

Nursing workers: Work conditions, social-demographic characteristics and skeletal muscle disturbances*

Condições de trabalho, características sociodemográficas e distúrbios musculoesqueléticos em trabalhadores de enfermagem

Condiciones de trabajo, características sociodemográficas y distúrbios músculo-esqueléticos en trabajadores de enfermería

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ABSTRACT

Objectives: To verify the prevalence of musculoskeletal symptoms among nursing workers at a teaching university hospital in Rio Grande do Sul, and to identify socio-demographic and labor variables associated with those symptoms. **Methods:** Transversal study involving 491 nursing workers at a teaching university hospital in Rio Grande do Sul. It was used the Brazilian version of the Nordic Musculoskeletal Questionnaire to identify the musculoskeletal. **Results:** Among participants, 96.3% reported pain in some part of the body in the last year, 73.1 % in the last seven days and 65.8% difficulties in daily activities; pain in the spinal column was the most frequent mentioned by workers; socio-demographic characteristics (being a woman, extremes of age, minor children, little education, obesity, tobaccoism) and labor characteristics (technician or auxiliary nurse, night shift work, strenuous physical labor) were associated with pain in various regions. **Conclusion:** The results indicated for participatory proposals for promoting health and well-being in nursing work environment; hospital managers and workers should participate.

keywords: Work; Cumulative trauma disorders; Occupational health

RESUMO

Objetivos: Verificar a prevalência de sintomas musculoesqueléticos entre trabalhadores de enfermagem de um hospital universitário público do interior do Rio Grande do Sul, e identificar variáveis sociodemográficas e laborais associadas a esses sintomas. **Métodos:** Estudo transversal, envolvendo 491 trabalhadores de enfermagem de um hospital universitário do Rio Grande do Sul. Utilizou-se a versão brasileira do *Nordic Musculoskeletal Questionnaire* para identificação dos sintomas musculoesqueléticos. **Resultados:** Entre os participantes, 96,3% referiram sentir dor em alguma região do corpo no último ano, 73,1 % nos últimos sete dias e 65,8% relataram dificuldade nas atividades diárias. A coluna lombar foi a localização mais frequente referida pelos trabalhadores. Características sociodemográficas (ser mulher, extremos de idade, filhos pequenos, baixa escolaridade, obesidade, tabagismo) e laborais (ser técnico ou auxiliar de enfermagem, trabalho noturno, alta demanda física no trabalho) estiveram associadas a dor em várias regiões. **Conclusão:** Os resultados indicam necessidade de propostas participativas para a promoção da saúde e bem-estar no trabalho de enfermagem, envolvendo tanto gerentes hospitalares quanto trabalhadores.

Descritores: Trabalho; Transtornos traumáticos cumulativos; Saúde do trabalhador

RESUMEN

Objetivos: Verificar la prevalencia de síntomas músculo-esqueléticos en trabajadores de enfermería de un hospital universitario público del interior de Rio Grande do Sul, e identificar variables sociodemográficas y laborales asociadas a esos síntomas. **Métodos:** Estudio transversal, envolviendo 491 trabajadores de enfermería de un hospital universitario de Rio Grande do Sul. Se utilizó la versión brasileña del *Nordic Musculoskeletal Questionnaire* para identificar los síntomas músculo esqueléticos. **Resultados:** Entre los participantes, 96,3% refirieron sentir dolor en alguna región del cuerpo en el último año, 73,1 % en los últimos siete días y 65,8% relataron dificultad en las actividades diarias. La columna lumbar fue la localización más frecuentemente referida por los trabajadores. Las características sociodemográficas (mujer, extremos de edad, hijos pequeños, baja escolaridad, obesidad y tabaquismo) y laborales (técnico o auxiliar de enfermería, trabajo nocturno y alto esfuerzo físico en el trabajo) estuvieron asociados al dolor en varias regiones. **Conclusión:** Los resultados indican la necesidad de presentar propuestas participativas, por parte de administradores hospitalarios y trabajadores, para la promoción de la salud y aumentar el bienestar en el trabajo de enfermería.

