REVISTA CHILENA DE ENFERMERÍA RchE FACULTAD DE MEDICINA UNIVERSIDAD DE CHILE

REVIEW ARTICLE

Risk situations faced by surgical nurses: a literature review

Situaciones de riesgo que atraviesan los enfermeros quirúrgicos: una revisión bibliográfica

Situações de risco enfrentadas por enfermeiros cirúrgicos: uma revisão da literatura

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ABSTRACT

Introduction: Surgical nurses are subject to numerous risk situations that compromise their physical and mental health and are related to the demanding nature of their work. Operating room conditions expose personnel to several hazards, including biological, ergonomic, chemical, physical, and psychosocial risks, which can negatively affect their well-being and performance. **Objective:** To analyze the risk situations encountered by surgical nurses through a literature review, identifying the primary threats to their health and the preventive measures that should be adopted. **Methodology:** A descriptive literature review was carried out using the PRISMA method for article classification. Information was retrieved from databases such as SciELO, Virtual Health Library, WHO, Google Scholar, and PubMed, using keywords related to occupational risks in the surgical environment. A total of 25 articles were selected from 45 reviewed, focusing on publications from the past four years in Spanish and English. **Results:** The reviewed studies indicate that surgical nurses are highly exposed to biological, ergonomic, and psychosocial risks, which significantly impact their health. **Conclusions:** It is suggested that occupational health policies and biosafety strategies be strengthened to protect surgical nurses from the many threats they face in their work environment.

Keywords: Perioperative Nursing; Occupational Risks; Occupational Stress; Ergonomics; Occupational Health.

RESUMEN

Introducción: Los enfermeros quirúrgicos enfrentan múltiples situaciones de riesgo que comprometen su salud física y mental debido a la naturaleza exigente de su trabajo. Las condiciones en el quirófano exponen al personal a diversos peligros, incluyendo riesgos biológicos, ergonómicos, químicos, físicos y psicosociales, que pueden afectar negativamente su bienestar y rendimiento. **Objetivo:** Analizar las situaciones de riesgo que atraviesan los enfermeros quirúrgicos mediante una revisión bibliográfica, identificando las principales amenazas a su salud y las medidas preventivas que se deben adoptar. **Metodología:** Se llevó a cabo una revisión bibliográfica descriptiva utilizando el método PRISMA para la clasificación de los artículos. La búsqueda de información se realizó en bases de datos como SciELO, Biblioteca Virtual en Salud, OMS, Google Académico y PubMed, utilizando palabras clave relacionadas con los riesgos laborales en el entorno quirúrgico. Se seleccionaron 25 artículos relevantes de un total de 45 revisados, considerando publicaciones de los últimos cuatro años en español e inglés. **Resultados:** Los estudios revisados muestran que los enfermeros quirúrgicos están altamente expuestos a riesgos biológicos, ergonómicos y psicosociales, con impactos significativos en su salud. **Conclusiones:** Se recomienda fortalecer las políticas de salud ocupacional y las estrategias de bioseguridad para proteger a los enfermeros quirúrgicos de las múltiples amenazas que enfrentan en su entorno laboral.

Palabras Claves: Enfermería Perioperatoria**;** Riesgos Laborales**;** Estrés Laboral**;** Ergonomía; Salud Laboral.

