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editorial

Dear Readers,

The journal "Zdravotníctvo a sociálna práca" (Health and Social Work) was renamed in 2021 to International Journal of Health, New Technologies and Social Work. Our long-term effort is to gradually acquire for the journal European significance and be included in international databases. Starting with issue No. 4 in 2016, the journal accepted the Harvard style of referencing, and changed guidelines for the authors. The aim of the changes was to move closer to the standard in international journals published in English in the area of health and helping professions. The editors are aspiring for registration in other relevant international databases. Since last 2020 the journal has published all articles in English only.

The journal "Zdravotníctvo a sociálna práca" (*Health and Social Work*) was established in 2006 at Faculty of Health and Social Work blessed to P. P. Gojdič in Prešov and St. Elizabeth University College of Health and Social Work in Bratislava. In 2022, the journal celebrated its 17th year of publication.

Previously professional journal, within 5 years developed into an international, peer-reviewed scholarly journal, published quarterly (4 issues per year). The journal were published by the St. Elizabeth University of Health and Social Work in Bratislava. The journal became international in 2009. The journal was published and distributed in the Slovak Republic and also in the Czech Republic.

Since 2011, the journal is published both in print and as electronic issues, available from: www.zdravotnictvoasocialnapraca.sk. Starting by issue No. 3 in 2014, the scope of the journal has broaden and the journal is covering health sciences, such as Public Health, Nursing, Laboratory Medicine, but also helping professions such as Social Work or Pedagogy. Collaboration with Faculty of Health and Social Work of Trnava University in Trnava was initiated.

The journal is indexed in the following databases: Central and Eastern European Online Library — CEEOL (since 2018), Bibliographia Medica Slovaca (BMS), and Slovak reference database CiBaMed.

The part of journal is Supplementum, to publish abstracts from international conferences organized by the St. Elizabeth University of Health and Social Work in Bratislava. In 2023, the conference will take place in October in Piešťany, in the Slovak Republic.

> prof. Miron Šrámka, MD, DSc. redactor-in-chief

Delivery by caesarean section and possibilities of influencing physiotherapy

Pôrod cisárskym rezom a možnosti ovplyvnenia fyzioterapiou

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Introduction: The objective of the thesis was to determine the effect of physiotherapy after cesarean delivery. Our research topic is focused mainly on postpartum diastasis of musculi recti abdominis and the possibility of affecting postpartum pains after section through kinesiotherapy.

Aims: This is a prospective clinical study, where the studied group consists of two groups of women after giving birth via c-section.

Material and method: The first group undergone a physiotherapy and the second group exercised as instructed in the home environment.

It is dedicated to information on prevention and current treatment procedures for diastasis m. rectus abdominis and the function of the correct activity of the deep stabilization system related to the impact on the reduction of diastasis m. RA.

Results: We also investigated the effect of physiotherapy on reducing pain after c-section and increasing physical activity after cesarean delivery, compared in a group of patients under the guidance of a physiotherapist versus a group exercising independently at home.

Conclusion: In the end, we evaluate our findings and recommend suitable exercises.

Key words: Birth by caesarean section. Postpartum physiotherapy. Diastasis of the musculi recti abdominis. Deep stabilization system. Soreness after the c-section. Postpartum physical activity.

Úvod: Práca mala za ciel zistiť vplyv fyzioterapie po pôrode sekciou. Našou skúmanou a riešenou problematikou bola hlavne popôrodná diastáza musculi recti abdominis a možnosti ovplyvnenia popôrodných bolestí po sekcii prostredníctvom kinezioterapie.

Ciele: Jedná sa o prospektivnú klinickú štúdiu, kde skúmaný súbor tvoria dve skupiny žien po pôrode sekciou.

Materiál a metodika: Prvá skupina podstúpila fyzioterapeutickú intervenciu a druhá skupina pacientiek cvičila podľa edukácie v domácom prostredí. Je venovaná informáciám o prevencii a doterajších liečebných postupoch pri diastáze m. rectus abdominis a funkcii správnej aktivity hlbokého stabilizačného systému súvisiaceho s dopadom na zmenšenie diastázy m. RA.

Výsledky: Skúmali sme aj vplyv fyzioterapie na zníženie bolesti po sekcii a zvýšenie pohybovej aktivity po pôrode sekciou, porovnávanej v skupine pacientiek pod vedením fyzioterapeuta oproti skupine cvičiacej samostatne v domácom prostredí.

Záver: V závere hodnotíme naše zistenia a odporúčame vhodné cvičenia.

Klúčové slová: Pôrod cisárskym rezom. Popôrodná fyzioterapia. Diastáza muskulus rectus abdominis. Hlboký stabilizačný systém. Bolestivosť po sekcii. Popôrodná pohybová aktivita.

INTRODUCTION

ABSTRAKT

We have seen an increasing number of cesarean births worldwide in recent years, and many experts are talking about their overuse. However, it is necessary to pay attention to the consequences of this major gynecological-obstetrical operation. The impact on the body is considerable and the woman is affected by it in many ways (Thabet *et al.* 2019).

Epidemiology — In some perinatological centers, the prevalence is even more than 30 %.

Indications to the section — There are many indications for caesarean section. Some deal with the mother, others with the easy course of the birth of the fetus. One of the most common reasons for SC is diabetes mellitus, when it is performed between 37 - 38 weeks of pregnancy. (Hagovská 2016).

Division by nature — A caesarean section can be divided into two ways, the first way is **planned** for a caesarean section, i.e. primary. The indication is already known during pregnancy. The mother is familiar with the course of the operation already during pregnancy. The second option is an **acute**, secondary caesarean section.

Postoperative care — After 24 hours in the intensive care unit, the mother moves to a room in the postpartum ward. After 5-6 days, the mother goes home (Pařízek 2015).

The sixth week and physiological changes in the sixth week — The period when the reproductive organs return to their normal state as before pregnancy is called six weeks. It lasts approximately 6 to 8 weeks.

Pelvic floor labor pain — Pain in the area of the pelvic floor, so-called Postpartum Pelvic grid pain (PPGP) resolves in most women within 4 months of giving birth, but 20 percent of women who experienced pain during and just after pregnancy report continued pain 2 to 3 years postpartum.

Pelvic floor dysfunction after cesarean delivery

Pelvic floor dysfunction (DPD) is a broad term that describes functional changes in the pelvic floor and its surrounding structures. These changes may affect only one part or may involve the entire pelvic floor. Symptoms of pelvic floor dysfunction are urinary or fecal incontinence, uterine or bladder prolapse, persistent or intermittent pelvic pain.

C-section scar

The mechanism of uterine scar healing has its specifics compared to classical scar healing, as certain mechanical factors are applied here. After the start of labor, when the wound is sutured, the hormone oxytocin has an effect on smooth muscle activity. So we can expect complete healing only a year or two after the procedure. A properly healing scar is asymptomatic, and if it heals pathologically, it is manifested by itching, burning, pain and limited mobility. It can result in active scarring (Bajerová 2018; Raková 2021; Žáková 2020).

Diastasis of rectus abdominis

Diastasis occurs already during pregnancy, when the right and left portions of the rectus abdominis muscle move away from each other due to the increase in space for the growing uterus. Diastasis in itself does not cause the patient any pain, but it affects the condition and function of the muscles, which can result in the development of painful states (Gruszczyńska, Truszczyńska-Baszak 2018).

DMRA occurs in 30-70 % of pregnant women and in 35-60 % of postpartum women. In newborns and infants, DMRA occurs due to incomplete closure of the abdominal wall and insufficient nutrition of the ligament (Taylor 2020).

Current treatment procedures

The surgical solution — abdominoplasty — is used in women who are a year or more after giving birth and conservative treatment did not have the desired effect. Other indications such as gap width suitable for starting surgical treatment are not reported in the literature. The operation can be performed in two ways. The first type of procedure is suturing (plication) of the weakened fascia of the m. rectus abdominis and is performed by laparotomy or laparoscopically.

Therapeutic procedures conservative

Diastasis therapy, as well as affecting other muscle imbalances, requires a completely individual approach. In the targeted physiotherapy of DMRA, consultation and management of therapy under the experienced hands of a physiotherapist is important.

Principles of physiotherapy after caesarean section

Rehabilitation focuses on pelvic floor strengthening exercises, diaphragmatic breathing, scar care, HSS exercises and proper abdominal muscle activation, lumbar spine pain relief exercises, postural correction, and recommendations for baby handling and ADL activities of daily living. We start as part of the pre-operative preparation, especially for planned caesarean sections. We mainly focus on exercise leading to an increase in physical fitness.

Therapeutic methods

Respiratory physiotherapy — Breathing is one of the automatic processes in which the chest cavity cooperates with the abdominal cavity. The chest cavity should develop three-dimensionally, and the abdominal cavity also responds to these changes. Chained breathing movements are also reflected in body posture, because the movements of the spine and chest are part of inhalation and exhalation movements (Čumpelík 2017).

Soft tissue techniques — This is a technique aimed at influencing reflex changes in the skin, subcutaneous tissue, fascia and muscles. We can use it alone, to affect nociception, or to prepare for one of the other manual techniques, such as mobilization (Kolář 2009).

Mobilization — Mobilization is carried out by gentle repeated movements of the joint in all directions until pretension is achieved, which leads to the restoration of the physiological function of the segment, therefore we most often mobilize joint blockages.

Postisometric muscle relaxation — Postisometric relaxation (PIR) is an analytical method used for muscle relaxation. It is most often used for trigger point therapy. We pre-tension the muscle we want to influence by delaying the beginning from the point of attachment, then we ask the patient to give us minimal resistance and to breathe freely. We stay in this position for 10 seconds and then invite the patient to relax with exhalation. Thanks to the decontraction, the muscle will lengthen spontaneously. For autotherapy, we use the antigravity method according to Zbojan (AGR)

Pelvic floor exercise — The pelvic floor muscles have an important postural function and keep the pelvic organs in the correct position. Women with a dysfunctional pelvic floor experience incontinence, fatigue after long-term walking, sometimes associated with pain in the hip joints and groin. Among the most well-known procedures are exercises according to Springer and Kegel exercises for training contractions and relaxation of the pelvic floor. Posture correction and sensorimotor exercises, for example on an unstable platform, are suitable (Suchomel 2019).

Exercises according to the Tupler Technique[®] *program* — Tupler methodology recommends wearing a supportive tightening belt for the entire duration of the program.

Sensorimotor stimulation

Acral Coactivation Therapy — Acral Coactivation Therapy (ACT) was developed by PhDr. Ingrid Palaščáková Špringrová, PhD. (2018) based on Roswitha Brunkow's method. The author states that: "Muscle chains start and end at the acre.

Ludmila Mojžišovás method — This is a methodology originally developed for the treatment of scoliosis and back pain, over time it proved to be functional even in patients with gynecological problems, and today it is mostly associated with influencing the muscles of the pelvic floor in the treatment of functional sterility in women. Bezvodová (2017) describes the principle of this method as influencing the neuromuscular apparatus of the pelvic floor using movement and manual therapy of the pelvis, sacrum and coccyx, while at the same time using the vegetative nerve to influence the female genital organs.

Proprioceptive Neuromuscular Facilitation — Proprioceptive Neuromuscular Facilitation (PNF) was developed by physician Herman Kabat in the mid-20th century. In his study, he proved that we can use afferent impulses from muscle, tendon and joint receptors to effectively affect the motor neurons of the

anterior spinal horns. Movement patterns according to PNF are directed diagonally and these are movement patterns used in normal daily activities.

Dynamic Neuromuscular Facilitation — Dynamic Neuromuscular Stabilization (DNS) by Pavel Kolář proves that when developing muscle strength, it is not optimal to follow only their anatomical course, but also their integration into biomechanical chains, which we derive from central programs. When influencing the muscles involved in trunk stabilization, movement patterns from developmental kinesiology are most often used, and individual muscles are trained in developmental series (Kolář 2009).

Kinesiotaping — This is a method discovered by Japanese chiropractor Kenzo Kasa, who developed a belt with properties similar to human skin. Correctly applied kinesiotape will achieve wrinkling and lifting of the skin (which will allow for the restoration of lymph and blood flow), reduce swelling, reduce pressure and irritation of pain receptors.

Relaxation methods — Relaxation methods include, for example, yoga, massages, relaxing imaginative methods, relaxation based on breathing exercises or relaxing concentration methods.

