" is an integral part of the study process integrating theory and practice. The aim of the practice is to enable students to acquire and strengthen the practical skills, attitudes, values and philosophies necessary for the profession of physiotherapist as well as to improve the students' theoretical knowledge in physiotherapy. In the study, we would like to find out whether the practice leader's assessment of the students' practical skills is in accordance with the student's self assessment.

Methodology

The current study includes an analysis of student assessment submitted by the practice supervisor – the physiotherapist and self-assessment of students' professional skills and knowledge after each of three practices during 3rd and 4th study year.

Results

During practice, the student gets acquainted with the duties of the physiotherapist in various health care institutions and other institutions and carries out them independently under the supervision of a physiotherapist or doctor's rehabilitator: carries out a physiotherapeutic examination and assessment of the patient; draw up a plan for physiotherapy; perform physiotherapeutic manipulations; complete the documentation according to the specifics of the institution; carries out educational activities with patients.

Clinical practices are assessed with a score of 10 points based on the practice leader's assessment, physiotherapy protocols, and the student's public presentation at the final practice seminar. The practice leader's assessment criteria are based on the requirements of the profession standard. The same criteria are included in the student self-assessment questionnaire, which is filled in by the practice. The assessment of the practice supervisors depended on their professional qualities, personalities, and institutions of medical treatment. Sometimes students had objections to the practice assessment that was considered at the internship conference.

Analyzing the self-assessment questionnaire revealed that the student does not always objectively evaluate their practical skills and knowledge. But overall, students note that their skills are increasing from the first to the 3rd practice. After the first practice, skills such as draw up an appropriate treatment plan corresponding to the patient's condition, choose and justify appropriate treatment methods, presenting the patient history in the correct physical therapy terminology was the least appreciated. After the last practice self-assessment, the average mark in any of the positions was not lower than 8.4 points.

Self-assessment of the practice allows students to see their professional skills changes and give them an incentive to supplement their knowledge and skills through evidence based approach to study process.

Conclusions & Significance

Practices are a very important part of study in professional bachelor program Physiotherapy at Daugavpils University (Latvia). Herefore, not only the opinion of the practitioners, but also of the students themselves, is important for the development of students' professional skills. After self-assessment, students can independently plan the completion of the missing knowledge and skills in the future, which will make it possible to become competitive in the field of physiotherapy in the labor market.

Keywords: Physiotherapy, clinical practice, practice supervision, self-assessment.

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HOW TO GET THE COURSE FEEDBACK FROM THE STUDENTS?

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Relevance

The course feedback is important in the quality assessment of the education. It is the students possibility to evaluate the course and give feedback to the teachers about the content and methods of the course. On the other hand, the teacher gets feedback what works well in the course and the suggestions to develop the course. However, the response rate of the feedback is often low. Therefore, it was important to find the methods that have been noticed to work well in the evaluation.

Methodology

The teachers and quality experts were interviewed.

Results

According to the teachers and quality experts the response rate can be affected in the different ways. These were timing, the possibility to give feedback easily in the electronic form, sending a personal email, giving individual feedback during the course, highlighting the meaning of the feedback, appreciating the feedback, telling the examples of how the feedback has affected on the course and discussion with the students about the the academic skills.

Conclusions & Significance

Discussion with the students is needed in developing of the course feedback.

Keywords: feedback, evaluation, teaching.

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BENEFITS OF EXPERIENTIAL BASED LEARNING: A CASE OF STUDENTS PARTICIPATION IN THE PROJECT "VILLAGES ON MOVE BALTIC"

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Relevance

Experiential learning and experience reflection play a significant role as an educational methodology, and it is a shared value to prepare students for the challenges in a changing world by developing critically and reflectively thinking professionals.

Methodology

As mandatory assignment during the Baltic Tour, the student collective formulated 7 questions, and an analysis of the students' individual replies to and reflections about these questions forms the basis of this research.

Qualitative research – content analysis was used in this study. A qualitative approach allows to the researchers to gain insight into the attitudes and experiences of participants. Content analysis has been used to study the questions related with the Baltic Tour influence to the students behavior, learning potential of integrating the Baltic Tour into studies, personal and professional life, assessment of events, Baltic Tour quality and possibilities for development.

The study was conducted based upon the 16 replies from participating students from Lithuania, Denmark, Finland, and Latvia. Students represented BA-programmes within health care, physiotherapy, social work, community pedagogy, and innovation & entrepreneurship

Results

Participation in the Baltic Tour influenced personal growth, social competencies development and improvement of cognitive skills. Students expressed a) cohesion of the theory and practice; b) knowledge application in a professional perspective; c) intercultural and international experience.

Conclusions & Significance

Findings highlighted the Baltic Tour has benefited to students' professional skills and competencies as well as an impact to personal attitude and behaviour. Participation in the VOMB project empowered students to develop professional skills and competencies – idea development, creativity, involving community members, communication, language, intercultural understanding. Villages on Move in general and the Baltic Tour was evaluated by the students as an unusually relevant and efficient practical case.

As a qualitative analysis the conclusion is best supported by the fact that the positive assessment was unanimous among participating students, and that many specific learning outcomes were mentioned in several student replies"

Keywords: Villages on Move Baltic, Physical activity, Experiential learning.

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THE ASSESSMENT OF PRESCHOOLERS' ORAL HYGIENE IN KAUNAS CITY AND THEIR PARENTS' CHANGING ATTITUDE TOWARDS IT

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Relevance

The aim of the research is to identify and assess preschoolers' oral hygiene in Kaunas City and their parents' changing attitude towards it. The objectives of the research are: to define oral diseases of preschoolers; to define preventative measures for the care of children's oral hygiene; to assess preschoolers' oral hygiene of Kaunas city using KPI and PI index before and after the implemented program; to reveal parents' changing attitude towards oral hygiene skills, oral hygiene in general and its reinforced care.

Methodology

The thesis consists of scientific and professional literature analysis, for the research part the authors chose clinical children's mouth assessment and quantitative analysis – questionnaire. The research was carried out in 2017 September, 291 children (age 3–6) took part in the research and after the program was completed in 2018 April – 219 preschoolers took part in the research. The aim of the questionnaire was to identify and define parents' attitude towards oral hygiene skills, oral hygiene in general and its reinforced care. Before the program was started there were 164 respondents (parents) after completion of the program there were 170 respondents. Clinical research instrument – PI and kpi index, which was the basis of the assessment of oral health. Another instrument – questionnaire of 11 questions.

Results

After the analysis and assessment of the data of the first check-up according to PI index (plague) it can be stated that 53,3 percent (n=155) children's oral health was satisfactory, 34,3 percent (n=97) – unsatisfactory, 13,1 percent (n=38) – good and only 0,3 percent (n=1) excellent. According to the results of the second check up oral health of children increased: 10 percent (n=22), of children's oral health was unsatisfactory, 34 percent (n=74) satisfactory, 42 percent (n=91) good, and 14 percent (n=31) excellent. Comparing to the results of 2017 September it can be stated that the number of children with excellent oral health increased by 14 percent, with good oral health by 29 percent and the number of children having unsatisfactory oral health decreased by 24 percent while the number of satisfactory oral health decreased by 19 percent. The survey also revealed that parents' attitude towards children's oral hygiene was more positive. Different means of dental care were tried and used, parents started to trust more dentists and oral hygienists than other means of information. After the completion of the program parents evaluated their knowledge about oral health to become better: 58,2 percent (n=99) stated their knowledge about oral health as good (before 45,1 percent (n=74), 25.9 percent (n=44) as satisfactory (before 35,4 percent; n=58), 15.9 percent (n=27) as good (before 11,6; n=19). None of the respondents declared ones knowledge about oral health as poor. The majority of the parents were interested in continuing of the program to improve children's oral health skills.

Conclusions & Significance

Keywords: preschoolers, oral hygiene, KPI index, PI index.