Descriptor: Trabajo; Transtornos de traumas acumulados; Salud laboral

* Paper extracted from the thesis "Psychosocial aspects of the workplace and musculoskeletal disorders in nursing" approved at the Center for Nursing Research and worker health – NUPENST, at the Anna Nery Nursing School – (EEAN) in the Federal University of Rio de Janeiro – UFRJ – Rio de Janeiro (RJ), Brazil. Fellow PQI/CAPEs (Agreement n° – PQI 00012/04-1).

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Received article 07/11/2008 and accepted 20/05/2009

INTRODUCTION

The musculoskeletal disorders are a major public health problem and one of the most serious in the field of occupational health⁽¹⁾. This disorder affects workers throughout the world, leading to different degrees of disability; also generates increased absenteeism and temporary or permanent sick leaves, and produces significant costs in treatments and compensations⁽²⁻³⁾.

In Brazil, from the 1980s, was observed an increased occurrence of musculoskeletal disorders in the statistics of the National Social Security Institute (INSS). According to available data, over 80% of diagnoses of these disorders resulted in aid for accidents and in disability retirement, by the Social Security⁽³⁾.

Among the health care professions, nursing particularly has been especially affected by musculoskeletal disorders. Research performed in several countries show prevalence rates above 80% of these disorders in nursing workers^(2,4). Brazilian studies show prevalence rates of 43% to 93%⁽⁵⁾.

The work environment, when in adverse conditions, is considered a risk factor for the development of alterations in the musculoskeletal system⁽⁵⁻⁶⁾. Among the key risk factors related to musculoskeletal disorders we found: a) work organization (increased working hours, excessive overtime, accelerated work rate, shortage of workers), b) environmental factors (inadequate furniture, inadequate lighting), and c) possible overloads of body segments in certain movements (for example, excessive force to accomplish certain tasks and repeatability of movements and postures in the development of work activities)⁽⁵⁾. The prolonged and continuous exposure of the body to the risk factors of such environment favors the emergence of occupational diseases⁽⁶⁾.

According to the Normative Instruction No. 98/2003 of the INSS, these factors are grouped according to: the degree of suitability for the type of job; to the area of attention and vision; to the cold; to the vibrations and local pressure on tissues; to the inadequate postures; to the static load; to the musculoskeletal load; to the invariability of the task; to the cognitive demands; and also to the organizational and psychosocial factors work-related⁽³⁾.

OBJECTIVES

To assess the prevalence of musculoskeletal symptoms among nursing workers in a public university hospital in the state of Rio Grande do Sul, and to identify socio-demographic and labor variables associated with these symptoms.

METHODS

It was performed a sectional epidemiological study involving 491 nursing workers in the University Hospital of Santa Maria-HUSM/RS (93%). The losses (7%) were due to refusal or retirements during the period of data collection. The data collection was performed using a structured questionnaire administered by nine trained interviewers in the period of March to September, in 2006. The interviews were conducted individually, during working hours, at a place that maintained the privacy of the interviewee.

To evaluate the musculoskeletal symptoms was used the Brazilian version⁽⁷⁾ of "Standardized Nordic Questionnaire". Three questions were investigated: 1 - "In the last year, did you have any pain or discomfort in ... (neck, shoulder, elbow, wrist, thoracic spine, lumbar spine, thighs, legs, knees or ankles)?" 2 - "Was this a problem that hinder to do something at home or away from home sometime in the last year?" and, 3 - "Did you have this pain in the last seven days?". These questions are closed (yes or no) and are related to each anatomical area. A human figure seen from the posterior region, divided into the regions mentioned above, accompanied the instrument.

Other analyzed features were: socio-demographic variables (gender, age, education, marital status, children under six years, Body Mass Index, BMI, smoking and family income in minimum wages), and labor variables (type of activity, time in the activity and in the sector, sector, shift, weekly hour load, another job, and physical demand at work).

To introduce the data was used the Epi-Info® (version 6.0), with double independent typing. After checking errors and inconsistencies, the data analysis was performed using the SPSS® (version 13.0). It was performed a descriptive analysis of data and verification of association (by adopting a significance level of 5%) between the socio-demographic and labor variables and the musculoskeletal symptoms (dependent variable) in the last 12 months.

The participation was voluntary and all employees who agreed to participate signed a consent form. The study was approved by the Ethics Committee in Research of the Federal University of de Santa Maria (Opinion No. 23081.000398/2006-10).

