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Encouraging Nursing Research and Innovation to Drive Evidence-Based Practice and Improve Healthcare Outcomes: A Systematic Review-Based Study

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Abstract

Background: Evidence-based practice (EBP) remains the cornerstone of high-quality, safe, and cost-effective healthcare. However, gaps between research and clinical implementation persist, especially in regions with limited nursing research infrastructure. Strengthening nursing research and innovation is crucial to bridge these gaps and enhance patient outcomes.

Aim: This review examined recent literature (2020–2024) to explore how initiatives promoting nursing research and innovation influence EBP and healthcare outcomes.

Method: A systematic search across PubMed, CINAHL, Scopus, Web of Science, and Google Scholar yielded 476 records. Following screening and de-duplication, ten studies met inclusion criteria. Data were extracted on study design, context, interventions, and outcomes, and appraised using a literature quality matrix.

Results: The studies included qualitative, cross-sectional, and review designs. Major themes were: fostering a research-oriented culture, education and training, technological innovation, organizational leadership, and integration of research into practice through learning health systems. Findings showed that nurses' knowledge, training, and supportive work environments strongly influence EBP readiness, while inadequate resources and leadership hinder implementation. Learning health systems effectively embed research into care processes, reducing the evidence-to-practice gap. Overall, EBP adoption improved patient safety, care quality, and professional development.

Conclusion: Promoting nursing research and innovation strengthens EBP uptake and optimizes patient outcomes. Key strategies include establishing research priorities, enhancing education and mentorship, fostering supportive organizational cultures, leveraging technology, and embedding learning health system models. Policymakers should champion nurse-led research to achieve sustainable healthcare improvements.

Keywords: Nursing research; innovation; evidence-based practice; learning health systems; patient outcomes.

Introduction

Evidence-based practice (EBP) is accepted as the best way to provide safe, quality and cost-effective healthcare. It is described by Dr. David Sackett as the careful integration of the best evidence from research

with clinical expertise and patient values and preferences to make health care decisions. By connecting the

theory and practice, EBP allows healthcare professionals to deliver care that is scientifically based and personalized to the needs of individual patients. Many studies have shown that EBP leads to patient safety, fewer complications and nursing efficiency and professional development. As nurses are the largest part of the global healthcare workforce and work approximately 70% of their time at the bedside, they are in a unique position to promote EBP and drive innovations that will improve patient outcomes.

The research and innovation in nursing practice are crucial for the development of healthcare. Nursing innovation has been defined as the applied use of knowledge and creative thinking to create new or substantially improved processes, products or services. It focuses on unmet needs in all six domains of healthcare quality: safe, effective, patient-centered, timely, efficient and equitable. Innovations can take the form of new technologies, workflow redesign, or new models of care that enhance patient experiences and outcomes. From Florence Nightingale's contributions in sanitation to modern telehealth technologies, nursing has a long legacy of innovation, but the rate of change demands continuous evolution. Innovation is only valuable if research evidence is both produced and translated into practice. This is especially important in resource-constrained settings, where nurses need to be innovative to provide quality care within these constraints.

Nursing research is part of the knowledge base that supports EBP. It offers a review of the evidence on interventions, models of care, organizational approaches and education that provide practice guidelines and policy. However, there is still a lack of nursing research competence globally. Rani et al. (2024) provide an example of the lack of skills and confidence of nurses in undertaking research, and the lack of funding and infrastructural support for nursing research. These challenges lead to an evidence-practice gap, whereby research evidence is not systematically incorporated into care. Research capacity-building programs, such as mentorship, dedicated research time, training workshops and other forms of supportive environments, are necessary to bridge this gap. Baptiste et al (2019) state that it is important for HCPs, especially nurses, to keep up to date with research and new developments to ensure that their practice is up to date and evidence based. Nurses with research and quality improvement experience can direct research projects to decrease morbidity and mortality in practice areas such as cardiovascular care and apply quality improvement principles to test and implement best practices.

