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Musculoskeletal symptoms of hospital nurses: contribution of rehabilitation nurses

Sintomatologia musculoesquelética dos enfermeiros no contexto hospitalar: contributo do enfermeiro de reabilitação

Síntomas musculoesqueléticos de los enfermeros en el contexto hospitalario: contribución del enfermero de rehabilitación

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Abstract

Background: Nurses make up the major professional category in the National Health Service, and their work affects their musculoskeletal well-being.
Objective: To determine the prevalence of musculoskeletal symptoms of nurses and identify their risk factors.
Methodology: A quantitative, descriptive, and correlational study, conducted in a Portuguese hospital center, used a non-probabilistic sample by convenience of 260 nurses. A questionnaire was used as data collection instrument, divided into two parts (sociodemographic and professional data/Nordic Musculoskeletal Questionnaire).
Results: The majority of nurses (65.1%) manifests musculoskeletal symptoms, the lumbar spine being the most affected body segment. The female gender, aging, body mass index, time of professional experience, and workload are related to the worsening of symptoms.
Conclusion: The results point out the need to raise awareness of the risk factors among nurses, as well as to promote the adoption of strategies, like workplace gymnastics, to minimize musculoskeletal symptoms.

Keywords: nurses; hospitals; risk factors; musculoskeletal pain

Resumo

Enquadramento: Os enfermeiros integram a classe profissional maioritária no Serviço Nacional de Saúde, sendo que o trabalho que desenvolvem condiciona o seu bem-estar musculoesquelético.
Objetivo: Conhecer a prevalência da sintomatologia musculoesquelética dos enfermeiros, identificando simultaneamente os fatores de risco.
Metodologia: Estudo quantitativo, de carácter descritivo e correlacional, concretizado num centro hospitalar de Portugal. A técnica de amostragem foi não probabilística por conveniência, obtendo-se uma amostra de 260 enfermeiros. Como instrumento de colheita de dados utilizou-se o questionário, dividido em duas partes (dados sociodemográficos/profissionais e Questionário Nórdico Musculoesquelético).
Resultados: A maioria dos enfermeiros (65,1%) apresenta sintomatologia ao nível do sistema musculoesquelético, sendo que a coluna lombar é o segmento mais afetado. O género feminino, o aumento da idade, do índice de massa corporal, do tempo de exercício profissional e a carga horária estão relacionados com o agravamento dos sintomas.
Conclusão: Os resultados apontam para a necessidade de sensibilizar os enfermeiros para os fatores de risco, bem como incentivar a adoção de estratégias, como a ginástica laboral, para minimizar sintomatologia musculoesquelética.

Palavras-chave: enfermeiras e enfermeiros; hospitais; fatores de risco; dor musculoesquelética

Resumen

Marco contextual: Los enfermeros forman parte de la clase profesional mayoritaria del Servicio Nacional de Salud, y su trabajo condiciona su bienestar musculoesquelético.
Objetivo: Conocer la prevalencia de la sintomatología musculoesquelética de los enfermeros, mediante la identificación simultánea de los factores de riesgo.
Metodología: Estudio cuantitativo, descriptivo y correlacional realizado en un centro hospitalario de Portugal. La técnica de muestreo fue no probabilística por conveniencia, y se obtuvo una muestra de 260 enfermeros. Como instrumento de recopilación de datos se utilizó el cuestionario, dividido en dos partes (datos sociodemográficos/profesionales y el Cuestionario Nórdico Musculoesquelético).
Resultados: La mayoría de los enfermeros (65,1%) presenta síntomas a nivel del sistema musculoesquelético, y la columna lumbar es el segmento más afectado. El sexo femenino, el aumento de la edad, el índice de masa corporal, el tiempo de ejercicio profesional y la carga de trabajo están relacionados con el empeoramiento de los síntomas.
Conclusión: Los resultados apuntan a la necesidad de concienciar a los enfermeros sobre los factores de riesgo, así como de fomentar la adopción de estrategias, como la gimnasia en el lugar de trabajo, para minimizar la sintomatología musculoesquelética.

