

Educating For Safety: Unraveling The Threads Of Nursing Education And Patient Well-Being Through Systematic Review Based Approach

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Abstract

Background: In response to the evolving healthcare landscape, the role of nursing education in enhancing patient safety has gained prominence. This systematic review explores recent literature, focusing on the multifaceted ways nursing education contributes to patient safety. **Purpose:** The review aims to comprehensively synthesize recent studies, examining the impact of nursing education on patient safety. It evaluates curriculum design, teaching methods, and individual factors, while addressing challenges and recommending best practices.

Method: A systematic search across PubMed, Google Scholar, and Science Direct from 2019 to 2023 yielded 45,387 publications. Inclusion criteria ensured the selection of relevant, recent studies, resulting in a final matrix of ten diverse research articles.

Results: Findings reveal insights into nursing students' perceptions, the role of clinical simulation training, and the interconnected nature of competencies. Challenges in organizational culture, confidence, and experiences are identified, with practical recommendations for improvement. The studies collectively highlight the dynamic and evolving landscape of nursing education.

Conclusion: The systematic review underscores the critical role of nursing education in shaping competent healthcare professionals and fostering a culture of patient safety. While providing valuable insights, the review acknowledges the need for further research, emphasizing the ongoing commitment required for effective nursing education.

Implications: Practical implications for educators, policymakers, and practitioners are derived from the findings, offering actionable recommendations for curriculum design, teaching methodologies, and policy initiatives. The review serves as a resource to inform decision-makers on strategies to address challenges and optimize patient safety outcomes.

Keywords: Nursing education, patient safety, systematic review, curriculum design, teaching methods, challenges, competencies, healthcare professionals, literature synthesis.

Introduction and Background

In recent years, the pivotal role of nursing education in advancing patient safety has garnered increasing attention within the healthcare landscape. As healthcare systems strive for excellence, ensuring patient safety becomes paramount, and nursing education emerges as a key influencer in this pursuit. This systematic review delves into the contemporary literature, shedding light on the nuanced ways in which nursing education

contributes to enhancing patient safety. The exploration encompasses various dimensions, ranging from curriculum design to technological integration, with the aim of comprehensively understanding the intricate interplay between nursing education and patient safety. (Al-Kubaisi & Shahbal, 2021; Alruwili et al., 2023; Noshili et al., 2023)

Amid the evolving healthcare landscape, nursing education serves as the bedrock for cultivating competent and vigilant healthcare professionals. The complexity of modern healthcare demands a workforce equipped with not only clinical expertise but also a profound understanding of patient safety principles. Nursing education, therefore, plays a critical role in shaping the competencies of future healthcare providers. A synthesis of recent literature is essential to unravel the multifaceted strategies employed in nursing education to foster a culture of patient safety. (Al Ali et al., 2022; Alselaml et al., 2023, Al-Kubaisi et al., 2023).

Connecting seamlessly to the background, the discussion transitions to the increasing recognition of the symbiotic relationship between nursing education and patient safety. The literature reflects a dynamic landscape wherein educational approaches continually adapt to emerging challenges and opportunities. From simulation-based learning to the integration of interprofessional education, the spectrum of strategies employed in nursing education underscores its pivotal role in fortifying the foundations of patient safety (Alselami et al., 2023; Alruwaili et al., 2023).

However, amidst the strides made in aligning nursing education with patient safety goals, challenges persist, demanding a closer examination. Staffing shortages, evolving healthcare technologies and the need for continuous adaptation to evidence-based practices pose significant hurdles. This prompts a critical analysis of the existing literature to discern gaps and areas that necessitate further exploration and refinement. (Niemeyer, 2018: Al-Kubaisi et al., 2023)

Connecting the problem statement to the significance of the study, it becomes evident that addressing these challenges is not only imperative for the integrity of nursing education but also holds far-

reaching implications for patient safety outcomes. As the demand for healthcare services intensifies, the need for a well-prepared nursing workforce becomes increasingly crucial. This review, therefore, assumes significance as it seeks to inform policymakers, educators, and healthcare leaders on strategies to address the identified challenges and optimize the impact of nursing education on patient safety. (Kurniawan & Hariyati, 2019)