Education — As already mentioned, during the first days in the maternity hospital, patients are taught about getting out of bed on their side and coughing while holding the wound.

OBJECTIVE

The aim of the work was to determine the impact of targeted physiotherapy intervention in patients after cesarean delivery with developing diastasis of the RA m. To show the methods of therapy that lead to the reduction of pain in the area of the pelvic floor, the lumbar spine and the scar after a cesarean section, to verify the possibilities of kinesiotherapy in reducing the diastasis of the rectus abdominis muscle after cesarean delivery. Monitor physical activity for 8 weeks. Qualitative research on 20 female patients was determined.

Sub-goals

Objective No. 1 To determine the change in diastasis width after 8 weeks of physiotherapy in patients exercising with a physiotherapist and in patients exercising at home based on instruction.

Objective No. 2 To find out the difference in the perception of **pain after surgery** in the area of the pelvic girdle, lumbar spine and scar after surgery, using the VAS analog scale of pain in patients who underwent physiotherapy intervention and in patients educated on exercises and regimen measures in the home environment.

Goal No. 3. To determine the difference in **physical activity** measured with a pedometer after the section in patients exercising with a physiotherapist and in patients exercising at home.

The aim of the work was to determine the impact of targeted physiotherapy intervention in patients after cesarean delivery with developing diastasis of the RA m. To show the methods of therapy that lead to the reduction of pain in the area of the pelvic floor, the lumbar spine and the scar after a cesarean section, to verify the possibilities of kinesiotherapy in reducing the diastasis of the rectus abdominis muscle after cesarean delivery. Monitor physical activity for 8 weeks. Qualitative research on 20 female patients was determined.

Formulation of research hypotheses

We set the following corresponding hypotheses for the given goals:

H1: We assume that after 8 weeks of targeted physiotherapy, there will be a more significant reduction in the width of **diastasis of the rectus abdominis muscle** in the area of the linea alba, than in patients educated and exercising at home.

H2: We assume that patients exercising with a physiotherapist will have a more significant improvement **in pain in the area of the pelvic floor, lumbar spine and post-section scar,** measured on the visual analogue scale VAS, than in patients exercising independently at home.

H3: We assume that after 8 weeks of physiotherapy, **physical activity**, monitored by a pedometer, will be better in patients exercising with a physiotherapist than in patients exercising at home.

H4a: We assume that in the group of female patients exercising with a physiotherapist, after completing physiotherapy, there will be a statistically significant change for the better in all monitored parameters: width of diastasis of m. RA, pain in the area of the pelvic floor, lumbar spine and post-section scars, and physical activities.

H4b0: We assume that in the group of female patients exercising with a physiotherapist, there will be no statistically significant change for the better in all observed parameters: width of diastasis of the RA muscle, pain in the area of the pelvic floor, lumbar spine and post-section scars, and movement activities.

Tracked file

The patients were aged between 20 and 40 years. All patients underwent caesarean section during the period from 11/9/21 to 11/13/2022.

File characteristics

We conducted the study on a research sample of female patients who were divided into 2 groups. In both groups there were women between the ages of 20 and 40. The group consisted of 20 women who gave birth by caesarean section. The patients signed an informed consent to be included in the study and were willing to cooperate.

With the help of a short questionnaire, some data related to this work were determined, such as height, weight, BMI, number of pregnancies, physical activities before, during and after childbirth, and other facts helpful for this study.

The first group of 10 patients underwent physiotherapy focused on diastasis, HSS, on strengthening the muscles of the pelvic floor and thus alleviation of stress incontinence, alleviation of lumbar spine pain, proper breathing pattern, instructed on proper lifting of loads and handling of the newborn. Physiotherapy was performed twice a week for 40 minutes. The following methods were used — soft and mobilization techniques, physical therapy for the scar, Kegel exercises for the pelvic floor, Tupler Technique[®] diastasis exercises, exercises to relax the lumbar spine, wearing a tightening belt, kinesiotaping for the scar as well as for diastasis, and others. They were asked to wear a smart device — a watch with a pedometer to detect physical activity — for the maximum amount of time.

The second group of 10 patients did not undergo physiotherapy, but was equipped with appropriate informational material and a demonstration of exercises to reduce the width of diastasis, exercises for HSS, pelvic floor and exercises to relax the L spine. They were also asked to wear a watch with a pedometer for the maximum amount of time, to record daily physical activity during the monitored period.

RESEARCH METHOD

The prospective study of our diploma thesis was carried out in the period from November 9, 2021 to November 13, 2022.

Used investigative methods in the framework of physiotherapy intervention

Our main examination methods were the visual analogue scale VAS from 1-10, used to determine the pain that the patients felt after the section, mainly in the area of the caesarean section, the pelvic floor and the lumbar spine, measuring the width of the diastasis in cm, we used a digital caliper for the patients lying down on the back and elevation of the head to the level of the lower angle of the shoulder blade. Daily physical activity was measured using a pedometer in a watch. These were key investigative methods to obtain input and output values.



Graph 1: Input and output values of diastasis with measurement in exercising patients



Graph 2: Input and output values of diastasis width measurement in women exercising at home



Graph 3: Entry and exit assessment of pain after the section according to the VAS pain scale in exercising patients with a physiotherapist

Ján Mašán, Jana Stanová, Eva Ďurinová, Michaela Šimonová, Jana Juricová Delivery by caesarean section and possibilities of influencing physiotherapy

RESULTS

In the chapter below, we present the research results in detail. For the reason of clarity, we have chosen the processing into appropriate graphs and tables.

Verification of hypotheses

We used the non-parametric Wilcoxon signed-rank test to test the hypotheses.

H1: We assume that 12 weeks after the section in patients exercising with a physiotherapist, there will be a more significant reduction in the width of diastasis of the abdominal muscles than only in educated patients exercising at home.

Conclusion: Hypothesis H1 was confirmed.

H2: We assume that 8 weeks after the section, patients undergoing physiotherapy will experience a more significant improvement in post-section pain, assessed on the analog VAS pain scale, than in patients exercising at home. According to the results (table no. 8), we can see that all 10 patients experienced a reduction in pain under the influence of exercise.

Conclusion: Hypothesis H2 was confirmed.

H3: We assume that 8 weeks after the section, physical activity, monitored by a pedometer, will be better in patients exercising with a physiotherapist than in patients exercising at home. We accept H3.

Conclusion: Hypothesis H3 was confirmed.

H4: We assume that in the group of female patients exercising with a physiotherapist, there will be a statistically positive change in all observed parameters (MRA diastasis width, post-section pain and physical activity) after completing physiotherapy. We accept **hypothesis H4.**

Conclusion: Hypothesis H4 was confirmed.

H04: We assume that in the group of female patients exercising with a physiotherapist, there will be no statistical change in all observed parameters (width of diastasis, pain after section, increase in functional movement activities) after completing physiotherapy.

Conclusion: Hypothesis H04 was not confirmed.

DISCUSSION

Caesarean section is one of the most frequently performed obstetric surgical procedures in the world, and primary numbers have increased globally in recent years. There are several reasons for this situation. The latest data show the impact of the increasing age of first-time mothers. The number of women giving birth after age of forty is increasing, and in Slovakia most births are given to mothers aged 30 to 34. World experts have categorized the reasons for the rising popularity of elective cesarean delivery.

The main reasons given by women are fear of childbirth, concerns about the safety of themselves and the child related to the perception of health risks during vaginal birth, negative experiences from previous births, the woman's reliance on science and surgery rather than "nature" and concerns about negative genital changes after vaginal delivery.

In conclusion, obtaining daily activity measures using a pedometer in women after cesarean delivery is feasible and well tolerated. Activity increased during the two months after surgery, and the slope of this recovery was closely related to the decreasing slope of pain.

These data provide new modeling of recovery of activity after surgery and its relationship to pain and suggest the utility of daily activity assessment for prognostication, which also showed an improvement in functional activities of women exercising under the care of a physiotherapist, compared to patients left to care according to home education.

CONCLUSION

Physiotherapy is a basic component of postpartum care. Physiotherapy after cesarean delivery effectively reduces the pain associated with the incision, by improving the diastasis of the rectus abdominis muscle, it reduces the incidence of stress incontinence and pain in the area of the pelvic floor, further enables the early start of functional activities, facilitates walking and the return to normal activities, which was also confirmed by the results of our research. Range of motion exercises, breathing techniques, restoration of postural stability, and scar care have been shown to reduce pain and difficulty with functional activities postoperative days.

Women who received therapy led by an experienced physical therapist had significantly better outcomes compared to a group of women with standard care and home-based exercise, suggesting that physical therapy intervention may be useful for improving recovery after CS. Reduced pain and early return to functional activities after CS using combinations of scar therapy, kinesiotaping, exercises in postnatal developmental positions, as well as deep breathing, protected huffing technique, exercises with an emphasis on maintaining correct posture have been reported.

The patients were advised to continue exercising and follow everything mentioned in the long-term rehabilitation plan. They stated that they were satisfied with the therapy and the choice of exercises and plan to continue exercising, so we believe that they will be successful in influencing the diastasis further until they achieve the functional result they want.

Conflict of interest

No Conflict.

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Knowledge of kinaesthetic and rehabilitation nursing among students of secondary nursing school Znalosti kinestetiky a rehabilitačního ošetřovatelství studentů střední zdravotnické školy

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Introduction: Training programs to increase patient mobilization skills are made up of different educational approaches. Training in kinaesthetic skills benefits both nurses and patients.

Research Objective: To investigate the knowledge of third and fourth year students of the Secondary Nursing School in Olomouc about rehabilitation nursing and the concept of kinaesthetics.

Material and Methods: Our study includes 44 students, age \pm 18 years (91.0 % female) and was conducted in January 2020. The research strategy adopted was a didactic test method, which students completed before and after kinaesthetic instruction.

Results: Students have general knowledge of rehabilitation nursing. Students have minimal knowledge of the concept of kinaesthetics. Compared to the knowledge surveyed before and after the course, the students' knowledge improved significantly after the course and fostered their interest in this method.

Conclusion: The results of the research could serve educators to include the method in the School Curriculum.

Keywords: Patient. Kinaesthetics. Mobilization. Nursing. Rehabilitation.

ABSTRAKT

ABSTRAC

Úvod: Tréninkové programy pro zvýšení dovedností v mobilizaci pacientů jsou tvořeny různými vzdělávacími přístupy. Trénink v oblasti kinestetických dovedností přináší benefity jak pro zdravotnické sestry, tak pacienty.

Cíl: Zjistit znalosti studentů třetího a čtvrtého ročníku Střední zdravotnické školy v Olomouci o rehabilitačním ošetřovatelství a konceptu kinestetiky.

Metodika: Naše studie zahrnuje 44 studentů, věk \pm 18 let (91,0 % žen) a byla uskutečněna v lednu 2020. V rámci výzkumné strategie byla zvolena metoda didaktického testu, který studenti vyplňovali před výukou a po výuce kinestetiky.

Výsledky: Studenti mají všeobecné znalosti o rehabilitačním ošetřovatelství. O konceptu kinestetiky mají studenti znalosti minimální. Ve srovnání se znalostmi zjišťovanými před výukou a po výuce, se po výuce znalosti studentů výrazně zlepšily a podpořil se u nich zájem o tuto metodu.

Závěr: Výsledky výzkumu by mohly sloužit pedagogům k zařazení metody do Školního vzdělávacího programu.

Klíčová slova: Pacient. Koncept kinestetiky. Mobilizace. Ošetřovatelství. Rehabilitace.

Kinaesthetics focuses its attention on how a person perceives their body. Thanks to kinaesthetic receptors in muscles, tendons and joints, the brain receives information about the position, movement, shape, effort and direction of the body (Proske, Gandieva, 2018). Information is processed continuously, automatically, and subconsciously, as movement and the perception of movement are constantly connected and cannot exist without each other (Tefera, 2021). It is also necessary to emphasize the fact that therapy is drifting away from traditional biomedical treatment procedures and prefers a biopsychosocial and multidisciplinary approach (Šichnárek *et al.* 2022).