RESUMO

Introdução: O enfermeiro cirúrgico enfrenta múltiplas situações de risco que comprometem a sua saúde física e mental devido à natureza exigente do seu trabalho. As condições na sala de cirurgia expõem o pessoal a vários perigos, incluindo riscos biológicos, ergonômicos, químicos, físicos e psicossociais, que podem afetar negativamente o seu bem-estar e desempenho. **Objetivo:** Analisar as situações de risco pelas quais passam os enfermeiros cirúrgicos por meio de revisão bibliográfica, identificando as principais ameaças à sua saúde e as medidas preventivas que devem ser adotadas. **Metodologia:** Foi realizada revisão bibliográfica descritiva utilizando o método PRISMA para classificação dos artigos. A busca de informações foi realizada em bases de dados como SciELO, Biblioteca Virtual em Saúde, OMS, Google Acadêmico e PubMed, utilizando palavras-chave relacionadas aos riscos ocupacionais no ambiente cirúrgico. Foram selecionados 25 artigos relevantes de um total de 45 revisados, considerando publicações dos últimos quatro anos em espanhol e inglês. **Resultados:** Os estudos revisados mostram que os enfermeiros cirúrgicos estão altamente expostos a riscos biológicos, ergonômicos e psicossociais, com impactos significativos na sua saúde. **Conclusão:** É crucial fortalecer as políticas de saúde ocupacional e as estratégias de biossegurança para proteger os enfermeiros cirúrgicos das múltiplas ameaças que enfrentam no seu ambiente de trabalho.

Palavras-chave: Enfermagem Perioperatória; Riscos Ocupacionais; Estresse Ocupacional; Ergonomia; Saúde Ocupacional.

INTRODUCTION

Occupational health refers to the state of physical, mental, and social well-being of workers, aiming to safeguard and promote their health. The prevention of occupational risks should be a constant and primary goal.[1-6] Working in the surgical area not only entails the satisfaction of assisting patients but also involves performing surgical interventions of varying complexity. Surgical staff are exposed daily to various infectious agents, leading to occupational hazards. These risks include chemical,

biological, physical, ergonomic, and psychosocial factors, which must be adequately identified and controlled by complying with protocols and biosecurity measures to mitigate risks among healthcare staff.[2-8]

Occupational hazards are the probability of surgical staff experiencing direct or progressive health damage during work shifts.[9-11] Specifically in the surgical field, these risks manifest as workplace accidents and occupational diseases, affecting healthcare professionals' quality of life. Moreover, insufficient adherence to biosecurity procedures exacerbates these risks. Consequently, properly implementing safety measures, raising awareness among nursing staff, and adopting preventive measures are essential to minimizing occupational risks.[2,8,12-18]

In 2021, the World Health Organization (WHO) and the International Labour Organization (ILO) released a global report on work-related diseases and injuries, revealing that occupational hazards led to the deaths of 1.9 million healthcare professionals. The primary contributing factors included prolonged working hours, inadequate ventilation, ergonomic risks, and excessive noise. Notably, exposure to extended work shifts accounted for 750,000 deaths, while insufficient ventilation led to 450,000.[3]

According to data from the European Agency for Safety and Health at Work, approximately 10% of employees in the European Union experience occupational risks. In Spain, occupational risks within surgical services account for 34% of all workplace hazards, with nursing professionals being the most affected group. The most frequently reported incidents include needlestick injuries (85.3%) and cuts (8.3%).[2]

A 2022 study conducted in Mexico found that 100% of nursing staff aged 20 to 45 faced biological risks at the highest percentage. Additionally, 86% of participants reported chemical risks, 94% experienced physical and psychosocial hazards, and 67% were exposed to ergonomic risks, including musculoskeletal injuries. These factors contributed to reduced work performance and failure to meet objectives in the surgical setting.[4]

In Ecuador, a study on physical and biological occupational risks, as well as the use of personal protective equipment in the operating room of the Dispensario Central IESS Quito No. 1, involved surveys and interviews with healthcare professionals. The findings indicated that 28.5% of personnel failed to comply with basic safety regulations and did not use protective measures. Additionally, 29.4% were exposed to chemicals (gases, fumes, and vapors), 29.4% reported needlestick injuries, 17.6% were affected by excessive noise, and 5.9% experienced infections acquired in the operating room.[5]

This review aims to analyze the scientific evidence concerning the occupational hazards encountered by surgical personnel.

METHODOLOGY

This research is methodologically based on a descriptive literature review. The evidence systematization report followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

Search Strategy and Article Selection

Eligibility Criteria: Documents selected to address the occupational risks faced by nursing staff in the surgical context have been published within the last four years. The review included primary studies, secondary studies, and reports.

