

# Work of the nursing team in the surgical center: risks to health

*Trabalho da equipe de enfermagem do bloco cirúrgico: riscos de danos à saúde*

*Trabajo del equipo de enfermería en el bloque quirúrgico: riesgos de daños a la salud*

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**ABSTRACT: Objective:** To analyze the risks to health related to the work of the nursing team in the operating room of a university hospital in southern Brazil. **Methods:** Cross-sectional study with a quantitative approach. Data were collected between November 2017 and January 2018, through a survey with workers of the nursing team in the surgical center of a university hospital. Data were submitted to statistical analysis. **Results:** It was found that 85.4% were women, with a mean age of 47.7 years. Regarding work-related psychological compromise, 91.5% were at low risk and 8.5% were at medium risk. As for social harm, 87.5% were at low risk and 10.4% were at medium risk. As for physical risk, 29.2% were at high risk, 35.4% at medium risk, and 33.3% at low risk. **Conclusions:** There was a high and medium risk for physical injuries related to work, highlighting the need for interventions aimed at preventing illness among workers.

**Keywords:** Perioperative nursing. Occupational health. Nursing services. Surgery department, hospital. Nursing.

**RESUMO: Objetivo:** Analisar os riscos de danos à saúde relacionados ao trabalho da equipe de enfermagem no bloco cirúrgico de um hospital universitário do Sul do Brasil. **Métodos:** Estudo transversal com abordagem quantitativa. Os dados foram coletados entre os meses de novembro de 2017 e janeiro de 2018, por meio da aplicação de um instrumento de pesquisa com os trabalhadores da equipe de enfermagem do bloco cirúrgico de um hospital universitário. Os dados foram submetidos à análise estatística. **Resultados:** Constatou-se que 85,4% eram mulheres, com idade média de 47,7 anos. Referente aos danos psicológicos relacionados ao trabalho, 91,5% apresentaram baixo risco e 8,5% apresentaram risco médio. Quanto aos danos sociais, 87,5% apresentaram baixo risco e 10,4% apresentaram risco médio. Quanto aos danos físicos, 29,2% apresentaram alto risco, 35,4% apresentaram risco médio e 33,3% apresentaram baixo risco. **Conclusões:** Observou-se risco alto e médio para danos físicos relacionados ao trabalho, evidenciando a necessidade de intervenções que visem à prevenção do adoecimento dos trabalhadores.

**Palavras-chave:** Enfermagem perioperatória. Saúde do trabalhador. Serviços de enfermagem. Centro cirúrgico hospitalar; Enfermagem.

**RESUMEN: Objetivo:** Analizar los riesgos de daños a la salud relacionados con el trabajo del equipo de enfermería en el quirófano de un hospital universitario del sur de Brasil. **Métodos:** Estudio transversal con enfoque cuantitativo. Los datos fueron recolectados entre noviembre de 2017 y enero de 2018, mediante la aplicación de un instrumento de investigación con trabajadores del equipo de enfermería en el bloque quirúrgico de un hospital universitario. Los datos fueron sometidos a análisis estadístico. **Resultados:** Se encontró que el 85,4% eran mujeres, con una edad promedio de 47,7 años. En cuanto al daño psicológico relacionado con el trabajo, el 91,5% tenía riesgo bajo y el 8,5% riesgo medio. En cuanto al daño social, el 87,5% tuvo riesgo bajo y el 10,4% riesgo medio. En cuanto al daño físico, el 29,2% se encontraba en riesgo alto, el 35,4% en riesgo medio y el 33,3% en riesgo bajo. **Conclusiones:** Hubo alto y medio riesgo de lesiones físicas relacionadas con el trabajo, destacando la necesidad de intervenciones dirigidas a la prevención de enfermedades entre los trabajadores.

**Palabras clave:** Enfermería perioperatoria. Salud laboral. Servicios de enfermería. Servicio de cirugía en hospital. Enfermería.

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## INTRODUCTION

Work is a space of relationships that involves the human being as a whole, capacity for creation, and critical thinking, making him a social being in constant development and transformation<sup>1</sup>. The relationships that are built in different social spaces make up the process of human living, which, in turn, is understood as a dynamic, complex and multifaceted process.

In this process, the context of work, in addition to everyday experiences, is part of historical and social constructions, a space for dreams, aspirations, and desires. As a result, work can be understood as a way of obtaining subsistence and financial return, as well as being perceived as an important tool in the construction of the individual's identity, in social interaction and in the search for a purpose worth dedicating oneself to. In a large portion of industrialized societies, the time spent at work occupies an important part of an adult's life<sup>2</sup>.