Palabras clave: enfermeras y enfermeros; hospitales; factores de riesgo; dolor musculoesquelético

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Introduction

Nurses are the health professionals who most suffer from musculoskeletal disorders, due to the physical demand of their job, inadequate body postures, and working with old-fashioned equipment (Fernandes, Couto, Carvalho, Fernandes, & Ferreira, 2018). These disorders are defined as inflammatory and degenerative diseases affecting the locomotor system, as a result of professional risk factors, such as repetitive motion, overload, and/or the body posture during working hours, with the manifestation of symptoms like pain, edema, decreased muscle strength and joint motion (Martins, 2008; Direcção-Geral da Saúde, 2008). According to the American Nurses Association (ANA, 2011), nurses have a high rate of musculoskeletal symptoms, even after their workplace conditions have been improved. ANA (2011) reminds that nurses need to be more aware of the use of support equipment in healthcare delivery because less than a third use it often. So, considering the professional practices observed, as well as the musculoskeletal symptoms of nurses, it is relevant to assess the determining factors of their musculoskeletal well-being while working in hospitals. This study took into account that many nurses have a 10.19% absenteeism rate (Oliveira, 2017), as the leading causes are disease-related. In this sense, the objective of this study is to establish the prevalence of musculoskeletal symptoms of nurses and to identify the risk factors.

Background

Nurses are the health professionals who spend the most time in healthcare delivery to patients, thus being more exposed to a large number of risks that may contribute to the development of work-related musculoskeletal disorders. In fact, nurses assist patients in their self-care activities, such as bathing, lifting, transferring, and positioning, which can result in musculoskeletal disorders. Therefore, it is important that nurses are aware of the various risks associated with healthcare delivery (Carpenter & Dawson, 2015; Neves & Serranheira, 2014). Musculoskeletal disorders are chronic pain syndromes that can affect different body segments. Symptoms settle in gradually and aggravate at the end of the working day or during peak situations, occasionally relieving with breaks and rest (Direcção-Geral da Saúde, 2008). According to the European Agency for Safety and Health at Work (Agência Europeia para a Segurança e Saúde de Trabalho [AESST], 2019), these disorders develop over time, as a result of the combination of various factors such as repetitive motion, force application, inadequate body postures, and work-related stress. Jerónimo and Cruz (2014) state that there are risk factors for the development of musculoskeletal disorders, particularly at the individual level (gender, age, anthropometric characteristics); biomechanical risks (body posture and repetitive motion); psychosocial risks (stress-related, such as work overload, time pressure, and rotating schedules), and organizational risks (number of overtime hours, extended working periods, few or no resting breaks). Within this context, nurses have a high probability of developing musculoskeletal symptoms in various body segments (Cordeiro, 2015; Torres, Carneiro, & Arezes, 2017). Cordeiro (2015), citing other authors, remarks that the process of developing musculoskeletal symptoms comprises four stages. In stage one, the person manifests discomfort and spontaneous pain in the affected area, and improves with rest; in stage two, the pain is more intense and persistent during working hours, possibly paired with signs of paresthesia and heat; in stage three, the pain increases persistently, with manifestation of edema and changes in sensitivity; and in stage four, the pain is continuous and intolerable, with manifestation of edema and possible atrophy and deformity, thus conditioning the person's capacity to work. Accordingly, the AESST (2019) recommends taking measures to prevent musculoskeletal disorders, including workplace organization, mainly to improve body postures; ergonomic and suitable equipment for the implementation of activities; to reinforce attention to the workplace risks, to develop a policy to prevent and fight against musculoskeletal disorders. Workplace exercise is also one of the preventive actions mentioned by several authors, like Ribeiro (2015) and Duarte, Gonçalves, Ferreira, and Cunha (2017), because it benefits the employee and the employer greatly. Indeed, it prevents

musculoskeletal disorders, reduces workplace accidents, decreases absenteeism, and increases productivity effectively. It also improves the quality of life of nurses, promoting their satisfaction and motivation (Santos & Almeida, 2012). The role of rehabilitation nurses in the team is to identify and contribute to the resolution of problems which may jeopardize the musculoskeletal well-being of nurses, because they assist the person in activities that allow maximizing their functional skills, improving the motor and cardiorespiratory performance, and increasing the personal development and efficiency (Regulamento n. º 350/2015).