Kinaesthetics is a method that cannot be learned quickly. It is an inspirational relationship between the patient and the caregiver (Betschon et al. 2011). Caregivers use their bodies to exert less physical force while encouraging patients to move using natural movement (Gattinger et al. 2016). Teuber, Knobel (2018) describe kinaesthetics as a method that deals with the sensitization of movement perception and the lifelong development of movement skills. Furthermore, the authors emphasize its importance in competencies in patient care, pointing out its quality in movement interactions and the support of all involved. In a study by Gattinger et al. (2015), the authors concluded that although patient mobilization is part of the daily work of the nurse, there is no common practice on how best to perform this task. Buge, Mahler (2004) found that kinaesthetic training provided nursing staff with significant physical relief, particularly in the lumbar spine region. Similar results were found by Sommer (2019), where nurses reported that kinaesthetic training facilitated their daily work with patients and positively affected their musculoskeletal system in the prevention of musculoskeletal disorders.

In European Union countries, e.g. Italy, Germany and Austria, the concept of kinaesthetics is not only used for health protection among allied healthcare professionals, but is already incorporated into teaching in medical schools and hospital education programmes (Enke et al., 2010). A number of international research studies demonstrate the effectiveness of this method (Fringer *et al.* 2014; Maieta, Resch Kroell 2009; Sommer 2019). However, there is no official base in the Czech Republic to support nursing staff in this area.

RESEARCH OBJECTIVES

The aim of our study was to investigate the knowledge about rehabilitation nursing and the concept of kinaesthetics among students of the Secondary Nursing School in Olomouc, namely those majoring in Practical Nursing and Medical Assistant, by means of a didactic test. The sub-aims were to ascertain: (a) the level of knowledge among students about rehabilitation nursing that they had in the nursing education; (b) the level of knowledge about the concept of kinaesthetics before and after a course, which was conducted in the form of a workshop; (c) whether the students are interested in the concept of kinaesthetics, possibly whether they would like to include it in their teaching and expand their knowledge in this area, which they could further develop and use in their practice.

MATERIAL AND METHODS

Respondents

A total of 44 students of the Secondary Medical School in Olomouc, 22 (50.0 %) students of the third year — practical nurse and 22 (50.0 %) students of the fourth year — medical assistant participated in the questionnaire survey. The cohort consisted of 40 (91.0 %) women and 4 (9.0 %) men, mean of age \pm 18 years.

Measuring instruments

For the purpose of data collection, we used a non-standardized didactic test, which had been consulted with teachers of professional nursing subjects and a lecturer of kinaesthetics. This test is intended to give teachers information for evaluation purposes in relation to the curriculum and the unit of rehabilitation nursing. It can be used to determine the level of knowledge and skills of students in a particular area (Jeřábek, Bílek 2010).

In the planning phase of the didactic test, the question was asked, "What purpose will the test serve? Which thematic unit will be examined? Which students will be tested?" In the second phase of the didactic test design, a draft of the test items was created and presented to a kinaesthetics instructor and the nursing course instructors. Subsequently, after critical evaluation, a prototype test was created. In the optimization phase of the didactic test, the clarity of the questions was verified in a pilot test with ten students. The time to complete the test was set to 15 minutes.

The didactic test contains 18 questions and is divided into three parts. The first part contains sociometric data age, gender, experience with the concept of kinaesthetics — questions 1-3; the second part concerns professional knowledge, of which the first three questions relate to the material that students know from the second study year. The third part of the test is completed by the students after the kinaesthetics lesson.

Expert part:

Knowledge of rehabilitation nursing. Question 4: Rehabilitation nursing includes the following: positioning; passive and

active exercises; breathing gymnastics; early mobilisation; self-sufficiency training. [Student should select the correct answer or multiple answers.]

Knowledge of the concept of immobilization syndrome. Question 5. Immobilization syndrome is? [The student should choose the correct answer.]

Knowledge of pressure sore sites. Question 6. What are the pressure sore sites you know? [The student should list the pressure sore sites he/she knows.]

Knowledge of other nursing concepts. Question 7: Have you encountered other nursing concepts?: yes; no. [If the student selected yes, he/she should list which ones.]

Knowledge of the strengths of the concept. Question 8. What are the strengths of the concept of kinaesthetics? [Student should select the correct answer or multiple answers.]

Knowledge of the limitations of the concept. Question 9. Does the concept of kinaesthetics have limits?: yes; no. [If the student chose yes, he/she should list which ones.]

Knowledge of the number of concepts. Question 10. How many concepts does kinaesthetics contain?: 4; 5; 6; 7.

Knowledge of types of kinaesthetic concepts. Question 11. What are the concepts of kinaesthetics? [The student should choose the correct answer or multiple answers.]

Knowledge of the countries where the concept is used. Question 12. In which countries is the concept of kinaesthetics used?: Austria; Italy; Germany; Switzerland; Poland; Slovakia.

[Student should select the correct answer or multiple answers.]

Knowledge of the factors that contributed to the development of kinaesthetics. Question 13. What contributed to the development of kinaesthetics? [Student should choose the correct answer.]

Knowledge of the main topic of kinaesthetics. Question 14. What is the main topic/point of kinaesthetics? [The student should list what is the main topic of kinaesthetics.]

Opinion on the concept of kinaesthetics and its general use. Question 15. [The student should give his/her opinion.]

The third part of the test — questions 16 to 18 are to be completed after the course:

Feedback on the kinaesthetic workshop. Question 16. [The student should list his/her opinion — positives, negatives, questions, opinions, comments.]

Interested in information about the concept of kinaesthetics. Question 17. Are you interested in information about the concept of kinaesthetics? Has your interest in the kinaesthetics method increased after the course?: yes; no; do not know.

Opinion on the inclusion of kinaesthetics in nursing education. Question 18. Do you think that kinaesthetics should be included in the nursing curriculum?: yes; no; do not know.

Data collection and evaluation process

The research took place on 15 January 2020. The students were informed in advance about the lesson and the aim of the research. The study protocol was conducted in accordance with the 1975 Helsinki Declaration, as revised in Brazil 2013. All students agreed to participate in the study, their informed consent was part of the General Data Protection Regulation.

The students filled in a questionnaire at the beginning of the course, followed by theoretical and practical training in cooperation with the kinaesthetics lecturer. At the end of the teaching unit, the students were asked to fill in the didactic questionnaire. The questionnaire contained 11 questions in the technical part, which the students answered before and after the lesson. A correct answer scored one point, an incorrect answer scored zero points. Answers to question 6: "What are the pressure sore sites you know?" scored as completely correct (1 point), partially correct (0.5 points), and incorrect answer with 0 points. Affirmative answers to question 7 "Have you encountered other nursing concepts?" scored with one point, negative ones with zero. The knowledge score ranged from 0 to 11 points.

Data were analysed using IBM SPSS statistical software version 23. Quantitative variables were presented by means of means and standard deviations (SD), minimum and maximum values. Qualitative data were represented using absolute and relative frequencies. Shapiro-Wilk normality tests were used to verify the normal distribution of the quantitative variable. The difference between two dependent samples in a quantitative variable that had a normal distribution was verified by Students's paired *t-test*. McNemar's test was used to test for differences between dependent variables in qualitative dichotomous variables and the non-parametric ordinal Wilcoxon test was used for ordinal variables. All tests were performed at the significance level $\alpha = 0.05$.

RESULTS

Level of knowledge of students regarding rehabilitation treatment

Prior to the course, the students were most familiar with the term immobilization syndrome: 28 students (64.0 %). A significant part of the respondents, 26 (59.0 %), answered

the question concerning knowledge of the predilection sites correctly and 14 (32.0 %) answers were partially correct. For the rehabilitation nursing question, 15 (34.1 %) students answered correctly before the course and 24 (54.5 %) students answered correctly after teaching. The number of correct answers to the question on immobilization syndrome increased and 36 (81.8 %) students answered correctly (Table 1).

Level of students' knowledge of kinaesthetic concepts before and after the course

Table 1 shows the absolute and relative values of students who answered the question correctly. Only 3 (7.0 %) students had previously encountered the concept of kinaesthetics, 17 (39.0 %) students answered that they had not encountered the concept and 24 (55.0 %) students could not answer this question. For question 7 "Have you encountered other nursing concepts?" the number of students who answered in the affirmative is listed. Although this was not the correct answer, music therapy and the Bobath concept were the most frequently mentioned ones. On the contrary, students did not know in which countries the concept of kinaesthetics was used at all (Table 1).

McNemar and Wilcoxon's test showed that the number of students who answered the questions correctly increased statistically significantly for all questions except for question 7 "Have you encountered other nursing concepts?" ($\chi^2 = 1$ 322; p = 0.250), see Table 1.

The knowledge score was calculated from the answers to the questions in the expert part of the questionnaire. The mean value with SD of the knowledge score before the course was 3.0 ± 1.6 points, with a score range of 0 to 8 points. Students answered 3 questions correctly on average. After the course, the mean number of correct answers increased to 7.2 ± 2.0 points, the score range was 1.5 to 11 points. Students improved by an average of 4.1 correct answers. Students's paired t-test showed that this difference was statistically significant (T = -14.127; p < 0.0001), see Table 2. The frequency distribution of the changes in students; knowledge scores before and after course is shown in Table 3.

Question		Before course	After course	IMPR	DET	UNCH	-2/7	
Ques	tion	n (%)	n (%)	n (%)	n (%)	n (%)	χ-12	p
4. ł	Knowledge of rehabilitation nursing	15 (34.1)	24 (54.5)	9 (20.0)	0 (0.0)	35 (80.0)	8.284	0.004 ^{*a}
5. ł	Knowledge of the concept of immobilization syndrome	28 (63.6)	36 (81.8)	8 (18.0)	0 (0.0)	36 (82.0)	7.033	0.008 ^{*a}
6. l	Knowledge of pressure sore sites (partially correct)	26 /14/ (59.1); (31.8)	29 /14/ (65. 9); (31.8)	5 (11.0)	0 (0.0)	39 (89.0)	-2.121	0.034 ^{*b}
7. ł	Knowledge of other nursing concepts	1 (2.3)	4 (9.1)	3 (7.0)	0 (0.0)	41 (93.0)	1.322	0.250ª
8. I	Knowledge of the strengths of the concept	2 (4.5)	27 (61.4)	26 (59.0)	1 (2.0)	17 (39.0)	21.333	<0.0001*ª
9. I	Knowledge of concept limitations	21 (47.7)	33 (75.0)	15 (34.0)	3 (7.0)	26 (59.0)	7.033	0.008 ^{*a}
10. ł	Knowledge of the number of concepts	9 (20.5)	37 (84.1)	29 (66.0)	1 (2.0)	14 (32.0)	24.300	<0.0001*ª
11. ł	Knowledge of types of kinaesthetic concepts	7 (15.9)	38 (86.4)	31 (70.0)	0 (0.0)	13 (30.0)	29.032	<0.0001*ª
12. I	Knowledge of the countries where the concept is used	0 (0.0)	9 (20.5)	9 (20.0)	0 (0.0)	35 (80.0)	8.284	0.004 ^{*a}
13. H	Knowledge of the factors that contributed to the development of kinaesthetics	1 (2.3)	32 (72.7)	31 (70.0)	0 (0.0)	13 (30.0)	29.032	<0.0001*a
14.	Knowledge of the main topic of kinaesthetics	17 (38.6)	39 (88.6)	23 (52.0)	1 (2.0)	20 (45.0)	21.816	<0.0001*a

Table 1. Absolute and relative frequencies of changes in students' responses before and after the course

Notes: χ^2 — a McNemar's test; Z –^b Wilcoxon test; $p^* < 0.05$

IMPR - improvement; DET - deterioration; UNCH - unchanged

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Knowledge of kinaesthetic and rehabilitation nursing among students of secondary nursing school

	Average	SD	Min	Мах	Т	р
Knowledge score before course	3.05	1.62	0.0	8.0		
Knowledge score after the course	7.16	2.03	1.5	11.0	-14.127	<0.0001*
Difference in knowledge scores	4.11	1.93	0.0	8.0		

Table 2. Descriptive statistics of knowledge scores before and after the course and difference in scores

Notes: T — test statistic of paired *t*-*test*; $p^* < 0.05$

Table 3. Frequency distribution of the number of correct answers before and after the course

Correct answers	Before th	ne course	After the course		
	n	%	n	%	
02.5	19	43.2	2	4.5	
35.5	19	43.2	5	11.4	
6-8.5	6	13.6	29	65.9	
9—11	0	0.0	8	18.2	
Total	44	100.0	44	100.0	

Students' interest in the concept of kinaesthetics before and after the course

The students' interest in the concept of kinaesthetics was tested by question 17. "If you are interested in information about the concept of kinaesthetics, has your interest in the kinaesthetics method increased after the lesson?" and question 18 "Do you think that kinaesthetics should be included in the curriculum?" Chi-square tests showed no statistically significant differences between third and fourth graders in interest in the concept of kinaesthetics ($\chi^2 = 2.141$; p = 0.343), nor regarding the inclusion of the concept in the curriculum ($\chi^2 = 0.360$; p = 0.835).