On the other hand, work can also be experienced as a source of suffering, of excessive effort or even as a source of economic alienation and distress for those who perform it, as workers expend physical and psychological effort with negative or irrelevant meanings. The work environment, under adverse physical, mechanical, and psychological conditions, is also considered a risk factor for the development of diseases<sup>3</sup>.

It is no different in the context of healthcare workers, the daily lives of these professionals demand complex knowledge and practical skills to meet the demands of a highly instrumented, rationalized, and technological environment. An intense pace of work is also required, permeated by unforeseen and conflicting situations, agility in decision-making and damage-free care. In addition, health professionals are in constant contact with situations of suffering and death of human beings, which lead them to anxieties, generating physical, psychological, and social exhaustion<sup>4</sup>.

Among health professions, nursing has been particularly affected by musculoskeletal disorders. Factors related to the organization of work (such as increased working hours, accelerated pace, and shortage of workers), various environmental factors (such as inadequate furniture and insufficient lighting), as well as overloading body segments in certain situations (such as positioning and transporting patients), performing repetitive movements, and maintaining inappropriate postures are some of the main risk factors<sup>4</sup>.

When it comes to surgical center workers, the need for integrated work is evident, which demands skills to cope with the conditions imposed by the closed environment and full of

complex technologies, aiming at the well-being and safety of patients. Considering the complexity and purpose of the procedures performed, the unit occupies a prominent place in the hospital, as it aims to care for patients on an elective basis as well as urgent or emergency ones<sup>5,6</sup>. This context demands scientific knowledge, technical skill, responsibility, and emotional stability from the nursing team, combined with knowledge of human relationships, favoring the management of conflicts<sup>6</sup>.

The work environment, under adverse physical, mechanical, and psychological conditions, is also considered as one of the main risk factors for the development of diseases, in which the continuous and prolonged exposure of workers to the risk factors of such an environment favors the appearance of occupational diseases. Among health professions, nursing has been especially affected physically, psychologically, and socially.

Studies point to relationships between stress and musculoskeletal, heart and digestive system diseases, revealing that, if prolonged, work-related stress can contribute to the emergence of serious cardiovascular diseases. In addition, the economic crisis and recession are identified as aggravating factors for the increase in work-related stress, anxiety, depression, and other mental disorders<sup>7,8</sup>.

Given this scenario, the question is: what are the risks of physical, psychological, and social damage related to the work of the nursing team in the surgical center? Based on the analysis of the risks of damage to which these workers are exposed, it becomes possible to mitigate or even eliminate predisposing factors, seeking to prevent workers from becoming ill and to promote the quality of care provided to surgical patients<sup>9</sup>.

## OBJECTIVES

To analyze the risks of damage to health related to the work of the nursing team in the operating room of a university hospital in southern Brazil.

## METHOD

This study was previously approved by the Ethics and Research Committee of the institution, CAAE number 65993517.9.0000.5327. In this study, the Guidelines and Regulations for Research Involving Human Beings were contemplated, Resolution 466/2012 of the National Health Council<sup>10</sup>.

This is a cross-sectional study with a quantitative approach, carried out in the operating room of a teaching hospital in southern Brazil. The study population consisted of nursing workers from the surgical unit, which has approximately 110 workers.

The sample was defined by performing a statistical calculation capable of detecting a difference in effect size greater than or equal to 0.25 of the surgical center, considering a power of 80% and a significance level of 0.05. Workers who met the criteria were included: nurses and nursing technicians who worked day and night shifts, of both genders and who had been employed in the hospital's surgical service for six months or more at the time of data collection. By applying the exclusion criteria, which included professionals on vacation, on leave for any reason or who did not agree to participate in the study, the final sample comprised 48 workers randomly selected until reaching the number necessary to constitute the sample.

Data collection was carried out between November 2017 and January 2018 by a previously trained team, which delivered the research instrument to the workers, providing guidance on the study and scheduling the follow-up session. The instrument used to collect research data was the Psychosocial Risk Assessment Protocol at Work (*Protocolo de Avaliação dos Riscos Psicossociais no Trabalho – PROART*), developed by Facas<sup>11</sup>. PROART makes use of the precepts of the psychodynamic theory of work as a tool to assess the relationship between health and work, seeking to apprehend their inter-subjective relationships.

