The Determinants of Nurses' Knowledge Application: A Systematic Review

Amal Mohammed A Hamdi[1], Hafizah Che Hassan[2*]

[1]Faculty of Nursing, Lincoln University College, Malaysia, yes-i-no@hotmail.com

[2]Faculty of Nursing, Lincoln University College, Malaysia, hafizahche@lincoln.edu.my

[*]Corresponding Author's E-mail: hafizahche@lincoln.edu.my

Abstract: *Knowledge application in nursing practice is fundamental to evidence-based care, clinical decision-making, and improved patient outcomes; however, its effective integration is shaped by multiple individual, organizational, and contextual determinants. This systematic review examined the factors influencing nurses' application of knowledge in clinical practice by synthesizing evidence from studies addressing knowledge utilization, evidence-based practice, and research use. Following PRISMA 2020 guidelines, a comprehensive search of PubMed, Scopus, Google Scholar, and Web of Science was conducted, and eligible studies were selected using predefined inclusion and exclusion criteria. Data were extracted and synthesized through a structured review matrix. Thirty studies were included. Findings demonstrated that knowledge application is influenced by nurses' knowledge, professional competence, clinical experience, and attitudes toward evidence-based practice, alongside organizational factors such as leadership support, institutional policies, and resource availability. Contextual influences included workload, work environment, access to clinical guidelines, and technological resources. The review further identified important barriers and facilitators affecting knowledge utilization across diverse contemporary clinical care settings. Strengthening professional education, supportive leadership, enabling workplace conditions, and access to relevant technologies may enhance knowledge application, improve evidence-based nursing practice, and contribute to higher-quality patient care and healthcare delivery.*

Keywords: Nurses; Knowledge application; Evidence-based practice; Knowledge utilization; Nursing practice.

1. Introduction

Nurses play a fundamental role in the healthcare system by providing direct patient care and supporting the implementation of evidence-based interventions in clinical settings. The application of professional knowledge in nursing practice is essential for ensuring high-quality care, improving patient outcomes, and enhancing the effectiveness of healthcare services (Rafii et al., 2021). In modern healthcare environments, knowledge application often occurs through the integration of research evidence, clinical expertise, and patient preferences, which collectively form the foundation of evidence-based practice (EBP). EBP has been widely recognized as a key strategy for improving clinical decision-making and ensuring that nursing care is guided by the best available scientific evidence (Brunt & Morris, 2023). Despite its recognized benefits, the translation of research knowledge into clinical practice remains a persistent challenge in many healthcare systems (Jabonete & Roxas, 2022).

Evidence suggests that nurses frequently encounter barriers that hinder the effective application of knowledge in clinical practice. These barriers may include limited access to research evidence, lack of time, insufficient training, and organizational constraints within healthcare institutions (Pitsillidou

et al., 2023). Organizational culture, leadership support, and workplace environments also play significant roles in influencing the successful adoption and implementation of evidence-based nursing practices (Alqahtani et al., 2022). Individual factors among nurses also contribute to variations in knowledge application. These factors include clinical competence, knowledge level, attitudes toward evidence-based practice, and professional experience (Shibiru et al., 2023). Nurses with higher levels of knowledge and favorable attitudes toward EBP are more likely to integrate research findings into clinical decision-making processes (Dabak et al., 2024).

Educational and training opportunities are also important determinants that influence nurses' ability to apply knowledge in practice. Continuous professional development programs and evidence-based training initiatives have been shown to improve nurses' competencies and enhance their capacity to implement evidence-based interventions in clinical settings (Ghodsi Astan et al., 2022). Similarly, structured educational interventions and technology-supported learning platforms can significantly enhance nurses' knowledge levels and clinical performance (Khorammakan et al., 2024). Organizational and contextual factors further shape nurses' knowledge application in healthcare environments. Leadership engagement, availability of resources, teamwork, and supportive professional practice environments have been identified as important facilitators of evidence-based practice implementation (Furtado et al., 2024). Conversely, organizational barriers such as heavy workload, lack of institutional support, and limited access to clinical guidelines can significantly impede the integration of evidence into nursing practice (Berthelsen & Hølge-Hazelton, 2021).

Technological advancements also play an increasingly important role in supporting knowledge application in nursing practice. Digital tools, mobile health applications, and clinical information systems can facilitate knowledge access and improve nurses' ability to utilize evidence in patient care (Nezamdoust et al., 2022). These technologies provide opportunities to bridge the gap between research evidence and clinical practice by enhancing access to information and supporting decision-making processes. Previous studies have examined various determinants influencing the adoption of evidence-based practice among nurses. These determinants include knowledge, attitudes, leadership roles, communication skills, and the availability of clinical guidelines (Wudu et al., 2024). However, the complexity of these factors highlights the need for a comprehensive synthesis of existing evidence to better understand how different determinants interact to influence nurses' knowledge application.

Systematic reviews provide an effective method for synthesizing existing research and identifying key determinants influencing knowledge utilization in healthcare practice. By systematically analyzing the available literature, researchers can identify patterns, gaps, and areas requiring further investigation to improve the implementation of evidence-based nursing care (Habtie et al., 2025). Therefore, this systematic review aims to examine the determinants influencing nurses' knowledge application in clinical practice by synthesizing findings from existing empirical and review studies. Understanding these determinants can support the development of strategies that enhance knowledge utilization, strengthen evidence-based practice, and ultimately improve the quality of patient care.

