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Disability Symptoms Among Professionally Active Nurses Caused by Back Pain

Przejawy niepełnosprawności wśród pielęgniarek aktywnych zawodowo spowodowane bólami kręgosłupa

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Abstract

Introduction. Back pain is a medico-socio-economic problem that affects about 90% of the population. People associated with medical professional are particularly exposed to frequent perceived back pain, which translates into their daily functioning.

Aim. The aim of the study is to assess spinal pain in a group of professionally active nurses and their impact on everyday functioning.

Material and Methods. The study included a group of 100 nurses from the Provincial Children's Hospital in Bydgoszcz, who are professionally active. The diagnostic survey method was used, while the tools were: author's questionnaire, VAS scale and Revised Oswestry Low Back Pain Disability Scale Questionnaire (Polish version). Data has been prepared statistically. The level of $p \leq 0.05$ was assumed to be statistically significant.

Results. In the group of nurses who have work experience within 11–20 years, the average pain perceived was at the level of 3.21 points, while among women with seniority over 21 years, the average pain perceived was about 4.5 points. Pain ailments were also experienced by nurses working in the profession less than 10 years — the average of 1.62 points. The seniority of the studied women remained statistically significant, the average correlation with the pain results ($p=0.000$).

Conclusions. The problem of pain in nurses is a frequent phenomenon. Seniority in the profession is related to the occurrence of pain in nurses, i.e. the higher the seniority, the greater the perception of pain, which translates into their functioning. The place and system of nurses' work are not factors significantly affecting the occurrence of back pain. (JNPN 2019;8(1):16–22)

Key Words: spine (back) pain, nurse, disability

Streszczenie

Wstęp. Dolegliwości bólowe kręgosłupa są problemem medyczno-społeczno-ekonomicznym, który dotyka około 90% populacji. Osoby związane z zawodami medycznymi są szczególnie narażone na częste odczuwanie dolegliwości bólowych kręgosłupa, przekładającymi się na ich codzienne funkcjonowanie.

Cel. Celem pracy jest ocena dolegliwości bólowych kręgosłupa w grupie pielęgniarek aktywnych zawodowo i ich wpływu na codzienne funkcjonowanie.

Materiał i metody. Badaniem objęto grupę 100 pielęgniarek Wojewódzkiego Szpitala Dziecięcego w Bydgoszczy aktywnych zawodowo. Zastosowano metodę sondażu diagnostycznego, natomiast narzędziami były: autorski kwestionariusz, skala VAS oraz Kwestionariusz Revised Oswestry Low Back Pain Disability Scale (wersja polska). Dane opracowano statystycznie. Poziom $p \leq 0,05$ przyjęto jako poziom istotny statystycznie.

Wyniki. W grupie pielęgniarek mających staż pracy w granicach 11–20 lat średnia odczuwanego bólu była na poziomie 3,21 pkt., natomiast wśród kobiet ze stażem pracy powyżej 21 lat średnia odczuwanego bólu wynosiła powyżej 4,5 pkt.

Dolegliwości bólowe odczuwane były także przez pielęgniarki pracujące w zawodzie poniżej 10 lat — średnia 1,62 pkt. Staż pracy badanych kobiet pozostawał w istotnej statystycznie, średniej korelacji z wynikami odczuwanego bólu ($p=0,000$).

Wnioski. Problem bólu u pielęgniarek jest częstym zjawiskiem. Staż pracy w zawodzie ma związek z występowaniem u pielęgniarek dolegliwości bólowych, tj. im wyższy staż pracy tym większe odczuwanie dolegliwości bólowych, które przekładają się na ich funkcjonowanie. Miejsce oraz system pracy pielęgniarek nie są czynnikami znacząco wpływającymi na występowanie dolegliwości bólowych kręgosłupa. (PNN 2019;8(1):16–22)

Słowa kluczowe: ból kręgosłupa, pielęgniarka, niepełnosprawność

Introduction

Spinal pain is a medico-socio-economic problem [1,2] that is raised by numerous publications devoted to this issue. About 90% of the population is affected by this problem, which appears between 30 and 40 years of age [3], and even earlier [4]. It is predicted that back pains will affect more and more people, they are now referred to as a civilization disease [5–8]. This is of course related to the development of civilization and evolution of humanity, moreover, with various factors, including obesity, stress, limited physical activity, lack of sleep and rest time, as well as factors related to the work [4,7–11].