Information Sources: To gather the necessary information, searches were conducted in the following databases and platforms: SciELO, *Biblioteca Virtual en Salud* (BVS), the WHO website, Google Scholar, and PubMed.

Search Strategy: The search was performed using the following keywords: *salud laboral, riesgos laborales, centro quirúrgico, enfermería* and *medidas de bioseguridad.*

Reproducibility and Methodological Quality

Article Selection Process: Documents were retrieved from the databases using the specified keywords, and applied individually to titles, keywords, and abstracts. Initially, article titles were screened; if they were relevant to the research topic, their abstracts were reviewed. Articles meeting the inclusion criteria were then read in full.

Data Extraction Process: The selected documents were organized in an Excel spreadsheet, recording author(s), year of publication, database source, and title. Duplicated documents were removed, and only those meeting the inclusion criteria were retained. The quality of the articles was not assessed, as the objective was solely to describe the existing evidence.

Information Analysis: The collected studies were summarized in a descriptive table containing the following details: author(s), year of publication, study design, sample size, and results. A narrative synthesis was conducted, categorizing the findings into the following dimensions: occupational risks, biological risks, ergonomic risks, chemical risks, psychosocial risks, physical risks, biosecurity measures, and biosecurity principles.

RESULTS

A total of 49 articles from scientific journals, repositories, and dissertations were reviewed, of which 25 were selected based on language (Spanish and English) and publication date within the last four years. Duplicated articles, those without full-text access, those containing incorrect information, and those outside the established timeframe were excluded. Figure 1 presents the PRISMA diagram illustrating the selection process.

