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Self-assessment of the Musculoskeletal System Load of the Nurses Employed in Conservative and Surgical Departments

Samooceńa obciążenia układu mięśniowo-szkieletowego pielęgniarek zatrudnionych w oddziałach zachowawczych i zabiegowych

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Abstract

Introduction. Work-related musculoskeletal disorders (WMSDs) all over the world are a frequent cause of illness affecting people working especially in the health sector. In the medical professions, nursing staff experiences negative impact of work on the motor system to the highest degree.

Aim. The aim of the work is to assess the extent of disability of nursing staff exposed to excessive strain on the spine as measured by the Oswestry Disability Index.

Material and Methods. The study involved 50 nurses employed in surgical (32%) and conservative (68%) departments. The study used the method of a diagnostic survey, and the Oswestry Disability Index questionnaire was the research tool. The collected material was subjected to statistical analysis.

Results. Women accounted for nearly 98% of the respondents. The average age of the respondents was over 46 years (46 years and 3 months). The results of the study showed that the occurrence of pain in the spine adversely affects the functional performance, in particular the social life ($p=0.0004$) and lifting ($p=0.036$). The average disability score at the Oswestry scale was 25.88%, which indicates a moderate disability of the respondents.

Conclusions. Pain in the spine significantly affects the functional capacity of the subjects. This problem is particularly common among nursing staff. (JNNN 2018;7(4):155–159)

Key Words: nursing staff, Oswestry Disability Index, disability

Streszczenie

Wstęp. Na całym świecie dolegliwości mięśniowo-szkieletowe związane z pracą (WMSDs) są częstą przyczyną zachorowań dotyczącą osoby pracujące zwłaszcza w sektorze służby zdrowia. Wśród zawodów medycznych to personel pielęgniarski jest najbardziej narażony na negatywne oddziaływanie pracy zawodowej na układ ruchu.

Cel. Celem pracy jest ocena zakresu niepełnosprawności personelu pielęgniarskiego narażonego na nadmierne obciążenia kręgosłupa mierzona za pomocą narzędzia Oswestry Disability Index.

Materiał i metody. W badaniu uczestniczyło 50 pielęgniarek zatrudnionych w oddziałach zabiegowych (32%) oraz zachowawczych (68%). W badaniach zastosowano metodę sondażu diagnostycznego, a narzędziem badawczym był kwestionariusz Oswestry Disability Index. Zebrany materiał poddano analizie statystycznej.

Wyniki. Blisko 98% ankietowanych stanowiły kobiety. Średnia wieku badanych wyniosła ponad 46 lat (46 lat i 3 miesiące). Wyniki badań wykazały, iż występowanie dolegliwości bólowych kręgosłupa w sposób negatywny wpływa na wydolność funkcjonalną, a w szczególności na prowadzenie życia towarzyskiego ($p=0,0004$) oraz dźwiganie ($p=0,036$). Średni wynik niepełnosprawności w skali Oswestry wyniósł 25,88%, co świadczy o umiarkowanej niesprawności respondentów.

Wnioski. Dolegliwości bólowe kręgosłupa w sposób znaczący wpływają na wydolność czynnościową badanych. Problem ten jest szczególnie powszechny wśród personelu pielęgniarskiego. (PNN 2018;7(4):155–159)

Słowa kluczowe: personel pielęgniarski, Skala Oswestry, niepełnosprawność

Introduction

Diseases and ailments of the musculoskeletal system, especially of the spine, are becoming an increasingly common problem. They constitute one of the main interdisciplinary social, medical and economic problems and are called civilization diseases [1]. Work-related musculoskeletal disorders (WMSDs) all over the world are a frequent cause of illness affecting people working especially in the health sector [2]. In the medical professions, nursing staff is the most exposed to the negative impact. Most nurses' professional activities are performed with the spinal ante-flexion and are associated with overcoming heavy weights, which exceed the accepted standards [3,4].

The aim of the study is to assess the extent of disability of nursing staff exposed to excessive strain of the spine as measured by the Oswestry Disability Index.

Material and Methods

The study involved 50 nurses employed in surgical (32%) and conservative (68%) departments. Women accounted for nearly 98% of the respondents. The average age of the respondents was over 46 years (46 years and 3 months). The average older were people working in a conservative ward with an average age of less than 48 years (47 years 8 months), with an average in the surgical ward — over 43 years (43 years and 1 month). The highest percentage of respondents concerned people

with secondary education and living in the city. The exact characteristics of the population studied are presented in Table 1.

The study employed the method of a diagnostic survey, and the Oswestry Disability Index (ODI) questionnaire. ODI is a 10-degree scale was the research tool, allowing for the assessment of disability, which is caused by pain in the lumbar spine. It contains questions about: severity of pain, daily hygiene activities, lifting, walking, sitting, standing, sleeping, social life, travel, and the course of pain. The subject answers the questions by outlining the responses indicating his/her condition, scoring from 0 to 5. All calculations and figures were made using the Statistica 10.0 program and the Microsoft Excel spreadsheet. The significance level $p \leq 0.05$ was assumed as statistically significant. The relationship between the two variables was calculated using the Spearman R correlation coefficient. The non-parametric U Mann–Whitney U test was also used to evaluate differences in one characteristic between two populations (groups).