The present lifestyle is conducive to the formation of bad habits, moreover, the lack of awareness regarding the principles of work ergonomics causes constant overloading of the spine [12].

Pain ailments are a frequent phenomenon, they can occur in every part of the spine (cervical, thoracic, lumbosacral), but most often they relate to the lumbosacral region [5,12,13]. These ailments are also referred to as the pain of the back [6,14]. 75–85% of the population have at least one episode of low back pain during their lifetime. In more than half, the pain disappears spontaneously after 1–2 weeks, but in 80–90% of cases, complete recovery takes about 8 weeks. The relapse percentage is high (approx. 80), and in the case of 10–15%, pain becomes a chronic disorder [13].

In medicine, about 100 different causes of back pain are known, however, most people with these conditions do not have a specific disease, and imaging shows degenerative changes, which can be a natural phenomenon, present in most people as they get old [15].

People associated with medical professions are particularly exposed to frequent perceived back pain, which translates into their daily functioning. Nurses are such a group whose work is related to the adoption of a forced body position. When carrying out their tasks, they are forced to carry patients, transport them to planned examinations or treatments. Repeated activities during the course of shift also result in overloads resulting in degenerative changes manifesting in back pain [3,12]. Nurses usually complain of ailments occurring in the lumbar region of the spine, and the evolution of pathological changes leads to experiencing ailments also in the neighbouring segments of the spine [12].

The aim of the study is to assess spinal pain in a group of professionally active nurses and their impact on everyday functioning. The following specific questions were formulated:

1. Is seniority related to the occurrence of pain and worse functioning of nurses?
2. Does the nurses' workplace affect the severity of the problem?
3. Is the nurse work system related to the feeling of discomfort and worse functioning?

Material and Methods

The study included a group of 100 nurses from the Provincial Children's Hospital in Bydgoszcz. The study was approved by the Bioethical Commission at Collegium Medicum of UMK in Bydgoszcz (consent no. 57/2017).

The study group comprised women aged from 24 to 60. In the youngest group of nurses, i.e. 24–34, there were 21 women, in the group of 35–45, there were 24, the largest group were nurses aged 46–55 — 42 people, the remaining women were over 56 years of age. The vast majority of respondents were urban residents. 39 nurses had secondary education, of which 15 had a specialization. Over 60 nurses declared higher education, including 23 with a specialization. 45 nurses had a work experience in the range of 21–30 years, 21 women up to 10 years, and as many as 20 of them had a work experience over 30 years. Nurses working in conservative wards predominated, slightly fewer women are employed in surgical wards. The vast majority of nurses worked in a two-shift system, 33 nurses worked in a one shift system (Table 1).

Nurses were asked about the place of pain in the spine. Here, the respondents could indicate more than one answer. 19.2% indicated the cervical spine, 11.9% — the thoracic segment, 43% — the lumbar section and 25.8% — the sacral segment.

The aim of the problem assessment was the author's questionnaire, the VAS scale and the Revised Oswestry Low Back Pain Disability Scale Questionnaire (Polish version).

The calculations were made with the Statistica 10.0 program and the Microsoft Excel spreadsheet, using the standard program functions. The obtained results were

Table 1. Characteristics of the study group

Variable	N	%
Age		
24–34 years old	21	21
35–45 years old	24	24
46–55 years old	42	42
56–60 years old	13	13
Total	100	100
Place of residence		
Village	19	19
City	81	81
Total	100	100
Education		
Secondary	24	24
Secondary with specialization	15	15
Higher	38	38
Higher with specialization	23	23
Total	100	100
Work experience in the profession		
To 10 years	21	21
11–20 years	14	14
21–30 years	45	45
Over 30 years	20	20
Total	100	100
Place of work of nurses in the unit		
Treatment ward	36	36
Preventive ward	39	39
Clinic	14	14
Surgical room	4	4
Others	7	7
Total	100	100
Nurses' work system		
Shift work	67	67
One-shift work	33	33
Total	100	100

subjected to a statistical analysis. The relationship between the two variables was calculated using the R. Spearman correlation coefficient; assessing the difference in one characteristic between the two groups, the non-parametric Mann–Whitney U test was used; when comparing many independent samples, the non-parametric Kruskal–Wallis rank test was used. The $p \leq 0.05$ level was assumed to be statistically significant.