Psychosocial risks are understood as arising from the negative effects of work organization on management styles, pathogenic suffering and physical, psychological, and social damage that cause workers to become ill and compromise the quality of work. The protocol is composed of four scales: Prescribed Work Organization Scale, Management Styles Scale, Pathogenic Workplace Suffering Scale, and Work-Related Harm Assessment Scale (*Escala de Avaliação dos Danos Relacionados ao Trabalho – EADRT*)<sup>11</sup>.

For this research, only the EADRT was used, consisting of 29 items and three factors: physical damage, psychological damage, and social damage, all essentially caused by the worker's confrontation with certain work contexts. For the evaluation, a Likert scale was used, consisting of five points, namely: 1 (never), 2 (rarely), 3 (sometimes), 4 (often), and 5 (always).

Considering the standard deviation in relation to the midpoint, the parameters for evaluating the mean, standard deviation and frequency of the factor: from 1.00 to 2.29, low risk, configuring a positive result that represents low psychosocial

risks. From 2.30 to 3.69: medium risk, representing a median result that indicates a state of alertness/threshold situation for psychosocial risks at work, which demands short- and medium-term interventions. From 3.70 to 5.00: high risk, configuring a negative result that represents high psychosocial risks. The latter demands immediate interventions in the causes, aiming to eliminate and/or mitigate them.

Data analysis was performed considering the objectives proposed for the study. The data received statistical treatment, the results of nominal variables were expressed through frequency analysis and the results of continuous variables through mean±standard deviation. The results were discussed based on the theoretical framework.

To verify the association between the results of the scales with age, the *t* test for independent samples or One Way Anova was used according to the number of categories of the scales. To verify the association between the results of the scales and the composite sociodemographic variables and categories, the square test or Fisher's exact test was used, according to the assumptions of the tests.

To verify the normality of the data, the Kolmogorov Smirnov test was used, in all analyses a  $p < 0.05$  was considered significant. To carry out the analyses, the SPSS 23.0 software was used.

## RESULTS

The sample consisted of 48 nursing workers from the surgical center, 85.4% (n=41) were female workers, 77% (n=37) nursing technicians, 16.7% (n=8) nurses, and 6.3% (n=3) workers did not answer this information. The age of those surveyed ranged between 28 and 63 years old, with an average of 47 years old. Regarding marital status, 58.3% workers (n=28) were married or in a stable relationship, 27.1% were single (n=13) and the rest separated or widowed.

As for the education of the researched sample, 43.7% (n=21) had completed high school, 22.9% (n=11) had incomplete higher education, and 18.8% (n=9) had a graduate degree. As for the type of employment contract, most of the workers (91.6%) were public servants on a CLT regimen. The length of service at the hospital varied between six months and 42 years, with a predominance of workers who worked at the institution between 11 and 20 years (31.2%, n=15).

Regarding risk factors for illness, just over half of the workers, 54.2% (n=26), have one to two work-related health problems, and in 8.3% (n=4) of cases, three or more problems were

reported. Regarding the periodic institutional medical examination, 89.5% (n= 43) of the interviewees stated that they had not undergone this examination in a period of 12 months. And in relation to absences from work, 41.7% (n=20) of workers were absent from work from one to three times in the last 12 months.

The present study depicts research instruments that allowed assess the risks of damage related to routine and the work environment. According to the results of the EADRT, the type of damage in which a high risk of illness was identified was physical, with the occurrence of physical damage reported by 29.2% (n=14) of workers. In terms of psychological and social harm, no categorization was found. In psychological factors, 89.6% (n=43) of the workers identified this as a low risk of harm. And, in the social factor, 87.5% (n=42) of the workers classified the illness as a low risk. Chart 1 demonstrates in detail the items that make up each type of damage.

The results on the mean of the items that make up the EADRT show that no item had an isolated mean of high risk, but the result of the frequency analysis of the work-related physical damage factor showed n=14 (29.2%) for high risk of damage. Regarding these workers, 85% were female, 85.7% were nursing technicians, and 42.9% of professionals with this type of classification had worked in the position or in the hospital for more than 10 years.

Still regarding workers classified as subjects at high risk of developing work-related physical injuries, 42.9% said they already had one or two work-related health problems, while 7.1% reported having three or more problems.

Isolated, in descending order, the averages of the items stand out: back pain, leg pain, body aches, sleep changes, arm pain and headache, with averages above 2.29, configuring medium risk for the development of these types of aggravations.

