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Safety Culture in the ICU: diagnosis of structural and behavioral failures in multidisciplinary care

Cultura de segurança em UTI: diagnóstico de falhas estruturais e comportamentais na assistência multiprofissional

Cultura de Seguridad en la UCI: diagnóstico de fallas estructurales y conductuais en la asistencia multiprofesional

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ABSTRACT

Objective: To analyze the challenges and barriers that permeate the implementation of patient safety practices in the context of the Intensive Care Unit (ICU), from the perspective of management and multidisciplinary care. Methodology: This is an integrative literature review structured in six stages. The search was conducted in the LILACS, BDENF, and SciELO databases, using inclusion criteria for primary studies published between 2020 and 2025, in Portuguese, English, and Spanish. The selection process followed the recommendations of the PRISMA method, resulting in a final sample of 11 articles for review. Results: The analysis revealed an exponential growth in recent publications, with a productive peak in the 2023-2024 biennium (54.54% of the sample). Descriptive and cross-sectional studies predominated (54.54%) focused on diagnosing adherence to protocols. The main findings highlighted failures in the compliance of catheter maintenance bundles (63.95% adherence), serious deficiencies in hand hygiene, and heterogeneity in the application of safety protocols, such as those for sepsis and fall prevention. Human factors, such as failures in interprofessional communication and inadequate staffing levels, were identified as critical barriers. Final considerations: safety in the ICU depends on an integrated network between technical rigor, infrastructure, and human factors. The nurse plays a central leadership role in risk management. Improving care required a transition to a non-punitive safety culture and constant investments in continuing education to align theory with clinical practice.

Keywords: Intensive Care Units; Patient Safety; Risk Factors.

RESUMO

Objetivo: analisar os desafios e as barreiras que permeiam a implementação das práticas de segurança do paciente no contexto da Unidade de Terapia Intensiva (UTI), sob a perspectiva da gestão e da assistência multiprofissional. Metodologia: trata-se de uma revisão integrativa da literatura estruturada em seis etapas. A busca foi realizada nas bases de dados LILACS, BDENF e SciELO, utilizando critérios de inclusão para estudos primários publicados entre 2020 e 2025, nos idiomas português, inglês e espanhol. O processo de seleção seguiu as recomendações do método PRISMA, resultando em uma amostra final de 11 artigos para revisão. Resultados: a análise revelou um crescimento exponencial de publicações recentes, com pico produtivo no biênio 2023-2024 (54,54% da amostra). Predominaram estudos descritivos e transversais (54,54%) voltados ao diagnóstico de adesão a protocolos. Os principais achados evidenciaram falhas na conformidade de bundles de manutenção de cateteres (63,95% de adesão), deficiências graves na higienização das mãos e heterogeneidade na aplicação de protocolos de segurança, como os de sepse e prevenção de quedas. Fatores humanos, como falhas na comunicação interprofissional e dimensionamento inadequado de pessoal, foram identificados como barreiras críticas. Considerações finais: a segurança em UTI depende de uma rede integrada entre rigor técnico, infraestrutura e fatores humanos. O enfermeiro desempenha papel de liderança central na gestão de riscos. A melhoria da assistência exigiu a transição para uma cultura de segurança não punitiva e investimentos constantes em educação permanente para alinhar a teoria à prática assistencial.

Palavras-chave: Unidades de Terapia Intensiva; Segurança do Paciente; Fatores de risco.

RESUMEN

Objetivo: analizar los desafíos y las barreras que permean la implementación de las prácticas de seguridad del paciente en el contexto de la Unidad de Cuidados Intensivos (UCI), bajo la perspectiva de la gestión y de la asistencia multiprofesional.Metodología: se trata de una revisión integradora de la literatura estructurada en seis etapas. La búsqueda se realizó en las bases de datos LILACS, BDENF y SciELO, utilizando criterios de inclusión para estudios primarios publicados entre 2020 y 2025, en los idiomas portugués, inglés y español. El proceso de selección siguió