1. The main pre-school children's oral cavity diseases are dental caries and gingivitis. They are caused by: not sufficient oral hygiene, poor nutrition, genetics. Gingivitis can be also caused by growth of the teeth.
2. Preventive measures can be used in the dentist's office or at home. The main preventive measures for the children's oral health are a toothbrush, interdental brushes or dental floss, tongue cleaner. Measures used in the dentist's office: fluorine varnish, dental sealants, trainings for the oral hygienists. Parents' attitude and knowledge about the care of the child's oral cavity hygiene is also important in order to prevent children's oral health diseases.
3. The oral hygiene of the pre-school children was rated satisfactory before the project "Children of Kaunas are smiling". After eight months of practical and theoretical training for children, parents, kindergarten teachers, public health professionals, it is indicated the improvement of children's oral hygiene skills. During the second check children's oral hygiene in most cases was evaluated as good. The intensity index values of tooth decay remained unchanged.
4. None of the respondents declared ones knowledge about oral health as poor. The majority of the parents were interested in continuing of the program to improve children's oral health skills.

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OPINIONS OF NATIONAL COMPETENT AUTHORITIES REGARDING PATIENT REPORTING OF ADVERSE DRUG REACTIONS

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Relevance

Patients are important contributors to pharmacovigilance through active reporting of adverse drug reactions (ADRs). In recent years, more and more national competent authorities (NCAs) have implemented systems to receive ADR reports directly from patients. However, the implementation and promotion of patient reporting systems differ worldwide as well as the general opinions of NCAs about patient reporting.

Methodology

A web-based questionnaire was constructed based on qualitative interviews and distributed through the SurveyMonkey® platform to all countries listed on WHO Programme for International Drug Monitoring (n=178) during November/December of 2015. Data were analyzed using descriptive statistics and chi-square (χ^2) tests.

Results

Questionnaires were received from 141 countries (79.2%). Official patient reporting system (PRS) – designed specifically for patients is implemented in 44 countries (31.2%). However, reports from patients are allowed in 107 countries. Lack of resources/budget (56.5%) and lack of information/education for patients (56.5%) were the main reasons for not implementing an official PRS. Respondents acknowledge that their organizations don't have the resources to promote patient reporting in the way they would like (71.1%) and that having an implemented PRS requires additional resources than a system for healthcare professionals (63.7%). For respondents, handling patient reports is more labor intensive (for example through coding, feedback, etc.) than healthcare professional's reports (60.7%). On the other side, NCAs stated that patient reports could be useful to provide information that is not present in healthcare professional reports (80.7%) and that patient reports give more information on the impact of the ADR on the quality of life than healthcare professionals reports (77.0%).

Conclusions & Significance

Most countries accept adverse drug reaction reports from the general public. The lack of resources/budget and the lack of information/education for patients are highlighted as the major obstacles to the implementation of patient reporting systems.

Keywords: Patient reporting; adverse drug reactions; national competent authorities.

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EDUCATION AND TRAINING PROGRAMS OF PHARMACY TECHNICIANS IN EUROPE

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Relevance

For EAPT, a Pharmacy Technician (PhT) is a qualified pharmacy professional who holds a formal qualification in pharmaceutical science, recognised by their countries regulatory organisations. The Pharmacy Technician is involved in optimising the use of medicines or medicinal products, within their national pharmacy legislation, in the best interests of patient safety. Regarding this definition, it is important to get a frame of pharmacy Technicians education in Europe to understand the basis for the accomplishment of their professional role.

Methodology

An online-based survey was conducted in March 2017. EAPT member countries were included in the survey, and other countries where the Pharmacy Technician professions exist were also invited to participate. The purpose of this survey was to characterise Pharmacy Technicians training programmes and give a detailed and easily accessible overview of the differences and similarities between the education and training throughout Europe.

Results

A sample of 19 answers were collected, thirteen EAPT member and six non-member countries. Different levels of development of training programmes were observed, including in duration (2 to 4 years), level of education (secondary, post-secondary, higher degree) and curriculum structure. Mandatory clinical training was observed in 17 out of 19 countries surveyed in different areas of training, including Hospital Pharmacy, Community Pharmacy, Industry, Radiopharmaceuticals, Primary Healthcare units and teaching institutions. The incidence of core sciences, pharmacy subjects and complementary subjects were surveyed in countries PhTs curriculum: Germany (36/37) and Portugal (34/37) were the countries that present most surveyed subjects in their training programmes.

Conclusion & Significance

Several differences were observed in the Education and training programmes around Europe, however, these differences are related with the duration of training programmes, the level of education and the different career opportunities for pharmacy technicians in different countries. These differences affect the professional competencies level, leading to challenging in mobility.

Keywords: Pharmacy Technician, Europe, Education, Training Programs.

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VILLAGES ON MOVE BALTIC, BEST PRACTICES IN PROMOTING PHYSICALY ACTIVE LIFE STYLE – EXAMPLES FROM FINLAND

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Relevance

Equal access to sport, meaning there has to be methods and programmes for promoting physically active lifestyle also in rural areas and in refugee centers Health enhancing physical activity, meaning that everybody has the right to move. Sustainability, meaning that the possibilities to HEPA must be near where people live and the activities developed in the project will have continuity in the villages. Multi professional network, meaning working together combining different skills. Joy of sports, meaning that joy of sport is a good motivator for physical activity

Innovativeness, meaning that culture of experimentation and co-creation with rural citizen is used as a working method.

Methodology

Frisbeegolf tour in Finland and Idea competitions.

Results

In Eurobarometer one of the motivating factors is HAVING JOY OF SPORTS AND PHYSICAL ACTIVITY. In rural villages for example in Finland there is a large variation of FUN village physical activity competitions such as “Sulkava rowing race with long boats” (6000 participants) and “Haukivuori Swamp volleyball” (600 participants). In all these competitions You can join with humor for example with a team collected from Your working place. This kind of team spirit supported physical activity is important. The the meaning of physical activities in building community spirit and family unity is important. Events like “Moving with Your dad” and “All people shall move” are building the sense of belonging together and motivate citizen to have active and healthy lifestyle.

The ideas for these events has rizen up in rural context, and supporting culture of experimentation can bring up more of them. In project’s Idea competition it is possible to get answers especially from these participants, but also from our students in “rural areas”, sport clubs and rural development associations as well as rural citizens. One idea Frisbeegolf has been promoted in Villages on Move Baltic project. Also map application is disseminating all ideas collected in the project.

Conclusions & Significance

Culture of experimentation is a good tool in promoting physically active life style.

Keywords: Culture of experimentation, joy of sports, rurality.

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FORMULATION AND EVALUATION OF TOPICAL ANTIFUNGAL FORMULATIONS

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Relevance

20–25% of the world's population has skin mycoses. Topical medications are primary treatment for tinea corporis, tinea pedis. While producing a semi-solid drug, selecting the adequate base is the important because the base provides the proper consistency, release and resorption of a semi-solid formulation. The aim of this study is to evaluate the stability and biopharmaceutical properties of antifungal bigels.

Methodology

Bigels with antifungal substances (CPO and TFH) were made of oleogel and hydrogel. The amount of oleogel were 10–40% in formulations. An in vitro release test was performed in modified Franz type diffusion cells. Bigels were studied for their antifungal activity against *Microsporum canis* using the agar well diffusion technique.

Results

The excipients have impact on the release of active substances. The release amount of both substances decreased when the concentration of oleogel increased. Oleogel slows the release from bigels and could be used to prolong the effect of the medicine. The active substance does not affect the released amount in 6 hours: CPO 22.25–50.59%, TFH 19.15–51.14%. All formulations showed great inhibition of pathogenic fungi.

Conclusions & Significance

Bigels were found physically stable at room temperature for 6 months and at least 4 months at 40 °C. Drug release and antifungal studies suggested that prepared bigels released a sufficient amount of CPO and TFH and were effective against *Microsporum canis*. Results of the study show that bigels are promising for antifungal substances.

Keywords: bigel, antifungal, ciclopirox olamine, terbinafine hydrochloride.

