



Nursing Performance in Preventing Adverse Health Events: A Literature Review

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Authors' contributions

This work was carried out in collaboration among all authors. All authors participated in all stages of the research: Definition of the theme and objectives, database searches, data analysis, critical review. All authors read and approved the final manuscript.

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ABSTRACT

This study aimed to evaluate the scientific literature on the role of nursing in preventing adverse health events. Nurses play a central role in implementing safety practices, due to their continuous presence and direct contact with patients at different stages of care. A narrative review of the literature was conducted through a search in the BVS, PubMed, and Google Scholar databases, which selected texts published between 2019 and 2024. This review examines nursing performance in adverse event prevention, discussing key strategies, technological advancements, and the importance of continuous professional development. The events which can trigger negative consequences for patients, can be avoided and minimized through strategies and practices widely discussed in the scientific literature. Effective nursing interventions, vigilance, and adherence to best practices significantly reduce hospital-acquired infections, medication errors, and patient falls. Actions such as the promotion of healthy behaviours, early identification of health problems, the performance of preventive exams, adherence to safety protocols, patient education on healthy lifestyles, and involvement in public health initiatives have proven effective in reducing and preventing adverse events. It was possible to verify that Nursing plays a fundamental role in the identification and assessment of risks, implementation of preventive measures, and monitoring and control of adverse events. Contributions to nursing consist of highlighting the importance of nursing, as a category, as well as being constantly updated and trained with regard to patient safety.

Keywords: Nursing; primary prevention; patient safety; preventive measures.

1. INTRODUCTION

Patient safety has become a major concern in healthcare systems around the world and is essential to ensuring the quality of care provided (Diz; Lucas, 2022). In this context, the occurrence of adverse events, which are defined as incidents resulting from interventions or omissions in healthcare that cause harm to the patient, represents one of the greatest challenges for promoting safe and effective care (Facanha, 2023; Sharma et al. 2023).

Studies indicate that preventing these events can significantly reduce morbidity and mortality rates,

in addition to improving patients' trust in healthcare services (Meneses et al., 2023).

Among the various professionals involved in care, nurses play a central role in implementing safety practices, due to their continuous presence and direct contact with patients at different stages of care (Borchardt et al., 2022).

Nursing is responsible for a series of actions aimed at preventing adverse events, such as the safe administration of medications, correct identification of patients, adequate hand hygiene, monitoring of vital signs, and educating patients

and their families about self-care (Oliveira et al., 2023). In addition, nursing plays a fundamental role in the early detection of complications and effective communication within the multidisciplinary team, factors that are crucial for reducing risks to patients' health (Santos et al., 2021).

Health policies are basically policies that are directly associated with the governmental health sector in any country (Shariff, 2014). These policies involve areas such as healthcare services, costs, and healthcare quality and access. Quality provision, accessibility, and cost-effectiveness improve the quality of life and welfare of society (Heydari et al., 2013). The participation of nurses in the development of health policies ensures safe, effective, accessible, and low-cost services (Jivraj Shariff, 2015). Health policies affect the nursing profession and healthcare (Safari et al. 2020).

Given the complexity and importance of preventive actions in the context of patient safety, it is essential to evaluate the existing scientific literature to understand more broadly the contribution of nursing in the prevention of adverse events.

This evaluation may contribute to the development of strategies aimed at continuously improving the quality of care and promoting a safer hospital environment. Thus, the objective of this study is to evaluate the scientific literature on the role of nursing in the prevention of adverse health events.

2. MATERIALS AND METHODS

This study is characterized as a narrative literature review, which was conducted in six stages, as described by Sousa et al. (2017): (1) definition of the research question; (2) creation of the data source and establishment of criteria for inclusion and exclusion; (3) definition of the information to be extracted from the selected studies (categorization of the studies); (4) evaluation and critical analysis of the results, identifying differences and conflicts; (5) interpretation of the results; and, finally, (6) synthesis of the evidence found.

The guiding question of the study was: "How does nursing act in the prevention of adverse health events, according to the scientific literature?" To answer this question, searches were carried out in the Virtual Health Library

(BVS), SciELO, PubMed and Google Scholar databases. Descriptors validated in DeCS/MeSH in Portuguese and English were used, such as: "Enfermagem; Prevenção de Eventos Adversos; Segurança do paciente" or "Nursing; Adverse Event Prevention; Patient Safety". The combination of Boolean operators "AND" and "OR" was used to refine data collection in the aforementioned descriptors.