RESULTS

From the total population (491 workers), was found a female predominance (88%), mean of age 41 years (SD±8.7 years). Most were married or living with a partner (66%), 21% had children less than six years, 59% had completed high school, and 41% were classified with family income less than two minimum wages. We identified that 34% of the workers were overweight, 14% were obese, and 11% were smokers.

Regarding the profile of employment, 30% were nurses, 33% technicians and 37% auxiliary nurses. They were working in the current function, on average, during 14.4 years (SD±8.3 years). The sectors that concentrated most workers were: Clinical Units (inpatient clinic, inpatient surgery, Hemato-Oncology and Psychiatry) with 33%, Intensive Therapy (adult, pediatric and neonatal) with 19%, Maternal Infant with 14%, Surgical Units and Urgent and Emergency Units with respectively 12% and 11%. Currently, they were working in the sector, on average eight years. Of the total nursing staff, 59% worked on daily shift, 53% developed a schedule of 36 hours weekly and 26% reported another working activity.

The prevalence of musculoskeletal pain or discomfort among workers, in nursing, during the studied period, was 96.3% in the last 12 months and 73.1% in the last seven days. The nursing staff reported higher frequency of pain in the regions: lumbar spine (71.5%), neck (68%), shoulder (62.3%) and legs (54.6%). The pains and discomforts that were more uncomfortable were

in the lumbar region (60.4%), wrists (58%), thoracic spine (54.7%) and elbows (54.1%). Over the past seven days, the references related were pain in the lumbar spine (56.4%), legs (49.6%) and neck (47.9%). The lumbar spine was the region with higher reported pain or discomfort in the three variables

(Table 1).

Table 2 shows the frequency of musculoskeletal symptoms according to the anatomical region. Compared to men, women had higher frequencies of pain in the neck, wrists and legs ($p < 0.05$). Regarding to the age range, younger people reported

Table 1 – Frequency of musculoskeletal pain and interference in home activities, according to anatomic regions, in nursing workers in the HUSM. Santa Maria, RS, 2006. (n=491)

Anatomical areas	Pain or discomfort in the last 12 months		Pain interference in activities at home in the last 12 months		Pain or discomfort in the last seven days	
	n	%	n	%	n	%
Neck	334	68.0	178	53.3	160	47.9
Shoulder	306	62.3	150	49.1	141	46.1
Elbow	87	17.7	47	54.1	35	40.2
Wrist	174	35.4	101	58.0	55	31.6
Thoracic spine	232	47.3	127	54.7	109	47.0
Lumbar spine	351	71.5	212	60.4	198	56.4
Thigh	74	15.1	37	50.0	33	44.6
Leg	268	54.6	111	41.4	133	49.6
Knee	188	38.3	97	51.6	82	43.6
Ankle	148	30.1	74	50.0	67	45.3

Table 2 – Prevalence of musculoskeletal pain in anatomical areas according to socio-demographic variables, in nursing workers in the HUSM. Santa Maria, RS, 2006.

