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PROFESSIONAL FACTORS OF LOW BACK PAIN IN HEALTHCARE PROFESSIONALS

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Abstract. *Low back pain is a complex condition associated with biopsychosocial factors that impair function, social participation, and personal prosperity. In the workplace, health professionals are exposed to occupational risks for the development of lower back pain. Identified factors are prolonged standing, sitting, bending, lifting loads and physical work with patients. The aim of the research was to determine the frequency of mechanical factors in the lower back pain of health professionals. A cross-sectional study was conducted in five primary, secondary and tertiary health institutions in Boka Kotorska, Montenegro (XII 2021 - VI 2022). The research instrument was a Questionnaire designed for this research. Pain in the lower back is present in 83.5% of health professionals. The results show the prevalence of pain in 82.3% of female respondents and 17.7% of male respondents. 34.9% of respondents were employed at the secondary level, 32.8% at the primary level and 32.3% at the tertiary level, with an average age of 41.6±12.99 years. The analysis of physical effort at work showed a statistically significant difference p=0.0001, because 35.9% of respondents mostly stand/walk, but do not carry heavy loads, 22.9% sit, 14.1% stand, 8.3% stand and carry heavy loads, 7.8% walk a lot, climb stairs and carry heavy loads, 5.7% often bend down, and 4.2% do hard physical work. Predominantly standing/walking, without carrying a heavy load, was exposed to 52.4% of respondents at the primary level, 37.1% at the tertiary level and 19.4% at the secondary level. 7.5% of secondary level respondents were exposed to hard physical work, carrying/lifting loads. 4.8% of respondents at the tertiary level were exposed to frequent bending during work tasks. Primary level respondents are not exposed to hard physical work. Professional factors are different and significantly represented in the pain of the lower part of the back of health professionals in the investigated institutions. The most common are physically demanding roles, lifting and carrying heavy loads, working positions and movements. It is necessary to implement preventive measures at the workplace to reduce exposure to these factors.*

Key words*: healthcare workers, low back pain, mechanical factors, frequency*

Introduction

Low back pain (LBP) is the most common musculoskeletal disorder and a debilitating condition that burdens the individual, the health care system and society as a whole [1]. It is a serious global, medical and socioeconomic problem that affects

work productivity and is the most prominent condition in clinical practice that 70-90% of adults have at some point in their lives [2,3].

Research in occupational medicine has confirmed that lower back pain is a complex condition that impairs function, participation in society, and personal prosperity associated with biopsychosocial factors [4, 5]. It is one of the most important causes of morbidity among healthcare workers, which is related to personal and professional factors [6].

Health workers at different levels of health care perform different activities at the workplace and are exposed to various risk factors that increase the likelihood of developing lower back pain [7]. Low back pain is one of the most important causes of morbidity among healthcare workers, and various workplace factors are involved in increasing the risk [8]. Prolonged standing, sitting, frequent bending and twisting, repetitive activities, heavy lifting and heavy physical work are occupational risk factors associated with lower back pain patients with LBP [9,10].

Many authors investigated the representation of factors associated with pain in the lower back, but there are few authors from Montenegro. The aim of this research is to determine the frequency of maniacal factors of pain in the lower back of health professionals in the southern region of Montenegro.

Material and methods

A cross-sectional survey was conducted in primary, secondary and tertiary health care institutions in the Bay of Kotorska (Montenegro) in the period from December 2021 to June 2022. Of the five health institutions included in the research from the primary level, JZU Dom zdravlja Herceg Novi and JZU Dom zdravlja Kotor are included, from the secondary level the Special Hospital "Vaso Ćuković" Risan and the General Hospital Kotor, and from the tertiary level the Institute for Physical Medicine, Rehabilitation and Rheumatology "Dr. Simo Milosevic" Igalo. With the approval of the Ministry of Health of Montenegro and the ethical committees of the aforementioned institutions, and in accordance with all ethical principles, this research included 230 respondents from various health professions. When informed about the purpose of the research, all respondents agreed to voluntarily participate in the research. Inclusion criteria were: age 19-65 years, permanent employment and lower back pain. The questionnaire designed for this research, which contains 15 questions, was used as a research instrument. Five questions from the Questionnaire refer to general sociodemographic data (gender, age, anthropometric data, marital status and level of education), and ten questions are related to profession, physical activity and effort at work, dominant work activity, pain and mobility of the lumbar spine. The software package SPSS for Windows (version 21.0, SPSS Inc, Chicago, Illinois, USA) and Microsoft Excell (version 11. Microsoft Corporation, Redmond, WA, USA) were used for statistical analysis of the obtained data. Nominal and ordinal variables in the research were analyzed with the $\chi 2$ test, and when the expected frequency was missing, Fisher's exact test was used (for contingency tables). The value $\alpha=0.05$ was taken as the limit of statistical significance. The results are