Research questions

What is the prevalence of musculoskeletal symptoms of hospital nurses? Which individual and organizational risk factors are related to musculoskeletal symptoms?

Methodology

A quantitative, descriptive, and correlational study was carried out in a hospital center (HC) in northern Portugal. The population is composed of nurses working in in-patient services of this HC (medicine, medical specialties, surgery, surgical specialties, intensive coronary care unit, and infectious diseases unit), totaling 427 individuals at the time of the authorization request. It is worth noting that professionals in leave of absence were excluded, regardless of the reason, as well as nurses with less than 1 year of professional experience.

The sampling technique used in this study was non-probabilistic by convenience, having obtained a sample of 260 nurses (corresponding to 60.9%). For this reason, a reliability rate of 95% was observed for a margin of error of 3.81%. The study was approved by the ethics committee, according to the opinion no. 170/2018. A questionnaire was used as data collection tool. Its first part concerns the demographic and professional data of the participants, and its second stage applied the Nordic Musculoskeletal Questionnaire (NMQ), adapted and validated by Mesquita, Ribeiro, and Moreira (2010). The data collection was carried out in May 2018, and the participants were informed thoroughly of the study's objectives and research procedures. For data treatment and analysis, a data matrix was formulated using the IBM SPSS Statistics program, version 25.0, which allowed operationalizing and correlating the variables afterward. Statistical non-parametric tests were conducted, in which a < 0.10 *p*-value was considered decisive for the results' significance because the number of nurses with musculoskeletal symptoms is low.

Results

The sociodemographic and professional characteristics of the 260 participants are described in Table 1. Most participants are female and work on a rotating schedule. Their age ranges between 25 and 62 years old, with a mean age of 40.4, and a standard deviation of 8.7. The minimum time of professional experience is 1 year, and the maximum is 43 years, with a mean time of 16.6 years and a standard deviation of 9.

Regarding their physical condition, the body mass index (BMI) of the female nurses varies between 17.6 and 37.0. The most significant number of female nurses has a healthy BMI, with a mean value of 23.9. Male nurses have a minimum BMI of 20.0, and one male nurse's BMI exceeds 31.5. The mean BMI of male nurses is 25.8 (pre-obesity).

Table 1
Sociodemographic and professional characterization of the nurses

Sample characterization		*n*	%
Gender	Male	50	19.2
	Female	210	80.8
Age groups	[25-35[	87	33.5%
	[35-45[	81	31.1%
	[45-55[	77	29.6%
	[55-62]	15	5.8%
Academic qualifications	Undergraduate degree	2	0.8%
	Bachelor's	179	68.8%
	Master's	16	6.2%
	Postgraduate degree	17	6.5%
	Specialization	46	17.7%
Specialty	Medical-Surgical	28	30.9%
	Community Health	5	10.9%
	Rehabilitation	9	19.6%
	Child Health and Pediatrics	1	2.2%
	Maternal Health and Obstetrics	1	2.2%
	Mental Health and Psychiatry	2	4.3%
Schedule	Daytime	48	18.5%
	Rotating	212	81.5%
Weekly hours	< 40H	118	45.5%
	≥ 40H	142	54.7%
Total		260	100.0

Note. *n* = sample number; % = sample percentage.

The NMQ was applied to assess the symptoms manifested by the nurses. Of the total 260 nurses participating in this study, 175 reported feeling pain during the last 12 months in at least one body segment (Table 2), and the prevalence of complaints is 65.1%.

