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Characterization of nurse staffing who are away from work due to musculoskeletal disorders in a university hospital

Caracterização dos trabalhadores da enfermagem afastados por distúrbios osteomusculares em hospital universitário

Caracterización de trabajadores de enfermería en licencia por trastornos musculoesqueléticos en hospital universitário

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Abstract: Objective: To describe the sociodemographic and occupational characteristics of nurse staffing from an university hospital who are away from work due to musculoskeletal cumulative disorders and the association with absenteeism time. **Method:** retrospective, analytic and cross-sectional study. Medical records from 2012 to 2017 were analyzed from medical records of workers using descriptive and analytical statistics. **Results:** Out of 2,761 recorded absences from nurse staffing, 449 referred to musculoskeletal disorders (16.26%), the highest percentage due to back pain (41.5%) and 78 workers had psychiatric diagnosis, especially depression (43.4%). There was identified in the group with longer time of absence (> 15 days) the predominance of the category of nursing assistants and technicians (p = 0.006), with lower median age (p = 0.021) and higher education (p = 0.035). **Conclusion:** The elevated number of absences due to musculoskeletal disorders, sometimes associated with other comorbidities, requires follow-up and prevention in the workplaces.

Keywords: Musculoskeletal Pain; Cumulative Trauma Disorders; Occupational Health; Sick Leave; Nursing

Resumo: Objetivo: descrever características sociodemográficas e ocupacionais de trabalhadores da equipe de enfermagem afastados por distúrbios osteomusculares em hospital universitário e sua associação com o tempo de

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afastamento. **Método:** estudo quantitativo retrospectivo, transversal e analítico. Os dados foram coletados nos prontuários de trabalhadores afastados no período de 2012 a 2017, e analisados por meio da estatística descritiva e analítica. **Resultados:** de 2.761 afastamentos registrados, 449 se referiam a distúrbios osteomusculares (16,26%), o maior percentual por dorsalgia (41,5%) e 78 trabalhadores apresentaram diagnóstico psiquiátrico, principalmente depressão (43,4%). Identificou-se no grupo com maior tempo de afastamento (> de 15 dias) o predomínio da categoria de auxiliares e técnicos de enfermagem (p=0,006), trabalhadores com menor mediana de idade (p=0,021) e de maior escolaridade (p=0,035). **Conclusão:** o elevado número de afastamentos por distúrbios osteomusculares, por vezes associado a outras comorbidades, exige acompanhamento e medidas preventivas nos locais de trabalho.
Descritores: Dor musculoesquelética; Transtornos traumáticos cumulativos; Saúde do Trabalhador; Licença médica; Enfermagem

Resumen: **Objetivo:** Describir las características sociodemográficas y ocupacionales de los trabajadores del personal de enfermería en licencia debido a trastornos musculoesqueléticos en un hospital universitario y relación con el tiempo de ausencia. **Método:** estudio retrospectivo, transversal y analítico. Se analizaron los registros médicos de los trabajadores con licencia de 2012 a 2017, utilizando estadísticas descriptivas y analíticas. **Resultados:** De 2,761 ausencias registradas, 449 fueron por trastornos musculoesqueléticos (16.26%), debido a dolor de espalda (41.5%) y 78 por diagnóstico psiquiátrico, especialmente depresión (43.4%). En el grupo con mayor tiempo de ausencia (15 días), se identificó el predominio de la categoría de auxiliares y técnicos de enfermería (p = 0.006), trabajadores con menor rango de edad (p = 0.021) y educación superior (p = 0,035). **Conclusión:** El elevado número de ausencias por enfermedad debido a trastornos musculoesqueléticos, a veces asociados con otras comorbilidades, requiere seguimiento y prevención en el entorno laboral.
Descriptores: Dolor musculoesquelético; Trastornos de traumas acumulados; Salud laboral; Ausencia por enfermedad; Enfermería

