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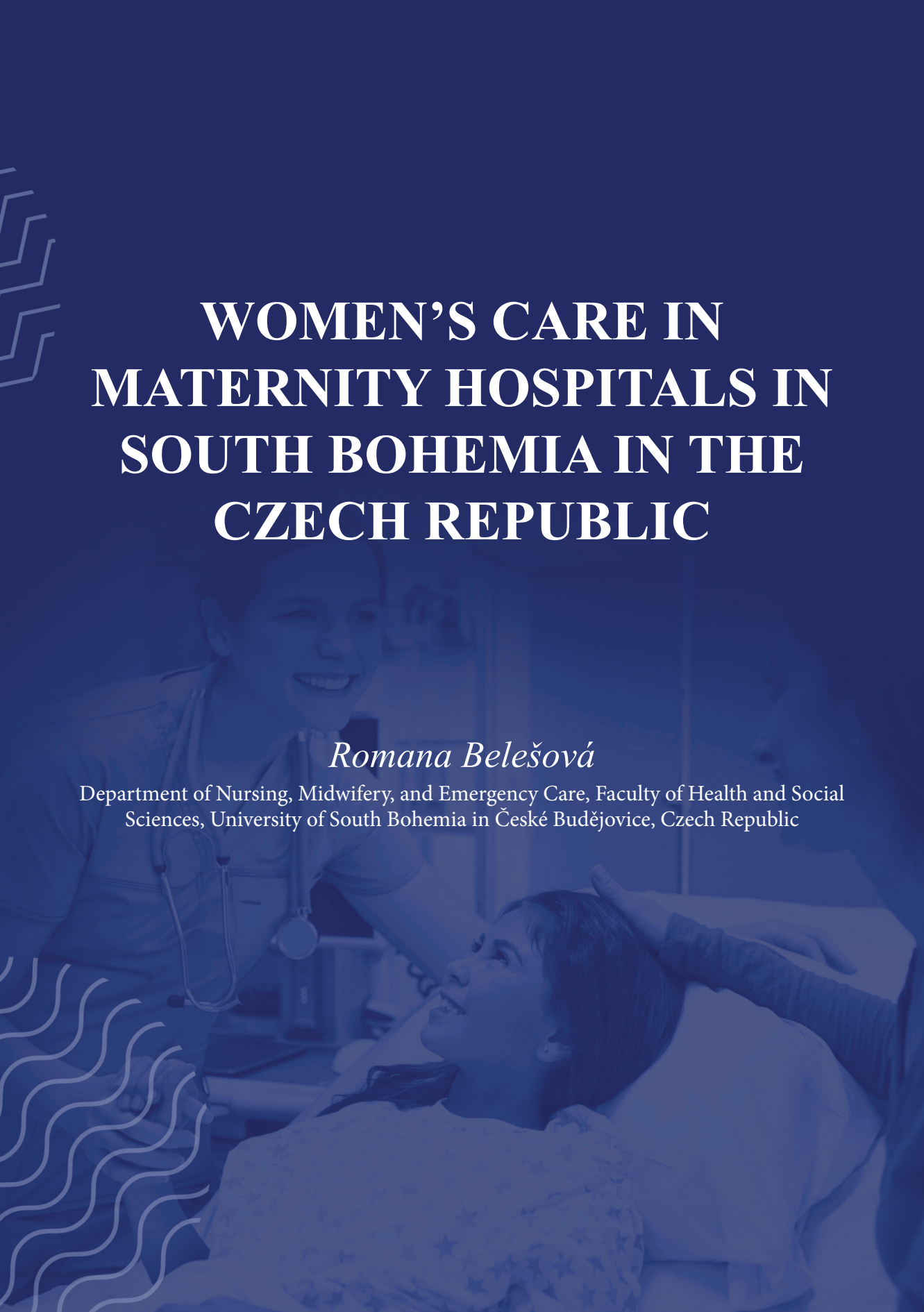
WOMEN'S CARE IN MATERNITY HOSPITALS IN SOUTH BOHEMIA IN THE CZECH REPUBLIC



Romana Belešová

Department of Nursing, Midwifery, and Emergency Care, Faculty of Health and Social Sciences, University of South Bohemia in České Budějovice, Czech Republic

Introduction: The positive experience of women during labour is related to the level of provided care, the environment and to other attributes that the maternity hospitals in South Bohemian region offer

Aim: The aim is to inform about partial data from a research monitoring experience related to labour, and midwifery care during the labour provided to women hospitalised in selected maternity hospitals of the South Bohemian region in Czech Republic.

Methods and Materials: The research was conducted via quantitative method using 1 unstandardised and 1 standardised Edinburgh Postnatal Depression Scale (EPDS) questionnaire. The data were processed in SPSS and SASD programmes. The research file had a total of 361 women who were a maximum of 9 months postpartum and had given birth in maternity hospitals in the South Bohemian region.

Results: The feeling of support during the delivery from the side of the midwife was perceived by 73.4% of women, labour as a natural process was mentioned by 58.7% of women, feeling of privacy during the delivery was perceived by 46.0% of women, 100% feeling of freedom in decision-making regarding provided care was perceived by 49.0% of women. 62.3% of women perceived 0 treatments and processes during labour in the delivery room as fully explained.

Conclusion: The research indicates that for women to perceive the labour experience as a positive life event, the approach, of expressing support and respect from the side of the midwives during the care, provided not only in the delivery room but also during the hospitalization at the department of puerperium period, is critical.

Keywords: care - labour - midwife - postpartum period - woman

Introduction:

A positive experience among women concerning provided care in the framework of midwifery correlates with the quality of provided care. It is of the same importance as the objectively evaluated perinatal results. To achieve the requested realization of improvements in the current obstetric practice it is important to identify the current deficiencies in care as well as monitor the key parameters of women's satisfaction with maternity care [1].

The psychosomatic health of women and their well-being is affected not only by their lifestyle but also by their pregnancy, experienced labour, and care of their newborn child. All this has an impact on the whole family as well as social arrangements in society. Similarly, it also positive maternal experience contributes to strengthening the mental balance of women and supporting their maternal competencies. Contrary to that a negative experience combined with experienced stress or trauma has an unfavourable impact on the woman as well as her newborn child's

well-being [2].

The birth experience is important for every woman and can significantly influence her future physical and mental health and subsequently, it's also important for her newborn child [3]. This is closely interconnected with respectful care (based on evidence) from the side of midwives that take into consideration the true personal needs and preferences of women. These women's needs consider communication, and emotional support. From the perspective of the women is the midwife care crucial especially during the labour [4]. The most effective communication and limited autonomy are usually the main cause of negative birth experiences of women [5].

The current health care during delivery, after labour and during early parenthood is lacks individualised models of care, emotional support, adequate and professional communication between different providers of health care and consistency in midwife care [4]. Women prefer personalised experiences; they strive to build a relationship of trust through high-level continuity of multidisciplinary care provided by health professionals [6].

The level of postnatal care provides an important opportunity to optimize women's health and well-being, it supports the transition to parenthood and at the same time helps to maintain the good health of the whole family [7]. Respectful maternity care is characterised as such kind of care that is organised and provided to all women in such a way that maintains dignity, privacy, and intimacy of women [8]. It ensures freedom instead of harm and maltreatment and enables informed decision-making and continuous support to women during labour. Full involvement of women in the informed decision making process regarding their care is related to better relationships and trust between women and health providers [9].

Women should be prepared for the postpartum period in such a way that they would be aware of what to expect during this time [10], [11]. The support offered by midwives in the early postnatal period is crucial because it gives women a sense of confidence in their own ability to manage their new role of a mother. Relational continuity reflects the women´s desire to have a relationship with one person or a team, to know the staff, and to obtain consistent information [12].

The midwife's support after the delivery represents many opportunities to provide health information that can support mental well-being, and on the contrary, lower the possible occurrence of postpartum depression [13]. Educational and advisory activities of midwives are thus important interventions in helping women achieve balance between their identities as individuals and mothers [7]. It is necessary to mention that during the investigation of the effectiveness of educational interventions from the side of the midwives concerning lowering or preventing the symptoms of postpartum depression by women, it was proved that it is suitable to educate women not only after the delivery but already in the prenatal period [14].

Aim:
This article aims to provide information about partial data related to women's care during labour and early in the postpartum period in selected hospitals in the South Bohemian region in the Czech Republic from the perspective of the women and to inform about the data related to the birth experience of women.

Methods and Materials:
Design:
The presented research had the design of an observational cross-sectional study. It was based on a project Midwifery and Paediatric nursing under the name "Multidisciplinary care for a woman and child during pregnancy, labour, and puerperium." The whole study was conducted in 3 years and included a qualitative study that complemented and expanded the study conducted with the use of a quantitative research method.
For this quantitative study, two research tools were used - one nonstandardised measuring tool and one standardised - Edinburgh Postnatal Depression Scale (EPDS). The standardised measuring tool was composed of 10 items focussing on the evaluation of the severity of depression symptoms in women after birth. The non-standardised questionnaire contained 125 questions focussing on women, their experience of the prenatal period, labour, and puerperium, including questions regarding their physical and mental health and identification data. The clarity of questions in the non-standardised questionnaire was first tested in the pre-research in January 2014, based on the acquired data from female respondents. Then the research was conducted from January to March 2024.
For the compilation of the research file, the purposive sampling method was used. The participation of women in the research was voluntary. In total, 394 women were addressed; however, 33 questionnaires were not included in the research as 6 of them were not fully completed and 27 were not filled in. The final number of respondents was 361 (91.6%). All respondents were informed about the aim of the study, the process of the research, and the possible use of the results from the research and they expressed their consent by filling in the questionnaires. The respondents also obtained information regarding the anonymous use of the acquired data for research and regarding the fact that their personal data acquired in the research will be processed in accordance with the regulation of the European Parliament and the EU Committee 2016/679 from April 27, 2016, on the protection of physical persons concerning processing personal data and free movement of these data and on the repealed directive 95/46/ES. We preferred our respondents to complete the questionnaires independently during the data collection process. Women needed around 30 - 40 minutes to complete the questionnaire. The research file consisted only of women who, based on the selection criteria in the questionnaire, selected the place of birth as a maternity hospital in South Bohemia. Namely maternity hospitals in Tá-

bor, České Budějovice, Písek, Jindřichův Hradec, Strakonice, Český Krumlov and Prachatice. Another selection criterion of respondents for the research file was the time since birth which should be a minimum of 6 weeks and a maximum of 9 months.

Statistical analyses:
The statistical data processing was done via SASD 1.5.8 (Statistical Analysis of Social Data) and SPSS software. We used the 1st level of sorting and contingency tables of selected parameters of 2nd level sorting. The dependency rate of selected characteristics was defined based on chi2, t-test, independence test and other testing criteria applied according to the character traits and type of their sorting. The strength of their relationship was measured at three levels of importance, i.e. α = 0,05, 0,01 and 0,001. Based on the analyses the interpretation of data was realised.

Results:
The study included 361 respondents. These were mostly represented by respondents between the ages 26 - 33 (209 women, 57.9%) and least represented by respondents in the age category 40 -48 (6 women, 6.4%). In total 187 women (51.8 %) were married and the least were represented women living alone (4 women, 1.1%). Other demographic data of respondents (education, town with maternity hospital where they gave birth) are illustrated in Table 1. With the basic evaluation of the research file, the following deviations were demonstrated: 4.97627 for age, 0.793426 for marital status, 1.20069 for the highest acquired education and 1.75789 for the town with a maternity hospital where women gave birth (Table 1).

The study explored women's perceptions of their labour experience, including the delivery room environment, their ability to move or not during the first stage of labour, the level of privacy provided by the medical staff, and whether the midwife's care conveyed support and attentiveness to their needs. We also examined whether the women felt they had the freedom to make decisions about their care during labour, whether they were allowed to provide consent for the treatments they received, whether the midwife clearly explained the individual treatments and procedures, and how the women evaluated the time and attention provided to them by the midwife.
Although labour is described as a physiological event, it is also perceived as a mental and emotional process. Labour is experienced through emotions affecting the release of neurohormones that influence the body physiology of a woman in labour - the neurobiology of labour [15]. The study [16] proved that if the experience from labour was classified as a positive experience, women evaluated their labour as a natural process and felt entitled to face new challenges in their lives, which was motherhood. In our study, labour as a natural process (the ability of a woman to give birth to a newborn child without external interferences, lead with-

Table 1 Demographic Data of Respondents

Demographic characteristics of respondents	Absolute frequency	Relative frequency (%)	Demographic characteristics of respondents	Absolute frequency	Relative frequency (%)
Age (years)			**Marital status**		
19-25	74	20.4	Single, living alone	4	1.1
26-33	209	57.9	Single, living with a partner	151	41.8
34-39	62	17.1	Married	187	51.8
40-48	11	3.1	Divorced, living alone	2	0.6
Did not answer	5	1.4	Divorced, living with a partner	12	3.3
			Did not answer	3	0.8
Maternity hospital (town)			**Education**		
České Budějovice	144	39.9	Primary	8	2.2
Písek	54	15.0	High school without graduation	53	14.7
Tábor	55	15.2	High school with graduation	131	36.3
Jindřichův Hradec	40	11.1	Higher vocational school	25	6.9
Strakonice	30	8.3	University degree	142	39.3
Český Krumlov	26	7.2	Did not answer	2	0.6
Prachatice	8	2.2			
Did not answer	4	1.1			

out unnecessary interventions and limitations) was mentioned by 212 (58.7%) of women, 148 (4%) perceived their labour as a medical process requiring doctor's intervention, medication, etc.

Concerning the environment in the delivery room, the respondents among the multiple choice answers most highly valued its cleanliness, 294 times (69.0%). For instance "pleasant" environment of the delivery room was selected 231 times (59.0%), "homely" environment was mentioned 35 times (9.7%), "calming" environment was reported 46 times (12.7%), "hospital (sterile)" environment was marked 141 times (39.1%), 14 times (3.9%) was the environment of the delivery room characterised as "unpleasant" and 12 times (3.3%) as "disruptive". The respondents marked the environment of the delivery room as "safe" 142 times (39.3%) and as "intimate" 79 times (21.9%). Such an environment of the delivery room that provides not only the feeling of security and safety, can also effectively reduce fear [17]. The environment is an important attribute of the birth experience, as the conventional environment affects the woman in labour to be passive, i.e. being seen as a patient. On the contrary, the currently designed environments for delivery focusing on the neurobiology of labour have a positive effect on the women's experiences [18]. Apart from the environment of the delivery room, it is important for the women if they have a chance to choose a suitable position during the 1st stage of labour such position that would be comfortable for them. 100% possibility of freely choosing the type of movement and position in the 1st stage of labour was praised by 189 (52.4%), "rather yes" was reported by 70 (19.4%) women, "rather no" was mentioned by 26 (7.2%) respondents. There were 36 (10.0%) respondents who could not choose the type of movement.

Based on the results from other foreign studies it is obvious that the support from the midwife is a significant factor in such case when the actual provided care surpasses the woman's expectation. This support plays a crucial role in shaping the relationship between the midwife and the woman and appears to be the most important aspect of intrapartum care [19]. The feeling of privacy in our research from the side of the medical staff during the delivery was perceived by 166 (46.0%) women, 121 (33.5%) women answered, "rather yes", "rather not" was reported by 43 (11.9%) women and 28 (7.8%) respondents had absolutely no feeling of privacy during their delivery. 100% feeling of support from the side of the midwife during the labour was expressed by 265 (73.4%) women, "rather yes" was stated by 61 (16.9%) women, "rather no" was mentioned by 8 (2.2%) and "no" was reported by 7 (1.9%) of respondents.

Having a profound impact on her physical, emotional, mental, and social well-being, labour is considered a pivotal experience in a woman's life.[16]. During the past decades in the framework of midwifery, the care focussing on women became a philosophical and pragmatic concept favouring unique individual

needs of women - organizational as well as those corresponding with the health care in the period of labour and in the postpartum period [20]. The midwife's interest regarding the condition and needs of women was reported as "certainly yes" by 209 (57.9%) women in the maternity hospitals in the South Bohemian region, "rather yes" was stated by 107 (29.6%) respondents, "rather no" was mentioned by 30 (8.3%) respondents, and "certainly not" was reported by 6 (1.7%) women. The time devoted to the women from the side of the midwife in the delivery room was evaluated by 230 (63.7%) women as "sufficient", as "rather sufficient" was reported by 77 (21.3%) women, "rather insufficient" time provided stated by 7 (1.9%) women and as "insufficient" was mentioned by 4 (1.1%) women.

As far as the experience of women regarding their free decision-making in providing care during labour, 177 (49.0%) women had a 100% feeling of freedom in decision-making regarding the provided care. "Rather yes" was reported by 123 (34.1%) women, "rather no" was stated by 42 (11.6%) respondents and 18 (5.0%) respondents replied "no". Free decision-making is closely related to expressing consent with individual treatments and an explanation of the treatments and processes. The medical staff requested expressing consent with the provided care from 276 (76.4%) women, they did not request it from 34 (9.ˇ%) respondents, 48 (13.3%) women did not remember if they had or had not expressed their consent with the individual performances. The performances and processes from the side of the midwife during the labour in the delivery room were perceived as explained by 225 (62.3%) women, "rather yes" was stated by 84 (23.3%), "rather no" by 18 (5.0%) respondent and 3 (0.8%) replied "no". "Nothing" was explained by midwives during labour to 25 (6.9%) women, 6 (1.7%) women did not answer. Even foreign studies prove that women who were more satisfied with the clinical care during the delivery and in the postpartum period could also make free decisions regarding the care provided and perceived their birth experience as more positive [21].

Birth experience can include known as well as unknown aspects, it is accompanied by pain or joy, emotional stress, or peace, increased vulnerability or increased self-control, the risk of physical injury or death as well as appreciation of personal potential, hope and changed role. Apart from the experience, affecting the life of the newborn child [22] and the interaction between mother-partner-child can the aspects mentioned above have a long-term positive or negative impact on the life of women [23]. For that reason, the research dealt with whether the respondents were offered some variety of labour pain relief from the side of the midwives and if women made use of this possibility. Out of possible answers, respondents mostly voted "shower" for reducing pain 249 times (69.0%), 187 times (5.8%) they responded "ball", 152 times (42.1%) they selected "midwife's recommendation to change the position", 100

times (27.7%) "staying in warm water in a bathtub", 110 times (30.5%) they selected the offer of "epidural analgesia", 74 times (20.5%) they reported "application of a drug" against pain based on the medication from the doctor. Aromatherapy for reducing pain was offered by a midwife 57 times (15.8%), and herbal steamer 44 times (12.2%). massage 52 times (14.4%) and tying the rebozo scarf 13 times (3.6%). The possibility that the midwife did not recommend any form of pain reduction was selected 24 times (6.6%). With regards to the concrete use of pain reduction during the birth that was recommended by the midwife, women selected "shower" 218 times (60.4%), "ball" 138 times (38.2%), "changing position" 154 times (42.7%), "staying in warm water in a bathtub" 66 times (18.3%), "epidural analgesia" 57 times (15.8%), "application of drugs" against pain based on the doctor's medication 33 times (9.1%). Aromatherapy for pain reduction was used 31 times (8.6%), herbal steamer 27 times (7.5%) and tying the rebozo scarf 5 times (1.4%).

Conclusion:

Every woman perceives her birth experience and the subsequent care provided to her individually and uniquely. The memories of a woman's birth experience is closely related to the emotions she experienced during labour and in the period shortly after the birth. In the case of negative birth experience, it is about fusion with negative emotions, such as worries, fear, loneliness, and suffering that can subsequently contribute to the possibility of complication by women. On the contrary, to the positive memories and experience, they are in symbiosis with positive emotions, such as peace, satisfaction, joy, merging with the first moment of meeting the newborn child, with the care from the side of the medical staff, with the support of the partner and with the fulfilment of expectations.

Labour as a natural process without any interventions from the doctors was mentioned by 58.7% of women giving birth in maternity hospitals in South Bohemia in the Czech Republic. Positive birth experience by 73.4% of women was enhanced by the feeling of support from the side of the midwife, 100% feeling of maintaining privacy during labour by 46.0% of women, 100% feeling of interest from the side of the midwife regarding their needs was marked by 57.5% of women, 100% feeling of free decision-making regarding the provided care by 49.0% of women and also perfectly explained treatments and processes from the side of the midwife during the labour at the maternity room by 62.3% of women.

For the medical staff that provide care to women and their newborn children in the prenatal and early postnatal period, they must get insights from the women regarding their opinions and subjective experience during the important phase of their life. Based on this experience, they can adjust the care (individualised, emotionally supported and substantiated by adequate, professional information) to the real needs and wishes of the women.

The study conducted in maternity hospitals in the South Bohemian region demonstrated a high level of satisfaction among women with the care they received.
In our study, we see a certain limit regarding a limited number of women in the research file giving birth only in the maternity hospitals in the South Bohemian region, which causes a limited capacity of acquired data. Collecting data concerning the limited representativeness of the research sample of the respondents can be considered as a certain limit of our study. In case the study, and collection of data, would be extended by women who gave birth in all maternity hospitals around the Czech Republic, the contribution could be greater regarding the relevance of the results and in the complex overview of the researched project.

The publication will be created with institutional support for the long-term conceptual development of the research organization of the Faculty of Health and Social Sciences of the University of South Bohemia within the Internal Multidisciplinary Research Project No. MPŽD2021-001, title: Multidisciplinary care for women and children during pregnancy, childbirth, and the puerperium.

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DENTAL HEALTHCARE AVAILABILITY

[1]BRÁZDILOVÁ, Dana, [2]SALGÓ, Tomáš, [1,2]KOPRDOVÁ, Ľubica

[1]Constantine the Philosopher University in Nitra,

[2]St. Elizabeth's University of Health and Social Work

Introduction: A number of studies aimed at dental healthcare support the thesis that it is essential to focus on the aspects leading to the improvement of health in the area. Preventive and treatment measures are closely related to multiple determinants and factors we have pointed out throughout this thesis.

Aim: The aim of the article, was to determine satisfaction with dental healthcare availability.

Methods and materials: The research methodology included qualitative and quantitative methods using absolute and relative abundance to analyse the results. The main tools used to collect data from 112 respondents were questionnaires designed for the general and professional public.

Results: The literature, as well as the questionnaire findings, identified areas of concern about access to dental healthcare which were: social inequalities; geographical; personnel and financial availability; and also dental hygiene in the context of accessibility.

Conclusions: In our practice reccomendations, we have provided options for addressing the limitations in the issues mentioned above that might be considered in policymaking in the area under study. The findings suggest that solutions to the individual problematic areas can increase utilizing of dental care and ultimately contribute to intervention with reaching WHO global action plan 2023-2030 aims in oral healthcare.

Keywords: availability, dental care, health care, oral health, health determinants

Introduction:

Oral diseases represent a major global health burden according to the WHO report from the 12th of August 2022 focusing on the DRAFT GLOBAL ACTION PLAN FOR ORAL HEALTH (2023-2030) and share common risk factors with other non-communicable diseases. Oral health encompasses a range of diseases and conditions such as dental caries, periodontal (gum) disease, tooth loss, oral cancer, oro-dental injuries, and noma. This also includes preventable birth defects (e.g. cleft lip, cleft palate and many others). A rough estimate is that major oral diseases affect nearly 3.5 billion people worldwide. These combined diseases have an estimated global prevalence of 45%, which is higher than the prevalence of any other non-communicable disease. In the American region, the estimated number of cases of severe oral diseases (caries of deciduous and permanent teeth, edentulism, severe periodontal disease, and other oral disorders combined) has increased by more than 151 million in the last 30 years (1990-2019). This represented a 48.0% increase, which is greater than the estimated population growth. There is an increasing prevalence of non-communicable diseases, which in 2019 resulted in 226 million disability-adjusted life-years

lost, 121 million years due to premature death, and 105 million years of life lived with disability or ill health. In 2019, the region had more than 467 million cases of severe oral diseases (WHO, 2022). Access to the health care as a fundamental human right is recognized as a complex and global issue. Access to healthcare services plays a key role in the effectiveness of healthcare systems worldwide. Access is considered to be one of the major public policy issues when prioritizing or evaluating the performance of the healthcare system (Zandam et al., 2017). Health equity requires access to quality healthcare services for all individuals and groups (Negarandeh et al., 2016).

Several studies indicate that oral care practices worldwide are not optimally effective or consistent and report that skill can seriously compromise effective mechanical cleaning, average cleaning times are shorter compared to standard recommendations, and interdental space cleaning is neglected (Weinert et al, 2022). The European Federation of Periodontology (EFP) has published evidence confirming that daily mechanical cleaning supplements, and antibacterial mouthwashes with essential oils, offer significant benefits in preventing gingivitis and controlling plaque levels. A recent EFP Economist Impact study also confirms that the prevalence of gum disease in Western Europe has remained worryingly stable over the last 25 years (EFP, 2023).

The ratio of decayed, filled and extracted permanent teeth in persons of a particular age to the healthy teeth in persons in the systematic care of an outpatient clinic at this age is the Oral Health Index (OHI). This index for Slovak children in 2021 has fallen to its lowest value since 2009, at 2.31. According to the International Study of Health and Health-Related Behaviour in School-aged Children Slovakia, 11, 13 and 15-year-olds had an average of 1.38 decayed, filled or extracted permanent teeth. Fifteen-year-olds were slightly worse off with an index of 2.31 (NCZI, 2021). In all age groups, the prevalence of oral diseases has led to other adverse health effects, including body image problems, insomnia, social isolation, pain, discomfort, fear, anxiety and functional limitations. Severe periodontal disease has a strong correlation with diabetes, cardiovascular and, to a lesser extent, cerebrovascular disease and chronic obstructive pulmonary disease (Jain et al., 2023). In 2021, periodontopathy and soft tissue were the most commonly treated conditions in the country, followed by tooth fillings and tooth extractions (NCZI, 2021).