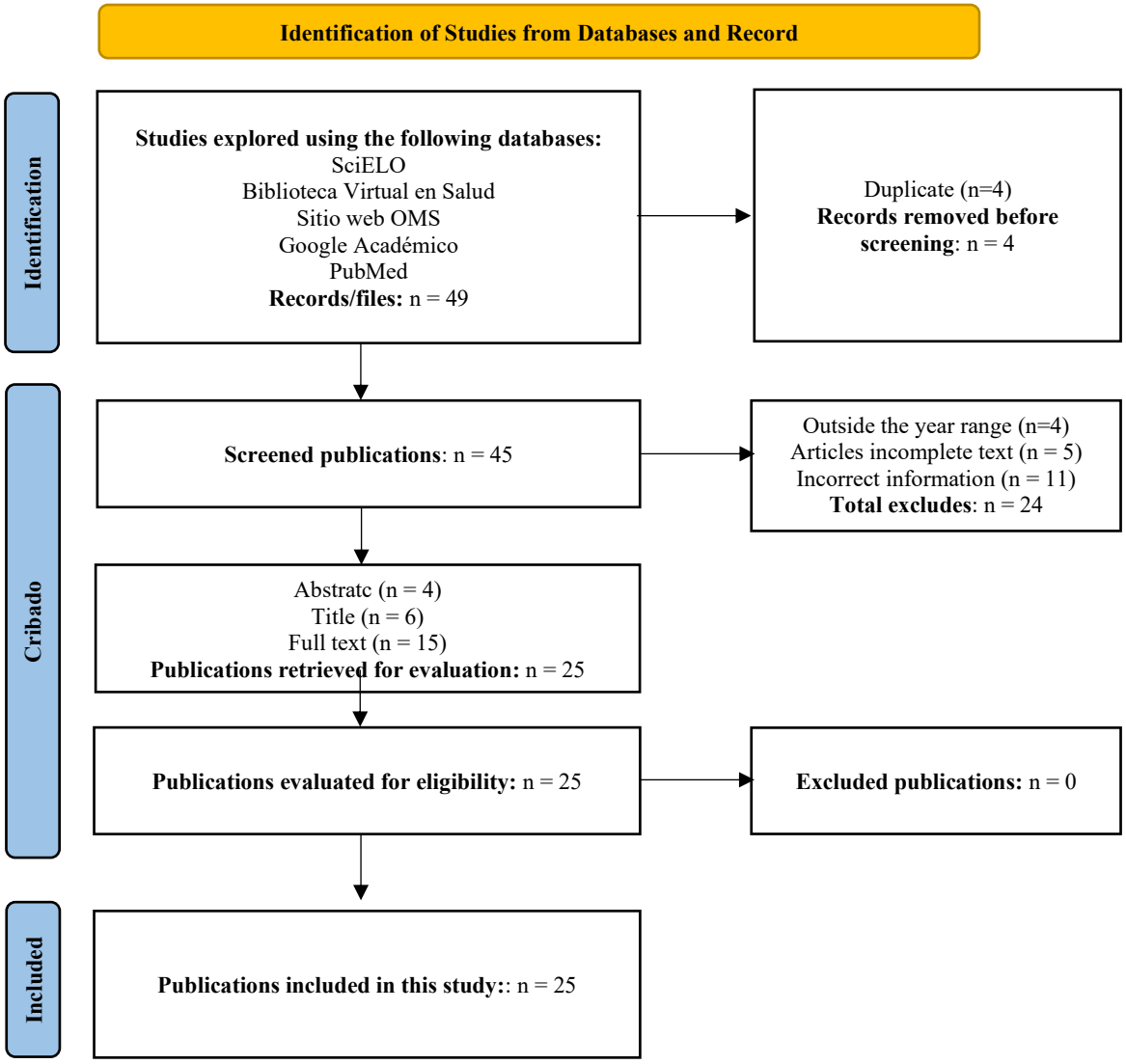
Document Description

The selected documents were published between 2021 and 2024. Among them, eighteen (72%) were non-experimental studies, six (24%) were reviews, and one (4%) was a report; no experimental studies were found. The primary studies had the following distribution: 55.5% from Peru (n = 10), 16.6% from Ecuador (n = 3), 16.6% from Mexico (n = 3), 5.5% from Brazil (n = 1), and 5.5% from Argentina (n = 1). Table 1 provides a detailed description of these documents.

Occupational Risks

A study by Valverde working with 20 nursing professionals in the Surgical Center at Hospital II-I Moyobamba found that 65% (13 professionals) were exposed to occupational risks. The study reported that 75% of nursing staff faced biological risks due to frequent contact with fluids and microorganisms inherent to the surgical environment and procedures. Additionally, 75% were exposed to chemical risks from handling various chemical compounds and medical substances, 55% did not experience physical risks, as their tasks did not involve direct physical harm, 65% were affected by ergonomic risks, as many surgical activities required them to stand for extended periods or adopt awkward postures, and 70% encountered psychosocial risks due to high-pressure environments, job stress, and frequent direct patient care.[18]

Figura 1: Diafragma de flujo PRISMA.



Source: Created by the authors.

Similarly, a study by García involving 62 surgical nurses found that 87.1% of participants were exposed to a moderate level of occupational risk, the most prevalent being chemical and ergonomic risks. Of the nurses, 80.6% faced moderate ergonomic risks due to prolonged static postures, 90.3% were exposed to moderate chemical risks from anesthetic gases and antiseptic agents, despite the availability of safety equipment, 82.3% experienced moderate physical risks, 53.2% reported moderate psychosocial risks, citing work-related stress and emotional exhaustion, and 96.8% experienced low biological risks, as they were provided with personal protective equipment (PPE) to mitigate exposure to bodily fluids and secretions.[19]

Occupational risks are defined as hazards encountered during workplace activities, and awareness of these risks is crucial for their prevention and mitigation.[18] Various high-risk scenarios frequently encountered by surgical personnel can be classified into the following categories:

Biological Risks

Biological risks refer to harmful microorganisms that impact human health through direct contact with patients, potentially causing infectious diseases. Indirect transmission can occur through contaminated objects carrying patient fluids.[6, 8-9, 12-18, 20-23] A study by Hernández et al. found that 100% of surgical personnel are exposed to biological risks, making them the most prevalent occupational hazard. Specifically, 96% were exposed to influenza virus, and 92% were at risk of exposure to HIV and hepatitis due to direct contact with blood.[4]