Table 2
Characterization of the feeling of pain in various anatomical segments, during the last 12 months

Segment	Pain				Which segment					
	No		Yes		Left		Right		Both	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Cervical spine	64	24.6	196	75.4	----	-----	----	-----	----	-----
Shoulders	108	41.5	152	58.5	27	17.8	49	32.2	76	50.0
Elbows	222	85.4	38	14.6	8	21.1	15	39.5	15	39.5
Wrists/Hands	168	64.6	92	35.4	11	12.0	40	43.5	41	44.6
Thoracic spine	106	40.8	154	59.2	----	-----	----	----	----	-----
Lumbar spine	60	23.1	200	76.9	----	-----	---	-----	----	-----
Hips/Thighs	184	70.8	76	29.2	----	-----	----	-----	----	-----
Legs/Knees	136	52.3	124	47.7	----	-----	----	-----	----	-----
Ankles/Feet	205	78.8	55	21.2	----	-----	----	-----	----	-----

Note. *n* = sample number; % = sample percentage.

As shown in Table 2, the body segment with more complaints is the lumbar spine (76.9%), followed by the cervical spine (75.4%) and the thoracic spine (59.2%). The body segments with less reported feeling of musculoskeletal pain are the elbows (14.6%).

The individual and organizational aspects regarding risk factors are described below, and the correlation between risk factors and the musculoskeletal symptoms is shown in the following tables.

The individual risk factors are gender, age, BMI, and academic qualifications. Their relation to the feeling of pain during the last 12 months was studied (Table 3; Table 4).

Concerning gender and the feeling of musculoskeletal pain during the last 12 months in the thoracic spine, hips/thighs, and legs/knees, it is concluded that the ratio of female nurses who feel pain in these body segments is higher than that of male nurses. In comparison, it is observed that the ratio of those who feel pain and who feel no pain in the remaining body segments are equal among male nurses and female nurses, meaning that there is no association between gender and the feeling of pain in the same body segments.

In what concerns the age and the feeling of pain during the last 12 months in the thoracic spine segment, the mean age of nurses who feel pain is lower than that of those who feel no pain, meaning that the feeling of pain in the thoracic spine decreases with age. However, it was noted that the mean age of nurses who feel pain in the elbows and ankles/feet segments is higher than that of those who feel no pain, meaning that the feeling of pain in these segments increases with age. As to the remaining body segments, the mean age of nurses who feel pain is equal to that of those who feel no pain.

As regards the BMI and the feeling of pain during the last 12 months in various body segments, it is possible to conclude that the mean BMI of nurses who feel pain in the thoracic spine segment is lower than that of those who feel no pain. On the other hand, the mean BMI of nurses who feel pain in the remaining body segments is equal to that of those who feel no pain, meaning that there is no association between the BMI and the feeling of pain.

Because the participants had few academic qualifications, the undergraduate and bachelor's degrees were grouped into a single category named first cycle, the master's was named second cycle, and, finally, the other group is composed of the nurse specialists. Thus, it is concluded that the ratios of nurses who feel pain and those who feel no pain in the thoracic spine segment are different between the various academic qualifications. The comparison between the three levels of education, meaning the first and second cycles, allows assuming that the ratios of nurses who feel pain and do not feel pain are the same between both cycles. Also, it is observed that more first-cycle nurses feel pain in the thoracic spine when compared to second-cycle nurses and nurse specialists. In turn, the number of second-cycle nurses who feel pain in the thoracic spine is the most significant. Between the three groups of academic qualifications, the nurse specialists manifest fewer complaints in the thoracic spine. As to the other remaining body segments, no differences were found between the first-cycle and second-cycle nurses and nurse specialists.

The organizational risk factors discussed are time of professional experience, services where nurses work, type of work schedule, and weekly working hours (Table 3; Table 4).

