CIÊNCIAS DA VIDA E DA SAÚDE
LIFE AND HEALTH SCIENCES
CIENCIAS DE LA VIDA Y LA SALUD

millenium

Millenium, 2(Edição Especial Nº16)

en

A SEGURANÇA DA PESSOA EM SITUAÇÃO CRÍTICA NO TRANSPORTE INTRA-HOSPITALAR - SCOPING REVIEW

THE SAFETY OF CRITICALLY ILL PEOPLE IN INTRA-HOSPITAL TRANSPORT - SCOPING REVIEW

LA SEGURIDAD DE LAS PERSONAS EN SITUACIONES CRÍTICAS DURANTE EL TRANSPORTE INTRAHOSPITALARIO - SCOPING REVIEW

Gonçalo Pires[1] *https://orcid.org/0009-0004-7328-9455*
Alice Ruivo[2] *https://orcid.org/0000-0002-6960-828X*

[1] Unidade Local de Saúde de Castelo Branco, Castelo Branco, Portugal.
[2] Instituto Politécnico de Setúbal, Setúbal, Portugal

Gonçalo Pires – gjorgepires@gmail.com| Alice Ruivo - alice.ruivo@ess.ips.pt

Corresponding Author:
Gonçalo Pires
Rua Nova da Escola no 20
6005-170 – Escalos de Cima - Portugal
gjorgepires@gmail.com

RECEIVED: 22nd October, 2024
REVIEWED: 10th February, 2025
ACCEPTED: 01st April, 2025
PUBLISHED: 14th April, 2025

DOI: https://doi.org/10.29352/mill0216e.38413

RESUMO

Introdução: O transporte intra-hospitalar da pessoa em situação crítica tem vindo a ser uma problemática cada vez mais trabalhada devido a toda a sua complexidade. A ocorrência de eventos adversos no mesmo tem vindo a aumentar a sua prevalência havendo a necessidade de se criarem estratégias de forma a preveni-los e a minimizá-los.
Objetivo: Identificar estratégias aserem utilizadas pelos enfermeiros de forma a melhorar a segurança da pessoa em situação crítica no transporte in-hospitalar.
Métodos: Foi realizada uma *scoping review*, tendo sido realizada uma pesquisa nas plataformas B-On e EBSCOhost considerando artigos com espaço temporal de 2019 a 2023. Foram utilizados os termos "*intrahospital transport*", "*critically ill*" e "*nurse*".
Resultados: Após a realização da pesquisa foram selecionados sete estudos primários das mais variadas nacionalidades, tendo sido considerados todos com qualidade metodológica de forma a serem inseridos neste estudo. Após a sua análise identificaram-se duas estratégias pertinentes de forma a melhorar a segurança do transporte intra-hospitalar: a formação contínua e a utilização de listas de verificação.
Conclusão: As utilizações das estratégias melhoram substancialmente a qualidade e a segurança do transporte intra-hospitalar, devendo as mesmas complementarem-se.

Palavras-chave: enfermagem médico-cirúrgica; doente crítico; transporte intra-hospitalar; segurança

ABSTRACT

Introduction: The intra-hospital transport of critically ill patients has become an increasingly studied issue due to its complexity. The occurrence of adverse events during transport has been rising, highlighting the need to develop strategies to prevent and minimize them.
Objective: To identify strategies that nurses can use to enhance the safety of critically ill patients during intra-hospital transport.
Methods: A scoping review was conducted, with a search carried out on the B-On and EBSCOhost platforms, considering articles published between 2019 and 2023. The search terms used were "intrahospital transport," "critically ill," and "nurse."
Results: Following the search, seven primary studies from various countries were selected, all of which met methodological quality criteria for inclusion in this study. The analysis identified two key strategies for improving intra-hospital transport safety: continuous training and the use of checklists.
Conclusion: Implementing these strategies significantly improves the quality and safety of intra-hospital transport, and they should be used in a complementary manner.