On the other hand, the study by Zamora reports that 15.3% of 30 nurses had this risk due to direct contact with blood, feces, urine, and respiratory secretions.[23]

Ergonomic Risks

Ergonomic risks arise from workplace conditions that cause musculoskeletal strain. According to Hernández et al., surgical nursing staff faces 98% exposure due to prolonged standing, 84% exposure from lifting patients post-surgery, 76% exposure from repetitive, forced, or improper postures, increasing the risk of musculoskeletal injuries, and 10% exposure from prolonged sitting.[4]

Similarly, García found that 80.6% of surgical personnel experienced a moderate level of ergonomic risk due to prolonged static postures.[19]

Chemical Risks

Chemical risks involve exposure to toxic or hazardous substances, either through direct handling or proximity to chemical agents. Among nursing personnel, 86% were exposed to chemical hazards affecting their health, including 94% due to handling antiseptic agents in the surgical room, 90% from cleaning surgical instruments with chemical substances, 68% developed contact dermatitis due to exposure to chemicals, and 50% suffered chemical splashes affecting the face, eyes, nose, and mouth.[4]

Psychosocial Risks

Psychosocial risks are associated with workplace interactions that negatively impact mental and emotional health, affecting the overall work environment.[11] The results show that 98% reported high cognitive demands, requiring constant focus; 96% expressed concerns about workplace accidents or contracting diseases in the operating room; 84% were under pressure to multitask extensively, 82% reported high stress levels due to their work environment, and 50% experienced physical exhaustion due to excessive workload.[4]

Table 1: Description of the selected documents (n = 25)

Authr(s)	**Country**	**Year of publication**	Study Design	Sample	Results
Gómez	México	2023	Descriptive and Cross-sectional	10 Nurses in a private surgical center	The study indicates that 100% of the staff is exposed to chemical risks, 60% to biological risks, 30% to physical risks, and 0% to psychosocial risks.
Madrid et al.	Brasil	2021	Descriptive, analytical, with a quantitative approach	160 nursing workers	In the operating room, no worker considered that the job posed a severe risk of psychological or social harm, but 6.4% considered it to be a high risk for physical ailments.
Coma et al.	-	2021	Systematic Review	24 Articles	The study highlights that occupational risks are the most prevalent and are largely unknown due to the high incidence of accidents. Biological risks are the most concerning due to their consequences, including diseases such as hepatitis B and C, and HIV.
OMS/OIT	-	2021	Report		It was demonstrated that more preventive measures are needed to ensure a safe working environment.
Hernández et al.	México	2021	Quantitative, descriptive, cross-sectional case study	50 Nurses in the surgical area of a third-level hospital	Nursing staff face various risks, such as 100% exposure to biological risks, 94% to psychosocial and physical risks, 87% to chemical risks, and 67% to ergonomic risks. These risks affect the physical, mental, and emotional health of operating room professionals.
Obando	Ecuador	2021	Cross-sectional	34 professionals, 13 of whom are nurses	Accidents with sharp objects, at 29.4%, are the most frequent in the operating room, and no regulations have been able to eliminate them in any hospital worldwide. Nurses report the highest proportion of these injuries in the operating room.
Palanyuk	-	2023	Bibliographic Review	26 Articles	According to the author, biological risks can be transmitted in various ways, particularly to surgical nurses.
Rodríguez et al.	-	2023	Bibliographic Review	51 Articles	The authors note that in Latin America, occupational risks primarily affect nursing staff in the healthcare (84.3%) and intervention (15.7%) sectors. These staff members are exposed to physical, biological, chemical, ergonomic, and psychosocial risks.
Guzmán et al.	-	2022	Descriptive Bibliographic Review	36 Articles	Stress levels among operating room nurses are high due to an inadequate work environment and excessive workload.
Fernández	Perú	2023	Quantitative approach, correlational, cross-sectional, non-experimental	110 participants from the surgical center area	In this research, the biological factor accounts for 35.5%, the ergonomic factor is present in 34.5%, the physical factor is identified in 36.4%, chemical risks are present in 83.6% of the cases, and psychosocial risks are present in 25.5%.