DISCUSSION

The aim of our study was to determine the level of knowledge among students of the Secondary Medical School in Olomouc about rehabilitation nursing and the concept of kinaesthetics. From the results presented, we can conclude that the students have a general knowledge of rehabilitation nursing, with an increase in knowledge regarding immobilization syndrome and pressure sore sites. The result confirms that through repetition of the content and linking it to practice, knowledge is anchored and needs to be exploited further, developed and promoted in the student's learning. The need for lifelong learning and incorporation of kinaesthetic concepts into everyday nursing practice was also highlighted in a study by Fringer et al. (2014). The authors stress the need for a proactive approach in the educational concept of kinaesthetics to continuously implement it into everyday practice. We found that there is a difference in students' knowledge in relation to the concept of kinaesthetics before and after an introductory course. The result of the didactic test confirmed that the students are able to receive new and information they find interesting in their field of study. In addition, the combination of theory and practice proved to be appropriate for storing new information in memory and recollecting it. A number of students reported that they heard about kinaesthetics for the first time, and through their own practical experience they became aware of a movement process that they had not perceived this way before. The importance of this concept was highlighted in a research by Buge and Mahler (2004) who found significant physical relief in the lumbar spine region. The positive effects of training in kinaesthetic mobilization were demonstrated in a research by Maietta, Resch Kroell (2009), where caregivers kept journals during training and documented theoretical knowledge applied to practice. They showed a change in thinking about and understanding movement. There was a decrease in the effort expended on patient mobilisation. Also, a study by Sommer (2019) that evaluated kinaesthetics training courses showed that kinaesthetics eases the caregiver's daily work with patients and positively affects their musculoskeletal system.

The results show that only 7.0 % of the students had previously encountered the concept of kinaesthetics, 39.0 % answered that they had not encountered the concept and 55.0 % of them could not answer this question. After the course, the students were able to answer between 60.0-88.0 % of the questions on the kinaesthetics concept correctly. The results show that most students are interested in the concept and

think that kinaesthetics should be included in the curriculum. After the course, some students reported that they realized that even a simple thing cannot be carried out properly when in poor health, such as drinking. This finding is also supported by the study by Proske, Gandieva (2018), where the authors claim that we perform many things in everyday activities automatically and subconsciously, but the visual perception is one of the most important senses for humans in navigating the environment. It is worth mentioning that one of the students stated after completing the course, "It is a very beneficial method for both me and the patient, but I think it is time consuming and with all the responsibilities around the patient, it is impossible to keep up with it". This fact is confirmed by a research by Buge and Mahler (2004). The authors demonstrated the impact of a kinaesthetics education project on the organisation of work and the time commitment of staff. While 66.7 % of caregivers confirmed an increase in time load, they also reported higher quality of care, greater job satisfaction and better mood in the care team.

CONCLUSION

The presented study dealt with the kinaesthetics method. This method is important for the health of future nursing staff. However, in the Czech Republic, the kinaesthetics method is neglected and lacking in nursing education. The research brought several valuable findings: a) students have good theoretical knowledge of rehabilitation nursing from school teaching, but the kinaesthetics method, which protects them in their future profession from back strain or other musculoskeletal disorders, is an unknown concept to them; b) students are interested in this method and its inclusion in teaching. The work could serve nursing educators in the development of the School Curriculum as a suggestion for the use of available hours on the topic of kinaesthetics.

Conflict of interest

None.

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Aspects of social services and well-being in post-covid era Aspekty sociálnych služieb a zdravie v postcovidovom období

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ABSTRACT

Introduction: The COVID-19 pandemic had a significant impact on well-being and negatively affected the level of well-being of people working in helping professions. The pandemic brought increased concerns about the physical health of these people, but also required a higher level of mental tension, which can be managed with a holistic approach to the whole personality.

Objective: The main objective of the research was to find out which areas of mental health among people in the helping professions were most affected by the pandemic. A secondary aim of the research was to analyse which areas of mental health to manage the burden of care in social services were most affected by the pandemic. We also investigated the relationship between the degree of resilience and mental health/well-being.

Methods: Data collection was carried out using a questionnaire method, which was aimed at analysing aspects of mental health among workers in helping professions in the post-pandemic period and at determining the relationship between resilience and mental well-being. Resilience was measured by a revised 15-item scale developed by Baltone (2007). The research sample consisted of 146 social workers, mostly in social services, and 173 nurses in hospital facilities.

Results: The results of the research showed that there is a relationship between resilience and well-being p < 0.05, while those respondents who had a low resilience score have a lower level of overall mental well-being, while the coronavirus pandemic most affected the dimensions: self-acceptance, self-acceptance, meaning life and life cycle, autonomy.

Conclusion: Currently, the influence of performing helping professions on the overall health and well-being of an individual is becoming more and more aware. Research results indicate that social workers experience an increased burden and stress, which was increased twice during the pandemic period. With increasing length of practice, they are also more susceptible to secondary traumatic stress. There is a correlation between overall well-being and higher personal satisfaction from the helping profession.

Keywords: Post-covid period. Well-being. Social Services. Mental health.

Úvod: Pandémia COVID-19 mala významný vplyv na well-being a negatívne vplývala na mieru životnej pohody ľudí pracujúcich v pomáhajúcich profesiách. Pandémia priniesla zvýšené obavy o fyzické zdravie týchto ľudí, ale aj vyžadovalo vyššiu mieru mentálneho napätia, ktoré je možné zvládať holistickým prístupom k celostnej osobnosti.

Ciele: Hlavným cieľom výskumu bolo zistiť, ktoré oblasti mentálneho zdravia u ľudí v pomáhajúcich profesiách boli zasiahnuté najviac pandémiou. Sekundárnym cieľom výskumu bolo analyzovať, aké oblasti mentálneho zdravia na zvládanie náporu starostlivosti v sociálnych službách boli najviac zasiahnuté pandémiou. Rovnako sme zisťovali vzájomný vzťah medzi mierou reziliencie a mentálnym zdravím/well-being.

Metódy: Zber dát sa uskutočňoval metódou dotazníka, ktorý bol zameraný na analýzu aspektov mentálneho zdravia u pracovníkov v pomáhajúcich profesiách v post-pandemickom období a na zisťovanie vzťahu medzi rezilienciou a mentálnou pohodou. Resiliecniu sme analyovali použitím revidovanej 15-položkovej škále vytvorenú autorom Baltone (2007). Výskumnú vzorku tvorilo 146 sociálnych pracovníkov prevažne v sociálnych službách a 173 ošetrovateliek v nemocničných zariadeniach.

Výsledky: Výsledky výskumu ukázali, že existuje vzťah medzi rezilienciou a well-being p < 0,05, pričom tí respondenti, ktorí mali nízke skóre rezilience majú nižšiu mieru celkovej mentálnej životnej pohody, pričom najviac pandémia koronavírusu ovplyvnila dimenzie: sebaprijatie, sebaakceptácia, zmysel života a životný cyklus, autonómia.

Záver: V súčasnosti je čoraz viac uvedomovaný vplyv vykonávania pomáhajúcich profesií na celkové zdravie a pohodu jednotlivca. Výskumné výsledky naznačujú, že sociálni pracovníci pociťujú zvýšenú záťaž a stress, počas pandemického obdobia bolo zvýšený dvojnásobne. S narastajúcou dĺžkou praxe sú tiež náchylnejší na sekundárny traumatický stres. Existuje korelácia medzi celkovým wellbeing a vyšším osobným uspokojením z pomáhajúcej profesie.

Kľúčové slová: Post-covidové obdobie. Životná pohoda. Sociálne služby. Mentálne zdravie.

INTRODUCTION

The COVID-19 pandemic has left an indelible mark on every aspect of life, especially in the area of people working in the helping professions. Due to the prioritization of values during the pandemic, the change in the organization of work and internal motivation, there have also been changes in the way of life, the way we live, work and learn has changed. Emotional well-being and well-being.

The pandemic has brought increased physical health concerns to these workers. They were on the front lines, exposed to a higher risk of contagion and worried about their own safety and the safety of their loved ones. In addition, they had to face changing working conditions during the pandemic and restrictions, which led to a higher level of mental stress. Constant pressure, restrictions and increased burden had a negative impact on their emotional experience and well-being.

In order for these workers to meet these challenges, it is essential to apply a holistic approach to the whole personality. Workers in helping professions need to ensure not only material and financial conditions, but also support for their mental and emotional health. It is important that we provide them with space for self-reflection, support to manage stress and increase their sense of appreciation and level of resilience.

The COVID-19 AND WELL-BEING

With the arrival of the COVID-19 pandemic, new sets of challenges arose. Most of the general public around the world was affected by social distancing measures, quarantine mandates, shortages in health care personnel, etc. care services were more highly sought after, due to an increase in people having life-threatening situations due to COVID-19 (Scheitel 2023). The experience gained during the COVID-19 pandemic thus presents new challenges for research and for the practical impact on patient care (Sladek 2021). This also included mental health care, focusing on the attitude that people take towards the situation they find themselves in and which they are unable to change, i.e., how they shoulder the burden that has befallen them to be able to adapt to post-pandemic life (Thurzo 2022). This may lead to distress that can be directly attributed to the restrictions in place due to the pandemic and hard-working conditions of social and health workers (Dobrikova et al. 2022). According to Špatenková and Olecká (2021), the elderly and geriatric patients are among those most vulnerable to COVID-19, on the other hand, these clients required the qualitative care of people working in helping professions and make this care more stressful due to lack of personal, financial and social capacities.

The studies have shown relation between the impact of the pandemic situation on the mental health and the negative psychical feelings (Dobrikova *et al.* 2023; Payne 2023). As social workers and workers in helping professions provide care that is helpful, human, and supportive, despite the pressure, there is inherent fears, and exhaustion that the pandemic brought with it to health and social care facilities.

The COVID-19 pandemic was a major disruption in people's lives and social relations, and the experience will remain with them for the rest of their lives; important until at least the halfway mark in the twenty-first century and significant beyond that (Payne 2023). Overall well-being of people working in health and social care was lower than the population norm. Particularly in the UK social work and social care services, by 2021, problems general well-being, control at work, and working conditions predicted worsened psychological well-being Ravalier et al. (2022) and required greater support by flexible working were needed to reduce burnout by improving wellbeing and work-related quality of life (Payne, 2023). The need for social workers to develop the resilience required to protect their own wellbeing and provide high quality care to service users is recognised by researches (Morrison, 2007; Grant 2012). The resilience construct is considered to be particularly relevant to those who work in complex and emotionally challenging contexts, such as social workers (Tománek 2019).

Resilience is characterized as one of the protective factors of a person's mental health, which carries protective factors that help the individual to avoid difficulties, minimize the impact of adverse conditions, circumstances or events, draw on resources that enable coping with the demands of the surrounding environment and overcome the consequences of adversity, especially in difficult situations, at nodal points of change, transitional periods and at important milestones in the development of human existence.

The COVID-19 and pandemic situation also affected some of the pillars of accompaniment in the field of social work include open communication between the social worker who is also the therapist — and the client, listening, respect, and empathy (Kralik et al. 2023). Anxiety, or manifestations thereof, affects an increasing part of the population. In general, it is an unpleasant mental state that bothers the person and can make it very difficult for them to function especially after long-term period of COVID-19 (Bariakova, Schwarz 2023). Another study has shown impact of Covid-19 on the increased stigmatisation of people who are independent on the social services that decrease level of wellbeing. Stigmatization and the inaccessibility of health care push clients to the very edge and to a high risk of failure or other diseases that have a serious impact on health and well-being, these facts make a more pressure on the social workers and nursing care (Ludvigh Cintulová, Budayová 2023). Valušová and Schwarz (2023) studied the aspects of perfectionism and the results has shown that Perfectionist is looking at his own value through

his results or performance. Self-critical perfectionism manifests in excessive perfectionist negative reactions to expected or actual failures. Those social and health workers who try to be perfectionists that are more likely to burn out.