las recomendaciones del método PRISMA, resultando en una muestra final de 11 artículos para la revisión.Resultados: el análisis reveló un crecimiento exponencial de publicaciones recientes, con un pico productivo en el bienio 2023-2024 (54,54% de la muestra). Predominaron los estudios descriptivos y transversales (54,54%) orientados al diagnóstico de la adhesión a los protocolos. Los principales hallazgos evidenciaron fallas en la conformidad de los bundles de mantenimiento de catéteres (63,95% de adhesión), deficiencias graves en la higiene de las manos y heterogeneidad en la aplicación de protocolos de seguridad, como los de sepsis y prevención de caídas. Los factores humanos, como las fallas en la comunicación interprofesional y el dimensionamiento inadecuado del personal, fueron identificados como barreras críticas.Consideraciones finales: la seguridad en la UCI depende de una red integrada entre el rigor técnico, la infraestructura y los factores humanos. El enfermero desempeña un papel de liderazgo central en la gestión de riesgos. La mejora de la asistencia exigió la transición hacia una cultura de seguridad no punitiva e inversiones constantes en educación permanente para alinear la teoría con la práctica asistencial.

Palabras clave: Unidades de Cuidados Intensivos; Seguridad del Paciente; Factores de riesgo.

1. INTRODUCTION

The Intensive Care Unit (ICU) is configured as a high-density technological hospital microsystem, designed for the life support of critically ill patients in a state of hemodynamic instability and extreme biological vulnerability. Paradoxically, the intrinsic complexity of this scenario, characterized by immediate invasive interventions and uninterrupted surveillance, exponentially increases the risk of incidents. From this perspective, Patient Safety, defined by the World Health Organization (WHO) as the mitigation of unnecessary harm associated with care at the minimum acceptable level, establishes itself as the fundamental paradigm for excellence in intensive care (Silva *et al*., 2023; WHO, 2023).

The reality of ICUs is permeated by a latent iatrogenic susceptibility. Clinical severity, associated with polypharmacy and the management of invasive devices, such as ventilatory support and central catheterizations, predisposes to the occurrence of Adverse Events (AEs). These events, which include Healthcare-Associated Infections (HAIs), pressure injuries, and medication errors, not only delay clinical recovery but also exacerbate morbidity and mortality rates and institutional costs (Assis *et al*., 2021; David *et al*., 2022).

As predicted by Lima Júnior *et al* . (2023), global estimates in high-income nations indicate that approximately 10% of hospitalized patients are victims of healthcare incidents, a proportion that is exacerbated in ICUs due to the high technological density and therapeutic complexity. In the Brazilian epidemiological context, data from the National Health Surveillance Notification System (NOTIVISA/Anvisa) confirm this upward trend, showing that ICUs remain high-risk microsystems, leading in notifications of serious adverse events and preventable deaths (Silva *et al*., 2023).

These indicators primarily reflect systemic vulnerabilities inherent in work processes. The disarticulation of systematized care and the fragmentation of care precipitate deficits in interprofessional communication, constituting determining factors for the occurrence of human error. Additionally, there is a

persistent gap in the implementation of continuing education strategies; in the absence of training based on Evidence-Based Practice (EBP), safety protocols become obsolete. This scenario distances the clinical staff from the International Patient Safety Goals and consolidates a reactive organizational culture, to the detriment of a proactive and preventive approach (Maxim *et al*., 2021; Ducatti, 2022).

Alongside behavioral factors, patient safety is frequently overshadowed by macrostructural determinants. The scarcity of basic supplies, inadequate staffing levels, and limitations in the physical infrastructure of healthcare units impose severe barriers to safe care practices. These deficiencies, when associated with hospital management models primarily oriented towards quantitative productivity, create an environment of high cognitive overload and occupational stress. In these scenarios, adherence to standardized protocols is superseded by the need for informal adaptations and makeshift solutions, popularly known as "quick fixes," which increase the likelihood of active errors (Ferreira; Gomes 2024).

From this perspective, Bispo *et al.* (2023) emphasize that nursing is emerging as a protagonist in the surveillance and mitigation of iatrogenic risks. Due to their continuous presence at the bedside, being the only professional category with uninterrupted 24-hour service, nurses and their teams constitute the last line of defense in intercepting incidents. For these authors, the implementation of the Nursing Process (NP), combined with continuous clinical monitoring, enables the early detection of signs of deterioration and the blocking of latent failures before they affect the patient, consolidating safety as an ontological pillar of care practice.