2. Methodology

This study employed a systematic review approach to synthesize existing evidence on the determinants influencing nurses' knowledge application in clinical practice. Systematic reviews are widely used in healthcare research to provide a comprehensive and structured synthesis of available studies by applying transparent and reproducible methods for identifying, selecting, and analyzing relevant literature. This review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines to ensure methodological rigor and transparency in the study selection and reporting process. The use of systematic review methods allows researchers to identify key patterns and determinants influencing evidence-based practice and knowledge utilization

in nursing (Wudu et al., 2024). Furthermore, systematic synthesis of the literature contributes to improving the understanding of factors affecting nurses' knowledge use and supports the development of strategies for strengthening evidence-based practice in healthcare systems (Habtie et al., 2025).

A comprehensive literature search was conducted to identify studies examining determinants associated with nurses' knowledge application, evidence-based practice implementation, and knowledge utilization in healthcare settings. The search process involved several electronic databases commonly used in healthcare and nursing research, including PubMed, Scopus, Google Scholar, and Web of Science. These databases were selected because they provide extensive coverage of peer-reviewed literature related to nursing practice and evidence-based healthcare interventions. The search strategy included a combination of keywords and Boolean operators such as "nurses' knowledge application," "evidence-based practice," "knowledge utilization," "knowledge translation," "nursing competence," "barriers," and "facilitators." These keywords were used in different combinations to capture studies examining individual, organizational, and contextual factors influencing the application of knowledge in nursing practice. Similar systematic search strategies have been used in previous reviews investigating the implementation and determinants of evidence-based nursing practice (Furtado et al., 2024).

To ensure the relevance and quality of the included literature, predefined inclusion and exclusion criteria were applied during the study selection process. Studies were included if they focused on nurses or nursing professionals and examined determinants related to knowledge application, evidence-based practice implementation, or research utilization in clinical practice. Both empirical studies and review articles published in peer-reviewed journals were considered eligible for inclusion. Only studies published in English were included to ensure accurate interpretation of findings. Studies were excluded if they were unrelated to nursing practice, lacked accessible full texts, or consisted of editorials, opinion pieces, or conference abstracts. Applying such criteria helps ensure that only relevant and methodologically sound studies are included in systematic evidence synthesis.

The study selection process followed a structured multi-stage screening procedure. First, all identified records from the database search were compiled and duplicates were removed. The remaining records were then screened based on their titles and abstracts to determine their relevance to the research topic. Articles that appeared to meet the inclusion criteria were subsequently retrieved in full text for further evaluation. During the eligibility assessment stage, full-text articles were carefully examined to confirm that they addressed determinants influencing nurses' knowledge application or evidence-based practice in clinical settings. Only studies that fully satisfied the eligibility criteria were included in the final synthesis. Such structured screening procedures help minimize selection bias and improve the transparency of systematic reviews (Habtie et al., 2025).

Relevant data from each included study were extracted using a structured data extraction framework. Information collected from the studies included the author names, year of publication, study design, sample characteristics, and key findings related to determinants influencing nurses' knowledge application. Additionally, key conceptual variables such as evidence-based practice implementation, knowledge competence, training and education, leadership support, organizational environment, technological tools, barriers, facilitators, and patient care outcomes were identified and recorded. These variables were organized in the literature review matrix presented in Table 1 to allow systematic comparison of the included studies. The synthesis of findings was conducted using a qualitative narrative approach to identify major patterns and relationships among determinants influencing nurses' knowledge application. Previous research highlights that knowledge application in nursing practice is influenced by multiple interacting factors, including individual competencies, organizational support, leadership engagement, and availability of resources (Furtado et al., 2024). Therefore, the findings from the included studies were categorized into major thematic determinants

to facilitate interpretation and analysis of the evidence. This synthesis approach enables a comprehensive understanding of how behavioral, organizational, and contextual determinants influence nurses' ability to apply knowledge and implement evidence-based practices in healthcare settings.

Figure 1 illustrates the PRISMA 2020 flow diagram describing the study selection process used in this systematic review. The diagram presents four main stages: identification, screening, eligibility, and inclusion. During the identification stage, records were retrieved from electronic databases through the systematic search strategy. After removing duplicate records, the remaining studies underwent title and abstract screening to determine their relevance to the research objectives. Studies that met the initial screening criteria proceeded to the full-text eligibility assessment stage. Finally, studies that satisfied all eligibility criteria were included in the final review and synthesis. The PRISMA flow diagram therefore provides a transparent overview of the selection process used to identify the studies included in this systematic review.