WHO, in consultation with Member States, has developed a draft global strategy to combat oral diseases by 2022. In the following year, the effort was to translate this global strategy into a public oral health action plan, including a framework for tracking progress with clear measurable targets to be achieved by 2030. This action plan consists of the six guiding principles of the Global Oral Health Strategy and six strategic objectives. Among the principles is a public health approach to oral health, and integration of oral

health into primary health care (WHO, 2022).

Geographic disparities in accessibility to oral care are driven by the unequal distribution of the population and health care providers. Inaccessibility leads to inequities in the use of resources and consequently their health outcomes, and these affect the stress levels of health workers and the quality of care they provide (Wang, 2020).

Large delays or complete unavailability of primary and speciality care are common in several EU countries. Disproportionately greater problems with access to speciality care and poorer health outcomes across geographic residences are experienced by the elderly, women, children, racial and ethnic minorities, socioeconomically disadvantaged, and individuals with chronic health conditions. These are particularly areas with inadequate healthcare provider coverage or lower populations, such as smaller towns and rural areas (Healthy People, 2020).

Oral health, general health and well-being are interrelated, and interactions between oral and systemic diseases are evident. Many of the same risk factors such as tobacco use, consumption of unhealthy diets, physical inactivity, alcohol intake and others impact oral health and are integral to overall health. Patient risk factors include socioeconomic status, smoking, substance use disorders, diabetes, diet, dietary supplements, mental health disorders, old age, poor or absent oral hygiene, and medication use (Darby, 2022).

Aims:

Main Aim: To find out through a questionnaire how access to dental health care is perceived by the general public in the Slovak Republic.

Particular Aim 1: To find out what is the perception of the respondents about the availability of dental care.

Particular aim 2: To find out what are the most common problems hindering the availability of dental health care among the respondents.

Methods and materials:

The form of data collection was mediated using an anonymous questionnaire created in the Survio.com online platform. It was designed for the general public with 29 questions. The full text of the questionnaire intended for the general public is available in the authors' archive and can be accessed on request. All questionnaires were in electronic form, with 112 fully completed, and thus valid, questionnaires. Respondents were adult individuals aged between 20 and 65 years. The mean age of respondents was 37.13 years with a median age of 32. Women were on average three years younger (women's mean: 33.83) than the men (37.13). The median age for males was 35 years old and for females, the median age was 30 years old. Almost 60 percent were women. We started the empirical phase in December 2023. E-questionnaires were distributed through Facebook, WhatsApp and personal email accounts. Data analysis consisted of relative and absolute abundance using Microsoft Excel. All variables eval-

uated were transformed into clear graphs and tables with descriptions. The questions in the questionnaire for the general public were evaluated using a quantitative method concerning each survey question.

Results:
In the following section, we present some findings from the questionnaire survey. The results are shown in graphs and tables.

Figure 1 shows how often our respondents visit the dentist. Almost half of the respondents visit the dentist once a year at a rate of 47.3% (n=53). This was followed by respondents who visit their dentist 2-3 times a year with a proportion of 35.7% (n=40). The lowest proportion of respondents reported visiting less than once a year 6.3% (n=7) and more than 3 times a year 10.7% (n=12) of the respondents in our research out of a total of 112 (100%) visits to the dentist.

Figure 2 shows whether our respondents have oral health problems. Out of a total of 112, 87 (77.7%) respondents reported that they do not have frequent problems. On the other hand, 19 (17%) respondents reported that they have frequent problems with oral health conditions. The most common oral health problems among our respondents were dental caries, tooth filling and tooth extraction.

Using Figure 3, we analysed respondents' answers to issues related to delaying a vis-

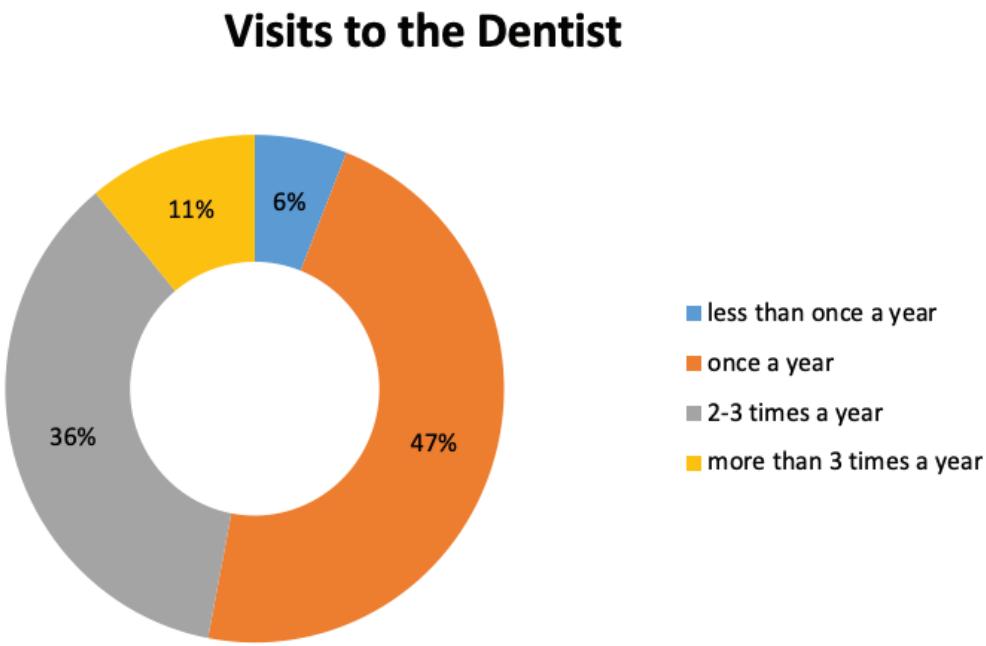

Figure 1

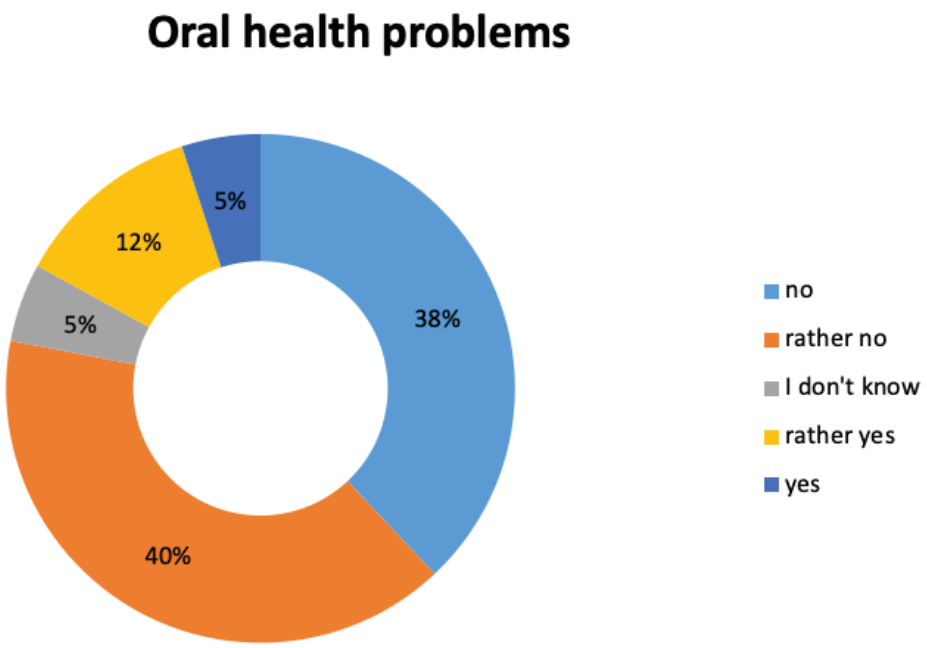

Figure 2

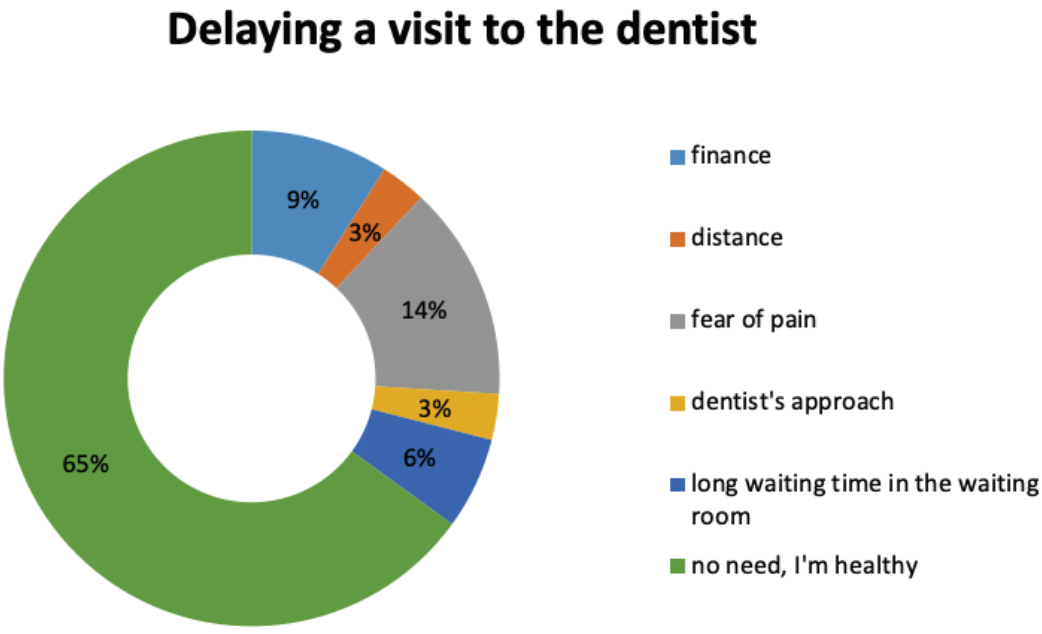

Figure 3

it to their dentist. The highest number of respondents 77 (68.8%) believe that they are healthy/do not have problems and therefore do not need to visit their dentist more often. This was followed by a group of seventeen respondents (15.2%) who cited fear of pain as a reason and ten respondents (8.9%) who were put off by the potential costs associated with the visit. Fewer of our respondents were discouraged from visiting the dentist because of the long waiting time at 6.3% (n=7) and poor attitude of the dentist at 3.6% (n=4). The least respondents are discouraged by the distance to the dentist at a proportion of 2.7% (n=3).

In particular, Figure 4 shows the satisfaction of 85.8% (n=96) of our respondents with the availability of dental care at their dentist. Only 7.2% (n=8) of the respondents are not satisfied with the availability of dental care. 8 (7.1%) of the respondents were unable to comment.

Conclusions:

Oral health, as an integral and fundamental part of health in general, can compromise people's quality of life. Therefore, it is important to adopt good health habits and oral health in particular, from the earliest years of life and to strive to reduce risk factors. An important determinant is accessibility, which has been the subject of our research. We focused on assessing the situation of access to dental health care in Slovakia. The assessment of accessibility was carried out from several perspectives. Despite the relatively high number of the general public involved in the research, we did not reveal any sig-

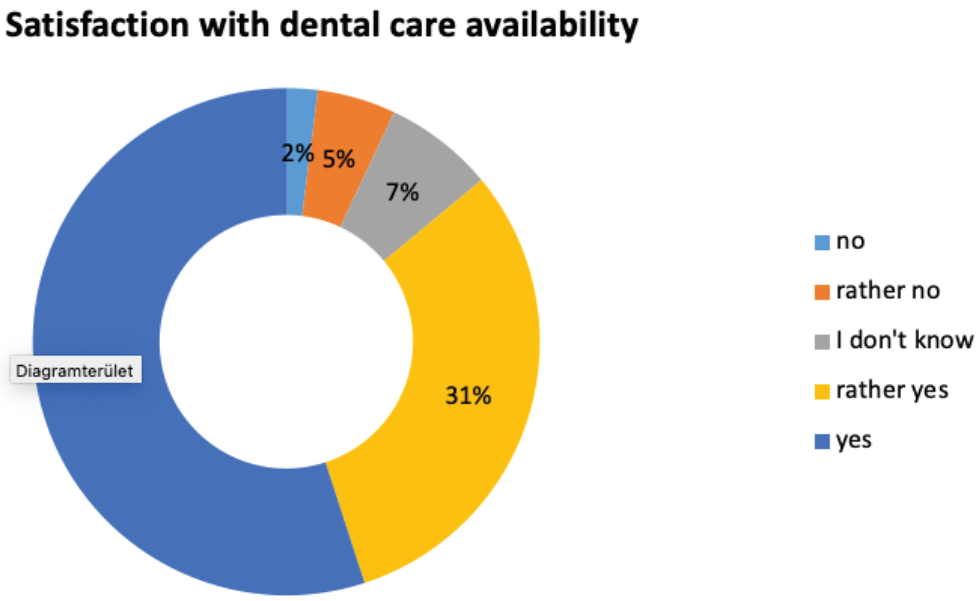

Figure 4

nificant gaps in the system. This research highlighted gaps in dental hygiene attendance and the convenience of citizens who visit dentists only when a pain-related problem occurs. Cost and pain issues associated with the procedure were the most common ones, with accessibility issues occurring at emergency facilities. To provide more robust results, we recommend increasing the number of respondents in lower age groups as the mean age in our sample was 37 years and therefore may have under-represented the current situation.

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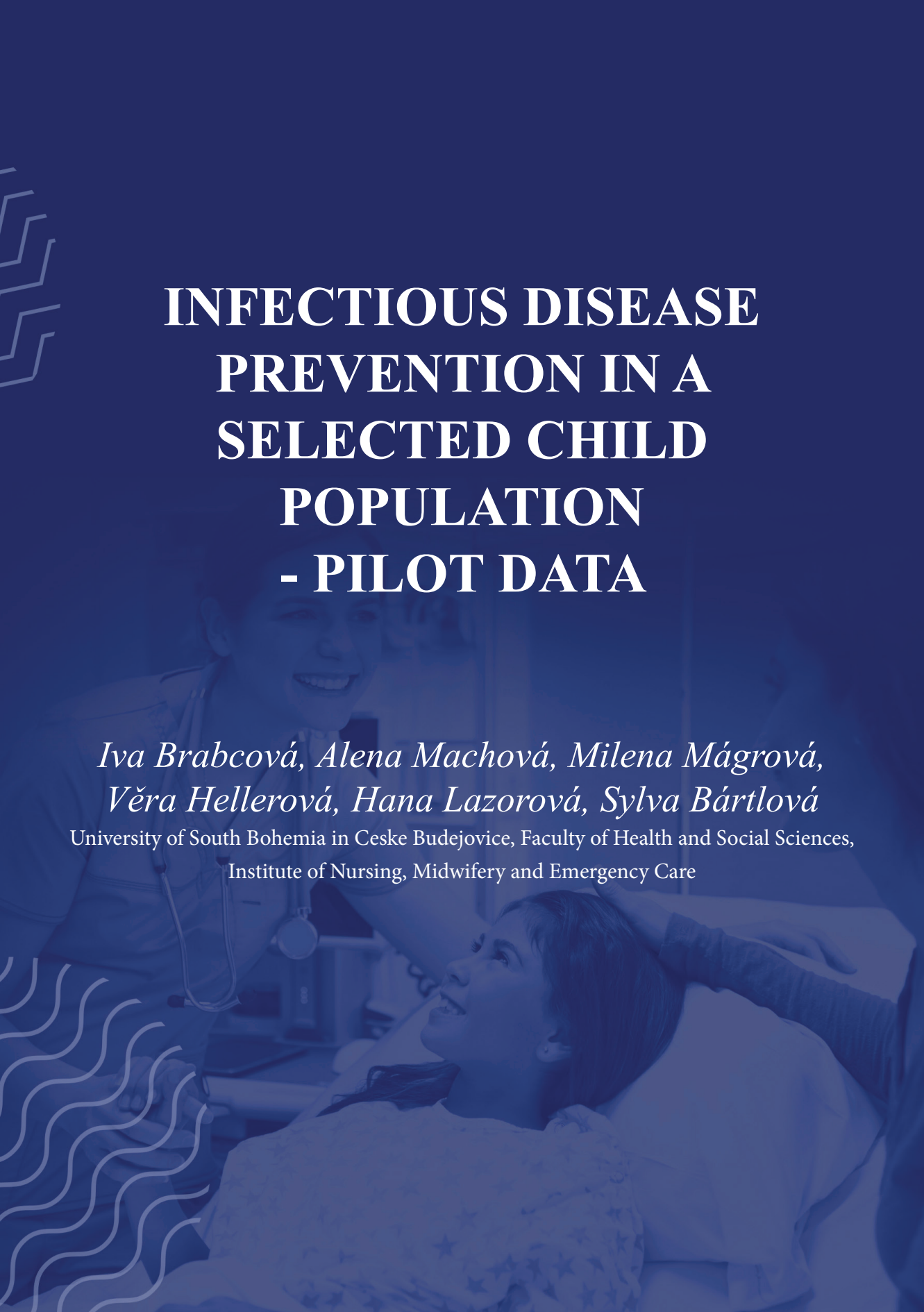
INFECTIOUS DISEASE PREVENTION IN A SELECTED CHILD POPULATION - PILOT DATA

Iva Brabcová, Alena Machová, Milena Mágrová, Věra Hellerová, Hana Lazorová, Sylva Bártlová

University of South Bohemia in Ceske Budejovice, Faculty of Health and Social Sciences, Institute of Nursing, Midwifery and Emergency Care



Introduction: Compliance with hygiene measures is one of the basic recommendations for preventing infectious diseases. Hand hygiene is a simple, effective, inexpensive way to prevent infectious diseases.

Aim: The research aimed to test the methodology of an observational intervention study to evaluate and improve handwashing techniques in younger school-age children. This is the pilot data of project reg. no. NW24-09-00302.

Methods and materials: This was an observational intervention study. A qualitative research design was chosen using a participant observation technique. The study population included ten children aged 7-8 years, three boys and seven girls. It was a purposive sampling. The inclusion of children in the study was subject to the consent of their legal guardians.

Results: Before education, errors were demonstrated in almost all steps of proper hand washing technique. Half of the children soaped their hands first and then wet their hands. The fewest errors were recorded in washing the palms and backs of the hands. The most neglected areas were between the fingers, thumbs, fingertips, and the area around the nails. After education, the children improved significantly in almost all steps of the hand washing technique, but the neglected area was still the fingertips.

Conclusions: In general, handwashing time was approximately doubled after education, and the range of steps of correct handwashing technique was extended. Children were actively involved in the educational process.

Keywords: children; infectious diseases; nurse; prevention; primary care.

Introduction

Researchers and policymakers agree that promoting health literacy in school-aged children could be the foundation for health literacy, overall health, and quality of life during adulthood [1].

For preschool and school children, health literacy is prioritized to promote their health and develop hygiene habits, nutrition, and behavior. Sedighi et al [2]. Point out that at the beginning of schooling (i.e., around the age of 7), the child can gradually assume basic responsibilities for self-care, hygiene, and daily routine. A health-literate child should, therefore, be fully aware by this time that health needs to be taken care of because it is not a given. To basic hygiene, they should know and have basic hygiene habits (i.e. mastering washing, brushing teeth, intimate hygiene, taking care of their appearance, etc.), mastering basic topics related to preventing infectious diseases.

According to the Ministry of Health of the Czech Republic [3], almost one-fifth of Czech children aged 13-15 have a low level of health literacy. As evidenced by data from 2012-2020 relating to the number of patients treated for infectious dis-

eases, there has been a significant increase in the number of pediatric patients (i.e., aged 0-19 years) over this period, from 23,242 in 2013 to 47,364 in 2020 [4].

Basic recommendations for the prevention of infectious diseases include the observance of hygiene measures. Therefore, in the case of the child population, it is necessary to keep in mind that children need to be taught the basics of personal hygiene and supervised in their adoption [5]. Early incorporation of this education and correction of inappropriately learned behaviors promotes the formation of appropriate habits associated with a healthy lifestyle [6]. The CDC [7; 8] states that hand hygiene is a simple, effective, and inexpensive way to directly prevent many infectious diseases. It also points out that keeping hands clean is a significant factor in maintaining health during the school day. Thorough hand hygiene significantly reduces the incidence of gastrointestinal illness [9]. The results of studies [10; 11] demonstrate that a hand hygiene intervention program can contribute to a reduction in overall bacterial colonization of children's hands and, consequently, more effective prevention of infectious diseases.

Aim

The research study aimed to evaluate the reliability of the proposed methodology of an observational intervention program focused on the skills of younger school-age children (7-8 years) in proper hand-washing techniques.

Methods and materials

The observational intervention study chose a qualitative research design using the participant observation method.

The sample consisted of 10 children aged 7-8 years. The observation occurred on 11 December 2024 in a primary school in the South Bohemia region. It was a purposive sampling. Including children in the sample was subject to the consent of the primary school management and the children's legal representatives. At the same time, permission was obtained to make a video recording of the observation. The video recording of the observation/examination process was used for subsequent analysis of the individual hand-washing steps.

Ethical approval

The study was approved by the Ethics Committee of the Faculty of Health and Social Sciences of the University of South Bohemia in Ceske Budejovice (n. 7/2023) under the Declaration of Helsinki [12].

The observational intervention study was conducted in three phases:

1. The first phase involved observation of children washing their hands. Hand washing technique was observed in ten steps, see Table 1.
2. In the second phase, children were educated about preventing infectious diseases transmitted by poor hand hygiene and the correct hand-washing technique. The education of children was carried out in both theoretical and practical ways.

3. After the education, repeated observation of children during hand washing was carried out.

Results and discussion

Children's skills in hand washing technique - before education

At the beginning of the research investigation, the children were introduced to the project's aim and the educational session's content. The instructors recorded the names and ages of the children. Each child was given a collared ribbon to pair observations of a particular child before and after education.

The first observation phase identified serious deficiencies in proper hand-washing techniques. Almost half of the children put soap on their hands first and only afterwards wet their hands. All children washed their hands correctly, and half of them washed the back of their hands correctly. The children did not forget to clean the spaces between the fingers, only 1/3 of them performed the task flawlessly. No child washed the nails by closing the fingers in the palm. Washing of thumbs was marked as fulfilled by one child and partially fulfilled by one child. Only one child partially completed washing the bellies of the fingers. All children rinsed their hands with water and wiped themselves with their towels at the end.

Many research studies have demonstrated children's lack of knowledge of proper hand-washing techniques (especially with soap, the way to wash the spaces between the fingers, etc.) [13, 14, 15].

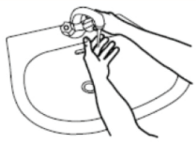
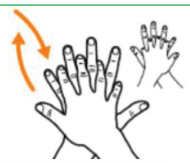
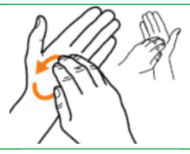
The process of educating children by a children's nurse

The diagnostic phase of the educational process evaluated the children's knowledge of hand hygiene. During the diagnostic phase, illustrative didactic methods were used: arranging pictures that illustrated situations in which hand hygiene should be performed.

In the exposure phase of the education, game activities were used: matching YES/NO pictures, in which children decided whether specific diseases were the result of poor hand hygiene and why. The children learned the correct handwashing procedure with the help of a poem "To make hands white as fish". An experiment "Water + pepper" was included in the educational lesson. The experiment consists of filling a container with water and then sprinkling it with pepper. If the child puts a finger in the water, the pepper will remain stuck to the finger. Conversely, if the child puts the finger in the soap and then in the water with the pepper, the pepper ("germs") will scatter over the surface and the finger will remain clean. So it is clear and proven how important it is to wash your hands with soap.

In the fixation phase of the educational process, the children were asked to assemble picture cards with the correct procedure for hand washing. At the end of the lesson, an evaluation of the education took place. The children were asked control questions, given diplomas and a small reward. The children were very ac-

Table 1 Correct hand washing technique

1.		Wetting hands with water
2.		Application of hand soap
3.		Rubbing palms together
4.		Rubbing the palms of the right hand on the left back together with interlaced fingers and vice versa
5.		Finger entanglement and palm-to-palm friction
6.		Rubbing the backs of the fingers against the other palm together with the fingers interlocked
7.		Clenching the left thumb in the right palm followed by circular rubbing and vice versa
8.		Circular rubbing of the fingertips of the left hand against the right palm and vice versa
9.		Rinsing hands with water
10.		Drying of hands

tive, inquisitive and cooperative during their education.

Children's skills in hand washing technique - after education

In the third phase of observation of children after education, much fewer deficiencies in correct hand washing techniques were found. Practical practice of the individual steps of hand washing through a game - a poem, helped the children to remember the individual steps of hand washing. One-fifth of the children first used soap and then wet their hands with water. All the children washed their hands and the back of their hands correctly. Only one child partially washed his interdigital area, the others performed the procedure correctly. Six children washed their fingertips and fingernails by closing their fingers in the palm; one child did not wash his fingertips at all, and the remaining children performed partially. Seven children marked Washing the thumbs as completed, and three partially completed this step of the correct hand-washing technique. Two children partially performed the "pinch" method of finger belly washing, and the remaining children skipped this step altogether. All children rinsed their hands with water and wiped themselves with their towels at the end. Some studies have confirmed the positive impact of the implemented educational activities [13, 14, 15]. In addition to direct education, the possibility of using audiovisual methods and online training programs seems very promising [16].

Proposals for modifying the methodology of the intervention program "Good Handwashing Technique."