Keywords: medical-surgical nursing; critically ill patient; intra-hospital transport; safety

RESUMEN

Introducción: El transporte intrahospitalario de personas en situación crítica se ha convertido en un problema cada vez más abordado debido a su complejidad. La ocurrencia de eventos adversos durante este proceso ha ido en aumento, destacando la necesidad de desarrollar estrategias para prevenirlos y minimizarlos.
Objetivo: Identificar estrategias para los enfermeros con el fin de mejorar la seguridad de las personas en situación crítica durante el transporte intrahospitalario.
Métodos Se realizó una revisión exploratoria, llevando a cabo una búsqueda en las plataformas B-On y EBSCOhost, considerando artículos desde 2019 hasta 2023. Se utilizaron los términos "intrahospital transport," "critically ill" y "nurse".
Resultados: Tras la investigación, se seleccionaron siete estudios primarios de diversas nacionalidades, todos cumpliendo con criterios de calidad metodológica para su inclusión en este estudio. Tras su análisis, se identificaron dos estrategias relevantes para mejorar la seguridad del transporte intrahospitalario: la educación continua y el uso de listas de verificación.
Conclusión: La implementación de estas estrategias mejora sustancialmente la calidad y seguridad del transporte intrahospitalario, recomendando que se complementen entre sí.

Palabras Clave: enfermería médico-cirúrgica; paciente crítico; transporte intrahospitalario; seguridad

DOI: https://doi.org/10.29352/mill0216e.38413

INTRODUCTION

Healthcare professionals are increasingly concerned with patient safety and the quality of care provided. As a result, the transport of critically ill patients has become a highly discussed and studied topic, particularly in terms of safety, due to the inherent risks associated with this process. These risks can worsen a patient's clinical condition, leading to severe complications (Ordem dos Enfermeiros, 2020).

A critically ill patient is defined as “one whose life is threatened by the failure or imminent failure of one or more vital functions, and whose survival depends on advanced surveillance, monitoring, and therapeutic measures” (Ordem dos Enfermeiros, 2018, p.19362). In some cases, transport—whether intra-hospital or inter-hospital—is necessary to ensure access to these essential resources. There are three types of transport for critically ill patients: primary transport, which occurs from a pre-hospital setting to a healthcare facility; secondary transport, which involves transferring a patient from one healthcare unit to another; and intra-hospital transport, which takes place within a healthcare institution (Ordem dos Médicos & Sociedade Portuguesa de Cuidados Intensivos [OM & SPCI], 2023).

Intra-hospital transport of critically ill patients occurs within a healthcare facility, usually for diagnostic testing or transfer to a specialized unit to ensure continuity of care, such as the Intensive Care Unit or the Operating Room. Like other types of transport, it consists of three phases: decision-making, which is solely a medical responsibility; planning, often considered the most critical phase, as it involves risk prevention by selecting the transport team, defining the route, estimating transport duration, and verifying all necessary equipment while anticipating potential adverse events; and execution, which concludes once the patient is handed over to healthcare professionals at the destination (OM & SPCI, 2023).

The risk of adverse events during intra-hospital transport is significantly high, with recent studies reporting an incidence of approximately 79%. The most frequent incidents involve physiological alterations such as severe hypotension, decreased consciousness, increased intracranial pressure, and cardiopulmonary arrest. Equipment or medical device failures rank second, particularly the accidental removal of endotracheal tubes or nasogastric tubes. The third most common issue is the failure of oxygen sources and transport monitors (An et al., 2022; Hu et al., 2021).

Most of these adverse events are preventable, and nurses play a crucial role in their prevention by conducting thorough patient assessment and preparation during the planning phase. Nurses must develop sensitivity and expertise in identifying potential instability. Given this, both the Ordem dos Enfermeiros and the Ordem dos Médicos recommend that nurses involved in intra-hospital transport receive specific training and preferably be Specialist Nurses in Medical-Surgical Nursing, particularly in the field of Critical Care (Hu et al., 2021; Mesa do Colégio de Especialidade em Enfermagem Médico-Cirúrgica, 2017 [MCE-EMC]; OM & SPCI, 2023; Zhang et al., 2022).

Recognizing the importance of this issue, we conducted a scoping review with the objective of mapping the strategies used by nurses to enhance the safety of critically ill patients during intra-hospital transport.

1. METHODS

This scoping review follows the guidelines of the Joanna Briggs Institute (JBI) and employs the PCC mnemonic (Population, Concept, and Context) to formulate the research question: “How can nurses improve the safety of critically ill patients during intra-hospital transport?"

This review focuses primarily on original research studies that examine the role of nurses working in Emergency Departments and Intensive Care Units, where critically ill patients receive care. Studies will be included regardless of the nurses' gender, age, race, level of education, or professional category. Additionally, research that contributes to the development of strategies to improve patient safety throughout the intra-hospital transport process will also be considered.

To address the research question, a literature search was conducted in October 2023 across electronic databases, aiming to identify scientific articles that provide theoretical and empirical insights into the topic. The search was carried out on the B-On and EBSCOhost platforms using the keywords "intrahospital transport," "critically ill," and "nurse," connected by the Boolean operator "AND." To refine the results, the conditions "NOT 'COVID-19'" and "NOT 'pediatric'" were applied.