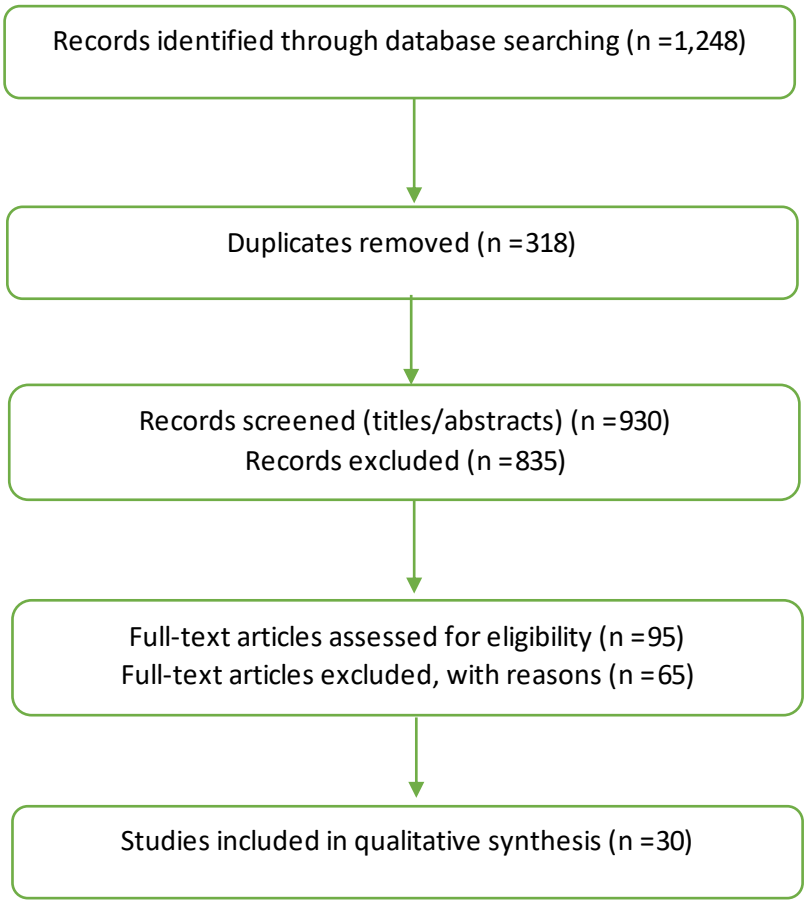

Figure 1: PRISMA 2020 Flow Diagram

3. Results

3.1 Study Selection and Characteristics

A total of thirty studies were included in this systematic review after applying the predefined inclusion and exclusion criteria. The included studies represent a range of research designs, including cross-sectional studies, qualitative studies, randomized controlled trials, systematic reviews, scoping reviews, and meta-analyses. These studies collectively examine the determinants influencing nurses' knowledge application, evidence-based practice implementation, and knowledge utilization in

clinical practice. The diversity of study designs allowed for a comprehensive understanding of the factors affecting knowledge use among nurses across different healthcare settings. Systematic evidence synthesis of such diverse studies has been widely used to identify determinants affecting nursing practice and the implementation of evidence-based interventions (Wudu et al., 2024). The included studies were conducted across different geographic regions and healthcare environments, including hospitals, intensive care units, operating rooms, and community healthcare settings. Several studies focused on the implementation of evidence-based practice among nurses and examined factors such as knowledge level, attitudes toward evidence-based practice, professional competence, and organizational support. For example, studies have shown that nurses' knowledge and competence significantly influence their ability to apply research evidence in clinical practice (Shibiru et al., 2023). Similarly, research examining the application of patterns of knowing among nurses highlights the importance of integrating multiple forms of knowledge in clinical decision-making processes (Rafii et al., 2021).

Many of the included studies also explored organizational and contextual factors that influence knowledge application in nursing practice. Organizational leadership, institutional support, and professional practice environments were frequently reported as key factors that facilitate evidence-based practice adoption among nurses (Alqahtani et al., 2022). In addition, supportive professional environments and teamwork have been identified as essential components that promote the successful integration of evidence into nursing practice (Furtado et al., 2024). Conversely, several studies identified barriers such as heavy workload, lack of time, and insufficient access to research resources that hinder the effective application of knowledge in clinical settings (Pitsillidou et al., 2023). The characteristics of the included studies and the key determinants examined in each study are summarized in Table 1. The literature review matrix categorizes the studies according to major conceptual variables related to knowledge application, including evidence-based practice, knowledge translation, clinical decision-making, training and education, leadership support, organizational context, technological tools, barriers, facilitators, and patient care outcomes. A check mark (✓) indicates that the respective concept was explicitly addressed in the study. This structured matrix provides an overview of how the selected studies contribute to understanding the determinants influencing nurses' knowledge application in healthcare settings.