Introduction

In nursing, the professionals are exposed to risks to their health due to the performance of activities that involve static and dynamic work with regard to the musculoskeletal system. Static work is an action that requires continuous contraction of some muscles to maintain a certain position. Dynamic work, on the other hand, allows for alternate contraction and relaxation of the muscles.[1]

A systematic review that evaluated repetitive stress injuries in nursing showed that professionals become vulnerable to various types of musculoskeletal disorders due to conditions and high workload. Other factors such as overtime work, fast pace, lack of staff, fragmentation of tasks, excessive physical strength, improper posture, carrying a weight greater than 10kg and working hours greater than eight hours a day are also linked to the emergence of

musculoskeletal disorders in nursing.[2-4] Regarding nurse knowledge about preventing Work-Related Musculoskeletal Disorders (WRMD), it was evidenced that the main factors related by the professionals to the onset of such disorders were the repetition of movements, inadequate posture, excessive physical effort and the working day. prolonged work.[5]

WRMD are chronic disorders of musculoskeletal structures caused by work activities. WRMD can be considered a generic name given to a set of multifactorial disorders that affect muscles, synovial tendons, joints, vessels and nerves, being a frequent diagnosis among nursing workers. [6-7]

The context of nursing practice is being studied worldwide and compared with other functions regarding the consequences to workers' health. Research aiming to verify specific work factors that influence the prevalence of musculoskeletal pain among office workers, caregivers and nurses, revealed that 73.9% of nurses (n = 221) reported low back pain, higher percentage than the other occupations.[8] In another study about low back pain in the last year, nurses, teachers and sonographers were evaluated, and the former (n = 925) represented the most affected group (51%).[9]

A study conducted in Iran, which aimed to find the relationship between the prevalence and risk of musculoskeletal disorders of the nursing staff in manual labor with the patient, also corroborates the data already shown by showing that among 175 nurses, 79.5% have some musculoskeletal disorder. , with emphasis on the lumbar region (69.1%).[10] In Malaysia, research on the prevalence and impact of work-related musculoskeletal disorders among 376 nurses found that in 2016, the rate of absenteeism due to these disorders increased from 6.2% to 18%.[11]

A Brazilian study that evaluated 1,574 medical certificates from all nursing staff workers in a university hospital showed that the majority (19.7%) of the certificates came from diseases of the musculoskeletal system, among them Dorsalgia in emphasized.[12] In an integrative review that investigated the relationship of absenteeism in nursing teams, thirteen articles were seen

and among these six showed musculoskeletal diseases as the predominant disease causing sickness, showing a strong association of musculoskeletal diseases with absenteeism.[13]

Based on the above, the justification for this research is based on the importance of producing and aggregating knowledge on the theme to support prevention and health promotion activities of nursing workers, as well as for the management of health services, considering the representative impact of the nursing population for resource and process management in hospitals.

The research developed had as question: What are the characteristics of nursing team workers who are away from musculoskeletal disorders in a university hospital? The objective was to describe sociodemographic and occupational characteristics of nursing staff workers who were away from musculoskeletal disorders in a university hospital and its association with time away from work.

Method

Cross-sectional, retrospective and analytical study. Held at the Hospital de Clinicas de Porto Alegre (HCPA), a public and university institution, part of the network of university hospitals of the Ministry of Education and academically linked to the Federal University of Rio Grande do Sul (UFRGS). The institution has 842 beds and has a nursing staff composed of 660 nurses, 1521 nursing technicians and 477 nursing assistants.

The sample consisted of medical records of nursing professionals (n = 2,212) from 2012 to 2017, who consulted at the Occupational Medicine Service (OMS) of HCPA. One included records of nursing workers on sick leave who would be assistants, nursing technicians or nurses and have departed during the selected period with any of the International Codes of Diseases (ICDs): 25.5 - Joint Pain; 50 - Cervical Disc Disorders; 50.1 - Cervical Disc Disorders with Radiculopathy; 50.2 - Other Cervical Disc Displacement 50.9 - Unspecified Cervical Disc Disorder; 51 - Other disorders of

