

**PRESENCE OF MUSCULOSKELETAL DISORDERS AMONG NURSES WORKING  
IN EMERGENCY CARE UNITS****PRESENÇA DE DISTÚRBIOS OSTEOMUSCULARES EM ENFERMEIROS DE  
UNIDADES DE PRONTO ATENDIMENTO****LA PRESENCIA DE TRASTORNOS MUSCULOESQUELÉTICOS EN  
ENFERMERAS DE UNIDADES DE TRATAMIENTO DE EMERGENCIA**

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**ABSTRACT**

Work-related Musculoskeletal Disorders are very common among health professionals. It is characterized as one of the most important and serious public health problems leading to absence from work. **Objective:** To assess the presence of musculoskeletal disorders among nurses working in two Emergency Care Units (ECU) at Brazil. All nurses working in the north and south ECU were invited to participate (n = 44) through the Nordic Musculoskeletal Questionnaire and sociodemographic questionnaire. **Method:** 35 nurses voluntarily joined and all of them referred at least one symptom of pain or musculoskeletal discomfort in the past 12 months. **Results:** The neck/cervical region presented the highest incidence (60.0%) followed by low back pain (54.3%). **Conclusion:** Health facilities should conduct actions on prevention and intervention in order to reduce WMSDs and consequently improve the quality of life of these professionals.

**Keywords:** Occupational Disorders. Nursing. Occupational Health. Occupational Risks.

**RESUMO**

Os Distúrbios Osteomusculares Relacionados ao Trabalho são uns dos mais comuns entre profissionais da saúde, caracterizando-se como um dos mais importantes e graves problemas de saúde pública e um dos principais agravos à saúde que resultam no afastamento do trabalho. **Objetivo:** Avaliar a presença de distúrbios osteomusculares em enfermeiros de duas Unidades de Pronto Atendimento do Brasil. Foram convidados a participar da pesquisa todos os enfermeiros das UPA norte e sul (n= 44, através do Questionário Nórdico de Sintomas Osteomusculares e questionário sociodemográfico. **Método:** Participaram voluntariamente 35 enfermeiros. **Resultados:** Todos tiveram pelo menos um sintoma de dor ou desconforto musculoesquelético nos últimos 12 meses. A região pescoço/região cervical apresentou maior incidência (60,0%), seguida da dor lombar (54,3%). **Conclusão:** devem ser direcionadas.

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ações de prevenção e intervenção por parte dos serviços de saúde, objetivando a redução de DORT e, conseqüentemente, uma melhora na qualidade de vida destes profissionais

**Palavras-chave:** Doenças Profissionais. Enfermagem. Saúde do trabalhador. Riscos ocupacionais.

## RESUMEN

Los trastornos musculoesqueléticos relacionados con el trabajo son uno de los más comunes entre los profesionales de la salud, y se caracteriza como uno de los más importantes y graves problemas de salud pública y uno de los principales daños para la salud que resultan de la ausencia del trabajo. **Objetivo:** evaluar la presencia de trastornos musculoesqueléticos en enfermeras de dos unidades de atención de urgencia en Brasil. Fueron invitados a participar en la investigación todas las enfermeras de la UPA al norte y al sur (n= 44, mediante el cuestionario de síntomas musculoesqueléticos, nórdicos y cuestionario sociodemográfico. Han participado voluntariamente en 35 enfermeras, entre los resultados obtenidos, **Resultados:** Todos tenían por lo menos un síntoma de malestar o dolor musculoesquelético en los últimos 12 meses. El cuello/región cervical mostró mayor incidencia (60,0%), seguido por dolor en la parte baja de la espalda (54,3%). **Conclusión:** deben dirigirse las acciones de prevención y de intervención por parte de los servicios de salud, encaminadas a la reducción de DORT y, por consiguiente, una mejora en la calidad de vida de estos profesionales.