Table 1: Literature Review Matrix

No	Author(s) & Year	Knowledge Application	Evidence-Based Practice	Knowledge Translation	Clinical Decision-Making	Knowledge / Competence	Attitudes Toward EBP	Training / Education	Leadership / Management	Organizational Support	Work Environment	Technology / Digital Tools	Barriers	Facilitators	Patient Care Outcomes
1	Rafii et al. (2021)	✓			✓	✓					✓			✓	✓
2	Aynalem et al. (2021)	✓	✓			✓		✓				✓		✓	✓
3	Bjorklund-Lima et al. (2023)	✓		✓		✓		✓						✓	✓
4	Alqahtani et al. (2022)	✓	✓		✓	✓	✓	✓	✓	✓	✓			✓	✓
5	Rabelo-Silva et al. (2021)			✓	✓	✓								✓	
6	Nezamdoust et al. (2022)	✓				✓						✓		✓	
7	Sharma et al. (2023)	✓				✓		✓			✓		✓		
8	Wudu et al. (2024)	✓	✓			✓	✓		✓					✓	✓
9	González-Alcantud (2022)	✓				✓		✓			✓		✓		
10	Jabonete & Roxas (2022)	✓	✓			✓				✓	✓		✓		
11	Pitsillidou et al. (2023)	✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	
12	Zhang et al. (2024)	✓	✓			✓		✓	✓	✓	✓			✓	
13	Pitsillidou et al. (2021)	✓	✓			✓				✓	✓		✓	✓	
14	Dabak et al. (2024)	✓	✓			✓	✓	✓			✓		✓	✓	✓
15	McNett et al. (2022)	✓	✓			✓		✓	✓	✓	✓		✓	✓	
16	Furtado et al. (2024)	✓	✓						✓	✓	✓		✓	✓	
17	Lunden et al. (2021)	✓	✓			✓		✓	✓	✓	✓		✓	✓	
18	Berthelsen & Hølge-Hazelton (2021)	✓	✓							✓	✓		✓		
19	Abou Hashish et al. (2025)	✓	✓			✓		✓	✓	✓	✓			✓	
20	Zammar (2022)	✓	✓			✓	✓						✓		✓
21	Shibiru et al. (2023)	✓			✓	✓	✓	✓		✓	✓			✓	✓
22	Atalla et al. (2025)	✓	✓			✓	✓						✓	✓	✓
23	Khorammakan et al. (2024)	✓				✓		✓				✓		✓	
24	Alemayehu & Jevoor (2021)	✓	✓		✓	✓		✓		✓	✓			✓	✓
25	Mohaghegh et al. (2024)	✓				✓			✓	✓				✓	
26	Tzeng et al. (2021)	✓	✓	✓	✓					✓	✓	✓		✓	✓
27	Brunt & Morris (2023)	✓	✓	✓		✓		✓	✓	✓	✓		✓	✓	✓
28	Ghodsi Astan et al. (2022)	✓	✓		✓	✓		✓						✓	✓
29	Østergaard et al. (2023)	✓	✓	✓			✓	✓	✓	✓				✓	
30	Habtie et al. (2025)	✓	✓			✓		✓			✓			✓	✓

3.2 Prevalence and Determinants

The findings of the included studies indicate that the prevalence of knowledge application and evidence-based practice utilization among nurses varies across different healthcare settings. Several studies reported that only a moderate proportion of nurses consistently apply evidence-based knowledge in clinical practice. For instance, research examining evidence-based practice implementation among nurses reported that approximately half of the participants demonstrated adequate levels of evidence-based practice utilization in clinical settings (Aynalem et al., 2021). Similarly, systematic review findings indicate that evidence-based practice adoption among nurses remains limited in many healthcare systems despite the growing emphasis on evidence-based healthcare delivery (Wudu et al., 2024). Individual determinants play an important role in influencing nurses' knowledge application. Knowledge level, clinical competence, and professional experience were consistently identified as major predictors of knowledge utilization in nursing practice. Nurses with higher levels of knowledge and competence are more likely to integrate research evidence into patient care and clinical decision-making processes (Shibiru et al., 2023). Furthermore, positive attitudes toward evidence-based practice have been shown to significantly increase nurses' likelihood of applying research findings in clinical practice (Dabak et al., 2024).

Training and educational opportunities were also identified as critical determinants influencing knowledge application among nurses. Evidence-based practice training programs and continuing professional education can significantly enhance nurses' competencies and improve their ability to apply research evidence in patient care. Educational interventions focusing on evidence-based nursing have been shown to improve nurses' clinical decision-making and increase their confidence in applying evidence-based practices (Ghodsi Astan et al., 2022). Similarly, technology-supported educational tools such as web-based learning platforms can improve nurses' knowledge levels and promote continuous professional development (Khorammakan et al., 2024). Organizational determinants were also widely reported across the included studies. Leadership support, institutional policies, and availability of resources were frequently identified as key factors facilitating the adoption of evidence-based practice among nurses. Research examining organizational influences on evidence-based practice indicates that leadership engagement and supportive institutional environments play a critical role in promoting knowledge utilization in healthcare settings (Abou Hashish et al., 2025). In addition, professional practice environments that encourage collaboration, communication, and teamwork have been associated with increased implementation of evidence-based nursing practices (Furtado et al., 2024).

Technological determinants also influence nurses' knowledge application. Digital tools, clinical information systems, and mobile health applications provide access to research evidence and support nurses in applying knowledge in clinical practice. Studies examining technology adoption in healthcare settings highlight that perceived usefulness and ease of use significantly affect nurses' willingness to use mobile health applications for clinical learning and patient interaction (Nezamdoust et al., 2022). Despite the potential facilitators of knowledge application, many studies identified several barriers that limit nurses' ability to implement evidence-based practices. Common barriers include heavy workload, limited time for reviewing research evidence, lack of organizational support, and insufficient access to clinical guidelines (Jabonete & Roxas, 2022). Organizational culture and structural factors within healthcare institutions also contribute to persistent barriers to research utilization among nurses (Berthelsen & Hølge-Hazelton, 2021). These findings highlight the complexity of determinants influencing knowledge application in nursing practice and emphasize the need for comprehensive strategies that address both individual and organizational factors.