2. RESULTS

From this search process, 352 potentially relevant articles were initially identified on the B-On platform. After filtering for the 2019–2023 timeframe, 97 articles remained. Further exclusions were made based on the following criteria: lack of full-text availability, non-inclusion in academic journals, and absence of peer review, resulting in a total of 69 studies. To refine the selection further, the subject term “critical illness” was applied, reducing the final sample to 5 articles.

On the EBSCOhost platform, 16 articles were found. After applying the 2019–2023 timeframe filter, only 8 articles remained. One article was excluded for not being peer-reviewed, leaving 7 articles. Of these, 4 were duplicates of studies already identified in the B-On database. After reviewing the abstracts, only 2 articles were retained for this study.

DOI: https://doi.org/10.29352/mill0216e.38413

Thus, following this rigorous selection process, a total of 7 articles were included in this scoping review, as illustrated in the flow diagram adapted from PRISMA, which outlines the screening process for the reviewed evidence (Figure 1).

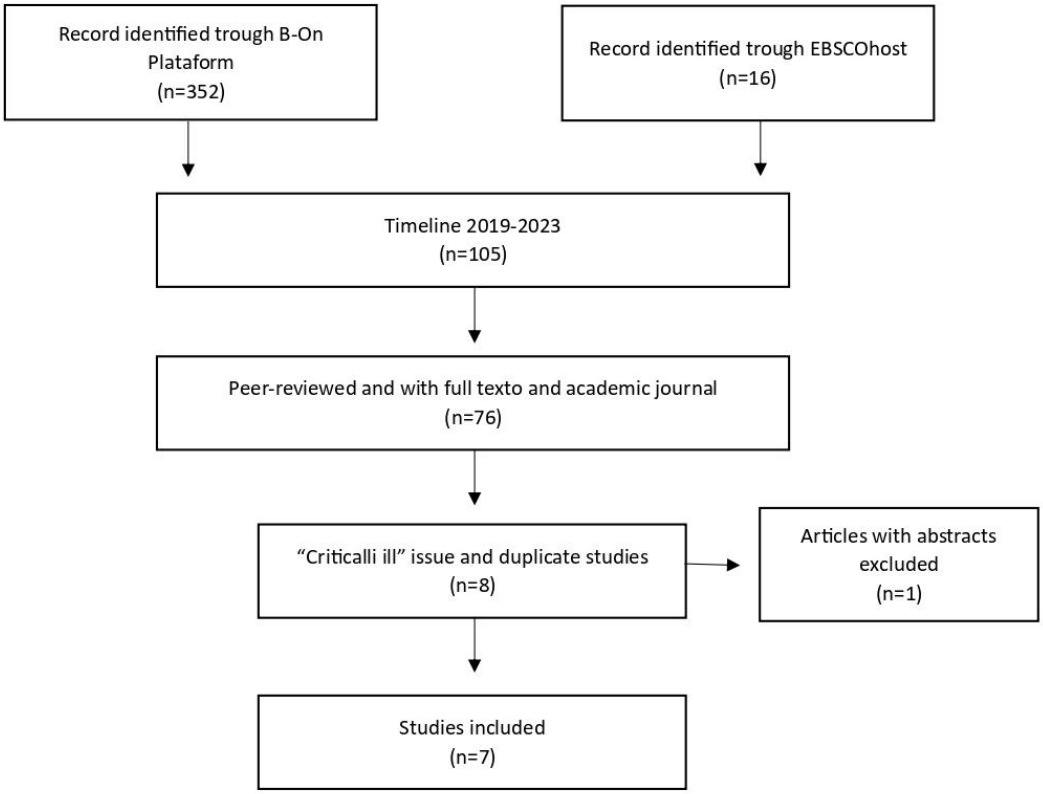

Figure 1 – PRISMA Flow Diagram

Based on the seven selected articles, we created a summary table that includes the study objective, participants and study period, results, and the level of evidence according to the Joanna Briggs Institute (2020).
This table provides a structured synthesis of the reviewed studies, allowing for a clearer understanding of the findings and their reliability in the context of improving the safety of critically ill patients during intra-hospital transport.