intervertebral discs; 51.0 - Disorders of Lumbar Discs and Other Intervertebral Discs with Myelopathy; 51.1 - Disorders of lumbar discs and other intervertebral discs with radiculopathy; 51.3 - Other Specified Intervertebral Disc Degeneration; 51.9 - Not Specified Disorder. Intervertebral Disc; 53.1 - Cervicobrachial Syndrome; 54 - Back pain; 54.1 - Radiculopathy; 54.2 - Neck pain; 54.3 - Sciatica; 54.4 - Lumbago with Sciatica; 54.5 - Low Back Pain; 54.9 - Unspecified back pain; Synovitis and Tenosynovitis 65.0 - Abscess of Tendon Sheath; 65.2 Calcified Tendonitis; 65.3- Trigger finger; 65.4 - Quervain's Radial Styloid Tenosynovitis; 65.8 - Other Synovitis and Tenosynovitis; 65.9 - Synovitis and Unspecified Tenosynovitis; 66 - Spontaneous Rupture of Sinovia and Tendon; 66.0 - Popliteal Cyst Rupture; 66.5 - Spontaneous rupture of unspecified tendons; 67.8 - Other Specified Synovium and Tendon Disorders; 71.3 - Other Synovial Stock Cysts; 72.2 - Plantar Fascia Fibromatosis; 72.5 - Fascitis Not Elsewhere Classified; 75 - Shoulder Injuries; 75.0 - Adhesions-Capsulitis Shoulder 75.1 - Rotator Cuff Syndrome; 75.2 - Bicepital Tendonitis; 75.3 - Shoulder Calcifying Tendonitis; 75.5 - Shoulder Bursitis; 75.8 - Other Shoulder Injuries; 75.9 - Unspecified Shoulder Injury; 77.0 - Medial Epicondylitis; 77.1 - Lateral Epicondylitis; 77.3 - Heel Spur; 77.8 - Other Enthesopathies Not Elsewhere Classified; 77.9 - Unspecified Enthesopathy in the period from 2012 to 2017. The leaves for pregnancy or special leave were excluded from the sample, as well as absences or inconsistencies in completing the information.

Data collection occurred through the request of a *query* (process of extracting information from a database in the electronic system) from medical records of workers on leave from July 1, 2012 to July 1, 2017.

The variables of interest that made up an Excel spreadsheet database were the following ones: Gender, age, marital status, education, occupation, years of work in the institution, body mass index (BMI), weight, height, chronic diseases, associated diagnosis, number of days off and total days off. Data were submitted to descriptive and analytical statistics with the aid of SPSS version

18.0. Qualitative variables were presented by absolute and relative frequency and quantitative variables by measures of central tendency and dispersion.

Analytical statistics were used to verify differences between workers with long or short leave, using Pearson's chi-square and Fisher's exact in association analyzes for categorical variables, Mann Whitney test for continuous variables according to the distribution asymmetry identified by the Shapiro-Wilk normality test. Values of $p < 0.05$ were considered significant.

This study was reviewed by HCPA Research Ethics Committee on January 26, 2018 under opinion number 2,474,947. Ethical aspects were respected, according to Resolution 466/2012 of the National Health Council. The Data Use Authorization Term was also utilized, guaranteeing the anonymity of the professionals and their medical records in the presentation of the findings.

Results

The medical records of 2,212 nursing professionals (assistants, nursing technicians and nurses) who consulted the OMS were analyzed and it was found that 220 (9.94%) had withdrawn due to musculoskeletal disorders. A total of 2,761 sick leaves were identified, of which 449 (16.26%) were sick leaves due to musculoskeletal disorders. The service that had the most absences was clinical hospitalization.

Table 1 displays the sociodemographic and occupational characteristics of workers on leave due to musculoskeletal disorders.

Table 1 – Distribution of individuals removed for musculoskeletal disorders according to sociodemographic and occupational data. Porto Alegre, RS. 2018.