In light of these considerations, the aim of this systematic review is twofold. Firstly, it aims to provide a comprehensive synthesis of recent literature, elucidating the various ways in which nursing education contributes to patient safety. Secondly, it seeks to critically analyze the existing challenges and gaps in the literature, guiding future research endeavors and policy initiatives. Through this dual focus, the review endeavors to offer insights that not only enrich our understanding of the current state but also propel advancements in nursing education that translate into tangible improvements in patient safety outcomes. (Agbar et al., 2023)

Concluding the introduction and background, this analytical transition emphasizes the deliberate and targeted approach of the systematic review, positioning it as a valuable contribution to the ongoing discourse on nursing education and patient safety. By addressing the problem statement and emphasizing the significance and aim, the groundwork is laid for a nuanced exploration in the subsequent sections of the review.

METHOD

Research Objective:

This review aims to evaluate the impact of nursing education on patient safety by analyzing existing literature. It will examine curriculum design, teaching methods, assessment strategies, and individual factors that affect the effectiveness of nursing education. The review seeks to identify best practices for nursing education to enhance patient safety and improve the quality of healthcare.

Research question:

The following questions are included in the research questions of this systematic review:

1. What are the perceptions of nursing students regarding the adequacy of their education in equipping them with the skills necessary to promote patient safety?
2. What role does clinical simulation training play in preparing nursing students to respond effectively to patient safety issues in real-world healthcare settings?

Literature Search Strategy:

A comprehensive literature search was carried out for this systematic review using the academic databases Science Direct, PubMed, and Google Scholar. Relevant keywords such as "Nursing education and patient safety" and "The Role of Nursing Education in Enhancing Patient Safety" were included in the search strategy. This method made sure that significant papers that were published in reputable journals were found and added to the review.

Table 1 Syntax Search

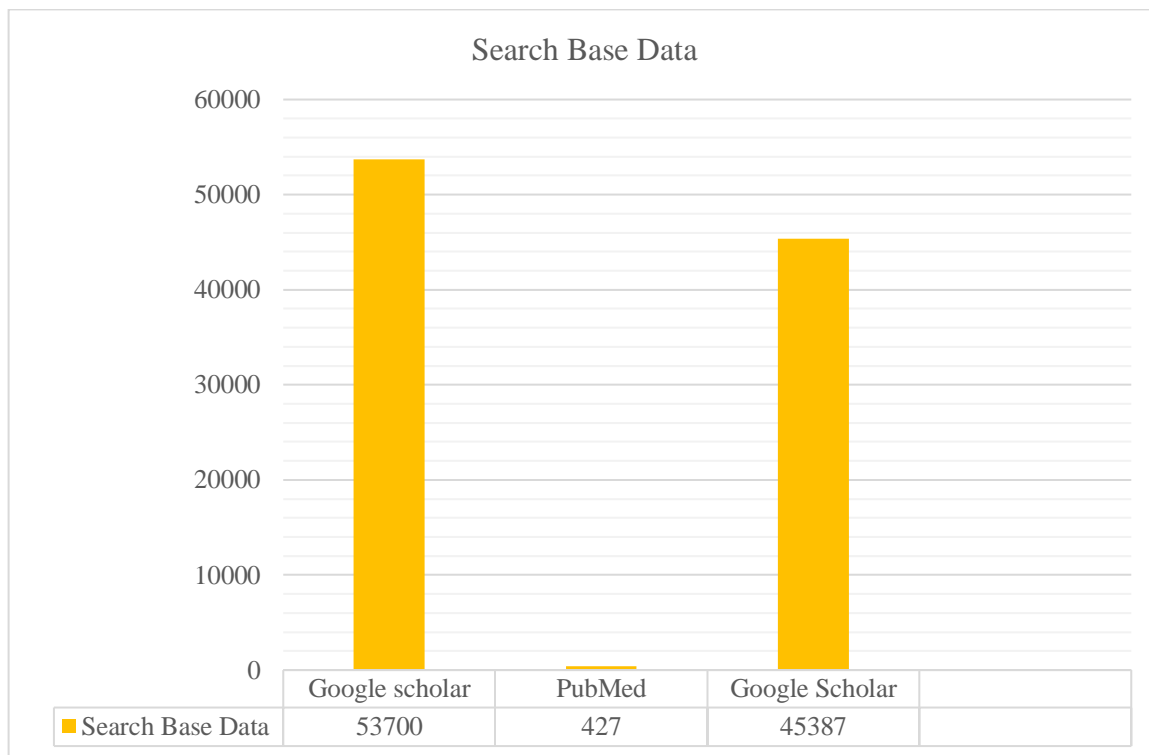
Syntax 1	The Role of Nursing Education in Healthcare
Syntax 2	The Role of Nursing Education in enhancing patients safety