Authr(s)	**Country**	**Year of publication**	Study Design	Sample	Results
Moctezuma et al.	México	2023	Quantitative, Descriptive, and Cross-sectional	54 nursing professionals in the surgical section	The level of exposure for staff is high due to a lack of prevention of psychosocial risk factors.
Estrada	Perú	2024	Non-experimental quantitative research	70 professionals	A high level of Burnout syndrome is mentioned, caused by emotional and physical exhaustion due to work activities.
Alvites	Perú	2024	Quantitative correlational approach, non-experimental, cross-sectional design	33 nursing graduates and technicians from the surgical center service	There is also a high level of biological and ergonomic risks, and the stress level of the staff is high, at 21.2%.
Suquilanda	-	2024	Systematic review	37 Articles	Physical risks are manifested through the surrounding environment, such as objects and environmental factors that directly influence the staff.
Valverde	Perú	2022	Simple Descriptive Design	20 nursing professionals from a surgical center	The study shows that biological and chemical risks represent the highest dangers.
Alvitez et al.	Perú	2023	Quantitative descriptive design	15 nursing professionals from a surgical center	This study demonstrated that most professionals face moderate occupational risks, with a minimal percentage facing high risks.
Sigueñas et al.	Perú	2023	Non-experimental quantitative and cross-sectional study.	Healthcare interns	Health interns experience high chemical risks; their limited experience during activities exposes them to these factors, potentially causing occupational accidents.
Vela	Perú	2023	Non-experimental design, quantitative approach, cross-sectional, descriptive-correlational study.	65 nursing graduates	The practice of biosafety is low, as is the prevention of risks, and the study recommends implementing prevention plans to reduce harm to staff.
Damián	Ecuador	2023	Descriptive, quantitative approach, cross-sectional	31 professionals	Research conducted at the Alauís Basic Hospital found that these factors significantly affect health, which led to the design of a prevention plan to enhance safety in the work environment.
Barreto et al.	Perú	2023	Quantitative study with a relational design, observational, prospective, cross-sectional, and analytical.	38 health professionals	The study showed a significant and strong relationship between occupational accidents and the implementation of biosafety measures, noting that healthcare staff will suffer an occupational accident if preventive biosafety measures are not applied.

Authr(s)	**Country**	**Year of publication**	Study Design	Sample	Results
Ramos	Perú	2022	Quantitative, hypothetical-deductive, applied and non-experimental, correlational, cross-sectional	85 nurses working in a hospital	A low level of biosafety measures predominates in 42.4% of the sample, while 37.2% corresponds to a low level of occupational risk.
Aimara et al.	-	2023	Descriptive and exploratory review	42 Articles	Biosafety measures are rules and protocols applied in various procedures in scientific research, to prevent the risk of infections due to exposure to pathogens or other potentially infectious substances.
Zamora	Ecuador	2023	Quantitative, non-experimental, descriptive, and cross-sectional approach	30 Nurses	The data obtained in the study show that 100% of the risk factors influence the development of workplace accidents among nursing staff. Of these, 49.5% relate to risks within the organizational structure, 30.5% to working conditions, and 20% to workplace environmental contaminants, highlighting non-compliance with regulations and protocols.
Negrete	Argentina	2022	Quantitative, hypothetical-deductive, applied and non-experimental, correlational, cross-sectional	85 nurses working in a hospital	A low level of biosafety measures predominates in 42.4% of the sample, while 37.2% corresponds to a low level of occupational risk.
García	Perú	2022	Quantitative and descriptive approach, correlational cross-sectional design	62 Surgical Nurses	According to the general hypothesis, there is a significant relationship between safety management and occupational risks among surgical nurses in a hospital in Lima. This suggests that if effective safety management is maintained, the occupational risk will be lower.

Source: Created by the authors.