3.3 Outcomes

The application of knowledge and evidence-based practice in nursing has been associated with several important outcomes related to healthcare quality, patient safety, and clinical effectiveness. Many studies included in this review emphasize that effective knowledge utilization in nursing practice contributes to improved patient care and better healthcare outcomes. Evidence-based nursing practices have been shown to enhance the quality of clinical decision-making and promote safer healthcare delivery (Brunt & Morris, 2023). One of the most significant outcomes associated with knowledge application in nursing practice is the improvement of patient safety and quality of care. Evidence-based interventions enable nurses to apply scientifically validated practices in patient care, which can reduce clinical errors and improve treatment effectiveness. For example, the implementation of evidence-based patient safety interventions in nursing homes has been shown to reduce the incidence of patient falls and fall-related injuries (Tzeng et al., 2021). Such findings highlight the importance of integrating research evidence into daily nursing practice to ensure optimal patient outcomes.

Knowledge application also contributes to improvements in nurses' professional competencies and clinical performance. Studies examining the relationship between evidence-based practice and nursing competencies indicate that nurses who actively engage in evidence-based practice demonstrate higher levels of professional competence and improved clinical skills (Atalla et al., 2025). Similarly, educational interventions designed to enhance nurses' knowledge and decision-making abilities have been shown to improve clinical performance and patient care outcomes (Ghodsi Astan et al., 2022). Another important outcome associated with knowledge utilization is the development of more effective healthcare systems and organizational performance. Knowledge management processes, including knowledge generation, sharing, and utilization, can enhance organizational efficiency and improve healthcare service delivery. Research examining knowledge management in healthcare organizations suggests that effective knowledge utilization contributes to improved organizational performance and sustainability (Mohaghegh et al., 2024).

The implementation of knowledge translation strategies also plays an important role in improving nursing practice outcomes. Knowledge translation frameworks facilitate the integration of research evidence into clinical practice and support nurses in adopting new interventions and care strategies. Studies examining knowledge translation in nursing practice indicate that structured implementation strategies can improve nurses' acceptance of evidence-based practices and promote the adoption of innovative care interventions (Østergaard et al., 2023). Despite these positive outcomes, several studies highlight that the effectiveness of knowledge application in nursing practice depends on the availability of supportive organizational environments and continuous professional development opportunities. When healthcare institutions provide adequate resources, leadership support, and training opportunities, nurses are more likely to apply evidence-based knowledge in clinical practice and achieve better patient outcomes (Alqahtani et al., 2022). Conversely, the absence of such supportive factors may limit the potential benefits of knowledge utilization and hinder improvements in healthcare quality.

4. Discussion

4.1 Interplay of Behavioral, Organizational, and Contextual Determinants

The findings of this systematic review demonstrate that nurses' knowledge application in clinical practice is influenced by a complex interaction of behavioral, organizational, and contextual determinants. These determinants collectively shape how nurses acquire, interpret, and utilize knowledge in clinical decision-making and patient care. The interplay of these factors highlights the multidimensional nature of knowledge utilization in healthcare environments and underscores the

importance of examining both individual and system-level influences on evidence-based nursing practice. Behavioral determinants, particularly nurses' knowledge level, competence, and attitudes toward evidence-based practice, were frequently identified across the reviewed studies. Nurses with higher levels of knowledge and professional competence are more likely to integrate research evidence into their daily clinical practice and participate in evidence-based decision-making processes (Shibiru et al., 2023). Similarly, positive attitudes toward evidence-based practice have been shown to significantly influence nurses' willingness to adopt and implement research findings in clinical settings (Dabak et al., 2024). The application of professional knowledge in nursing also involves the integration of multiple patterns of knowing, including empirical, ethical, and experiential knowledge, which guide nurses in making clinical judgments and delivering patient-centered care (Rafii et al., 2021).

Educational and training-related determinants also play a central role in shaping nurses' knowledge application behaviors. Continuous professional education programs and evidence-based training initiatives can enhance nurses' knowledge, improve clinical competencies, and strengthen their ability to implement research evidence in practice (Ghodsi Astan et al., 2022). Technology-supported learning approaches, such as web-based educational platforms, have also been shown to improve nurses' knowledge levels and promote ongoing professional development (Khorammakan et al., 2024). These findings emphasize that strengthening nurses' competencies through training and education is essential for promoting effective knowledge utilization in clinical practice. Organizational determinants were also widely reported as critical influences on knowledge application among nurses. Leadership engagement, institutional support, and organizational culture were consistently identified as key facilitators of evidence-based practice implementation in healthcare settings. Research suggests that leadership support and positive professional practice environments create conditions that encourage nurses to integrate research evidence into patient care (Alqahtani et al., 2022). In addition, organizational leadership plays an important role in mentoring nurses, promoting evidence-based decision-making, and creating supportive environments that facilitate knowledge translation (Abou Hashish et al., 2025).