Socio-demographic Co-variables	Neck %	Shoulder %	Elbow %	Wrist %	Thoracic spine %	Lumbar spine %	Thigh %	Leg %	Knee %	Ankle %
Gender										
Masculine	47.4	54.4	17.5	24.6	47.4	64.9	8.8	38.6	47.4	31.6
Feminine	70.7	63.4	17.7	36.9	47.2	72.4	15.9	56.7	37.1	30.0
p value	0.000	0.122	0.570	0.044	0.548	0.155	0.108	0.007	0.089	0.455
Age group										
22 to 38	74.4	59.4	10.0	30.6	49.4	75.0	15.0	62.8	32.8	25.6
39 to 46	70.6	65.3	17.6	32.4	49.4	72.4	10.6	50.0	37.1	34.1
>47 years	56.7	62.4	27.7	45.4	41.8	66.0	20.6	49.6	46.8	31.2
p value	0.002	0.529	0.000	0.013	0.314	0.195	0.050	0.021	0.034	0.207
Children <6 years										
No	66.4	63.0	18.3	35.7	47.8	68.7	15.5	51.7	38.5	30.7
Yes	74.0	59.6	15.4	34.6	45.2	81.7	13.5	65.4	37.5	27.9
p value	0.085	0.298	0.293	0.470	0.359	0.005	0.366	0.008	0.473	0.331
Education										
Not graduated	69.5	62.1	18.8	38.3	51.3	74.5	11.7	56.7	39.6	32.6
Graduated	65.8	62.7	16.1	31.1	40.9	66.8	20.2	51.3	36.3	26.4
p value	0.226	0.484	0.258	0.063	0.015	0.042	0.008	0.139	0.259	0.089
IMC										
low/normal	68.2	63.9	11.8	30.6	43.1	66.3	10.6	52.2	32.5	23.9
Overweight	68.3	59.9	23.4	40.1	49.7	76.0	17.4	55.1	39.5	33.5
Obese	66.7	62.3	26.1	42.0	56.5	79.7	26.1	62.3	56.5	44.9
p value	0.967	0.704	0.001	0.063	0.105	0.025	0.004	0.318	0.001	0.002
Smoking										
No, never	68.9	60.7	16.1	33.9	46.4	71.6	14.2	56.8	38.5	27.6
Yes, smokes	77.4	81.1	30.2	43.4	60.4	75.5	24.5	60.4	41.5	41.5
Already smoked	56.9	56.9	16.7	37.5	41.7	68.1	12.5	38.9	34.7	34.7
p value	0.043	0.010	0.042	0.370	0.097	0.660	0.117	0.013	0.730	0.078
Income*										
< 2 wages	71.9	65.0	17.7	36.9	52.7	74.4	13.3	58.6	42.9	36.5
2 to 3 wages	63.1	60.3	13.5	28.4	43.3	69.5	16.3	51.1	39.0	28.4
> 3 wages	68.6	60.6	20.4	40.1	42.3	68.6	16.1	51.1	31.4	21.2
p value	0.225	0.589	0.299	0.100	0.098	0.438	0.680	0.261	0.102	0.009

Nota: * family income per capita in minimum wages. Salary at that time: R\$ 350,00.

Table 3 – Prevalence of musculoskeletal pain by anatomical areas according to labor variables, in nursing workers in the HUSM. Santa Maria, RS, 2006

Co-variantes from labor	Neck %	Shoulder %	Elbow %	Wrist %	Thoracic spine %	Lumbar spine %	Thigh %	Leg %	Knee %	Ankle %
Activity										
Nurse	68.5	61.6	15.8	27.4	39.0	67.1	19.9	50.7	37.0	26.0
Technical auxiliary	67.8	62.6	18.6	38.8	50.7	73.3	13.0	56.2	38.8	31.9
p value	0.885	0.840	0.458	0.015	0.018	0.164	0.054	0.259	0.699	0.196
Time in the activity										
Until 10 years	70.6	61.2	11.2	29.4	49.4	74.1	14.1	59.4	34.1	27.1
11 to 19 years	73.5	58.1	19.4	34.8	45.2	72.3	16.1	55.5	38.7	32.3
More than 20 years	60.0	63.7	22.4	41.8	46.7	67.9	14.5	48.5	41.8	30.9
p value	0.023	0.222	0.020	0.059	0.737	0.433	0.868	0.127	0.344	0.565
Sector*										
UTIs										
Clinical Unit	74.5	71.3	20.2	34.0	54.3	73.4	9.6	67.0	34.0	26.6
Surgical Unit	68.8	61.3	21.9	38.1	47.5	73.8	23.1	56.9	43.8	37.5
Urg/Emergency	74.1	69.0	12.1	44.8	53.4	77.6	12.1	63.8	48.3	31.0
Ambulatorial U.	73.2	62.5	7.1	30.4	58.9	87.5	19.6	64.3	32.1	30.4
Maternal infant U.	52.5	55.0	25.0	45.0	35.0	50.0	12.5	35.0	35.0	15.0
Management /Coord.	58.0	56.5	15.9	21.7	30.4	58.0	2.9	34.8	30.4	26.1
P value	0.081	0.105	0.104	0.098	0.013	0.001	0.002	0.000	0.231	0.142
Time in the sector										
Until 3 years	69.1	59.6	10.1	30.9	48.9	76.4	11.8	55.6	31.5	29.2
4 to 10 years	69.7	66.9	22.1	41.4	46.2	68.3	18.6	53.8	40.7	31.7
More than 11 years	65.5	61.3	22.0	35.1	46.4	69.0	15.5	54.2	43.5	29.8
P value	0.679	0.378	0.004	0.146	0.862	0.189	0.230	0.939	0.056	0.880
Shift										
Daytime	69.4	60.8	18.2	35.4	46.4	73.5	16.8	55.0	34.4	29.2
Nightly	66.0	64.5	17.0	35.5	48.5	68.5	12.5	54.0	44.0	31.5
P value	0.425	0.409	0.729	0.981	0.646	0.224	0.187	0.830	0.031	0.587
Other job										
No	69.9	62.2	18.8	39.8	48.1	73.2	14.9	55.5	40.3	31.8
Yes	62.8	62.8	14.7	23.3	45.0	66.7	15.5	51.9	32.6	25.6
P value	0.138	0.898	0.300	0.001	0.544	0.158	0.873	0.482	0.119	0.189
Physical effort										
Low	60.9	55.1	15.3	28.5	40.9	63.5	13.5	45.6	35.8	28.5
High	77.0	71.4	20.7	44.2	55.3	81.6	17.1	65.9	41.5	32.3
P value	0.000	0.000	0.119	0.000	0.001	0.000	0.275	0.000	0.196	0.363