However, for this performance to reach its peak of effectiveness, it is imperative that Nursing assume strategic leadership in risk management and in the operationalization of verification tools, such as *checklists* and patient safety protocols. The essential nature of the profession transcends purely technical expertise; it resides in the competence to articulate and manage care among the different actors of the multidisciplinary team. According to Silva and Diaz (2024), this coordination is vital to ensure that continuity of care occurs free from informational gaps or disruptions in flow that could compromise the integrity of the individual under their care. (Silva; Diaz, 2024).

Given this complex and multifactorial scenario, the following question arises: what are the main challenges faced by healthcare professionals in promoting patient safety in Intensive Care Units? The objective of this study is: to analyze the challenges and barriers surrounding the implementation of patient safety practices in the context of the Intensive Care Unit (ICU), from the perspective of management and multidisciplinary care.

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2. METHODOLOGY

This research is characterized as an Integrative Literature Review, a method that allows for the search, critical evaluation, and synthesis of available evidence on the topic. To ensure the rigor and replicability of the study, the methodology was structured in six distinct stages: 1) development of the guiding question; 2) search and selection of studies; 3) data extraction; 4) critical evaluation of the included studies; 5) synthesis of results; and 6) presentation of the review (Mendes; Silveira; Galvão, 2019).

To guide the search, the following guiding question was formulated: "What is the scientific evidence regarding the challenges and barriers that permeate the implementation of patient safety practices in the context of intensive care?". The question was developed using the acronym PICo: where P (Problem): Patient Safety; I (Interest): Nursing Care; Co (Context): Intensive Care Unit.

The Health Sciences Descriptors (DeCS) and their alternative terms, as well as the MeSH descriptors (*Medical Subject (Headings)* . These were selected to ensure search accuracy, as detailed in Table 01 below.

Table 01: Presentation of the descriptors and alternative terms of DeCS. Teresina, PI – 2026.

PICo Strategy	DeCS	Alternative terms
P	Patient Safety	Patient Safety Culture
I	Nursing Care	Nursing care; Nursing Care; Nursing Management; Nursing Care Management; Systematization of Nursing Care
Co	Intensive Care Units	Intensive Care Unit; Intensive Care Centers; Adult Intensive Care Unit; Type II Intensive Care Unit; Specialized Intensive Care Unit

Source: Health Sciences Descriptors, 2026.

The search was conducted in the following databases: LILACS, BDENF, via BVS and SciELO. The inclusion criteria comprised primary studies published between 2020 and 2025 (to ensure the timeliness of the data), in Portuguese, English, and Spanish. Review articles, theses, dissertations, experience reports, and informative government documents were excluded.

In order to ensure interoperability between the conceptual axes and terms extracted from the DeCS and MeSH platforms, customized search strategies were structured for the selected databases. To this end, the strategic use of the Boolean operators AND (intersection of subjects) and OR (sum of synonyms) was

employed, allowing for an exhaustive and, at the same time, refined retrieval of scientific evidence relevant to the object of study. This combination aimed to maximize the sensitivity of the search to capture the largest possible number of relevant studies on the challenges of security in critical environments, as detailed in Table 2.

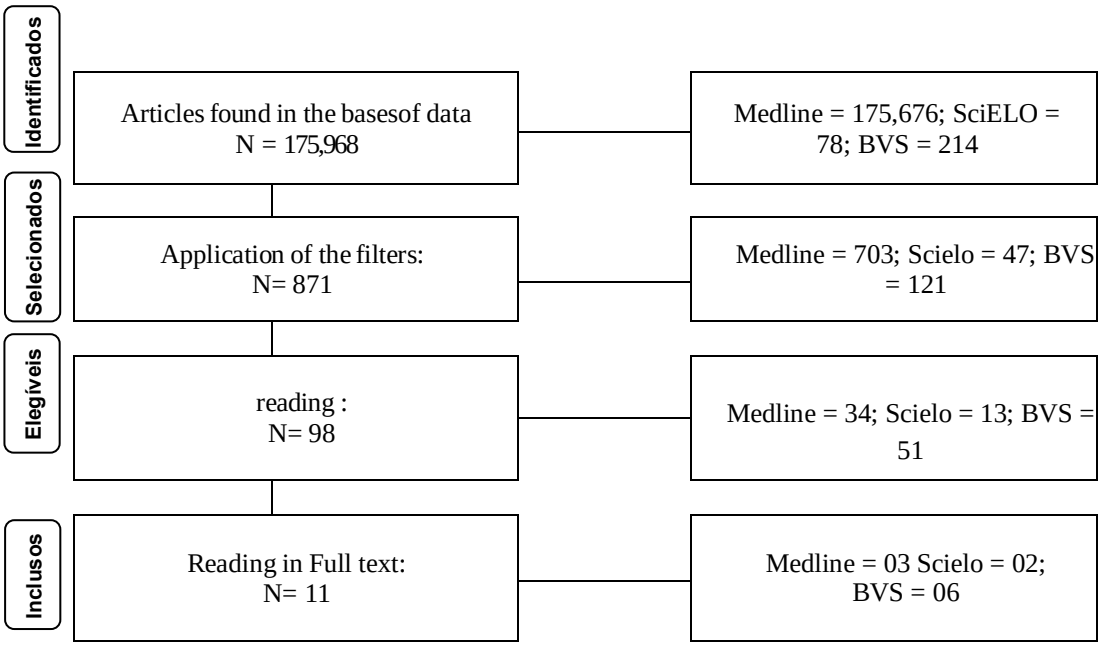
Table 2 - Strategies of search maids in the bases of data.