For the successful implementation of the educational intervention process, good cooperation between the contact person at the school and the lecturer is important. Before the education, the lecturer must get acquainted with the premises where the program will be implemented, find out the number of children/pupils and the number of washbasins, evaluate the lighting conditions for the video recording, adjust the premises for education, to determine the time allocation, evaluate the expected level of cooperation of the children, their interest in the activity, to secure the consent of parents and school management for the research. Emphasis must be placed on timing. Plan the implementation of each step/phase so that there is no extended downtime, the program runs continuously, and there is no downtime or loss of interest of children/students in the activity. Based on the pilot study, the time allocation for children's education will be increased, the methodology will be supplemented with additional game elements according to the age of the children to improve their interest in education.

Conclusions

The observational-intervention study shows that the sample of younger school-age children (7-8 years old) managed the educational program without problems regarding content and time. The set educational objectives were appropriately

chosen and subsequently met. After the education, the time for hand washing was generally doubled, and the range of individual steps of the correct hand washing technique was extended. The children were actively involved in the educational process and evaluated it positively in the feedback.

In conclusion, the proposed methodology of the observational intervention program "Proper Hand Washing Technique" is reliable and valid. It can be used for further research investigations of a quantitative type among children of younger school age. For preschool children, the steps will need to be modified to match the developmental stage of the children and their comprehension and understanding abilities.

Funding sources

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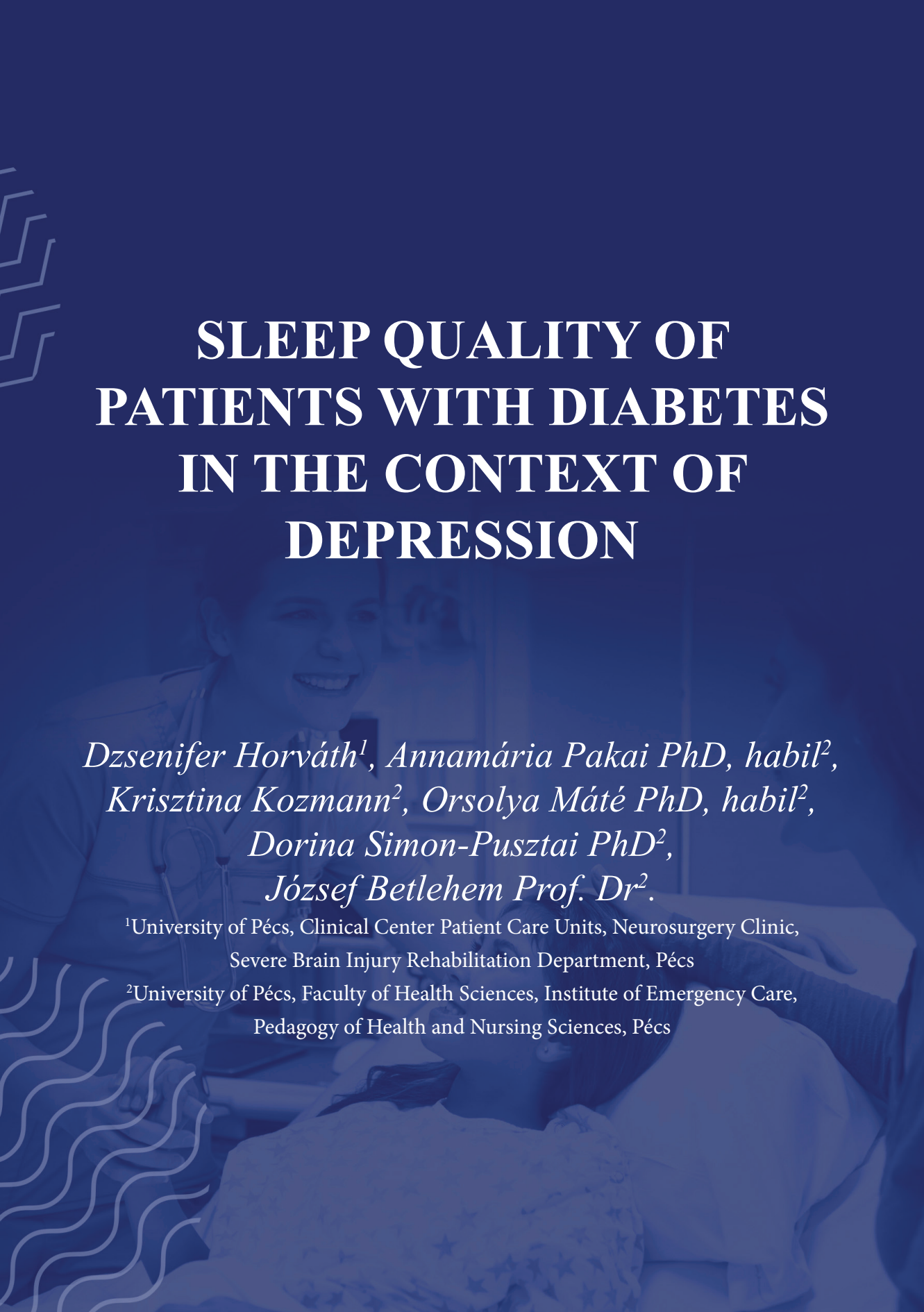
SLEEP QUALITY OF PATIENTS WITH DIABETES IN THE CONTEXT OF DEPRESSION



Dzsenifer Horváth[1], Annamária Pakai PhD, habil[2], Krisztina Kozmann[2], Orsolya Máté PhD, habil[2], Dorina Simon-Pusztai PhD[2], József Betlehem Prof. Dr[2].

[1]University of Pécs, Clinical Center Patient Care Units, Neurosurgery Clinic, Severe Brain Injury Rehabilitation Department, Pécs

[2]University of Pécs, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences, Pécs

Introduction: According to estimates from the World Health Organization (WHO), approximately 347 million people worldwide are affected by diabetes. Our study aimed to assess the sleep quality and mental well-being of patients with diabetes.

Sample and Methods: A quantitative, cross-sectional study was conducted between December 1, 2023, and February 29, 2024. Our target group consisted of patients diagnosed with type 1 and type 2 diabetes for at least six months (n=100). Patients under 18, those engaged in night shifts, and individuals who required hospitalization in the past month were excluded. The data collection tool was a questionnaire, consisting of self-constructed and validated instruments (Beck Depression Inventory, Groningen Sleep Quality Scale). In addition to descriptive statistical analysis, independent sample t-tests, ANOVA, and correlation analyses were performed using Microsoft Excel Office 2019 ($p<0.05$).

Results: Among the respondents, 66% exhibited a normal mood, 22% showed signs of mild depression, 10% had moderate depression, and 2% were classified as having severe depression. Significant deterioration in sleep quality was detected in 42% of participants, while 30% reported experiencing healthy, restful sleep. A significant relationship was identified between sleep quality and depression severity ($r=0.332$; $p=0.001$). BMI significantly impacted both mental well-being and sleep quality ($r=0.252$; $p=0.001$; $r=0.148$; $p=0.001$).

Conclusions: Our research highlighted that several factors can influence the severity of depression and sleep quality in diabetic patients. Adequate attention should be given to both the mental well-being of patients and the quality of their sleep.

Keywords: diabetes, depression, sleep quality, Beck Depression Inventory, Groningen Sleep Quality Scale

Introduction

The foundation of human physical and mental health is quality sleep. Poor sleep quality is not only associated with the development of various diseases but can also lead to poor performance, workplace accidents, and depression. [1] The importance of adequate sleep quality cannot be overstated, especially among those affected by chronic illnesses. A decline in sleep quality can have consequences that impact nearly every aspect of life. In the short term, insomnia can cause memory impairments and headaches, while in the long term, it may result in cognitive damage. [2]

According to the latest estimates from the World Health Organization (WHO), more than 347 million people worldwide are affected by diabetes, 90% of whom have type 2 diabetes. [3] Clinical research indicates that one-third of diabetic patients suffer from sleep disorders, and the prevalence of depression among them is also

significantly higher. [4] Approximately 20-30% of affected individuals struggle with clinically significant depression, which not only worsens glycemic control but also facilitates the development of complications. The mutually reinforcing negative effects of poor sleep quality and depression significantly deteriorate patients' quality of life, reduce physical activity, and increase the demand for medical care. This can lead to substantial healthcare costs and place additional burdens on both patients and the healthcare system. [5]

The role of advanced practice nurses is becoming increasingly important in community-based primary care, as issues related to poor sleep quality and mental health could be easily identified during the care of diabetic patients. [6]

Our study aims to assess the sleep quality and mental state of patients suffering from diabetes.

Methods

A descriptive, quantitative, cross-sectional study was conducted in Hungary through an online format and a paper-based questionnaire at the general practitioner's office in Felsőrajk, Zala County. The study was carried out between December 2023 and February 2024. A non-random, purposive sampling method was used to select 100 diabetic patients who had been diagnosed with either type 1 or type 2 diabetes for at least six months. Patients under the age of 18, those engaged in night shifts, and individuals who had required hospitalization within the past month were excluded from the study.

The data collection tool was a questionnaire consisting of self-constructed questions and validated instruments, including the Beck Depression Inventory and the Groningen Sleep Quality Scale. In terms of sociodemographic aspects, the following data were recorded: gender, age, occupation, educational level, type of residence, marital status, type of diabetes, type of treatment, and sleep habits.

To assess sleep quality, the self-administered Groningen Sleep Quality Scale was applied. This validated questionnaire includes 15 statements regarding the respondent's sleep quality from the previous night. The statements cover aspects such as subjective sleep quality, difficulty falling asleep, nighttime awakenings, and feelings of fatigue or refreshment. Participants responded by selecting "False" or "True" for each statement. Among the 15 statements, 3 are reverse-scored items, and each statement is assigned 1 point, except for the first item, which is not included in the final evaluation. Based on the assessment of sleep quality for the previous night, participants who scored above 6 reported significant deterioration in sleep quality, whereas those scoring between 0 and 2 indicated healthy, restful sleep. [7]

To measure the level of depression, the Beck Depression Inventory, consisting of 13 items, was used. For each item, the respondent was required to select one of four statements that best described their feelings. The responses were assigned a score between 0 and 3. A score below 7

indicated a normal mood, a score between 7 and 12 suggested mild depression, a score between 12 and 17 indicated moderate depression, and a score above 17 was classified as severe depression. [8]
Statistical calculations for data processing were performed using Microsoft Excel 2019. Descriptive statistics included mean, standard deviation, minimum and maximum values, and absolute and relative frequencies. For mathematical statistical tests, independent sample t-tests, ANOVA, and correlation analyses were applied. The results are presented with frequency distributions and confidence intervals for means, considering $p<0.05$ as statistically significant. [9]

Results

Sociodemographic Data

A total of 100 participants were included in the study, of whom 80% were female and 20% were male. The average age of the respondents was 52.7 years (SD = 12.698). The youngest participant was 19 years old, while the oldest was 74 years old. Regarding their place of residence, 68% lived in urban areas, while 32% resided in villages or rural communities. In terms of marital status, 10% of the participants were divorced, 9% were single, 8% were widowed, and 73% were in a domestic partnership or married. Regarding educational attainment, 37% had a college or university degree, 46% had completed vocational secondary school or high school, 12% had attended trade school, and 5% had completed only primary education or had an education level lower than eight years of schooling. Employment status data revealed that 57% of the respondents were actively employed, 36% were inactive workers, and 7% were unemployed. Among the participants, 33% performed intellectual or mental work, 30% engaged in physical labor, and 37% were currently not working.

Anthropometric Measurements

The respondents' average BMI was 28.26 kg/m² (SD = 5.437, min = 17.26 kg/m², max = 44.08 kg/m²). Among the participants, 37% had a normal body weight, 19% were overweight, 33% were classified as having first-degree obesity, 8% had second-degree obesity, 2% had third-degree obesity, and 1% were classified as mildly underweight. No statistically significant differences were observed in BMI concerning gender ($p = 0.470$) or place of residence ($p = 0.075$).

Diabetes-Related Questions

Among the participants, 95% were aware of the type of diabetes they had been diagnosed with: 31% had type 1 diabetes, while 64% had type 2 diabetes. The remaining 5% were not certain about the exact type of their diagnosed condition.
Regarding treatment, 28% of the diabetic patients followed a diet combined with oral antidiabetic medication, while 22% adhered to a diet along with insulin therapy. Additionally, 2% utilized all three treatment methods—diet, oral antidiabetic medication, and insulin—simultaneously. Furthermore, 7% relied solely on dietary management, 24% used insulin

exclusively, and 15% managed their condition with only oral antidiabetic medication. Another 2% combined oral antidiabetic drugs with insulin.

Assessment of Symptoms Associated with the Disease

The study examined the occurrence of symptoms experienced by diabetic patients. The survey inquired about symptoms such as weakness, dizziness, nausea, headaches, fear, anxiety, and dry mouth. The data related to these symptoms are summarized in Table 1.

Hemoglobin A1c Levels

The study examined whether patients were aware of their most recently measured Hemoglobin A1c levels. A total of 77% of respondents knew their latest recorded value. Based on the data provided, the minimum reported value was 5%, the maximum was 9.3%, and the average was 7.2%.

Factors Related to Restful Sleep

Among the respondents, 72% stated that no sleep disorder had been diagnosed in their family, while 28% reported the presence of such conditions among family members. According to the survey results, 61% of participants experienced unexplained daytime sleepiness. A separate question assessed the frequency of nighttime urination among patients. Based on responses, 17% never experienced nocturia, 45% reported occasional occurrences, and 38% indicated frequent nighttime urination. Regarding the use of sleep aids, 80% of the participants did not use any sleep-inducing medication or device, while 20% did. Among those using sleep aids, the most commonly mentioned medications were Frontin and Zolpidem. In terms of healthcare access, 77% of respondents received treatment within the public healthcare system, 8% exclusively in private institutions, and 15% utilized both public and private healthcare services. The study also investigated the use of subcutaneous sensor-based glucose monitoring devices. A total of 83% of respondents did not use such devices, whereas 17% did. Among those using continuous glucose monitors, nine individuals reported that the sensor alerts caused more frequent nighttime awakenings; however, they also noted that continuous glucose monitoring contributed to a more restful sleep overall.

Results of the Groningen Sleep Quality Scale

According to the results of the Groningen Sleep Quality Scale, the average score was 5.67 (SD: 4.13; minimum: 0 points; maximum: 14 points). Significant deterioration in sleep quality was detected in 42% of respondents, while 30% reported experiencing healthy, restful sleep. A weak positive correlation was identified between age and sleep quality ($r = 0.117$; $p = 0.043$), suggesting that sleep quality declines with increasing age. Additionally, a significant relationship was found between BMI and sleep quality, indicating that patients with lower BMI values reported better sleep quality ($r = 0.148$; p

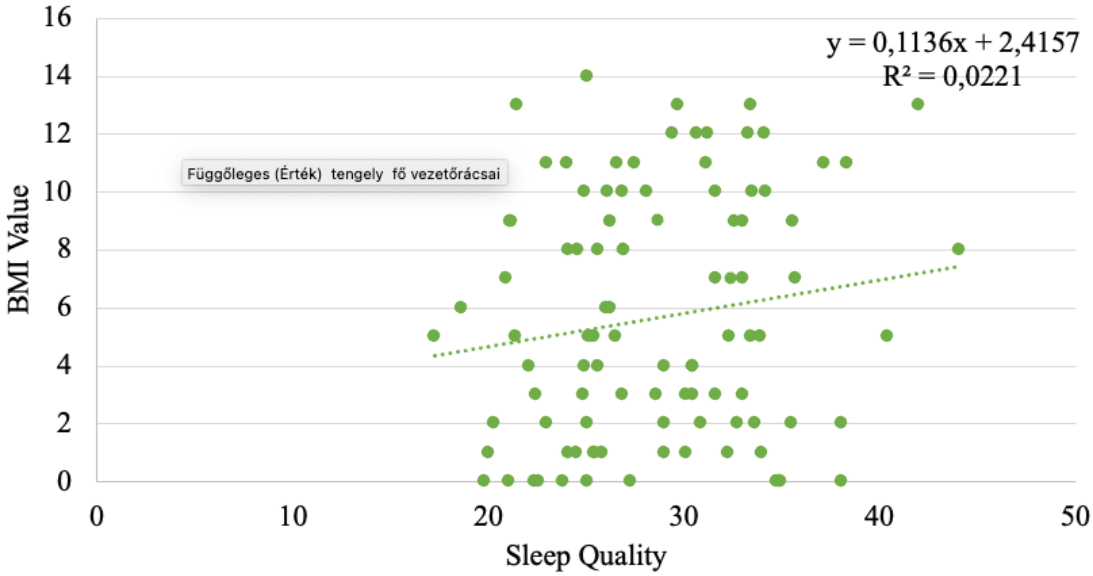


Figure 1: Relationship Between BMI Value and Sleep Quality (n=100; p<0.001)

< 0.001) (Figure 1). Furthermore, calculations showed that patients using sleep aids had significantly poorer sleep quality (p = 0.003). The relationship between sleep quality and various variables is illustrated in Table II.

Results of the Beck Depression Inventory

The average score on the Beck Depression Inventory was 5.54 (SD: 4.84; minimum: 0 points; maximum: 22 points). Among the respondents, 66% had a normal mood, 22% exhibited mild depression, 10% experienced moderate depression, and 2% showed signs of severe depression. A linear regression analysis examining the relationship between the Beck Depression Inventory scores and age revealed a weak but positive correlation, which was statistically significant (r = 0.275; p = 0.005). This suggests that as age increases, the severity of depression also tends to rise. Additionally, a significant relationship was found between BMI and mental health status, indicating that patients with lower BMI values had lower levels of depression (r = 0.256; p < 0.001) (Figure 2). The relationship between Beck Depression Inventory scores and various variables is illustrated in Table II.

A significant difference was found concerning employment status. Non-working patients had an average Beck Depression Inventory score of 7.08, while those engaged in physical or intellectual work had lower scores (p = 0.047). A moderate positive correlation was observed between sleep quality and mental health status. The better the patients' sleep quality, the more favorable their mental health condi-

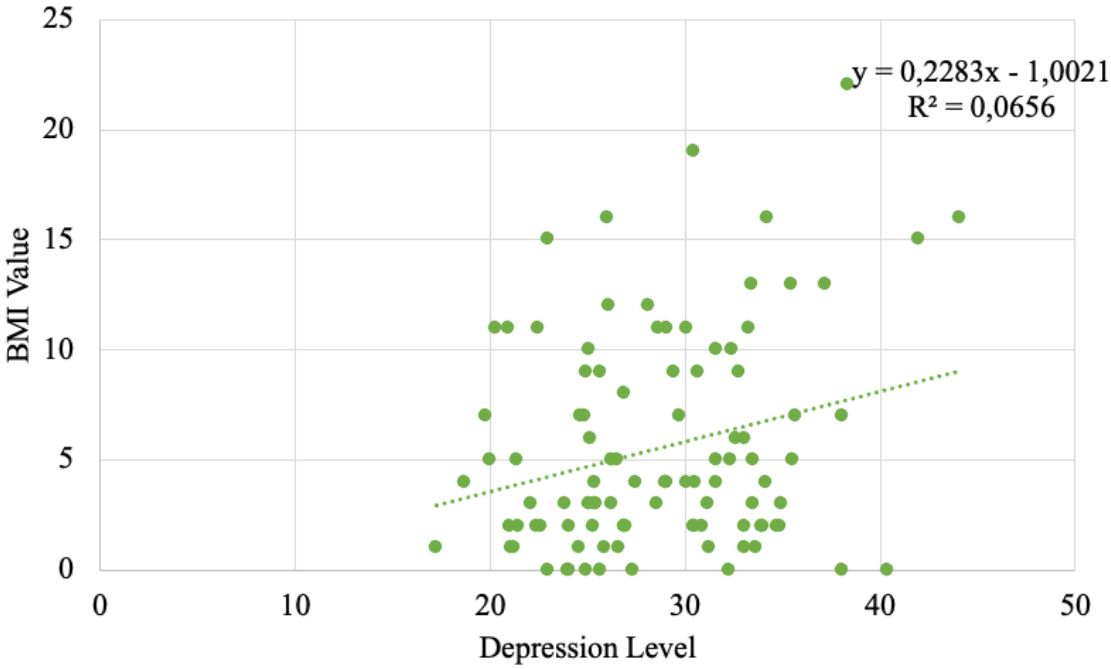


Figure 2: Relationship Between BMI Value and Depression Level (n=100; p<0.001)

tion (r = 0.332; p < 0.001) (Figure 3). The relationship between Beck Depression Inventory scores and various variables is illustrated in Table III.

Discussion

This study demonstrates that sleep quality has a significant impact on the mental health of diabetic patients, particularly on the levels of depression and anxiety. In our study, 42% of participants showed significant deterioration in sleep quality, while 30% reported experiencing healthy, restful sleep. Based on the distribution of depression severity, 66% of respondents exhibited a normal mood, 22% had mild depression, 10% suffered from moderate depression, and 2% showed signs of severe depression.

Muharrem Bayrak and colleagues identified a correlation between poor sleep quality and depression severity (p = 0.05). (10) In our research, 42% of participants (42 individuals) experienced significant sleep quality deterioration. A linear regression analysis of the Groningen Sleep Quality Scale and the Beck Depression Inventory results revealed a strong correlation (r = 0.711; p = 0.001). Research by Vincenzo Fiore et al. also indicated that depression is significantly more prevalent among diabetic patients. (5) Our study confirmed this, as the Beck Depression Inventory results showed that 66% of participants had a normal mood, 22% had mild depression, 10% had moderate depression, and 2% suffered from severe depression. Ida Kim Wium-Andersen and

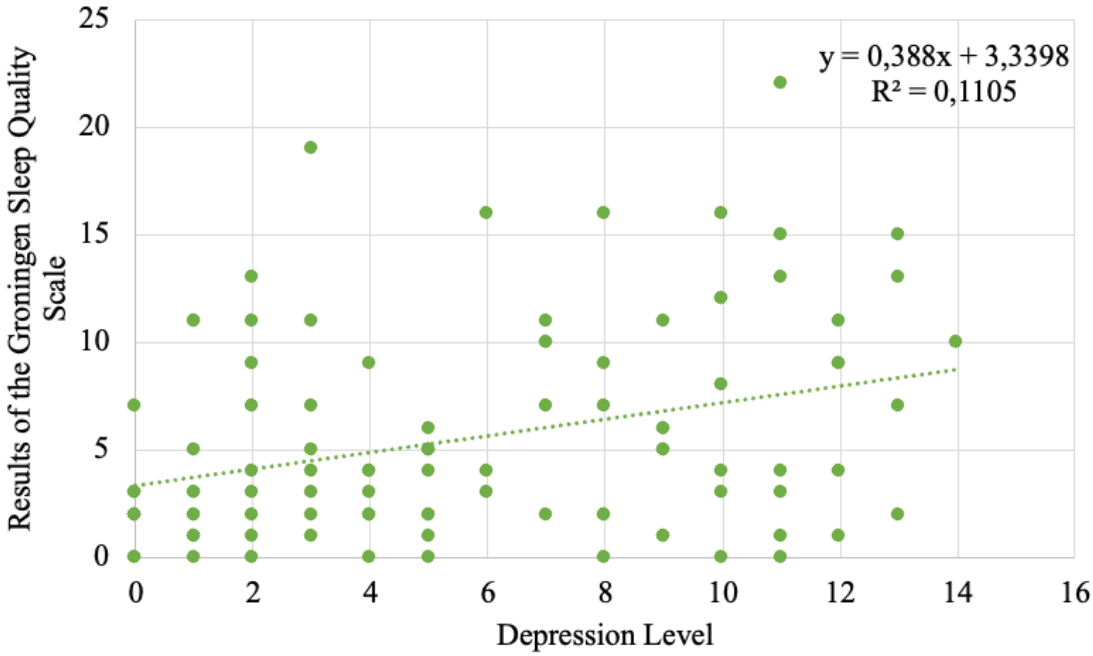


Figure 3: Relationship Between Sleep Quality and Depression Level (n=100; p<0.001)

colleagues demonstrated that frequent sleep disturbances significantly increase the likelihood of developing mental disorders among diagnosed diabetic patients (p = 0.05). [11] Our findings also confirmed a significant correlation between sleep quality and depression severity (r = 0.332; p = 0.001). Patients who reported experiencing restful sleep had lower levels of depression. A study conducted by Zoltán Rihmer and colleagues found that obese patients exhibited higher levels of depression. [12] Our research also confirmed that BMI significantly influences both sleep quality (r = 0.148; p = 0.001) and depression severity (r = 0.256; p = 0.000). These findings emphasize the importance of BMI normalization and the continuous monitoring of both the physical and mental health of patients. The management of chronic diseases, including diabetes, should not be limited to disease control alone but should also focus on improving patients' quality of life.

The role of Advanced Practice Nurses (APNs) is particularly significant in this process, whether in specialized care or primary healthcare. [13] In accordance with European guidelines, Hungary's 2016 EMMI regulation defined the competencies granting extended authority to healthcare professionals in primary care. These competencies include the independent management of chronic diseases, conducting physical examinations, establishing preliminary diagnoses, developing treatment plans, and ordering various medical tests. Additional responsibilities

involve conducting preventive examinations, referring patients to specialized care following acute episodes, prescribing and administering vaccinations, and developing comprehensive rehabilitation plans. Furthermore, APNs are responsible for preparing health plans, providing health counseling, continuously monitoring patients' health status, identifying risk factors, and conducting screening tests. They may also engage in educational activities related to their field. [14] Research has shown that APNs with higher education and extended competencies can provide primary care services of the same high standard as general practitioners. Their work contributes to increased patient satisfaction, the provision of more health counseling, improved prevention efforts, and reduced healthcare costs. The support of general practitioners in promoting the role of APNs can facilitate their integration into primary care, as patient acceptance and trust largely depend on the recommendations and opinions of their general practitioners. [15-21] Whittemore and colleagues also confirmed that APNs play a key role in primary healthcare, particularly in the treatment and prevention of diabetes. [22]

Conclusion

In summary, the sleep quality and mental health status of diabetic patients are closely related, and depression severity is influenced by multiple factors, including BMI. Our findings support previous research and highlight the importance of focusing on sleep quality improvement and mental health support in the comprehensive care of diabetic patients. The role of APNs is crucial in this process, as patient-centered care and regular monitoring can contribute to enhancing patients' overall quality of life.

