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Stress level and associated factors among intensive care unit nursing staff during long shifts: a systematic review

Nivel de estrés y factores asociados en el personal de enfermería de unidades de cuidados intensivos durante turnos prolongados: una revisión sistemática

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Abstract

The present study aimed to analyze the stress level and associated factors among nurses working in intensive care units (ICUs) during long shifts. Twenty-one scientific articles were included, which allowed us to identify the main causes of occupational stress in this context, such as work overload, constant supervision, administrative tasks, clinical uncertainty, and limited institutional training. These factors negatively affect the physical and emotional health of staff, manifesting in symptoms such as headaches, hair loss, muscle fatigue, anxiety, and alterations in interpersonal relationships. Furthermore, a high prevalence of burnout syndrome was observed, reflecting a progressive deterioration of professional well-being. The results were consistent across diverse institutional contexts, with no significant differences based on age, gender, or hospital type. In conclusion, the stress experienced by nurses in ICUs constitutes a structural phenomenon that requires urgent attention through the implementation of preventive and organizational strategies that promote improved working conditions and staff well-being.

Keywords: occupational stress, nursing, intensive care.

Resumen

El presente estudio tuvo como objetivo analizar el nivel de estrés y los factores asociados en enfermeros que laboran en unidades de cuidados intensivos (UCI) durante turnos prolongados. Se incluyeron 21 artículos científicos que permitieron identificar las principales causas de estrés laboral en este contexto, tales como la sobrecarga de trabajo, la supervisión constante, las tareas administrativas, la incertidumbre clínica y la limitada capacitación institucional. Estos factores afectan negativamente la salud física y emocional del personal,

manifestándose en síntomas como dolores de cabeza, caída del cabello, fatiga muscular, ansiedad y alteraciones en las relaciones interpersonales. Además, se observó una prevalencia elevada del síndrome de Burnout, reflejo de un deterioro progresivo del bienestar profesional. Los resultados fueron consistentes a lo largo de diversos contextos institucionales, sin diferencias significativas según edad, género o tipo de hospital. En conclusión, el estrés experimentado por los enfermeros en las UCI constituye un fenómeno estructural que requiere atención urgente mediante la implementación de estrategias preventivas y organizativas que promuevan la mejora de las condiciones laborales y el bienestar del personal.

Palabras clave: estrés laboral, enfermería, cuidados intensivos.

Introduction

Work-related stress represents one of the primary challenges faced by nurses working in healthcare institutions, as their environment is characterized by high physical and emotional demands. In particular, nurses in intensive care units (ICUs) play a crucial role, as they are at the forefront of caring for critically ill patients, exposing them to multiple stressors. Long working hours are a constant in these units, where patient needs change continuously, requiring prolonged vigilance from healthcare staff. This dynamic significantly increases the risk of developing stress-related disorders, such as Burnout Syndrome and compassion fatigue (De Souza-Veloso et al., 2024).

Burnout Syndrome manifests through emotional exhaustion, depersonalization, and a sense of low personal accomplishment, directly impacting nurses' ability to provide quality care (De Souza-Veloso et al., 2024; Herrera-Jiménez et al., 2024). Conversely, compassion fatigue arises from continuous exposure to patient suffering, leading to feelings of frustration, helplessness, and emotional disconnection (Franco Coffré et al., 2024). Additionally, many nurses face organizational barriers that amplify these levels of stress (Salazar et al., 2024).

It is important to highlight that the impact of stress is not homogeneous. Various studies have demonstrated that work overload particularly affects those working night shifts, where demands are greater and opportunities for rest are limited. This group exhibits higher rates of physical and emotional exhaustion, increasing the risk of errors and decreasing the quality of care (Espinel García et al., 2022; Álvarez et al., 2017).

The effects of work-related stress transcend the professional sphere, also affecting the personal and social lives of nurses. Long hours and adverse working conditions can lead to family conflicts, mental health issues such as anxiety and depression, and even motivate some professionals to leave the profession (Calderón & Rivas, 2021). Therefore, it is essential to have reliable methods for measuring the level and type of stress in this personnel, such as the Maslach Burnout Inventory (MBI), which evaluates emotional exhaustion, depersonalization, and professional achievement (De Souza-Veloso et al., 2024).

Moreover, there are other tools to measure stress in nursing, such as the Nursing Stress Scale (NSS) (Belizario, 2021) and the Nursing Activities Score (NAS), which calculates workload based on time spent providing care (Cruz López et al., 2023). Generally, these instruments use the Likert scale to collect responses that help diagnose the situation of the personnel (Cortez-González et al., 2022). To analyze the relationship between variables such as work factors and stress levels, the Chi-Squared hypothesis test is employed (Calderón & Rivas, 2021).

Given this context, the primary objective of the present study is to analyze the impact of work-related stress on intensive care nurses during prolonged shifts and how this affects their lifestyle.