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FACTORS OF STUDENTS PHYSICAL ACTIVITY: A THEORETICAL FRAMEWORK

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Relevance

This article examines theoretical aspects of student physical activity. Students make up a large part of the youth. Studies by various countries clearly reveal the problem of low physical activity of students (Shani et al., 2014; Bergier et al., 2017; Teixeira et al., 2016). Irwin (2004), summarizing the study of physical activity in students in 27 different countries, notes that between 30% and 60% the students' physical activity did not meet the recommended rates and varied according to the country. Student populations are characterized by a certain specificity a new stage of life begins, independence increases, parents change, place of residence, circle of friends, changed circumstances require new time planning skills, responsibility, changing agenda, increasing mental workload, increasing physically passive time spent on computer, studying, performing tasks. Changes in the environment can lead to the formation of risk behaviors such as alcohol, drug use, changes in eating habits and decreased physical activity (Vella-Zarb and Elgar, 2009; Borsari, Murphy and Barnett, 2007; Haase et al., 2004).

Although there is a lot of research in this area, there is a lack of a systematic, integrated approach to physical activity conditions, studies reflect one or several aspects of physical activity. Therefore, in order to increase the level of physical activity of students, it is first necessary to understand the phenomenon of physical activity and its components by reviewing various theoretical perspectives. The research problem is formulated on the question: What factors influence physical activity in the student population? The purpose of this presentation is to provide a theoretical framework explaining the system of factors influencing students' physical activity.

Motivation for physical activity was considered from theoretical perspectives such as Pender's Health Promotion Model, Social Cognitive Theory, Self-Efficiency and Self-Structuring Theory, Ecological Model and Social Ecological Model, Theory of Planned Behavior, Self-Determination Theory.

Results

Summarizing theories of physical activity analyzing and the results of the research carried out on the basis of them, revealed several common aspects: on the one hand, physical activity is a process or a set of actions due to a set of complex assumptions. Motivation for physical activity arises and not only supports by internal personal predispositions, such as provisions, personal effectiveness, self-determination, but also particular important are contextual circumstances that can change the inner person's mood towards physical activity, i.e. encourage or inhibit. This is especially emphasized in the principles of social-cognitive, self-decisive and planned behavior theories. Their social support, i.e. family, friends, learning / study environment factors, interacting with the person's internal attitudes, affect the intentions and preferences of the young person for activities of physical activity and the perception of their benefits (Deci, Ryan, 2000; Dowda et al. 2007; Neumark-Sztainer et al. 2003; Ajzen, Fishbein, 2010).

Conclusion & Significance

The theoretical analysis have revealed that physical activity is conditioned both in terms of the internal predispositions of the individual, of the near social environment and of the contextual cultural, economic, structural factors. In summary, the factors influencing students' physical activity can be divided into five groups: demographic and biological factors; psychological, cognitive and emotional factors; attributes of behavior and skills factors; social and cultural factors; physical environmental factors.

Physical activity is a process or a set of actions due to the complexity of complex assumptions. Motivation for physical activity arises and are not supported only by internal personal predispositions, such as provisions, personal effectiveness, self-determination, but also of particular importance are contextual circumstances that can change the inner person's mood towards physical activity, i.e. encourage or inhibit. Social support is becoming important, i.e. family, friends, learning / study environment factors, interacting with the person's internal attitudes, affects the intentions and provisions of the young person for activities of physical activity and the perception of the benefit. Significant contextual factors and events related to studies, such as the changing of living conditions, friends, traditions of physical activity fostered by the higher school, support sports, sports equipment, study load, changed agenda, even the content of studies, are becoming significant.

Keywords: Physical activity, students, factors.

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COPING WITH STRESS IN TEACHING PROFESSION

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Relevance

Teachers are among the professions reporting the highest level of work-related stress. High level of stress has a negative effect on teacher health and well-being, causes teacher burnout, lack of engagement, job dissatisfaction, poor performance, and high turnover rates. Therefore it is important to determine the level and the main sources of teacher's work stress and identify the most common choices of individual and organizational interventions or activities used to manage stress in teacher work.

Methodology

The study is made within the framework of the international project "Preventing Stress in the Teaching Profession-Stress Free Teachers", No. 2016-3715/001-001. For the study a quantitative research method was used. Data for the study was obtained from a comprehensive online survey of teachers (n=308) and school management staff (n=62) across the following project partner countries: Portugal, Slovenia, Bosnia and Herzegovina, Lithuania and Turkey. For this purpose online questionnaires for teachers and school management staff were prepared and circulated via e-mails to schools in the mentioned countries. Participation in survey was based on volunteering principle. The anonymity of survey participants was ensured.

Results

61% of teachers reported their work environment as very stressful or stressful. School management staff towards stress level in teacher work is even more worrying and decisive – almost 80% of school leaders consider teachers' job as very stressful or stressful. The main stressors that most teachers and school leaders reported as being faced constantly, very often or often include: filling in documents, abundance of reports and paperwork, low salary, the need to work overtime, abundance of work roles, achieving the goals of the curriculum, inadequate teacher's work assessment at school, changing requirements for the teacher's roles and competencies, bad social status of teacher in the society, unclear duties and responsibilities.

The most frequently reported stress management activities are related to rational stress management methods like convincing oneself of being professional and having the necessary skills to solve the problem, thinking over what has been learnt from the situation, trying to find something positive in the situation, and other. The least frequently reported activities are *going to sport club* and *taking medicaments*. Relaxation methods (breathing exercises, visual imagination techniques, etc.) are also not often used among teachers to cope with stress.

Different organizational interventions are implemented at school level to promote teachers' motivation, participatory environment, open communication and support (events for developing organizational culture, qualification development events, etc.)

Conclusion & Significance

Majority of teachers face high level of stress in their work. The most frequent stressors in teachers' work are linked to their functions, role overload, workload, also to poor work

conditions (low salary, noisy environment and other) and external factors, like education reforms, social status in society. Most common methods to deal with stress and employed by teachers are based mostly on individual approach. Most often teachers cope with stress using rational methods directed to thoughts managements and positive thinking. Measures applied at school level to support teachers in stress management are insufficient. They need to be strengthened and expanded in order to promote more supportive work environment.

Keywords: Teacher stress, stressors in teacher work, stress management methods.

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OUTDOOR WORKERS' SUN PROTECTION BEHAVIORS– A PILOT STUDY

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Relevance

Association between solar ultraviolet radiation (UVR) exposure and all types of skin cancer has been demonstrated in different studies.¹ Due to their nature of their occupation, outdoor workers have been identified as a group with high levels of UVR exposure and consequently with highly risk for the development of skin cancer.

Outdoor workers are at risk of UVR exposure due to the nature of their occupation, high levels of UVR exposure, and have been identified as an at risk group for the development of skin cancer.² Exposure to UVR can be reduced by preventative strategies like using sunscreen during their occupation.⁴ This study aims to identify the sun protection behavior of outdoor workers in one region of Portugal.

Methodology

A cross sectional questionnaire-based study was conducted in one district of the inland region of Portugal. The questionnaire about sunscreen's use and sun protection behavior was applied to a convenience sample of outdoor workers between 19th March and 15th June 2018. The inclusion criteria were subjects that work daily outdoors with exposition to sunshine and with 18 years or more.

Results

Fifty subjects answered to the questionnaire (76% male and 24% female). Most respondents were between 50–69 years old (54%) and only 4% have a Bachelor Degree. In what concerns their profession, 42% are farmers, 32% building constructors, 14% are lifeguards. 74% of the subjects refer a daily sun exposition of more than 6 hours, however only 40% use sunscreen. Among the 88% of the participants did not know that exposition to sun is one of the main factors to cause skin cancer. Women are more likely to use sunscreen rather than men. The main factors identified for not using sunscreen are the forgetfulness and owing to the fact they consider that the use is unnecessary.

Conclusions & Significance

It was observed a lack of awareness about the sun exposure problem, by the outdoor workers included in this study. It is necessary to develop educational interventions in this population to alert them about the consequences of excessive exposure to solar radiation.

Keywords: outdoor workers; ultraviolet radiation exposure; skin cancer; sun protection behaviors.

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MOTIVATION AND PHYSICAL ACTIVITY TYPES: COMPARATIVE ANALYSIS

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Relevance

Abstract was written while participating and doing a research in a project called “Villages on Move Baltic” (Erasmus+: Sport, Collaborative Partnerships, Grant Decision/Agreement No. 2016-3715/001-001). It was written by partners from Kauno kolegija / University of Applied Sciences (Lithuania), Lääne-Viru College (Estonia), Southern Savo Sports Federation (Finland), UCL University College Denmark. A research was also done in Latvia and it was done by academical staff from Riga 1 st Medical college.