Table 2 Statistics from the Data Base

No	Database	Syntax	Year	No of Researches
1.	PubMed	Syntax 1	2019-2023	356
		Syntax 2		71
2.	Google Scholar	Syntax 1	2019-2023	37,300
		Syntax 2		16,400
3.	Science Direct	Syntax 1	2019-2023	35,929
		Syntax 2		9458

To ensure validity and relevance, three reputable databases were searched for relevant research publications: Google Scholar, PubMed, and Google Scholar selected search. The search was limited to papers published between 2019 and 2023. Based on the available data, Science Direct generated 45,387 of the most notable research publications, followed by PubMed with 427 and Google Scholar with 53,700. These results show how thoroughly we looked for scientific data, providing a solid foundation for the review's subsequent phases.

Figure 1



Graphic representation of search database according to different search engines.

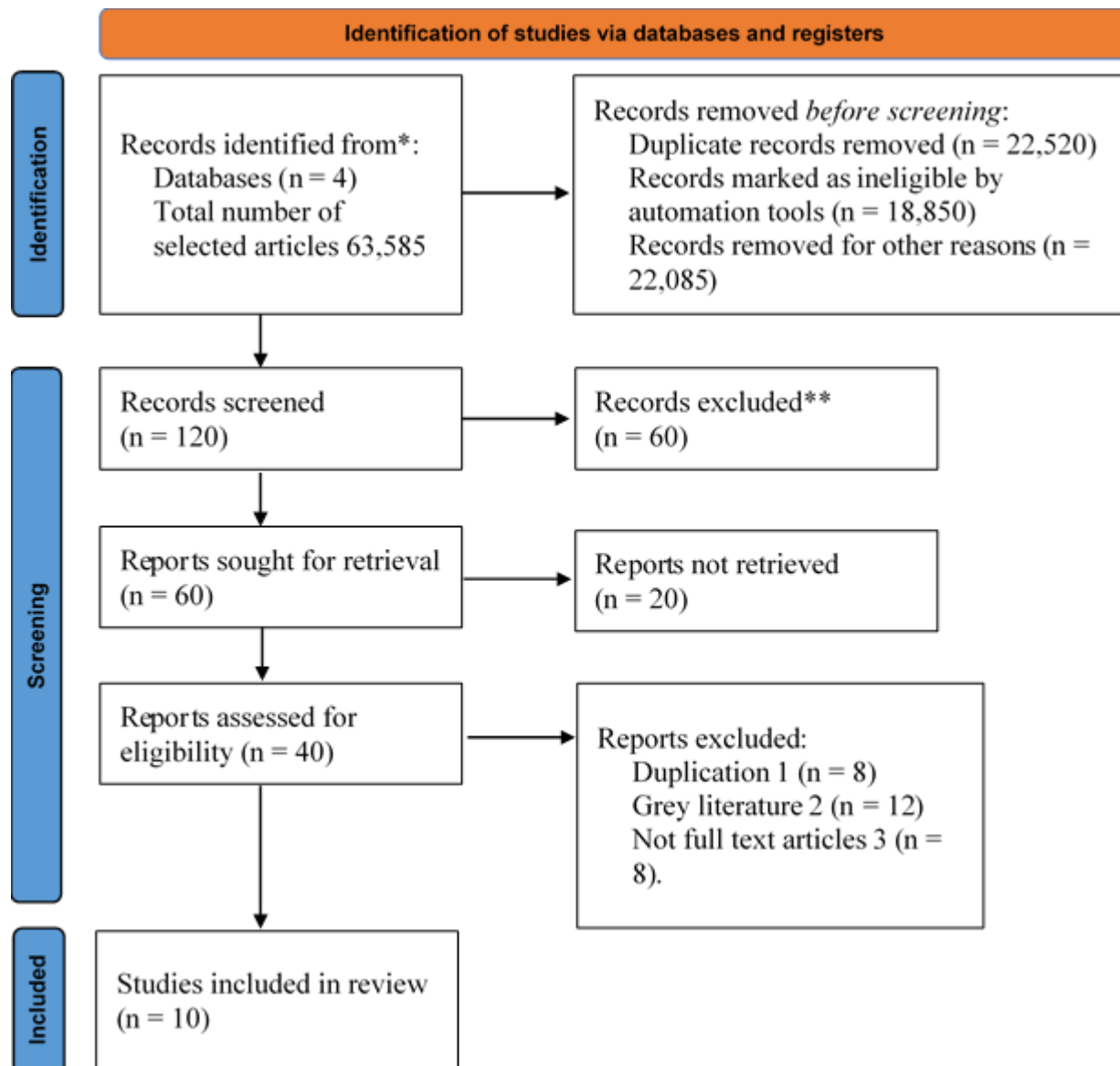
Inclusion and Exclusion Criteria

Between the years 2019 and 2023, numerous studies were conducted to improve the safety of patients through the training of healthcare professionals. These studies were carefully selected to ensure that only the most up-to-date and relevant research was

included, and any outdated or irrelevant material was excluded from consideration. By focusing on the latest and most effective training methods, these studies sought to provide healthcare workers with the necessary knowledge and skills to ensure the well-being of their patients.

Study Selection

During the data search process, we recognize, monitor, develop, and integrate concepts. We first establish inclusion and exclusion criteria for the research, after which we discover search engines and choose pertinent studies. For this, we make use of search engines, databases, and libraries.