Table 1 - Analysis of the selected articles

Study Identification	Objective of the study	Total Participants/Period	Results	Level of Evidence JBI/ Methodological Quality
Intrahospital transport of critically ill patients: A survey of emergency nurses **Authors:** Hu *et al*., 2021 **Country:** China	- To investigate the current situation of in-hospital transportation of critically ill patients; - Understand nurses' perceptions of in-hospital transportation.	A total of 528 nurses from 142 Chinese hospitals were included in this study. The inclusion criteria for this study were: - Emergency nurses; - Nurses working in Intensive Care Units in secondary and tertiary hospitals; - Professional experience in emergency services for over one year; - Willingness to participate in the study. Period: May 2015.	- Of the 528 nurses included in this study, only 466 participated in intra-hospital transports, showing a high incidence of adverse events (1536 critical incidents). - Among the respondents, only 19.3% believed that all nurses were competent to perform intra-hospital transports of critically ill patients without specific training. - The absence of internal protocols for intra-hospital transport is associated with oxygen failure during these transports and incorrect transport destination.	Descriptive Observational Study (Cross-sectional study - level 4.b) 100% of criteria valid (8/8 - Yes)

DOI: https://doi.org/10.29352/mill0216e.38413

Study Identification	Objective of the study	Total Participants/Period	Results	Level of Evidence JBI/ Methodological Quality
Proactive assessment of intrahospital transport of critically ill patients from emergency department to intensive care unit in a teaching hospital and its implications **Authors:** Zhang *et al*., 2021 **Country:** China	- Explore the effects of the health mode and failure analysis used in the intra-hospital transport of critically ill patients from the emergency department to the intensive care unit.	Not applicable. For this study, a risk assessment tool was used. Failures occurring in the intra-hospital transport of critically ill adult patients from the emergency department to the intensive care unit were identified and analyzed. Period: November 2019 to January 2020.	This study identified 16 types of failures considered high-risk for intra-hospital transport, with measures to be implemented for each to reduce their risk. Among these measures, the development of internal procedures, including the creation of simple and easy-to-use checklists, stands out. In addition to this, it is also considered essential to increase the skills of the personnel performing these transports through training and team drills.	Descriptive observational study (Cross sectional study - level 4.b) 100% of criteria valid (8/8 – Yes)
A checklist for intrahospital transport of critically ill patients imporves compliance with transportation safety guidelines **Authors:** Williams *et al*., 2019 **Country:** Australia	- To compare compliance with interprofessional transport guidelines before and after the introduction of an intra-hospital transport checklist in an intensive care unit.	For this study, a total of 76 intra-hospital transfers of critically ill patients were used as participants. Of these transfers, 38 occurred before the introduction of an intra-hospital transport checklist for critically ill patients, and the remaining 38 after its implementation. Period: August 2016 to April 2017.	This study demonstrated that communication between the transport team and the receiving department improved after the creation and use of safety checklists. It was also shown that the occurrence of adverse events decreased significantly after the introduction of the checklist, concluding that its use empowers the team to enhance the safety of critically ill patients. In this study, it was observed that notification of the receiving department before using the checklists was made in 83.7% of the transfers, significantly improving after the checklist implementation, with an increase to 100% of transfers where the receiving department was notified. Of all the items filled out on the checklist, the only one showing a decrease in percentage was the verification of sufficient oxygen for the duration of the transfer, with a reduction from 100% to 76.3%.	Quasi-experimental prospectively controlled study (level 2.c) Presents 100% of valid criteria (9/9 - Yes)
Improving quality and safety during intrahospital transport of critically ill patiens; A critical incident study **Authors:** Bergman *et al*., 2018 **Country:** Australia	- Explore the experiences and practices of intensive care nurses and doctors associated with adverse events during intra-hospital transport of critically ill patients.	A total of 15 intensive care nurses and 5 doctors were included in this study, collectively reporting 46 critical incidents during the intra-hospital transport of critically ill patients. Period: February to May 2016.	This study concludes that it is important to have prerequisites for safe intra-hospital transport, particularly the prevention and management of critical incidents. The participants felt confident in case of an adverse event, emphasizing the importance of situational awareness to ensure safety throughout the process. The study suggests minimizing workload, distractions, and interruptions before and during transport, highlighting the importance of well-functioning teams that complement technical skills with non-technical ones, thereby enhancing the safety of intra-hospital transport. Finally, this study promotes the use of various strategies to minimize the occurrence of critical incidents, including the introduction of checklists, team training, and technical solutions. In summary, intra-hospital transport will proceed more effectively if: - Healthcare organizations provide a favorable environment for intra-hospital transport; - The transport team has sufficient knowledge and skills for the task; - The team must possess non-technical skills such as self-awareness and teamwork.	Descriptive Observational Study (Cross sectional study - level 4.b) Presents 87.5% of valid criteria (7/8 - Yes)