**Chart 1.** Mean of the items on the Work-Related Harm Assessment Scale of the population interviewed at a university hospital in southern Brazil between November 2017 and January 2018.

Items	Statement	Mean	Standard deviation	Risk
Psychological	Bitterness	1.54	0.72	Low
	Feeling of emptiness	1.62	0.82	Low
	Bad mood	1.98	0.77	Low
	Willingness to give everything up	1.38	0.77	Low
	Sadness	1.91	0.95	Low
	Loss of self confidence	1.60	0.71	Low
	Loneliness	1.34	0.64	Low
Social	Insensitivity towards colleagues	1.68	0.75	Low
	Difficulty in relationships outside of work	1.62	0.71	Low
	Desire to be alone	1.94	0.99	Low
	Conflict in family relationships	1.83	0.76	Low
	Aggressiveness with others	1.60	0.68	Low
	Difficulty with friends	1.36	0.53	Low
	Impatience with people in general	1.89	0.76	Low
Physical	Body pains	2.96	1.00	Medium
	Arm pains	2.62	1.13	Medium
	Headache	2.45	1.08	Medium
	Digestive disorders	1.94	0.87	Low
	Back pains	3.21	0.88	Medium
	Sleep disorders	2.93	1.34	Medium
	Leg pains	3.21	1.02	Medium
	Circulatory disorders	1.98	0.99	Low
	Changes in appetite	2.04	1.04	Low

Source: Survey data, 2017-2018. Results expressed as mean±standard deviation.

## DISCUSSION

Of the total sample, there was a predominance of middle-level workers, which is in line with the national reality and may be related to the existence of a high number of technical training courses and the greater ease of admission to them<sup>12</sup>.

Also noteworthy is the greater number of female workers, corroborating the literature that deals with the feminization of nursing at the national and international levels<sup>13</sup>. Data published by the Ministry of Labor and Employment indicate that women represent 73% of formal jobs in the health area, and, although female participation in the Brazilian labor market has intensified since the 1970s, in the area of nursing, the predominance of female workers has always been and continues to be a reality<sup>14</sup>.

As for the age group of the analyzed workers, the age ranged from 28 to 63 years old, with an average of 47 years old. This data conflicts with the work by Machado et al.<sup>15</sup>, in which the authors analyze the general aspects of the nursing profile in Brazil with emphasis on sociodemographic aspects and state that nursing is a profession in full rejuvenation. The data obtained in this research were: 40% of the contingent of nursing teams are aged between 36 and 50 years old, 38% between 26 and 35 years old, and only 2% aged over 61 years old. However, there are 61.7% of the total, representing more than 1.1 million workers aged up to 40 years, which means that the profile of the nursing team in Brazil is predominantly young. When evaluating the sample of workers from the nursing team in the surgical center covered in this research, it can be seen that their mean age is close to 50 years, bringing us the perception of a team composed of older workers.

Taking into account that the workers in operating rooms are exposed to different workloads, the risks to which they are submitted can be classified as biological, such as contact with the body fluids of patients, chemical, through the handling of medications, physiological, of which standing work and inadequate posture can be highlighted, and psychological, regarding inadequate working conditions. These are some of the determining factors of workloads, which are related to the workers' illness processes. Continuous exposure to workloads and the daily experience of feelings of pleasure and suffering can cause wear and tear in workers, which can evolve and contribute to their illness<sup>8</sup>.

As for the results obtained regarding the risks to health related to work in the operating room, it was observed that no results were obtained in the categorization of high risk for

psychological and social variables. The vast majority of the sample is categorized as having a low psychological (89.6%) and social (87.5%) risk, not requiring any immediate intervention in work organization.

These data go in the opposite direction to another study on workers in the operating room, in which the authors report high rates of workers who have psychological pathologies, such as anxiety and depression<sup>16</sup>. Anxiety is characterized by a feeling of anticipation of fear and apprehension, which can become pathological according to the intensity and degree of involvement of the affected person. Depression, on the other hand, is characterized by the slowing down of psychic processes, inability to feel pleasure, loss of energy, difficulty concentrating, among others<sup>16</sup>.

The perception that the results obtained in the research with the nursing workers in the surgical center were mostly positive in terms of psychological and social risks leads us to understand that there are aspects to be maintained, consolidated, and enhanced in the work organization established in the unit.