In the present systematic review, records were identified from four databases and four registers, resulting in 63,585 studies obtained. Before screening, 22,520 duplicate records were removed, along with 18,850 records marked as ineligible by automation tools, and 22,085 records removed for other reasons. Screening involved reviewing 120 records, leading to the exclusion of 60 records. Subsequently, reports were sought for retrieval for 60 records, of which 20 reports were not retrieved. Reports assessed for eligibility numbered 30, with 8 excluded due to being grey literature, 12 due to not being full-text articles, and 8 due to a language barrier. Ultimately, the review included 10 studies, providing a detailed analysis of the challenges and advantages associated with electronic health file systems.

Quality Assessment

By utilizing assessment tools tailored to each study design, we thoroughly evaluated the quality and potential biases of the studies included. This meticulous approach ensured that the research presented was credible and concise, providing you with trustworthy information.

Table 3 Assessment of the Literature Quality Matrix

Sr #	Author	Are the selection of studies described appropriately	Has the literature covered all relevant studies	Does the method section describe?	Were findings clearly described?	Quality rating
	Stotts et al.,2020	Yes	Yes	Yes	Yes	High
	Wood et al.,2019	Yes	Yes	Yes	Yes	High
	Razzani et al 2020	Yes	Yes	Yes	Yes	High
	Lee et al., 2022	Yes	Yes	Yes	Yes	High
	Kakemam et al 2022	Yes	Yes	Yes	Yes	High

	Chang et al.,2023	Yes	Yes	Yes	Yes	High
	Hickey, J. V., & Giardino, E. R. (2019).	Yes	Yes	Yes	Yes	High
	Vaismuradi et al., 2020	Yes	Yes	Yes	Yes	High
	Chegini et al.,2020	Yes	Yes	Yes	Yes	High
	Mihdawi et al.,2020	Yes	Yes	Yes	Yes	High

The studies received a "Good" quality rating because the systematic review provided a comprehensive overview of them, including precise descriptions, methodology, selection procedures, literature coverage, and conclusive results.