Results

The pain complaints experienced among the surveyed nurses were assessed using the VAS scale. Most nurses indicated “1” — 23%, “2” — 17%, “3” by 12% and “8” by 12%. Only 4 women marked “0”, none of the respondents indicated 10. The average pain received in this scale was 3.82 points. It was shown that in the group of nurses who have work experience within 11–20 years, the average pain perceived was at the level of 3.21 points, while among women with seniority over 21 years, the average pain perceived was above 4.5 points. Unfortunately, pain was also felt by nurses with seniority in the profession of less than 10 years — an average of 1.62 points. The seniority of the studied women remained in a statistically significant mean correlation with the results of pain perceived — $p=0.000$ ($p < 0.05$). Taking into account the place of employment of nurses, persons working in surgical wards and inpatient wards, the level of experienced ailments was at a similar level, which amounted to 3.56 points and 3.49 points. While nurses employed in the clinic experienced pain at the level of 5.00 points, employed in other places at the level of 4.36 points. Due to the level of significance ($p=0.270$), there was no statistically significant difference between nurses employed in various places in the hospital. Considering the respondents' work system, women working in the two-shift system (day and night shift) experienced pain at 3.58 points, while those employed in the one-shift system felt stronger pain, at the level of 4.30 points. However, there was no significant relationship between nurses ($p=0.121$) (Table 2).

Assessing the disability with the Oswestry scale, it was shown that in the whole group of nurses included in the study, which had no limitations caused by pain, there were only 25 people. In the group of women up to 10 years of work experience in the profession, 11 respondents had slight degree limitations. In the group of nurses with work experience of 11–20 years (the smallest group — 14 respondents) 3 women had slight limitations and 4 moderate limitations. In the group of women with seniority in the profession of 21–20 years, slight restrictions occurred in 17 women, moderate restrictions in 17, severe restrictions in 5 of them. In nurses with seniority over 30 years, there were only 10 of them with slight restrictions, 5 with moderate, while 3 women had serious restrictions due to back pain. Nurses with seniority of 21–30 years and over 30 years had the highest average point disabilities — 14.35 and 13.18 points. These results are still within the range of light restrictions. Finally, it turned out that the seniority of nurses remained in a statistically significant, average correlation with the results of disability assessment ($p=0.000$) (Table 3).

Table 2. Assessment of perceived pain according to the VAS scale and factors related to the work performed

	Work experience in the profession				Place of work				Work system	
	Up to 10 years	11–20 years	21–30 years	Over 30 years	Treatment ward	Preventive ward	Clinic	Others	Two shifts	One shift
N	21	14	45	20	36	39	14	11	67	33
Average	1.62	3.21	4.58	4.85	3.56	3.49	5.00	4.36	3.58	4.30
SD	1.431	2.887	2.589	3.031	2.512	2.955	3.038	2.656	2.813	2.733
Confidence –95.0%	0.97	1.55	3.80	3.43	2.71	2.53	3.25	2.58	2.90	3.33
Confidence +95.0%	2.27	4.88	5.36	6.27	4.41	4.44	6.75	6.15	4.27	5.27
Min	–	–	1.0	1.0	–	–	1.0	1.0	–	1.0
Max	6.0	9.0	9.0	9.0	9.0	9.0	9.0	8.0	9.0	9.0
Q25	1.0	1.0	2.0	2.0	1.5	1.0	2.0	2.0	1.0	2.0
Median	1.0	2.0	4.0	4.5	3.0	2.0	5.5	3.0	3.0	3.0
Q75	2.0	5.0	7.0	7.5	5.0	6.0	3.0	7.0	6.0	6.0

Table 3. Disability assessment and seniority of nurses

Work experience	to 10 years		11–20 years		21–30 years		over 30 years	
	N	%	N	%	N	%	N	%
No restrictions	10	47.6	7	50.0	6	13.3	2	10.0
Slight restrictions	11	52.4	3	21.4	17	37.8	10	50.0
Moderate restrictions	–	–	4	28.6	17	37.8	5	25.0
Serious restrictions	–	–	–	–	5	11.1	3	15.0
Total	21	100.0	14	100.0	45	100.0	20	100.0
Average	4.38		7.43		14.16		14.60	
SD	2.96		7.22		7.89		7.81	
R	0.403							
t(N-2)	4.355							
p level	0.000							