**Palabra-clave:** Enfermedades ocupacionales. Enfermería. Salud Laboral. Riesgos Laborales.

## INTRODUCTION

The Brazilian health system holds the responsibility to perform actions of health promotion, health monitoring, control of vector insects and health education, as well as ensure the continuity of health care at primary levels, specialized and hospital outpatient.<sup>1</sup>

Formed by a complex network, health actions follow a hierarchical logic at increasing complexity levels that are classified according to the degree of technological density required for the procedures performed.<sup>2,3</sup>

The health care level of lower density technology, Primary Health Care (PHC), aims to provide universal access and comprehensive services, coordinate

and expand coverage to more complex care levels as well as implement intersectoral health promotion and disease prevention. Intermediate technological density, also called secondary health care, seeks to ensure access to specialized diagnostic and therapeutic services. The highest technological density, or tertiary health care, is included in the integration of outpatient health care services and specialized hospitals of high complexity, whose organization is made by means of the reference system.<sup>2,3</sup>

To lessen the demand of hospital emergencies, in 2008, the Emergency Care Units (ECU) were created, which operate 24 h and are articulated with the Mobile Emergency Care Service (SAMU) that rely

on ambulances (basic or advanced support), helicopters, boats and even motorcycles able to assist people on the streets, at home or at work.<sup>1</sup>

Urgent and emergency activities have an intense dynamic that requires professionals to have skills to act effectively, because a delay in the assistance can result in serious consequences and even death. Therefore, professionals that work in this field are subject to physical and psychological damage that may compromise their health and interfere with the assistance provided to users.<sup>4</sup>

Work-related Musculoskeletal Disorders (WMSDs), also known as Repetitive Strain Injuries (RSI), are some of the more common physical problems among health professionals. WMSDs are characterized as one of the most important and serious public health problems, which affect about 30% of the world population with more than 25 years, becoming one of the main health hazards that lead to absenteeism from work and the need for health-related assistance among the working population.<sup>5,6</sup>

The health-disease process of nursing workers has registered some factors associated with the development of WMSDs. The main problems are biomechanical and ergonomic, due to inadequacy of technological resources,

lack of special equipment for moving patients, understaffing and the lack of training.<sup>5,7,8</sup>

Nursing professionals, in their daily assignments, perform repetitive movements in their everyday tasks, leading some pathologies that eventually become chronic and recurrent with difficult treatment resulting in incapacities for the worker.<sup>6,8</sup>

WMSDs include a variety of inflammatory and degenerative conditions affecting muscles, tendons, synovial joints, nerves and vessels of the upper and lower limbs, fasciae and ligaments (isolation or combination), with or without tissue degeneration. The shoulder and neck regions are directly related to the requirements of tasks, physical environments and work organization.<sup>6,9</sup>

The diagnosis of WMSDs is essentially clinical-occupational, because, despite technological advances, it is not yet possible to identify the etiological reason for the pain of most workers, which may be linked to psychosocial conditions that they face. The treatment should necessarily be performed by a multidisciplinary team, where all professionals involved must have a scientific training, whose purpose is to recover the physical, psychological and social capacity of the workers affected.<sup>6,10,11</sup>

This study aims to assess the presence of musculoskeletal disorders in nurses at ECUs of a capital city of the northern region of Brazil.

## **METHODS**

The present study had a quantitative feature and was accomplished through interviews. The sample was composed by all the 44 nursing professionals of the two ECUs, sampling was conducted by the convenience method in which professionals chose to participate voluntarily. The interviews were conducted face-to-face after acceptance and signature of the Free and Clarified Consent Term (FCCT) between April and May 2015.

The central research instruments were the nursing socio-economic-demographic questionnaire and the Nordic Musculoskeletal Symptoms questionnaire, which was developed to measure musculoskeletal symptoms. The assessment followed the methodology proposed in the instrument by measuring the frequencies and percentages for regions involved.<sup>12</sup> However, this instrument is based on the participant's perception, that is, no cause and effect relationship is established through a diagnostic evaluation.

This instrument allows the identification of musculoskeletal symptoms by the worker and is one of the main instruments used in the context of

occupational health or ergonomic, the instrument offers a good validity index as a measure of musculoskeletal morbidity. It is not recommended for clinical diagnosis; however, it may provide an important diagnostic instrument for the environment or workstation.<sup>12</sup> The variables presented in the socio-economic-demographic questionnaire and the Nordic musculoskeletal symptoms questionnaire were: sex, age, work condition, employment, income, economic class<sup>13</sup>, education, presence of pain (numbness, tingling or discomfort) in body regions, information about symptoms and work, prevalence of dominant side and previous diagnosis of health. Previously trained staff collected the data.