Database	Strategies of search used
Lilacs, Bdenf and Ibecs (via BVS)	("Patient Safety" OR "Patient Safety Culture") AND ("Nursing Care" OR "Nursing Assistance" OR "Nursing Care" OR "Nursing Management" OR "Systematization of Nursing Care") AND ("Intensive Care Units" OR "Intensive Therapy Center" OR "Adult Intensive Care Unit")
SciELO	("Patient Safety") AND ("Nursing") AND ("Intensive Care Unit" OR "ICU")
Medline (via PubMed	(((((((*patient safety* [MeSH Terms]) OR (*Patient Safety Culture* [MeSH Terms])) AND (*Nursing Care* [MeSH Terms])) OR (*Nursing Process* [MeSH Terms])) OR (*Nursing Administration Research* [MeSH Terms])) AND (*Intensive Care Units* [MeSH Terms])) OR (*ICU* [MeSH Terms])) OR (*care, intensive* [MeSH Terms])) OR (*critical care* [MeSH Terms]))

Source: authors, 2026.

The selection process will follow the recommendations of the PRISMA method (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*), using a flowchart to describe the identification, screening, eligibility, and inclusion of studies (Page *et al* ., 2022; Tricco *et al* ., 2018). The initial screening by title and abstract will be carried out independently by two reviewers using the Rayyan platform , aiming to minimize selection bias. After full reading, the selected articles will have their methodological quality assessed using the CASP (*Critical Advice Processing)* tool. *(Appraisal Skills Programme*). The extracted data will be organized into a synthesis matrix containing: authorship, year, country, objective, study design, and main barriers identified (Escaldelai). *et al* ., 2023).

Figure 1. Flowchart of selection of the studies primary, of agreement with the recommendation PRISM. Teresina, PI – 2026.



Source : authors, 2026.

3. RESULTS AND DISCUSSIONS

As illustrated in the selection flowchart (Figure 1), the initial search in the databases resulted in a significant amount of 175,968 identified records. The sample distribution was concentrated mainly in the Medline database (n = 175,676; 99.83%), followed by BVS (n = 214; 0.12%) and SciELO (n = 78; 0.05%). After applying the initial inclusion and exclusion filters, a drastic reduction of 99.5% of the initial volume was observed, leaving 871 articles selected for the screening phase.

Subsequently, the preliminary reading of titles and abstracts refined the sample to 98 eligible studies, representing a retention rate of 11.25% compared to the filtering stage. These manuscripts were then submitted for full-text reading, at which point they were rigorously compared against the eligibility criteria and the guiding question.

Finally, 87 articles were excluded for not meeting the qualitative or thematic requirements, consolidating the final sample into 11 articles included in this review (approx. 11.22% of the texts read in full). The final synthesis includes studies from BVS (n = 6), Medline (n = 3), and SciELO (n = 2).

The analysis of the 11 selected studies reveals a chronological distribution with exponential growth in recent scientific production on patient safety in critical settings. Between 2019 and 2024, the highest

peak in production is concentrated in the 2023-2024 biennium, accumulating 54.54% (n=6) of the total publications analyzed. The year 2019 has a relative frequency of 9.09% (n=1), while the years 2020 and 2021 each account for 18.18% (n=2) of the total sample. This temporal trend suggests a maturation of discussions regarding risk management and the implementation of care protocols, especially driven by the national safety guidelines established in the last decade.