Table 4. Disability assessment and place of work

Place of work	Treatment ward		Preventive ward		Clinic		Others	
	N	%	N	%	N	%	N	%
No restrictions	9	25.0	11	28.2	1	7.1	4	36.4
Slight restrictions	15	41.7	16	41.0	8	57.1	2	18.2
Moderate restrictions	11	30.6	10	25.6	2	14.3	3	27.3
Serious restrictions	1	2.8	2	5.1	3	21.4	2	18.2
Total	36	100.0	39	100.0	14	100.0	11	100.0
Average	10.22		10.54		14.36		13.18	
SD	7.13		8.06		9.08		9.98	
Df	(3, N=100)							
H	1.883							
p level	0.597							

Table 5. Disability assessment and nurses' work system

Work system	Shift work		One-shift work	
	N	%	N	%
No restrictions	21	31.3	4	12.1
Slight restrictions	24	35.8	17	51.5
Moderate restrictions	18	26.9	8	24.2
Serious restrictions	4	6.0	4	12.1
Total	67	100.0	33	100.0
Average	10.42		12.94	
SD	8.24		7.75	
Z	-1.385			
p level	0.166			

Considering the place of work of nurses, people employed in surgical wards had the lowest average disability — 10.22 points, slightly higher women working in conservative wards — 10.54, in these groups there were the most nurses who had no restrictions (20 women), only three of them had serious limitations. Among nurses employed in clinics only one of them had no restrictions, 8 women had slight restrictions, and 3 of them had serious ones. Here, the obtained average of results was the highest and amounted to 14.36 with SD 9.08. Statistical analysis did not show statistical dependence between the disability of nurses employed in various places in a given hospital ($p=0.597$) (Table 4).

Taking into account the work system of the nurses surveyed, it was shown that the majority of women (67) worked in a shift work system. From this group, 21 respondents had no restrictions on the Oswestry scale, 24 had slight restrictions, 18 had moderate restrictions, while 4 had serious ones. The average for the group was 10.42 points, which means that the group of nurses is characterized by slight restrictions caused by pain. In the one-shift system there were 33 women working, only 4 of them had no restrictions, 17 had slight restrictions, 8 moderate ones, while 4 people had serious restrictions. The average for this group was 12.94 points, which also falls within the range of light restrictions. Finally, there was no statistically significant difference between nurses due to the system in which they work ($p=0.144$) (Table 5).

Discussion

Lower back pain is the most common cause of limitations in the performance of everyday activities and work, and the periodic or long-term disability of people under 45 years of age. It is believed that in the case of a break in work caused by back pain longer than 6 months, only 50% of people return to professional activity, and after 12 months of a break, only 25% of patients [13].

Work performed by nurses in hospital wards is associated with a number of factors that cause overload and chronic pain in the musculoskeletal system. The shift work related to effort should be mentioned here, often requiring forced positions, lifting the patients and medical equipment. In addition, an increased level of stress associated with, for example, the nuisance of patients' behaviour, but also with responsibility when administering medication or performing various treatments [16].

The problem of spine pain in the nurses' professional group is a frequent topic presented in numerous publications regarding this issue. The studies carried out by authors among nurses employed in a children's hospital confirm the importance of the issue. Only 4 (4%) nurses did not feel spinal discomfort. Nearly 70% of nurses' responses indicated the lumbosacral segment as a place of pain experienced, while over 19% of the cervical spine section. In the study of Tworek [3], all nurses experienced pain in the spine, and most often the pain affected the lumbosacral segment. In addition, as in own research, pain also affected other parts of the spine. In the studies by Mynarski et al. [16], lower back pain affected 61% of the surveyed nurses. In the studied by Przychodzka et al. [17], on the day of the study, only 20.79% of nurses did not feel pain in the spine area, others experienced pain of varying intensity. In the studies by Juraszek et al. it was shown that 92% of nurses had pain in the spine, the most common percentage of respondents (33.3%) experienced pain in the lumbosacral segment [18]. In the studies by Mikołajczak et al., concerning the problem discussed among nurses of emergency departments, pain occurred in 25 out of 30 respondents [12].