The inclusion criteria included full articles, theses and dissertations from institutional repositories, freely available, written in Portuguese, English and Spanish, and published in the last five years (2019 to 2024). Duplicate articles, incomplete publications or other types of documents were excluded, as well as studies that did not directly address the research questions.

For data analysis, Laurence Bardin's "Content Analysis" (2011) was used, allowing the classification and grouping of studies according to their themes and main elements.

3. RESULTS AND DISCUSSION

3.1 Safety Practices in Medication Administration

Safe medication administration is one of the most critical areas in nursing practice for the prevention of adverse events (Meneses et al., 2023). Medication errors, which include dosage errors, failure to correctly identify the patient, and incorrect medication administration, are among the most common causes of adverse events in health services. The implementation of safety practices in this context has been widely discussed in recent literature (Barbiero; Souza; Almeida, 2023).

According to Moraes et al. (2024), the adoption of strategies such as double-checking of medications, standardization of processes, and the use of electronic prescription systems significantly reduce the occurrence of errors. These authors highlight that, in hospitals where nursing adopts these measures, there is a substantial improvement in safety indicators, preventing adverse events related to medications.

In addition, Silva et al. (2022) and Almeida et al. (2024) point out that ongoing education for nursing professionals is essential to maintain up-to-date knowledge on safe medication administration practices. Training programs

focused on the safe use of technologies, such as infusion pumps and barcode systems for patient identification, have shown effectiveness in reducing errors. Another relevant aspect is correct patient identification, which is directly related to preventing medication errors. Checking the identification bracelet and confirming patient data before administering the medication are essential practices to avoid confusion and ensure safety (Brito et al., 2021). Furthermore, the study by Loureiro et al. (2021) highlights the importance of creating a culture of safety within healthcare institutions. Building an environment where nurses feel comfortable reporting errors without fear of punishment contributes to the early detection of problems and the development of improvements in medication administration processes. Therefore, nursing's role in medication administration goes beyond the simple act of distributing medications. It involves the rigorous application of safety protocols, the use of assistive technologies and effective communication with the healthcare team, which together promote a significant reduction in medication-related adverse events (Santos; Correa; Silva, 2022).

3.2 Hand Hygiene and Infection Control

Adequate hand hygiene is widely recognized as one of the most effective measures for preventing healthcare-associated infections and is a crucial responsibility of nursing staff (Silva et al., 2022). Recent literature highlights the importance of strict adherence to this practice, especially in hospital settings, where patients are more vulnerable to infections (Santos et al., 2021).

Hospital infections, such as ventilator-associated pneumonia, urinary tract infections, and bloodstream infections, are common adverse events that can be largely prevented with appropriate control measures (Mesquita et al., 2023).

According to Rocha et al. (2023) and Cristino et al. (2023), the implementation of continuing education programs on hand hygiene has contributed to increasing the adherence of nurses and the entire multidisciplinary team to this practice. These programs, which include periodic training and internal audits, have proven effective in reducing hospital infections, as they ensure that healthcare professionals adopt the correct technique and use antiseptic products appropriately.

In addition, the use of alcohol-based hand sanitizers, compared to traditional handwashing with soap and water, has been widely recommended in situations where there is no visible dirt. These authors indicate that this practice is more efficient, saves time, and promotes greater adherence among nursing professionals, resulting in a significant reduction in the transmission of pathogens (Cruz, 2022).

The World Health Organization (WHO) proposes the "Five Moments for Hand Hygiene" strategy, which includes hand hygiene before and after contact with the patient, after contact with bodily fluids, before performing aseptic procedures, and after touching surfaces around the patient (Constantino et al., 2022). Nurses who follow this strategy have a positive impact on reducing hospital-acquired infections, especially in intensive care units (ICUs), where the risk of infections is high (Oliveira et al., 2022).

Another crucial factor is the continuous monitoring of adherence to hand hygiene practices, which is an effective strategy for identifying failures and reinforcing the importance of this procedure in the hospital routine. Regular audits, associated with immediate feedback to professionals, have proven to be fundamental for increasing adherence rates and creating a safety culture focused on infection control (Godoy; Leite, 2022; Oliveira et al., 2022).