Methodology

Methods of the research: structured questionnaire in written. This article presents the results of internal and external motivation for most common physical activity types (11) of citizens from participial countries in last 6 months. In order to be physically active 6 indications depended to external motivation and 12 to internal.

Data were processed using an SPSS program (Statistical Package for Social Sciences, version 21.0). Methods of statistical analysis: descriptive statistics, T-test, Anova test, Spearman Correlation Coefficient.

Sample: there were 627 people from 5 EU countries (Lithuania, Latvia, Estonia, Denmark, Finland). Research was conducted from May of 2017 to June of 2018 year.

Results

The research has shown that the most favorite forms of physical activities in Lithuania, Latvia, Estonia, Denmark and Finland are walking, riding a bike and running. However, the participants from Finland and Denmark were more active in all kinds of physical activities comparing to other participating countries. For the participants of urban areas walking, gym, Nordic walking, swimming and yoga are most popular forms pf physical activities. Gardening is more popular in villages and rural areas. Participants from 18 to 44 years old are more physically active as they apply a variety of physical activities comparing to the participants in 45–59 age group. Motivation is thought to be a combination of the drive within us to achieve our aims. Showing a good example to one"s family is the most common external factor mentioned by the participants. Least favorite extrinsic cause for motivation in regards to physical activity was media. Almost all of the participants agree that health is a very important internal motivational factor for physical activity. To add more, almost all external factors are important to men and women, considering physical activity. Motivational causes of external

physical activity were a little bit different in different age groups. Younger citizens (under 44 years old) were more positive about internal and external factors of motivation for physical activity. Participants from rural areas more than respondents who live in settlements or cities agree on the idea that person's quality of life depends on personal efforts.

Conclusions & Significance

Strongly expressed motivation to be physically active is not in all cases related to being physically active in real life. Denmark is a great example. Citizens of Denmark, who were participating in this research, had less positive outlook on motivation for physical activities than participants from Lithuania and Latvia. The research has shown that in real life people from Denmark and Finland are more active and they have a bigger variety of physical activities.

Keywords: Motivation, physical activity, project "Villages on Move Baltic".

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PROPOLIS OINTMENT: MODELING AND EVALUATION OF PHYSICAL AND SENSORY CHARACTERISTICS

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Relevance

Topical semisolid products of natural origin attract more attention nowadays, so researchers seek to design stable products from natural raw materials, which would meet contemporary requirements. The most important thing is to develop such a product which would have not only an active natural component, but also would have natural base.

The main aim of the study was to select the composition of propolis ointment using bee products and natural materials, and to evaluate the quality of the preparation. The investigation focuses on the study and the evaluation of their physical characteristics and sensory characteristics.

Methodology

Selection of composition and preparation of ointments formulations: the experimental formulations of propolis ointment were formulated and investigated.

Evaluation of physical characteristics: the organoleptic evaluation various physical parameters of formulations, such as spreadability, washability, phase separation, color, odor were estimated at the temperature ($25 \pm 2^\circ\text{C}$), the lighting and humidity (60% RH). Samples were evaluated after 1, 7, 14, 30 days of the preparation.

Determination of pH values: the pH of samples was measured by pH-meter 766 Calimatic (Knick, Germany) at temperature $20 \pm 1^\circ\text{C}$.

Evaluation of sensory characteristics: a trained group of evaluators analyzed products samples and selected the concepts (compiled the vocabulary) for describing the sensory characteristics: spreadability, fattiness, texture acceptability, general acceptability, general scent intensity, scent acceptability, intensity of color. Subsequently, the scales for the evaluation of the intensity of these characteristics were selected and discussed, and the intensity of each characteristic of all products were then marked on separate scales.

Results

As ointment base substances there was selected: olive oil, beeswax, cocoa butter, cholesterol, honey, and following substances that improved the sensory characteristics of the ointment base: buckthorn oil for color, and lemon-balm essential oil for scent. Propolis as an active component was introduced to ointment bases in soft extract form. The results of the study of sensory properties were evaluated.

The evaluation of physical parameters of propolis ointment were determined. The assessment of the results of the investigation showed, that the quality and the stability of the formulations were influenced by the quantity of beeswax. The study showed that beeswax

concentration (10-20%) had the greatest effect on the all investigated physical parameters of the propolis formulations.

The results of pH value (4,19 – 6,51) indicates that all ointment are suitable for use on the skin, since they correspond to physiological skin pH range. The results demonstrated that pH value was influenced not only by the properties of base components but also by concentration of beeswax in formulations. The data showed that after insertion of soft propolis extract, the pH value in ointment increased in comparison with ointment base.

Conclusions & Significance

The modeled propolis ointment is the hydrophobic homogenous system with positive physical and sensory characteristics. The research has established that the composition of bases has an impact on their physical and sensory characteristics also on pH value. Formulated semisolid formulations containing bee products are characterized by acceptable organoleptic properties. The composition of the ointment was selected: olive oil, beeswax, cocoa butter, cholesterol, soft propolis extract, and substances that improved the sensory characteristics.

Keywords: ointment, propolis, physical, sensory characteristics, pH value

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LIFE CHANGES AND AID POSSIBILITIES FOR FAMILY GUARDIANS OF INCAPACITATED OR DISABLED PERSONS: EXPERIENCE ANALYSIS

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Relevance

More and more attention is given to problems, related to not only life quality of seriously ill people, but also to the changes of their family members' lives. These changes are stipulated by the disease of their family member and constant and tiring care of this person at home.

Researches show that psychological support and consultation on various safety issues have a good impact on people who take care of ill family members and help improve nursing quality at home. Literature often analyses the role of a nurse, which helps to secure the bond between the ill person and medical professionals [6,7,13].

Methodology

The research was carried out doing half-structured interview. Data was analyzed using content analysis method.

In order for participant selection to be expedient, there were a few requirements: only people who nurse their family member with disability could participate in the research. There were 75 guardian people, their age was between 20 and 80 (average – 55). 68 of them were women and 7 were men.

Results

The research was carried out doing half-structured interview that revealed life changes and aid possibilities according to these fields: work activities, participation in social life, communication, hobbies, appearing difficulties and need for assistance. The age of guarded people was between 26 and 96 (average was 76), 58 of them live in cities, 8 in settlements, 9 in a countryside. Research participants guard people who suffer from: a- neurodegenerative diseases, such as Parkinson's, Alzheimer's, multiple sclerosis, (N=20); b- stroke (N=27); c- dementia (N=17); d- heart-blood vessel diseases, respiratory failure (N=6); oncological diseases (N=3); f- diabetes mellitus (N=2).

Conclusion & Significance

1. Family member who care for disabled people face psychological, physical and social difficulties. Research also revealed another common problem – lack of social and nursing services. Many respondents named psychological difficulties, such as: it's hard to accept functional and personal changes of a disabled person; they are afraid of losing their loved one; they feel helpless and emotionally drained, sometimes they feel negative society attitude towards their disabled family member. Physical difficulties induce guardian health problems and usually occur during nursing activities.

2. Guardians would like to get more nursing services at home; they express the need to get medical training. Another hurtful aspect for family members is the lack of financial or compensated means. The help of medical staff, various specialists and volunteers, participation in mutual help groups are also very important – they enable guardians to live more qualitative lives.

Keywords: family guardians, welfare, life changes.