Contextual determinants, including work environment conditions, workload, and access to resources, further influence nurses' ability to apply knowledge in practice. Heavy workload, time constraints, and insufficient access to clinical guidelines were frequently identified as barriers that hinder evidence-based practice implementation (Jabonete & Roxas, 2022). Organizational culture and contextual factors within healthcare institutions also shape nurses' perceptions of research utilization and influence their willingness to apply new knowledge in clinical settings (Berthelsen & Hølge-Hazelton, 2021). Technological advancements represent another important contextual determinant influencing knowledge application in nursing practice. Digital tools, mobile health applications, and clinical information systems provide nurses with improved access to research evidence and support knowledge utilization in patient care (Nezamdoust et al., 2022). These technologies can facilitate the translation of research knowledge into clinical practice by improving information accessibility and supporting evidence-based decision-making processes.

4.2 Policy, Practical, and Theoretical Implications

The findings of this systematic review have several important implications for healthcare policy, clinical practice, and theoretical development in nursing research. Addressing the determinants influencing nurses' knowledge application requires coordinated efforts at multiple levels of the healthcare system, including policy development, organizational management, professional education, and research. From a policy perspective, healthcare institutions and policymakers should prioritize strategies that strengthen nurses' competencies and promote evidence-based practice adoption. Policies that support continuous professional development, evidence-based training programs, and access to clinical guidelines can significantly improve nurses' ability to apply

knowledge in practice. Previous research has demonstrated that educational interventions focusing on evidence-based nursing practices enhance nurses' clinical decision-making and improve the quality of patient care (Ghodsi Astan et al., 2022). In addition, ensuring access to reliable clinical resources and guidelines can facilitate knowledge translation and promote the integration of research evidence into clinical practice.

Healthcare policies should also address organizational barriers that hinder evidence-based practice implementation. Organizational support, leadership engagement, and professional practice environments are essential for creating conditions that enable nurses to apply knowledge effectively. Studies have shown that supportive institutional cultures and leadership engagement significantly influence nurses' adoption of evidence-based practices (Alqahtani et al., 2022). Similarly, leadership-driven initiatives aimed at strengthening knowledge management and mentoring programs can enhance nurses' competencies and promote evidence-based practice implementation (Abou Hashish et al., 2025). From a practical perspective, healthcare organizations should implement strategies that enhance knowledge utilization in clinical practice. These strategies may include establishing evidence-based practice committees, providing access to digital information resources, and promoting interdisciplinary collaboration. Organizational interventions designed to improve professional practice environments have been shown to increase the adoption of evidence-based nursing practices and support knowledge application in healthcare settings (Furtado et al., 2024).

Technology also offers practical opportunities for improving nurses' access to knowledge and supporting evidence-based practice implementation. Mobile health applications, clinical decision-support systems, and digital knowledge platforms can facilitate information sharing and enhance nurses' ability to apply research evidence in patient care (Nezamdoust et al., 2022). Integrating technological tools into healthcare systems can therefore support knowledge translation and improve the effectiveness of evidence-based interventions. The findings of this review also have theoretical implications for nursing research. Understanding the determinants influencing knowledge application contributes to the development of theoretical frameworks that explain how knowledge is translated into practice within healthcare organizations. Knowledge management theories emphasize the importance of knowledge generation, sharing, and utilization processes in improving organizational performance and healthcare service delivery (Mohaghegh et al., 2024). Integrating such theoretical perspectives into nursing research can provide deeper insights into the mechanisms that influence knowledge utilization in clinical practice.

4.3 Comparison with Existing Reviews, Limitations, and Future Research

The findings of this systematic review are consistent with previous research highlighting the importance of individual competencies, organizational support, and contextual factors in influencing nurses' knowledge application. Several previous reviews have reported similar findings regarding the determinants of evidence-based practice adoption among nurses. For example, systematic reviews examining evidence-based practice implementation among nurses have identified knowledge level, attitudes, and leadership support as key predictors of knowledge utilization in clinical practice (Wudu et al., 2024). Similarly, previous reviews have highlighted the role of organizational culture and institutional context in shaping nurses' ability to apply research evidence in clinical settings. Organizational barriers such as lack of resources, heavy workload, and limited access to research evidence have been consistently reported as significant obstacles to research utilization among nurses (Berthelsen & Hølge-Hazelton, 2021). These findings align with the results of the present review, which identified similar barriers affecting knowledge application across multiple healthcare settings.

Another consistent finding across the literature is the importance of training and professional development in promoting evidence-based practice adoption. Educational interventions aimed at improving nurses' knowledge and competencies have been shown to significantly enhance evidence-

based decision-making and knowledge utilization in clinical practice (Ghodsi Astan et al., 2022). This finding supports the results of the present review, which identified education and training as key facilitators of knowledge application among nurses. Despite the valuable insights provided by this review, several limitations should be acknowledged. First, the included studies represent a wide range of research designs and healthcare settings, which may introduce heterogeneity in the findings. Differences in study methodologies, measurement tools, and contextual factors may affect the comparability of results across studies. Second, the review included only studies published in English, which may limit the generalizability of the findings to non-English-speaking contexts.