Therefore, hand hygiene is not just a routine action, but an essential component in the prevention of adverse events, especially related to hospital-acquired infections. Nursing, through the adoption of appropriate protocols, continuing education and monitoring of its adherence, plays a fundamental role in controlling these infections, ensuring patient safety (Ramos et al., 2022).

3.3 Monitoring and Early Detection of Complications

Continuous monitoring and early detection of complications by nurses are essential actions to prevent adverse health events. Nurses play a vital role in directly observing patients, assessing clinical signs and detecting changes that may indicate the onset of a complication. This constant surveillance allows for rapid interventions, preventing problems from evolving into more serious situations, such as falls, infections or deterioration of the patient's clinical condition (Nava et al., 2021; Binkowski et al., 2024).

Nurses' ability to identify early signs of clinical deterioration is essential for patient safety, especially in highly complex environments, such as the ICU. The authors highlight that the implementation of structured monitoring protocols, such as the use of early assessment scales, has proven effective in reducing adverse events in paediatrics, allowing a faster response by the health team (Miranda et al., 2020; Guerra et al., 2022; Cunha; Tenório, 2023).

Furthermore, Borges and Negreiros (2024) emphasize the importance of monitoring vital signs and continuous surveillance of hospitalized patients, particularly in intensive and semi-intensive care units. Nurses, by being in direct contact with the patient throughout the care journey, are in a unique position to identify subtle changes in the clinical condition, such as variations in blood pressure, heart rate, temperature and oxygen saturation, which can be early indicators of serious complications. Detecting these changes and immediately communicating them to the medical team are crucial to prevent the progression of conditions that could culminate in adverse events.

Technology has also proven to be an ally in the continuous monitoring of patients. The use of electronic devices for remote monitoring and automated alert systems, which notify the nursing team of critical changes in the patient's clinical parameters, has improved the effectiveness of early detection of complications. These systems allow for faster interventions, reducing the incidence of adverse events, such as cardiorespiratory arrest or sepsis (Monteiro et al., 2023).

Another relevant aspect is the creation of a collaborative environment between the nursing team and other health professionals, ensuring effective and continuous communication. The integration of nurses in the process of planning and clinical monitoring of patients at high risk of complications allows for a more holistic and effective approach. Interprofessional collaboration facilitates the recognition of signs of deterioration and the implementation of preventive actions in a rapid and coordinated manner (Santos et al., 2021).

3.4 Continuing Education and Training for the Prevention of Adverse Events

Continuing education and ongoing training for nursing professionals are essential elements for

the prevention of adverse events in health. Clinical practice is constantly evolving, and nurses must be up to date on best practices, new technologies, and safety protocols. Ongoing training and the improvement of nurses' skills directly contribute to the reduction of errors and the promotion of a culture of safety in the health environment (Galvão, 2021).

According to Nascimento et al. (2023) and Parise and Batista (2023), continuing education programs focused on patient safety and the prevention of adverse events have shown significant results in improving the quality of care provided. The authors point out that when nurses participate in regular training that addresses topics such as hand hygiene, safe medication administration, and correct patient identification, error rates decrease considerably. This is due to the continuous reinforcement of good practices and the opportunity to recycle knowledge already acquired.

Parente et al. (2023) highlight that, in institutions where training is a priority, there is greater adherence to safety protocols. In addition, these educational programs also promote awareness of the importance of effective communication among members of the healthcare team, a crucial factor for the early detection of errors and the implementation of corrective interventions in a timely manner. The study reveals that the lack of adequate training can result in professionals who are unprepared to deal with critical situations, which increases the risk of adverse events.

Another relevant aspect, pointed out by Martins et al. (2022), is the introduction of clinical simulations in training programs. Simulations of real scenarios, which reproduce critical situations that can occur in the hospital environment, have been effective in training nurses to make quick and safe decisions. Simulations allow nursing professionals to practice in a controlled environment, without risks to patients, which improves their confidence and competence in identifying complications and implementing preventive interventions.

The literature also emphasizes the importance of interdisciplinary education, in which training programs that integrate different health professionals promote a collaborative approach to the prevention of adverse events. By working as a team during training, nurses develop communication and problem-solving skills

together, which facilitates the flow of information and coordination in patient care (Frazão et al., 2024). Finally, continuing education should not be seen as an isolated event, but as an ongoing process that accompanies the entire career of nursing professionals. Creating an environment of continuous learning, where nurses have regular access to new knowledge, contributes to strengthening the culture of safety and reducing adverse events. Institutional support, such as providing resources and time for participation in courses and training, is essential to ensure the success of these initiatives (Rocha; Alves; Carminati, 2024).