Methodology

The study was conducted through a descriptive systematic review with a mixed approach, focusing on analyzing studies regarding stress levels and associated factors among nurses working in intensive care units (ICUs) during prolonged shifts. To ensure methodological rigor, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol guidelines were followed, allowing for the structured identification, evaluation, and synthesis of the most relevant and recent studies available on this topic.

Search strategy

The bibliographic search was performed in three high-impact scientific databases: ScienceDirect, Wiley Online Library, and PubMed. Descriptors in both Spanish and English were combined, employing Boolean operators to optimize the precision of the results. The key terms included were “work-related stress,” “nurses,” “critical care,” “long shifts,” and “intensive care units.” The search was limited to studies published between 2020 and 2025, available in open access, and in either Spanish or English. This strategy allowed for the retrieval of the

most current and pertinent documents to understand the impact of stress on nursing personnel working in critical care environments (see Table 1).

Table 1
Pala Keywords for article search in databases

Database	Search strategy	Results obtained
ScienceDirect	"work-related stress" AND "nurses" AND "intensive care units" AND "long shifts"	85 articles
Wiley Online	"work-related stress" AND "nurses" AND "intensive care units" AND "long shifts"	70 articles
PubMed	"work-related stress" AND "nurses" AND "intensive care units" AND "long shifts"	65 articles

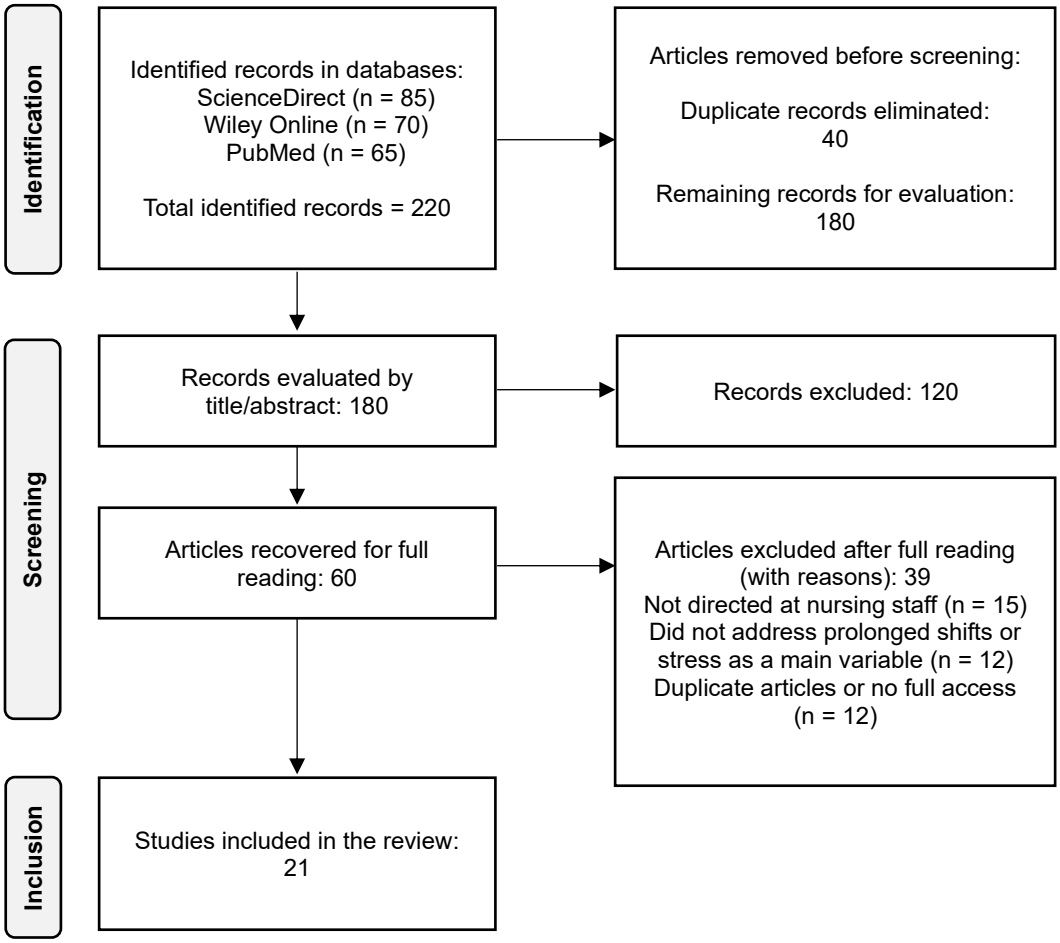
Inclusion and exclusion criteria

Studies addressing work-related stress and its associated factors among nurses in intensive care units (ICUs) were included, providing relevant empirical evidence. Conversely, duplicated articles, those not focused on nurses, those directed at other healthcare professions or non-hospital settings, and those not considering prolonged shifts as a primary outcome were excluded.