Another limitation relates to the variability in the measurement of knowledge application and evidence-based practice implementation across studies. Different studies used diverse instruments and conceptual frameworks to assess these constructs, which may influence the interpretation of the findings. Additionally, some studies focused on specific clinical settings, such as intensive care units or operating rooms, which may limit the applicability of the findings to other healthcare environments. Future research should focus on developing standardized frameworks and measurement tools for assessing knowledge application and evidence-based practice adoption in nursing. Longitudinal studies examining the long-term impact of educational interventions, leadership initiatives, and organizational reforms on knowledge utilization would provide valuable insights into the sustainability of evidence-based practice implementation. Furthermore, future studies should explore the role of emerging technologies, including digital health platforms and artificial intelligence tools, in supporting knowledge translation and evidence-based decision-making in nursing practice.

5. Conclusion

This systematic review examined the determinants influencing nurses' knowledge application in clinical practice by synthesizing evidence from a range of empirical studies and review articles. The findings demonstrate that knowledge application in nursing is influenced by multiple interrelated factors that operate at the individual, organizational, and contextual levels. Nurses' knowledge levels, competencies, attitudes toward evidence-based practice, and professional experience were identified as important behavioral determinants that shape their ability to apply knowledge effectively in patient care. These individual factors are closely connected with educational opportunities, training programs, and professional development initiatives that enhance nurses' capacity to implement evidence-based practices in clinical settings. The review also highlights the critical role of organizational determinants in facilitating or hindering knowledge utilization among nurses. Leadership support, institutional policies, availability of resources, and positive professional practice environments were consistently identified as essential factors that encourage the adoption of evidence-based nursing practices. When healthcare organizations provide supportive environments, mentorship, and access to evidence-based resources, nurses are more likely to integrate research findings into their clinical decision-making and patient care activities. Conversely, barriers such as heavy workload, limited time, insufficient training, and lack of organizational support continue to limit the effective application of knowledge in healthcare settings.

Technological advancements also represent an important component of knowledge application in modern healthcare systems. Digital tools, mobile health applications, and electronic information systems provide nurses with improved access to research evidence and support the translation of knowledge into clinical practice. The integration of technological resources into healthcare environments can therefore strengthen evidence-based practice implementation and enhance the overall efficiency of healthcare delivery. Overall, the findings of this review emphasize that improving nurses' knowledge application requires coordinated efforts that address behavioral competencies, organizational structures, and contextual conditions within healthcare institutions.

Strengthening professional education, enhancing leadership engagement, promoting supportive work environments, and improving access to technological resources are essential strategies for supporting knowledge utilization in nursing practice. By addressing these determinants, healthcare organizations can enhance the implementation of evidence-based nursing practices, improve patient care outcomes, and strengthen the overall quality and effectiveness of healthcare systems.

References

Abou Hashish, E. A., Khattab, S. M. A. K., Mohammad, H. F., & Elliethey, N. S. (2025). Exploring the Impact of Leadership, Organizational Support, and Knowledge Management in Evidence-Based Practice Implementation Among Nurse Managers Through SEM. *Worldviews on Evidence-Based Nursing*, *22*(3), e70051.

Alemayehu, A., & Jevoor, P. C. (2021). Utilisation of evidence-based practice and its associated factors among nurses. *Indian Journal of Continuing Nursing Education*, *22*(2), 180-187.

Alqahtani, N., Oh, K. M., Kitsantas, P., Rodan, M., Innab, A., Asiri, S., ... & Bahari, G. (2022). Organizational factors associated with evidence-based practice knowledge, attitudes, and implementation among nurses in Saudi Arabia. *International Journal of Environmental Research and Public Health*, *19*(14), 8407.

Atalla, A. D. G., El-Ashry, A. M., & Mohamed, S. M. S. (2025). The relationship between evidence-based practices' facilitators and barriers among nurses and their competencies: self-efficacy as a mediator. *BMC nursing*, *24*(1), 458.

Aynalem, Z. B., Yazew, K. G., & Gebrie, M. H. (2021). Evidence-based practice utilization and associated factors among nurses working in Amhara Region Referral Hospitals, Ethiopia. *PloS one*, *16*(3), e0248834.

Berthelsen, C., & Hølge-Hazelton, B. (2021). The importance of context and organization culture in the understanding of nurses' barriers against research utilization: A systematic review. *Worldviews on Evidence-Based Nursing*, *18*(2), 111-117.

Bjorklund-Lima, L., Müller-Staub, M., & Rejane Rabelo-Silva, E. (2023). Knowledge translation for nursing care for patients with Risk of perioperative positioning injury: A case report. *International journal of nursing knowledge*, *34*(4), 247-253.

Brunt, B. A., & Morris, M. M. (2023). Nursing professional development evidence-based practice.

Dabak, Z., Toqan, D., Malak, M. Z., Al-Amer, R., & Ayed, A. (2024). Knowledge, attitudes, practice, and perceived barriers toward evidence-based practice among Palestinian nurses in intensive care units. *BMC nursing*, *23*(1), 950.

Furtado, L., Coelho, F., Mendonca, N., Soares, H., Gomes, L., Sousa, J. P., ... & Araujo, B. (2024, January). Exploring professional practice environments and organisational context factors affecting nurses' adoption of evidence-based practice: a scoping review. In *Healthcare* (Vol. 12, No. 2, p. 245). MDPI.