DOI: https://doi.org/10.29352/mill0216e.38413

Study Identification	Objective of the study	Total Participants/Period	Results	Level of Evidence JBI/ Methodological Quality
Improving the safety and quality of the in-hospital transport of critically ill patients. **Authors:** Sharafi *et al*., 2020 **Country:** Iran	- Determine the incidence of adverse events during intra-hospital transport; - Obtain suggestions from nurses for improving the transport process.	For this study, approximately 160 nurses from intensive care units were included. Period: September 2018 to January 2019.	In this study, the most common adverse events identified during intra-hospital transport were a decrease in peripheral oxygen saturation (90.7%), hemodynamic instability (73.8%), and psychomotor agitation (88.7%). The nurses in the study mentioned various preventive measures based on their professional experience, considering the clinical condition of the patient and verifying all connections as the most important factors for ensuring the safety of the transport. It was noted that such events should be avoidable if the patient is unstable.Team training was also highlighted in this study as a way to improve competencies and skills, always involving specialized professionals in critical care when possible. Finally, the participants emphasized the importance of non-technical skills such as communication, particularly highlighting the importance of coordinating the transport with the receiving department, thus enhancing transport safety and patient satisfaction.	Descriptive observational study (Cross sectional study - level 4.b) Presents 87.5% of valid criteria (7/8 – Yes)
Intrahospital transport of critically ill patients: A cross-sectional survey of Nurses' attitudes and experiences in adult intensive care units **Authors:** Song *et al*., 2022 **Country:** China	- To describe the experiences and attitudes of nurses regarding intra-hospital transport; - To evaluate the relationship between the characteristics and attitudes of nurses' experiences.	A total of 480 nurses from 12 intensive care units participated in this study. Period: July to August 2019	In this study, the interviewed nurses believed that the competence and knowledge of nurses and the use of checklists improve the safety of critically ill patients during intra-hospital transport, as well as collaboration and good relationships among all healthcare professionals (nurses, doctors, operational assistants, and diagnostic technicians). Effective communication in intra-hospital transport also has a positive impact, as communication failures related to information exchange were found to be a frequent problem during transport, causing delays and increasing the risk of hemodynamic instability for the patient. Nurses with specific higher education training commonly use checklists to assess the risks of critically ill patients, ensuring greater safety during intra-hospital transport. Moreover, these checklists also improve compliance with existing guidelines for intra-hospital transport of critically ill patients, while also enhancing communication, with a compliance rate of 96.24%. In conclusion, this study emphasizes the importance of using checklists. However, on their own, they are not enough and need to be personalized by incorporating them into hospital procedures. When well-constructed, these procedures can positively affect the quality and safety of intra-hospital transport for critically ill patients.	Descriptive Observational Study (Cross sectional study - level 4.b) 100% of criteria valid (8/8 - Yes)
Establishment of a simplified score for predicting risk during intrahospital transport of criticall patients: A prospective cohort study **Authors:** An *et al*., 2022 **Country:** China	- Explore whether vital sign values can be used to identify the risk of intra-hospital transport from the emergency department to the intensive care unit.	For this study, 584 critically ill patients were included. Period: January 1, 2019, to June 30, 2021.	This study used objective data from the vital signs of the patients studied, including five variables: blood pressure, heart rate, respiratory rate, oxygen saturation, and level of consciousness. It was concluded that the higher the score, the greater the risk of hemodynamic instability in the critically ill patient. For patients at higher risk of instability, the transport team should prepare the transport in advance using checklists that improve communication between the team and the destination service. In summary, the article states that a nurse with specialized training in the transport of critically ill patients and good emergency and urgent situation skills will be an asset to ensure the safety of the critically ill patient during intra-hospital transport.	Analytical Observational Study (Cohort study with control group - level 3.c) Presents 90.9% of valid criteria (10/11 - Yes)

DOI: https://doi.org/10.29352/mill0216e.38413

The selected studies were conducted between 2015 and 2021, with articles from China, Australia, and Iran. The main content found regarding the strategies that nurses can develop to improve the safety of critically ill patients during intra-hospital transport focuses on two aspects: continuous training and the creation of checklists associated with internal procedures. The seven selected articles were all included in this study as they demonstrated methodological quality.