RESEARCH RESULTS

The main goal of the research was to figure out the relation between the coronavirus pandemic and mental well-being and to analyse the relationship between resilience and mental health among workers in the helping professions. We used the 15-item Dispositional Resilience Scale (DRS-15) as a short, reliable and valid self-report instrument to measure the level of resilience and impact of the COVID-19 pandemic on their mental well-being.

METHODS AND SAMPLE

The study sample was recruited among 146 workers in social services and 173 nurses in medical facilities. Participants provided a self-rating of their health on a 5-point scale ranging from "very poor" to "excellent" and were given the 18-item Psychological Well-Being scale (PWB-18) and the DRS to complete. The data collection was held in April 2023 in Trnava and Bratislava region.

The PWB-18 (27) consists of 18 items, rated on a 1 ("strongly disagree") to 7 ("strongly agree") scale. It yields scores on six subscales, named self-acceptance (S), positive relationships with others (R), personal growth (G), purpose in life (P), environmental conditions (E), and autonomy (A). Individuals scoring high on S possess a positive attitude towards themselves, acknowledge and accept multiple aspects of self, including good and bad qualities, and feel positive about past life.

The distribution of DRS total score was approximately normal, as it was quite symmetrical (skewness = -0.08, SE = 0.30) and slightly platykurtic (kurtosis = -0.36, SE = 0.38). Mean DRS total score did differ by job status and length of working experiences, while they were found to be higher in participants with more than 7 years of practice in the social and health care of the clients. A descriptive analysis was used to study the frequency distribution of all variables of interest. Analysis of variance was used to test for differences in DRS total and subscale scores between socio-demographic subgroups. Cronbach coefficient alpha is by far the most commonly used index of reliability for self-report scales. But Cronbach alpha reflects the internal consistency of scale items and can underestimate reliability when a complex construct is measured with relatively few items. In such cases, test-retest reliability is the preferred approach (Anastasi & Urbina 1997). The DRS is a self-completed questionnaire consisting of 15 items, scored on a 4-point scale ranging from 0 (not at all true) to 3 (completely true). The instrument includes positivelyand negatively-keyed items covering the three conceptually important Hardiness facets of commitment, control and challenge.

The second research tool used:

The Multidimensional Fatigue Inventory (MFI) is self-report instrument to measure fatigue. The MFI is a 20-item scale and consists of five subscales: general fatigue (GF), physical fatigue (PF), reduced motivation (RM), reduced activity (RA), and mental fatigue (MF). Each scale contains four items. The items are rated on 5-point scale, from 1 (Yes, that is true) to 5 (No, that is not true), scores range from 0 to 20 (Smets *et al.* 1995). This test yields a total score (the sum of all items) and five scale scores calculated as the sum of the items within each subscale. Higher scores indicate higher fatigue levels. The subscale score > 12 was considered clinically significant fatigue (Schwarz *et al.* 2003), and the total score > 60 was considered clinically significant multidimensional fatigue (Tian *et al.* 2013).

Hypothesis:

H1: There is a relationship between well-being and the COVID-19 pandemic, whereby social workers will show a lower level of well-being compared to nurses in hospitals.

H2: There are differences in the level of resilience among helping professions workers during the COVID-19 pandemic.

H3: There are differences in key predictors of the level of resilience between workers in helping professions.

The sample

The study sample was recruited among 146 workers in social services and 173 nurses in medical facilities.

The sample characteristics	Workers in social services	Workers in medical facilities — nurses
Age	40.2 ± 11.2	43.4 ± 11.2
Covid-19 working overtime per week in hours	5 — 7 hours	8 — 10 hours
Self-rated health	20.0.0/	
poor	20.0 %	11,5 %
nond	31.3 %	33,4 %
excellent	16,5 %	20,0 %
Exhaustion	SD	SD
Low	2.0	1.5
Medium	3.0	2.0
High	3.5	3.0
Working experience in years	5.8	7.5
Total	146/100 %	173/100 %

RESULTS

Research findings have shown that individuals with higher resilience have higher self-confidence, self-confidence, activity and the ability to adapt to new situations arising when working with clients in social services. On the other hand, self-acceptance, self-esteem and associated competencies, such as reflective ability, aspects of empathy and social confidence, were found to be key predictors of the level of resilience. If the resilience is low, the professionals who are able to cope with the emotional demands of the job, are less able to handle with the various problems in social care services. Resilience may be a particularly important quality for social work practitioners, as it may help them adapt positively to stressful working situations and enhance their professional growth (Grant 2012; Collins 2008). COVID-19 pandemic affected the autonomy (p = 0.024), self-acceptance (p = 0.016) and purpose of life in the dimension challenge (p = 0.037) that was identified in the DRS scale (table1).

The results confirmed different relation between resilience and autonomy dimension. Workers in helping professions can make decisions and act according to personal desires and motives due to COVID-19 measures they have had to follow. The significal impact has been identified in personal autonomy at social workers (p = 0.006) and health care workers (p = 0.005). COVID-19 era brought new legislative changes and administrative actions and duties due to covid patients at both workers (table 2).

Finally, a path analysis revealed that unconditional self-acceptance mediated the association between socially prescribed perfectionism and psychological distress during the pandemic situation, and other-oriented perfectionism was found to affect burn out and exhaustion only indirectly through its association with low levels of self-acceptance. The findings indicate that social workers evaluate themselves in terms of a contingent sense of self-worth, and as such, they are vulnerable to psychological distress when they experience negative events that do not affirm their self-worth. The higher level of self-worth was indicated to health workers compared to social workers (table3).

Results have shown a positive correlation between higher levels of resilience and better mental health outcomes. Individuals with greater resilience tend to have lower levels of anxiety, depression, and psychological distress. They are better equipped to handle challenging life circumstances and are more likely to engage in adaptive coping strategies.

Moreover, resilience has been found to have a positive impact on different dimensions of life. Resilient individuals often report higher levels of life satisfaction, self-esteem, and overall well-being. They demonstrate greater social support, positive relationships, and a sense of purpose and meaning in their lives.

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Table 1: Correlation between DRS and PWB-18

PWB	DRS scale chi-test	Commitments p	Control p	Challenge p
Autonomy	0.024	0.103	0.114	0.035
Environmental conditions	0.119	0.132	0.129	0.136
self-acceptance / self-esteem	0.016	0.026	0.028	0.022
Personal growth	0.135	0.131	0.125	0.134
positive relationships with others	0.124	0.129	0.120	0.122
purpose in life/life dimensions	0.037	0.041	0.039	0.033

Table 2: Correlation DRS and autonomy

Autonomy	DRS scale chi-test	Social workers i Cohen′s d	n social services SD	Health c Cohen's d	are workers SD
Personal	0.034	0.006	2.2	0.005	2.0
Cultural	0.118	0.17	4.3	0.20	4.5
Functional	0.096	0.31	3.6	0.28	3.3
Administrative	0.015	0.004	1.4	0.002	1.2
Legislative	0.004	0.001	1.1	0.002	1.2

Table 3: Correlation between DRS and self-acceptance dimensions

Self-acceptance	DRS scale chi-test	Social workers in social services		Health care workers	
sense of self-worth	0.007	0.006	1.2	0.005	1.0
other-oriented approach	0.014	0.19	3.3	0.22	3.5
Perfectionism	0.112	0.41	3.6	0.28	3.3
psychological distress	0.035	0.010	1.4	0.02	1.2
Unconditional self-acceptance	0.029	0.012	1.2	0.021	1.7
Exhaustion due to covid-19	0.023	0.016	1.4	0.019	1.6

Table 4: Correlation DRS and Life dimensions

Purpose of life/life dimensions	DRS scale chi-test	Commitments p	Control p	Challenge p
Physical	0.089	0.087	0.091	0.082
Mental	0.074	0.083	0.094	0.075
social/emotional	1.116	0.121	0.118	0.116
Spiritual	0.154	0.146	0.137	0.142
General purpose of life	0.121	0.134	0.124	0.117

The correlation between resilience, as measured by the DRS, and mental health and life dimensions underscores the importance of fostering and developing resilience in individuals. Building resilience can be achieved through various means, such as fostering social connections, cultivating positive thinking patterns, enhancing problem-solving skills, and practicing self-care (table 4).

In the context of the COVID-19 era, it is essential to consider the dimensions of life and their impact on well-being and resilience. These dimensions include the physical, mental, social/emotional, spiritual, and the general purpose of life. Each dimension plays a crucial role in shaping an individual's overall well-being and resilience during these challenging times.

Physical dimension: The physical dimension encompasses the physical health and vitality of an individual. Taking care of one's physical well-being, such as maintaining a healthy lifestyle, exercising regularly, getting enough sleep, and following safety guidelines, becomes even more critical during the COVID-19 era. Prioritizing physical health helps in boosting immunity, reducing stress, and enhancing overall resilience.

Mental dimension: The mental dimension relates to an individual's cognitive and emotional well-being. The pandemic has brought about increased levels of stress, anxiety, and uncertainty. Focusing on mental health becomes crucial by practicing self-care, managing stress effectively, seeking support to empower mental health.

Social/Emotional dimension: The social/emotional dimension refers to the quality of relationships and the ability to connect with others. The COVID-19 era has brought social distancing measures, leading to feelings of isolation and loneliness. Nurturing social connections, and engaging in meaningful relationships is vital for emotional well-being and resilience. Staying connected with loved ones, participating in support networks, and finding ways to contribute to the community can help maintain a sense of belonging and emotional support.

Spiritual dimension: This dimension is unique to each individual and can encompass religious, philosophical, or personal beliefs. During challenging times, exploring spirituality, engaging in practices such as meditation, prayer, or reflection, and seeking a sense of purpose can provide solace, resilience, and a deeper understanding of oneself.

General purpose of life: The general purpose of life dimension reflects an individual's sense of meaning, goals, and aspirations. The pandemic has prompted many to re-evaluate their priorities and find new ways to create purpose in their lives. Setting meaningful goals, pursuing passions, engaging in activities that align with personal values, and finding ways to make a positive impact can contribute to a sense of fulfilment and resilience.

In the COVID-19 era, focusing on these dimensions of life and actively nurturing each aspect can contribute to overall well-being and resilience. It is important to remember that these dimensions are interconnected, and addressing them holistically can enhance one's ability to adapt, cope, and thrive during these challenging times. There are difficulties as occurred during the Covid-19 pandemic is an important factor for lower wellbeing between social workers and health care workers (see table 5). Physical and mental well-being has been affrected by COVID-19 the most. During the COVID-19 pandemic, social workers and healthcare workers have faced numerous challenges that have had a significant impact on their overall well-being. Table 5 illustrates the difficulties experienced by these professionals, highlighting the effect on their physical and mental well-being.

The physical well-being of social workers and healthcare workers has been particularly affected due to the demanding nature of their roles during the pandemic. They have been at the forefront of providing care and support to individuals affected by COVID-19, often working long hours and being exposed to the risk of infection. This heightened exposure to the virus, coupled with the stress and exhaustion associated with their work, has taken a toll on their physical health.

In addition to the physical challenges, the mental well-being of these professionals has also been significantly impacted. They have had to navigate the emotional strain of witnessing the suffering and loss caused by the pandemic, often experiencing high levels of stress, anxiety, and burnout (table5).

Table 5: Correlation life dimensions and working position

	DRS scale chi-test	Social workers in social services	Health care workers
Physical	0.039	0.029	0.022
Mental	0.044	0.046	0.034
social/ emotional	1.108	1.119	1.121
Spiritual	0.125	0.124	0.135
General purpose of life	0.091	0.121	0.113

The COVID-19 pandemic has had a substantial impact on various aspects of fatigue, including general fatigue (GF), physical fatigue (PF), reduced motivation (RM), reduced activity (RA), and mental fatigue (MF). These factors have been significantly influenced by the unique circumstances and challenges brought about by the pandemic.

General Fatigue (p = 0.037): The overall sense of tiredness and exhaustion, often experienced as a result of the physical and mental demands placed on individuals during the pandemic. The prolonged stress, disrupted routines, and uncertainties associated with COVID-19 have contributed to an increase in general fatigue among workers in helping professions.

Physical Fatigue (p = 0.089): The physical exhaustion and weariness caused by the demands of daily activities and responsibilities. During the pandemic, physical fatigue may have been exacerbated by factors such as increased workloads, changes in physical activity patterns, and the impact of stress on the body. The lack of access to recreational facilities and limited opportunities for physical exercise or outdoor activities may have further contributed to physical fatigue.