Ghodsi Astan, P., Goli, R., Hemmati Maslakpak, M., Rasouli, J., & Alilu, L. (2022). The effect of evidence-based nursing education on nurses' clinical decision making: A randomized controlled trial. *Health science reports*, *5*(5), e837.

González-Alcantud, B. (2022). Barriers to the application of the nursing methodology in the Intensive Care Unit. *Enfermería Intensiva (English ed.)*, *33*(3), 151-162.

Habtie, T. E., Feleke, S. F., Terefe, A. B., Alamaw, A. W., & Abate, M. D. (2025). Nurses' knowledge and its determinants in surgical site infection prevention: A comprehensive systematic review and meta-analysis. *PloS one*, *20*(1), e0317887.

Jabonete, F. G. V., & Roxas, R. E. O. (2022). Barriers to research utilization in nursing: A systematic review (2002–2021). *SAGE Open Nursing*, *8*, 23779608221091073.

Khorammakan, R., Roudbari, S. H., Omid, A., Anoosheh, V. S., Arabkhazaei, A. N., Arabkhazaei, A. Z., ... & Ghadami, A. (2024). Continuous training based on the needs of operating room

nurses using web application: a new approach to improve their knowledge. *BMC Medical Education*, *24*(1), 342.

Lunden, A., Kvist, T., Teräs, M., & Häggman-Laitila, A. (2021). Readiness and leadership in evidence-based practice and knowledge management: A cross-sectional survey of nurses' perceptions. *Nordic Journal of Nursing Research*, *41*(4), 187-196.

McNett, M., Tucker, S., Zadvinskis, I., Tolles, D., Thomas, B., Gorsuch, P., & Gallagher-Ford, L. (2022). A qualitative force field analysis of facilitators and barriers to evidence-based practice in healthcare using an implementation framework. *Global Implementation Research and Applications*, *2*(3), 195-208.

Mohaghegh, F., Zaim, H., Dzenopoljac, V., Dzenopoljac, A., & Bontis, N. (2024). Analyzing the effects of knowledge management on organizational performance through knowledge utilization and sustainability. *Knowledge and Process Management*, *31*(3), 261-272.

Nezamdoust, S., Abdekhoda, M., & Rahmani, A. (2022). Determinant factors in adopting mobile health application in healthcare by nurses. *BMC medical informatics and decision making*, *22*(1), 47.

Østergaard, B., Eggenberger, S., Sheppard-Lemoine, D., Mulcaster, A., & Mahrer-Imhof, R. (2023). Implementation and efficacy of knowledge translation frameworks in family focused nursing care: A scoping review. *Journal of Clinical Nursing*, *32*(19-20), 7086-7100.

Pitsillidou, M., Noula, M., Roupa, Z., & Farmakas, A. (2023). Barriers to the adoption of evidence based practice in nursing: a focus group study. *Acta Informatica Medica*, *31*(4), 306.

Pitsillidou, M., Roupa, Z., Farmakas, A., & Noula, M. (2021). Factors affecting the application and implementation of evidence-based practice in nursing. *Acta Informatica Medica*, *29*(4), 281.

Rabelo-Silva, E. R., Monteiro Mantovani, V., López Pedraza, L., Cardoso, P. C., Takao Lopes, C., & Herdman, T. H. (2021). International collaboration and new research evidence on nanda international terminology. *International Journal of Nursing Knowledge*, *32*(2), 103-107.

Rafii, F., Nasrabadi, A. N., & Tehrani, F. J. (2021). How nurses apply patterns of knowing in clinical practice: a grounded theory study. *Ethiopian journal of health sciences*, *31*(1), 139.

Sharma, J., Sharma, R., Negi, R., & Jelly, P. (2023). Knowledge, practices and factors affecting in application of nursing process: a cross-sectional study. *Journal of Medical Evidence*, *4*(1), 29-33.

Shibiru, S., Aschalew, Z., Kassa, M., Bante, A., & Mersha, A. (2023). Clinical Competence of Nurses and the Associated Factors in Public Hospitals of Gamo Zone, Southern Ethiopia: A Cross-Sectional Study. *Nursing Research and Practice*, *2023*(1), 9656636.

Tzeng, H. M., Jansen, L. S., Okpalauwaekwe, U., Khasnabish, S., Andreas, B., & Dykes, P. C. (2021). Adopting the fall tailoring interventions for patient safety (TIPS) program to engage older adults in fall prevention in a nursing home. *Journal of nursing care quality*, *36*(4), 327-332.

Wudu, M. A., Tarekegn, S. M., Wondifraw, E. B., Birhanu, T. A., Hailu, M. K., Bekalu, Y. E., ... & Belete, M. A. (2024). Uptake of evidence-based practice and its predictors among nurses in Ethiopia: a systematic review and meta-analysis. *Frontiers in Pharmacology*, *15*, 1421690.

Zammar, A. M. A. (2022). Nurses' knowledge and attitude regarding evidence-based practice: an integrative review. *Open Journal of Nursing*, *12*(2), 103-112.

Zhang, X., Peng, M., He, M., Du, M., Jiang, M., Cui, M., ... & Wang, Y. (2024). Climates and associated factors for evidence-based practice implementation among nurses: a cross-sectional study. *BMC nursing*, *23*(1), 62.