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Table 1: Occurrence of disease-related symptoms among participants (n=100)

Symptom	Yes	No
Weakness	57%	43%
Dizziness	57%	43%
Nausea	32%	68%
Headache	54%	46%
Fear	26%	74%
Anxiety	46%	54%
Dry mouth	49%	51%

Table 1: Occurrence of disease-related symptoms among participants (n=100)

Variable	**Attribute**	**Sleep Quality (Mean ± SD)**	**p-value**
Gender	Male	4.65±4.73	p=0.141
	Female	5.91±3.98	
Residence	Village/Rural	6.68±4.23	p=0.261
	City	5.19±4.06	
Marital Status	Divorced/Single/Widowed	6.11±4.05	p=0.05
	Domestic Partnership/Married	5.51±4.20	
Education Level	College/University	5.02±4.03	p=0.121
	Lower Education Level	6.03±4.20	
Employment Type	Intellectual/Mental Work	5.36±4.07	p=0.606
	Physical Work	5.33±4.07	
	Unemployed	6.21±4.34	
Comorbidities	Yes	5.71±4.04	p=0.458
	No	5.62±4.29	
Smoking	Yes	6.57±3.84	p=0.122
	No	5.43±4.22	
Treatment Setting	Public	5.55±3.93	p=0.861
	Private	5.75±5.06	
	Both	6.2±4.95	

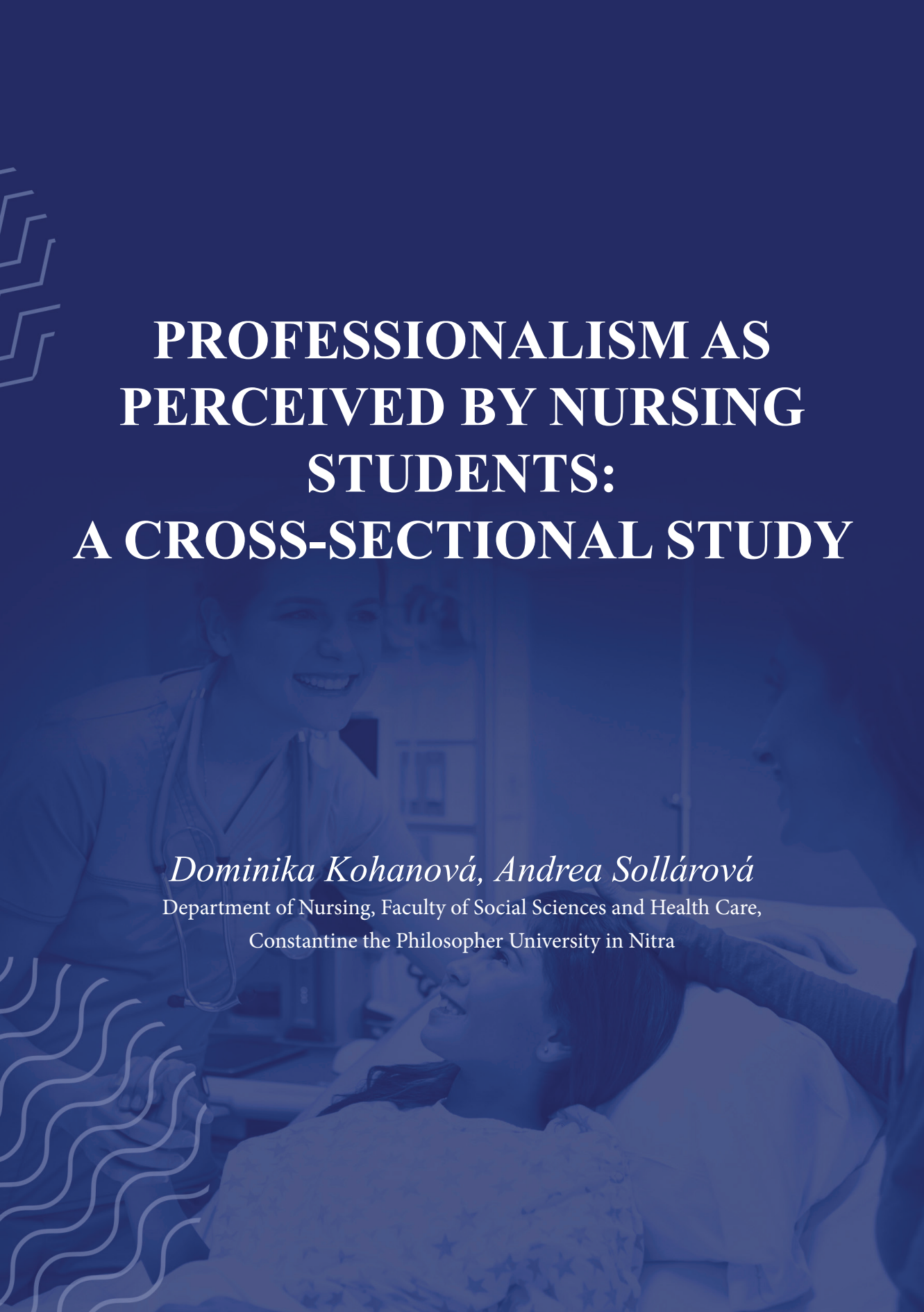
Use of Sleep Aids	Yes	8.2±3.95	p<0.001
	No	5.03±3.97	
Family History of Sleep Disorders	Yes	6.92±3.99	p=0.223
	No	5.18±4.13	

Table 2: Description of Sleep Quality and Variables

Variable	Attribute	Depression (Mean ± SD)	p-value
Gender	Male	5.57±4.58	p=0.445
	Female	5.40±5.98	
Residence	Village/Rural	4.60±4.91	p=0.100
	City	5.94±4.77	
Marital Status	Divorced/Single/Widowed	5.62±5.77	p=0.460
	Domestic Partnership/Married	5.50±4.50	
Education Level	College/University	4.83±4.55	p=0.161
	Lower Education Level	5.95±5.00	
Employment Type	Intellectual/Mental Work	4.45±3.92	p=0.047
	Physical Work	4.48±4.82	
	Unemployed	7.08±5.31	
Comorbidities	Yes	6.18±5.23	p=0.072
	No	4.84±4.36	
Smoking	Yes	5.52±5.08	p=0.493
	No	5.54±4.81	
Treatment Setting	Public	5.28±4.53	p=0.593
	Private	5.87±3.68	
	Both	6.66±6.77	
Use of Sleep Aids	Yes	7.56±5.58	p=0.036
	No	5.03±4.54	
Family History of Sleep Disorders	Yes	5.54±4.48	p=0.474
	No	5.52±4.83	

Table 3: Description of Depression Levels and Variables

PROFESSIONALISM AS PERCEIVED BY NURSING STUDENTS: A CROSS-SECTIONAL STUDY



Dominika Kohanová, Andrea Sollárová
Department of Nursing, Faculty of Social Sciences and Health Care,
Constantine the Philosopher University in Nitra

Introduction: Professionalism in nursing is crucial for ensuring quality care and patient safety. Developing professional behavior in nursing students is fundamental as it influences their skills and self-assessment regarding patient safety.

Aim: To evaluate the perception of professionalism by Slovak undergraduate nursing students and identify factors that affect the evaluation of professionalism.

Methods and materials: Data were collected between February and April 2024 using the Slovak version of the Nurse Professionalism Inventory (NPI). The study sample included 160 nursing students from two selected universities in the Slovak Republic. Data analysis was performed using SPSS version 25.0, employing descriptive and inferential statistical methods.

Results: The average NPI score was 123.68 (SD = 16.880) out of 168, indicating a positive self-assessment of professionalism among nursing students. A statistically significant difference was found between professionalism and learning expectations. A significant association was found between professionalism and satisfaction with the clinical placement ($p \leq 0.05$).

Conclusions: Slovak undergraduate nursing students demonstrated a positive self-assessment of professionalism, with clinical placement satisfaction emerging as a key factor influencing their evaluation. These findings highlight the importance of fostering supportive clinical environments and aligning learning expectations to enhance professional development in nursing education.

Keywords: nursing, nursing students, professionalism, quantitative study

Introduction

The global shortage of nurses, compounded by shifts in societal values, has created significant professional and ethical challenges for nursing as a field [1]. Despite growing public demand for nursing services, many experienced nurses are exiting the profession, and younger generations show limited interest in pursuing nursing as a career [2]. Contributing factors such as a lack of professional respect, challenging work environments, and limited opportunities for growth have discouraged participation in the field [3]. To address these concerns, it is critical to enhance professionalism and elevate the professional standing of nurses. Professionalism in nursing encompasses a broad spectrum of attitudes, behaviors, and competencies that are essential for delivering high-quality care and achieving positive patient outcomes. Defined as the combination of attributes, responsibilities, and actions required of professionals in their interactions with patients and society [4], professionalism is fundamental to the identity and practice of nursing. It is linked to factors such as clinical

experience, education, specialization, and active participation in professional organizations [5,6]. Importantly, fostering professionalism can not only retain experienced nurses but also inspire the next generation to embrace the profession [7]. For nursing students, understanding, and cultivating professionalism is especially important as they prepare to enter a field facing dynamic challenges [8]. By examining professionalism within the Slovak sociocultural context, there is an opportunity to develop targeted educational strategies that empower students to uphold and advance the standards of nursing practice. This exploration seeks to deepen understanding and foster the professional growth necessary for sustaining a resilient and dedicated nursing workforce.

Aim

This study aimed to evaluate the perception of professionalism by Slovak undergraduate nursing students and identify factors that affect the evaluation of professionalism.

Methods and materials

This study was conducted in alignment with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines, ensuring thorough reporting and adherence to robust methodological standards [9]. The study complied with the principles outlined in the Declaration of Helsinki and was approved by the Ethics Committee at Constantine the Philosopher University in Nitra, Slovakia (UKF/917/191013:002).

Regarding the sample, two nursing faculties in the Slovak Republic offering bachelor's degree programs were invited to participate in the study. Following approval from the heads of the nursing departments, convenience sampling was used to recruit nursing students. To be eligible, students needed to provide informed consent. Students were not included in the sample if they were on maternity leave or had participated in an Erasmus exchange during the data collection period. Overall, 213 questionnaires were distributed and 160 were returned (response rate of 75.0%) and included in the final analysis.

The data was collected between February and April 2024 using the Slovak version of the Nurse Professionalism Inventory [5,6] which consists of 28 items grouped into five subscales, namely accountability (8 items), self-improvement (8 items), professional attitudes (5 items), advancement of the nursing profession (4 items) and professional membership (3 items). The instrument is self-reported and measures the degree to which items related to professionalism align with nursing awareness and behavior. Responses are recorded on a Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree), Higher scores indicate a greater sense of professionalism in nursing. The instrument also involves selected characteristics of nursing students, as illustrated in Table 1. The Slovak version of the NPI instrument used among nurses demonstrated strong

psychometric properties, with Cronbach's alpha of 0.968 [6]. The Cronbach alpha coefficient in the current study was 0.879, reflecting the acceptable reliability of the tool as used among nursing students.

Data analysis was conducted using SPSS version 25.0, utilizing both descriptive and inferential statistical methods. The proportion of missing data in the study was minimal, ranging from 0.5% to 0.6%, which is unlikely to introduce significant bias. The Kolmogorov-Smirnov test was used to assess data normality, and since the data met the normality assumption ($p \geq 0.05$), parametric tests were chosen for further analysis. ANOVA (Analysis of Variance) was used to compare mean values across multiple groups, particularly to examine differences in professionalism based on sociodemographic factors such as year of study or current clinical placement. The Bonferroni post-hoc test followed the ANOVA to adjust for type I error, minimizing the risk of false positive results from multiple group comparisons. Additionally, the Pearson correlation coefficient was applied to assess relationships between self-reported professionalism and sociodemographic variables such as age and satisfaction with the clinical environment.

Results

The questionnaire was completed by 160 undergraduate nursing students with an average age of 20.95 (SD = 2.107) years. Sample characteristics are reported in Table 1.

Self-report of nursing students´ professionalism

The average NPI score was 123.68 (SD = 16.880), reflecting a positive perception of nursing professionalism. Among the subscales, accountability received the highest average score (40.90 ± 4.43), indicating it was viewed as the strongest expression of professionalism by nursing students. Conversely, self-improvement scored the lowest (29.80 ± 7.559), suggesting it was perceived as the least positive aspect of professional capability (Table 2).

Association of professionalism and individual variables

Statistically significant differences were only confirmed between the advancement of the nursing profession (subscale 4) and learning expectations. Nursing students whose expectations were unmet also achieved lower scores of professionalism compared to the students whose expectations were fully met ($p = 0.046$).

Additionally, nursing students' satisfaction with their clinical placements was significantly associated with several subscales of the NPI instrument: Accountability ($r = 0.291$, $p \leq 0.001$), Professional attitude ($r = 0.132$, $p \leq 0.05$), and Advancement of the nursing profession ($r = 0.519$, $p \leq 0.001$). Students who reported higher levels of satisfaction with their clinical placements also achieved higher scores in their self-assessment of professionalism (Table 3).

Table 1 Sample characteristics

Variable		N = 160	%
Previous vocational education	Healthcare program General program (gymnasium) Other	117 35 8	73.1 21.9 5.0
Year of Study	1st 2nd 3rd	45 78 37	28.1 48.8 23.1
Current clinical placement	Outpatient care: day clinics, primary care, rehabilitation Inpatient care: medical-surgical care units Inpatient care: psychiatric care units Critical-specialized services: anesthesiology department, intensive care units, emergency, and the operating room Mother-child inpatient care: maternity and pediatrics, obstetrics, gynecology Long-term care setting: residential care units, elderly homes, nursing homes	11 99 4 27 16 3	6.9 61.9 2.5 16.9 10.0 1.9
Supervision of practice	Nurse educator or teacher (the nursing faculty employee) Lecturer (healthcare facility employee) Nurse manager Mentor with specific training in mentoring Team of nurses (without individual supervision) Nurse without specific training in mentoring	45 40 17 15 37 6	28.1 25.0 10.6 9.4 23.1 3.8
Previous experience in healthcare (provision of nursing care to patients)	No Yes	76 84	47.5 52.5
Learning expectations*	Not at all (unmet expectations) Enough Greatly Very greatly (met expectations)	16 76 49 19	10.0 47.5 30.6 11.9
Satisfaction with the clinical environment	M = 6.83, SD = 1.999 (1-10)		

Legend: M – mean, SD – standard deviation

** The student assesses the extent to which his/her expectations related to clinical practice have been met*

Table 2 Professionalism as reported by nursing students

NPI subscales	Min.	Max.	M	SD	%
Accountability	24	48	40.90	4.431	85.20
Self-improvement	18	48	29.80	7.559	62.08
Professional attitude	9	30	21.16	4.116	70.53
Advancement of the nursing profession	5	24	16.59	3.877	69.12
Professional membership	7	18	15.21	2.211	84.50
Overall NPI score	84	168	123.68	16.880	73.61

Legend: M – mean, SD – standard deviation, % – calculation of the NPI score in percentages

Discussion

Professionalism is a fundamental concept in nursing, essential for ensuring improved patient outcomes, greater job satisfaction, enhanced performance, and a stronger commitment to the profession [4]. The focus of our study was to evaluate the perception of professionalism by Slovak undergraduate nursing students and identify factors that affect the evaluation of professionalism.

Accountability, the highest-rated dimension among the NPI subscales (40.90 ± 4.43), underscores nursing students' awareness of their responsibility to uphold professional standards and ensure patient well-being [8]. This finding aligns with the broader literature that identifies accountability as a cornerstone of nursing professionalism, essential for building trust between healthcare providers and patients [6,7]. Accountability encompasses not only adherence to ethical and legal standards but also a proactive commitment to patient safety, effective communication, and evidence-based practice [5]. Nursing students' high scores in this domain may reflect their understanding of the importance of personal and professional responsibility, which is often emphasized in theoretical coursework and clinical settings [10]. Incorporating case-based learning, ethical dilemma discussions, and reflective practice exercises into nursing curricula can further strengthen students' accountability by providing opportunities to apply theoretical knowledge to real-

Table 3 Correlations between the domains of the Nurse Professionalism Inventory and other individual variables

Professionalism	Age	Satisfaction with the clinical placement
Accountability	0.107	0.291**
Self-improvement	0.124	0.076
Professional attitude	0.080	0.132*
Advancement of the nursing profession	0.117	0.519**
Professional membership	0.105	0.047
Overall NPI score	0.143	0.135

** $p \leq 0.05$; ** $p \leq 0.001$*

world scenarios [6,7].

In contrast, self-improvement, the lowest-rated dimension (29.80 ± 7.559), highlights a significant area for growth. Self-improvement involves continuous professional development, adaptability, and a commitment to lifelong learning. In the context of nursing, this dimension is crucial for keeping pace with rapid advancements in medical technology, changing patient demographics, and evolving healthcare policies [11]. The relatively low scores in this domain may indicate barriers such as limited access to professional development resources, insufficient emphasis on self-directed learning, or a lack of encouragement for reflective practice within nursing programs [6]. One possible explanation for the lower scores in self-improvement could be the heavy academic and clinical workload faced by nursing students, which leaves little time for additional learning or skill development [12]. This is consistent with findings from studies indicating that time constraints and competing priorities often hinder students' ability to engage in professional growth activities [2]. Furthermore, students may lack awareness of available resources or opportunities for self-improvement, such as conferences, webinars, or nursing journals, particularly if these are not actively promoted by educational institutions or clinical mentors [13]. To address these challenges, nursing programs should prioritize creating an environment that fosters self-improvement. This can include integrating professional development planning into the curriculum, encouraging students to set personal learning goals, and providing access to resources such as workshops,

certifications, and mentorship programs. Simulation-based training and peer learning initiatives can also be effective in helping students reflect on their practice and identify areas for growth [7,11]. Encouraging students to join professional nursing organizations and participate in academic conferences can expose them to the latest trends and innovations in the field, further cultivating a mindset of lifelong learning [5].

This study also highlighted the critical role of clinical placement satisfaction in shaping nursing students' perception of professionalism. Students who expressed higher levels of satisfaction with their clinical placements demonstrated stronger scores on NPI subscales, particularly in accountability, professional attitude, and the advancement of the nursing profession. These associations underscore the pivotal influence of clinical environments on the formation of students' professional identity [12]. Positive clinical experiences, supported by effective mentorship and a nurturing learning environment, are essential for cultivating professionalism [5,14]. Positive clinical placements foster confidence, competence, and a sense of belonging, all of which contribute to a student's professional growth [8]. When students feel supported by clinical mentors, they are more likely to engage actively, take responsibility, and exhibit professional behaviors [15]. Studies have shown that structured feedback from clinical educators and opportunities to participate in meaningful patient care activities are integral to creating satisfying clinical experiences [2,15]. Conversely, a lack of support, unclear expectations, or exposure to unsupportive environments can hinder professional development. Nursing students who face negative clinical experiences may feel disconnected or undervalued, potentially leading to lower engagement and diminished commitment to the profession [14]. Therefore, ensuring that clinical placements are well-organized, inclusive, and aligned with students' educational needs is vital for fostering professionalism [8]. The study also revealed that unmet learning expectations negatively influenced students' perception of professionalism, particularly regarding the advancement of the nursing profession. Students enter clinical placements with specific academic and professional expectations, such as gaining hands-on experience, receiving guidance, and applying theoretical knowledge. When these expectations are not met, it can lead to frustration and disengagement, ultimately affecting their sense of professionalism [7]. Aligning clinical placements with students' learning expectations requires careful planning and collaboration between academic institutions and healthcare facilities [14].

This study has several limitations that should be acknowledged. The cross-sectional design restricts the ability to assess changes in professionalism over time or establish causal relationships between variables. The reliance on self-reported data through the Nurse Professionalism Inventory (NPI) introduces potential response bias, as students may have over-

or underestimated their professionalism. Additionally, the sample was drawn from only two universities in the Slovak Republic, limiting the generalizability of the findings to other regions or educational contexts.

Conclusions

This study highlights a generally positive self-assessment of professionalism among Slovak undergraduate nursing students, with accountability emerging as the strongest dimension. Satisfaction with clinical placements significantly influenced students' professionalism, emphasizing the importance of supportive and enriching clinical environments. Conversely, unmet learning expectations negatively impacted professionalism, particularly in advancing the nursing profession. These findings underline the need for educational institutions to align clinical experiences with students' academic goals and foster opportunities for continuous self-improvement.

Acknowledgement

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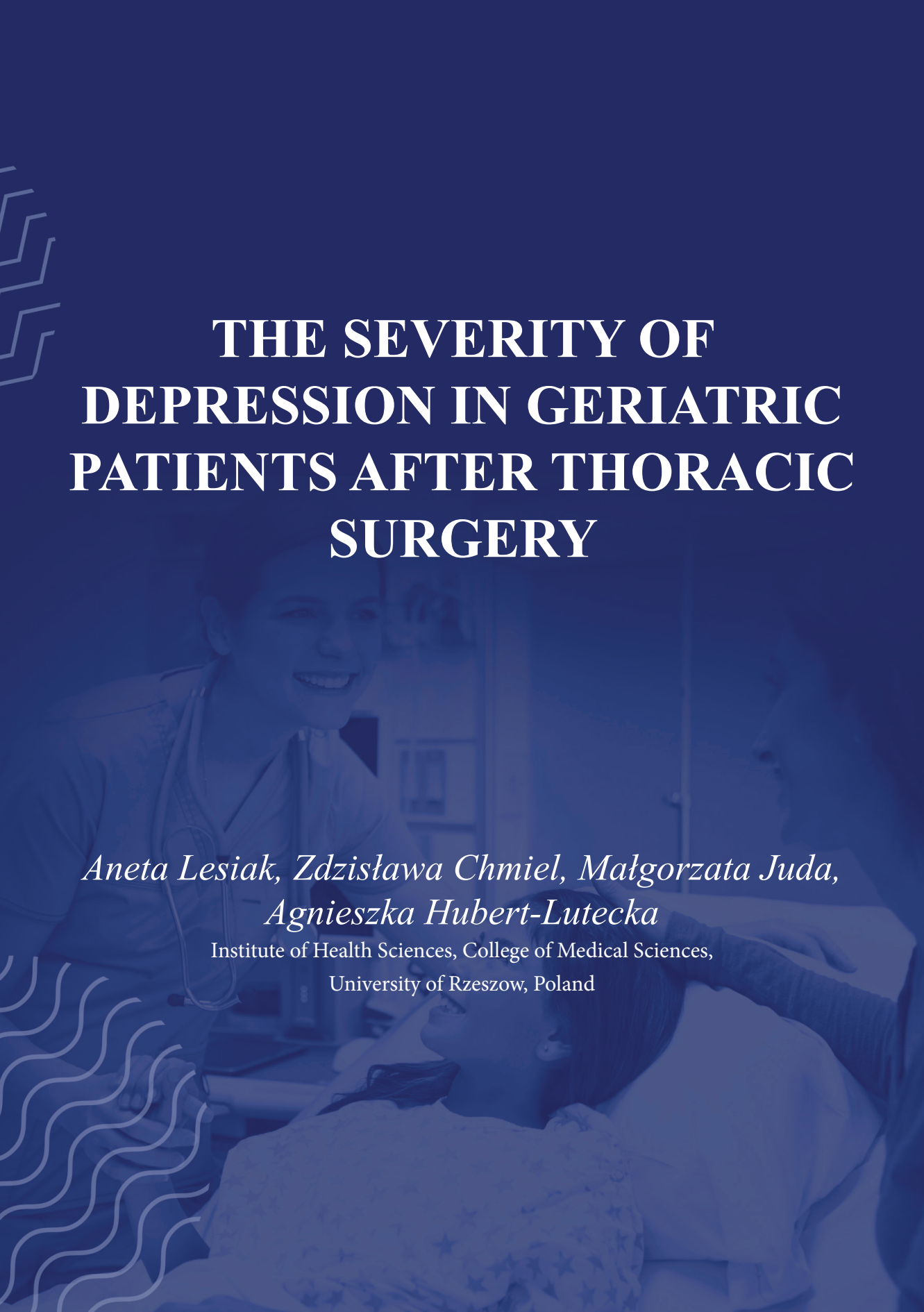
THE SEVERITY OF DEPRESSION IN GERIATRIC PATIENTS AFTER THORACIC SURGERY



Aneta Lesiak, Zdzisława Chmiel, Małgorzata Juda, Agnieszka Hubert-Lutecka

Institute of Health Sciences, College of Medical Sciences,
University of Rzeszow, Poland

Introduction: Seniors are particularly vulnerable to depression as they experience social isolation and deteriorating health. Surgical procedures are listed as one of the factors that can trigger the onset of the first or subsequent episode of depression.

Aim: This study aimed to identify factors determining the occurrence and severity of depression in the perioperative period in geriatric patients after thoracic surgery.

Materials and Methods: The study mainly used the diagnostic survey method, supported by techniques such as questionnaires, interviews, and observations. The tools used included the Abbreviated Mental Test Score (AMTS) by Hodgkinson, the Beck Depression Inventory (BDI), and an original questionnaire and interview form. The study was conducted in the Department of Thoracic Surgery Specialist Hospital in Rudna Mała (Poland). The study group consisted of 58 patients aged 65+ who underwent thoracic surgery and were examined in stages: Stage I: the day before the surgery, Stage II: the day of discharge from the hospital, and Stage III: 3 months after the surgery.