Results

The results of our own research have shown that spinal pain is significantly impeding the social life ($p=0.0004$) and lifting ($p=0.036$). In other aspects, the difference obtained was not statistically significant ($p>0.05$) (Table 2). The average point score on the Oswestry scale was 12.94 points, which means that the respondents are characterized mainly by a small disability. The higher mean point score among the respondents was recorded in the conservative ward — 13.85 points, with an average of 11.0 points in the surgical ward. The minimum score was similar and lower among respondents in the surgery ward (0 points), while the maximum was found to be differentiated and higher in the respondents working in the conservative ward (31 points).

The highest number of respondents obtained the result of a slight degree of disability (21–40%) — 30 people (60.0%) or slight (10–20%) — 11 people (22.0%). The fewest respondents achieved the result of a severe restriction (61–80%) — 1 person (2.0%). In the surgical ward, the majority of respondents obtained a result of a slight degree of disability (10–20%) or light (21–40%) — 6 people (37.5% each), the smallest result of the average limitation (41–60%) — 1 person (6.3%).

In the conservative ward, the highest number of respondents received a slight degree of disability (21–40%) — 24 people (70.6%), the smallest result of the average limitation (41–60%) and severe (61–80%) — 1 person (2.9% each). In general, greater disability was noted in the conservative ward. The average disability score on the Oswestry scale was 25.88%. The standard

Table 1. Characteristics of the study group

Variable	N	%
Gender		
Woman	49	98.0
Man	1	2.0
Age		
Up to 40 years	9	18.0
41–50 years	22	44.0
Over 50 years	19	38.0
Level of education		
Secondary	33	66.0
Higher	17	34.0
Place of residence		
City	34	68.0
Village	16	32.0
Ward		
Surgical	16	32.0
Conservative	34	68.0

Table 2. Differences in the results between the groups in the field of activities in everyday life

Position	Sum of ranks		U	Z	p*
	Surgical	Conservative			
Pain severity	341.5	933.5	205.5	-1.373	0.170
Daily hygiene activities	395.0	880.0	259.0	-0.260	0.795
Lifting	306.5	968.5	170.5	-2.101	0.036
Walking	344.5	930.5	208.5	-1.310	0.190
Sitting	391.5	883.5	255.5	-0.333	0.739
Standing	387.0	888.0	251.0	-0.426	0.670
Sleeping	435.5	839.5	244.5	0.562	0.574
Social life	268.0	1007.0	132.0	-2.901	0.004
Travels	377.0	898.0	241.0	-0.634	0.526
Course of pain	357.5	917.5	221.5	-1.040	0.298

*Mann–Whitney U test

Table 3. Average results of the Oswestry scale in assessing the degree of disability of the respondents

Ward	N	Mean	SD	Confidence -95.0%	Confidence +95.0%	Min	Max	Median
Surgical	16	22.00	14.16	14.45	29.55	0.0	50.0	17.0
Conservative	34	27.71	11.78	23.60	31.82	4.0	62.0	27.0
Total	50	25.88	12.73	22.26	29.50	0.0	62.0	26.0

SD — standard deviation

Table 4. Factors affecting the degree of disability

Variable	N	R	t(N-2)	p
Age*				
Total	50	0.422	3.227	0.002
Surgical	16	0.651	3.210	0.006
Conservative	34	0.308	1.833	0.076
Level of education*				
Total	50	-0.302	-2.194	0.033
Surgical	16	-0.391	-1.588	0.135
Conservative	34	-0.287	-1.692	0.100
Place of residence**				
		Sum of ranks		
	City	Village	Z	p
Total	981.0	294.0	2.360	0.018
Surgical	99.5	36.5	1.519	0.129
Conservative	463.5	131.5	1.625	0.104
Pain location**				
		Sum of ranks		
	Sacral section	Lumbar section	Z	p
Total	447.0	828.0	-1.238	0.216
Surgical	94.5	41.5	0.057	0.955
Conservative	120.5	474.5	-1.425	0.154

*Mann–Whitney U test, **Spearman's rank correlation coefficient

deviation amounted to 49.2% of the average value, which indicates a wide variation in results. The higher mean percentage of disability associated with pain was recorded in the respondents in the conservative ward — 27.71%, with the average percentage of 22.0% in relation to respondents in the surgical ward. The minimum score among the subjects was similar and lower in the surgical ward (0.0%), and the maximum and differentiated among respondents in the conservative ward (62.0%) (Table 3).