Regarding geographic scope, scientific production shows a strong concentration in the national context, totaling 90.9% (n=10) of studies developed in Brazilian institutions or by national researchers. In contrast, only 9.09% (n=1) of the sample presents an international or multicentric character involving other South American countries. In the regional analysis of national studies, the Southeast region leads in productivity with 50% (n=5) of the research, followed by the South region with 30% (n=3). The North and Northeast regions contribute 10% (n=1) each, highlighting an inequality in the geographic distribution of scientific production, with a higher density in teaching hospital centers and centers of excellence located in the South-Southeast axis.

The methodological profile of the sample reveals a predominance of studies with a descriptive and cross-sectional design, which comprise 54.54% (n=6) of the research, highlighting the academic interest in diagnosing adherence to protocols and the incidence of adverse events in daily care.

Regarding publication venues, a concentration in high-impact nursing journals is identified. The journals Revista Brasileira de Enfermagem (REBEn) and Cuid'Arte Enfermagem show the highest recurrence, together concentrating 36.36% (n=4) of the publications in the sample. Other journals such as *Revista da Escola de Enfermagem da USP* , *Revista Enfermagem Atual In Derme* , and *Health & Society* also stand out as channels for disseminating scientific production on patient safety. The presence of a master's thesis from the Federal University of Paraná (UFPR) reinforces the role of academia in generating primary data on the nurse's performance in risk management.

To ensure the transparency and methodological rigor of this review, the selected articles were analyzed and organized into a synthesis matrix. Table 1 presents the characterization of these studies, detailing information such as title, authorship, year, research location, journal, objectives, and main contributions.

Table 1 - Summary of articles selected from the databases. Teresina – PI, 2026.

Title, author, year and location of the research	Periodical	Objective of the study	Main contributions/ Considerations
Adherence of the nursing team to the infection prevention bundle . Vicente, Contrin , Werneck (2023). São José do Rio Preto - SP	Cuid'Arte Nursing	To assess nursing adherence to the bundle for prevention of central venous catheter (CVC)-related bloodstream infections.	The average overall adherence to the bundles was 63.95%, highlighting gaps between theory and practice. The need for investments in continuing education focused on the weaknesses of each sector to reduce morbidity and mortality was emphasized.
The role of nurses in managing healthcare risks. Mendonça (2020). Curitiba - PR	UFPR Magazine	To identify the risk management actions performed by nurses and whether years of experience influence this perception.	It was concluded that training time and experience are not related to perspective on risk management. Nurses perform identification and notification, but the monitoring and communication stages show lower rates of agreement.
Interprofessional communication in the neonatal intensive care unit. Alves *et al.* (2024). Pelotas - RS	Nursing Journal Currently in Costa Rica	Understanding how the interprofessional communication process occurs to ensure patient safety in the NICU.	Shift handover was identified as the central tool, but it lacks standardization. An Effective Communication Protocol was developed to reduce risks arising from language failures among the team.
Good Nursing Practices Related to Allergy, Sepsis, and Falls in the ICU Benvenuti et al. (2024) São Paulo – SP.	Cuid'Arte Nursing	To assess adherence to best practices related to allergy, sepsis, fall, aspiration, phlebitis, and invasive device protocols.	Heterogeneity in adherence was identified: the falls protocol had the highest compliance rate (95.13%), while the sepsis protocol showed the worst performance. This reinforces the importance of objective protocols to facilitate clinical decision-making.
Safe nursing care: medication administration process in intensive care. Ribeiro *et al* . (2021). Sobral - CE	UFPE Nursing Journal online	To highlight the factors that affect the safety of care during the medication process in the ICU.	Electronic prescribing and operating systems can become barriers when they include abbreviations or lack drug interaction alerts. Workflow organization and physical structure directly impact the safety of administration.
Care for the prevention of unplanned extubation: validity analysis Torres *et al* . (2021). Florianópolis - SC	Brazilian Journal of Nursing (REBEn)	To analyze the content validity of a nursing care instrument for preventing unplanned extubation (UPE).	An instrument with 26 interventions focused on agitation/pain management, device stability, sedation weaning, and human resources was validated . The study points to neuropathic pain as a multi-causal event requiring constant vigilance.