4. DISCUSSION

Nurses have an increased responsibility regarding patient safety, as the complexity inherent in care delivery considering the context in which it occurs and the available resources can contribute to the occurrence of adverse events. These events are usually unpredictable, representing a constant challenge in ensuring the quality and safety of patient care (Brás et al., 2023).
Intra-hospital Transport of Critically Ill Patients is considered a significant event that, despite its short duration, involves substantial risks for both the patient and healthcare professionals. These risks arise due to the change in the care environment and the lack of resources, making it difficult to anticipate changes in the patient's clinical condition. This is where the nurse's role in intra-hospital transport becomes crucial, as they must prevent and anticipate potential complications by implementing strategies that facilitate the promotion of safety for critically ill patients (Hu et al., 2021; Sharafi et al., 2020).
Following the analysis of the selected articles, two important strategies were identified.

Continuous training for nurses

The studies reviewed indicate that healthcare professionals involved in this type of transport, particularly nurses, should be as highly qualified as possible, possessing specific skills and training in this area. Hu et al. (2021) states that only 19.3% of nurses without specialized training feel adequately prepared to perform such transport, highlighting the role of individual perception in this context. It is essential for hospital institutions to provide specialized training for these teams, equipping nurses to handle urgent and emergency situations, thereby improving the safety of critically ill patients (An et al., 2022; Bergman et al., 2018; Zhang et al., 2022).
In 2023, the Portuguese Medical Association and the Portuguese Society of Intensive Care, in their new Recommendations for the Transport of Critically Ill Patients, also emphasized the importance of training and skill development for the professionals involved. They recommend that nurses responsible for intra-hospital transport of critically ill patients should have experience in Advanced Life Support and training in this type of transport. The Portuguese Nurses Association further reinforces this idea, advocating that the care of such patients should be provided by a Specialist Nurse in Medical-Surgical Nursing, with expertise in Critical Care (MCE-EMC, 2017; Portuguese Nurses Association, 2019; Portuguese Medical Association & Portuguese Society of Intensive Care, 2023).
Continuous training is directly related to team skill development, as training should involve both hands-on practice and simulated exercises. This training should focus on acquiring both technical and non-technical skills, such as communication, situational awareness, observation, leadership, and decision-making. These competencies are increasingly recognized as essential for ensuring a safe environment for patients and delivering high-quality care. Therefore, training in these areas is crucial for conducting safe intra-hospital transports (Bergman et al., 2018; Zhang et al., 2022).

Internal procedures and checklists

All the selected studies emphasize the importance of implementing checklists within internal procedures, even stating that the absence of such documents is directly associated with the occurrence of critical incidents. Hu et al. (2021) confirmed this claim, as the incidence of cardiopulmonary arrests decreased from 44.1% to 38.2% after the introduction of checklists, while oxygen supply issues improved from 67.6% to 45%. Furthermore, the same author observed a significant reduction in adverse events related to incorrect patient destinations, dropping from 63.2% to 5.3%.
Checklists are considered an effective tool for enhancing the safety of critically ill patients during intra-hospital transport, as they should be simple, cost-effective, practical, and easy to use (An et al., 2022; Zhang et al., 2022). These checklists assist nurses in identifying modifiable risk factors before transport, enabling the implementation of preventive measures to enhance patient safety. Song et al. (2022) suggests that checklists should be tailored to their specific purpose and developed based on the three phases of intra-hospital transport (decision-making, planning, and execution), ensuring they are adapted to the clinical setting and patient type.
Williams et al. (2019) conducted a study in which a checklist was implemented for intra-hospital transport, demonstrating that its use improved communication between the transport team and the receiving team at the destination unit. Additionally, the study showed that the use of checklists reduced the incidence of adverse events from 36.8% to 22.1%, thereby improving patient safety and enhancing the team's preparedness for transport. To reinforce this point, Hu et al. (2021) highlights that the absence of checklists and internal procedures is linked to oxygen supply failures and incorrect patient destinations. Similarly, Ann et al. (2022) argue that using checklists ensures a structured transfer process and reduces transfer time.
On the other hand, another study points out that nurses who have experienced a higher number of critical incidents tend to place less importance on checklists, believing that they do not completely eliminate the risk of complications. However, checklists

DOI: https://doi.org/10.29352/mill0216e.38413

remain a crucial tool for structuring intra-hospital transport effectively. The same author suggests that the use of safety checklists should be complemented with other strategies, such as continuous training, to ensure patient safety (Song et al., 2022).

Chalenges in Implementing Strategies

The implementation of the identified strategies for the safety of intra-hospital transport of critically ill patients faces significant challenges. Continuous training for nurses, although essential, can be hindered by a lack of institutional resources, including limited time for training and financial support.

