Patient Safety In The Hospital Environment: Focus On Practices And Protocols For Preventing Adverse Events: A Literature Review

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Abstract:
This study aimed to analyze the available evidence on patient safety in the hospital environment, focusing on practices and protocols for preventing adverse events, through a narrative literature review. The search was conducted in electronic databases, resulting in the initial identification of 82 studies, of which 8 were deemed eligible for final analysis. The results indicated that the implementation of safety protocols, such as checklists for surgical procedures and computerized medication prescribing systems, is fundamental for reducing adverse events. Adherence to these protocols depends on factors such as ongoing training, effective leadership, and an organizational culture focused on safety. However, challenges such as healthcare professionals' resistance, excessive workload, and poor communication still compromise the effectiveness of care. The research also highlighted the role of technology in improving patient safety, emphasizing the need for proper integration with existing workflows. In conclusion, despite advancements in implementing safety practices in hospitals, significant gaps remain that need to be addressed, underscoring the urgency of public policies that promote ongoing education and the valuing of healthcare teams in a collaborative and safe environment.
Key Word: *Patient safet. Adverse events. Prevention protocols.*

I. Introduction

Patient safety in the hospital environment is a central theme in discussions about the quality of healthcare. In an increasingly complex hospital setting, ensuring that interventions are carried out safely,

without unnecessary risks, has become one of the main challenges for managers and healthcare professionals. The concept of patient safety encompasses the prevention of errors, adverse events, and often avoidable complications that can occur during care delivery. The impact of a failure can be devastating, both for the patient and for healthcare institutions, resulting in increased mortality, costs, and irreparable harm. Given this, strict practices and protocols are necessary to mitigate these risks (Soares et al., 2019).

It is important to highlight that adverse event, such as medication errors, falls, hospital-acquired infections, and surgical procedure failures, are still common occurrences in many healthcare units worldwide. These situations are often linked to inadequate work processes, staff overload, and lack of proper training. Although many of these occurrences are preventable, they still represent a significant public health problem, raising questions about the effectiveness of surveillance systems and the implementation of safety protocols (Santos & Takashi, 2023).

The creation of an organizational culture focused on patient safety is a crucial step. This involves the engagement of all levels of the institution, from administration to frontline professionals such as nurses and doctors. Establishing effective communication between teams, promoting a culture of learning from mistakes, and ensuring transparency in actions are essential components in preventing adverse events. Moreover, efficient management that promotes continuous education and training in safety is key to ensuring that practices are properly followed (Silva et al., 2021).

Prevention protocols are indispensable tools in standardizing conduct and establishing safe practices. They cover everything from hand hygiene to the strict verification of medications and surgical procedures. The implementation of checklists, for example, has proven to be an effective strategy in reducing the occurrence of errors and ensuring that all steps of a procedure are properly followed. However, strict adherence to these protocols depends on a collective effort between managers and healthcare professionals, as well as a system that allows for constant monitoring and adjustments when necessary (Moraes & Aguiar, 2020).

Technology also plays a significant role in patient safety, providing support at various stages of care. The use of computerized systems for medication prescriptions, electronic monitoring of vital signs, and tracking of medical equipment contributes to reducing human errors and improving accuracy in diagnosis and treatment. However, these technologies must be efficiently integrated into the workflow, with adequate training for all involved (Pinto & Santos, 2020).

This article aims to explore the main practices and protocols for preventing adverse events in the hospital environment, discussing strategies that can be adopted to strengthen patient safety.

II. Material And Methods

This study is a narrative literature review, aimed at analyzing the available evidence on practices and protocols for preventing adverse events in the hospital environment. A narrative review was chosen as it allows for the synthesis of studies with different designs, providing a broad and in-depth view of patient safety strategies. For the completion of this review, the six steps proposed by Whittemore and Knafl (2005) were followed: problem formulation, literature search, data evaluation, data analysis, interpretation of results, and presentation of the review.

The guiding question of the review was: "What are the main practices and protocols for preventing adverse events in the hospital environment?" Based on this question, inclusion and exclusion criteria for the studies were established, considering the relevance of the theme to patient safety, the improvement of hospital care, and health research. The inclusion criteria encompassed empirical studies that directly discussed the implementation and outcomes of safety protocols in the hospital environment.

The search was conducted in international electronic databases such as PubMed, Scopus, CINAHL, LILACS, and Web of Science, ensuring a diversity of perspectives on the topic. Controlled descriptors and keywords used in the search were combined using Boolean operators (AND, OR) and included terms such as "patient safety," "adverse event prevention," "hospital protocols," "safety practices," and their equivalents in Portuguese and Spanish. The search was limited to studies published between 2018 and 2023, in English, Portuguese, and Spanish, which were available in full text.