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META-MODEL OF INTERPROFESSIONAL DEVELOPMENT: AN OVERARCHING MODEL THAT CONNECTS REQUIREMENTS FOR INTERPROFESSIONAL PRACTICE AND EDUCATION

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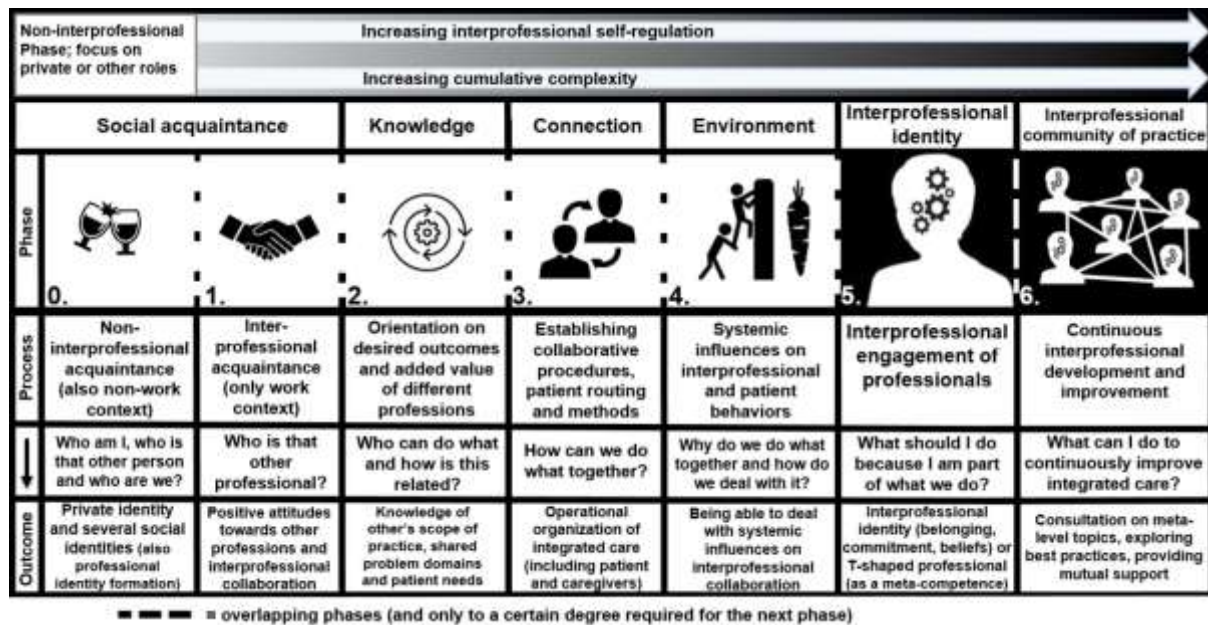
Relevance

Changing demographics, increased complexity of work, and fragmentation through increasing specialization are three important reasons that determine the general necessity to integrate services. The challenge of integrating services of different disciplines and organizations is prominent in health care. Most models describing essential elements for interprofessional practice and education try to simplify the complexity of integrated care but are mainly conceptual and do not explain developmental relationships between and among the elements of the model. A model is needed that is well substantiated and practical for both IPE as well as IPC.

Methodology

The meta-model of interprofessional development was developed by utilizing theories, models and external evidence using on three general strategies. First, identifying common denominators among existing models regarding integrated care and interprofessional collaboration. The selection of these aspects was determined by the factors of the activity theory (Russell, 1997). Second, determining the guiding principles of the whole model: increasing cumulative complexity and increasing interprofessional self-regulation. This way the initial sequence of actions and developmental phases could be determined. Finally, applying theories and external evidence regarding behavioral change and identity formation to test the logic of the initial consecutive phases and to further specify developmental phases and their mutual relationships.

Results



Conclusion & Significance

The Meta-Model of Interprofessional Development outlines, 6 phases, associated processes and outcomes that support interprofessional development over and through time. This Meta-Model is a heuristic that can support teaching and learning as well as research and practice initiatives in the area of interprofessional self-regulation.

Keywords: model; interprofessional collaboration; interprofessional education; curriculum design; integrated care; interprofessional practice; integrated services

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INTERGROUP CONTACT THEORY VERSUS EXTENDED PROFESSIONAL IDENTITY THEORY: WHAT CAN DECREASE INTERPROFESSIONAL HIERARCHY?

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Relevance

Interprofessional collaboration can be limited by social psychological processes that become visible in intergroup competition. For this reason, several authors emphasize the importance of an interprofessional identity to enhance interprofessional collaboration. The purpose of this study is to compare the effect on interprofessional hierarchy of an intervention based on the intergroup contact theory (IGCT) compared with an intervention based on the extended professional identity theory (EPIT).

Methodology

This observational study comprised a randomized double-blind pretest-posttest control group design with 19 mixed profession groups (ten EPIT groups and nine IGCT groups, each with three dental and three dental hygiene students). All groups received reflective feedback during two consecutive two hour team development meetings. EPIT groups also received comparative feedback. Profession-based dominance concerned the sum of three observation items (conversational turn-taking, dominance, and contributing ideas) with a three-point scale: -1=dental dominance, 0=no dominance, +1=dental hygiene dominance. General dominance concerned the sum of absolute values of observation items with a minimum value of zero (no dominance) and maximum value of three (strong dominance).

Results

Polychoric correlations confirmed positive associations with the latent trait and an unidimensional underlying structure. Observation items were internally consistent ($\alpha > .70$). A two-way factorial ANOVA was performed and revealed a significant interaction effect with regard to the EPIT intervention and general dominance, $F(1,17)=6.630$, $p=.020$ and large effect size (partial eta squared =0.28).

Conclusions & Significance

An intervention based on EPIT can decrease interprofessional hierarchy but the regular IGCT intervention does not. Comparative feedback on interprofessional interaction decreases general dominance in mixed profession groups. This is indirect proof that EPIT is a plausible theory to enhance interprofessional collaboration through interprofessional identity formation. However, more research is needed to confirm interprofessional identity formation based on the EPIT.

Keywords: interprofessional identity, interprofessional collaboration, intergroup contact theory, extended professional identity theory.

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THE EXTENDED PROFESSIONAL IDENTITY THEORY (EPIT) A NEW PSYCHOLOGICAL THEORY TO ENHANCE INTERPROFESSIONAL COLLABORATION

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Relevance

Despite the widespread support for integrated care (e.g. Mittinty, Marshall & Harvey, 2018), interprofessional collaboration between different practitioners remains difficult (e.g. Green & Johnson, 2015). Interprofessional collaboration is often perceived as a threat to professional identity which, in turn, obstructs interprofessional collaboration. For this reason some authors emphasize the importance of an interprofessional identity to enhance interprofessional collaboration (e.g. Khalili, Orchard, Spence Laschinger & Farah, 2013).

Methodology

A theory was developed to facilitate interprofessional identity formation. For this purpose, a comprehensive literature exploration was conducted. Since ingroup collaboration is predicted by intergroup processes, the solution should be found in creating an interprofessional ingroup. Based on these initial insights and additional external evidence, the extended professional identity theory was developed.

Results

Ingroup inclusion of different professionals should be possible. According to the self-categorization theory (Turner, 1987), individuals have widening circles of group membership. Intergroup competition enhances ingroup formation and is related to identification processes. In turn, these insights resulted in an extended professional identity theory which is based on ten basic assumptions (Reinders et al., 2018). An interprofessional identity is formed when comparative feedback on interprofessional performance between comparable mixed profession groups is facilitated in a professional context. An interprofessional identity is “superordinate” while an professional identity is “subordinate” (Fig. 1).



Figure 1.

Interprofessional identity as “superordinate” coexisting with a “subordinate” professional identity as proposed by the extended professional identity theory (Reinders et al., 2018).

Conclusion & Significance

1. More interprofessional task distribution (Reinders et al., 2017).
2. Decreased interprofessional hierarchy (Reinders et al., 2018).
3. Increased interprofessional identification particularly increased interprofessional belonging, commitment and beliefs (Reinders et al.; research in progress).

Keywords: theory; professional identity; interprofessional identity; interprofessional collaboration.

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THE INFLUENCE OF GENETIC POLYMORPHISMS IN THE EFFICACY OF IRINOTECAN IN THE TREATMENT OF COLON-RECTAL CANCER

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Relevance

Cancer of the colon and rectum is one of the cancers with the highest incidence rate in Portugal according to the World Health Organization. Irinotecan is one of the drugs that is indicated for the treatment of advanced colon and rectal cancer in adults, either alone or in combination with other drugs. Irinotecan is a prodrug that is classified as an antineoplastic drug that belongs to the class of cytotoxic agents and is used in the treatment of colon and rectum cancer. Its function is to inhibit the enzyme DNA-Topoisomerase I (TOP1) [1]. In order to understand how genetic polymorphism can influence the metabolism of this drug and how it can induce toxicity, a bibliographic review was carried out, with an exploratory and descriptive character, through a bibliographic search delimited to Pubmed and Web of Science search engines.