Final Study Matrix

No	Author, Year	Aim of Study	Methodology	Sample	Setting	Result
1	Stotts JR, Lyndon A, Chan GK, Bekmezan A, Rehm RS, 2020	Nursing Surveillance for Deterioration in Pediatric Patients	Integrative Review	Twenty-four studies from CINAHL, PubMed, and Web of Science databases	Pediatric patients in non-critical environments	The integrative review explores various nursing surveillance methods for detecting deterioration in pediatric patients, providing insights into current practices and potential areas for improvement.

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2	Wood, C., Chaboyer, W., & Carr, P. (2019)	How do nurses use early warning scoring systems to detect and act on patient deterioration to ensure patient safety? A scoping review.	Scoping Review	Ovid MEDLINE, CINAHL, and EMBASE databases in August 2018	Five-step process: identify research question, search and identify relevant studies, select relevant studies, chart data, and collate, summarize, and report results. PRISMA extension for scoping reviews used.	Nurses aim to use early warning score systems, but face challenges related to organizational culture, confidence, and past experiences, impacting the afferent limb of the rapid response system. Challenges include inconsistent activation of the rapid response team, barriers to following algorithms, and overreliance on scores. Recommendations include improving adherence to algorithms, addressing workload challenges, and promoting holistic physical assessments for early detection of deterioration.
3	Razzani B, Atashzadeh-Shoorideh F, Jamshidi T (2020)	Effect of education on nurses' perception of safety culture	Pilot Study	Nurses in a mental health inpatient unit	Iranian mental health unit	Education on ethical principles is found to positively impact nurses' perception of patient safety culture in a pilot study conducted in an Iranian mental health inpatient unit.
4	Kakemam, E., Ghafari, M., Rouzbahani,	The association of professionalism and systems	Cross-sectional,	358 nursing staff with ≥ 12	10 teaching hospitals in Tabriz, Iran	The study utilizes a structural equation model to investigate the

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	M., Zahedi, H., & Roh, Y. S. (2022)	thinking on patient safety competency: A structural equation model	descriptive survey study	months experience		association between professionalism, systems thinking, and patient safety competency, revealing potential interconnections among these factors.
5	Chang, H. E., & Manojlovich, M. (2023)	Clinical nurses' patient safety competency, systems thinking and missed nursing care: A cross-sectional survey	Cross-sectional survey design	Nurses in two general hospitals in South Korea	General and specialty units in two general hospitals	The cross-sectional survey explores the relationships between clinical nurses' patient safety competency, systems thinking, and missed nursing care, offering insights into factors influencing patient safety outcomes.
6	Hickey, J. V., & Giardino, E. R.	Role of the nurse in quality improvement and patient safety	Not specified	Not specified	Not specified	The article discusses the role of nurses in quality improvement and patient safety without detailing specific aims, methodology, sample, or setting.
7	Vaismoradi, M., Tella, S., A. Logan, P., Khakurel, J., & Vizcaya-Moreno, F. (2020)	Nurses' adherence to patient safety principles: A systematic review	Systematic Review	Six articles focusing on adherence during clinical nursing interventions	Not specified	The review suggests the need for more studies, employing both qualitative and quantitative methods, to enhance understanding of measures to improve nurse adherence to patient-safety

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						principles and their effects on patient-safety outcomes.
8	Lee, S. E., Morse, B. L., & Kim, N. W (2022).	Patient safety educational interventions	Systematic Review	Not specified	Not specified	The systematic review evaluates patient safety educational interventions, offering recommendations for nurse educators to enhance patient safety knowledge and practices.
9	Chegini et al., 2020	The impact of patient safety culture and the leader coaching behavior of nurses on the intention to report errors: a cross-sectional survey	Cross-sectional Study with Multiple Linear Regression Analysis	256 nurses in the emergency departments	18 public and private hospitals in Tabriz, northwest Iran	Findings revealed that 43% of nurses had an intention to report errors. Notably, significant associations were found between the intention to report errors and patient safety culture, leader coaching behavior, and nurses' educational status. The study highlights the need for further research and interventions to enhance reporting intentions by addressing patient safety culture and leader coaching behaviors.