Moreover, resistance to change and a sense of self-sufficiency among professionals may hinder their engagement with training programs. Concerning internal procedures and checklists, their effectiveness depends on their adaptation to the specific clinical context and the professionals' adherence, which can be undermined by an organizational culture resistant to process standardization. The workload burden and the urgency inherent in intra-hospital transport can also lead to neglect in the use of these tools, compromising their effectiveness. Therefore, it is crucial that these strategies are accompanied by ongoing awareness efforts and institutional support to ensure their sustainable integration into clinical practice.

The implementation of strategies for the safety of intra-hospital transport of critically ill patients also varies significantly depending on the hospital's setting, influenced by factors such as resource availability, organizational culture, and staff training. In larger hospitals with specialized units, structured continuous training programs and the rigorous implementation of checklists and internal procedures are more common, promoting the standardization of care and minimizing risks. In these settings, the presence of teams dedicated to intra-hospital transport allows for greater specialization and technical competence, reducing variability in clinical practice.

On the other hand, in smaller hospitals or those with fewer resources, the reality may differ, with nurses taking on multiple roles, making it more difficult to specialize in this area. In such contexts, the lack of specific training may compromise professionals' perception of safety and increase the likelihood of adverse events during transport. Additionally, the absence of institutional protocols and checklists tailored to the local reality may result in greater variability in the execution of transports, compromising predictability and safety in the process.

Thus, while the identified strategies are crucial for ensuring the safety of intra-hospital transport of critically ill patients, their effective implementation depends on the ability to adapt to different hospital realities. Standardizing practices, coupled with continuous training and monitoring efforts, is essential to reducing disparities and ensuring patient safety remains a priority in any hospital context.

LIMITATIONS

This study acknowledged as limitations the absence of primary studies conducted in Portugal, as such research would provide a more comprehensive national overview of our healthcare reality. Additionally, a limitation was identified in the limited number of articles focusing on nurses working in the Emergency Department, as these departments serve as the “entry point” for hospital institutions, with the majority of critically ill patients being transferred from these services to other units.

CONCLUSION

Nurses should be closely involved in the development of these procedures, as they may use them as a work tool to improve patient safety. The creation of checklists should always be incorporated into protocols or internal procedures, as these enable the standardization of their use.

In summary, this scoping review aimed to identify strategies for nurses to improve patient safety during intra-hospital transport. Two important measures were identified: continuous training with skills development and the creation of checklists associated with internal procedures. These measures should be implemented together, complementing each other, thereby enhancing patient safety during intra-hospital transport of critically ill patients.

This article addresses the specific competencies of the specialist nurse in Medical-Surgical Nursing, in the area of Critical Care, specifically in the domain “Cares for the patient, family/caregiver undergoing complex processes of critical illness and/or organ failure” (OE, 2018, p. 19363). In this context, the specialist nurse, through the use of strategies to improve patient safety during intra-hospital transport, prevents the occurrence of critical incidents by early diagnosing potential complications and implementing methods to address them with nursing responses. This study also aligns with the Quality Standards for Specialized Nursing Care in Critical Care, focusing on complication prevention and the organization of specialized care. Regarding complication prevention, it is expected that the specialist nurse in Medical-Surgical Nursing in Critical Care will promptly identify potential issues, thus enhancing patient safety during intra-hospital transport. Concerning the organization of specialized care, the use of checklists and internal procedures ensures the standardization of care, as they provide "a framework for the professional practice of the specialist nurse in critical care" (Ordem dos Enfermeiros, 2015, p. 17243).

DOI: https://doi.org/10.29352/mill0216e.38413

AUTHORS' CONTRIBUTION

Conceptualization, G.P.; data curation, G.P. and A.R.; formal analysis, G.P. and A.R.; investigation, G.P. and A.R.; methodology, G.P. and A.R.; project administration, G.P. and A.R.; resources, G.P. and A.R.; software, G.P. and A.R.; supervision, G.P. and A.R.; validation, G.P. and A.R.; visualization G.P. and A.R.; writing-original draft, G.P.; writing-review and editing, G.P. and A.R.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

An, Y., Tian, Z., Li, F., Lu, Q., Guan, Y., Ma, Z., ... Li, Y. (2022). Establishment of a simplified score for predicting risk during intrahospital transport of critical patients: A prospective cohort study. *Journal of Critical Nursing, 32*, 1125-1134. https://doi.org/10.1111/jocn.16337

Aromataris, E., & Munn, Z. (2020). *JBI manual for evidence synthesis*. JBI. https://doi.org/10.46658/JBIMES-20-01