Variables	N=220
Gender* (n=219)	
Female	188(85.8)
Male	31(14.2)
Age" (n=220)	48 (28 – 69)
Marital status *(n=219)	
With a partner	75(34.2)
With no partner	144(65.8)
Schooling *(n=219)	

≥High School	194(88.6)
<High School	25(11.4)
Occupation* (n=219)	
Nursing Technician and Assistant	200(91.3)
Nurse	19(8.7)
Number of Leaves"(n=220)	2.04 (1 – 9)
Total Days Away"(n=220)	120.99 (4 – 1630)
Years of Work at the Institution" (n=220)	14 (8 – 22)
BMI" (n=220)	27.90 (19.14 – 51.20)
Chronic disease* (n=204)	
Yes	144(70.6)
No	60(29.4)
Number of Chronic Diseases* (n=220)	
No	75(34)
One	108(49)
Two or more	37(17)
Psychiatric Diagnosis* (n=196)	
Yes	78(39.8)
No	118(60.2)
Type of Psychiatric Diagnosis* (n=76)	
Depression	33(43.4)
Anxiety	19(25)
Bipolar Psychosis	8(10.5)
Others	16(21)

Notes: * n (%);" median (interquartile ranges).

Source: Authors Database, 2018

In order to relate the data presented with long and short-term leave, a distribution analysis of the sociodemographic and occupational characteristics between the groups was performed, which allows us to detail the analysis of the desired characterization in the present study (Table 2).

Table 2 – Distribution of nursing workers on leave less than 15 days and more than 16 days according to sociodemographic and occupational data. Porto Alegre, RS. 2018.

Variables	≤ 15 days	>15 days	*P*
Gender*			
Female	7(3.8)	179(96.2)	0.597
Male	0(0)	30(100)	
Schooling*			
≥High School	4(2.1)	187(97.9)	**0.035**
<High School	3(12)	22(88)	
Marital Status*			
With a partner	4(2.8)	137(97.2)	0.696
With no partner	3(4)	72(96)	

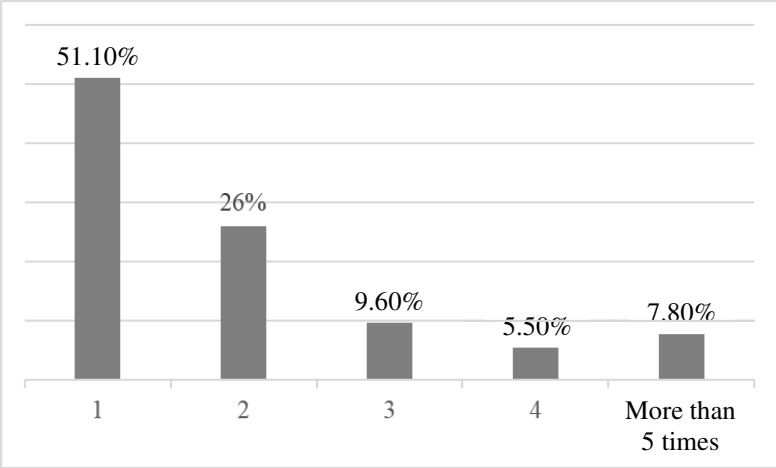
Age“	58 (52-59)	48 (41-53)	**0.006**
Weight“	66 (60-73)	73.2 (65-86.5)	0.115
Height“	1.61(1.57-1.64)	1.63 (1.59-1.7)	0.207
IMC“	26.1 (23.4-27.2)	27.33 (24.3-30.8)	0.216
Occupation*			
Assistant/Technician Nur.	4(2)	193(98)	**0.016**
Nurse	3(15.8)	16(84.2)	
Years of Work at the Institution “	22 (8-29)	14 (7.5-21)	0.139
Chronic Disease*			
Yes	6(4.2)	136(95.8)	0.676
No	1(1.7)	59(98.3)	
Psychiatric Diagnosis*			
Yes	3(3.8)	75(96)	0.705
No	5(4.3)	112(95.7)	

Notes: *n (%); “median (interquartile ranges).
BMI: Body Mass Index.
Source: authors database

Absences longer than 15 days were statistically associated with occupation of nursing assistant and technician (p = 0.016), higher education (p = 0.035) and lower median age (p = 0.006). In addition to this analysis, when the 30-day time away from work was envisaged, it was observed that workers with higher median weight were significantly associated with time off (p=0.043).