Nota: * ICU (ped/adult/RN); Surgical Unity (CC, CME, SR).

higher percentage of neck pain (74.4%) and legs pain (62.8%), while workers with more than 47 years had higher frequency of pain in the elbow region (27.7%), wrists (45.4%), thigh (20.6%) and knees (46.8%) - ($p < 0.05$). Having children, less than six years old, was significant for lumbar pain ($p=0.005$) and legs pain ($p=0.008$). The not graduated workers had a higher percentage of pain in all regions, however the significant percentages were only for pain in the thoracic column ($p=0.015$) and lumbar spine ($p=0.042$).

Taking into account the BMI, we observed that the workers classified as obese reported pain more frequently in the following regions: elbow ($p=0.001$), lumbar spine ($p=0.025$), thighs ($p=0.004$), knee ($p=0.001$) and ankle ($p=0.002$). Smokers had significant pain rates on: neck ($p=0.043$), shoulder ($p=0.010$), elbows ($p=0.042$) and legs ($p=0.013$). Employees with family income below two minimum wages had the highest percentages of reported pain, but statistical significance was demonstrated only for the region of the ankles ($p=0.009$). The marital status of workers was the only variable that was not associated with pain in the body regions.

Table 3 shows the frequency of reported musculoskeletal symptoms, according to labor characteristics. Compared to nurses, technicians and auxiliary nurses showed significant percentages ($p=0.01$) of pain in the regions of the wrists and thoracic spine.

The workers who performed the same function for a period of time between 11 and 19 years showed higher percentage of neck pain ($p=0.023$). For those who performed the same function for more than 20 years the percentages were significant for elbows ($p=0.020$) and wrists ($p=0.059$).

The work sectors that showed significant percentages of pain were: on the thoracic spine ($p=0.013$) and on the lumbar spine ($p=0.001$) among workers acting in emergency rooms; on the thigh ($p=0.002$) among workers in clinical units; and, on the leg ($p=0.000$) among workers in the ICU. The groups of workers that had longer time of service in the sector (from four to 10 years and more than 11 years) showed higher percentages of pain in the elbow ($p=0.004$).

With respect to the work shift, the percentage of knee pain was higher ($p=0.031$) among workers in the night shift. High physical demands at work was significant ($p < 0.0001$) for pain in the neck, shoulders, wrist, thoracic spine, lumbar spine and legs.

The factors workload and other job were not associated with complaints of musculoskeletal pain in this group of workers.

DISCUSSION

The high percentage, expressed for pain and musculoskeletal discomfort, denotes a serious health problem in the studied

population. Similar prevalence found in another study⁽⁴⁾ confirm the high occurrence of musculoskeletal disorders and reveal the importance of this problem among the nursing staff. However, significantly lower percentages, especially for the regions: lumbar (59%), shoulders (40%) and cervical (28.6%), were observed in other studies⁽⁴⁻⁵⁾.