In another study, Alvitez and Carrasco found that among 15 nursing professionals in a surgical center, 86.6% faced moderate psychosocial risk due to stress, unfavorable work environments, heavy workloads, and unplanned shifts.[20]

Stress directly impacts both the physical and mental health of healthcare workers, as well as the functioning of the surgical unit.[16] The high stress levels associated with surgical work demand adjustments, leading to status changes among staff members and ultimately creating a tense work environment.[8,12]

It is essential to identify factors such as age, marital status, and affective and social relationships with friends, family, and colleagues, as these elements contribute to elevated stress levels in nursing professionals. Recognizing these factors can help understand the extent of the issue and highlight the need for intervention through motivational activities. These initiatives should promote knowledge exchange to foster a better work environment, where leadership plays a crucial role in stress reduction, as it is a key factor in improving the surgical environment.[12]

Burnout syndrome is a psychological condition characterized by physical and emotional exhaustion, particularly affecting surgical staff who face persistent work pressure. Prolonged exposure to such stress can alter personality and self-esteem. Additionally, burnout syndrome can have serious consequences for healthcare workers' well-being, ultimately impacting the quality of patient care.[16]

In a study by Estrada, a questionnaire administered to 70 nursing professionals revealed a high prevalence of burnout syndrome (42.9%). The participants experienced emotional exhaustion (42.9%), high levels of depersonalization (41.4%), and a high level of diminished personal accomplishment (51.4%).[16]

Physical Risks

In the study conducted by Alvitez and Carrasco, a questionnaire administered to 15 surgical nurses indicated that 73.3% faced moderate physical risks due to insufficient ventilation, excessive noise, ionizing radiation, and improper temperature control.[20] Abnormal temperatures can lead to heat exhaustion, which reduces work efficiency. Additionally, prolonged exposure to cold environments increases the risk of musculoskeletal disorders and, in severe cases, hypothermia.[2,13-15, 17-21]

Similarly, Negrete's study on 20 surgical assistants found that 5 people reported exposure to fluid splashes, 4 identified risk of cuts or needlestick injuries while handling or disposing of sharp instruments, and 4 individuals noted concerns about contracting infectious diseases.

These hazards were ranked in order of importance.[24]

Biosafety Measures

Biosafety measures play a critical role in fostering safe attitudes and behaviors that help reduce risks associated with daily healthcare activities.[21] Strict compliance with protocols, procedures, and the effective use of protective equipment and materials is essential. Ensuring biosafety in the operating room cannot be an individual or spontaneous effort; on the contrary, it requires a structured safety organization that assesses risks, monitors adherence to guidelines, and implements preventive strategies based on the recommendations of safety committees, thus ensuring workplace safety and reducing occupational hazards.[11, 26]

Principles of Biosafety

Universality: The primary objective of biosafety is to prevent the onset of diseases or occupational accidents. Hand hygiene is the first and most essential rule for preventing the spread of pathogens, serving as the most effective protection method.[10-11, 22, 26]

Use of Barriers: The second principle focuses on preventing direct exposure or contact with pathogens. This involves using personal protective equipment (PPE) such as caps, long-sleeved gowns, gloves, N95 masks, boots, and protective goggles. These barriers prevent contamination, reduce microbial presence, and minimize the risk of diseases resulting from exposure to contaminated agents.[10, 21-22]

Disposal of Contaminated Materials: The third principle aims to prevent contact with biological samples and hazardous waste generated during patient care and hospital procedures. These materials must be disposed of following institutional protocols to protect all healthcare staff working in medical facilities.[9-10, 21-22]

DISCUSSION

The review shows that biological risk is one of the most concerning factors. Several studies indicate that up to 75% of surgical staff fail to use PPE properly, thereby increasing their vulnerability to serious infections, such as HIV and hepatitis B and C.[7] All of the studies analyzed revealed that staff had experienced some form of exposure to bodily fluids in recent years. This underscores the urgency of establishing biosafety protocols and providing ongoing training on their proper application.[2]