The conducted study also attempted to determine what factors affected the degree of disability of the respondents. The age of the respondents remained in a statistically significant mean value in relation to the results of the disability assessment (p=0.002). A similar average correlation between age and disability concerned respondents from the surgical ward (p=0.006). The highest disability rate was recorded in the age group over 50 — 16.26 points, the lowest in the age of 40 — 8.56 points. There was also a statistically significant difference between the place of residence and the degree of disability in relation to the whole studied population (p=0.018). However, calculated in individual wards, the difference was not statistically significant (p>0.05). A higher disability rate was recorded among urban residents — 14.59 points, and lower among residents — 9.44 points. The education of the respondents also remained in a statistically significant mean correlation with the results of the disability assessment related to pain perception (p=0.033), but also only in relation to the whole studied population. A higher disability rate was noted in the group of respondents with secondary education — 14.42 points, and lower in people with higher education — 10.06 points. In turn, a higher degree of disability was

noted in the group of respondents experiencing pain in the lumbar region of the spine — 13.6 points. There was no statistically significant difference between the place of pain and disability ($p>0.05$) (Table 4).

Discussion

The occurrence of spinal pain in the nursing staff is a common phenomenon. Among health care workers, nurses are a group that is particularly vulnerable to overloading of the musculoskeletal system [5]. Conducted analyzes indicate that nearly 75% of nurses struggle with low back pain syndromes in the lumbosacral spine, while in the cervical segment, it is nearly 60%. The number of new cases is still progressively increasing [6]. The occurrence of spinal pain ailments significantly reduces functional capacity and affects the appearance of burnout. Lewandowska et al. [7] showed that the most common physical symptoms of burnout include fatigue and exhaustion (79%) and back pain (57%). Similar results were obtained in the study of Yoshioka et al. [8], where the nursing staff listed the most common physical complaints: fatigability (66.1%), followed by back pain (44.7%). Ogińska et al. [9] also pointed out that the most frequently reported complaints by nurses include back pain (95.5%). In our study, when assessing a nurse by means of the Oswestry scale, it was observed that spinal pain symptoms significantly impede the social life ($p=0.0004$) and lifting ($p=0.036$). The average point score on the Oswestry scale was 12.94 points. Higher mean point score among respondents was recorded in the conservative ward — 13.85 points, with an average of 11.0 points in the surgical ward. In turn, in a study conducted by Baumgart et al. [3], among 60 randomly selected nurses, the average score on the Oswestry scale was 16.33. On the other hand, the results of own research show that the average disability score at the Oswestry scale was 25.88%. Similar results were obtained in a study conducted by Maciuk et al. [5], where the median degree of nurses' disability was 12 points. In the study population of nurses, 65% were characterized by a slight disability (5–14 points of the ODI scale), 29% — a medium disability (15–24 ODI points), 6% showed a complete disability (0–4 points of the ODI scale), and 1% was characterized by severe disability (25–34 points of the ODI scale). In a study conducted by Baumgart et al. [3], also the highest percentage of nurses, i.e. 65%, concerned people with little disability (5–14 points of the ODI scale). In a study conducted by Pop et al. [10] among 170 nurses, physicians and physiotherapists, the degree of disability was also assessed using Oswestry scale. Most of the examined persons had a small and middle degree of disability. The nursing staff turned out to be indeed the most vulnerable group for the occurrence

of a higher level of disability. The average point score on the Oswestry scale for nurses was 13.7, for physiotherapists 8.1, and for physicians 8.1. About 40% of nurses had mild or greater disability, while in other groups it was about 15% of the respondents ($p=0.0002$).

In the studies carried out by us, the severity of pain did not differ significantly in the study group depending on the area affected by ailments (lumbar or sacral part of the spine). There was also no statistically significant difference among the respondents in the results related to the assessment of disability depending on the location of pain. Nevertheless, higher disability assessments were recorded in the group of respondents experiencing pain in the lumbar part. Juraszek et al. [11] examined 205 nurses for the assessment of pain in the spine. Most of the respondents (92%) had back pain and its appearance was related to taking up a job as a nurse. The authors showed that the occurrence and location of these ailments depends on the nature of the work performed. Nevertheless, back pain usually involved the lumbosacral region of the spine (33.3%), followed by the cervical region (18.5%). Przychodzka et al. [12] assessed the problem of spinal pain syndrome among 101 professionally active nurses. Research has shown that 80% of nurses admit that they have problems with their spine. In terms of location, the most affected area was the lumbosacral section (55.45%).

Conclusions

1. The occurrence of spinal pain adversely affects the functional performance, especially social life ($p=0.0004$) and lifting ($p=0.036$).
2. The average disability score on the Oswestry scale was 25.88%. The higher mean percentage of disability was reported among the respondents in the conservative ward — 27.71%.
3. The factors that significantly affect the degree of disability include: age, place of residence, education.

Implications for Nursing Practice

The conducted research allows to show the problem of the occurrence of disability caused by a spinal disorder among nurses. Nurses are a professional group that is particularly vulnerable to damage to the musculoskeletal system. It is necessary to perform systematic exercises from the beginning of your professional career. In order to be able to limit the progressively increasing percentage of people with spine disorders, it is necessary to conduct education in this area.

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