Table 3

Correlation between the risk factors and the feeling of pain during the last 12 months using the chi-squared statistical test

Body segment	Gender		Academic qualifications		Service		Work schedule		Weekly working hours	
	X^2	*p*	X^2	*p*	X^2	*p*	X^2	*p*	X^2	*p*
Cervical spine	1.4	0.244	4.7	0.653	4.7	0.096	0.391	0.532	< 0.001	0.999
Thoracic spine	5.2	0.023	0.458	0.075	0.458	0.795	0.001	0.982	8.3	0.004
Lumbar spine	< 0.001	0.999	5.1	0.378	5.1	0.079	0.048	0.827	0.141	0.708
Shoulders	0.305	0.581	0.841	0.29	0.841	0.657	0.033	0.856	0.790	0.374
Elbows	2	0.155	< 0.001	0.946	< 0.001	0.999	0.451	0.502	8.5	0.004
Wrists/Hands	1.9	0.168	4.3	0.422	4.3	0.118	0.257	0.613	4.1	0.044
Hips/Thighs	6.1	0.014	0.464	0.239	0.464	0.793	< 0.001	0.999	0.679	0.41
Legs/Knees	6.9	0.009	3.0	0.448	3.0	0.227	< 0.001	0.999	0.646	0.422
Ankles/Feet	0.64	0.424	1.5	0.343	1.5	0.222	0.843	0.359	1.2	0.281

Note. p = level of significance ($p < 0.10$); X^2 = Chi-squared test statistics.

In what concerns the time of professional experience and the feeling of musculoskeletal pain, discomfort, and fatigue during the last 12 months, it was observed that the time of professional experience of nurses who feel pain in the body segments of shoulders, elbows, wrists/hands, hips/thighs, and ankles/feet is longer than that of those who do feel no pain, which means that the feeling of pain increases the longer their time of professional experience is. Nevertheless, as to the thoracic spine segment, it can be concluded that the mean time of professional experience of nurses who feel pain is lower than that of those who do feel no pain, meaning that the feeling of pain decreases the longer their time of professional experience is. As regards the remaining segments, it can be assumed that there is no association between the time of professional experience and the feeling of pain.

Besides, the services where the nurses work, mainly surgical services, medical services, healthcare unit services, were grouped into categories of their own because the number of services found in the sample is very high. Concerning cervical spine, thoracic spine, lumbar spine, shoulders, wrists/hands, hips/thighs, and legs/knees, it can be concluded that there are no differences in the ratios of nurses who feel pain and those who feel no pain between the various services. It was not possible to apply the test to the three services for the body segments of elbows and ankles/feet because only two and three nurses felt pain in the healthcare unit services. Hence, comparison was performed between the surgical services and medical services, concluding that there is no association between the services where the nurses work and the feeling of pain.

As to the type of working schedule of the participants, mainly daytime or rotating, it was noted that, for all body segments, the ratio of nurses who feel pain and who feel no pain are the same for the two types of schedule, meaning that there is no association between the type of schedule and the feeling of pain.

Moreover, the two following categories were created regarding the weekly working hours: less than 40 weekly hours, and 40 weekly hours or more. It was concluded that more nurses working 40 or more weekly hours feel pain in the thoracic spine. Also, more nurses working less than 40 weekly hours feel pain in the wrists/hands. As to the other body segments, it is assumed that the ratios of nurses who feel pain and who feel no pain are the same for both hourly loads.

Table 4

Correlation between the risk factors and the feeling of pain during the last 12 months using the Mann-Whitney statistical test

	Time of professional experience		Age		BMI	
	U	*p*	*U*	*p*	*U*	*p*
Cervical spine	6231	0.938	6228	0.934	6628	0.496
Thoracic spine	9672.5	0.011	9909.5	0.003	9862.5	0.004
Lumbar spine	5959.5	0.938	6395	0.44	6121	0.814
Shoulders	7098.5	0.063	7478.5	0.222	7845.5	0.545
Elbows	2981.5	0.004	2962	0.003	3917.5	0.484
Wrists/Hands	6417	0.024	6859.5	0.134	6834.5	0.124
Hips/Thighs	5906	0.049	6104.5	0.107	7226.5	0.671
Legs/Knees	7564.5	0.152	8121	0.608	8212.5	0.718
Ankles/Feet	4665	0.049	4746.5	0.072	5426	0.67

Note. p = level of significance ($p < 0.10$); U = Mann-Whitney test

The distribution of the feeling of pain in all the body segments during the last 12 months was assessed (Table 5) to determine if the use of support equipment in nursing care delivery contributes to decreasing musculoskeletal complains in nurses. Only a minority of the patients, 75 nurses (28.8%), reported using support equipment to transfer patients. It was concluded that more nurses who use support equipment to transfer patients feel pain in the elbows than those who do not use them. In contrast, regarding the remaining body segments, it can be assumed that the ratio of nurses who feel pain and who feel no pain is the same among the nurses who use and who do not use support equipment to transfer patients, meaning that there is no association between the use of this equipment and the feeling of pain.