elaborated in detail, presented with absolute numbers, relative numbers, statistical values with the use of statistical indicators, and presented in simple and understandable tables.

Results and discussion

230 subjects were included in the study, but 38 were excluded because they did not meet the inclusion criteria. The total sample consisted of 192 or 83.5% of respondents with lower back pain.

The largest number of respondents is employed at the secondary level of health care, n=67 or 34.9%, followed by primary level n=63 or 32.8% and tertiary level n=62 or 32.3%.

Table 1. Gender structure of respondents

			Nivo			Level Total
			Primary	Secondary	Tertiary	
Gender	**Male**	N (%)	4 (6.3)	13 (19.4)	17 (27.4)	34 (17.7)
	Feminine	N (%)	59 (93.7)	54 (80.6)	45 (72.6)	158 (82.3)
Level Total		N (%)	63 (100.0)	67 (100.0)	62 (100.0)	192 (100.0)
$\chi 2=9.723$; p=0.008						

Analysis of the gender structure showed a statistically significant difference in gender. 82.3% of respondents were female, and 17.7% were male. There is a statistically significant difference in gender because the female gender dominates. It is most represented at the primary level (93.7%), significantly less at the secondary level (80.6%), and the least at the tertiary level (72.6%) ($\chi 2=9.723$; p=0.008). The average age of the respondents in the total sample is 41.6±12.99 (20.00-65.00) years, with the youngest respondent at the age of 20 and the oldest at the age of 65.

The analysis of the results of physical effort at work in the examined sample is statistically significant, because during the working day 22.9% of respondents mostly sit, 14.1% stand, 35.9% stand or walk but do not carry heavy loads, while standing and carrying loads exposed to 8.3% of respondents. During the work week, 7.8% of respondents were exposed to prolonged walking and climbing stairs, 5.7% bent over during work tasks, and 4.2% of health professionals were exposed to heavy physical work, carrying or lifting large loads. At the primary level, 52.4% of the respondents stand and walk for a long time, at the secondary level, 7.5% of the respondents do hard physical work, and at the tertiary level, 4.8% of the respondents often bend down when performing work tasks ($\chi 2=39.060$; p=0.0001).

The work activities of health professionals at the primary, secondary and tertiary levels include many risk factors and increase the likelihood of developing LBP [11]. Work department, workplace and work activity are recognized as risk factors, especially activities such as bending, twisting, long standing, lifting and pushing patients during transfer are professional factors among healthcare workers [12, 13].

In 2017, Awosan et al examined the perception and correlates of LBP among healthcare workers in tertiary care facilities. In their cross-sectional study, 83.9% of healthcare workers found that LBP was work-related. The most frequently reported risk factors were long standing (57.2%), awkward position (22.2%) and carrying heavy objects or patients (20.6%) [14].

In 2016, Bin Homaid et al. examined the characteristics and risk factors of lower back pain among staff in the operating room and found that LBP was present in 74.2%. The most risky activities were lifting objects above the waist and trunk rotation associated with carrying loads, transferring and by pulling the patient [15].

In 2019, Alnami et al. found that due to specific working conditions and longer working hours, healthcare workers working at the secondary and tertiary levels are more likely to develop LBP than at the primary level. They emphasize that workers with a positive history of back trauma in the form of trauma from overloading or lifting heavy objects have a higher risk of developing LBP. They believe that the long-term condition can result in a number of musculoskeletal effects, which include muscle ischemia, pain and disc degeneration [6].