The statistical analysis was performed by means of the descriptive analysis with frequency and percentage distribution, data normality test, using the software SPSS 21.0.

The study was registered at Platform Brazil and was approved by the Ethics Committee in Research with Humans (CEP) under the Presentation Certificate for Ethics Assessment (CAAE) No. 39521014.7.0000.5516.

## **RESULTS**

Among the 44 nurses invited to participate in the study that work at the ECUs, six refused to participate and three were on vacation, totaling nine losses.

The population sample was composed of 35 nurses, where 26 (74.3%) were female. The average age was of 38.09 (SD±9.79), 94.3% of the nurses were hired

through contests from which 68.6% work more than 12 h a day (Table 1).

**Table 1** –Socio-economic-demographic characteristics of nurses of Emergency Care Units in the southern and northern regions of the city.

VARIABLES	Mean (SD) / %
<b>Sex</b>	
Male	9 (25.7%)
Female	26 (74.3%)
	38.09 (SD±9.79)
<b>Age average</b>	
<b>Employment</b>	
Contest	33 (94.3%)
Contract	2 (5.7%)
<b>Working condition</b>	
6-8 hours	2 (5.7%)
10-12 hours	9 (25.7%)
More than 12 hours	24 (68.6%)
<b>Time on the job</b>	
< 1 year	17 (48.6%)
1-5 years	3 (8.6%)
6-10 years	10 (28.6%)
More than 10 years	5 (14.3%)
<b>Rest</b>	
No rest	1 (2.9%)
01 hour	14 (40.0%)
02 hours	20 (57.1%)
<b>Places of work</b>	
1	9 (25.7%)
2	23 (65.7%)
3	3 (8.6%)
<b>Gross monthly income</b>	
Not informed	2 (5.7%)
R\$ 790.00 to R\$ 5,000.00	12 (34.3%)
R\$ 6,000.00 to R\$ 9,000.00	14 (40.0%)
R\$ 10,000.00 to R\$19,000.00	5 (14.3%)
>R\$ 20,000.00	2 (5.7%)

The general analysis of the data obtained from the Nordic Musculoskeletal Symptoms questionnaire shows the presence of musculoskeletal symptoms reported by the nurses in various body regions and the neck/cervical region (60.0%) was the most reported, while the

least affected region was the elbows (14.3%) (Table 2).

**Table 2** – Distribution of musculoskeletal symptoms by body regions reported in the last 12 months

	No pain		Rarely (1)		Frequently (2)		Always (3)		(1)+(2)+(3)	
	n	%	n	%	n	%	N	%	n	%
Neck/Cervical	14	40.0%	4	11.4%	10	28.6%	7	20.0%	21	60.0%
Shoulders	19	54.3%	4	11.4%	7	20.0%	5	14.3%	16	45.7%
Arms	22	62.9%	7	20.0%	4	11.4%	2	5.7%	13	37.1%
Elbows	30	85.7%	4	11.4%	0	0.0%	1	2.9%	5	14.3%
Forearms	25	71.4%	6	17.1%	3	8.6%	1	2.9%	10	28.6%
Wrists/Hands/Fingers	20	57.1%	7	20.0%	4	11.4%	4	11.4%	15	42.9%
Dorsal	18	51.4%	3	8.6%	8	22.9%	6	17.1%	17	48.6%
Lumbar	16	45.7%	2	5.7%	10	28.6%	7	20.0%	19	54.3%
Hips/lower limbs	17	48.6%	2	5.7%	10	28.6%	6	17.1%	18	51.4%

Regarding the diagnoses received in the last 12 months, only one (2.9%) survey participant received diagnosis of WMSDs through a specialized diagnosis. Of the musculoskeletal symptoms presented, 34.3% of respondents reported that,

according to their perception, more than three symptoms are related to work activities that they perform (Table 3).