Adverse events related to the use of equipment and materials. Xelegati *et al.* (2019). Ribeirão Preto - SP .	Journal of the USP School of Nursing	To analyze the occurrence of adverse events (AEs) associated with the use of equipment and materials in healthcare.	16.9% of reported adverse events were related to materials. The most common events were: loss of feeding tube (45.0%) and loss of central venous catheter (15.5%), frequently associated with patient agitation.
Hand hygiene in nursing care for critically ill patients. Lopes *et al* . (2020). Manaus - AM.	REVIEW	To describe hand hygiene (HH) practices by nursing professionals in critical care.	Only 20% of professionals performed the hand hygiene technique completely correctly. Crucial steps such as rubbing between the fingers, wrists, and nails had adherence rates below 25%.
Nursing care in light of neonatal patient safety. Santos (2023). Rio de Janeiro - RJ	Current Nursing Journal In Derme	Identify nursing actions for safety of care in the Neonatal Intensive Care Unit.	He highlighted key strategies: correct patient identification, prevention of medication errors, prevention of skin lesions, and valuing the family in the care process.
Patient safety and infection control in the ICU. Melo e Silva (2023). São Paulo – SP	*Health & Society*	To characterize scientific studies on patient safety and hospital infection control from a health promotion perspective.	It emphasizes that continuing education and standardization of actions are essential, as there is still a deficit of scientific knowledge among healthcare professionals regarding safety protocols.
Risk factors associated with the occurrence of the adverse event phlebitis. Furlan, Saba and Lima (2024). São Paulo - SP	Brazilian Journal of Nursing (REBEn)	To synthesize knowledge about risk factors for phlebitis in hospitalized adult patients.	The main risks identified were: prolonged hospital stay, use of Teflon® catheters, use of antibiotics, and loss of nursing care.

Source: authors, 2026.

4. CONCLUSION

The discussion about patient safety in Intensive Care Units (ICUs) reveals a highly complex scenario, where risk management and adherence to protocols are fundamental pillars. According to Mendonça (2020), risk management involves the identification, analysis, and treatment of events that may impact the quality of care. The nurse's role in this context is central, as they are the professional responsible for making decisions that seek to prevent incidents in critical environments. The literature reinforces that safety is the basic requirement for quality care, demanding a systemic vision that goes beyond the technical dimension.

Regarding invasive procedures, the use of Central Venous Catheter (CVC) is frequent, but associated with high rates of bloodstream infection. Vicente et al. (2023) observed that, although compliance with individual maintenance measures is high, total adherence to preventive *bundles* is still

lower than expected, with an average of 63.95%. This study shows that simple handling errors can increase morbidity, mortality, and hospital costs. Therefore, the joint implementation of good practices is more effective than isolated actions to reduce Healthcare-Associated Infections (HAIs).

The integrity of devices and equipment also represents a significant source of risk in ICUs. Xelegati *et al* . (2019) analyzed adverse event reports and identified that 16.9% were related to the use of equipment and materials. Among the most frequent occurrences, the loss of feeding tubes (45.0%) and central venous catheters (15.5%) stood out. Many of these failures occur due to patient agitation or lack of proper fixation, which requires constant vigilance from the nursing staff to minimize harm.

Hand hygiene (HH) remains the simplest and most economical method to prevent the spread of multidrug-resistant microorganisms. However, Lopes *et al* . (2020) revealed worrying data in a university hospital, where only 20% of professionals performed the HH technique correctly. The study indicated that fundamental steps, such as rubbing interdigital spaces and nails, had adherence rates below 25%. Such failures increase the risk of cross-infections, especially in critically ill patients exposed to invasive procedures.

Benvenuti thoroughly examined the heterogeneity in adherence to various safety protocols. *et al* . (2024). In their research, the fall prevention protocol, specifically bed restriction, showed the highest compliance rate (95.13%). In contrast, the sepsis protocol showed the worst results, which is attributed to the complexity of the diagnosis and the need for sharp clinical reasoning in situations of high care demand. These findings suggest that more objective protocols favor correct execution, while more complex ones require greater investment in training.