Results: In Stage II of the study, the severity of depression increased significantly ($p=0.00001$), which systematically decreased 3 months after the surgery. There were statistically significant differences in the severity of depression concerning gender in all stages of the study; depression was more frequent among women ($p=0.002$; $p=0.003$; $p=0.000$). The lower the level of education, the higher the severity of depression, especially 3 months after the surgery ($p<0.05$). No statistically significant relationship was observed between the occurrence of depression and the oncological cause of the surgery ($p>0.05$). The severity of depression significantly depended on the length of hospital stay in Stage II of the study, i.e., immediately after discharge from the hospital ($p<0.05$). The longer the hospital stay, the higher the severity of depression.

Conclusions: Older age, female gender, lower education, and prolonged hospital stay determine the occurrence of depression in patients in the preoperative and postoperative periods. Significant depression severity was observed in Stage II of the study, which decreased 3 months after the surgery.

Keywords: depression, geriatric patient, surgical procedure, thoracic surgery

Introduction

According to the World Health Organization (WHO), depression is one of the most common causes of disability in the world. It is a disease that occurs quite often in the group of somatically ill people, but also in those who have undergone surgery [1]. Somatic diseases and surgeries are among the factors cited as triggers for the first or subsequent episodes of depression [2].
Some researchers suggest that proper postoperative care, such as effective pain management, can reduce the risk of de-

pression [3]. However, it is essential to consider that even after an uncomplicated neurosurgical procedure for an unruptured aneurysm—where symptoms should not be severe and the prognosis is favorable—10% of patients develop depression [4].

Due to the above factors, it is not surprising that the prevalence of depression in internal medicine and surgical wards is higher than in the general population and depending on the type of ward it may reach several dozen percent (30–40%) among patients after cardiac surgery, 24% after liver resections, and 26% among women after extensive gynecological surgeries [1, 5, 6, 7].

In recent years, there has been an increase in the incidence of depression among the elderly. Seniors are particularly vulnerable to depression as they experience social isolation and deteriorating health. Surgical procedures are listed as one of the factors that can trigger the onset of the first or subsequent episode of depression.

Objective

This study aimed to identify factors determining the occurrence and severity of depression in the perioperative period in geriatric patients after thoracic surgery.

Materials and Methods

The study mainly used the diagnostic survey method, supported by techniques such as questionnaires, interviews, and observations. The tools used included the Abbreviated Mental Test Score (AMTS) by Hodgkinson, the Beck Depression Inventory (BDI), and an original questionnaire and interview form. The study was conducted in the Department of Thoracic Surgery Specialist Hospital in Rudna Mała (Poland). The study group consisted of 58 patients aged 65+ who underwent thoracic surgery and were examined in three stages

Stage I: the day before the surgery, Stage II: the day of discharge from the hospital, and Stage III: 3 months after the surgery.

Results

Increased depression in geriatric patients after thoracic surgery under general anesthesia.

The presence and intensity of depression were assessed at three stages: Stage I – on the day before thoracic surgery; Stage II – on the day of hospital discharge (no earlier than the 7th day); and Stage III – three months after the surgery

The study involved 58 patients who underwent thoracic surgery under general anesthesia. The patients were aged between 65 and 84 years. The largest group, 74.1%, was in the 65–74 age range. Most participants were women (58.6%), while men constituted 41.4%. Most of the participants had vocational or secondary education.

There are statistically significant differences in the severity of depression in patients before and after thoracic surgery under general anesthesia ($p<0.05$). Depression severity increased significantly immediately after surgery but gradually

Table 1 Characteristics of the study group

Characteristics of the study group								
Education			**Sex**			**Age**		
Type	N	%	**Type**	N	%	**Type**	N	%
Primary	10	17,2	**Woman**	34	58,6	**65 - 74**	63	74,1
Vocational	18	31,0	**Man**	24	41,4	**75 - 84**	22	25,9
Secondary	19	32,8						
Higher	11	19,0						
Total	58	100,0	**Total**	58	100,0	**Total**	58	100,0

Table 2 The differences in the severity of depression according to the Beck Depression Scale in patients before and after thoracic surgery under general anesthesia.

Severity of depression in Beck depression scale	**N**	**M**	**Me**	**Min**	**Max**	**SD**	**Test ANOVA**
Stage I	58	10,79	9,5	0	32	7,18	**p=0,00001 p<0,05**
Stage II	58	11,83	10,5	0	38	7,91	
Stage III	58	11,59	9	0	47	9,04	

decreased over the three months following the procedure (Table 2).

There are statistically significant differences in the severity of depression between men and women in all stages of the study ($p<0.05$). Women had a higher level of depression severity than men, both before the surgery, on the day of hospital discharge, and three months after the procedure (Table 3).

There were statistically significant differences in the severity of depression depending on age on the day of hospital discharge and three months after surgery

Table 3 Severity of depression in patients before and after thoracic surgery vs sex

Severity of depression in Beck depression scale	Sex				Test U Manna-Whitneya
	Man		Woman		
	M	SD	M	SD	p
Stage I	7,90	6,57	10,79	6,54	0,002
Stage II	8,72	6,27	12,27	7,83	0,003
Stage III	6,28	4,36	11,14	8,68	0,000

Table 4. Severity of depression in patients before and after thoracic surgery vs age and education

Severity of depression in Beck depression scale	age	education
	R	R
Stage I	0,14	-0,02
Stage II	0,21	-0,06
Stage III	0,34	-0,22

($p<0.05$). With increasing age, the severity of depression increased in the examined patients on the day of hospital discharge and three months after the procedure. Statistically significant differences in depression severity were also observed based on educational level three months after surgery ($p<0.05$). Patients with lower levels of education showed higher levels of depression severity (Table 4).

No statistically significant relationship was found between depression severity and cancer-related reasons for surgery ($p>0.05$) (Table 5).

Similarly, no significant relationship was observed between depression severity and the duration of the surgical procedure ($p>0.05$). However, a significant relationship was found between depression severity and the length of hospital stay at Stage II of the study ($p<0.05$). The longer the hospital stay, the higher the severity of depression.

Conclusions

The analysis of depression severity in geriatric patients following thoracic surgery under general anesthesia showed a significant increase in depression imme-

Table 5 Severity of depression in patients before and after thoracic surgery vs character of surgery

Character of surgery	The severity of depression in the Beck depression scale					
	Stage I		Stage II		Stage III	
	M	SD	M	SD	M	SD
Oncological	9,44	7,08	11,57	8,13	9,68	8,03
Non- Oncological	9,05	6,13	8,73	5,36	7,02	5,38
Test U Manna-Whitneya	p= 0,896; p>0,05		p= 0,082; p>0,05		p= 0,056; p>0,05	

Table 6 Severity of depression in patients before and after thoracic surgery vs duration of surgery and hospitalization time

Severity of depression in Beck depression scale	Duration of surgery (hours)	Hospitalization time (days)
Stage I	-0,096	0,057
Stage II	0,025	0,225*
Stage III	-0,027	0,108

**Spearman correlation coefficient; statistically significant results (p<0,05) are marked in red*

diately after the procedure, followed by a systematic decrease three months later ($p<0.05$). No significant differences in depression severity were observed between patients who underwent surgery for cancer-related reasons and those without a cancer diagnosis ($p>0.05$). This was probably due to the lack of cancer diagnosis before the surgery in some patients.

However, studies by other authors indicate a correlation between the severity of depression and cancer. In cancer patients, depression prevalence ranges from 15% to 25%, with moderate depressive disorders affecting approximately 13% of patients. The coexistence of depression is associated with worse results of treatment of the primary disease and a higher risk of patient death [8, 9].

The coexistence of depression with somatic diseases always has very negative consequences. People with depression

often struggle with decision-making and tend to isolate themselves, which increases the risk of irregular doctor visits, non-compliance with medical recommendations, and worsened cooperation between doctors and patients [10].

Murawiec emphasizes that depression in cancer patients increases the risk of mortality [11]. Depression accompanying cancer affects up to one in four patients. In addition to directly influencing pain and suffering, it can lead to various other complications. Patients with depression may require longer specialist care, extending their hospital stay. Moreover, they are less likely to adhere to treatment recommendations, potentially reducing therapy effectiveness [12]. This may explain the changes in mental state observed in our studies, in which depression intensifies after surgery but decreases three months later. During this period, patients may come to terms with their illness, and thoracic surgery often improves health, resulting in reduced stress, anxiety, and depression.

Scientific reports show that depression, based on RDC (Research Diagnostic Criteria) and DSM-5, occurs in 30-42% of cancer patients. In some studies, its prevalence is estimated at 8-24%, with 3-5% among lung cancer patients [1].

The study revealed differences in depression severity based on gender, age, and education level. Women showed higher depression severity than men before surgery, on the day of discharge, and three months post-surgery ($p<0.05$). Older age was associated with increased depression severity on the day of discharge and three months after surgery ($p<0.05$). Additionally, lower education levels were linked to higher depression severity ($p<0.05$).

Other studies also highlight differences in mental well-being due to gender. Kochkodan et al. demonstrated significant differences between men and women during surgery. Men were generally older, married, reported lower self-rated depression levels, and had more comorbidities [13]. One year after surgery, men were significantly more satisfied with the procedure than women [14].

There is a statistically significant correlation between the severity of depression and the length of stay in the hospital in the second stage of the study ($p<0.05$). The longer the length of hospital stays, the higher the severity of depression. Kieszkowska-Grudny's studies confirm that depression can prolong specialist care, leading to extended hospital stays [15]. As shown in this study, prolonged hospitalization exacerbates depression and other mental health issues, increases stress, and worsens overall health and cognitive functioning. Even mild depression can have serious consequences, such as immune system disorders and increased infection risk, complicating recovery. Doering et al. found a higher rate of postoperative infections in depressed patients [16].

Thoracic surgery often involves tissue resection, which may lead to significant physical changes, explaining the observed increase in depression before and after surgery. Monitoring patients' mental

health during the perioperative period is crucial. Identifying deviations early and initiating treatment promptly can accelerate recovery. According to Ghoneim et al., proper perioperative care may reduce the risk of depression [3].

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ASSOCIATION OF WORK-PLACE PSYCHOSOCIAL FACTORS WITH MUSCULO-SKELETAL SYMPTOM CLUSTERS AMONG MIDWIVES

Gyöngyi Major[1], Ildikó Rákóczi[2], József Gergő Szőllősi[3], Krisztina Éles Gebriné[4]

[1]Assistant Professor, University of Debrecen, Faculty of Health Sciences, Department of Nursing and Midwifery, Nyíregyháza ORCID: 0000-0001-7074-8610

[2]Associate Professor, University of Debrecen, Faculty of Health Sciences, Department of Nursing and Midwifery, Nyíregyháza ORCID: 0000-0001-8668-9598

[3]Adjunct Professor, University of Debrecen, Faculty of Economics and Business, Debrecen ORCID: 0000-0002-4126-0058

[4]Adjunct Professor, University of Debrecen, Faculty of Health Sciences, Department of Nursing and Midwifery, Nyíregyháza ORCID identifier: 0000-0002-6672-0268

The association of workplace psychosocial factors with musculoskeletal symptom clusters among midwives

Introduction: The objectives of this research are to find answers to the question of what alternatives could improve the health status of professionals who are associated with long-term disability and chronic pain due to musculoskeletal disorders.

Methods: A cross-sectional study was conducted by completing the standardized Dutch Musculoskeletal (DMQ), Nordic Musculoskeletal (NMQ) questionnaire, the Copenhagen Questionnaire on Occupational Psychosocial Factors II (COPSOQ II) questionnaire, and the Perceived Stress Questionnaire. Results were processed using SPSS 23.0 software.

Results: Our study focused on the specificities of Musculoskeletal disorders by identifying the most frequent sites of MSD.

Conclusions: The significant burden of MSDs among healthcare workers leads to functional limitations and reduced work efficiency, poor quality of patient care, loss of income due to absenteeism, and increased expenditure on the management of disability due to MSDs and may lead to early retirement.

Keywords: musculoskeletal disease, health worker, chronic pain

Introduction

As health professionals, midwives are directly or indirectly involved in providing health services, either in health facilities or in health activities. They take part in special training fulfill the responsibilities of their field of expertise. Looking at the development of the number of midwives in the country, in the early 2000s, approximately 2,600 midwives were employed in health institutions. Due to the initial four years of college training, which began in the 2005/2006 academic year, there were no young entrants in the system until 2010. After that, the number of midwives decreased every year, but not as significantly as from 2017 to 2021. Based on the data gathered from 2015 to 2017, there was a decrease in the number of individuals from 1,653 to 1,622, which accounts for a total reduction of 31 people, equivalent to a 1.9% decline over 2 years. The number of working midwives decreased by 225 (13.87%) from 2017 to 2021. The number of unfilled midwife positions/statuses increased by 64 people, which represents an 87.67% growth. The number of permanently vacant and unreplaced midwife positions increased by 19 individuals, which represents a 13.19% rise during this period. Out of all midwife positions in 2021, including both vacant and permanently absent, unreplaced positions, there was a total increase of 83 individuals, equivalent to a 38.25% growth compared to 2017. When projected onto the working midwives, it can be observed that the proportion of permanently vacant positions reaches 21.47%. The number of

midwives working in hospital delivery rooms also decreased by 69.5 individuals (8.62%) over the past 4 years [1]. Based on the results of national research, the prevalence of musculoskeletal disorders among midwives is over 30%, affecting even a quarter of the youngest age group. In the oldest group of workers, these symptoms occur in as much as 60% of cases. In the 40-49 age group, there is a significant increase in the number of concurrent diseases, with the oldest age group having 3-4 different chronic diseases [2]. The novelty of the research lies in the fact that, in the context of our country, such a large-scale study within this target group has not been conducted on this topic before. In the field of studying health and workplace relationships, we aspire to examine the disparities in musculoskeletal health and its prevalence, particularly among healthcare workers. This focus is driven by their known exposure to risk factors and the resulting consequences within the professional community. Healthy, well-trained, and motivated healthcare professionals play a pivotal role in the healthcare system [3]. The World Health Organization (WHO) has reported that musculoskeletal disorders are among the most common causes of disability and limitations in daily life and work-related activities. They emphasize the importance of protecting the health of nurses and midwives and preventing non-communicable diseases [4]. Healthcare professionals, including midwives, as part of their work, mobilize pregnant women and postpartum individuals. In maternity wards, they may even be required to transfer clients from bed to bed in critical situations, sometimes without the presence of surgical assistants, which may include assuming challenging body positions during childbirth management [5]. The results of this study emphasize that lifting heavy loads can have a significant impact on the musculoskeletal health of workers. This information can prompt the development of occupational ergonomic guidelines and the establishment of safe workplaces and conditions aimed at preventing LBP [6]. Recent studies have shown that safety-related leadership attitudes, such as the emphasis on the value of safe performance, setting goals for injury prevention, and rewarding compliance with safe work practices, have had a positive impact on reducing accidents and various occupational injuries, including severe muscle and back injuries [7]. Several physiological underpinnings support why exertion may play a dominant role in the relationship between psychosocial workplace stressors and musculoskeletal disorders. Stress acts as an intermediary in the effect of stressors on WRMSD due to increased muscle tension when employees experience exertion. The presence of muscle tension and other autonomic effects in the body increases the biomechanical load to which employees are exposed during physical efforts related to job tasks. Previous research has supported that exertion can have a direct impact on muscle tension. In some experiments where clients participated in stress-inducing tasks, psycholog-

ical stress reactions and anxiety were strongly linked to muscle tension [5]. Moreover, exertion has several physiological effects. It diminishes blood circulation to the extremities and muscles, raises blood pressure, increases the levels of corticosteroids and cortisol, and triggers fluid retention in tissues. Additionally, it can result in heightened levels of peripheral neurotransmitters, such as noradrenaline, which may compromise the efficiency of the immune system's defense mechanisms. Exertional responses like frustration and anger can lead to escalated exertion, thereby elevating the risk of WRMSD. In summary, it can be postulated that exertion could potentially act as an intermediary factor in the relationship between psychosocial workplace stressors and WRMSD [7]. Exertion significantly mediated the relationship between job control and lower back muscle symptoms. Higher levels of job control can protect employees from lower back pain by reducing the perceived exertion by employees. The quality of job control is associated with physical exertion and the degree of muscle tension, which poses a significant risk for the development of WRMSD. Employees with higher levels of control in their jobs can work more independently, and take more breaks, thereby reducing the strain on their muscles and directly reducing the risk of musculoskeletal disorders. Workplace leaders who demonstrate a focus on safety can help protect employees from performance pressure. Lower job security-oriented leadership behavior is often associated with poor ergonomic conditions. There are alternative mechanisms through which safety leadership behavior is linked to WRMSD [7]. It has been recognized that pain, the main symptom of musculoskeletal disorders, has a multifactorial origin and is prevalent among healthcare workers. Biomechanical factors such as heavy lifting and maintaining forced and prolonged body positions can play a role in the development of back pain [8]. Repetitive upper limb movements or gestures performed during static contractions can cause pain in the limbs and neck [9]. Undoubtedly, psychosocial factors, which include individual characteristics such as age, gender, behavior (e.g., smoking, sedentary lifestyle), and the presence of comorbidities [10], can trigger or exacerbate musculoskeletal pain [11]. The etiology of musculoskeletal disorders is multifactorial, encompassing not only physical stressors but also psychosocial risk factors [12]. There is a clear relationship between workplace psychological factors and social support [13]. While we cannot modify workers' personal attributes, individual-level elements can be modified through improvements in working conditions and reductions in the impacts on workers. Among them, employment conditions, such as the organization, content, and demands of work, and the promotion of healthy habits and behaviors, stand out [14]. Nurses and midwives together constitute the largest group of healthcare workers in every country. The WHO strategy plan also emphasizes that healthy, adequately supported, well-trained, and mo-

tivated staff improve the quality of patient care, thereby positively impacting the health of the population. They can serve as role models for the community [4]. Nurses and midwives are healthcare professionals who come into direct contact with patients/clients in their everyday work. A positive work environment and mental well-being ensure active work, and quality performance at the workplace, and can reduce turnover rates. For all these reasons, it is essential to support midwives and nurses in achieving optimal health in all age groups, prevent the development of non-communicable diseases or complications, and strengthen health promotion tasks among them.

Material and Methods

Data collection and sampling

A cross-sectional study was conducted from November 2023 to 2024 June 2024. Taking into account the midwifery staffing figures for 2021, we have determined the planned sample size, which is 720 midwives working in the delivery room. The inclusion criterion for the sample was that the midwives interviewed should work in the obstetrics and gynecology department, including inpatient care (mainly in the labor ward). Questionnaires that were not scored were excluded. The sample selection was stratified within a random sample of midwives working in inpatient care in the 38 hospitals. The head midwives assisted in the distribution and collection of the questionnaires. Midwives working in the obstetrics and gynecology inpatient ward (mainly in the labor ward). The questionnaires were randomly sampled and distributed. The results are presented based on 20% coverage (73 respondents).

Measurement tools

The questionnaire consisted of:

- Individual Characteristics: Sociodemographic data (gender, age, marital status, and educational level), lifestyle factors (participation in leisure activities, physical activity, and smoking habits), and factors determining health status (sick leave, workplace absenteeism, or absence due to health issues).
- Job Characteristics: Job position, length of employment, time spent in the organization, work schedule, the presence of other job roles, weekly working hours in the institution, and total hours worked.
- Examination of Musculoskeletal Complaints: The participants' musculoskeletal complaints in the lower back, hand/wrist, and shoulders are assessed using the standardized Nordic Musculoskeletal Questionnaire. This simple, widely recognized, and validated questionnaire identifies symptoms in the regions of the neck, back, shoulders, and limbs. The questionnaire consists of 28 multiple-choice questions and is divided into two distinct sections.
- Investigation of Workplace Psychosocial Factors: The COPSOQ II (Copenhagen Psychosocial Questionnaire II), which is the most used

tool in European occupational health practice, was developed by the National Institute of Occupational Health in Denmark. The Occupational Health and Safety Act requires regular psychosocial risk assessment and reduction at work, but in Hungarian, there has been no provision for this so far, a wide range of targeted questionnaires integrating several theoretical models to carry out a risk assessment. To fill this gap the Copenhagen Questionnaire on Risk Assessment in the Workplace was adapted into Hungarian. Psychosocial Factors II (Copenhagen Psychosocial Questionnaire II), abbreviated COPSOQ II questionnaire, also known as the Copenhagen Occupational, the Hungarian version of the COPSOQ II is available in English and French. The Hungarian version of COPSOSOQ was tested for validity and validity by Katalin Nistor and colleagues. The COPSOQ II consists of 92 questions and 28 scales grouped into seven main dimensions of work stress models by integrating several work stress models local psychosocial risk factors, as well as individual health and well-being factors indicators (burnout, stress, sleep disturbance, self-perceived health).

Results

The methodological procedures used include descriptive statistics on lifestyle, work experience, and the results of two-sample Wilcoxon and Fisher exact tests.

Descriptive statistical analyses:

For age and cervical pain as variables, the median (Mdn) and interquartile range (IQR: 25%-75%) are well representative of differences. For individuals experiencing neck pain, the median age is 45.5 years and the IQR is 33-52 years. For individuals without neck pain, the median age is 50.5 years, and IQR is 40-54 years.

For age and shoulder pain as variables, the interquartile range (IQR: 37-53 years) is slightly shifted in the group with shoulder pain, indicating a slightly older age group.

For age and back pain as variables, the interquartile range (IQR: 34-54 years) shows a significant overlap between the two groups, indicating a similar distribution.

The interquartile range for age and elbow pain as variables (IQR: 34-53 years). The distribution between the elbow pain and age as variables groups is similar, with no significant difference confirmed.

For age and waist pain as variables, the interquartile range (IQR: 34-54 years). In this case, both in the group with and without waist pain, the age data clustered relatively closely in the interquartile range.

The interquartile range for age and hand/joint pain as variables (IQR: 33-53 years). In this case, the difference between the medians is not significant, but the median for the group with hand/joint pain is higher.

For age and hip pain as variables, the interquartile range (IQR: 35-52 years).

For age and knee pain as variables, the

median (Mdn) and interquartile range (IQR: 34-54 years) are well representative of the differences. IQR shows an overlap between the two groups, indicating a similar distribution.
For age and ankle pain as variables, the interquartile range (IQR: 34-54 years) also well represents the differences. IQR values show a small difference, but the difference between medians is not significant.

Wilcoxon tests (Mann-Whitney):
Shows differences in medians of the above groups, and significance levels of the measured variables. For the group experiencing neck pain, p=0.1666. In this case, there is no evidence of a strong association between age and experiencing neck pain. For shoulder pain and age, p=0.5730, which is much higher than the 0.05 significance level used, indicating that the difference between the medians for age is not statistically significant. For back pain and age, p=0.83, which statistically confirms that back pain as a variable does not show a significant relationship with age in this analysis. For elbow pain and age, p=0.87 was also well above the significance level used. For waist pain and age, p=0.506, indicating that there is no relationship between waist pain and the medians for age. For hand/wrist pain and age, the p-value is 0.53, also indicating that there is not a strong relationship between age and hand/wrist pain as variables. For knee pain and age, the p=0.492 indicates that the difference between the ages of the groups with and without knee pain is not significant. The relationship between age and knee pain cannot be statistically proven. For hip pain and age, p=0.43 indicates that the difference between age and hip pain is not significant. The relationship between age in the hip pain and non-hip pain groups is not statistically relevant. For ankle pain and age, p=0.627 also indicates that there is no significant relationship between ages and ankle pain. The difference between the ages of the two groups is not statistically proven.

Fisher exact tests:
These tests examine the relationship between variables in a cross-tabulation. For example, the correlation between neck pain and tension in the last month as variables is p=0.343. In this case, the strong relationship between neck pain and tension in the last month cannot be proven. For the association between shoulder pain and tension felt in the last month as variables, p=0.463. In this case, the close association between shoulder pain and tension felt in the last month cannot be demonstrated. For the association between back pain and tension felt in the last month as variables, p-value is 0.272. In this case, the strong association between back pain and tension felt in the last month cannot be proven. For the association between elbow pain and tension felt in the last month as variables, p=0.885. This means that there is no significant association between elbow pain and tension felt in the last month as a variable. For the association between waist pain and tension felt

in the last month as variables, the p-value is 0.085, indicating that the test results show no significant association between the two variables. The p-value for the association between hand/wrist pain and tension felt in the past month as variables is 0.081, suggesting that there may be a weak association, but this is not statistically proven. For the association between knee pain and tension felt in the past month as variables, the p-value is p=0.296, indicating that there is no significant association between knee pain and tension felt in the past month. The results suggest that the relationship between the two variables cannot be statistically proven. The relationship between ankle pain and tension felt in the past month as variables has a p-value of 0.412. This indicates that there is no significant relationship between ankle pain and tension felt in the past month. The possibility of a weak correlation between the two variables is also not statistically proven.

Discussion

There is considerable overlap between groups in terms of median age and interquartile ranges, for example for those with and without musculoskeletal complaints. This may suggest that age alone is not always a differentiating factor. When examining the relationship between age and pain in different parts of the body, p-values mostly show that there is no statistically significant difference. This indicates that there is not a strong correlation between pain at a particular site and age based on the data **analyzed**. For example, the relationship between low back pain and age is p=0.506, which is not statistically significant. In the cross-sectional analyses, the associations between specific musculoskeletal complaints (e.g. neck, shoulder, back pain) and other psychosocial factors typically showed no significant association. For example, the association between neck pain and stress in the past month is p=0.343, which is not significant. This suggests a weak, unprovable relationship between the factors involved. Based on the data on different pain types, there are likely to be more complex interactions between factors underlying musculoskeletal complaints, which cannot simply be explained by age or psychosocial stress factors. The high prevalence of back, shoulder, and neck pain is in line with the findings of Okuyucu et al. (2018), who found a 92% prevalence among healthcare workers. The higher prevalence in the older age group confirms the findings of Alexopoulos et al. (2004), who found that age is a significant factor in the development of musculoskeletal complaints, and the data reported by Gebriné (2019), where age-related complaints predominate.