**Table 3** – Quantities of symptoms of WMSDs related to work activities

Work-related symptoms	N	%
None of the symptoms	6	17.1%
One of the symptoms	9	25.7%
Two of the symptoms	4	11.4%
Three of the symptoms	4	11.4%
More than three of the symptoms	12	34.3%

## DISCUSSION

In our study, the neck, cervical and lumbar regions are the most affected by symptoms of WMSDs. In addition, a considerable portion (34%) of respondents attributed the occurrence of more than three symptoms of WMSDs related to work activity.

Among the symptoms, we highlight localized, radiated or generalized pain, discomfort, fatigue and heaviness, tingling,

paresthesia, sensation of strength decrease, swelling and joint stiffness. However, factors that favor the occurrence of WMSDs are multiple, constituting a complex set, isolated or combined, but interconnected, exercising their effect simultaneously.<sup>14</sup>

However, 25% of participants identified at least one symptom of WMSDs related to their work activities. This result is important because when left untreated,

progression of these symptoms is observed.

At first, the symptoms, concomitant or not, appear insidiously, usually in the upper limbs. However, they can occur in the lower limbs at peak periods of work and relieve with rest. Over time, the symptoms can become routine, even affecting activities outside the workplace of individuals, often causing temporary or permanent work incapacity.<sup>5,6,14</sup>

The clinical picture of musculoskeletal disorders is specific to each phase and musculoskeletal impairment. At degree I, there is a feeling of heaviness and discomfort in the affected limb. At degree II, the pain is more persistent, more localized, more intense and appears intermittently during the workday. At degree III, the pain is more persistent, stronger and have a more radiated set. At degree IV, the pain is strong, continuous, sometimes unbearable and exacerbated by movements and may extend throughout the limb.<sup>15</sup>

On the other hand, the most frequent pathologies on workers resulting from WMSDs are: carpal tunnel syndrome, ulnar tunnel syndrome, lateral and medial epicondylitis, bursitis, tendonitis and tenosynovitis.<sup>16</sup>

Nursing workers are among the professionals that most report symptoms of WMSDs, which are more frequent among

technicians and nursing assistants when compared to nurses.<sup>17,18</sup>

The nursing job natural requirements would be enough to favor the occurrence of symptoms of WMSDs, for example, overload of activities (understaffing, number and severity of patient conditions), which generates a hectic work pace, leading the worker to adopt inadequate postures (bathing, dressing, venous puncture), constituting a factor for the occurrence of pain in central body regions.<sup>19</sup>

Besides, there is accumulation of several journeys, as observed in the results of this study, where most participants (65.7%) have two jobs and work more than 12 h per day (68.6%).

Furthermore, there is a cumulative effect over the years. In this study, it was observed that most respondents (48.6%) have worked at the ECUs for less than a year. However, a considerable part (28.6%) has been on the job for 6-10 years. These results reflect inevitably that the working conditions may be contributing to perception of WMSDs in the studied group.

Measures, such as reduction of workload and rest breaks, can also control risk factors in terms of frequency and intensity of musculoskeletal disorders.<sup>5</sup>

Regarding work-related symptoms, prevention of WMSDs is still the best way

to ensure health to the worker. This is done through the adequacy in the physical environment, creating ergonomically suitable and healthy environments, which are characterized as least-costly measures compared to the treatment of a sick worker besides preventing absenteeism.<sup>17</sup>

Laboral gymnastics can be an alternative. Its practice is based on stretching exercises and relaxation, restoring the bodily structures mostly used during work, contributing to the improvement of the quality of life of the worker and, consequently, increased productivity in the workplace, decreasing absenteeism due to work-related accidents.<sup>20</sup>

## CONCLUSION

The nurses reported higher prevalence of musculoskeletal symptoms in the neck/cervical region. Low back pain is also considered one of the most important musculoskeletal disorders due to high prevalence. Pain in hips/lower limbs, the dorsal region and shoulders are also frequent symptoms presented by the studied group. These symptoms occur because the professional activities are mostly carried out manually, requiring great physical efforts and strength.

As it is a study on worker's perception, one limitation was the lack of information on ergonomics of

workstations; therefore, it is recommended that future studies focus on this factor because such data could provide subsidies for a better understanding of the presence of musculoskeletal pain.

Therefore, the adoption of intervention strategies are suggested through permanent education programs and health promotion, encouraging workers to adopt a correct posture, compensatory exercises and adequacy of the workplace.

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