In graph 1 it is possible to find the frequency of absences in the period from 2012 to 2017 of the individuals of the sample as repetitions in the leaves.

Chart 1 –Frequency of sick leave due to musculoskeletal disorders from 2012 to 2017. Porto Alegre, RS. 2018.



Removals due to musculoskeletal disorders according to ICD were due to back pain (41.5%), shoulder injuries (25%), cervical disc disorder (7.8%), synovitis and tenosynovitis (6.3%), enthesopathy (6 %), radiculopathy disc disorder (5.1%), intervertebral disc disorder (2.9%), fasciitis (2.5%) and others (2.9%).

It is important to mention that in the Dorsalgia category are inserted as many ICDs that were considered in the same classification for a better understanding and separation of data. Back pain includes cervical pain, sciatica pain, sciatica lumbago, low back pain and unspecified back pain. The category "Others" included Joint Pain, Cervicobrachial Syndrome and Other Synovial Pouch Cysts, which had reduced numbers.

Discussion

This study found that 220 nursing professionals were removed from the work due to WRMD totaling 449 leaves, a percentage of 16.26% of the total leaves. The percentage found is lower than that identified in a study carried out in university hospitals in São Paulo, with 31% of sick leave due to WRMD.[14] However, it is still above the results of other institutions, such as another university hospital in the southern region, which identified 12.5% of absences for the same reason.[15] This difference suggests that workplace characteristics can minimize nursing staff illness due to WRMD and that there is a need for improvements in the working conditions of the population studied.

No differences were found in gender distribution and time off by the WRMD. However, a study that aimed to establish gender differences and the occurrence of upper extremity WRMD with a sample of 1,177 individuals concluded that women have a higher occurrence of this condition.[16]

Another Brazilian survey of nursing workers found associations between male gender and elbow pain (PR = 5.5, 95% CI: 1.1; 25.5, p = 0.028) and ankles (PR = 5.1, CI 95%: 1.3; 19.2, p = 0.016), and pain and physical inactivity for the elbow segments (PR = 3.4, 95% CI: 1.1; 10.3, p =

0.027) and knees (PR = 2.4, 95% CI: 1.1; 5.0, p=0.021). The same study found no significant difference for body mass index.[17]

Unlike the results of this study regarding the marital status of the workers, a study that evaluated 60,202 Brazilians found a lower chance for diagnosing WRMD when having no partner (95% CI 0.37 - 0.71).[18]

Nursing assistants and technicians were the most affected by WRMD, and 193 (98%) of mid-level professionals were more than 15 days away. It is understood that this data is related to the activities developed by this professional category, since the assistants and technicians have attributions that demand great physical effort to perform care in dependent patients. In addition, issues related to ergonomics, working conditions, staffing and workload should be considered. A study conducted in an inpatient unit showed that the 40.0% increase in the number of nurses and 16.0% in the number of nursing technicians resulted in a 12.0% reduction in the percentage of sick leave.[19]

It was found that the out-of-work professionals had an average age of 48 years, with a minimum age of 28 years, and there was a statistically significant difference (p = 0.006) when compared to the age of professionals who left for more than 15 days with those who left for shorter time, demonstrating that musculoskeletal injuries affect younger professionals in the productive phase. In another study also identified longer time off work in workers with shorter time in the institution.[20]

An assessment carried out in Brazilian Emergency Room revealed that most workers on leave (48.6%) had less than one year of service at the institution.[21] However, other research conducted with workers from various sectors showed that the disease appeared in professionals with longer service time.[15]

No data were found in the literature regarding the finding concerning education. This is an aspect to be explored, considering that mid-level nursing professionals usually perform

activities with greater physical effort when compared to higher-level professionals, such as pushing stretchers, making change of position, bed bath, among others.