Reduced Motivation (p = 0.036): The decline in motivation and drive to engage in activities or pursue goals. The pandemic has disrupted routines, limited social interactions, and introduced a sense of uncertainty, which can diminish motivation. The ongoing challenges, such as remote work, social distancing measures, and the overall impact on daily life, may have led to decreased motivation for many individuals.

Reduced Activity (p = 0.039): The decrease in overall physical and cognitive engagement in daily activities. COVID-19 restrictions, such as lockdowns and social distancing guidelines, have significantly reduced opportunities for socialization, travel, and recreational activities. This reduced activity can contribute to a sense of stagnation, reduced energy levels, and an increase in overall fatigue.

Mental Fatigue (p = 0.028): The exhaustion and mental drain resulting from cognitive tasks, concentration, and decision-making processes. The pandemic has brought numerous cognitive challenges, including adapting to remote work or learning, managing increased responsibilities at home, and processing the constant influx of information related to the virus. These factors can lead to mental fatigue, affecting attention, memory, and overall cognitive functioning (table 6).

DISCUSSION

Findings from studies in different countries showed that the prevalence of mental health problems increased significantly in the general population during the COVID-19 pandemic (Wu *et al.* 2021). In the previous research study has figured out the risk of reduced mental well-being has been confirmed in people facing post-covid symptoms more than 8 weeks (p = 0.023); the level of mental well-being is directly related to the readiness to cope with life's difficulties (p = 0.028) and the ability to adapt to life changes (p = 0.032).

There is a relationship between a decline in mental well-being and the frequency of post-covid symptoms (p = 0.019). Physical activity induces pleasant feelings and neurotransmitters that increase mental well-being, if it is performed regularly, a person acquires the right life habits that help him increase resistance to post-covid related issues and it makes positive impact on the good level of well-being. (Cintulová, Budayová, Bredová 2022). The level of well-being at people with post-COVID-19 syndrome is determined by internal motivation.

Higher levels of depression, anxiety, and insomnia were associated with the severity of COVID-19 infection in the acute phase (Ludvigh Cintulová, Beňo, Rottermund, Budayová 2023). In the current study, motivation was assessed through four questions related to motivation dimension of the MFI-20 including "I feel like doing all sorts of nice things", "I dread having to do things", "I have a lot of plans", and "I don't feel like doing anything". One possible explanation relies in that constancy in the face of difficulties as occurred during the COVID-19 pandemic is an important factor for lower wellbeing (O'Connor RC et al., 2021). Life has been changed during the pandemic and a wide range of difficulties has been constantly experienced by many people such as financial difficulty, loneliness, fear of illness with COVID-19, loss of work, difficulties acquiring medication, difficulties accessing food, threats to personal safety, and difficulties in social functioning (Badinlou F, et al. 2022).

	DRS scale chi-test	Commitments p	Control p	Challenge p
general fatigue (GF)	0.037	0.041	0.042	0.031
physical fatigue (PF)	0.089	0.067	0.071	0.082
reduced motivation (RM)	0.036	0.047	0.041	0.044
reduced activity (RA)	0.039	0.033	0.034	0.036
mental fatigue (MF)	0.028	0.021	0.028	0.029
Personal fatigue (PF)	0.041	0.044	0.037	0.042

Table 6: Correlation DRS and Multidimensional Fatigue Inventory (MFI)

Study Bocu et al. (2023) analysed impact of Covid-19 on psychological health is the complementary combination of external abilities and constraints with the internal motivations and needs of the individual. The resilience include ability being social, intelligence, communication skills, self-efficacy perception, as well as relations with family members and environment. Costello (2023) agreed that mental health is especially affected by environmental conditions determining psychological resilience. Mental health issues are often influenced by physical health problems as well. There is positive correlation between low level of well-being and burn out syndrome detected in the study of Gazikova (2023). By recognizing the correlation between physical health problems, well-being, and burnout syndrome, healthcare professionals and organizations can implement strategies to support individuals in managing their mental health alongside their physical health. This comprehensive approach is vital for promoting overall well-being and preventing the negative impact of burnout and mental health issues (Jackulikova et al. 2021). Hennel, Vallova et al. 2022) in their study confirmed negative impact of COVID-19 on the different aspects of the human life including basic needs affected by the pandemic.

CONCLUSION

The factors that have been identified as contributing to mental health problems can be utilized to screen individuals who have been infected with COVID-19, particularly those who continue to experience post-COVID conditions. For instance, the discovery that reduced motivation is a significant predictor of poor mental health implies that maintaining motivation plays a crucial role in managing mental well-being for individuals working in helping professions.

Author contributions:

The author hereby declares to be actively involved in the research and has approved its publication.

Conflict of interest statement:

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report. We certify that the submission is original work and is not under review at any other publication.

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Breast cancer risk factors – an overview of current knowledge Rizikové faktory rakoviny prsníka – prehľad súčasných poznatkov

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Introduction: For many years, breast cancer has been one of the most common malignant diseases of the female population in most developed European countries and the developed countries of the world. The etiology of the disease is still unknown, i.e. that there is no primary prevention. We are left with secondary prevention, which includes two basic aspects — to diagnose the tumor at an early stage and to influence the population of women through systematic professional health education so that, in addition to self-examination, they also regularly visit a specialist doctor and contact a specialist in case of any symptoms.

The core of the work: The goal of the work is a summary and overview of risk factors that have an impact on the development of breast cancer. Risk factors are those that increase the coefficient of the occurrence of the disease compared to the population that does not have any risk factors. We are also dedicated to breast cancer screening as the only method of early detection and reduction of mortality.

Conclusion: In the work, we summarize an overview of risk factors that should be discussed and published as part of education, because some factors can influence women and thus help in prevention.

Key words: Breast cancer. Screening. Risk factors. Preventive examinations.

Úvod: Karcinóm prsníka už dlhé roky patrí k najčastejšiemu malígnemu ochoreniu ženskej populácie väčšiny vyspelých európskych krajín a vyspelých krajín sveta. Etiológia ochorenia nie je doteraz známa, tzn. že neexistuje primárna prevencia. Zostáva nám prevencia sekundárna, a tá obsahuje dva základné aspekty — diagnostikovať nádor v počiatočnom štádiu a pôsobiť na populáciu žien systematickou odbornou zdravotnou výchovou tak, aby okrem samovyšetrovania aj pravidelne navštevovali odborného lekára a aby pri akýchkoľvek príznakoch kontaktovali odborníka.

Jadro práce: Cieľom práce je sumarizácia a prehľad rizikových faktorov, ktoré majú vplyv na vznik karcinómu prsníka. Rizikové faktory sú tie, ktoré zvyšujú koeficient vzniku ochorenia v porovnaní s populáciou, ktorá nemá žiadne rizikové faktory. Venujeme sa aj skríningu karcinómu prsníka ako jedinej metóde včasného záchytu a zníženia mortality.

Záver: V práci sumarizujeme prehľad rizikových faktorov, o ktorých by sa malo v rámci osvety rozprávať a uverejňovať, pretože niektoré faktory môžu ženy ovplyvňovať a tým pomôcť v prevencii.

Kľúčové slová: Karcinóm prsníka. Prevencia. Skríning. Rizikové faktory.

INTRODUCTION

Breast cancer is the most common malignancy in the female population of European countries and most of the world. Accurate statistics are not commonly available. According to European data, Slovakia is up to 8 places behind the Czech Republic in terms of the incidence of breast cancer, overall, according to the data (Graph 1), Slovakia is in 27th place out of 42 European countries.

At the forefront of breast cancer incidence rates are countries such as Belgium, the Netherlands, France, the United Kingdom, Ireland. With the lowest values in the graph are countries such as Ukraine, Moldova, Albania, Bosnia and Herzegovina, Greece (Ferlay, Ervik, Lam *et al.* 2018).

In Graph 2 shows the values of incidence and mortality for the most common oncological diseases in Slovakia. In the first place in women is breast cancer, followed by malignant diseases of the colon and gynecological malignancies

The etiology of breast cancer, despite the tremendous efforts of scientists around the world, is still unknown. Therefore, we cannot implement primary breast cancer prevention either (Klenner 2002). However, there are known factors that increase the likelihood of breast cancer. We are talking about the so-called risk factors. The main ones — the so-called high risk risk factors — are summarized in Table 1.

Table 1: The development of breast cancer is multifactorial: the main risk factors can be divided into basic groups (Daneš a kol., 2021)

1.	age
2.	genetic load
3.	parameters in the gynecological history
4.	factors associated with increased exposure to endogenous and exogenous estrogens (alcohol, obesity, HRT)
5.	previous affections in the breast
6.	previous radiotherapy in the breast area
7.	some benign findings

CORE OF WORK

The main risk factor is the patient's age, the incidence increases sharply after the age of 50, currently even after the age of 40. A woman's hormonal status is also of great importance. Large studies show that women with early menarche or late menopause have a higher risk of breast cancer. For example women with menopause after age 55 have twice the risk of developing breast cancer during their lifetime compared to women with menopause before age 45. Nulliparity and late age at first birth are also risk factors (Smith, Brinton, *et al.* 2011).

Again, it follows from large studies in Western countries that breast cancer occurs in families in about 10 % and genetic predisposition is involved in its development in up to 1-5 %. Tumor susceptibility is inherited in an autosomal dominant manner with varying penetrance (breast cancer family syndrome). This means that it is transmitted by both sexes, but some family members, despite the presence of the abnormal gene, do not get cancer. It is not yet known how many breast cancer genes there are. It is believed that 40-50 % have a mutation of the BRCA 1 gene, which is on the long arm of chromosome no. 17. The second is BRCA 2, which is located on the long arm of chromosome no. 13. In connection with breast cancer, many families also have cancers in other locations (ovarian cancers, colorectal cancers, stomach cancers, but also prostate cancers) - cancer family syndrome, Liov-Fraumeni syndrome, cancer - prone families. Benign breast disease is often a debated issue. Women with epithelial hyperplasia and cellular atypia have a 4-5 times higher risk of cancer than other women. Women with these changes and, in addition, a positive family history have a risk up to 9 times higher. Women with cysts, solid deposits of the fibroadenoma type, sclerosing adenosis, ductal papillomas have only a slightly higher risk, but this has no clinical significance. The only significance lies in the fact that these units create a less clear terrain on mammographic images and the presence of cancer near or in the so-called can be missed. daytime terrain. (Buchler et al. 2019). Radiation is also of great importance due to the increasing burden of the population worldwide. Up to twice the risk was observed in women who were exposed to ionizing radiation as girls, or in women who were irradiated to the chest in their youth in accordance with treatment procedures (e.g. treatment of chest wall hemangiomas, anti-inflammatory treatment of postpartum mastitis or treatment of lymphomas) (Alexandrova, Hodjadjik, Sergieva 2003; Pleško, Jurga, Nováková, Foretová 2010). The impact of repeated mammographic examinations on carcinogenesis in women over 40 years of age is fully balanced by a significant reduction in the mortality of women from cancer during screening. Despite this, it is necessary to indicate a mammographic examination judiciously and to proceed in accordance with the principles of radiation hygiene, standards and recommendations of the institutions of the European Union.

Lifestyle is also often discussed. Obesity and alcohol consumption are carcinogenic, but the level of risk for the development of breast cancer is not precisely defined. Stress is one of the important risk factors in oncology as such, and its exact share has not yet been precisely determined (Kruk, Aboul-Enein 2004, Dědová M., Jakabová V., Dobríková P., Baní G., 2022).

Graph 1: Incidence of breast cancer in European countries in 2012 (Source: EUCAN)



Estimated incidence of breast cancer, 2012

Graph 2: Incidence and mortality of malignant diseases of women in Slovakia in 2012 (source EUCAN)



Estimated incidence and mortality for women in Slovakia, 2012

Contraceptives that are used today do not have an early carcinogenic effect. Unequivocal data are not available because they were not commonly indicated for young women before the late 1970 s.

Hormonal replacement therapy with estrogens in combination with progestogens is very common in menopausal women. The goal is primarily to alleviate the so-called difficulties postmenopausal syndrome, it is also used to prevent osteoporosis. According to several studies, long-term use (after 10 to 15 years) increases the risk of cancer by up to 50 %. Other studies present the problems of the development of breast cancer, mainly with the increasing density and thus the opacity of mammographic images, which cause more difficult evaluation and thus the possible overlooking of minimal findings. In any case, the indication should be considered, especially in women with a high risk of developing breast cancer. (Tomiczek V., Slaný J., 2022)

SCREENING OF BREAST CANCER

Repetition is the mother of wisdom. A lot has been written about prevention, we think it doesn't hurt to repeat something. That is why we return to the essence of prevention, There are three ways to prevent and successfully treat cancer. It is about primary, secondary and tertiary prevention.

