

NURSING PROFESSIONALS WORKING IN THE SURGICAL CENTER EXPERIENCE MUSCULOSKELETAL PAIN

Trabalhadores de enfermagem que atuam em centro cirúrgico sentem dor musculoesquelética

Trabajadores de enfermería que trabajan en centros quirúrgicos sienten dolor musculoesquelético

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ABSTRACT: Objective: To assess the intensity of musculoskeletal pain and the affected anatomical regions reported by nursing professionals working in a hospital surgical center. **Method:** This is a quantitative, descriptive, cross-sectional study carried out with nursing professionals working in the surgical center of a general hospital. Data were collected between December 2019 and March 2020 by administering a sociodemographic, labor, and clinical questionnaire, the Nordic Musculoskeletal Questionnaire, and the Numeric Pain Rating Scale. **Results:** Twenty-five nursing professionals participated in the study. Most were women, aged 31 to 40 years, married, and with children. The anatomical regions most affected by musculoskeletal pain in the previous year were the low back, ankles and feet, shoulders, and neck; in the previous seven days, the lumbar region was responsible for the highest percentage of pain. Only a small part of workers declared not feeling pain in recent days. **Conclusions:** The pain reported by the participants compromises their work activities. Pain intensity reveals professional suffering, with the risk of chronicity and of triggering other diseases, even autoimmune ones.

Keywords: Nursing. Surgicenters. Pain. Musculoskeletal pain.

RESUMO: Objetivo: Avaliar a intensidade da dor musculoesquelética e as regiões anatômicas comprometidas referidas por profissionais de enfermagem atuantes em um centro cirúrgico hospitalar. **Método:** Estudo transversal, descritivo e quantitativo, desenvolvido com profissionais de enfermagem que atuam no centro cirúrgico de um hospital geral. A coleta de dados ocorreu entre dezembro de 2019 e março de 2020, mediante aplicação de questionário sociodemográfico, laboral e clínico, Questionário Nórdico de Sintomas Osteomusculares e Escala Numérica de Avaliação da Dor. **Resultados:** Participaram do estudo 25 profissionais de enfermagem. A maioria é mulher, na faixa etária de 31 a 40 anos, casada e com filhos. As regiões anatômicas mais acometidas pela dor musculoesquelética no último ano foram lombar, tornozelos e pés, ombros e pescoço, e, nos últimos sete dias, o maior percentual de dor foi na região lombar. Apenas pequena parcela dos trabalhadores referiu não sentir dor nos últimos dias. **Conclusão:** A dor referida pelos participantes compromete suas atividades laborais. A intensidade da dor expressa sofrimento profissional, com risco de cronificação e desencadeamento de outras patologias, até mesmo autoimunes.

Palavras-chave: Enfermagem. Centros cirúrgicos. Dor. Dor musculoesquelética.

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RESUMEN: Objetivo: Evaluar la intensidad del dolor musculoesquelético y regiones anatómicas comprometidas reportadas por profesionales de enfermería que laboran en el quirófano de un hospital. **Método:** Estudio transversal, descriptivo y cuantitativo, desarrollado con profesionales de enfermería que laboran en el quirófano de un hospital general. La recolección de datos se realizó entre diciembre de 2019 y marzo de 2020, mediante la aplicación del cuestionario sociodemográfico, laboral y clínico, Cuestionario Nórdico de Síntomas Musculoesqueléticos y Escala Numérica de Evaluación del Dolor. **Resultados:** Participaron del estudio veinticinco profesionales de enfermería. La mayoría son mujeres, de entre 31 y 40 años, casadas y con hijos. Las regiones anatómicas más afectadas por el dolor musculoesquelético en el último año fueron la zona lumbar, tobillos y pies, hombros y cuello y, en los últimos siete días, el mayor porcentaje de dolor fue en la región lumbar. Solo una pequeña parte de los trabajadores informó no haber sentido dolor en los últimos días. **Conclusión:** El dolor informado por los participantes compromete sus actividades laborales. La intensidad del dolor expresa sufrimiento profesional, con riesgo de cronicidad y desencadenamiento de otras patologías, incluidas las autoinmunes.

Palabras clave: Enfermería. Centros quirúrgicos. Dolor. Dolor musculoesquelético.

INTRODUCTION

In 1700, the Italian physician Ramazzini carried out studies on occupational diseases and stated that inappropriate movements and postures during work could cause serious problems for the human body. Among occupational diseases, work-related musculoskeletal disorders stand out¹.