Conclusions:

The analyses show that the association between age and musculoskeletal complaints is not always significant. This may suggest that the occurrence of pain is likely to be influenced by other factors, such as work environment, physical strain, or individual lifestyle. The role of psychosocial factors (e.g. stress) remains to be

investigated, as in most cases no significant association can be found, but weak correlations suggest more complex relationships.

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ADVANCED PRACTICE NURSING (APN) IN POLAND - OPPORTUNITIES AND CHALLENGES

Małgorzata Nagórska
College of Medical Sciences, University of Rzeszow, Poland

Introduction: Advanced Practice Nursing (APN) has evolved significantly over the past century, shaped by healthcare needs, legislative changes, and advancements in nursing education. The term APN is used as a designation nurse who practice at the highest level. The study aims to describe the process of implementing APNs into the healthcare system in Poland.

Aim: The study aims to describe the process of implementing APNs into the healthcare system in Poland.

Results: The idea of APN was created in the 1960s in the USA, and later it was adopted in Europe. Despite differences between countries in defining APNs, which result from different education systems, especially at the postgraduate level, the international enthusiasm for APN roles is increasing. This is due to the possibility of better use of nursing staff in the face of physician staff shortages and the changing expectations of an aging society in Europe regarding health care. In Poland, in formal and legal terms, the position of the APN has not yet been approved but work and discussions on legislative solutions are ongoing. In practice, we have well-educated nurses who meet the accepted definition of APN. This is possible thanks to dynamic transformations of the profession, increasing professional autonomy through expanding professional competencies such as writing prescriptions, referring patients for basic laboratory tests, nursing advice.

Conclusion. The introduction of APN into the Polish healthcare system is revealed in the event of medical shortages and new medical epidemiological or demographic devices. In Poland, there is a need to apply the principles of sanctioning APNs and show their importance and role in the health care system.
Key words: nursing, development, Advanced Practice Nursing, APN

Introduction

According to the International Council of Nurses (ICN), an Advanced Practice Nurse (APN) is a nurse who, through additional education, has acquired expert knowledge, complex decision-making skills, and clinical competencies for expanded nursing practice. The characteristics of this role are shaped by the context in which they are credentialed to practice [1,2].
The idea of APN was created in the 1960s in the USA, and two decades later it was adopted in Europe, (initially in the UK and later in other European countries), and in Asia and Africa as well. APNs provide comprehensive clinical care and provide greater access to health services in more than 70 countries around the world [3-5].
Advanced practice nursing refers to highly specialized nursing functions that include not only holistic patient care but also vastly expanded clinical competencies. APN integrates various roles such as clinical practice, education, administration, research, and public health management. In Poland, this concept is still in the phase of development and searching for

its identity within the healthcare system. [6].

According to the ICN guidelines [2], the key competencies of the APN Nurse include:

- planning and coordination of prevention programs
- assessment of the patient's health condition and taking the necessary diagnostic and therapeutic measures
- making decisions on referring the patient for the necessary tests and diagnostic procedures
- referring the patient to other specialists and medical facilities (consultations with specialists, hospital treatment, and centers for chronically ill patients)
- ordering and conducting pharmacological therapy in the field of their specialization/competence
- performing specialized diagnostic and therapeutic procedures
- coordinating care plans and supervising the treatment of chronically ill patients
- training students and medical staff in the area of their specialty.

Aim

The study aims to describe the process of implementing APN into the healthcare system in Poland.

Results

APN represents a higher level of nursing practice characterized by advanced clinical skills, specialized knowledge, and expanded responsibilities. APNs typically hold a master's degree and are prepared to provide comprehensive healthcare services, including diagnosis, treatment, and management of acute and chronic illnesses. They work in a variety of settings such as hospitals, primary care, and specialized clinics, contributing significantly to patient care and the healthcare system. In Poland, an APN is defined as a nurse with a master's degree in nursing, specialization in a particular area of nursing, and professional experience. The ICN shows two mostly identified APN roles: Clinical Nurse Specialist (CNS) and a Nurse Practitioner (NP) [1,2,7].

Advanced Practice Nursing (APN) is an important element of the health care system, affecting the quality of health services and patients' access to medical care. This model, originally originating from Anglo-Saxon countries, is gradually being adapted to Poland [8,9].

The development of advanced practice nursing in Poland is gaining momentum in the 21st century, mainly in response to the changing needs of society and the challenges facing the healthcare system, such as an aging population or a shortage of specialist doctors. APN representatives are usually nurses who have gained additional qualifications, m.in. through postgraduate studies, specialist courses or master's programs enabling them to carry out a wider range of activities, such as prescribing medicines, diagnosing, and planning and monitoring the treatment process [8,9].

The prospects for the development of ANP in Poland are also analysed through

the prism of the experience of other countries. Proponents of this solution often refer to countries such as the United States or Great Britain, where APN nurses have been performing integral functions in the health care system for many years. In Poland, although the concept itself is relatively new, actions are being taken to regulate the legal and professional status of advanced practice nurses and to promote their role in the health care system [7-10]. Work on the implementation of the APN model in Poland has been carried out by the Polish Nursing Association (PTP) for many years. In December 2023, a draft systemic amendment was submitted to the Minister of Health aimed at improving the availability and quality of health services through the use and systemic implementation of independent professional competences of nurses and midwives [10].

PTP proposes the introduction of APNs as a new level of competence. This change will allow for the fulfilment of European recommendations in the field of statutory definition of three levels of practice: 1) general nurse; 2) specialist nurses; 3) advanced practice nurses.
Dziedziny proponowane do wdrożenia APN w pierwszym etapie rozwoju modelu w Polsce to:

- Primary healthcare
- Long-Term Care APN Nurse
- APN Surgical Nurse
- Diabetes APN Nurse
- Anesthesiology APN Nurse
- Cardiology APN Nurse
- APN Neurological Nurse
- Palliative Care APN Nurse
- APN Wound Care Nurse
- Geriatric APN Nurse [10]

On 22 May 2024, a conference entitled "Advanced practice of nurses and midwives as a value for the patient, the system and the payer" was held in Gdańsk, during which a document signed by representatives of the Supreme Chamber of Nurses and Midwives, the Medical University of Gdańsk, the National Association of Nurses and Midwives and the Polish Nursing Association was handed over to the Minister of Health. This document called the Gdańsk Declaration, contains a postulate to undertake legislative and systemic work that will adapt the currently functioning model of health care to social needs through the effective use of human resources in the Polish health care system, including nurses and midwives, m.in. by implementing a new level of competence, i.e. Advanced Nursing Practice [11].
The literature emphasizes that the key role in the development of APNs is played by the support of educational and scientific institutions, which through educational programs and scientific research contribute to the development of standards of clinical practice. The results of the analysis indicate the need to integrate cross-sectoral education, including both medical personnel and political decision-makers, which would allow for more effective implementation of advanced practice nursing into the Polish healthcare system [6-8].

An important aspect discussed in the literature is also social acceptance and awareness of the role of the advanced practice nurse, which is crucial for the full implementation of this model. Research shows that patients often express satisfaction with the care provided by qualified nurses, especially in situations where access to a doctor is limited [7]. However, there are also concerns about the possibility of blurring the boundaries of competence between doctors and nurses, which requires appropriate legal regulations and practice standards [8].

Advanced practice nursing in Poland is a growing model that has the potential to significantly improve the efficiency and accessibility of healthcare. Further cooperation between educators, practitioners and policymakers is necessary to implement the APN in Poland and optimize the structure of the healthcare system for the benefit of the patient.

In Poland, since 20024, there has been a system of higher education for nurses: bachelor's and master's degrees. Nurses can gain specializations in 15 fields. Polish nurses have competences to write prescriptions and provide nursing advice, so from the substantive level, we have a well-prepared nursing platform ready to carry out the tasks of the APN. One of the main barriers to the development of advanced practice nursing in Poland is the lack of unambiguous legal regulations and professional frameworks defining both the scope of competence and responsibility. The current legal system limits the diagnostic capabilities of nurses, and the full integration of advanced physical examinations into everyday practice depends on the development of legal acts that recognize the new competences of nurses [10, 11].

Gorzkowicz and Strecker also emphasize the importance of international cooperation and exchange of experience as key factors supporting the development of APN in Poland. Foreign examples show that high-quality specialist training systems and the development of the role of APNs in the health care system result in improved health outcomes for patients, increased access to health services and relief of the burden on the care system through the rational use of human resources [9].

Conclusions

In this context, the initiatives undertaken by the nursing community are an important contribution to the discussion on the future of nursing in Poland, as they indicate specific actions that should be taken to implement the APN into the health care system. However, to achieve this goal, it is necessary to modify educational programs accordingly, changes in legal regulations and actively support the social and professional recognition of increased competences of nurses.

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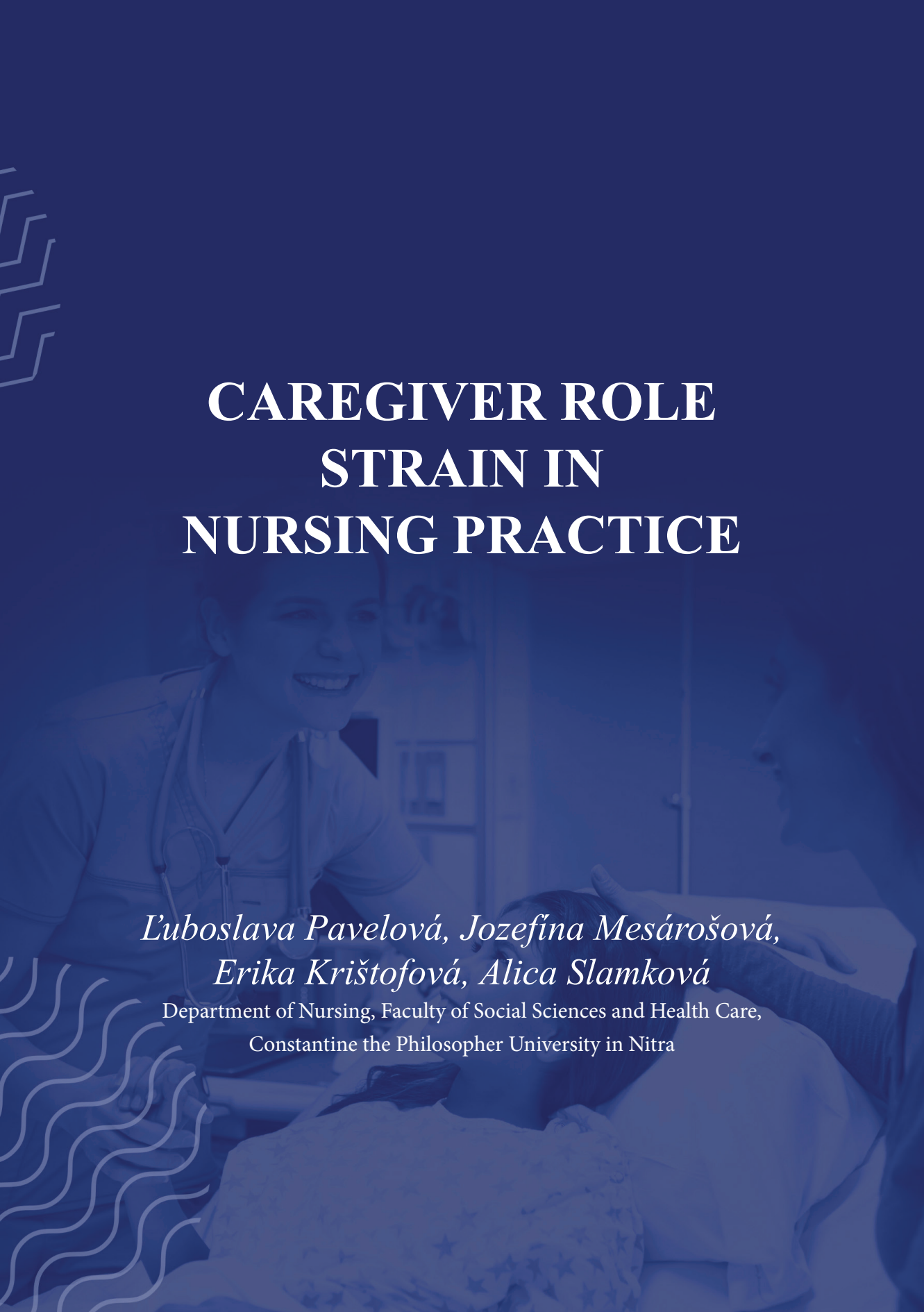
CAREGIVER ROLE STRAIN IN NURSING PRACTICE



Ľuboslava Pavelová, Jozefína Mesárošová, Erika Krištofová, Alica Slamková

Department of Nursing, Faculty of Social Sciences and Health Care, Constantine the Philosopher University in Nitra

Introduction: Family involvement in health and medical tasks at home is not new, but it has become more common and is often far more complex than in the past. The Global Strategy and Action Plan on Aging and Health 2016-2020 includes informal caregiver support as one of the key actions. The Caregiver Role Strain is a nursing diagnosis that describes the burden of caregiving on the physical and emotional health of the caregiver and its effects on the family and social system of the caregiver and care receiver.

Aim: This study was a literature review. The search was made during November in 2023 and it was conducted using the following databases: A total of 195 studies were found of which 15 were duplicates. The selection of relevant studies was conducted using inclusion and exclusion criteria.

Results: There are several tools available for assessing caregiver stress and burden. Professionals recommend being familiar with structured interviews and questionnaires. Nurses and clinicians need to tailor their use of assessment instruments depending on the characteristics of the caregiver (e.g. age, cultural background), and the care recipient (e.g. age and specific medical problem or disability).

Conclusions: This assessment helps the nurse to identify the best way to educate the patient and to tailor the teaching strategies to fit the patient's preferences.

Keywords: Caregiver Role Strain. Nursing diagnosis. Home nursing care.

Introduction

Family involvement in health and medical tasks at home is not new, but it has become more common and is often far more complex than in the past.

Along with improving quality of life, the focus on health and social policies has increased the longevity of populations. If, on the one hand, living longer is a sign of a civilization's evolution, on the other, this increase in average life expectancy entails several less positive repercussions. These repercussions include higher social and economic costs, increased prevalence of chronic diseases, greater comorbidities, greater dependence, and consequently, longer and increasingly differentiated care needs. Such care is essentially provided by family members or significant persons close to the patient, called informal caregivers [1]. The role of family caregivers following the discharge of their care recipient from a hospital or skilled nursing facility is important but currently understudied. The caregiver's specific role during this process may vary based on the care needs of the older adult, the caregiver's relationship with the older adult, and where the caregiver lives in relation to the older adult [2].

In Slovakia, approximately 77,652 caregivers have provided care to an adult or child in the last year (MPSVR SR gov.). About 34.2 million Americans have provided unpaid care to an adult age 50 or older in the last 12 months. The majori-

ty of caregivers care for one other adult, while 15% care for 2 adults, and 3% for 3 or more adults [3].

All family caregivers should receive support and help with their everyday lives and take care of their loved ones. A family caregiving situation often starts off as ordinary assistance in everyday life, which in time turns to a more binding family caregiving situation. Often, the patient requires constant care from the family caregiver due to illness, injury or ageing [4].

Nurses in home care spend a great deal of time with patients and families, they are in a unique position to assess caregiver strain and burden and to provide appropriate education and interventions. Nurses are ideally positioned to assist patients and their families to recognize and reduce the strain and burden of caregiving. Reducing caregiver strain and burden supports the mission of professional nursing through efforts to improve the quality of life and other health outcomes for patients with cancer and their caregivers.

The Global Strategy and Action Plan on Aging and Health 2016-2020 includes informal caregiver support as one of the key actions [5].

The Caregiver Role Strain is a nursing diagnosis that describes the burden of caregiving on the physical and emotional health of the caregiver and its effects on the family and social system of the caregiver and care receiver. The diagnosis is used to identify caregivers who are having trouble fulfilling their role and to develop interventions to address their specific needs and challenges [6].

In nursing, NANDA-International identified as a problem that nurses must deal with in their practice and defined it as "difficulty in playing the role of caregiver for the family or other signifiers. "It is a multidimensional phenomenon that is characterized in the caregiver through changes in physical and emotional state, imbalance between activity and rest and compromised individual coping (Domain 7. Role relationship, Class 1. Caregiving roles – 00061) [7].

Aim

This study was a literature review. The search was made during November in 2023 and it was conducted using the following databases: PubMed and ScienceDirect. Searches were supplemented by screening the reference lists of the articles, making searches in nursing education journals, and conducting searches on Google Scholar. The literature search was performed using a combination of the following primary search terms: [[empower] AND [caregiver OR caregivers AND [educate] [caregiver role strain OR burned out]]. Search terms were modified for each database. A total of 195 studies were found of which 35 were duplicates. The selection of relevant studies was conducted using inclusion and exclusion criteria. Inclusion criteria for the publications included an age limit, articles must have been written in the past 15 years to avoid using outdated materials. Articles must contain enough information that shows the article is focused on using tools/instruments in the assessment of education

for caregivers. Inclusion criteria: written in the last ten years, the articles are evidence-based, the presence of clear definitions about the use of tools in the assessment of caregivers, and the research is published in English. Exclusion criteria: point of view based on subjective opinions; the full text of the article is not available, irrelevant to the subject.

Results

There are several tools available for assessing caregiver stress and burden. Professionals recommend being familiar with structured interviews and questionnaires. Nurses and clinicians need to tailor their use of assessment instruments depending on the characteristics of the caregiver (e.g. age, cultural background), and the care recipient (e.g. age and specific medical problem or disability).

Caregivers may be prone to depression, grief, fatigue, and changes in social relationships. They may also experience physical health problems and fatigue, gastrointestinal issues, headache, hypertension, weight changes, emotional liability, expressions of anger or frustration, insufficient time to meet personal needs and others.

Therefore, the nursing education goals and outcomes for caregiver role strain aim to provide a balance in both the caregiver's and care receiver's lives [8].

"The Zarit Burden Interview" is a popular caregiver self-report measure used by many aging agencies, originated as a 29-item questionnaire [9]. The revised version contains 22 items. Each item on the interview is a statement that the caregiver is asked to endorse using a five-point scale. Response options range from 0/ Never to 4/Nearly Always. For shorter administration, shorter versions, ranging from 1 to 18 items, have been developed. The results Canadian Study of Health and Aging demonstrated that is a valid and reliable instrument in measuring the burden of caregivers [10]. These scales have been used extensively in caregiving research [11]. "The Caregiver Reaction Scale" is a new scale that was adapted for use in a clinical setting from the research instrument used to develop a model of caregiver burden [12]. It is a valid and reliable assessment of multiple reactions to the experience of caregiving, including family-level stresses as well as more traditional burdens and role demands, along with a positive response to caregiving. The measure includes subscales that assess feelings of role captivity, overload, relational deprivation, competence, personal gain, coping, family beliefs and conflict, job conflicts and financial disruption. Two advantages of this scale for clinical settings include the simplicity of its response format (1-4 Likert-type scale ranging from not at all to completely) and its inclusion of a broad range of possible caregiver responses.

"The Caregiver Health Self-Assessment" Questionnaire can help caregivers look at their own behavior and health risks. With their healthcare provider's help, this questionnaire can also help caregivers make decisions that may benefit both caregivers [13]. This 18-item, caregiv-

er self-report measure was devised as a means of helping healthcare workers assess the stress levels of family caregivers accompanying chronically ill older adult patients to their medical visits. Caregivers are asked to respond either Yes or No (statements, such as "During the past week or so, I have felt strained between work and family responsibilities) [14]. "Perceived benefits of caregiving", while caregiving is often highly stressful, many caregivers report that caring for a loved one has positive aspects. Benefit-finding can be an important way of coping with stress [15]. The Perceived Benefits of Caregiving Scale includes 11 items and was developed by Beach [16]. Response options that have been used include a Yes or No format, and a 5-point Agree or Disagree scale [17]. Importantly, the positive and negative effects of caregiving are not mutually exclusive; rather, caregivers can and do experience both simultaneously [18]. This scale is a valid assessment instrument for measuring the benefits that caregivers experience from their caregiving work and can easily be used in research and practice [19]. "The Picot Caregiver Rewards Scale" is a 25-item scale measuring the positive consequences of caregiving. Respondents rate the degree to which items describe positive consequences of their caregiving on a 5-point Likert scale, ranging from Not at All to "A Great Deal [20]. This contains 15 items within 3 subscales, self-efficacy for obtaining respite, responding to disruptive patient behaviours, and controlling upsetting thoughts about caregiving. Items are rated on a 0-100 scale for current beliefs [21]. The Revised Scale for Caregiving "Self-Efficacy" has been translated into multiple languages; it is effective for use in diverse populations of caregivers [22]. "Social support, or perceptions" of help received from others, is studied as a resource used to cope with stress [23].

Received Support scales include Tangible Support, such as help with transportation, emotional support, such as having others listen and show interest, and informational support, such as sharing suggestions and information. Satisfaction with support, and negative social Interaction, such as criticisms and demands by others, are also included [24]. Improvements in satisfaction with social support after caregiver counselling is an important mechanism underlying effective caregiver intervention and finding positive aspects of caregiving [25]. "Coping Health Inventory for Parents" is 45-item measure of a parent's response to managing demands when a child has a serious or chronic medical condition. Purpose is to measure a family's coping with the serious or chronic illness of a child Response format: Likert-type scale (0 - not helpful; 1 - minimally helpful; 2 - moderately helpful; 3 - extremely helpful.

Trying to maintain family stability, talking with the doctor about my concerns about my child with the medical. This is a widely used measure in studies of children with chronic illness and disability [26].

"The Cultural Justification for Caregiving Scale" is a 10-item measure designed to assess caregivers' cultural reasons and ex-

pectations for providing care. Responses are coded 4 - Strongly Agree, 3 - Somewhat Agree, 2 - Somewhat Disagree, and 1 - Strongly Disagree. Items are summed, and scores may range from 10 to 40, with higher scores indicating stronger cultural reasons for giving care [27]. Caregiver Strain Instrument/Index is a brief, convenient, self-administered instrument that is easy to score. Long-term family caregivers were not comfortable with the dichotomous choice, the modified instrument provides the ability to choose a middle-category response best suited to some situations [28]. "The "Caregiver Strain Index" (CSI) is a tool that can be used to quickly identify families with potential caregiving concerns. It is a 13-question tool that measures strain related to care provision. This instrument can be used to assess individuals of any age who have assumed the role of caregiver for an older adult [29]. The Caregiver Strain Index is a screening instrument which can be used to identify the strain of carers, assess their ability to go on caring and to identify areas where support may be needed. These assessment tools can help nurses identify the specific needs and challenges faced by caregivers and develop effective nursing interventions to address them.

Conclusions

Nurses play a crucial role in educating patients about their health. To provide effective patient education, nurses must first assess their patients to determine their level of knowledge and understanding of their medical condition. This assessment helps the nurse to identify the best way to educate the patient and to tailor the teaching strategies to fit the patient's preferences. Utilizing evidence-based nursing interventions, goal setting, and nursing diagnoses specific to addressing knowledge deficits can help nurses effectively educate patients and provide health teachings.

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EXAMINATION OF THE ROLE OF ADVANCED PRACTICE NURSES IN DIABETIC RETINOPATHY SCREENING BY TELEMEDICINE

Lívia Tóth[1], Dr Klára Simon[2], Dr Dorina Pusztai[3], Dr Habil Orsolya Máté[4]

[1]Assistant Professor, UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[2]Assistant Professor UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[3]senior lecturer, UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[4]Phd, MEdu, MPH associated professor, director of foreign affairs , UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

Diabetes mellitus is a disease of civilization and is the leading cause of blindness in the working-age population in developed countries. The goal of this systematic review was to create a summary of international literature on the role of advanced practice nurses (APNs) in the screening of diabetic retinopathy (DR), with special emphasis on telemedicine. The main areas we examined were the efficacy of APNs in the screening of DR and the advantages of telemedicine. The review includes 28 studies chosen from 6 electronic databases between 2005 and 2020. The training of APNs in Hungary began in 2017 with multiple areas of specialization. Internationally, APNs form an important pillar of the healthcare system and perform DR screening in several locations. The effectiveness of APNs in providing appropriate health care and in the screening of DR is supported by multiple sources in the literature. The results showed that APNs were nearly as effective in their ability to diagnose DR as clinical doctors, confirming their efficacy. We can infer that with their participation, the quality of care, patient satisfaction, screening coverage and cost-effectiveness can all be improved. It is important to emphasize that the care of a diabetic patient is a complex task which not only involves fundus photography, but also physical exams, laboratory tests, as well as investigations and treatment of its complications. In a primary healthcare setting, APNs can provide efficient care in all of these aspects. The involvement of APNs in the telemedicine screening of DR in Hungary may provide a significant leap forward in preventing blindness caused by this common condition.

Keywords: advanced practice nurse, diabetes, diabetic retinopathy, telemedicine

Introduction

Diabetes mellitus (DM) is a civilization disease and the leading cause of blindness among the working-age population in developed countries. In our country, the prevalence of diabetes is estimated to be 9.9% among adults, which translates to approximately 807,000 people with diabetes in this age group as of 2015 (Szabó et al., 2018). Diabetes has several negative effects on health, one of the most significant complications being diabetic retinopathy (DR), which can lead to severe vision impairment and even complete blindness. DR ranks first worldwide among the causes of blindness in the 20 to 65 age group. The incidence of blindness among diabetics is 25 times higher than in the average population. According to some data, DR is observed in 40% of diabetic patients, and it is already present in 20% at the time of diagnosis of type 2 diabetes mellitus (Tóth and Németh, 2020). In our country, there are more than 218,000 visually impaired individuals aged 50 or older. Nearly one in five diabetics in Hungary has ophthalmic complications due to diabetes, of which 0.3% are blind and 0.3% are severely visually impaired due to poorly managed diabetes and diabetic retinopathy (Tóth et al., 2017).