Methodology

This work is a literature review, with exploratory and descriptive character, about the genetic polymorphisms associated with the therapeutic response of irinotecan in patients with colon-rectal cancer. The literature search was limited to search engines Pubmed and Web of Science and were considered the keywords "genetic polymorphism", "anticancer drug irinotecan", "antineoplastic agent", "cytotoxic drug", "genotype", "pharmacogenetics" and "antitumor therapy".

The filters used were "Clinical Trial", "Review", "Clinical Study", "Journal Article", "Meta-Analysis", "Systematic Review", "Comparative Study". Only were considered articles written in Portuguese, Spanish, French or English, from which were selected 38 based on the affinity with the polymorphism and irinotecan. We included studies published during the period from 1969 to 2017.

Results

UGT1A1*28 is the most frequent polymorphism in the Caucasian population causing toxicity in the form of neutropenia and severe diarrhea [2]. This polymorphism is associated with pathologies such as Gilbert Syndrome and Crigler-Najjar Syndrome [3]. UGT1A1*6 is more frequent in the Asian population [4]. The occurrence of toxicity depends on the dose of drug administered [5], [6]. It is advisable to use this drug with caution. If necessary, genotyping should be used before drug administration [7].

Conclusion & Significance

Genetic analysis of an individual and prediction of their response to irinotecan will decrease the risk of unwanted response. In this way, the treatment for colon-rectal cancer must become increasingly individualized due to the particularities of each person and variability in pharmacodynamics and pharmacokinetics of antineoplastic drugs.

Keywords: genetic polymorphism, irinotecan, anticancer therapy.

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THE MAGIC OF THE STAGE – THE PLACE THAT MAKES THE DIFFERENCE

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Relevance

Speaking of “theatre”, three determinants are required: actors, the audience, and the stage. Seen through the lens of drama and theatre pedagogy, one of these elements may be neglected: the audience. What we do need though, are the actors and the stage. Particular attention is usually paid to the actors, whereas the stage remains in the backseat – which is certainly unjustified.

In the course of my long-standing experience in theatre pedagogy involving highly diverse groups, the stage has turned out to be most relevant. It is the stage that creates the difference with “real” life – at the theatre as well as in education. As soon as the actor enters the stage, they are allowed to do anything they want to do, think, say, or resist doing which is forbidden or negatively sanctioned in “real” life. This opens manifold spaces of possibilities.

Results

Pedagogy as well as therapy focus on changes in acting and thinking, in attitudes and social behaviour. Experience has been gathered at the in-patient adolescent psychiatry unit of a psychiatric hospital, at a facility for mentally disabled adults, at advocacy services for children and young people dealing with victims of violence, but also at various schools. Observations revealed that it is the stage that creates possibilities not only for therapy but also for teaching and learning at schools and at other places of formal and informal learning.

What makes the stage a unique instrument for therapy as well as for teaching and learning? Performing arts provide the opportunity to visualise and manage processes. This is guided by two principles:

a) “As if” situation: The actors behave on stage as if they were imagined figures in an imaginary situation.

b) “I am” situation: The actors behave as if they themselves were part of an imaginary situation.

These two principles give scope for subjective experience beyond the daily routine. The actors enter an aesthetic reality which facilitates learning.

Conclusions & Significance

Teaching through theatre applies a holistic approach which includes the cognitive, emotional, and physical levels. This means that the learners, as actors, actively participate in the learning process, which thus provides optimal conditions for efficient and successful learning. In contrast to artistic work, priority is always given to contents, overcoming problems, and solving conflicts. It is not important how you act, but what you act. Hence, the stage turns into a magic place of change and learning.

Keywords: performing arts, stage, learning, therapy, behaviour modification, pedagogy.

MEDELDELRLY PROJECT (PART I) – A QUALITATIVE STUDY FROM PORTUGAL - EXPLORING DRUG RELATED PROBLEMS IN OLDER PATIENTS

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Relevance

Population ageing is one of the most significant social transformations of the twenty-first century. Globally, the increasing number of people aged 80 years or over, is faster than the number of older persons overall.¹ These increase in average life expectancy was a successfully challenge achieved in the modern world. However, nowadays a new challenge arise for all the society: achieving a better quality of life for increasing people's life. Medicines are the medical technology mostly used and about two-thirds of all older people have problems using their medicines correctly. Drug-related problems (DRP) in older patients, have been reported to account for a large percentage of emergency treatment and hospitalizations, increasing the costs with health in the most aged regions.^{2,3} Portugal is one of the most aged countries of Europe and interventions to improve medicines use by older patients are needed. We are developing a research, the MedElderly project, to improve the use of medicines by older patients⁴. The part I of this Project is a qualitative study to explore health professionals and patient's perceptions about DRP in older patients.

Methodology

A qualitative research in the form of focus group was developed in primary care centers. The methodology included focus groups with both patients and focus groups with primary care health professionals. The sessions were moderated by a researcher, following a top guide, and were audio-recorded and transcribed by another researcher. The study was developed between May 2018 and August 2018. The study was approved by the ethical committee of the Center Health Region of Portugal, and from the Portuguese Data Protection Authority. After explanations about the study and the aims of the research, a signed informed consent was obtained from the participants.

Results

It was performed 8 focus group with primary care health professionals, general practitioners (n= 34), community pharmacists (n= 14) and nurses (n=27). Nine focus groups were conducted with older patients (n=53). The main DRP identified by health professionals are duplication of medication, confusion with similar boxes, drug interactions and few medication adherence. In the opinion of the health professionals the main factors for medication non-adherence is the costs of medicines and the lack of familiar or other external support to help patients in the management of their medicines. Patients recognized that sometimes they increase or decrease the dosage of medicines on their own, and that sometimes take over the count medicines and herbal products and they don't talk about them to the doctor. In general, older patients know their medicines by color of the box and dosage form. Usually, they don't

like to read the information inside the box because it is very complicate to understand and when they read adverse drug reactions sometimes they stop to take them.

Conclusions & Significance

Although older patients have the perception that medicines are important to improve their health, mistakes are frequent during self-administration. It is important a global discussion enrolling physicians, pharmacists, nurses and policy makers of different countries to develop strategies to improve medicines use by older patients.

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Keywords: older patients; drug-related problems; focus group.

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NURSE TRAINING AND INTERNSHIP IN PSYCHIATRY: CLINICAL TEACHING ACCOMPANIMENT AND REFLECTIVE PROCESS

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Relevance

The activity of caring in psychiatry field is multi and interdisciplinary. The role and function of psychiatric nurses in the clinical practice is difficult to identify and figure out as the activity is various and part of it is not so visible and obvious.

Educational trainers have implemented a framework such as a clinical teaching accompaniment, to support students to be more aware of care in psychiatry and identify the role and the function of the psychiatric nurse.

Methodology

A sequence gathering students, a mentor and a trainer is scheduled during the internship in psychiatry.

During the sequence, students are invited to share their experience the opportunity of putting their experience through words enables them to better identify and enlighten the the role of a psychiatric nurse.

Results

Through their posture and practices, the educational trainer and the mentor provide the conditions that enable the students to engage a dialogical and reflexive activity language activity leads to a gain of awareness the process leads to awareness which promotes a development, through a process of conceptual and identity geneses.

Conclusions & Significance

The activity of a nurse in psychiatry is not so visible and understandable; actually the most part of the activity is informal and less prescribed than in another field.

Language activity is needed to help students to catch the meanings of what they observe and experiment through the work placement.

Keywords: student, psychiatry, nurse, activity, reflective process.

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OVERVIEW OF SYSTEMATIC REVIEWS INDICATES VARIATION IN EBP COMPETENCIES AMONG HEALTHCARE PROFESSIONALS

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Relevance

Systematic implementation of EBP is essential to effectively improving the quality and consistency of care as well as patient outcomes. However, previous studies have shown that nurses and other healthcare professionals do not consistently use evidence in practice. This overview of systematic reviews (i.e., systematic review of systematic reviews) evaluates the state of healthcare professionals' EBP competencies and the quality of reporting of their EBP competencies.