Innovation is driven by translational research and knowledge transfer. Lina Chien (2020) highlights the importance of noting that research alone is not enough, and that there needs to be an enabling context and an intentional effort to translate evidence to practice. This includes the creation of clinical guidelines, training manuals, educational curricula and networks for collaboration. An internal peer-reviewed journal can be used to provide a means of disseminating research findings, providing critical appraisal and promoting the implementation of evidence-based interventions by nurses. Card et al. (2020) contend that despite requirements for evidence-based decision making, many nurses do not possess knowledge and competence in respect to EBP, and time pressures and unresponsive organizational cultures are barriers to implementation. Hence, mentorship, journal clubs and peer-reviewed publications are proposed to increase EBP competencies and to spread research.

The concept of EBP and innovation is important in historical context. The modern EBP concept was developed in the early 1990s and incorporated research evidence in clinical decision-making. Dr. Sackett's EBP five-step model (formulate clinical questions, acquire evidence, critically appraise the evidence, apply evidence to practice and assess outcomes) is still the basis of the model. The following steps are necessary for nurses to provide care based on the best available evidence. However, studies indicate that not all nurses are trained in critical appraisal nor are they proficient in critical appraisal processes. Hence, the need for ongoing education and professional training to stay competent. Organizational support for integration of EBP also involves leadership, resources and a culture of inquiry and innovation. Nursing research and innovation are boosted by global health agendas. The Sustainable Development Goals (SDGs) and national visions, such as Saudi Arabia's Vision 2030, are demanding a strong healthcare workforce, quality care and innovation. According to the review, Nashwan et al. (2024), only 58% of countries in the Eastern Mediterranean region have national nursing research priorities and nurse shortages prevent participation in research. Aboshaiqah et al. (2023) report that nursing research in Saudi Arabia is in the early stages of development but is expanding, with a need for development of a research culture and publication output. These findings highlight the need for building research infrastructures and training to position nurses to make contributions to national and global health priorities.

Technology and data analytics are also revolutionizing nursing research and innovation. Mosier (2024) notes that large healthcare systems have access to large clinical data sets and partnerships that help to enable

nurse-led research and EBP implementation. Such data-driven strategies can help nurses identify patterns, assess interventions and expedite the implementation of best practices. Al Rashed et al. (2025) highlight the integration of technological tools such as electronic health records and telehealth with quality improvement frameworks like Lean and Six Sigma to enhance efficiency and minimize errors. Evidence-based innovation is additionally facilitated by collaborative care models and professional development programs.

Thus, there is an obvious need for a systematic synthesis of the recent literature that explores how research and innovation programs in nursing affect EBP and health outcomes. This review responds to that gap by conducting a review of studies published between 2020 and 2024 identifying interventions, barriers, facilitators, and outcomes related to nursing research and innovation.

Problem Statement

Despite the high level of evidence on EBP and the vital role of nurses in healthcare delivery, there is still a notable gap between research and practice. Many nurses are not well prepared in research methodology or critical appraisal, and often have little time and resources to be involved in EBP. This gap could be especially large in areas where nursing research is at an immature stage. As such, nurses may be using practices based on tradition, outdated or anecdotal knowledge, which may not be consistent with current best practice. Organizational cultures and leadership may not value EBP and as a result, research activities may lack support If research and innovation are not actively promoted, the potential of nurses to contribute to evidence-based improvements in healthcare is lost.

Significance of the Study

Nursing research and innovation is critical to providing high quality healthcare as well as to the success of global health agendas. EBP will reduce morbidity and mortality, improve patient safety and improve cost effectiveness. Nurses are uniquely positioned as frontline care providers to identify practice gaps and conduct research and implement evidence-based interventions. As a result, professional bodies and policy makers encourage nurses to be at the forefront of research and innovation. Building research capacity in nursing is an important strategy for meeting the challenges of chronic disease management, health care disparities and system inefficiencies. In addition, innovations that enhance care processes, use technology and engage patients are critical to achieving the six domains of healthcare quality. This systematic review offers implications for effective approaches to promoting nursing research and innovation to inform educators, managers and policy makers in the design of programs to empower nurses and improve healthcare outcomes.