Prevention and regular screening play an extremely important role, as patients ty-

pically perceive very little regarding the disease's development, and vision problems only become apparent when severe, advanced damage occurs in the retina. Continuous ophthalmic screening and monitoring of diabetics are emphasized in several recommendations, both to slow the progression and to prevent severe stages. The time elapsed since the disease was diagnosed and the severity of vision loss are directly correlated. The condition can cause serious complications that significantly impair the patient's quality of life. Much of this could largely be preventable through regular screening (Szabó et al., 2015), which could theoretically be implemented in ophthalmic outpatient clinics; however, due to the large number of diabetics, the capacity of these clinics would not be able to accommodate this volume. According to national survey data conducted in 2015, only 45.7% of diabetics in our country participated in a fundoscopic examination within the one-year timeframe recommended by professional guidelines, while 27.4% did not show up (Németh et al., 2019).

Aim:

In Hungary, nearly 1,000 individuals lose their sight each year due to the ophthalmic complications of diabetes, which is the second most common cause of blindness in our country. The severity of the problem is indicated by the increasing trend of diabetes-related blindness in Hungary. Patients are advised to undergo ophthalmic examinations starting from the diagnosis of diabetes, annually or semi-annually, and in cases of pre-proliferative retinopathy, every 2 to 4 months (Ophthalmology Professional College, 2018). To examine the entire diabetic population, the full-time employment of more than 100 ophthalmologists would be necessary, which is not feasible within the Hungarian healthcare system (Somfai, XVIII).

Monitoring patients and providing timely treatment is becoming an increasingly significant challenge. By involving extended scope nurses working in primary care, screening, care, and coordination for diabetic patients can be implemented, which has already been done in several places internationally by APRNs (Advanced Practice Registered Nurses) (Ji-Peng et al., 2020). The extended scope allows nurses to take on certain medical tasks, such as working independently in community nursing practices, independently compiling treatment plans, ordering and evaluating imaging diagnostics and blood tests, prescribing medications, establishing diagnoses, and conducting preventive examinations, as well as referring patients to specialist clinics. The goal of these measures is to enhance the efficiency of healthcare services, which in turn increases patient satisfaction (Oláh et al., 2015). Literature examples support the idea of relieving physicians and highlight the usefulness of Advanced Practice Nurses in screening for diabetic retinopathy (Ophthalmic nurse practitioner-led diabetic retinopathy screening. Results of a 3-month trial - Eye (2006) 20, 173–177).

Screening in primary care is also complemented in several places by telemedicine

screening, which enables healthcare professionals to care for their patients without regular face-to-face meetings. This is advantageous for ophthalmic care for several reasons: primarily time-saving, it facilitates access to healthcare services in remote areas, highlighting regions where healthcare personnel is lacking, reducing direct healthcare service delivery, and additionally, it decreases the risk of infection transmission amid the COVID-19 pandemic (Ji-Peng et al., 2020).

Methods and materials:

Selection Criteria

Regarding the methodology of the study, only published studies were included in the research material. The literature search was conducted using reliable, objective foreign and domestic databases such as MEDLINE, PUBMED, EBSCO, EMBASE, MATARKA, and MOKKA, keeping in mind the professional guidelines of the Health Professional College of the Ministry of Human Capacities.

This paper encompasses the literature published between 2005 and 2024, based on multicenter, prospective descriptive studies conducted in the last 15 years. To provide a complete and comprehensive picture, it was also necessary to review the literature published before 2010 during the literature analysis. The search was conducted using the following keywords: diabetes, diabetes mellitus, diabetic retinopathy, advanced practice nurse, nurse practitioner, extended scope nurse, ophthalmology, telemedicine, and screening.

Exclusion Criteria

Literature published more than 15 years ago is excluded.

Results:

Forms of diabetic retinopathy:

1. **Praeretinopathy** Before the development of retinal lesions, so-called praeretinopathic changes occur in the retina, primarily indicating alterations in the hemodynamics of blood supply and changes in the vascular walls that compromise the integrity of the blood-retina barrier.
2. **Mild and moderately severe nonproliferative or background retinopathy** The hallmark phenomena of the second stage include retinal microaneurysms, intraretinal hemorrhages, lipid (hard) exudates, soft exudates (cotton-wool spots due to retinal nerve fiber microinfarcts), and the appearance of edema.
3. **Preeproliferative retinopathy (severe nonproliferative retinopathy)** With increasing ischemia, the number and extent of symptoms observed in stage 2 increase, surpassing the threshold above which it is defined as a severe nonproliferative stage.
4. **Proliferative retinopathy** In this stage, newly formed blood vessels arise from the area of the optic nerve head and project outwards from the surface of the retina towards the vitreous body, carrying the risk of vitreous hemorrhage complications and threatening tractional retinal de-

tachment. (Ophthalmology Professional College, 2018)

Regarding telemedicine screening networks, Iceland has the most experience, where diabetic retinopathy (DR) screening has been conducted for 25 years. According to a survey conducted in 1980, 2.4% of Icelandic diabetics were blind (visual acuity <0.1), and by 2005, this number had decreased to 0.5% thanks to the screening network. (Stefansson, 2006) Unfortunately, even today, there are areas where one-third of diabetics cannot participate in ophthalmic examinations due to distance and lack of time. In their 2009 research, Ng and colleagues developed a teleophthalmology program in Alberta, Canada, to improve access to screening for diabetic retinopathy. After pupil dilation, stereoscopic photos were taken of the patients who underwent the teleophthalmology assessment. The digital images were then packaged into an encrypted, password-protected, compressed file and uploaded to a secure server. Subsequently, the images were unpacked and reviewed by ophthalmologists, who diagnosed them according to the Early Treatment Diabetic Retinopathy Study. Reports were then generated as PDF files and sent back to the healthcare professional working in primary care. During the program, over 5,500 patients (9,016 examinations) were evaluated. Nine hundred thirty patients were referred for further examination or treatment. Only about 2% of teleophthalmology assessments required an in-person examination due to unidentifiable image details. (Ng et al., 2009) In England, the NHS Diabetic Eye Screening Programme (NDESP) provides free screening for retinal changes for diabetics aged 12 and older through more than 80 local programs annually. The program produces 2-field images with pupil dilation, which are evaluated in so-called reading centers. However, it is also possible to evaluate the photos using portable tablets from anywhere in the world, once connected to the internet. The evaluation must occur on an appropriate screen. The current minimum acceptable resolution is a vertical resolution of at least 1080 (1920x1080), with a recommended standard of 1200 (1920x1200), and at least 60% of the photo must be visible on the screen. With the continuous operation of the program, an 82.8% screening coverage was achieved in 2016, involving approximately 2,140,000 patients. Thanks to successful screening, for the first time in fifty years, diabetic retinopathy was no longer the leading cause of blindness in England in 2010. (Scanlon, 2017) In the United States, the two largest DR screening programs are the Joslin Vision Network (JVN) and the Department of Veteran Affairs model (VA). The JVN offers a straightforward solution in which primary care professionals screen patients. The images are sent to a central reading center, supplemented with clinical data such as blood pressure and blood glucose levels (according to the Joslin Diabetes Eye Health Care Model), and a recommended treatment plan is sent back to the primary care institution. (Ji-Peng et al., 2020)

(Figure 1 Telemedicine Screening, own composition) The diagnostic accuracy was higher with digital images obtained after mydriasis than with non-mydriatic images. The best results were achieved when a wide angle (100–200°) was used compared to narrower angles (45–60°, 30°, or 35°), and this was true for both mild and more severe diabetic retinopathy cases. (Shi et al., 2015)

Cuadros and Bresnick conducted a study on annual retinal screenings for diabetics using a telemedicine-based method (EyePACS) within primary care. EyePACS is a web-based DRS system without a license, aimed at simplifying the capture, transmission, and review of images. The system provided a flexible platform for collaboration among healthcare professionals regarding diabetic retinopathy. Relevant clinical data and eight high-resolution images per patient (two external and six retinal images) were encrypted and transmitted to a secure internet server using a computer. The images were then reviewed by ophthalmologists, who diagnosed the severity of retinopathy and made referral recommendations on the EyePACS website, which were subsequently sent to primary care providers. During the pilot phase of the EyePACS DRS program in California (2005-2006), 3,562 examinations were registered. Since 2006, EyePACS has expanded to over 120 primary care sites in California and beyond, recording more than 34,000 DR cases. The overall referral rate was 8.21% for vision-threatening retinopathy and 7.83% for other conditions (e.g., cataracts and glaucoma). (Cuadros and Bresnick, 2009)

Telemedicine Screening Methods, Specificity, and Sensitivity:

L. Shi and colleagues aimed to investigate the effectiveness of telemedicine as a diagnostic tool concerning diabetic retinopathy (DR) and diabetic macular edema (DME). They utilized the PubMed, EMBASE, and Cochrane databases using the keywords „telemedicine" and „DR." The methodological quality of the research was assessed using QUADAS-2. A total of twenty articles were included, involving 1,960 participants (N=1960). The telemedicine examination involved transmitting digital images of the retina to a reading center, where an ophthalmologist evaluated the images. The results indicated that its sensitivity exceeded 80% in detecting DR diagnosis. For low or high-risk proliferative diabetic retinopathy (PDR), it exceeded 70%, while the sensitivity for mild or moderate non-proliferative diabetic retinopathy and macular edema was 53%. The combined specificity of the telemedicine examination exceeded 90%. The diagnostic accuracy was higher for digital images obtained after mydriasis compared to those taken with a narrow pupil. (Shi et al., 2015)

In a 2019 study conducted in Sri Lanka, 700 individuals (n=700), all over the age of 18 with diabetes, were included in the research. A handheld digital camera was used, which took images of the retina using a two-field imaging technique, both before and after pupil dilation. The average age of the participants was 60.8 years

(SD ± 10.08), and the average duration of diabetes was 9.9 years (SD ± 8.09). They were unable to determine the severity of DR in 43.4% of cases, which decreased to 12.8% after dilation. The sensitivity for diagnosing diabetic retinopathy was 88.7% (95% CI 81.7–93.8%). The specificity was 94.9% (95% CI 93.6–96.0%). (Piyasena et al., 2019)

F. Aptel and colleagues aimed to evaluate the sensitivity and specificity of one-field and three-field, non-mydriatic and mydriatic pupil, as well as 45-degree digital color photography used in DR screening, compared to mydriatic indirect ophthalmoscopy. The sensitivity and specificity of digital photography were 92% and 97% with the three-field non-mydriatic technique, and 97-98% with the three-field mydriatic technique. In conclusion, the non-dilated three-field technique has proven to be a convenient solution (shorter duration, able to lead after the examination) while also providing adequate sensitivity. (Aptel et al., 2008)

Conclusion:

The continuous population growth and increasing life expectancy pose serious challenges in our country regarding an aging society, the health status of the population, the rising costs of the healthcare system, waiting lists, and the shortage of healthcare professionals. To address these issues, many OECD countries have introduced the training and role of Advanced Practice Nurses (APNs, MSc nurses). Internationally, APNs are an integral part of healthcare. In Hungary, the training for APNs started in 2017 with several specializations. Nurses who choose the community specialization have a broader scope of competencies upon graduation, which includes independent work in community nursing practices, creating treatment plans independently, ordering and evaluating imaging diagnostics and blood tests, prescribing medication, establishing preliminary diagnoses, conducting preventive examinations, referring to specialist outpatient clinics, and administering vaccinations, as well as using telemedicine tools. APNs, under medical supervision and regulated by protocols, can provide services equivalent to those of physicians in various areas. Their presence can strengthen primary care: they can perform 67% of medical tasks, thus increasing access to healthcare; their work leads to longer, patient-centered consultations, which increases patient trust and satisfaction; patients under their care show a better willingness to cooperate and preventive health behaviors, resulting in a lower incidence of diseases within their group; and their patients attend screening tests more regularly. In terms of patient safety, satisfaction, and treatment outcomes during follow-ups for primary care and chronic patients, APNs provide equivalent but more cost-effective care under the same healthcare conditions. Their application has resulted in significant improvements in the control of patients suffering from hypertension and diabetes.

Globally, the number of blind and visualy-ly impaired individuals is increasing. Based on available evidence, in the countri-

es involved in the study, APNs in England achieved a 92% agreement in diagnosing diabetic retinopathy (DR) compared to clinical physicians, confirming the effectiveness of APNs in DR screening. Numerous literature examples support the appropriate care provided by APNs and their effective participation in DR screening and management. To prevent blindness due to diabetes, the internationally recognized best and most effective solution would be the national establishment and operation of a telemedicine-based retinal screening network. Furthermore, it should be noted that a telemedicine screening network could improve access to specialized care, reduce unnecessary hospital visits, alleviate the burden on treatment centers, and enable more comprehensive examinations while making services more cost-effective, especially in rural areas. Additionally, APNs working in primary care must provide effective care to the population in managing diabetes, as diabetes management is a complex task that includes photo-documentation of the retina, DR screening, blood pressure, glycemic control, hyperlipidemia monitoring, and examination of diabetic foot. The telemedicine screening of DR, in which APNs working in primary care can play an integral role in diabetes management, could bring significant progress in Hungary in combating blindness caused by DR.

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IMPROVING THE PREVENTIVE ACTIVITIES OF PRIMARY CARE NURSES BASED ON INTERNATIONAL GOOD PRACTICES, THE TASKS OF THE ADVANCE PRACTICE NURSE NURSE SCOPE PRACTICE COMMUNITY

Adrienn Ujváriné Dr. habil Siket[1], Annamária Pakai Dr. habil[2], Miklós Zrínyi Dr.[3], Erika Balogh Lánczinė4, Anita Nagy[5], József Betlehem Prof. Dr.[6]

[1]University of Debrecen, Faculty of Health Sciences, Institute of Health Sciences, Department of Nursing and Midwifery,

[2]University of Pécs, Faculty of Health Sciences, Institute of Health Sciences

[3]University of Debrecen, Center for Drug Development Coordination, Research Fellow

[4]Dombi Samuel Small Area Health Centerre and Health Development Office

[5]Debrecen University Clinical Center

[6]University of Pécs, Faculty of Health Sciences, Institute of Emergency, Health Education and Nursing, Pécs

Introduction: This presentation will introduce the role of nurses in preventive services. Hungary has the second highest rate of preventable deaths in the European Union after Romania. To improve these indicators, it is essential to develop preventive services at the primary care level in Hungary. According to international trends, BSc and MSc Advanced Practice Nurses (APNs) can play an active role in preventive care.

Aim: Based on the published professional guidelines on preventive care, this has become a crucial issue in our country. BSc and MSc (Advanced Practice Nurses) nurses can be empowered with additional competencies in key indicator groups of preventive care such as vaccination, screening, risk assessment, preventive/ lifestyle counseling, preventive therapy, and documentation.

Method and material: Literature search, quantitative comparative study, scenario analysis.

Results: If it could have a broader scope of tasks and a specialization code through competency-based regulation, it would free up a significant workload in the GP system, so that medical knowledge could be oriented towards higher levels of patient care. APN training could be expanded, and the ultimate beneficiary population would be able to use their existing practical and theoretical skills and competencies - such as patient-centeredness, and emphasizing preventive options - ultimately leading to a better overall social care status and higher quality, more accessible care.

Conclusions: For an effective implementation of the structural change in the healthcare system, it is necessary to strengthen the preventive and definitive care conditions in primary care. In this context, capacity building and competence development of the skilled nursing workforce is a priority. The vast majority of preventive care tasks can be carried out by competent nurses, with appropriate care organization and the provision of equipment, under the professional supervision of a general practitioner who is trained to plan and manage these tasks. Nurses can make the most effective contribution if they are given a greater and more prominent role than hitherto, working in a multidisciplinary team.

Keywords: primary care, APN nurse, performance assessment, competence, preventive, care tasks

Introduction

The theme is important because it focuses on equipping primary care nurses with the knowledge, skills, and international best practices they need to contribute effectively to disease prevention and health promotion in their communities. This is also in line with global trends towards sustainable health systems and a more active role for nurses.

Primary care nurses are emerging as first-rate healthcare providers for individuals using healthcare services. Often primary care nurses are the first point of contact. This makes them crucial in early identification of health problems, guidance, and prevention of illness.

There is a growing body of evidence from around the world on best practices in preventing common diseases, promoting healthy lifestyles, and managing health risks. Learning from international good practice can equip primary care nurses with the most up-to-date and effective strategies to improve patient outcomes.

The challenges facing nursing depend largely on changes in living conditions and changes in the functioning of the healthcare system in each country. Nursing research plays an essential role in improving healthcare, advancing nursing practice, and contributing new insights into patient care. Why is it important to stress this point?

According to Eurostat data, Hungary has a poor record of preventable and avoidable deaths in the European Union. In 2020, 350 out of 100,000 people died from preventable causes. Figure 1 illustrates that Hungary has the second highest rate of preventable deaths after Romania1-2 (Figure 1).

To improve these indicators, it is essential to develop preventive services at the level of primary care in the country. To give an example, an average GP prac-

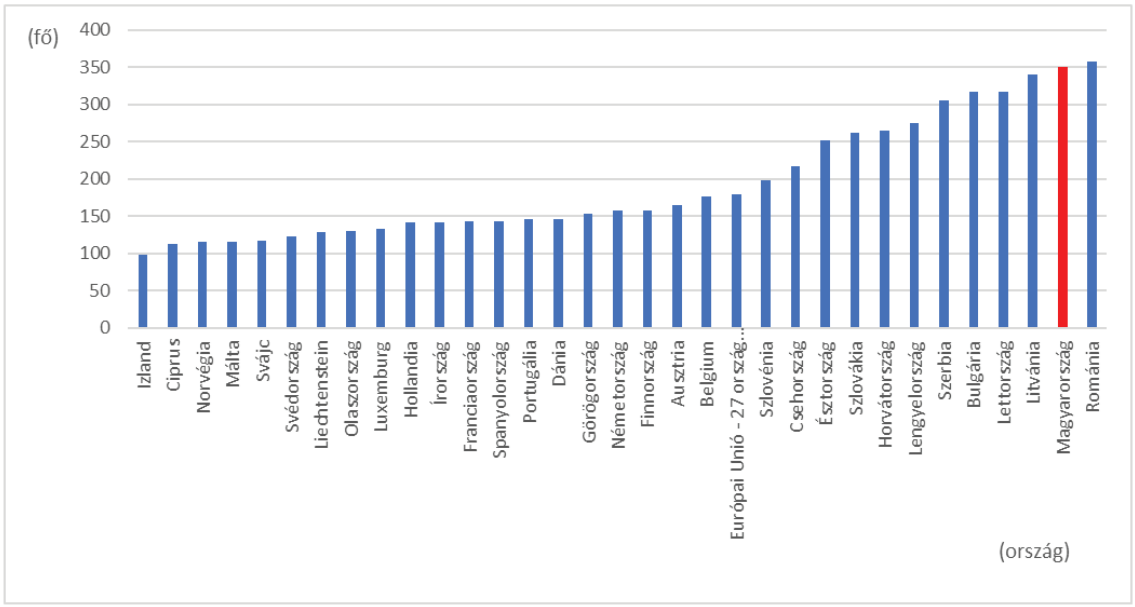

Figure 1 Number of deaths from preventable causes in the European Union Member States [1]

tice in England prevents 2.59 deaths, and the preventive services provided by GPs could potentially prevent 3.41 deaths per year. If preventive services in our country were as effective as in the UK region, GPs could prevent 28,335 deaths through their preventive services in primary care, saving 21,519 lives each year and 6,816 lives each year. Unfortunately, these statistics are adversely affected by cardiovascular mortality under 65 years of age, mortality from ischemic heart disease, cerebrovascular mortality, and mortality from diabetes. However, improvements in these indicators can be achieved through preventive services in primary care [2],[3].

According to international literature, the role of the Advanced Practice Nurse (APN) is also important in preventive care settings in addition to the general practitioner. Numerous studies have shown that health gains are achieved through the practical application of procedures integrated into the nurse's work, rather than the general practitioner's. This, APNs can therefore play an important role in preventive care in our country too, specifically concerning the 15 recommended intervention targets such as alcohol consumption, aspirin prophylaxis, diabetes, domestic violence, depression, smoking, drug addiction, falls, obesity, physical activity, abdominal aortic aneurysm, hypertension, dyslipidemia, osteoporosis, and nutrition [2],[3].

The essence of implementing the Advanced Practice Nursing (APN) model in Hungary, as like many other developed countries, is to establish practice-oriented advanced professional training in nursing, ensuring a real scope of professional activity (competence) and level of responsibility (accountability) [4].

In addition to prioritizing the safe recovery of patients, the greatest challenge of the healthcare sector is ensuring patients' access to care and equal opportunities. To achieve these goals, the „APN competence" of Advanced Practice Nurse program and jobs are already being utilized in a majority of the countries associated with the Organization for Economic Co-operation and Development (OECD) [5], [6], [7], [8]. In addition to nursing, similar trends and „good practices" are already clearly visible at the international level in imaging diagnostic (radiographer BSc, MSc), laboratory medicine (medical laboratory analytical training BSc, MSc), physical therapy and midwifery [5], [6], [7], [8].

In addition to the adoption of a renewed training system, the introduction of the new care model must be preceded by the expansion and rethinking of health service options. The first phase of the introduction was the development and acceptance by the universities of a 'professional' joint master's program after familiarizing themselves with the literature and the systems used in practice. The second phase included the enrolment of students and the implementation of the courses based on the new curriculum in September 2017 and February 2018 at the four authorized universities (University of Debrecen,

University of Pecs, Semmelweis University, University of Szeged). The present study aims to describe the role of primary care nurses, with a special focus on APN care nurses, in preventive services.

Data and methodology

Literature review, literature search. The literature review presents the scientific literature of nurses' responsibilities and preventive tasks as a priority topic, placed in context. It includes a critical appraisal of the material. A literature search of relevant literature on the topic was conducted using keywords in online databases. The following keywords were used in the literature search: community nurse, advanced practice nurse (APN), advanced practice nurse (APN), Nurse Practitioner (NP), nurse practitioner (NP), APN practice nurse, primary care, competence, competency, prevention, and care.

The research selected relevant literature, no more than 10 years old, that contained specific information on the competencies and responsibilities of primary care nurses and APNs in the care and management of patients, with a focus on prevention. In addition, an international and domestic overview was prepared, focusing on the most important areas and significance of the topic, in terms of the past-present-future timeline. In particular, research on the preventive tasks of nurses was presented.

Results

International perspective, the role of primary care in addressing public health problems, nurses' priority tasks and competencies

The guidelines for primary healthcare were formulated by the International Conference on Primary Health Care in Alma-Ata (USSR) in 1978. According to Congress, primary healthcare is a means of achieving a level of health for all the world's people by the year 2000 that will enable them to lead productive lives, both socially and economically [9].

The conference focused on steps to address the inequalities in the health status of the population. The Declaration enshrined that health is a fundamental human right. It identified the establishment, development, and maintenance of primary healthcare as a key objective of the Conference. It emphasized health promotion, and prevention of common diseases through education, immunization, adequate food supply, safe drinking water, and public health measures, as well as maternal and child health and family planning services. Primary healthcare is also the first level of linkage between individuals, families, communities, and the healthcare system [10].

The declaration also stated that (1) as the achievement of health is one of the most important social goals, governments must provide the resources to realize the potential of primary care, including a framework for cooperation with other sectors; (2) this system can integrate the cooperation of doctors, nurses, and other health professionals; (3) and it is based on this system that health promotion, preventive,

curative and rehabilitation services can be effectively operated [11],[3].

In 1979, the International Council of Nurses, speaking on behalf of the world's nurses, declared its intention to work together at the international and national level to make primary healthcare a reality. This declaration of intent reflected the well-established fact that in most healthcare systems, therefore, the success of national healthcare efforts depends to a large extent on the preparedness and dedication of the nursing profession.

The First International Conference on Health Promotion was held in Ottawa, Canada in 1986. The main outcomes of the conference are contained in the Ottawa Charter for Health Promotion. The Charter further strengthened primary care by giving even greater emphasis to prevention, emphasizing the importance of health promotion at both individual and community levels [10].

The 1996 Ljubljana Charter on Health Care Restructuring set out the principles that should guide health system transformation plans. These include that health system reform should be guided by human dignity, equity, solidarity, and professional ethics; have clear targets for health gains to be achieved; be people-centered; focus on quality; be based on adequate financial foundations; and have an emphasis on primary care.

In primary care, reforms should ensure that health services at all levels protect and promote health, improve quality of life, prevent and treat disease, rehabilitate patients, and care for those with terminal illnesses [13].

Among the community-based public health intervention models, the North Karelia Project was an internationally renowned program in North Karelia (eastern province of Finland) between 1972 and 1992, which was based on the high mortality from cardiovascular disease among middle-aged men in the region [14]. Hypertension patients were screened by hypertension clinics run by a public health nurse. This model trial used the monitoring system and the intervention together, thus ensuring that the effectiveness of the intervention could be monitored. Family doctors and district nurses organized health assessments for the population, followed by treatment of those in need, lifestyle counseling, and regular monitoring of those with risk factors.

The results were monitored by surveys every 5 years. The results of the program include, for example, a 57% reduction in mortality among men aged 35-64 due to lifestyle changes [15], [16], [17].