Work-related musculoskeletal disorders (WMSD) can be defined as dysfunctions that affect musculoskeletal structures caused by work overload, with symptoms such as localized pain, fatigue, functional loss, limb numbness, physical discomfort at the end of the working day, paralysis, paresthesia, and local edema². In this context, inadequate physical effort during work activities can result in physical discomfort for nursing professionals³.

Currently, the expression WMSD is also found in the literature as work-related musculoskeletal disorders (WMSD). WMSDs stand out for their magnitude and severity, making them a relevant public health problem, especially in industrialized countries since they affect workers' quality of life in different health areas⁴. In addition, they impair different levels of functional capacity, potentially leading to absenteeism, decreased productive capacity, work abandonment, limitation of professional activity, as well as high costs with treatments and compensations⁵.

The health work environment is conducive to the development of WMSDs, given its many risk factors, including repetitive movements, stress, weight lifting, work overload, physical and genetic factors, and poor posture⁶. Continuous exposure to these factors can contribute to the emergence of mechanical tensions in muscles, ligaments, and joints, which can lead to pain in regions such as the neck, back, shoulders, and wrists⁵.

Among health workers, nursing professionals are affected by WMSDs due to work overload and daily demands⁷. Studies have shown a significant incidence of musculoskeletal symptoms related to these professionals, with a rate ranging from 43 to 93%. The prevalence of these symptoms is usually caused by occupational stress⁸. In the hospital environment, nursing professionals are the ones who complain most about pain, as they often fail to care for their own health to prioritize patient care⁹.

Some authors have described the prevalence and characteristics of muscle symptoms in nursing professionals. However, these studies have different results. In an investigation with 37 nursing professionals working in the surgical center (SC) of a federal hospital, the prevalence of musculoskeletal symptoms among the participants was 76.5% in the previous seven days and 83.3% in the previous 12 months. In this study, the lumbar region was the most affected (42.3%), followed by the dorsal one (30.8%)¹⁰.

Nonetheless, another study assessing 52 nursing professionals working in the Sterile Processing Department (SPD) identified a prevalence of musculoskeletal symptoms of 60.8% in the previous seven days and 80.4% in the previous 12 months among the participants; low back pain was predominant in both cases. More than 90% of the interviewees reported pain and/or discomfort in some body part during their work¹¹.

The considerations above evidence the knowledge gap regarding research on pain among nursing professionals working in the hospital environment, particularly in the SC. Thus, this study proves to be relevant since health workers should acquire knowledge of this subject and engage — through dialogs, discussions, and reflections — in actions and interventions aimed at promoting health and preventing diseases in order to maintain a healthy personal and professional life.

OBJECTIVE

To assess the intensity of musculoskeletal pain and the affected anatomical regions reported by nursing professionals working in a hospital SC.

METHOD

This is a quantitative, descriptive, cross-sectional study developed with nursing professionals working in the SC of a philanthropic large general hospital located in the northwest region of the state of Rio Grande do Sul (RS).

This facility has 198 hospitalization beds and is considered a macro-regional reference in health. It serves a population of 1,282,927 people — equivalent to 12.9% of the RS population —, distributed in 125 municipalities¹². The SC consists of six operating rooms equipped to treat adults, older adults, children, and newborns.

The target population of the study comprised 43 nursing professionals. The inclusion criteria were: being part of the nursing team, working in the SC of this facility, and signing the informed consent form (ICF). The study excluded nursing professionals on leave, including sick leave, and/or vacation during the data collection period and who did not sign the ICF.

Data were collected between December 2019 and March 2020 by administering the following instruments: sociodemographic, labor, and clinical questionnaire, Nordic Musculoskeletal Questionnaire (NMQ), and Numeric Pain Rating Scale.

The sociodemographic, labor, and clinical questionnaire was developed by the researchers and covered the following items: age group, sex, marital status, whether they had children and how many, professional category, undergraduate/graduate/specialization courses, time since graduation, management/coordination position, weekly workload, another employment relationship, and length of nursing experience.

The visual numeric scale used to assess pain intensity is a simple but effective instrument, ranging from 0 to 10, in which 0 represents “no pain” and 10 corresponds to “extreme pain”¹³.

NMQ was developed by Kuorinka and collaborators in 1987 and translated into Portuguese in 2003 by Barros and Alexandre¹⁴. This instrument is used to standardize and measure reports of musculoskeletal symptoms and includes 36 multiple-choice and dichotomous questions regarding the presence of musculoskeletal symptoms in the 12 months and seven days prior to the interview¹⁴.