Methodology

Systematic searches were conducted in July-August 2017 in PubMed/MEDLINE, CINAHL, Cochrane Library, and SCOPUS for studies of healthcare professionals' EBP competencies. A total of 3,932 titles published between January 2012 and July 2017 were screened, of which 15 were considered for inclusion. After reviewing full text articles, 11 reviews involving y participants were included in the overview. Critical appraisal of methodological quality of the included reviews was independently conducted by 3 reviewers.

Results

Some overlap was found across the reviews included in the overview: 197 source studies included in the reviews related to 135 separate studies, of which 42 were included in more than one review. Included reviews used heterogeneous methodologies to assess the EBP competencies of healthcare professionals; and critically appraise the quality of the source studies included in the reviews. The quality of reporting the results in the included reviews was moderate.

Conclusions & Significance

Healthcare professionals' EBP competencies vary considerably, both across the healthcare disciplines and in terms of level of competency in the various EBP competency categories, i.e., EBP knowledge, EBP attitudes/beliefs, EBP skills, and EBP implementation. EBP competencies are essential for all practicing healthcare professionals in guiding their integration of best evidence into their clinical decision-making and thus enabling them to provide higher-quality care and better patient outcomes.

Keywords: Evidence-based practice, competence, healthcare professional, systematic review.

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THE EFFECTS OF PILATES EXERCISES ON RESPIRATORY FUNCTION

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Relevance

Spirometry is one of the most important diagnostic tests that helps to determine the vital capacity of the lung. By assessing the vital capacity of the lung, various illnesses such as chronic obstructive pulmonary disease, bronchial asthma and restriction lung diseases can be detected and the age and physical fitness of spirometry are strongly influenced. It is well established that women have smaller lungs and narrower airways relative to age- and height-matched men (Harms, Rosenkranz, 2008). A growing number of studies suggest that these sex differences in pulmonary structure have important physiological implications during exercise. For example, it has been shown that women are more likely to experience expiratory flow limitation and have a higher work of breathing to achieve a given absolute minute ventilation (VE) during exercise relative to men (Guenette et al., 2013). Although women experience greater ventilatory constraints and have a higher work of breathing during exercise (Reid A. Mitchell et al., 2018). Yoga and other body-mind techniques enjoy an increasing popularity in many fields of health maintaining practices, in prevention of some illnesses and in curative medicine in spite of our incomplete knowledge about its applicability and effects (Hostler, Pendergast, 2018).

Methodology

The MicroLab is part of a new range of respiratory instrumentation with the most comprehensive range of features to be found in spirometers of their size and price. The MicroLab uses the Micro Medical Digital Volume Transducer, an extremely stable form of volume transducer, which measures expired air directly at B.T.P.S (Body Temperature and Pressure with Saturated water vapour) thus avoiding the inaccuracies of temperature corrections. This transducer is insensitive to the effects of condensation and temperature and avoids the need for individual calibration prior to performing a test. To evaluate the effects of Pilates exercises designed to the expiratory vital capacity (EVC), forced expiratory volume in 1 s-FEV1 and Tiffeneau (FEV1 / VC).

Participants: Female volunteers were divided into an experimental group after Pilates program (n = 27) and a control group before Pilates program (n=27). The average lung capacity before and after Pilates training was compared to middle(old)-aged women. Intervention: Pilates exercises were performed twice per week by the EG; the duration of each session was 60 min. The program lasted for 32 weeks; thus patients underwent a total of 32 exercise sessions.

Results

The norm vital capacity (VC) is 3.25 liters in women over the age of 60 years. The mean FVC score for the women at the beginning of the study was $3,421 \pm 0.49$ liters, after the Pilates exercise program, this statistically significant increase ($p < 0.05$) and reached $3,908 \pm 0.59$ liters.

The forced expiratory volume in 1 sec. (FEV1) is 2.5 liters in women over the age of 60 years. The mean FEV1 of women in the study group was $2,534 \pm 0.42$ liters, after the Pilates exercise program, this statistically significant increase was observed ($p < 0.05$) and reached $2,941 \pm 0.5$ liters.

Conclusions & Significance

Forced vital capacity and forced expiratory volume in 1 second after the pilates exercises has improved ($p < 0,05$).

Keywords: spirometry, pilates exercises, vital capacity.

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MUSCLE OXYGENATION DURING EXERCISE IN PHYSICALLY ACTIVE AND OVERWEIGHT 6–19 YEARS OLD CHILDREN

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Relevance

In childhood, physical activity maintains an appropriate bone strength, and it contributes to normal skeletal development (Van der Hors, et al, 2007). Physical activity has positive influence on VO₂ max, and blood cholesterol (Dobbins, et al, 2013). Children display a faster exponential rise in the phase II pVO₂ kinetics, which can the rise in muscle O₂ consumption, during different intensity exercises (Amstrong, 2011).

49% of children are less physical active that 60 min per day in nowadays (Harrison et al, 2017). Since physical activity is decreasing, overweight and obesity among adults and children are increasing. Pediatric obesity can harm multiple body systems: respiratory system, including pulmonary function, exercise intolerance, gas exchange, and airway musculature (Durbin et al, 2017).

Near-infrared spectroscopy (NIRS) has been used to determinate the concentration of light-absorbing chromophores (Ferreira et al, 2007). NIRS is a noninvasive and direct method to determine oxygenation in tissue (Van Beekvelt et al, 2001). Respiratory muscles deoxygenate during incremental exercise and ventilatory threshold can be determined by NIRS in children (Maolla et al, 2005).

Training-induced adaptation in aerobic fitness and muscle oxygenation among adults is carefully analyzed, but findings in children still are not clear.

Methodology

Muscle oxygenation was recorded by near infrared spectroscopy during constant (6 min, 6 km/h, 4% grade) and increasing walking exercise (modified Balke test). Heart rate was recorded using Polar system.

Results

Overweight children of all age groups demonstrate slower time constant of muscle oxygenation during constant walking exercise (37.2±3 (6–10 yr old); 29.7±2 (11–15 yr old), 33.4±5.1 (16–19 yr old)) and lower threshold of oxygenation (TO) (84.3±10.1, 104.5±17.1, 188.5±69.4 respectively) during increasing walking exercise as compared NPA (111.8±13.7, 124.4±29.8, 192.6±84 respectively) and PA (106.2±35.2; 122±13.3; 340.8±44.2 respectively.) peers.

The time constant of Deoxy-Hb during constant walking exercise was the shortest in PA (16.7±2.3, 16.9±2, 15.5±4.7 respectively) in all age groups. The TO was higher in PA as compared to NW only in 16–19 age.

Conclusions & Significance

Muscle oxygenation during constant or increasing exercise is dependent on both body weight and physical activity status in 6–19 years old children.

Keywords: physical activity, overweight, muscle oxygenation, aerobic fitness.

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SUSTAINABLE BIOREFINERY OF AROMATIC PLANTS FOR AN ENVIRONMENTAL FRIENDLY PRODUCTION OF ESSENTIAL OILS, BIOSOURCED ACTIVE MOLECULES AND BIOMATERIALS

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Relevance

Since antiquity, essential oils are worldwide used for their aromatic properties as flavorings and perfumes but also for their biological ones as food additives or medicines. They are extracted from fresh or dried Medicinal and Aromatic Plants (MAP) by hydrodistillation or steam distillation. Their extraction yield being limited to 1%, 99% of solid or liquid wastes are generated and are actually not valorized despite their potential biological potentialities.

To solve this problem, 2 options exist: i) development of new extraction technologies; ii) setting up of an innovative scheme based on existing technologies allowing a global valorization of wastes. If the first approach could be costly, it is of sure not easily economically transferable worldwide (especially in underdeveloped countries which represent main producers of essential oils) while the second one better fits with the objectives of a sustainable use of vegetal matter (wastes valorized, environmental friendly processes, easy technological transfert, ...).