Selection process

Initially, 220 records were identified. After removing 40 duplicates, 180 titles and abstracts were evaluated, of which 120 were discarded for not meeting the inclusion criteria. Sixty full texts were retrieved for detailed review, from which 39 articles were excluded for various reasons: 15 were not directly relevant to nursing staff, 12 did not focus on stress or prolonged shifts, and 12 had incomplete access or were duplicates. Ultimately, 21 studies were included for integration into the review.

Figure 1
PRISMA flow diagram



Analysis of studies

Following the selection of articles, a detailed analysis of their data was conducted to identify both common factors and relevant differences. The results were organized into two main themes: first, the impact of work-related stress on nurses' performance; and second, the factors that exacerbate this stress, including working conditions and resource shortages.

This approach allowed for a deeper understanding of the issue, ensuring that the findings accurately reflect the reality faced by nurses in intensive care units.

Results and discussion

Table 2 presents the results extracted from eight selected articles out of a total of 21 studies included in this review. These eight studies were specifically chosen for the quantitative analysis of percentages related to stress factors, as they provided comparable numerical data. However, the general analysis considered the findings from all 21 articles. The table highlights the impact of stress on nursing performance, as well as the aggravating factors, including work overload, emotional exhaustion, and organizational conditions. These results reflect the complexity and intensity of the stress faced by nurses in intensive care units, underscoring the importance of addressing these factors to improve care quality and the well-being of staff.

Table 2
Percentages of stress factors in intensive care nurses during prolonged shifts

No.	Reference	Factors
1	Cáceres Rivera et al. (2021)	Interviewed 71 ICU nurses with an average age of 33 years, predominantly female. Results revealed that 56.34% had moderate levels of Burnout Syndrome, and 49.30% reported moderate levels of compassion fatigue, leading to stress, sadness, frustration, and emotional pain.
2	De Souza Veloso et al. (2024)	Interviewed 94 ICU nurses, mostly over 38 years old, with 78.70% being female. The Maslach Burnout Inventory (MBI) showed that 62.80% experienced high levels of emotional exhaustion, while 64.90% exhibited elevated depersonalization. Additionally, 77.70% felt a significant reduction in their professional development.
3	Espinel García et al. (2022)	Surveyed 70 ICU nurses, with an average age of 35.70 years, predominantly female. Results indicated that 92% perceived a high workload, and 50% reported spending 25% of their total time on administrative tasks. The authors concluded that there is a work overload, especially during night shifts.
4	Calderón & Rivas (2021)	Surveyed 70 surgical nurses with an average age of 45 years. Data showed that 74.30% experienced excessive supervision in their assigned tasks.
5	Belizario (2021)	Surveyed 45 nurses in the hospitalization area, with an average age of 42 years. Regarding stressors, 28.90% cited lack of institutional support as a trigger, while 24.40% identified uncertainty regarding treatments as a prominent factor.
6	Quintana-Atencio & Tarqui-Mamani (2020)	Interviewed 208 hired and contracted nursing staff in a national hospital, with an average age of 42.70 years, and 92.30% female. Findings showed that 70.20% did not receive training from the institution, and 37.00% reported constant work pressure from nursing leadership.
7	Cortez-González et al. (2022)	Surveyed 115 nurses with more than two years of work experience. Results indicated that 18.30% had moderate levels of stress, regardless of gender. The authors emphasized that poor work organization is a triggering factor for stress, mainly among nursing staff.
8	Cruz López et al. (2023)	Of a total of 320 documents collected and organized in a matrix created in Google Spreadsheets, only 87 were considered for the final sample. Results indicate that in ICUs, the workload exceeds 50%.

Source. Compiled by the authors based on multiple selected studies for this research

The quantitative results presented in Table 2 demonstrate that work-related stress among intensive care nursing professionals during prolonged shifts is an alarming phenomenon, with significant physical, emotional, and organizational consequences. Cáceres Rivera et al. (2021) highlight that over 56% of evaluated nurses exhibited moderate levels of Burnout Syndrome, while nearly 50% reported symptoms of compassion fatigue. De Souza Veloso et al. (2024) complement these findings by noting that 62.80% of assessed staff experienced emotional

exhaustion, and over 60% showed signs of depersonalization. Additionally, Espinel García et al. (2022) indicate that 92% perceived a high workload, with 50% identifying administrative tasks as an additional stress factor.

On the other hand, Calderón and Rivas (2021) reported that excessive supervision significantly contributes to stress, while Belizario (2021) identified disrespectful treatment and lack of institutional support as triggers in 42.44% of cases. Quintana-Atencio and Jague-Manani (2020) added that over 70% of staff do not receive adequate training, increasing work pressure. Furthermore, Cortez-González et al. (2022) observed that stress occurs regardless of gender, while Cruz López et al. (2023) reported that 50% of ICU personnel suffer from work overload, confirming the high prevalence of this issue.