For the analysis, data were initially entered into a database with independent double entry in Microsoft Office Excel[®]. After verification and correction of possible mistakes and/or inconsistencies, the data were transferred to the software Statistical Package for the Social Sciences (SPSS)[®], version 22.0, and analyzed using descriptive and inferential statistical analysis.

Descriptive statistics were used to characterize the participants' sociodemographic, labor, and clinical data. Qualitative variables were expressed as relative and absolute frequency.

As for ethical aspects, this study is linked to the master's thesis entitled “Musculoskeletal pain, stress, burnout, and resilience in nursing professionals in the hospital environment”, whose research project was approved by the hospital's Evaluation Committee and the university's Research Ethics Committee (REC), under the consolidated opinion no. 3,657,852. The study complied with all ethical-legal precepts involving research with human beings, as recommended by Resolution no. 466/2012 of the Brazilian National Health Council¹⁵.

RESULTS

Out of the 43 nursing professionals invited, six nurses and 19 nursing technicians participated in the study, totaling 25 participants. Table 1 presents their sociodemographic characteristics. The vast majority of participants were women (92%), aged 31–40 years (56%). With respect to marital status, 36% reported being married, and the same percentage declared being single; 68% reported having children, most of them with a single child (48%).

Table 2 describes the results of the participants' labor characteristics. The prevalent professional category was nursing technicians (76%), with a higher rate of individuals who graduated between one and five years earlier (32%); 36% of the sample had specializations, and 80% did not hold management positions. Concerning workload, most individuals worked 36 hours per week (80%), with exclusive employment relationship (88%). Regarding the length of nursing experience, almost half of the research participants had more than ten years of experience (48%), followed by those whose career span ranged from 5 to 10 years (28%).

Table 3 presents the results related to pain in different anatomical regions mentioned by the participants. As to pain in the previous year, the highest rates were in the upper

posterior chest and ankles/feet (36%), followed by the lumbosacral region, neck and shoulders, and deltoids (32%). Shoulder disorders (12%) were responsible for the highest rate of individuals prevented from performing normal activities in the previous year, followed by neck, upper posterior chest, wrists or hands, and ankles/feet (8%).

Most visits to health professionals in the previous 12 months were motivated by pain in the upper posterior chest and neck, followed by shoulders, wrists or hands, and ankles/feet.

When asked about pain in the previous seven days, most participants reported pain in the upper posterior chest (28%), followed by shoulders and ankles/feet (20%).

Next, Table 4 shows the intensity of musculoskeletal pain reported by the participants in the previous seven days, scored 0 to 10, in which 0 represents “no pain” and 10 corresponds to “extreme pain”. The results indicate that 28% of workers declared no pain in the previous seven days; 16% experienced severe pain, with the same rate (7 and 8), respectively.

Table 1. Sociodemographic characteristics of nursing professionals working in the surgical center of a general hospital – April/2020 (n=25).

| Variable | Number | Percentage (%) |
|----------------------|--------|----------------|
| Sex | | |
| Female | 23 | 92 |
| Male | 02 | 8 |
| Age group (years) | | |
| 18 to 30 | 05 | 20 |
| 31 to 40 | 14 | 56 |
| 41 to 50 | 04 | 16 |
| Over 51 | 02 | 8 |
| Marital status | | |
| Married | 09 | 36 |
| Single | 09 | 36 |
| Domestic partnership | 07 | 28 |
| Children | | |
| Yes | 17 | 68 |
| No | 08 | 32 |
| Number of children | | |
| 0 | 08 | 32 |
| 1 | 12 | 48 |
| 2 | 04 | 16 |
| 3 | 01 | 4 |

DISCUSSION

The nursing team working in the SC performs several activities that can trigger musculoskeletal pain, impairing their physical and mental health. This statement stems from the results of the present research, which has a predominance of women and shows how much pain they feel in different anatomical regions.

Similar results were found in a study¹⁶ that sought to identify complaints related to physical discomfort due to SC ergonomic risks, its anatomical location, characterization,

Table 2. Labor characteristics of nursing professionals working in the surgical center of a general hospital – April/2020 (n=25).