The essence of primary prevention is to prevent the formation of a tumor, the principle of secondary prevention is early diagnosis of a tumor and treatment in the initial stage. Tertiary prevention is effective and complete treatment of clinically found tumors. Primary prevention includes all measures that prevent the onset of the disease, with a time shift of the onset of the disease or the elimination or reduction of the influence of risk factors. The exact cause of breast cancer is still unknown, apart from genetic influences or a woman's long-term exposure to radiation at a young age. The risk factors described later are relative and not independent. Effective primary prevention of breast cancer is practically impossible for these reasons. Changes in the techniques of surgical procedures, radiotherapy and combination with adjuvant treatment (chemotherapy) brought partial success, there is a longer survival of patients, but they did not radically change the development of the mortality trend and did not bring fundamental changes in the relative number of deaths of women from breast cancer in the 80 s or 90 s. The statistics clearly show that the mortality rate decreases in connection with the early detection of breast cancer.

Therefore, the attention turns to the second option — secondary prevention, i.e. to diagnose tumors in the initial stage, when the disease is without subjective and objective symptoms and is localized only to the site of the tumor itself. By early detection of breast cancer, it is possible to choose a less burdensome surgical procedure and, for patients, a less burdensome adjuvant chemotherapy. Early diagnosed cancer, local, not spread in the body, is usually curable. As a result, there is a real decrease in mortality. A reduction in mortality from breast cancer can only be achieved by regular, mass, preventive examination (screening) of part or the entire selected population of subjectively healthy (asymptomatic) women, women without symptoms of the disease, focused on this (ACR standards 2000 - 2001).

In addition to mammography, clinical examination (palpation) and regular self-examination (breast self-examination, BSE) were also used for diagnostic and screening examinations (Abrahámová, Horák 2000). Over the last few decades, several screening studies have been carried out in several European countries, but also in the USA and Canada. The conclusions unequivocally confirmed and verified the reduction of mortality from breast cancer, mostly only with the help of mammography, while palpation is considered a possible, but not necessary, step before the actual mammographic examination. A significant reduction in mortality by regular breast self-examination alone has not been demonstrated

Mammography is an X-ray examination of the breast, carried out using analog or digital mammography devices, which is able to detect malignant disease in early stages. As part of secondary prevention, it is preventive (screening) mammography. Preventive (screening) mammography is beneficial in detecting clinically latent lesions in asymptomatic women. In screening mammography, the age of the woman at the start and end of the screening, the intervals, are not unified worldwide. A woman's entry into screening usually starts at the age of 40, 45, 50, and even 55. According to the literature, intervals are most often 24 months, but also 18 months, and 12-month intervals are also no exception. Screening for breast cancer consists of a mass, all-area mammographic examination of certain selected age groups of women. The benefits of screening mammography lie in the reduction of breast cancer mortality based on early detection and a better potential for conservative treatment of small tumors and early stages of breast cancer. The European Code Against Cancer (ECAC) was created in 1986 as part of the European Union's program — Europe Against Cancer.

However, due to the impact of screening, the number of newly diagnosed cancers also increases and the expenses for their treatment increase. Total costs are highly dependent on screening organization and efficiency. The benefit of examinations in relation to costs is often evaluated as the cost of saving one year of life (from the English cost-benefit analysis). However, they are only a rough measure and the own price must always be assessed in relation to other prices and in relation to the general social and economic situation in that society and country.

Individual, most important and well-known studies (The HIP study — started in 1963 in the USA, The Canadian studies NBSS I and II, The Malmo study (Anderson, Janzon 2006). The Two. county study, The Edinburgh study, The Stockholm trial, The Gothengurg breast screening trial and Overview of Swedish randomized trial) were aimed at age groups of women from 40-45 or 49 years of age and lasted from 7 to 10, in the last up 6 years. Examination intervals were most often 18 or 24 months, screening consisted exclusively of a mammographic examination (Daneš *et al.* 2021). Sonography as an additional examination was significantly limited. The reduction in mortality was from 26 to 35 % during the observed period.

Most studies have shown a significant reduction in mortality, and thus the benefit of screening even for younger women — from the age of 45, in some from the 40 s.

To implement high-quality mammographic screening, it is necessary not only to have high-quality and affordable technology (mammographs), but also to equip screening workplaces with negatoscopes in the case of analog mammograms, sonographic devices, and the possibility of biopsy verifications. With the possibility of supplementing the examination with magnetic resonance. The sensitivity of screening native mammography ranges from 60 to 95 %, specificity from 90 % to 99 %. The sensitivity is higher in examinations of women who are over 50 years old, which is logical. Postmenopausal women have the highest number of fat changes in their breasts compared to "daily" terrain. Breasts changed by fat are excellently readable and valuable for mammography and do not require additional modalities that make the screening examination more expensive and longer. Screening in the Czech Republic has been working for more than 10 years with a group of women from the age of 45, in our screening program, the age of entry into screening is also being prepared at 50 and the interval is once every two years.

CONCLUSION

Breast cancer is the most common malignant tumor in women worldwide. More than 3,000 newly diagnosed cancers increase annually in Slovakia.

The only sophisticated and world-recognized screening method is digital mammography. In Slovakia, it has been officially put into practice by law since September 2019. However, in addition to screening, it is important to know and be informed about all the risk factors that affect the development of breast cancer. Nowadays, of course, it is age, genetic factors, stress, lifestyle, previous gynecological and personal history, radiation therapy in the chest area at a young age, hormonal treatment and hormonal status, and of course exposure to endogenous and exogenous estrogens. As part of education and information, women and the public should be informed about all aspects of the possible development of breast cancer, as the etiology is multifactorial.

Conflict of Interest

The author declare there is no conflict of interest in the connection with the published article

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Every day problems in patients with secondary glaucoma surgery after stereotactic irradiation of the eye globe Každodenné problémy u pacientov po operáciach sekundárneho glaukómu po stereotaktickom ožiarení očnej gule

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ABSTRACT

Aim: After irradiation of intraocular tumor secondary radiation-related side effects like secondary glaucoma (SG) can appear after the therapy. This study describes the incidence of SG in patients after stereotactic surgery (SRS) and problems in everyday life after treatment.

Method: The data of 95 patients treated by SRS were reviewed for SG treatment (cyclocryotherapy, enucleation) in one center with follow-up regularly at least 4 times per year. Patients got a questionnaire and answered questions dealing their quality of everyday life.

Results: In group of 95 patients with the median age 62 years, the median tumor volume at baseline was 0.4 cm^3 and surgical treatment of secondary glaucoma — cyclocryotherapy was necessary in 15 patients (15.8 %). In 6 patients (6.3 %) secondary enucleation was necessary due to complications and SG. Both predictors as tumor volume and age of patient at the time of SRS were not significant to develop secondary glaucoma.

Conclusions: Complications like SG in 5-year interval after irradiation can lead to secondary glaucoma and in some cases also enucleation of the eye globe. The quality of life was determined with the surgery.

Key words: Secondary glaucoma. Stereotactic radiosurgery. Melanoma. Quality of life.

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Cieľ: Po ožiarení vnútroočného nádoru sa môžu v určitom intervale po liečbe objaviť sekundárne nežiaduce účinky súvisiace s ožarovaním, napr. sekundárny glaukóm (SG). Táto štúdia popisuje výskyt SG u pacientov po stereotaktickej operácii (SRS) a problémy v každodennom živote po liečbe.

Metóda: Analyzovali sa údaje 95 pacientov liečených SRS na liečbu SG (cyklokryoterapia, enukleácia) v jednom centre s pravidelným sledovaním minimálne 4-krát ročne. Pacienti odpovedali na otázky týkajúce sa kvality ich každodenného života.

Výsledky: V skupine 95 pacientov s mediánom veku 62 rokov bol stredný vstupný objem tumoru 0,4 cm³ a chirurgická liečba sekundárneho glaukómu — cyklokryoterapia bola nevyhnutná u 15 pacientov (15,8 %). U 6 pacientov (6,3 %) bola potrebná sekundárna enukleácia pre komplikácie SG. Oba prediktory, ako objem nádoru a vek pacienta v čase SRS, neboli významné pre rozvoj sekundárneho glaukómu.

Závery: Komplikácie ako SG v 5-ročnom intervale po ožiarení môžu viesť k sekundárnemu glaukómu a v niektorých prípadoch aj enukleácii očnej gule. Kvalita života pacientov bola ovplyvnená operačným výkonom.

Kľúčové slová: Sekundárny glaukóm. Stereotaktická rádiochirurgia. Melanóm. Kvalita života.

INTRODUCTION

ABSTRAKI

The most common primary intraocular malignancy in adults is uveal melanoma. Even though it is rare, the incidence varies from 0.2 to 1.0/100 000 inhabitants and the predilection site of the uveal is the choroid (90 %). Rarely this type of malignancy is found in the iris (4%) or the ciliary body (6%)(Damato et al. 2005; Kaliki & Shields 2017). In last century enucleation was the standard treatment method for posterior uveal melanoma with the aim to prevent metastatic process. Nowadays a suitable and increasingly preferred alternative has been to use "conservative" methods (Furdova et al. 2005) Radiotherapy can be performed as plaque brachytherapy and teletherapy. It can be used also SRS using a cyber knife, a gamma knife, or a linear accelerator (LINAC) (Kaliki & Shields 2017; Furdova et al. 2018a). Despite any attempt to minimize adverse effects, there can be a development of complications. Large melanoma can rarely present primary with the features of neovascular glaucoma (Sahu et al. 2019).

Secondary glaucomas are a heterogeneous of conditions in which elevated intraocular pressure is the leading pathological factor causing glaucomatous optic neuropathy (European Glaucoma Society Terminology and Guidelines for Glaucoma, 4th Edition - Chapter 2: Classification and terminologySupported by the EGS Foundation: Part 1: Foreword; Introduction; Glossary; Chapter 2 Classification and Terminology 2017). There are many causes of SG. It may also arise as a result of treatment that appears to be effective (European Glaucoma Society Terminology and Guidelines for Glaucoma, 4th Edition - Chapter 2: Classification and terminologySupported by the EGS Foundation: Part 1: Foreword; Introduction; Glossary; Chapter 2 Classification and Terminology 2017). SG may occur despite effective treatment of uveal melanoma (Siedlecki et al. 2017) It has been described as the second most common complication of radiation therapy, leading to the need for enucleation. In the study Furdova et al. have analyzed the association between secondary enucleation and the presence of SG or haemophthalmus and radiation-induced optical neuropathy after SRS. Enucleation as a result of SG was found in 16.7 % of patients while optical neuropathy was significantly associated with a higher dose in SRS. Overall survival of patients undergoing secondary enucleation did not differ from patient survival without enucleation (Furdova *et al.* 2018b) (See Fig.).

Secondary post-irradiation glaucoma may be treated with any group of antiglaucomatous drug therapy, taking into account the specific drug or its active agent contraindications (Wanner & Pasquale 2006). Depending on the intraocular pressure (IOP) value, we start with eye drops as a first-choice method monotherapy or combined therapy. Today the recommended treatment is with β receptor blockers, α -2 receptor agonists, and carbonic anhydrase inhibitors (Othman *et al.* 2013). When drugs are ineffective and do not reach the target IOP, glaucoma surgery is an option. Conventional glaucoma operations, including filtration operations such as basal



Fig. 1. Anterior segment of the eye in patient with secondary glaucoma after irradiation treatment due to intraocular melanoma. (Photo A. Furdova, Department of Ophthalmology, Faculty of Medicine, Bratislava)

iridectomy, trabeculectomy, drainage implants may be used (Lee *et al.* 1999; Skalicky *et al.* 2007)

Lee *et al.* however, it states that surgery alone can speed up tumor spread (Lee *et al.* 1999). Piirtola *et al.* in their work, the use of transcleral photocoagulation therapy as a possibility to reduce IOP in patients with SG has been reported because ciliary body photocoagulation or cyclocryotherapy can cause regional death of tumor cells and thereby alleviate high intraocular pressure (Piirtola *et al.* 2014).