The selection of studies was carried out in two stages. In the first stage, titles and abstracts of the identified articles were analyzed using the following inclusion criteria: (a) empirical studies addressing practices and protocols for patient safety in hospitals; (b) articles published in peer-reviewed journals; (c) studies available in English, Portuguese, or Spanish. The following were excluded: (a) literature reviews, letters to the editor, editorials, and opinions; (b) studies not available in full text; and (c) articles not specifically addressing safety protocols in the hospital context. In the second stage, the selected articles were read in full to verify their relevance and depth in addressing the topic.

The methodological quality of the included studies was evaluated using appropriate tools for each type of study. For quantitative studies, the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) checklist was applied, and for qualitative studies, the CASP (Critical Appraisal Skills

Programme) was used. Each study was evaluated by two independent reviewers, and any disagreements were resolved by consensus or, if necessary, by a third reviewer. The quality assessment aimed to ensure the robustness of the evidence but was not used as a criterion for excluding studies.

Data extraction was performed using a standardized instrument that included information about the authors, year of publication, country of origin, objectives, methodology, sample, interventions, and main results. Data analysis was conducted in a descriptive and thematic manner, allowing the identification of patterns and practices related to patient safety in the hospital environment. Data categorization was done to highlight key interventions, prevention practices, and the challenges faced in the implementation of safety protocols.

The results of the narrative review were presented descriptively, summarizing the characteristics of the included studies, the interventions implemented for preventing adverse events, and the main thematic categories identified. The discussion addressed hospital safety practices and protocols, the challenges in implementing preventive measures, and the implications for healthcare professionals' training, clinical practice, and public policy development. Finally, the study's limitations were discussed, considering potential biases in article selection and the variability in the methodologies of the included studies.

III. Result And Discussion

The search conducted in the databases resulted in the identification of 82 relevant studies on the topic of patient safety in the hospital environment, focusing on practices and protocols for the prevention of adverse events. After reviewing the titles and abstracts, 74 studies were excluded for not meeting the established inclusion criteria, such as lack of direct relevance to the topic or being literature reviews, editorials, or articles not available in full.

Out of the 82 initial studies, 8 were considered eligible for full analysis. These studies met all the inclusion criteria, directly addressing the implementation of safety protocols in hospitals and their implications for the prevention of adverse events. Most of the selected studies were conducted in large hospitals, involving intensive care units (ICU), surgical clinics, and emergency services. All the analyzed studies were published between 2018 and 2023, covering a variety of countries and hospital settings.

The selected studies presented a diversity of interventions, including the use of checklists for surgical procedures, computerized medication prescription systems, safety training programs for healthcare teams, and the implementation of hand hygiene policies. Additionally, the articles highlighted the positive impact of these interventions in reducing adverse events, such as medication errors, patient falls, and hospital-acquired infections.

The thematic analysis of the studies revealed three main categories: (1) strategies for implementing safety protocols, (2) challenges in adherence by healthcare professionals, and (3) the role of technology in improving patient safety. The studies indicated that protocol adherence is higher when there is continuous support and adequate training, and that technologies such as electronic monitoring systems play a crucial role in reducing errors.

Strategies for Implementing Safety Protocols

The implementation of safety protocols in the hospital environment is one of the most effective strategies for preventing adverse events. The analyzed studies showed that the standardization of procedures, such as the use of checklists for surgeries and the adoption of rigorous hygiene practices, plays a crucial role in mitigating errors. However, the mere creation of protocols does not automatically guarantee a reduction in risks. Effective implementation requires a structured process that includes adequate training and continuous monitoring of adherence to the standards (Bates et al., 2023).

One of the main challenges encountered in implementing protocols is the resistance from healthcare professionals. Many studies indicate that doctors and nurses, under time pressure and heavy workloads, may underestimate the importance of strictly following established guidelines. This resistance can be attributed to the perception that protocols are "bureaucratic" or that they limit professional autonomy. Thus, a more collaborative approach, involving professionals in the creation and revision of these protocols, can increase adherence (Mágulas et al., 2024).

Furthermore, hospital leadership plays a fundamental role in the success of implementing safety protocols. Managers who promote a safety culture and encourage active participation from their teams tend to achieve better results in applying standards. Clear and transparent communication about the benefits of the protocols, combined with efficient supervision, can enhance acceptance and use of the recommended practices (Mendes et al., 2020).

Another important aspect is the need to customize protocols for different hospital contexts. Each unit, whether in intensive care, emergency, or surgical clinics, has its own characteristics, and safety protocols must be adjusted to meet the specific demands of each environment. Studies show that adapting guidelines to local

needs increases their applicability and effectiveness, rather than following a generic model (Oliveira et al., 2024).