| Variable | Number | Percentage (%) |
|--------------------------------------|--------|----------------|
| Professional category | | |
| Nurse | 06 | 24 |
| Nursing technician | 19 | 76 |
| Specialization | | |
| Yes | 09 | 36 |
| No | 16 | 64 |
| Time since graduation (years) | | |
| 1 to 5 | 08 | 32 |
| 6 to 10 | 05 | 20 |
| 11 to 15 | 07 | 28 |
| Over 16 | 05 | 20 |
| Management position | | |
| Yes | 05 | 20 |
| No | 20 | 80 |
| Weekly workload (hours) | | |
| 30 | 01 | 4 |
| 36 | 20 | 80 |
| 40 | 02 | 8 |
| 44 | 02 | 8 |
| Another employment relationship | | |
| Yes | 03 | 12 |
| No | 22 | 88 |
| Length of nursing experience (years) | | |
| Less than 1 | 01 | 4 |
| 1 to 3 | 03 | 12 |
| 3 to 5 | 02 | 8 |
| 5 to 10 | 07 | 28 |
| Over 10 | 12 | 48 |

and correlation with the working environment. In that study¹⁶, 77.27% of participants were women. Likewise, research¹⁷ aimed at analyzing and comparing the professional satisfaction rate of nurses working in the SC identified a majority of females. Another investigation¹⁸ assessed 340 nursing professionals working in the SC and/or SPD of 11 hospitals in the city of Londrina, Paraná; among them, 87.1% were women — a characteristic of the nursing field.

The fact that most participants are women, aged 31 to 40 years, can be one of the factors that partially explains pain complaints in many anatomical regions, combined, of course, with physical effort, and that requires knowledge of ergonomics. Similar to the present study, research conducted in a hospital in the northern region of Portugal¹⁹ identified that 65.1% of the nurses, with a mean age of 40 years, had some complaint of musculoskeletal pain or discomfort. Another study¹⁶ also found an increase in musculoskeletal pain complaints in nursing professionals, with a mean age between 26 and 35 years (36.6%).

The present research shows that this team has expertise in SC nursing, an essential condition for performing high-quality activities, as this complex, specialized unit requires experience²⁰. The longer career span was also

identified in studies with SC professionals, who had a mean length of nursing experience of 8 years¹⁷ and ranging from 10 to 20 years¹⁰.

The intensity of the pain self-reported by the participants and the fact that they declared feeling pain in more than one anatomical region lead us to contemplate how much this pain can interfere in the daily work of these SC

Table 4. Intensity of musculoskeletal pain in the previous seven days, in which 0 represents “no pain” and 10 corresponds to “extreme pain”, as reported by the nursing team working in the surgical center of a general hospital.

| Pain intensity | Number | Percentage (%) |
|----------------|--------|----------------|
| 0 | 7 | 28 |
| 1 | 1 | 4 |
| 3 | 1 | 4 |
| 4 | 3 | 12 |
| 5 | 2 | 8 |
| 6 | 2 | 8 |
| 7 | 4 | 16 |
| 8 | 4 | 16 |
| 9 | 1 | 4 |

Table 3. Frequency of musculoskeletal symptoms per anatomical region reported by the nursing team working in the surgical center of a general hospital.

| Musculoskeletal symptoms | PDF | IAN | CAS | PR |
|--------------------------|---------|---------|---------|---------|
| Body part | n (%) | n (%) | n (%) | n (%) |
| Neck | 08 (32) | 02 (8) | 03 (12) | 03 (12) |
| Shoulders | 08 (32) | 03 (12) | 02 (8) | 05 (20) |
| Upper posterior chest | 09 (36) | 02 (8) | 03 (12) | 07 (28) |
| Elbows | 02 (8) | - | - | 01 (4) |
| Wrists or hand | 04 (16) | 02 (8) | 02 (8) | 02 (8) |
| Lumbosacral | 08 (32) | 01 (4) | 01 (4) | 02 (8) |
| Hips/thighs | 03 (12) | - | - | - |
| Knees | 01 (4) | 01 (4) | - | 01 (4) |
| Ankles/feet | 09 (36) | 02 (8) | 02 (8) | 05 (20) |

PDF: experienced problems (such as pain, tingling/numbness) in the previous 12 months; IAN: was prevented from performing normal activities in the previous 12 months; CAS: visited a health care professional in the previous 12 months; PR: experienced some problem in the previous seven days.

professionals, including when it comes to the incidence of iatrogenesis and abstention, the safety of the team and the patient, and the damage to the facility's image. In addition, the pain reported by them can become chronic in the medium and long term, making their professional practice impossible. In the SC, professionals associate pain and/or physical discomfort with the tasks performed in the unit. Most of them have lived with pain and discomfort for a long time, making the situation worrying because, in the long term, these symptoms can worsen and become increasingly harmful to the worker¹⁶.