Cyclocryotherapy can be used to treat SG. The action at the site of the ciliary body causes destruction of its cells and consequent reduction of aqueous humor production as well as regional cell death, thus relieving high eye pressure. The aim of our work is to describe the incidence and prevalence of SG as a complication of SRS on LINAC depending on individual types of uveal melanoma. In this study we assess the treatment of posterior uveal melanoma by one-day session LINAC based SRS and risk for SG. Patients with complications like secondary glaucoma can lead to enucleation and destroy the quality of their life. In severe secondary glaucoma there is need to remove the eye globe (Zahorjanová *et al.* 2020).

MATERIAL AND METHODS

The data of all 95 patients treated by LINAC based therapy for uveal melanoma (ciliary body and choroid) were reviewed. Medical records were screened for neovascularization of the iris, increases IOP > 23 mmHg and antiglaucomatous therapy of IOP lowering medication was analyzed in the interval after one day session therapy on LINAC.

The regular follow-up examination included slit lamp examination, ophthalmoscopy, intraocular pressure measuring, ultrasound, optical coherence tomography and photo-documentation.

In patients after one day irradiation in LINAC we used the quantitative research in the form of a questionnaire. The questionnaire was based on the "Visual Functions Questionnaire-25" containing questions related to anti-glaucoma surgery and their everyday life quality.

RESULTS

The group of 95 patients after applied stereotactic irradiation the age of patients ranged from 24 to 92 years with the median 59 years. In 6 patients (6.3 %) secondary enucleation was necessary due to complications — SG. Enucleation free interval ranged from one and half year to three years.

We used the method of quantitative research in the form of a questionnaire. At the beginning of the questionnaire, we informed the patients about the aim and purpose of the questionnaire and they were also assured of its anonymity. The questionnaire was based on the "Visual Functions Questionnaire-25" containing questions related

		age	BCVA before OP	BCVA after OP	Reoperation	Complications
		[years]	[decimal]	[decimal]	0/1	0/1
Cyclo-cryotherapy	N	15	15	15	15	15
	Average	64,9	0,1	0,1	0,3	0,1
	SD	12,4	0,2	0,2	0,5	0,3
	Maximum	92,0	1,0	1,0	1,0	1,0
	Median	63,5	0,1	0,1	0,0	0,0
	Minimum	19,0	0,0	0,0	0,0	0,0
Enucleation	N	6	4	4	0	0
	Average	59,5	0,2	0,3	0,0	0,3
	SD	18,1	0,2	0,2	0,0	0,5
	Maximum	85,0	0,6	0,5	0,0	1,0
	Median	65,0	0,3	0,3	0,0	0,0
	Minimum	19,0	0,0	0,0	0,0	0,0

Table 1. Descriptive statistics in patients after cyclocryotherapy and enucleation — age, BCVA, complications, reoperation

BCVA — best corrected visual acuity; OP — operation, surgery; N –number; SD — standard deviation

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to anti-glaucoma surgery added by us. Patients filled out the questionnaire electronically via the website "survio.com" or in printed form, which we then processed electronically.

We have contacted 15 patients who underwent anti-glaucoma surgery — cyclocryotherapy and 6 patients after enucleation due to secondary complications after stereotactic irradiation. We asked the patients after cyclocryotherapy or enucleation to answer 36 questions from the Questionnaire. We analyzed the most important questions.

In group of patients who underwent cyclocryotherapy, all the respondents reported tolerable, minimal or no pain during the operation and shortly after the operation, with most patients reporting only minimal pain. Up to the first year after surgery only 1 patient reported pain.

The question "Do you have difficulty reading ordinary print (newspaper, magazine, book etc.)?" the answer among respondents was "I have some difficulties, especially with details" and "I can't read at all" in patients after one eye enucleation.

The question "Do you have difficulties with normal work and performing hobbies and activities close to you (e.g., cooking, sewing, using hand tools,...)?" the answer among patients was "I have a big difficulty, especially with details".

In the next question we asked: "How much difficulty is there in seeing small things or details" patients answered "I have much difficulties with small details".

The next question was: "How much difficulty is there in reading street or shop signs?" the most frequent answer among all respondents was "I have difficulties at all".

The next question was: "Do you have difficulty going down stairs or a curb in the dark or at night?". The answer "I have difficulties" in everyday life.

The next question was: "Do you have difficulty noticing surrounding objects while walking?" the answer was "Yes, I do have problems".

Reading in everyday life magazines, books or newspapers was a minimal problem for respondents after cyclocryotherapy. The findings from our group of patients represent evidence of the impact of cyclocryotherapy on visual acuity changes but the feeling of pain or discomfort from the patient's point of view, and the overall postoperative comfort of the patient in the postoperative period was not good.

The comfort of the patient after therapy was determined with the other eye status, of course. In every patient with uveal melanoma after irradiation on linear accelerator in whom the necessity of surgical treatment due to secondary glaucoma was the final quality of life worsened.

DISCUSSION

Linear accelerators have the advantage of a feasible fractionation, today we use a hypofractionated scheme of 4-5 fractions. In different studies for uveal melanoma has been reported over 90 % good local tumor control in 5 or 10 years after the treatment (Dieckmann *et al.* 2003; Furdova *et al.* 2010). Recent studies have suggested that SRS may be an appropriate alternative for treating uveal melanoma in those patients, in whom lesions are ineligible for conventional brachytherapy (Furdova *et al.* 2014, 2016; Sramka *et al.* 2016).

Radiogenic side effects after stereotactic radiotherapy are radiation retinopathy, cataract, opticoneuropathy and neovascular glaucoma, secondary glaucoma. They result is the secondary visual acuity loss and in some cases it is necessary to perform secondary enucleation. An important cause of visual morbidity can be secondary glaucoma (Dubey *et al.* 2019). Overall, stereotactic photon beam radiotherapies are considered effective treatment modalities for uveal melanoma and local control was found to be excellent. LINAC based stereotactic irradiation for uveal melanoma is feasible and well tolerated and can be offered to patients with medium sized and unfavorably located uveal melanoma who are searching for an eye-preserving treatment (Dieckmann *et al.* 2001)

The eye globe retention and good cosmetic results is one of the main goals of the conservative treatment but in some cases removal of the eye, enucleation, must be indicated due to complications after therapy, e.g. secondary neovascular glaucoma (Ghazi *et al.* 2008; Krema *et al.* 2009).

According to the results a single one-day sessions SRS with 35.0 Gy is sufficient to treat small and middle stage melanoma (Furdova *et al.* 2012).

Secondary complications after brachytherapy is most frequently SG (Summanen *et al.* 1996; Sagoo *et al.* 2014; Shields *et al.* 2018)respectively. The median follow up time was 2.8 and 2.0 years (range 1 month to 10 years. These studies use different criteria of SG (in some of them increase intraocular pressure over 23 mmHg, in others over 25 mmHg). In our study elevated IOP was measured by non-contact tonometry and patients with primary open angle glaucoma before stereotactic irradiation were excluded from our study.

Siedlecki *et al.* diagnosed 96 % of patients with SG they had therapy by eye drops, and some of them needed secondary enucleation due to blind amaurotic eye (Siedlecki *et al.* 2017) Shields et al. assumed that higher tumor thickness may be associated with increased incidence of SG (Shields *et al.* 2002 Tumor thickness and volume is a very important risk factor for SG (Zehetmayer 2012; Mishra *et al.* 2013; van den Bosch *et al.* 2015).

The most important radiation/related risk factors for SG are localization of the tumor in the ciliary body and near the posterior pole (Langmann *et al.* 2000; Hirasawa *et al.* 2007; Mishra *et al.* 2013).

SG was observed was 10-21 months after surgery (Mueller *et al.* 2000; Muacevic *et al.* 2008) "plainCitation": (Mueller et al. 2000; Muacevic et al. 2008.

Irradiation techniques have a great importance for eye retention, but SG with tumor recurrence make up 82-90 % of reasons for secondary enucleation (Macdonald *et al.* 2011; van den Bosch *et al.* 2015; Eibl-Lindner *et al.* 2016).

Long term follow-up screening for late complications after stereotactic irradiation like SG is necessary. In patients after irradiation techniques in treatment of secondary glaucoma medical therapy, transscleral cyclocryotherapy, laser iridotomy or minimally invasive glaucoma surgery (MIGS) can be applied for eyes with regressed posterior segment melanoma in patients with no iridociliary involvement, but in some conditions also enucleation is necessary (Camp et al. 2019). In study of Fatehi (Fatehi et al. 2019) rate of metastases, and to-nometric success, based on survival curves, defined as IOP < 21 mm Hg.\nResults: Eleven eyes with choroidal melanoma, 4 with iris melanoma, and 1 with ciliary body melanoma were followed for a median (interquartile range they reported patients safety and IOP control after placement of a glaucoma drainage device in eyes treated for uveal melanoma. Due to their results, they suggest that glaucoma filtration surgery can be effective in patients with uveal melanoma with secondary glaucoma development, but local tumor control is basic to decide in that treatment modality. In our study we did not apply filtration surgery in patients with secondary glaucoma.

The issue of the patient's subjective perception of individual operations is not well clarified in the professional literature (Huang et al. 2020). The patients had to answer questions related to the subjective perception of the surgical performance and the postoperative period in terms of pain, discomfort, near vision, distance, medium distance, and everyday activities. Important is also the overall quality of life and the impact on the patient's psyche during but also after specific surgical techniques. Of the patients who underwent cyclocryotherapy, all the respondents reported tolerable, minimal or no pain during the operation and shortly after the operation, with most patients reporting only minimal pain. Despite the possible risks, from the point of view of pain, cyclocryotherapy appears to be very suitable and subjectively well-tolerated by patients both intraoperatively and long-term after the operation. This does not fully correspond to the

opinions of several sources about the subsequent impairment of visual functions in patients after the cyclocryotherapy (Li 1990; Mlčák *et al.* 2009; Kalyani *et al.* 2020). Other answers to the questions in our questionnaire concerning other daily activities also brought similar results. Reading ordinary press such as books, newspapers, or magazines was a minimal or no problem for respondents after cyclocryotherapy.

The findings from our questionnaire correspond to the results of other study where represent evidence of the minimal impact of cyclocryotherapy on visual acuity changes but the feeling of pain or discomfort from the patient's point of view, and the overall postoperative comfort of the patient in the postoperative period (Miljković *et al.* 2021)randomized, controlled clinical trial included 40 patients (40 eyes.

CONCLUSION

Secondary complications after stereotactic one day session LINAC based radiosurgery with a single dose 35.0 Gy can appear and influence the everyday life of the patient. Complication like secondary glaucoma treatment must be individualized and tailored to all the patient's needs, taking into account their current health status but also their socioeconomic status. Glaucoma is a serious condition and without adequate treatment, leads to gradual damage to the optic nerve and visual functions. Adaptation of the patient after the treatment is long-lasting.

DECLARATIONS

Conflict of interest: The authors declare no conflict of interest.

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Data availability: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Conference information

Vysoká škola zdravotníctva a sociálnej práce sv. Alžbety v Bratislave, Slovenská Republika v spolupráci so Slovenskou komorou sestier a pôrodných asistentiek, Bratislava, Slovenská republika a so Slovenskou komorou sociálnych pracovníkov a asistentov sociálnej práce, Bratislava, Slovenská republika a v spolupráci so Sliezskou lekárskou univerzitou v Katoviciach, Fakulta zdravotníctva v Katoviciach, Katedra fyzioterapie organizujú a pozývajú Vás k účasti na:

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SPOLUPRÁCA POMÁHAJÚCICH PROFESIÍ: POĽSKO — ČESKO — SLOVENSKÉ ŠTÚDIE ktorá sa bude konať 20. — 21. októbra 2023 v Piešťanoch, Slovenská republika. Miesto konania: Magnólia, Nálepkova 1, 921 01 Piešťany, Slovenská republika

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Tématické zameranie:

Zdravotníctvo, Nové technológie, Rehabilitácia, Fyzioterapia, Ošetrovateľstvo, Laboratórne vyšetrovacie metódy v zdravotníctve, Sociálna práca, Sociálne služby, Dobrovoľníctvo, Etika, Náboženstvo, Vzdelávanie, Rôzne.

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Abstrakty konferenčných príspevkov prezentovaných na konferencii budú publikované na CD-ROM, ako príloha č. 4/2023 odborného časopisu International Journal of Health, New Technologies and Social Work Including Public Health New Technologies, Nursing, Laboratory Medicine, Social Work and Education (predtým Zdravotníctvo a sociálna práca)

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