About the location of pain, the data found converge with what is in the national and international literature. An evaluation conducted in Estonia showed that 57% of the professionals surveyed had low back pain and 56% had neck pain.[8] A literature review with a sample of 132 articles showed that the prevalent regions in which nursing individuals report musculoskeletal pain are the lower back (93%), neck (47%) and shoulders (46%).[22] The main triggering factor in nursing professionals, as well as worsening of low back pain, is the manipulation of the patient. Equipment to mobilize dependent individuals and support workers through non-pharmacological treatments can prevent lower back injuries and minimize the symptoms.[20]

Although it is still difficult to identify what is the cause and what is the effect, it is already known that there is a link between mental disorders and musculoskeletal disorders in nursing professionals.[23] In this investigation 78 workers on leave also had psychiatric diagnosis, among them 33 with depression. About this, a study pointed out that are factors associated with a higher chance of having WRMD the diagnosis of depression (95% CI 0.37 - 0.71) and arthritis and rheumatism (95% CI 1.68 - 3.44).[18]

Thus, psychosocial factors and mental health problems, especially somatic stress symptoms, seem to have an important impact on the presence of musculoskeletal pain.[24] A Brazilian study that sought to associate musculoskeletal chronic pain with psychiatric disorders found that pain is an independent risk factor for psychiatric disorders and suicide risk, which indicates the need for a multidisciplinary approach to the problem.[25]

In university hospitals in São Paulo, it was found that notifications of illness related to mental and behavioral disorders are already the second cause of illness in nursing, with 23.2%.[14] In Europe, research that aimed to show the prevalence of musculoskeletal pain in the nursing

staff identified a strong relationship with stress, burnout and depressive symptoms.[24] The professionals attribute psychosocial symptoms to the imposition of time to perform tasks, generating acceleration of body movements and inadequate posture, relevant factors for the emergence of musculoskeletal pain and discomfort. [19]

It was identified that the service that presented the most absences was clinical hospitalization, with which chronic patients are hospitalized, with a high level of dependence for nursing care, thus having a longer hospital stay. In this regard, it is inferred the importance of equitable strategies in the distribution of personnel, accompanying the division of labor in tasks and scales, in order to avoid the physical and psychological overload that impacts the worker.

It was found that 48.9% had more than one leave during the study period, which demonstrates the persistence of the injury or the comorbidities of the worker. In this regard, research has identified that the aggravation of the disease may occur due to workers' accommodation in relation to musculoskeletal symptoms, a fact that often causes delay in the search for health services and the diagnosis of the disease condition, either due to lack of time or due to difficulty of access.[19]

Although the percentage of WRMD leaves seems small (9.94%) at first glance, it is essential to think about the magnitude of the problem, a fact that is expressed in the other results. The effect on the health of the nursing worker causes psychological distress and makes it difficult to perform daily activities, since pain restricts or precludes simple actions such as climbing stairs, walking, standing, sleeping, among others. In addition to the problems mentioned above, it is important to highlight the economic impact of this modality of workers' illness and, considering its expressive importance in the nursing context, there are urgent resolving actions.

Conclusion

This study aimed to describe the sociodemographic and occupational characteristics of nursing staff workers on leave due to musculoskeletal disorders in a university hospital and their association with time off. The results show the need to enable access to technologies that minimize excessive and frequent physical effort and harmful postures adopted in carrying out nursing care activities, especially among nursing assistants and technicians, associated with adherence to preventive measures by the workers. In addition, working conditions stand out as an aspect of direct interference with workloads improper to maintain the physical and psychological integrity of the nursing worker. Investment in studies evaluating musculoskeletal pain in association with working conditions is also suggested. The effect of non-pharmacological therapies as a preventive measure for the appearance of musculoskeletal injuries.

The limitations of the study are the sometimes incomplete records, the impossibility of assessing the physical effectiveness of workers on leave, and the cross-sectional design, which makes it impossible to infer inferences related to the causality of the injuries that lead to removal.

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