Methodology

In the framework of a program of sustainable recultivation of medicinal and aromatic plants in Occitanie region, a project of integral valorization of distillation wastes of MAP is set up. This Flag Project, based on Green Chemistry and Biorefinery concepts, goals to transform all liquid or solid by-products (wastes) in biosourced co-products such as biological active additives and biomaterials while model MAP selected are fennel seeds and lavender flowers-straws.

The scientific approach developed is based on sequenced extraction of main secondary metabolites respecting the chemical structures of remaining constituents of plant in order to not penalized their subsequent valorization. Indeed, after the mandatory hydrodistillation step (for obtention of essential oils), the extraction cake (solid) and aromatic waters (liquid) were processed in order to extract-concentrate bioactive molecules (especially anti-oxidant ones) by developing green processes based on zeolite adsorption. The final solid residue was extruded (by twin-screw extruders) for producing pellets which could be used as basics for designing thermoformed biomaterials (thermo pressing and injection molding).

Results

The concentration of hydrosoluble polyphenols from aromatic waters was successfully done by batch maceration of 2 different zeolites HBEA and UZY 50 followed by their desorption with ethanol. Total phenolic content and antioxidant activity of extracts were measured and stated the efficiency of concentration of zeolites for recovery of polyphenols in aqueous medium.

After grounding, solid extraction cake was thermopressed in order to obtain boards. Bending and Immersion tests allows to evaluate rheology and hydrophobicity of such biomaterials.

Additivition with plant straws or Isolated Protein Sunflower Cake allow to increase boards mechanical properties.

Conclusions & Significance

The potentiality of a dual valorization of extraction cake/aromatic waters were evaluated and was very promising, especially for the thermopressed agromaterials which have better rheological properties than Chips Boards and Fibres Boards Panels and after process optimization, could compete with Oriented Strand Boards.

Complementary experiments are in progress for continuous concentration of hydrosoluble polyphenols by percolation on adsorbant column.

Keywords: biorefinery, aromatic plants, sustainable valorization.

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A NATIONAL RESEARCH AND DEVELOPMENT PROJECT DEVELOPS STANDARDIZED COMPETENCY EVALUATION FOR GENERALIST REGISTERED NURSES IN FINLAND

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Relevance

The research and development project will verify the competency level required for pre-licensure generalist registered nurse students and thus promote the students' flexible transitioning to working life and further the development of their professional competency at higher levels of education (e.g., master's studies) and specialty training.

Methodology

The project will consist a total of 8 work packages that utilize the following methods: A literature review of the current international literature on the existing national standardized competency evaluations for pre-licensure registered nursing students; a survey of all Universities of Applied Sciences in Finland on the current competency evaluation practices for registered nursing students; a benchmarking study utilizing the Delphi method of national experts on the competency requirements for generalist registered nurses; and piloting of the newly developed model of a national standardized competency evaluation for generalist registered nursing students.

Results

The project is nationwide, but also regionally comprehensive, and includes all 21 Finnish Universities of Applied Sciences that provide nursing education. The results of the project will be strongly in line with working life, and in particular, the competences that generalist registered nurses will need in the future. Key partners in the project include the Finnish Nurses Association and the European Federation of Nursing Associations, the Union for Health and Social Care Professionals (Tehy), the National Expert Group on Lifecycle Education (LOKKA), and the National Medication Education Development Group of Experts. The 3-year project (2018–2020) receives funding from the Finnish Ministry of Education and Culture as a special grant for the Ministry of Education

Conclusions & Significance

The evaluation methods developed in the national development project will help ensure that the required professional nursing competency levels for generalist registered nurses will be met nationwide by all graduating registered nursing students. They will also help ensure that a sufficient and consistent level of professional nursing qualifications are offered by all registered nursing programs. The newly developed evaluation methods can be utilized in international collaboration, e.g., in nursing competency evaluations of foreign-educated registered nurses. The newly developed evaluation methods allow for international benchmarking of the registered nursing programs in Finland and utilization of the methods in education technology exports.

Keywords: Nursing education, national final examination, competence evaluation, generalist registered nurse.

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CO-CREATION OF WELLNESS BUSINESS STUDY PROGRAM

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Relevance

Universities of Applied sciences are responsible for developing, offering and maintaining adequate and relevant education to respond the local, national and international needs. On top of that there is and will be growing competition for students between institutions. In Finland the history of business education started in 1839 when commerce school of Turku started education in Swedish language. The first Finnish commerce school was founded in Kuopio in the year 1887. Savonia UAS and business programs there have historically focused on traditional topics: administration, accounting & finance, sales and marketing. Consumers' purchasing power and consumption in recent years have focused on well-being and the wellness-market is globally one of the fastest growing business areas. Based on these facts, Savonia UAS decided to cut 40 start-ups from traditional business training program and build a new training program focusing on the wellness business. This paper describes and discusses the development process of new program, and the methods that were used to ensure real work-life oriented business program which is produces competitive professionals for fast growing and constantly changing wellness market.

Methodology

Traditionally the planning of a study program or single course is conducted by teachers and administrative staff and the work is based on information collected from real life. In this case joint planning and co-creation of the study program was implemented in several levels. The core group of five specialists which worked intensively through the planning process was formed. Members represented the management of school of Business, Tourism and Hospitality, teachers of business, health care and tourism & hospitality and representative of department of health economics in University of Eastern Finland. Close co-operation with industry representatives allowed the planning group to constantly get feedback and advise in the planning work. A group of partner organizations was formed and altogether twelve partnership agreements were signed. Partners represent a wide range of wellness business areas and co-operation with them continues in form of student projects, internships, quest lectures, study visits and internships.

Results

The study program was published in 2017 and in the first application the number of primary applicants per student place were 4.1. The study program Wellness Business started in autumn 2017 with 35 students. The admission to the program was hard to reach which means that the students are really motivated. After first year studies the students were satisfied with the content and implementation and only a couple of students have left from the program to study in another institution. According the students' feedback one of the best features of the program is the living and intense co-operation with companies and organizations of 'real life'.

Conclusions & Significance

The model on a closer program planning together with companies, partners and other stake-holders was found very fruitful and rewarding: the structure of the program can be traditional but contents and priorities turned out to be more relevant, up-to-date and interesting – and thus serving specially one of the main tasks of education, namely impact on regional working-life development. Next step in development in Savonia UAS Wellness education will be a joint wellness business program delivered in English. Join us, please!

Keywords: wellness, education, study program, development.

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PHYSICAL CAPACITY OF PEOPLE WITH OBESITY AND RELATIONSHIP WITH METABOLIC SYNDROME INDICATORS

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Relevance

We aim to present our research study with people who have obesity and metabolic syndrome.

Methodology

27 physically inactive subjects ($BMI > 25 \text{ kg/m}^2$) aged 25–45 years were tested for indications of metabolic syndrome and physical capacity. Fasting blood samples were collected to determine glucose, HDL cholesterol and triglycerides concentrations. Body weight, BMI, hip and waist circumference were measured. Maximal exercise test on a cycle ergometer was administered to assess cardiorespiratory fitness (VO_2 peak). Hand grip strength was measured.

Results

Subjects were allocated to MS group ($n=14$) and non-MS group ($n=13$) according to WHO criteria.

Individuals with metabolic syndrome had higher blood glucose and triglycerides level in blood, systolic and diastolic blood pressure, increased waist to hip ratio. Also, the increasing load test showed that the group without metabolic syndrome had better physical data than group without metabolic syndrome.

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Conclusions & Significance

1. Subjects in group with metabolic syndrome had higher blood pressure (both systolic and diastolic), higher triglycerides and fasting glucose concentrations whereas high-density lipoprotein concentration was lower than the group without MS.
2. Although the body mass index was not significantly different between groups, subjects in group with metabolic syndrome had greater waist to hip ratio.
3. We found that subjects with metabolic syndrome had significantly higher absolute oxygen consumption and heart rate in resting and incremental exercise testing conditions than those without metabolic syndrome, although subjects without metabolic syndrome developed greater exercise capacity.
4. No significant difference was found between groups in handgrip strength.

Keywords: Obesity, metabolic syndrome, cardiorespiratory fitness, physical capacity.

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