Table 5

Correlation between the use of support equipment in healthcare delivery and the feeling of pain during the last 12 months

Body segment	Patient transfer		Hygiene and walking activities		Moving patients on a bed	
	X^2	*p*	X^2	*p*	X^2	*p*
Cervical spine	0.09	0.76	0.241	0.623	0.005	0.941
Thoracic spine	0.066	0.797	0.047	0.829	0.598	0.44
Lumbar spine	0.004	0.95	3.6	0.058	1.2	0.27
Shoulders	0.211	0.646	0.445	0.505	0.0005	0.983
Elbows	6.4	0.01	4.4	0.035	0.069	0.793
Wrists/Hands	2.0	0.156	0.764	0.382	< 0.001	> 0.999
Hips/Thighs	0.03	0.862	0.736	0.391	0.332	0.564
Legs/Knees	0.225	0.635	2.1	0.143	0.476	0.490
Ankles/Feet	0.3	0.584	3.2	0.076	0.604	0.437

Note. p = level of significance ($p < 0.10$); X^2 = Chi-squared test.

Ninety-four nurses (36.2%) reported using support in the hygiene and walking activities. Concerning the lumbar spine, elbows, and ankles/feet, it was concluded that more nurses who use support equipment in hygiene and walking activities feel pain in these body segments than those who use none. As to the remaining body segments, it can be assumed that the ratios of nurses who feel pain and who feel no pain are the same among nurses who use and do not use support equipment.
Moreover, 54 nurses (20.8%) use support equipment to move patients on a bed. In these cases, regarding all body segments, the ratio of nurses who feel pain and those who feel no pain are the same among the nurses who use the equipment and those who use no equipment.

Discussion

Besides determining the prevalence of the musculoskeletal symptoms of nurses in hospitals, this study aimed to identify the individual and organizational risk factors and to establish if the nurses of the studied HC use support devices in healthcare delivery. The sample was composed of the nurses who work in the several inpatient services of the Hospital Center of Trás-os-Montes and Alto Douro (CHTMAD), with one year or more of professional experience. 65.1% of the participants reported feeling musculoskeletal pain, discomfort, and fatigue during the last 12 months. The analysis of the results allows observing that the lumbar segment (76.9%) presented the highest number of complaints by nurses, which concurs with several studies, namely Cordeiro (2015), Torres et al. (2017), and Yan et al. (2017). Furthermore, it was possible to observe an association between some individual and organizational risk factors and the feeling of pain during the last 12 months. Female nurses manifest more musculoskeletal complaints in the thoracic spine, hips/thighs, and legs/knees, just like in the study by Lima et al. (2014), which, indeed, states that female nurses present more musculoskeletal symptoms (47.4%) than male nurses (18.6%). Consequently, it can be assumed that female nurses feel more musculoskeletal pain than male nurses. Also, musculoskeletal pain in the elbows and ankles/feet increases with age, but pain in the thoracic spine decreases with age. One possible explanation for this fact is that the female participants of this study are mainly young, probably mothers of pre-school children, which can promote complaints in that body segment. Although this supposition was not examined in this study, it may be a relevant aspect to be included in other researches. It should be noted that no studies addressing this fact were found.
As regards academic qualifications, it was observed that the nurse specialists present less pain in the thoracic spine than the nurses with a bachelor's, master's, or undergraduate degree. These data point out that the knowledge of nurse specialists can lead to adopting preventive behaviors, which can be another pertinent aspect for future studies. The majority of the female nurses have a considerably healthy BMI, just like in the study by Jerónimo (2013), and the male nurses are mostly pre-obese, which explains the aggravated complaints in the thoracic spine. In the shoulders, elbows, wrists/hands, hips/thighs, legs/knees, and ankles/feet, the pain increases the longer their time of professional experience is, contrary to what happens with the thoracic spine. This result agrees with what was previously mentioned about the age of female nurses.
It can also be noted that the pain increases in the elbows and wrists/hands for those who work less than 35 hours. On the other hand, the pain is more considerable in the thoracic spine for nurses who work at least 40 hours.
After dividing the services into categories for the different areas, it was observed that there is no association between services where nurses currently work and the feeling of pain in the various body segments. Oliveira (2017) states that the majority of the population of Trás-os-Montes and Alto Douro is mostly aged, with increased morbidities and needs, which leads to assuming that there are patients with high level of dependence, regardless of where they are hospitalized.
Moreover, it was found that most participants present risk behaviors at work, specifically the non-use of support equipment in healthcare delivery. Only a minority of nurses use support equipment: in particular, 28.8% of these study's participants use it to transfer patients; 36.2% use it during hygiene and walking activities,