When analyzing the physical risks to which these workers are exposed, a significant number of workers is highlighted as having medium (35.4%) and high (29.2%) risk for developing physical harm, especially nursing technicians. It is important to mention that 54.2% (26) of the participants said they had at least one or two work-related health problems, while 7.1% (1) reported three or more problems. Thus, the physical damage factor is what most demands immediate interventions in its causes, which must be eliminated or mitigated, aiming at better working conditions and the prevention of illness among workers.

Turning to the literature, it is possible to find studies in which physiological loads are predominantly identified as causes of illness among health professionals. A study that investigated the exposure of nursing workers to these loads pointed to handling excessive weight during activities and the predominance of standing, uncomfortable or inappropriate positions during the working day as the main loads to which workers are exposed<sup>17</sup>, a scenario often experienced in the operating room.

In another recent study on musculoskeletal disorders in nursing workers, the authors point to physiological loads as the cause of the high prevalence of work-related musculoskeletal disorders among these professionals. It is a clinical syndrome, of complex multifactorial origin, which involves individual aspects as well as those linked to work organization. It is characterized by the appearance and evolution of an insidious nature, usually progressive, permanent or not,

with physiological repercussions arising from wear processes suffered by the musculoskeletal system, without sufficient time for its proper recovery<sup>18</sup>.

Corroborating the data collected in the present study, research by Silva et al.<sup>18</sup> points out that nursing technicians are the most susceptible to musculoskeletal pain, reporting more pain, fatigue, and tension. The research also points out the predominance of musculoskeletal symptoms in the back region, a characteristic that was also present in the workers of the surgical center addressed in this study.

The need for up-to-date research on the subject was also noted, since the studies found and used as a theoretical reference mostly date from more than five years of publication, suggesting the need for updated scientific production on the subject of the health of the worker in the surgical center.

The data presented indicate the importance of making managers aware of the health of nursing workers in the surgical center, in an attempt to guarantee well-being, decent working conditions, and worker satisfaction. Also understanding that these factors directly interfere in the team's work process and, consequently, in the quality of care provided to the surgical patient. This is an old and, at the same time, current issue in nursing research, in need of constant updating.

With the result of the study, it is possible to understand that there are weaknesses in the organization of work and, therefore, to propose improvements, minimizing the risk of damage and preventing the worker from becoming ill. The present study also provides contributions to the area of nursing education, as it brings a critical look at important management issues that can culminate in the team becoming ill, issues that should be discussed during the training period for new nurses.

## CONCLUSION

The results of the study indicate that the nursing team is exposed to physical, psychological, and social risks related to work in the operating room.

Among the participants, 85.4% were women, the age group of those surveyed ranged between 28 and 63 years old, with a mean age of 47.7 years old, 77% (n=37) were nursing technicians, 16.7% (n=8) nurses, and 6.3% (n=3) of workers did provide this information.

As for physical damage, 29.2% of workers considered high risk for physical compromise, 35.4% of the sample considered medium risk for this damage, and 33.3% considered

low risk for physical alterations related to work in the operating room. The items with the highest mean were pain in the body, arms, head, back, legs, and sleep disorders.

With regard to psychological risk related to the work of the nursing team in the operating room, 91.5% considered it a low risk and 8.5% considered it a medium risk. The item with the highest mean was bad mood, which is still considered low risk.

Regarding the social risks for the nursing team workers related to work in the surgical center, 87.5% considered it to be low and 10.4%, medium risk. The desire to be alone was the item with the highest mean.

Based on the results, there is room for studies that detail the activities that put the physical health of nursing workers in the surgical team at risk, so that an appropriate intervention can be carried out on these specific items, since important results were obtained regarding the existence of a high risk to health related to work in the operating room.

The results presented in this study are extremely valuable and provide subsidies to the nursing area to enable the development of preventive measures and projects to improve the organization of work in the hospital environment, especially in the operating room environment, considered an area of high demand (scientific, specialized, technological, and physical) and full of predisposing factors to the development of psychological, social and, above all, physical disorders among its workers. Just as strategies can be implemented to prevent and control injuries resulting from professional activities.

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## CONFLICT OF INTERESTS

The authors declare no conflict of interests.

## AUTHORS' CONTRIBUTIONS:

TMM: Formal analysis, Data curation, Conceptualization, Methodology. LLBR: Writing – original draft, Writing – review & editing, Visualization. CHG: Project management, Conceptualization, Methodology, Supervision.

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