Among the localizations of pain, the pain in the lumbar spine has achieved high recurrent rates in studies among the nursing staff. The movements performed in activities, the maintenance of static postures, the bending for long periods, and the transportation of patients, were the activities that showed more association with this type of pain^(2,4). On the other hand, the care activity, drag or push beds/stretchers/wheelchairs (with patients) were more related to pain complaints on shoulders and neck⁽²⁾.

The social-economic status has been widely associated with the worker conditions of physical and mental health⁽⁶⁾. Characteristics like being a woman, having small children and having low income and low education, seem to be related directly to the tasks undertaken within the family, since the household chores are almost exclusively performed by women. This fact elevates the working hours and increases the physical and mental strain of these workers, which eventually might be reported as pain or discomfort in the musculoskeletal system.

Regarding the relationship between the non-occupational physical load influence - related to musculoskeletal symptoms - and the gender, the results are controversial. In study among bank employees⁽⁸⁾, was observed that women had 2.05 times more likelihood of reporting symptoms than men. However, the results did not support the hypothesis that women tend to report more symptoms because of the greater burden of non-occupational activities, mainly by running the household chores and being responsible of caring for small children; unlike the present study that showed significant pain in the back and legs, among workers who had children less than six years.

Some authors⁽⁹⁾ have postulated the possible existence of bias on registered symptoms, in which women showed more likelihood of reporting pain and seeking medical treatment than men.

However, a study⁽¹⁾ that collected the diagnosis of attentions, in an Occupational Health Service, showed that although there was a higher percentage of consultations made by the male workers, when investigating the diagnostic service, women had a higher percentage of injury, related to repetitive stress/musculoskeletal disorders work-related, than men. Two possible reasons were given⁽¹⁰⁾ to explain the highest reported frequency of pain among women: a) women would experience more stress and have more coping strategies than those employed by men, resulting in a higher frequency of reports, and b) there may be differences in information processing, on the somatic interpretation of men and women.

Regarding the age range, this study identified, among the younger, higher rates of pain in vertebral regions (neck and lumbar spine) and in the lower extremities. Moreover, among the older, the frequencies were higher in the joints, especially elbows and wrists. In the daily work of nursing, within the nursing staff, it was observed a greater demand on the younger people in activities

requiring more physical effort, for example, weight lifting, maintaining the body in physically uncomfortable positions and traveling long distances. The call "you're younger ..." is commonly heard when arises a need for making physical efforts or travel longer distances. Perhaps, this situation explains, in part, the higher frequency of pain in vertebral regions and in the lower limbs among this group of workers. On the other hand, the "older" would perform activities considered "lighter", for example, dressing, preparing and administering medication, checking vital signs, among others. The burden caused by musculoskeletal repetitive motion when performing those repetitive activities is a risk factor⁽³⁾ in regions that have joints.

The finding, in this study, that almost half of the nursing workers were overweight, was a motive of concern, since obesity is a risk factor for many diseases and disabilities⁽¹¹⁾. In our study, the BMI was associated with reports of pain in joints and lumbar spine. Another important observation was that few workers were smokers; the smokers reported a higher frequency of musculoskeletal symptoms. With reference to the use of tobacco and musculoskeletal symptoms, the research results are controversial. Other researches⁽⁸⁾ found that smoking increased by 221% the chance that bank employees might report symptoms in the central regions and 73% in the peripheral regions; other⁽¹²⁾ showed a low prevalence of musculoskeletal disorders among smokers and justified the findings and explained the results with the frequent breaks that employees make, to smoke, during the shift of work. In any case, incentives to abandon the use of tobacco are important.

Among the labor characteristics, surveyed in this study, stood out with significant occurrence of musculoskeletal disorders the technicians and auxiliary nurses, that were working: in ICU, in medical units and emergency rooms, in night shifts and those being exposed to high physical demands. These findings are consistent with other studies^(1,13-14).

In the vertical hierarchical division of nursing work, the implementation of tasks, in most cases, are performed by technicians and auxiliary nurses, which have less decision-making autonomy over their work; added to this we found the intense pace, the repetitive tasks and the short time⁽¹⁵⁾ to perform them. Some authors⁽¹⁶⁾ warn that only 50% of nursing staff perceive the risks in the workplace.