Specifically concerning pain sites, in the present study, the participants reported more pain in the upper posterior chest and ankles/feet (36%) in the previous year, followed by the low back, neck, and shoulders (32%). Likewise, a study¹⁶ with 22 nursing professionals found that most participants (68.18%) reported discomfort in the upper limbs, spine, or lower limbs, with the shoulders (18.91%), spine (18.91%), and legs (18.91%) as the most painful sites.

Most nursing professionals attributed the prevention from performing normal activities in the previous year to disorders in the shoulders, neck, upper posterior chest, wrists or hands, and ankles/feet. An investigation²¹ revealed similar results, identifying that the leave taken by these professionals in the previous 12 months was related to pain in the low back, with a percentage of 34%, followed by the shoulder and neck, both with 31%. Study²² with 90 nursing professionals from a public hospital providing secondary and tertiary care indicated that the risk factors predisposing to low back pain are associated with poor posture, carrying heavy equipment, performing repetitive movements, and continuing to work, even with pain.

In the present study, the highest response rates regarding the presence of pain in the previous seven days were in the posterior chest, shoulders, and ankles/feet, a result that, although in different percentages, suggests a change in the pain typology from acute to chronic. Research²³ with 42 nursing professionals showed that 71.4% of them reported musculoskeletal symptoms in the previous 12 months, while 31.0% declared experiencing muscular discomfort in the previous seven days. In this scenario, another factor deserving attention is the quantitative and qualitative distribution of nursing professionals in the SC, considering that the professional deficit, together with the unit's health care profile, may lead to work overload²⁴.

As for the intensity of pain reported by the participants in this research, the fact that only 28% did not mention any

pain in the previous week is a finding that deserves attention, reflection, and discussions from managers and nurses of the unit, with the goal of implementing appropriate actions for pain treatment and management, as well as reviewing contributing and triggering factors for pain. The physical and mental suffering of SC nursing professionals due to their work activity interferes with their professional capacity and quality of life, making them susceptible to illnesses²⁵. In this regard, it is up to the professionals to become aware of the prevention of ergonomic risks, adopt good postures, avoid carrying heavy objects, and practice physical activities to strengthen their body muscles since working in the SC requires physical strength, long periods of standing in the orthostatic position, and repetitive movements²⁵.

Based on the arguments above, the pain experienced by the nursing team working in the SC should be regularly assessed to prevent personal and organizational harm, mainly related to the quality and safety of patient care in the SC. Nursing is responsible for a significant number of SC workers, and the job characteristics of this unit favor the emergence of both physical and mental illnesses among these professionals²⁶. Exposure to and handling of physical, chemical, biological, ergonomic, and psychosocial agents can damage the quality of productivity and care and compromise the workers' health²⁶.

The results of this research, together with our positions regarding research findings on the subject, show that the nursing team working in the SC presents signs of illness, especially concerning the persistence of musculoskeletal pain in different anatomical regions, which varies in intensity, can cause harm, and risks the safety of patients undergoing surgical procedures, with direct repercussions on care quality and the organization's image.

With respect to the limitations of this study, the number of participants and the fact that the investigation was conducted in a single hospital preclude us from making inferences and comparisons between facilities.

FINAL CONSIDERATIONS

The assessment of the intensity and sites of musculoskeletal pain reported by nursing professionals working in an SC is important because it provides managers and workers with support for actions and interventions in order to improve knowledge about pain, ergonomics, precautions to prevent damage to the physical and mental health of

workers, as well as maintain the quality of care and of the organization as a whole.

The pain reported by the participants affects their work activities, and its intensity reveals the professional's suffering in their daily life, with risk of chronicity and of triggering other diseases, including autoimmune ones. We stress the risk of illnesses, which may make the professional nursing practice impossible in the SC.

We believe that this research contributes to reducing the evidence gap on the subject, more specifically, that related to the SC unit. We expect that the results can help broaden discussions and reflections, leading to changes in the attitude of both managers and health professionals from the unit.

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CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

CCS: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Writing — original draft, Writing — review & editing. **MBF:** Data curation, Formal analysis, Investigation, Validation, Visualization, Writing — original draft, Writing — review & editing. **LV:** Data curation, Formal analysis, Investigation, Validation, Visualization, Writing — original draft, Writing — review & editing. **PT:** Conceptualization, Data curation, Formal analysis, Methodology, Supervision, Validation, Visualization, Writing — original draft, Writing — review & editing. **CFC:** Conceptualization, Data curation, Formal analysis, Methodology, Software, Supervision, Validation, Visualization, Writing — original draft, Writing — review & editing. **EMFS:** Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision Validation, Visualization, Writing — original draft, Writing — review & editing.

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