and 20.8% of nurses use it to move patients on a bed. Therefore, it is crucial to remember nurses that such equipment is available. Otherwise, they will use it only when they feel pain or manifest symptoms. In fact, the results obtained in our study allow concluding that professionals who felt pain sought to use some of the various support devices in healthcare delivery because of that same discomfort. Martins (2008) found that 79.7% and 78.6% of nurses use the patient lift and transfer board. In contrast, only 28.8% of nurses of the studied HC use them. In the study by Torres et al. (2017), 88% of respondents mention the existence of support devices for patient transfer. However, only 24% use them in more than 50% of the cases, alerting to the limited number of devices available in the services, the patient's physical status, and the prolonged and challenging usage as the main reasons for the low use of equipment. Martins (2008) argues that nurses are aware of the risk of developing musculoskeletal symptoms during nursing activities and due to inadequate body postures at work. However, in an attempt to decrease physical efforts and risks related to the activity, they often seek the help of a nurse coworker. As a result, although nurses possess the necessary skills to move a patient correctly, the repetitive motion during the work shift and with several patients contributes to an increased risk of musculoskeletal disorders. In light of the problems described so far, Fernandes et al. (2018) and Serranheira, Cotrim, Rodrigues, Nunes, and Sousa-Uva (2012) suggest the adoption of intervention programs for the reduction of musculoskeletal symptoms in professionals. As an example, attention has been focused on discussing the implementation of a multifactorial program to reduce work-related musculoskeletal symptoms, according to the prevalence of disorders, and to remedy poor body mechanics, as well as the lack of training in load handling techniques (Fernandes et al., 2018). Besides, Torres et al. (2017) and Ribeiro (2015) point out workplace exercise as an important intervention to reduce the risk of musculoskeletal disorders in nurses, since it aims to promote the professional's health, and to which rehabilitation nurses may provide an essential contribution.

The limitations of this study are the fact that it was conducted in only one HC, as well as choosing a non-probabilistic sampling technique, which may have determined the participants' profile, especially regarding age.

Conclusion

Nurses very often develop work-related musculoskeletal symptoms, and, for this reason, they should be aware of this issue. It can be concluded that the majority of nurses manifest musculoskeletal symptoms in at least one body segment, and the most frequent complaints focus on the lumbar, cervical, and thoracic spines. This agrees with the results of other national and international studies previously conducted. Also, after analyzing the risk factors of nurses, it was concluded that the time factor affects the onset of these symptoms the most. Regarding support devices for healthcare delivery, it was observed that the majority of nurses do not use them and only resort to them after manifesting associated symptoms. Besides, based on the results of this study, the authors suggest the creation of a program that promotes workplace exercise among nurses who work in inpatient services of the studied HC to decrease the musculoskeletal symptoms and their consequences among these professionals. Rehabilitation nurses will play a significant role in defining and implementing the program to achieve the proposed objectives.

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