Constant monitoring and periodic review of protocols are essential to ensure their relevance and effectiveness. As new technologies and evidence emerge, it is necessary to update safety practices to reflect the best recommendations based on recent data. This continuous review also allows for identifying failures or gaps in existing procedures, adjusting them as necessary to maintain high safety levels (Mendes et al., 2020).

Challenges in Adherence by Healthcare Professionals

One of the greatest obstacles to the effective application of safety protocols is the inconsistent adherence by healthcare professionals. Although most recognize the importance of following safety guidelines, factors such as workload overload, lack of time, and operational pressures often lead to noncompliance. This becomes especially critical in high-demand environments, such as emergency units and ICUs, where professionals often prioritize speed over full adherence to the norms (Tsai & Pontes & Capucho, 2020).

Insufficient training is another factor contributing to low adherence. Many healthcare professionals, especially the more experienced ones, may not receive updated training on new safety protocols and technologies. Studies have shown that continuous educational programs are fundamental to ensure that teams are familiar with the latest procedures and can apply them correctly. Furthermore, education should go beyond the technical aspects, promoting a deep understanding of the benefits and necessity of strictly following the protocols (Han & Seo, 2020).

Organizational culture also exerts a significant influence on adherence. Hospitals with a strong patient safety culture, where errors are viewed as learning opportunities and transparency is encouraged, tend to have higher compliance with protocols. Conversely, in environments where there is fear of punishment or where errors are stigmatized, professionals may avoid reporting problems or questioning inadequate practices, which compromises overall safety (Azyabi & Karwowski & Davahli, 2021).

The studies also identified that communication among healthcare teams plays a crucial role in adherence to safety protocols. Barriers in communication, whether between different disciplines or across work shifts, can result in failures to transmit critical information, leading to noncompliance with essential steps of the protocols. Thus, promoting effective and clear communication among doctors, nurses, and other professionals is vital to ensure that everyone follows the same safety guidelines (Bates et al., 2023).

Another important issue is the fatigue and physical and mental exhaustion of healthcare professionals. Work overload, especially in high-pressure hospital environments, can lead to increased errors and reduced adherence to protocols. Studies suggest that implementing policies that balance workloads and ensure the well-being of professionals can significantly improve compliance with safety practices (Mágulas et al., 2024).

The Role of Technology in Improving Patient Safety

The incorporation of new technologies in the hospital environment has been fundamental to improving patient safety. Computerized medication prescription systems, for example, have significantly reduced dosage errors and drug interactions, factors that previously contributed to a large number of adverse events. Moreover, the automation of certain processes, such as verifying medication compatibility and electronically controlling medical records, provides greater accuracy and reduces the risk of human errors (Oliveira et al., 2024).

One of the most evident benefits of technology is the enhancement in patient monitoring. Continuous vital sign monitoring devices, such as pulse oximeters and blood pressure monitors, allow healthcare teams to quickly detect any changes in the patient's clinical status, often before they become critical. This rapid response capability has a direct impact on reducing severe adverse events, such as cardiac arrests and sepsis (Azyabi & Karwowski & Davahli, 2021).

However, implementing new technologies also presents challenges. The analyzed studies indicate that many healthcare professionals may face difficulties adapting to complex technological systems. Lack of adequate training and resistance to change are common barriers that need to be overcome to ensure that technologies are used effectively. Continuous training programs and technical support are essential for teams to integrate new tools into their workflows (Han & Seo, 2020).

Another important point is the integration of technologies into the existing workflow. The information overload generated by electronic devices can, in some cases, be counterproductive, creating "alert fatigue" among professionals, who end up ignoring or underestimating important alerts. Thus, customizing and adjusting systems to reduce false or irrelevant alerts is essential to ensure that technologies genuinely contribute to patient safety (Tsai & Pontes & Capucho, 2020).

IV. Conclusion

In conclusion, the analysis of the selected studies highlights the critical importance of implementing well-structured safety protocols in hospital settings to prevent adverse events and improve patient outcomes.

While standardized procedures such as checklists, hand hygiene policies, and computerized systems for medication prescriptions have proven effective, their success largely depends on continuous training, strong leadership, and a culture of safety. Additionally, the challenges posed by healthcare professionals' resistance and inconsistent adherence underscore the need for a collaborative approach, personalized protocols, and ongoing evaluation of safety practices to ensure relevance and effectiveness. Moreover, the role of technology in enhancing patient safety cannot be overstated. Innovations such as automated monitoring systems, artificial intelligence, and surgical robots offer new opportunities to reduce human error and improve clinical accuracy. However, successful integration of these tools requires addressing issues related to staff training, system overload, and the adaptation of existing workflows. As healthcare systems continue to evolve, the synergy between advanced technologies and robust safety protocols will be essential in creating safer, more efficient hospital environments that prioritize patient well-being.

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