Hoy et al (2012) found that overexertion back trauma is more common in workers with longer working hours and is associated with patient transfers [16]. The position during work is a significant risk factor due to the physiological state of the muscles, which intensifies muscle fatigue and causes pain (15). Healthcare workers who most often occupy a sitting position are 2.74 times more at risk of LBP compared to colleagues whose standing position is dominant. Workers with an adopted bending position are 3.29 times more at risk for LBP compared to colleagues who adopt a standing position [17].

Conclusion

Professional factors of low back pain are common and differently represented among health professionals in primary, secondary and tertiary health care institutions. They are related to the work activities and physical demands of the job. In this research, long standing and walking were identified as the most common mechanical factors at the primary level, physical hard work at the secondary level, and frequent bending over at the tertiary level. It is necessary to implement preventive measures in the workplace in order to establish a balance between personal health care and professional tasks and to reduce exposure to these factors.

Literature

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PROFESIONALNI FAKTORI BOLA U DONJEM DIJELU LEĐA ZDRAVSTVENIH PROFESIONALACA

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Sažetak. *Bol u donjem dijelu leđa složeno je stanje povezano sa biopsihosocijalnim faktorima koji narušavaju funkciju, učešće u društvu i lični prosperitet. Na radnim mjestima zdravstveni profesionalci su izloženi profesionalnim rizicima za razvoj bola u donjem dijelu leđa. Identifikovani faktori su dugotrajno stajanje, sjedanje, savijanje, podizanje tereta i fizički rad s pacijenatima. Cilj istraživanja bio je utvrditi učestalost mehaničkih faktora bola u donjem dijelu leđa zdravstvenih profesionalaca. Sprovedena je presječna studija u pet zdravstvenih ustanova primarnog, sekundarnog i tercijarnog nivoa u Boki Kotorskoj, Crna Gora (XII 2021. godine - VI 2022. godine). U istraživanju dobrovoljno je učestvovalo 230 ispitanika. Istraživački instrument bio je Upitnik dizajniran za ovo istraživanje. Bol u donjem dijelu leđa zastupljen je kod 83,5% zdravstvena profesionalca. Rezultati pokazuju zastupljenost bola kod 82,3% ispitanika ženskog pola i 17,7% ispitanika muškog pola. Radno je angažovano 34,9% ispitanika na sekundarnom nivou, 32,8% na primarnom i 32,3% na tercijarnom nivou, prosječne starosne dobi 41,6±12,99 godine. Analiza fizičkog napora na poslu pokazala je statistički značajnu razliku p=0,0001, jer 35,9% ispitanika uglavnom stoje/ hodaju, ali ne nose težak teret, 22,9% sjedi, 14,1% stoji, 8,3% stoje i nose težak teret, 7,8% puno hodaju, penju se uz stepenice i nose težak teret, 5,7% često se saginju, a 4,2% teško fizički rade. Pretežnom stajanju/hodanju, bez nošenja teškog tereta izloženo je 52,4% ispitanika primarnog nivoa, 37,1% tercijarnog i 19,4% sekundarnog nivoa. Teškom fizičkom radu, nošenju/podizanju tereta izloženo je 7,5% ispitanika sekundarnog nivoa. Čestom saginjanju pri radnim zadacima izloženo je 4,8% ispitanika tercijarnog nivoa. Ispitanici primarnog nivoa nisu izloženi teškom fizičkom radu. Profesionalni faktori su različiti i znatno zastupljeni u bolu donjeg dijela leđa zdravstvenih profesionalaca u ispitivanim ustanovama. Najzastupljeniji su fizički zahtjevne uloge, podizanje i nošenje teškog tereta, radni položaji i pokreti. Potrebno je sprovesti preventivne mjere na radnom mestu za manju izloženost ovim faktorima.*

Ključne riječi: *zdravstveni radnici, bol u donjem dijelu leđa, mehanički faktori, učestalost*