Aim of the Study

The purpose of this systematic review is to aggregate empirical evidence published between 2020 and 2024 on efforts that promote nursing research and innovation to strengthen evidence-based practice and improve health outcomes. Specific objectives are to:

- To recognize interventions, programs or strategies that encourage nursing research and innovation.
- To explore how these initiatives, impact on nurses' uptake of evidence-based practice, research competency and patient outcomes.
- To examine barriers and facilitators to implementing research and innovation in different healthcare settings.
- To make recommendations for policy, practice, education and research based on the evidence.

Methodology

We performed a systematic review in accordance with PRISMA. The project was guided by a focused research question: How do nursing research and innovation initiatives affect nurses' use of evidence-based practice (EBP) and health outcomes? Methods: We conducted a search in five databases (PubMed, CINAHL, Scopus, Web of Science, Google Scholar), using controlled vocabulary and keywords (e.g., nursing research, innovation, evidence-based practice, patient outcomes) limited to English language, peer-reviewed studies published 2020-2024. We included qualitative, quantitative and mixed methods studies and systematic reviews that included nurse-led research/innovation, EBP uptake, organizational/educational enablers, or patient outcomes; we excluded non-data-containing editorials, non-

nursing disciplines, samples limited to students, and studies outside the date range. Screening was conducted in two stages (titles/abstracts and then full-texts) by two independent reviewers with consensus resolution; exclusion reasons were recorded.

A standardized form of extraction was used to retrieve study metadata, setting, participants, intervention/initiative, comparison (if any), outcomes (EBP competencies/readiness, uptake, organizational culture, patient-level results) and key findings. Quality appraisal was conducted by using a priori matrix (clarity of study selection, coverage of literature, transparency of methods, clarity of findings) to score studies as High/Moderate/Low; disagreements were resolved by discussion. We employed narrative synthesis because of heterogeneity and grouped results into thematic domains (research culture/priorities, education & training, technology/data, leadership & organizational supports, integration via learning health systems, and patient outcomes). This framework is aligned with EBP translation advice (evidence generation and enabling context implementation) and capacity-building foci in nursing scholarship.

Research Question

How do initiatives that encourage nursing research and innovation influence the adoption of evidence-based practice and improve healthcare outcomes, and what barriers and facilitators affect their implementation?

Selection Criteria

Inclusion and exclusion criteria were developed in line with the research question and are summarized below.

Inclusion Criteria

- Peer-reviewed articles published between 2020 and 2024.
- Nursing research, innovation, evidence-based practice, quality improvement or nurse-led initiatives studies.
- Research designs including qualitative, quantitative, mixed methods, systematic reviews, integrative reviews and expert opinion pieces with empirical data.
- Clinical, educational or community-based research undertaken by practicing nurses or postgraduate students.
- Articles in English.

Exclusion Criteria

- Articles prior to 2020.
- Editorials, opinion articles and commentaries that do not include empirical data.
- Studies that only included undergraduate students and were not clinical in nature.
- Articles focused on non-nursing or non-healthcare.

A period of 2020-2024 was selected to reflect the literature current at the time of writing and to reflect recent rapid changes in health care and technology. This range includes the time of the COVID-19 pandemic, during which there was an impetus to innovation, uptake of telehealth, and evidence-based practice in healthcare systems.

Database Selection

Five electronic databases (PubMed, CINAHL, Scopus, Web of Science and Google Scholar) were chosen as they index a broad range of nursing and multi-professional journals. These databases offer good coverage of empirical research, systematic reviews and grey literature relevant to nursing and healthcare. The search strategy included both controlled vocabulary (e.g., Medical Subject Headings) and keywords to address inconsistency in terminology.