Table 3

Descriptive findings on work-related stress in intensive care nurses during prolonged shifts

No.	Reference	Relevant descriptive findings
9	Vásquez & González (2020)	Work-related stress generates overload, physical and emotional exhaustion, job dissatisfaction, hair loss, headaches, anxiety, and muscle tension, negatively affecting the organizational climate.
10	De Souza-Veloso et al. (2024)	Having children can act as a protective factor against stress, while anxiety, back pain, and sleep disorders contribute to its exacerbation.
11	Reyes-Guevara (2022)	During the pandemic, ICU nurses faced elevated stress levels due to workload overload, inadequate conditions, and fear of contagion, impacting their physical and mental health.
12	Salazar et al. (2024)	Insufficient resources in ICUs and the high complexity of patients increase staff stress, diminish their well-being, and affect the quality of care provided.
13	Franco-Coffré et al. (2024)	Adverse working conditions and constant exposure to stress are predictors of compassion fatigue, highlighting the need for supportive organizational policies.
14	Comezaquira-Reay et al. (2021)	Poor equipment and delays in medication administration increase the physical effort required and negatively affect professional performance.
15	Acosta-Romo & Maya-Pantoja (2020)	An average score of 68 on the NAS scale reflects high levels of work overload, necessitating planning that aligns with patient complexity and volume.
16	Del Valle-Solórzano (2021)	Pressure from time constraints and reduced staff during rotating shifts negatively impacts care quality and elevates nursing team stress.
17	López et al. (2023)	50% of ICU staff experience a high workload linked to both the clinical complexity of patients and institutional conditions.
18	das Neves Borges et al. (2021)	42% of nurses present moderate to high levels of Burnout, with significant differences in depersonalization based on the country of origin.
19	Rendón Montoya et al. (2020)	Consecutive shifts and excessive workloads lead to emotional exhaustion and depersonalization, compromising the quality of care provided.
20	Chireh et al. (2025)	Stress is associated with the deterioration of the mental health of staff, indicating the need for interventions at both individual and institutional levels to improve service quality.

21	Felicity et al. (2025)	The implementation of occupational health policies and protocols with legal standing is recommended to reduce work pressure and protect the health of nursing staff.

Source. Compiled by the authors based on multiple selected studies for this research

The descriptive results from the 13 studies included in Table 3 demonstrate that work-related stress in intensive care nurses during prolonged shifts is a persistent and multifactorial issue. Vásquez and González (2020) describe physical symptoms associated with emotional exhaustion, such as headaches, hair loss, and muscle tension. De Souza-Veloso et al. (2024) and Reyes-Guevara (2022) emphasize that personal factors, such as motherhood, and exceptional circumstances, like the pandemic, intensify this emotional burden.

Moreover, Salazar et al. (2024) link stress to a lack of resources, while Franco-Coffré et al. (2024) associate it with compassion fatigue. Regarding planning and staffing, Comezaquira-Reay et al. (2021) and Acosta-Romo and Maya-Pantoja (2020) highlight the negative impact of poor organization and insufficient equipment. Del Valle-Solórzano (2021) points out that time pressure and staff shortages further exacerbate work-related stress.

Additionally, López et al. (2023) and das Neves Borges et al. (2021) report high levels of professional burnout in intensive care units. Rendón Montoya et al. (2020) associate consecutive shifts with the emergence of depersonalization, while Chireh et al. (2025) suggest the need for institutional-level interventions to address this issue. Lastly, Felicity et al. (2025) recommend implementing legally binding occupational health policies that reduce work overload and safeguard the well-being of nursing staff.

Conclusions

Based on the information collected in this literature review, it is concluded that nursing staff in intensive care units (ICUs) are constantly exposed to various stressors. Among the most frequent are work overload, excessive supervision, administrative tasks, and uncertainty or lack of institutional support in training and guidance for staff. The combination of these factors can progressively compromise the physical and emotional health of nurses, manifesting in symptoms such as hair loss, interpersonal conflicts, headaches, anxiety, and muscle pain.

In this sense, the literature review provided a detailed compilation that allowed for an understanding of the impact of work-related stress on nursing personnel, which was the primary objective of the research. Thus, it is concluded that nursing staff are exposed to stressors that can deteriorate their health over time, regardless of variables such as country, type of institution, age, sex, or other physical or psychological characteristics.

Finally, it is recommended that future research delve deeper into analyzing policies and practical strategies aimed at reducing stress in healthcare institutions, both public and private. Special emphasis should be placed on caring for intensive care nursing staff, as they represent the first line of defense in protecting the health of the most vulnerable patients within healthcare facilities.

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