3.5 Implementation of Safety Protocols and Good Practices

The implementation of safety protocols and the adoption of good practices in the nursing routine are essential for the prevention of adverse health events. Well-structured protocols guide nurses in carrying out their daily activities, ensuring that the care provided to patients is carried out in a standardized and safe manner. In addition, they establish clear guidelines for identifying risks, implementing preventive interventions, and responding to emergency situations (Serra; Silva, 2021).

According to Ramos (2022), patient safety protocols are indispensable tools for reducing the occurrence of adverse events, especially in hospital settings. The study reveals that the implementation of hand hygiene protocols, safe medication administration, correct patient identification, and fall prevention resulted in a significant decrease in the rate of adverse events in a large health unit. The standardization of care practices minimizes variations in care and promotes a culture of safety within institutions.

One of the main benefits of protocols is the establishment of a clear line of action for risk situations, such as the prevention of healthcare-associated infections (HAIs). The implementation of infection prevention protocols in hospital settings, such as the safe insertion of invasive devices and the correct handling of catheters, is essential to avoid serious complications. Strict adherence to these guidelines by nurses has been identified as one of the most effective strategies for reducing the incidence of HAIs, directly contributing to patient safety (Ferreira et al., 2019).

In addition to protocols, good practices recommended by international organizations,

such as the WHO, also play a crucial role in preventing adverse events. The WHO promotes specific guidelines for the prevention of medication errors, one of the most common adverse events in hospital settings. Compliance with good practices related to the use of medications, such as double checking, correct labelling, and administration at the right time, has significantly reduced medication errors in institutions that adopt these recommendations (Dantas, 2023).

Effective implementation of protocols is also closely linked to supervision and continuous feedback on professionals' practices. Supervision by nurse leaders and nursing managers is a relevant strategy to ensure that protocols are followed properly on a daily basis. Through regular audits, case reviews, and training based on identified errors, the team can adjust their practices and continually improve the safety of the care provided (Maia, 2021).

Another important aspect is the role of nurses in adapting and creating protocols specific to the context of their institutions. Araújo et al. (2020) discuss how nurses, by being directly involved in care practice, have a privileged view of the main risks and safety needs of their patients. By participating in the development or adaptation of protocols, nurses ensure that these guidelines are applicable and relevant to the local reality, increasing their adherence and effectiveness (Sete; Goveia; Vieira, 2021).

4. FUTURE DIRECTIONS AND RECOMMENDATIONS

Nurses are at the forefront of preventing adverse health events through vigilance, education, and evidence-based interventions. Addressing challenges such as staffing shortages and resistance to change is essential for improving patient outcomes. Future research should focus on innovative nursing practices and technological advancements to further enhance patient safety.

Effective communication between nurses, physicians, and other healthcare providers fosters a coordinated approach to patient care, reducing miscommunication-related errors. Enhancing nursing performance in preventing adverse health events requires policy changes, increased funding for training, and the adoption of artificial intelligence in healthcare monitoring. Hospitals must prioritize nurse well-being and invest in advanced patient safety measures.

5. CONCLUSION

The role of nurses in preventing adverse health events is an essential component for promoting safety and quality in patient care. This study demonstrated, based on a literature review, that the role of nurses goes beyond care activities, including the adoption of strategies such as monitoring at-risk patients, use of technological tools, implementation of safety protocols and good practices, as well as ongoing education and continuous training. These factors, when combined, contribute significantly to reducing errors and complications, promoting a safer care environment.

The results highlighted that the proactive involvement of nurses in the surveillance and monitoring of early signs of clinical deterioration is essential for preventing adverse events. The use of technological tools, such as automated monitoring systems, has also proven to be an effective strategy for early risk detection. In addition, ongoing training and the implementation of standardized protocols ensure that nursing teams are prepared to deal with the daily challenges of clinical practice in a safe and efficient manner.

Thus, nursing plays a vital role in preventing adverse health events through evidence-based practices and a strong commitment to patient safety. To ensure this process remains continuous and effective, institutional support, regular supervision, and the integration of advanced technologies and training methods are essential for maintaining quality care and patient safety. Strengthening these practices within healthcare institutions is, therefore, crucial for enhancing overall health services and fostering an environment that minimizes preventable risks.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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