In Finland, primary healthcare is a basic public service provided in Health Care Centers (HCCs), which are the basis of the healthcare system [18]. HCCs were initially formed from existing institutions, local doctors' surgeries, and local hospitals, which were complemented practically. They provide a wide range of medical, social, and community services to their local population (health promotion and prevention, diagnostic services, curative, palliative and rehabilitative care. The

staff is made up of nurses and other health professionals with a multidisciplinary approach (laboratory assistants, midwives, physiotherapists, specialists, pediatricians, gynecologists, psychiatrists, etc.). Health education is an important part of the work of health centers. It is not organized and applied in a general way but in specific areas. Examples include advice on the prevention of cardiovascular diseases and diabetes. Public health nurses (public health nurses) organize screenings, give vaccinations, care for hypertensive patients, and provide medical aid to those in need. In this way, nurses also do work that in Hungary is the responsibility of a doctor. Modern primary care is therefore also based on the work of independent nurses, which could be the basis for an independent ‚nurse ordering' system in Hungary [18].

In the British primary care system, services are grouped around family doctors (Balogh 1998). 2-6 family doctors are based in one building. It should be emphasized that the practice nurse has a separate practice, also in a different room from that of the doctor, and is only involved in nursing, health promotion, and education. She is responsible for taking blood pressure, taking blood samples, administering vaccinations, carrying out screening and diagnostic tests, writing prescriptions for long-term medication for chronic illnesses (asthma, diabetes), prescribing nursing equipment and aids, and providing lifestyle and care advice. District nurses are in close contact with doctors' surgeries, although they work in patients' homes. They work to standards set by health services. Their scope of activities and competencies depend on their qualifications, status and practice [19]. APNs' activities are constantly monitored, patients receive more information about their care, the quality of care is improved and there is no significant difference in the cost of care, the number of prescriptions and requests for tests compared to the districts served by doctors [20]. An interesting finding from a British study is that an APN nurse spent more time with a patient than a general practitioner (doctor average 9.36 minutes, APN average 15.97 minutes) [21].

The US approach to health emphasizes home-based skilled nursing/care, with family and community involvement. In order to reduce the number of days of care, rapid discharge from hospital is encouraged and appropriate specialist care is provided for continuing care in the home. MSc nurses work independently, sometimes under medical supervision. „Self-practising" Nurse Practitioners (NPs) with a university degree are qualified to diagnose and treat patients, even when completing nursing rounds. A doctor's referral is required for a nurse practitioner visit.

In 2020, there were 325 000 APNs registered, 88.9 percent of them working in primary care and, according to US statistics, the number of APNs will increase by 31 percent between 2016 and 2026 and could be one of the fastest growing pro-

fessions [22]. Nurse practitioners are entitled to 85 percent of the physician's visit fee, 20 percent of which is paid by the patient. 15.6% of nurses work in home care [16].They have autonomous competence in the following activities: physical examination of patients, carrying out various tests, differential diagnosis, making diagnoses, ordering and assessing laboratory tests, preparing treatment plans, referral to higher level care, counselling at individual and family level, ordering drug therapy, referral in acute cases, participation in clinical trials, projects, direct management of lower qualified staff [23]. Perhaps the strongest arguments for the training and use of APN scope nurses abroad are that nurses achieve the same level of care and, on average, higher patient satisfaction in those care activities that are delegated from the medical function. This is due to the fact that they can devote more time to a patient, many patients are more familiar with them than with their doctor, and district nurses often care for patients in their own homes, so they are familiar not only with their illness but also with the environment and family [24].

The concept of Advance Practice Nurse (hereinafter APN) was described by the International Council of Nurses (ICN) in 2002, with guidelines for all countries in the world: an Advanced Practice Registered Nurse (APN, NP) is a registered nurse who has acquired an expert knowledge base, complex decision-making skills and clinical competencies with advance scope, according to the characteristics of the country in which he/she is working [25].

An analysis of the World Health Organization (WHO) Human Resources for Nursing reports shows that key interventions have been formulated to change the situation of nurses. These include the introduction of new training policies, economic incentives, increasing the role of non-monetary incentives, addressing the substitution of skills and competencies, a regulatory framework, teams based on complementary skills and the creation of a skills mix, along geographical and population lines [26]. [27].

Recent changes in the nursing profession in many countries have resulted in nurses being given new and more responsible roles. Health systems in a growing number of countries are reporting significant progress in the development of advance competence nursing, most recently in Ireland, France, Switzerland, Central Europe and the Baltic countries (Denmark, Finland, Estonia, Iceland, Lithuania and Norway).

Previous experience in the regulation of competencies for nursing and regulatory changes in the training environment over the years (emergence of expected learning outcomes), as well as the perceived impact of developments in practical health technology (digitalisation, equipment) have generally been taken into account in the development of current competencies. In addition to taking over some of the former medical tasks, the extension

of nurses' prescribing powers plays an important role in improving health outcomes, providing efficient and effective health services and ensuring integrated patient care. It is clear that higher educational attainment of nurses is associated with survival of the patients they care for, which is also an encouraging vision for the APN role. Not only in many European countries, but also globally over the last three decades, the demand for nurses has increased, resulting in an increasing regulation of the tasks that can be performed by nurses, which were previously performed by doctors. This process has already taken place in many countries in Europe and may well be taking account of national specificities everywhere.

The OECD's recent publication „Health at glance: Europe 2024" also emphasizes that many healthcare activities in Europe can be levelled and many of those previously performed exclusively by doctors can be safely transferred to highly qualified (university-educated) professionals, which can also ensure better access to care. The system and framework for this should be regulated at Member State level, covering all levels of training. [28], [29], [30], [31].

Situation in Hungary, effective prevention at primary care level

The number of patients per GP in Hungary is currently increasing, while a large proportion of GPs will reach retirement age within five years. The trend is similar in the demographic field of nursing. Nurses with BSc and MSc degrees are almost absent from the system. According to a 2018 survey by the Hungarian Chamber of Health Care Professionals (MESZK), only 10.32% of community and district nurses have a degree, their competencies are unclear, their tasks are inconsistent, and their funding is low [32].

In terms of nursing conditions, the two-person practice model is typical, with a general practitioner and a nurse, typically with an OKJ qualification, providing the care. At present, the average time per patient in a GP practice in Hungary is 5 minutes for a 4-hour appointment, according to the Central Statistical Office. This obviously does not include quality prevention work. In addition to all these problems, the population is aging, health status is steadily declining, partly as a consequence of inadequate lifestyles, and the cost of care is rising as a result. If we look at how Europe has responded to similar challenges, we can see that countries with more developed nursing cultures have adopted a system of expanded scope of nursing education and the introduction of community specialist nurses with MSc degrees.

In order to address this problem, in our country, too, the advance scope of nursing education was launched in 2017, with six specializations, including the specialization of community nurse specialists, which is of particular importance in primary care, and is intended to improve the progressive situation in primary care. [33].

In addition, the introduction of geriatric and emergency specialist nurses will also specifically support the strengthening of the definitive functions of primary care.

In terms of nursing conditions, the two-person practice model is typical, with a general practitioner and a nurse, typically with an OKJ qualification, providing the care. Currently, the average time per patient in a GP practice in the country is 5 minutes for a 4-hour appointment. This obviously does not include quality preventive work [32]. In addition to all these problems, the population is aging, health is declining, among other things as a consequence of inadequate lifestyle, and the cost of care is increasing. If we look at how Europe has responded to similar challenges, we can see that countries with more developed nursing cultures have adopted a system of expanded scope of nursing education and community specialist nurses with MSc degrees. Of the 28 countries in the EU, 13 now have aadvance scope nurse training [34].

In order to solve the problem, the advance competence nurse training was launched in Hungary in 2017, with six specializations, within the framework of which the community nurse specialization is of particular importance in primary care, which is intended to improve the progressive situation of primary care. In addition, the specializations in geriatrics and emergency care and their introduction into practice will also specifically support the strengthening of the definitive functions of primary care.

The successful nursing pilot (EFOP 1.8.2-17 and VEKOP-7.2.3-17) was used to learn about the tasks of nurses [35]. The project is a clear demonstration of the effective implementation of preventive and care tasks by nurses. Based on the test data from 51 practice communities and 357 practices between 2018 and 2021, it can be said that nurses performed preventive tasks with high efficiency. The dissemination of the health assessment (HSA), the development of preventive prescription tasks, disease risk assessment based on identified risk factors, professional development in the areas of lifestyle counselling, patient education, chronic care and rehabilitation were all carried out. In relation to the results of the screening, the additional client pathways are: 1, Client is healthy, 2, Client has lifestyle risk factors without suspected disease, 3, Client has suspected disease, 4, Client is ill and in need of acute care [35].

Services are thus organized around the main groups that can be planned following screening. Health promotion services for healthy people, EFI, complemented by local programmes. For those at risk, the preparation of a health plan and the reduction of modifiable risks (e.g. weight management, exercise, support for mental health problems) and regular screening for non-modifiable risks (e.g. family history of stress). For chronic patients, the preparation and ongoing monitoring of a care plan, including non-pharmacological and lifestyle therapy in addition to drug therapy. The public health services to be

provided and which may be provided by each specialist are defined in relation to the competence lists of the primary care actors.

A competence list has been drawn up within the framework of the project, which has also broken down the nursing tasks for primary, secondary, and tertiary prevention and has been coordinated with the competence list of the general practitioner for APN primary care [35].

The service to be developed aims to contribute to the transformation of primary care towards a personalized, predictive, preventive, participatory and empowering approach The approach is to shift the focus from disease to health and quality of life by identifying the risk of disease onset before it occurs, or by detecting the disease at an early stage when treatment is still possible and less costly, designing optimal interventions and treatment according to the client's risk group [35].

The personalized care plan, which is a central element, takes into account the client's physiological status, mental status, worldview, lifestyle expectations, adaptive skills and socio-economic situation, and takes into account the local specificities of the care system. Together, they enable a plan to be drawn up which can count on the client's cooperation and motivation, and which he or she is able to accept and implement. The most important means of increasing patient adherence to care is to take into account the patient's lifestyle, values and living conditions. The implementation of the personalized care plan involves both the professionals in the practice (e.g. general practitioners, nurses, public health specialists, dieticians, physiotherapists, health psychologists, protective nurses, health promotion officers), and the client [35].

According to the professional guidelines for preventive medicine, published in 2023, the tasks in preventive medicine supervised by general practitioners in the community of practice must be performed by specialists, based on the competencies acquired during their training, or by non-physician health professionals with tertiary qualifications based on the training and outcome requirements. The bachelor's degree courses in nursing and patient care, healthcare and prevention, and the master's degree courses in nursing, health psychology, physiotherapy, complex rehabilitation, public health, nutrition with advance competencies provide appropriate competencies in relation to certain preventive services (as defined in their training and outcome requirements). Professionals with such qualifications may be delegated tasks relating to preventive services, as set out in recommendations 3-26 of the Directive, by the person responsible for the practice [3].

If it could have a broader scope of tasks and a specialization code through competency-based regulation, it would free up a significant workload in the GP system, so that medical knowledge could be oriented towards higher levels of patient care [36].

APN training could be expanded, and the ultimate beneficiary population would

be able to use their existing practical and theoretical skills and competencies - such as patient-centeredness, emphasizing preventive options - ultimately leading to a better overall social care status and higher quality, more accessible care [36].

The use of APNs could be a good solution for both diabetes and prediabetes, since the prevalence data speak for themselves, their number is gradually increasing over the years, and the current workload (1956 patients per diabetologist) could be improved by the employment of three APNs per county, even in the framework of pilot projects.

Only 107 of the GPs in the country were qualified as diabetologists at the time of the study, further justifying the inclusion of specially trained nurses in basic and additional preventive/care services [36]. Today, it is clear that the care system needs highly skilled, dedicated people who can take on some of the work of doctors, act as partners/assistants to the doctor, are accepted by patients, and can play a role in creating a healthier vision [36].

Conclusions

Today, there is no internationally recognized clinical guideline that does not refer to the role of nurses in chronic non-communicable diseases, in prevention, or in emergency care. The above research also confirms that trained nurses are those who, according to their level of competence and with appropriate medical-professional support and supervision, can safely perform routine tasks that affect the masses or occur in large numbers, from complex health assessments to regular monitoring of chronic patients in stable condition, or even provide essential healthcare in emergency situations. There is a large body of literature showing that health counseling, patient education, regular care, and home-based specialist care provided by skilled nurses reduces the rate of hospice admissions, (e.g. heart failure patients, COPD patients, IBD patients, diabetic patients, hypertensive patients, cancer patients - stoma care, etc.) and improves prognostic parameters determining the status of chronic patients [15],[17].

Strong, preventive, and definitive primary care is best achieved with an adequately staffed and well-trained nursing and GP workforce. This requires longer, more accessible, and well-organized practices equipped with modern technology, improving upon the current standard of care. This is also a key condition for structural change in the hospital-centered Hungarian healthcare system [15],[17].

In order to respond effectively to the challenges of public health, the current number of nurses working alongside general practitioners (around 7 600) should be doubled in the short to medium term, in parallel with a conscious development of the competence of the workforce [37], [38], [39], [40].

Another key finding in the development of the community of practice is that the professions of physiotherapy, dietetics, psychology, and public health provide significant added value in improving the

health status of the Hungarian population. (e.g. EFOP - data on the community of practice coordination system, analysis of data on community of practice operations).

In addition, it is necessary to shape the public health, preventive approach of primary care workers, especially nurses, to prepare them to develop a public health approach, to work according to the tasks of preventive levels and services, to display the competencies and skills of nurses according to their level of qualification, in order to provide quality care for chronic non-communicable diseases [41],

In university education, nurses with advance competencies (MSc, APN nurses) are able to perform certain activities currently performed by physicians, especially in certain areas of primary care and chronic care, at the same level as physicians, provided that they have the appropriate training and the necessary professional and collegial support from physicians. The aim of the restructuring of human resources in nursing is therefore to optimize the new job role and position of new professionals and to exploit their additional potential by spreading a multidisciplinary team approach [41].

A further aim is to support the broad involvement of BSc nurses, to equip them with additional competencies, and to integrate them into the care of the future in the community [42]. [43], [44].

A key issue is to define the precise role of primary care and its other actors (district community nurse, home care nurse, home care specialist), to define the role of the multi-provider teamwork actors, and to define the cooperation with other co-professionals (nurse, physiotherapist, dietician, psychologist, health promoter, etc.), to reduce the current overlaps to increase cost-effectiveness.

It is important to highlight the fact that, due to the specificity of the country, preventive services for the population aged 0-18 years are primarily the responsibility of the nurse, while for the population aged over 18 years, the responsibility lies with the nurse.

In this way, it is possible to increase the range of organized screening tests for public health purposes, increase the participation rate of the target population in screening tests, modernize public health, and ensure equal access to services, particularly in disadvantaged areas. This will improve the quality of chronic care and increase the average age of the Hungarian population (Oláh et al. 2019) [34]. With regular care activities and individualized education according to the patient's level of knowledge, the general condition, disease outcome, and therapeutic adherence are improved. An important factor in this process is the patients' commitment to self-management of their disease [45].

Patients with higher-quality knowledge have higher adherence to therapy and health awareness. Therefore, enhancing patient self-management through the use of telemedicine is also an essential nursing task. Increasing the role of specially trained professionals, (BSc, MSc) gradu-

ate nurses, is therefore essential in redefining primary care. Modern primary care also relies on the work of independent professionals, such as independent „nurse prescribing"/preventive prescribing in community practices, through the use of preventive nurses [16].

Last but not least, and of even greater importance, is the increased burden on primary care, which also requires human resources and competence development in primary care. This is evidenced by increased administrative burdens, vaccination organization, and telemedicine tasks [46].

There is a need to recruit (BSc, MSc) nurses aquires an increase in staffing, adequate salaries, and competencies. Provided appropriate motivational factors are in place, APNs in Hungary could be key players in the emerging community of practice, with a high level of expertise in public healththus providing competent support to the population [36].

„Working with a good Nurse Practitioner is one of the greatest joys of medicine."

Oscar Leonard, MD

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EXAMINATION OF THE ROLE OF ADVANCED PRACTICE NURSES IN DIABETIC RETINOPATHY SCREENING BY TELEMEDICINE

Lívia Tóth[1], Dr Klára Simon[2], Dr Dorina Pusztai[3], Dr Habil Orsolya Máté[4]

[1]UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[2]UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[3]UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

[4]UNIVERSITY OF PÉCS, Faculty of Health Sciences, Institute of Emergency Care, Pedagogy of Health and Nursing Sciences

Introduction: The development of practical skills is a key element in the nursing education process, which is why medical simulation plays such an important role.

Aim: This study aimed to evaluate research conducted at the Medical Simulation Center as one of the methods for assessing nurses' skills.

Methods and Materials: A review of English-language literature was conducted, focusing on studies performed at the Medical Simulation Center of the University of Rzeszow. Two studies related to the nursing field were analyzed.

Results: Two publications were analyzed based on studies performed at the Medical Simulation Center of the University of Rzeszow, focusing on the nursing field.

Conclusions: The ability to perform procedures repeatedly in simulated conditions leads to improved accuracy. The studies confirm the validity of using simulation tools in nursing education. A limitation of this review is the small number of studies included, highlighting the need for further research in this area. Future studies require greater methodological rigor.

Keywords: medical simulation, simulated patient, nursing competencies

Introduction

Education in the Medical Simulation Center enables the development of clinical competencies. The modern world, filled with advanced technology and technical devices, has introduced numerous innovative methods in the field of education. Nursing education in the Medical Simulation Center (MSC) proves to be an effective teaching method, as students are encouraged to find solutions using their knowledge, correct their own or others's actions, and, most importantly, refine both technical and non-technical skills, including communication within an interpersonal team.

Medical simulation is an educational process that utilizes training equipment ranging from simple trainers to advanced simulators that closely replicate human anatomy and physiology. An important aspect of conducting classes in the MSC is the ability to create virtual reality conditions. Education through medical simulation allows for the handling of challenging, controversial, and standard clinical cases alike.

The primary goal of medical simulation is to replicate specific action patterns and test students' skills without exposing real patients to any risk [1].

Simulation-based education can be conducted using various methods, such as task training, which focuses on practicing essential procedures or skills. For nurses, examples of task training include procedures like inserting a peripheral intravenous catheter or drawing venous blood. This type of education is introduced to first-year full-time nursing students.

Another method of teaching involves the use of standardized patients, where an ac-

tor assumes the role of a patient. These actors are usually professionals, though occasionally amateurs, who simulate clinical symptoms for a given scenario. Standardized patients are often used during examinations.

In our Medical Simulation Center, we also utilize high-fidelity simulators that mimic human body behavior and physiology. These mannequins can be connected to monitors displaying symptoms specific to a given medical condition. Modern simulators are capable of realistically coughing, expressing pain, or vomiting. These mannequins typically include built-in speakers, allowing an instructor in a separate room to respond to students' questions.

A less commonly used method of simulation is computer-based simulation, which in some ways resembles a game format where the user interacts with an interface. The final method of education in the Medical Simulation Center is virtual reality, which is typically employed for acquiring highly technical competencies.

Each simulation session begins with a briefing or an introduction. The academic instructor presents the scenario, assigns roles, and outlines tasks. During this introduction, students have the opportunity to familiarize themselves with the equipment and its capabilities. Next, in the simulation session, students implement the scenario prepared by the instructor. They take action and execute the scenario using their knowledge and skills. During such a session, students have the opportunity to develop leadership skills and improve communication with other members of the interpersonal team. The session concludes with a debriefing, or summary, which is a crucial phase where the scenario is reviewed. Students learn what was done correctly and what needs improvement. Debriefing often includes the use of audio-video recordings, as students may be filmed during the session. Reviewing the footage allows for a thorough analysis of the scenario and helps conclude for the future. This summary provides an ideal opportunity to discuss student behaviors and analyze alternative approaches for handling similar situations.

The development of practical skills through medical simulation is increasingly becoming an advanced model in both undergraduate and postgraduate education. Such a teaching process must be based on current standards and the most comprehensive evidence-based knowledge. Therefore, this work aims to assess the conditions for its effectiveness [1,2].

Aim

This study aimed to evaluate research conducted in the Medical Simulation Center as an effective method for assessing the technical skills of nurses, including second-cycle nursing students.

Methods and Materials

The literature review encompassed English-language scientific publications from the past eight years. Resources included studies conducted at the Medical Simulation Center of the University of Rzeszów. Ultimately, only two studies were evalu-

ated as they specifically pertained to the nursing program.

The conducted studies received positive approval from the Bioethics Committee at the University of Rzeszow. Both studies were carried out after obtaining informed consent from participants. The research involved a group of 51 nurses who were already licensed to practice.

In the first described study (E. Iwanicka et al.), the effectiveness of alternative airway management using a laryngeal mask airway (LMA) and a laryngeal tube (LT) under simulated conditions was assessed. The evaluation focused on parameters determining the success of the procedure concerning selected variables. The study demonstrated the efficacy of the LMA as a tool for airway management [3]. The literature indicates that endotracheal intubation is the gold standard in airway management. However, this procedure is associated with numerous complications and should therefore be performed by trained and experienced medical personnel [4]. Polish law stipulates that nurses are permitted to manage airways using an LT or LMA after completing a specialized course in cardiopulmonary resuscitation (CPR) or after obtaining specialization in this area [5].

Prior to the study, each participant was trained in the use of the simulator available at the Medical Simulation Center of the University of Rzeszów. The study aimed to place a laryngeal tube (LT-D, size 5, VBM Laryngeal Tube) and a silicone laryngeal mask airway (LMA, size 5). The order of LT-D and LMA placement was randomized. Participants performed one-minute ventilation using a self-inflating bag (1700 ml, Ambu, Poland). Task accuracy was analyzed using a dedicated checklist. Each nurse was allowed a second attempt if the first placement was unsuccessful.

The next analyzed study focused on the assessment of the stability of endotracheal intubation (ETI) performed by nurses under simulated conditions. Endotracheal intubation is a critical procedure during cardiac arrest and becomes essential for maintaining the stability of resuscitation efforts. The study, conducted by Wójcik A. et al., utilized an intubation phantom (BT-CSIE, model Q'ty) with a tablet (PC-1EA) available at the Medical Simulation Center of the University of Rzeszów. Additionally, the IntuBrite laryngoscope with a rounded handle was employed. The study involved 51 practicing nurses. The evaluation of the intubation procedure considered several factors, including the average time required to place the endotracheal tube, maximum pressure on the incisors during intubation, assessment of mandibular displacement, degree of head tilt, average tidal volume, number of breaths, number of attempts, and overall intubation success rate [6].

Results

Two publications were included in the analysis. The first publication evaluated the effectiveness of alternative airway management methods performed by nursing staff, while the second assessed the effectiveness of endotracheal intubation

(ETI) among nurses.

In the first study (E. Iwanicka et al.), a higher success rate was observed for the LMA mask compared to the LT-D during the first attempt. The average time to place the LMA mask on the first attempt was 30.22 seconds, while for the LT-D, it was 32.26 seconds. Additionally, a higher tidal volume was achieved following airway management with the LMA mask compared to ventilation using the LT-D. It is important to note that ERC (European Resuscitation Council) guidelines recommend that intubation and airway management should be performed within 30 seconds.

In the described study, ventilation using the LT-D was effective in 60% of cases. Among the 51 respondents, more than half—43 participants—successfully placed the laryngeal tube on the first attempt [3]. In this study, variables such as age, years of professional experience, and level of education did not significantly affect the performance of the procedure. The time required to complete the procedure on the first attempt ranged from 14 to 59 seconds, while during the second attempt, it ranged from 14 to 35 seconds. Ventilation using the LT-D was effective in 60% of cases [3].

Nurses with specialization achieved the shortest ETI time—30.4 seconds—which is close to the time recommended by the ERC. The most effective ventilation (546.2 cm^3) was also performed by specialized nurses, as well as those working in intensive care units (544.3 cm^3) and operating rooms (544.3 cm^3). Completing specialization and having more professional experience significantly improved the effectiveness of ETI. The frequency of performing the procedure likely has a significant impact on its effectiveness, highlighting the importance of repetitive practice, such as in simulated conditions facilitated by the Medical Simulation Center. Proper intubation was performed by 71% of the participants. Nurses with higher education were significantly better at airway management through head tilt (60.7%) [6].

Conclusions

In the first analyzed study conducted by E. Iwanicka et al., it was concluded that systematic training for nurses, including the opportunity to practice procedures and receive feedback, is a crucial aspect during life-threatening emergencies. Such training enhances confidence and effectiveness.

In the studies analyzed by A. Wójcik et al., special attention was also given to the use of simulation for practicing specific procedures. This approach not only positively influences the execution of tasks but also improves decision-making speed, self-confidence, and overall competency.

The ability to perform a large number of repetitions of specific procedures enables efficient execution and positively influences decision-making in stressful situations, thereby improving the quality of emergency operations. The Medical Simulation Center provides students with the opportunity to repeatedly practice procedures and skills, which enhances knowl-

edge retention and the acquisition of practical skills.

The analysis of the aforementioned studies conducted at the University of Rzeszów leads to the conclusion that continued research evaluating the effectiveness of performed procedures is essential, which the Medical Simulation Center facilitates.

The rapid development of medical simulation underscores its importance, and this dissertation can serve as an educational or scientific resource for academic instructors. Furthermore, this study may inspire more detailed and methodologically rigorous scientific research in the future.

The results obtained in the analyzed studies confirm the validity of using simulation tools in nursing education. An essential aspect is the development of appropriate scenarios and the selection of suitable simulation methods.

In addition to the limitations described below, it is important to address the issue of the lack of a comparative protocol in the studies, either with another form of assessment or a different type of simulation. Research on the effectiveness of education is often susceptible to various biases that can distort the results, emphasizing the need for a well-designed and thoughtful study structure.

Limitations:

A significant limitation of the presented review is the small number of studies included in the analysis. It cannot be ruled out that relevant studies may exist in languages other than English, which was the only language considered in this review. Further research on simulations in the context of student assessment requires a higher level of methodological rigor than has been applied thus far.

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