Previous studies^(1,17) showed the auxiliary nurse category as the one that requires the larger number of attendances at the Division of Workers Health Assistance. The authors denoted that these results may be related to the types of activities developed. This finding is strengthened by another study⁽¹⁸⁾ that signals the uncomfortable positions (prone, arms raised) during performing activities that cause fatigue and pain in legs, as the main complaints declared by auxiliary nurses. Certainly, traveling long distances and staying standing for long periods helps to increase pain levels in the legs and tiredness. Also, staying in prone positions, with arms raised, increases the possibility of pain in the vertebral regions, since the gravity force provides an additional load on the joints and muscles⁽³⁾. An observational study⁽¹⁹⁾ identified that professional nurses maintains inadequate postures and also do not observed the body mechanics properly. Thus, the in-service education can be an excellent intervention

strategy to overcome these problems, that often are not even perceived by the employee and are so harmful to the musculoskeletal system.

By taking into account the lapsed time in the activity, it became evident that those up to 19 years in the activity had higher frequency of pain in the neck, and over 20 years presented higher percentage of pain in the elbows. Considering that the time elapsed in the activity and age range are variables directly correlated (the longer in the activity, the higher the age), it is relevant the result found in another study⁽⁸⁾ that showed that an increase of one year in age resulted in increased likelihood of musculoskeletal symptoms, about 2% between bank employees. Such information indicates the need for adopting intervention measures and health promotion as early as possible, beginning in the admission of the professional to prevent or minimize the harm to the workers' health and safety.

The reality of the health care in university hospitals – appearing similar to banks' employees – has also become a serious factor for aggravating the health workers health, particularly on the nursing staff. From the quantitative point of view and regarding the severity of the clinical patient condition, overcrowded units creates extra work for professionals. The presence of critically ill patients in non-critical and in semi-critical units, is increasing in frequency; thus, the level of emotional and physical tension, caused by high demand and complexity of care, promotes or aggravates organic disorders in nursing workers.

According to the Normative Instruction No 98/2003⁽³⁾, the need for cognitive demands in the working place is a risk factor that could play an important role in the occurrence of musculoskeletal disorders, by increasing the muscular tension or by causing a more generalized stress reaction. A strategy to minimize this problem would be to adopt a participatory management in order to approximate the employee to the debate of discussions, and to search for deficiencies in process and organization of work; this strategy could allow finding the best solutions for problems and safeguarding the workers' rights to health and quality of life, in the workplace.

The obtained results, related to the sector of activity, confirmed high musculoskeletal morbidity and the importance of aggregated work (managers and workers), in the surveying of health conditions and implementation of preventive measures. Workers, acting in clinic urgency/emergency units and ICU units, presented high

frequencies (between 50% and 87%) of pain in various body regions. The university hospital studied also presents the same reality of most university hospitals, such as: overcrowded with patients, presence of severe ill patients in all units, shortage of professionals, lacking of support equipment for handling patients, among others. This situation wears out the worker and contributes to occurrence of tension, muscle pain and consequent limitations to perform the activities satisfactorily.

Corroborating these findings, when investigating the physical demand at work, the results revealed significant percentages of reported pain in various body regions when the physical demand at work was considered high by the nursing workers. The literature^(2,5-6,16-17) highlights that assistance activities carried out directly for the patient are those that require more physical effort and exposes workers to risks of developing musculoskeletal pain. The expenditure of energy, generated by fatigue during and at the end of the working day, produces muscle fatigue and mechanical stress, acting in the cartilage as a result of repetitive movements, promotes muscle contractions and, consequently, ischemia of the local tissue⁽¹⁷⁾.

FINAL CONSIDERATIONS

It was identified a high percentage of reference to musculoskeletal pain. The epidemiological survey, despite the limitations inherent of cross-sectional studies (not possible to relate cause and effect) allowed the initial exploration of the factors associated with musculoskeletal symptoms, and pointed out evidence of the relevance of this problem among the nursing staff. The socio-demographic characteristics (woman, age disparity, small children, low education, obesity and smoking) and the labor characteristics (technician or auxiliary nurse, night shift, and high physical demands) were associated with pain in various regions. We highlight the importance of workers' engagement in active and collective participation demanding modifications on the working conditions and rethinking the traditional models of work organization to create conditions that allow the working process become more flexible. It is understood that broad studies on the occurrence of musculoskeletal disorders, in this population, are critical for searching measures that will improve the working conditions of nursing workers and, consequently, their quality of life.

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