Bergman, L., Pettersson, M., Chaboyer, W., Carlstrom, E., & Ringdal, M. (2018). Improving quality and safety during intrahospital transport of critically ill patients: A critical incident study. *Australian Critical Care, 31*(5), 1-8. https://doi.org/10.1016/j.aucc.2018.12.003

Brás, C., Ferreira, M., Figueiredo, M., & Duarte, J. (2023). Cultura de segurança do doente na prática dos enfermeiros. *Revista Latino-Americana de Enfermagem, 31*, e3838. https://doi.org/10.1590/1518-8345.6231.3838

Hu, Y., Shi, D., You, L., & Li, W. (2021). Intrahospital transport of critically ill patients: A survey of emergency nurses. *Nursing in Critical Care, 26*(5), 1-7. https://doi.org/10.1111/nicc.12601

Ordem dos Enfermeiros. (2015). *Regulamento nº 361/2015: Regulamento dos padrões de qualidade dos cuidados especializados em enfermagem em pessoa em situação crítica*. *Diário da República, 2ª série, nº 123*, de 26 de junho de 2015. https://diariodarepublica.pt/dr/detalhe/regulamento/361-2015-67613096

Ordem dos Enfermeiros. (2017). *Parecer nº 09/2017: Transporte da pessoa em situação crítica*. Mesa do Colégio de Especialidade em Enfermagem Médico-Cirúrgica. Ordem dos Enfermeiros. https://shre.ink/Mf6I

Ordem dos Enfermeiros. (2018). *Regulamento nº 429/2018: Regulamento de competências específicas do enfermeiro especialista em enfermagem médico-cirúrgica na área de enfermagem à pessoa em situação crítica*. *Diário da República, 2ª série, nº 135*, de 16 de julho de 2018. https://diariodarepublica.pt/dr/detalhe/regulamento/429-2018-115698617

Ordem dos Enfermeiros. (2020). *Parecer do Conselho de Enfermagem nº 07/2020: Transporte in-hospitalar em pessoas em situação crítica*. Ordem dos Enfermeiros. https://www.ordemenfermeiros.pt/media/18211/parecer-nº-07_ce_27022020_transporte-secundário-de-pessoas-em-situaçã.pdf

Ordem dos Médicos & Sociedade Portuguesa de Cuidados Intensivos. (2023). *Transporte de doente crítico: Recomendações 2023*. Ordem dos Médicos e Sociedade Portuguesa de Cuidados Intensivos. https://www2.ordemdosmedicos.pt/transporte-de-doentes-criticos-versao-atualizada-2023/

Peters, M., Godfrey, C., McInerney, P., Soares, C., Khalil, H., & Parker, D. (2017). Scoping reviews. Em E. Aromataris & Z. Munn (Eds.), *Joanna Briggs Institute reviewer's manual*. Joanna Briggs Institute. https://doi.org/10.46658/JBIMES-24-09

Regulamento nº 743/2019 da Ordem dos Enfermeiros. (2019). Regulamento da norma para cálculo de dotações seguras dos cuidados de enfermagem. Diário da República, 2ª série, de 25 de setembro de 2019. https://diariodarepublica.pt/dr/detalhe/regulamento/743-2019-124981040

Sharafi, R., Ghahramanian, A., Sheikhalipour, Z., Ghafourifard, M., & Ghasempour, M. (2020). Improving the safety and quality of the in-hospital transport of critically ill patients. *Nursing in Critical Care, 25*(6), 1-9. https://doi.org/10.1111/nicc.12527

Song, Y., Zhao, Q., Yang, M., Xie, X., Gong, M., & Chen, H. (2022). Intrahospital transport of critically ill patients: A cross-sectional survey of nurses' attitudes and experiences in adult intensive care units. *Journal of Advanced Nursing, 78*(10), 2775-2784. https://doi.org/10.1111/jan.15179

Williams, P., Karuppiah, S., Greentree, K., & Darvall, J. (2019). A checklist for intrahospital transport of critically ill patients improves compliance with transportation safety guidelines. *Australian Critical Care, 32*(4), 1-5. https://doi.org/10.1016/j.aucc.2019.02.004

Zhang, W., Lv, J., Zhao, J., Ma, X., Li, X., Gu, H., ... Zhou, R. (2022). Proactive risk assessment of intrahospital transport of critically ill patients from emergency department to intensive care unit in a teaching hospital and its implications. *Journal of Clinical Nursing, 31*, 2539-2552. https://doi.org/10.1111/jocn.16072