In our study, a statistically significant relationship between the occurrence of spinal pain and work experience was demonstrated. Nurses with seniority over 21 years had pain in the range of medium pain intensity (average of 4.58 and 4.85 points). Tworek in her studies also assessed the impact of seniority of the occurrence of spinal pain. In these studies, in nurses with less seniority, back pain occurred sporadically, and in women with longer work experience, this problem occurred several times a week or every day. Statistical dependence was found between the seniority in the profession and the incidence of pain [3]. Juraszek et al. noted that the average time of occurrence of pain in the spine is 8.04 years, moreover, it was noted that the time of occurrence of this problem is prolonged with the number of years of work. Over 90% of respondents indicated that back pains result from overload at the workplace [18]. Mikołajczak showed that the problem of spine pain in the nurses of the emergency department is a frequent phenomenon, determined at the medium level, which is the cause of small losses in the quality of life [12].

In own studies, there was no correlation between the perception of pain and the place of work and the system in which nurses worked ($p > 0.05$). Taking into account the workplace, nurses of surgical and conservative wards experienced pain at a similar level (3.56 points; 3.49 points). The strongest ailments were found in nurses working in clinics (5.00 points). As far as the work system is concerned, stronger pain occurred in respondents working in the one-shift system. In the studies by Juraszek et al., the severity of pain was similar for those working on the morning and night shift. 27.5% of nurses felt pain after each shift ended, in 48.7% the pain occurred sometimes, only 1 person did not feel pain after the night shift [18]. Mikołajczak et al., in their studies, showed that nurses spent most of their time in a forced body position, moreover, the complaints were caused by too long time spent on shifts during which women performed a series of repetitive activities being part of their duties [12].

In own studies it was shown that along with the seniority of nurses, there is a growing disability caused by pain. In women over 21 years of work, the highest values indicating disability were observed (average 14.16 points and 14.60 points), being on the borderline of light restrictions and moderate restrictions. The lowest point value of 4.38 was demonstrated in women with work experience of up to 10 years. This data turned out to be statistically significant ($p = 0.000$). The relationship between disability, workplace and work system is not shown here. In the studies by Przychodzka, 22.77% of the respondents had minimal disability, 53.47% moderate disability, while 23.76% severe disability. For nurses working in surgical and conservative wards, the average value was about 32%, which corresponded to moderate disability [17]. In the studies by Filipiska et al., it was shown that pain ailments significantly impede social life and lifting ($p > 0.05$). The average point score on the Oswestry scale (12.98 points) indicated a slight disability. Greater disability was recorded in the group of nurses over 50 years of age, which may also suggest that it is a group with the highest professional experience [2].

It should be emphasized that in the last decade, there has been enormous progress in the treatment of patients, while in terms of nurses' work stations they still leave much to be desired. Nursing shifts still do not have a full staffing personnel adjusted to the number of patients staying in the wards, there is still a lack of ergonomics beds and auxiliary devices (rollers, straps, ladders, slides). Lack of equipment in units facilitating the work of nurses is often translated into insufficient financial resources [3].

The basis for prophylactic activities in the fight against spine pain should be prevention. Preventive actions should increase the awareness of people related to the patho-mechanism of pain and the consequences

associated with lack of knowledge in this field [9]. Therefore, it is necessary to know the principles of work and rest ergonomics. The observance of these rules can prevent excessive overloading of the spine. This requires the development of certain habits that will help a man live in harmony with his own spine. Education in this area should be carried out from the early years of life to the time of professional performance, when employees are exposed to a number of factors conducive to the occurrence of back pain [8]. Tworek emphasizes that nurses do not have enough knowledge about the principles of work ergonomics. In her study, only 35% of nurses surveyed knew the norm of lifting and carrying weights by women at permanent work, permissible by Polish law [3]. This was also confirmed in the studies of Juraszek et al., in which only 9.7% knew the acceptable lifting standards. In addition, only 8% of nurses always applied the principles of ergonomics in their work [18].

Conclusions

The problem of pain in nurses is a frequent phenomenon. The work experience in the profession is related to the occurrence of pain in nurses, i.e. the higher the seniority, the more frequent the sensation of pain, which translates into their functioning. The place and system of nurses' work are not factors significantly affecting the occurrence of back pain.

Implications for Nursing Practice

Due to the frequent occurrence of back pain in nurses, which are confirmed by numerous publications presenting the issue, regular training should be carried out on the prevention of spinal pain, with the emphasis on the specificity of the nurses' work. Nurses should also use all available tools and devices that will improve their work.

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