Ergonomic risks are also highlighted among the articles in this review, with surgical nurses reporting pain in the lumbar region, shoulders, and neck, which may lead to chronic injuries and workplace absences.[3] One specific study found that extended working hours without adequate rest were a key factor in developing these ailments.[4] Furthermore, using heavy surgical instruments without proper ergonomic support may further increase the risk of injury. However, the authors suggest that workplace ergonomics programs, which include training on proper lifting techniques and scheduled breaks, have proven effective in reducing musculoskeletal pain.[5] A program incorporating regular breaks resulted in a 30% decrease in reports of pain among staff. This highlights the importance of addressing ergonomic risks in the design of the surgical environment to protect the health of workers.[6]

Chemical risks are less documented than other types of risks, although some studies indicate that staff may experience skin irritation and respiratory issues due to exposure to chemical vapors. Workers report symptoms of eye and respiratory irritation, impacting their ability to perform tasks efficiently. It is crucial to implement appropriate protocols for handling these substances, train staff on their safe use, and ensure adequate ventilation.[12-13]

Psychosocial risks, including stress and burnout syndrome, are significant concerns among surgical nursing staff. Several studies show high levels of stress, exacerbated by excessive workloads, time pressure, and a lack of emotional support.[14] Nurses exhibited signs of burnout, affecting not only their mental health but also the quality of patient care and the work environment.[15] Additionally, authors such as Alvites have observed that the lack of communication and support from superiors contributes to increased stress and burnout levels among staff.[16] In this context, it is essential for hospitals to implement psychological support programs and stress management resources, promoting a healthier and more sustainable work environment. Creating spaces for open communication and fostering empathetic leadership can be key steps in addressing these issues.

Research has also shown that stress not only affects mental health but is associated with an increase in medical errors, thereby jeopardizing patient safety.[16] Therefore, hospitals need to implement stress management programs, which should include training in time management skills and the creation of spaces for communication and emotional support among staff.[18, 20-21]

Different authors indicate that burnout is also linked to physical effects, such as headaches and digestive issues.[25] When comparing burnout to other psychosocial risk factors, it becomes evident that it is not merely an individual issue but impacts the entire work team.[24] Therefore, it is crucial for

healthcare institutions to implement policies that promote staff well-being, such as detection and psychological support programs, to combat emotional exhaustion and foster a culture of care within the healthcare team.

CONCLUSIONS

A high prevalence of biological, ergonomic, and psychosocial risks was observed among the different studies in this review. These risks stem from the nature of the work healthcare staff undertakes. Constant contact with bodily fluids and the handling of chemical substances expose staff to infectious diseases and other health hazards. Additionally, the physical demands associated with maintaining uncomfortable postures for extended periods and the emotional stress generated by the pressure in surgical settings contribute to increased vulnerability. These findings highlight the urgent need for occupational health interventions that effectively protect surgical nursing staff.

Implementing biosafety measures and promoting safer working conditions are crucial to mitigate the risks faced by surgical nurses. Although some studies emphasize the provision of personal protective equipment and the adoption of safety protocols, exposure levels to biological, ergonomic, and psychosocial risks remain high. Strict adherence to biosafety regulations, alongside continuous education on proper material and stress management, can substantially improve safety in the surgical environment. Healthcare institutions need to promote a culture of prevention, and training programs for techniques such as relaxation and coping skills can be crucial in enhancing staff well-being.

The studies included in this review emphasize that inadequate attention to the working conditions of surgical nurses can have serious consequences for both their physical and mental health. High exposure to risky situations can lead to the development of chronic health issues and emotional conditions such as burnout syndrome. This underscores the importance of organizational intervention in fostering a safe, healthy, and low-stress work environment. Biosafety policies and procedures, combined with training and psychological support for staff, are key tools to ensure optimal performance and protect the integrity of surgical nursing staff.

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KPP: Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Project Administration, Resources, Software, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing.
TCC: Conceptualization, Formal Analysis, Investigation, Methodology, Project Administration, Resources, Supervision, Validation, Visualization, Writing – Original Draft Preparation, Writing – Review & Editing.

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