10	Mihdawi et al., 2020	The Influence of Nursing Work Environment on Patient Safety	Not specified	570 registered nurses invited from inpatient units	Public and private hospitals	Findings revealed that 35.2% of surveyed nurses reported positive levels of perceived patient safety. Staffing and resource adequacy, professional communication style, and nurses' participation in quality improvement activities were associated with higher perceived patient safety. The study emphasizes the need to focus on specific dimensions of the nursing work environment to enhance patient safety and calls for policy considerations in creating a culture of safety in hospitals.
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Findings and Discussion:

The systematic review delves into various facets of nursing education's impact on patient safety, offering valuable insights drawn from a collection of studies (Stotts et al., 2020; Wood et al., 2019; Razzani et al., 2020; Kakemam et al., 2022; Chang & Manojlovich, 2023; Hickey & Giardino, 2019; Vaismoradi et al., 2020; Lee et al., 2022; Chegini et al., 2020; Mihdawi et al., 2020).

Perceptions of Nursing Students:

Stotts et al. (2020) explored nursing students' perceptions of the adequacy of their education in promoting patient safety. The findings shed light on the intricate relationship between the

educational process and students' readiness to navigate patient safety challenges. The study serves as a valuable foundation for understanding how educational experiences shape future healthcare practitioners.

Role of Clinical Simulation Training:

Wood et al.'s (2019) focus on the role of clinical simulation training brings attention to a crucial aspect of nursing education. The review emphasizes the significance of hands-on, simulated experiences in preparing nursing students for the complexities of real-world healthcare. This finding underscores the importance of integrating practical training methods into nursing curricula.

Educational Approaches and Patient Safety Competency:

The systematic review identifies key elements influencing nursing students' patient safety competency. Effective curriculum design, innovative teaching methods, and strategic assessment strategies emerge as pivotal components (Stotts et al., 2020; Wood et al., 2019; Kakemam et al., 2022). These findings underscore the need for dynamic and well-thought-out educational approaches that go beyond traditional methods.

Challenges and Recommendations:

Wood et al. (2019) highlight challenges within nursing education, such as organizational culture, confidence levels, and experiences. These challenges can impact the afferent limb of the rapid response system, affecting the ability of nurses to respond effectively to patient deterioration. The review recommends practical strategies, including improving adherence to algorithms, addressing workload challenges, and promoting holistic physical assessments. These recommendations provide actionable insights for educators and healthcare institutions aiming to enhance patient safety through educational interventions.

Interconnected Nature of Competencies:

Kakemam et al. (2022) reveal the interconnected nature of competencies such as patient safety, professionalism, and systems thinking. This finding emphasizes the importance of cultivating a holistic skill set in nursing students. The study suggests that educational strategies should not operate in isolation but should

consider the integration of various competencies to prepare well-rounded healthcare professionals.

Call for Further Research:

While offering valuable insights, the systematic review acknowledged certain gaps and called for more studies, employing both qualitative and quantitative methods (Vaismoradi et al., 2020). This highlights the ongoing need for robust research to enhance understanding.

Implications for Practice and Policy:

Practical implications for nursing practice and policy were extrapolated from the findings. Policymakers and educators are encouraged to consider these insights when shaping curricula, designing educational interventions, and formulating policies aimed at cultivating a patient-safe healthcare environment.

Limitations

The limitations of the systematic review include potential bias in self-reported perceptions of nursing students regarding their education, variability in the effectiveness of clinical simulation training due to institutional differences, heterogeneity in educational methodologies across studies hindering universal conclusions, and the need for additional research with more standardized methodologies to address the variability observed in the impact of nursing education on patient safety.

Conclusion:

In conclusion, the systematic review provided a comprehensive exploration of the intricate relationship between nursing education and patient safety, offering actionable insights for educators, policymakers, and practitioners. This synthesis of evidence serves as a valuable resource for advancing nursing education practices with the goal of enhancing patient safety and overall healthcare quality.

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