The medication process in intensive care is another critical area discussed in the literature. Ribeiro *et al.* (2021) identified that electronic prescribing and workflow organization are factors that directly affect safety. Although the computerized system reduces legibility errors, abbreviations still generate doubts and potential risks. Furthermore, adequate staffing allows professionals to administer medications calmly and with a lower probability of error.

Airway management and prevention of unplanned extubation (UP) are vital to avoid serious respiratory complications. Torres *et al* . (2021) validated a care instrument that focuses on endotracheal tube stability and sedation and pain management. The literature shows that UP is frequently associated with bed baths or changes in patient position, when the patient's head is lost from centering. The use of standardized weaning and sedation protocols significantly reduces the incidence of this adverse event.

In the field of peripheral intravenous therapy, phlebitis is a prevalent adverse event that requires attention. Furlan *et al* . (2024) synthesized risk factors such as catheter dwell time exceeding 72 hours, antibiotic use, and the quality of the patient's vein. The study highlights that choosing more flexible materials, such as polyurethane instead of Teflon®, can minimize damage to the vascular wall. Early identification of patients with difficult venous access allows for a proactive approach to preserve the venous network and reduce hospital stay.

Interprofessional communication emerges as an indispensable cross-cutting element for patient safety. Alves *et al* . (2024) highlight shift handover as the main tool for exchanging information, although it often occurs informally or hastily. The lack of standardization in this process weakens the continuity of care and increases the risk of losing vital patient data. The creation of standard operating protocols for effective communication is recommended to standardize the language used by physicians, nurses, and physiotherapists.

The influence of working conditions and staffing levels on safety is corroborated by several authors. Mendonça (2020) emphasizes that the lack of human resources and the accumulation of functions hinder the early identification of care risks. Similarly, Torres *et al.* (2021) point out that the high workload of nurses is a risk factor for the occurrence of accidental extubations and other incidents. Adequate staffing levels, based on patient complexity, are fundamental to ensuring vigilance and adherence to safety protocols. Strengthening a non-punitive safety culture is essential for transparency and institutional learning. Mendonça (2020) states that reporting systems should not be used to point out individual failures, but as resources to identify systemic failures. However, weaknesses such as fear of reprisal persist, leading to underreporting of adverse events. Transforming this culture requires leadership to encourage open communication about errors, focusing on the continuous improvement of work processes.

Continuing education emerges as the most effective strategy for aligning theory and practice in the daily routine of ICUs. Vicente *et al* . (2023) conclude that constant investments in training are necessary to address specific weaknesses in each sector. Educational programs that use quality indicators allow the team to reflect on their own results and plan evidence-based preventive actions. Equipping professionals from their academic training onwards is a predictor of safer and more effective care.

The economic and social impacts of adverse events reinforce the urgency of efficient risk management. Mendonça (2020) cites that preventable incidents prolong hospitalization and generate extremely high costs for healthcare systems, reaching R$ 100,000 per infection episode in Brazil. In Paraná, thousands of reports of care failures and pressure injuries highlight the need for studies that promote patient

safety. Proactive management protects not only the patient but also professional integrity and the institution's image.

5. FINAL CONSIDERATIONS

In summary, the discussion of the selected articles reveals that safety in the ICU depends on an integrated network of protocols, technologies, and human factors. While protocols for central venous catheters (CVCs), medication, and enteral nutrition (ENNs) offer technical support, communication and organizational culture provide the structural basis for safe care. The cross-analysis of the studies demonstrates that compliance with best practices still faces significant structural and behavioral barriers. Overcoming these challenges requires a joint effort between management, education, and direct care.

It is concluded that nurses play a crucial leadership role in driving actions to improve healthcare quality. By systematizing care and managing risks inherent to high complexity, this professional acts as the central link in patient safety. The reviewed literature indicates that lasting results will only be achieved through institutional commitment to safety and continuous investment in human capital. The pursuit of excellence in the ICU is, therefore, an evolutionary process that requires constant vigilance and rigorous scientific grounding.

The main limitations identified in the studies relate to the scope of the setting and the sample size. Several authors highlight that conducting research in a single center or in hospitals with very specific profiles (such as teaching or accredited hospitals) can generate biases and limit the generalizability of the results to the entire healthcare network. Therefore, it is essential to conduct research that explores strategies to encourage the participation of professionals in scientific investigations, aiming for safer care. Future studies should focus on monitoring the progress of risk management actions and the continuous monitoring of quality indicators.

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