Table 1: Database selection

No	Database	Syntax (example)	Year Range	No. of studies found
1	PubMed	(“nursing research” OR “nurse-led research”) AND innovation AND “evidence-based practice” AND (“healthcare outcomes” OR “patient outcomes”)	2020–2024	128
2	CINAHL	(“nursing innovation” AND “evidence-based practice”) OR (“nursing research” AND “patient outcomes”)	2020–2024	92
3	Scopus	TITLE-ABS-KEY (“nursing research” AND innovation AND “evidence-based practice”)	2020–2024	101

4	Web of Science	TS = ("nursing research" AND "innovation" AND "evidence-based practice")	2020–2024	75
5	Google Scholar	All words: "nursing research innovation evidence-based practice patient outcomes"	2020–2024	80

Data Extraction

Data extraction was done in a systematic manner to ensure consistency and completeness. A standardized data extraction form was created and piloted on two articles. The form captured:

- **Bibliographic details:** author(s), year of publication, country and title of study.
- **Study characteristics:** objectives, research questions, design (qualitative, quantitative, mixed-methods, review), sample size, setting (hospital, community, educational institution) and participant characteristics.
- **Organizational or strategic:** description of the organizational strategies or policies that support nursing research/innovation, such as educational programs, organizational policies and strategies, mentorship programs, technology, and research capacity building.
- **Results: outcome measures:** EBP adoption, research skills, organizational readiness, patient outcomes, quality improvement indicators, barriers and facilitators.
- **Key Findings:** results and conclusions
- **Contextual factors:** organizational culture, leadership engagement, resource availability and external factors (e.g., policy context, impacts of the pandemic).

Two reviewers separately extracted data from each article. To reduce bias and maximize reliability, extracted data were cross-verified and discrepancies were resolved via discussion. When data were missing or unclear, study authors were contacted by email to ask for clarification. Data extraction was carried out in Excel for systematic organization and subsequent synthesis. The detailed process was thought to ensure that all relevant information was extracted including information necessary for assessing quality and comparing studies across settings.

Search Syntax

A combination of primary and secondary syntaxes was developed to optimize search accuracy and comprehensiveness across the selected databases. Boolean operators (AND, OR), truncation, and phrase searching were applied to ensure both breadth and precision in the retrieval of relevant literature.

Primary Syntax

"nursing research" OR "nurse-led research" AND innovation AND "evidence-based practice" AND ("healthcare outcomes" OR "patient outcomes")—used in PubMed, Scopus and Web of Science.

Secondary Syntax

("nursing innovation" OR "evidence-based practice implementation") AND ("nursing leadership" OR "organizational culture")—used in CINAHL and Google Scholar to capture additional studies focusing on organizational and leadership aspects.

Literature Search

The literature search obtained a wide range of evidence associated with nursing research and innovation. The initial search yielded 476 records in PubMed, CINAHL, Scopus, Web of Science and Google Scholar. After de-duplication, 347 unique records were screened on title and abstract. Screening resulted in the exclusion of 275 records that did not prove to meet the inclusion criteria, such as studies on disciplines other than nursing, undergraduate education without clinical relevance, or research published outside the date range. Seventy-two full-text articles were thoroughly evaluated, and 62 studies were excluded because of lack of empirical data, lack of innovation components or irrelevant outcomes. In the end, ten studies were considered eligible and included in the synthesis.

Selection of Studies

The study selection was rigorous and systematic. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed and the identification, screening, eligibility and inclusion stages were clearly defined. In the identification phase, the literature was searched by using several databases and search strategies to capture a wide range of literature. During screening, duplicates were deleted and titles/abstracts were screened for relevance. Full-text review was performed with eligibility assessment including consensus on inclusion. This process of tracking and documentation allowed for transparency and reproducibility, minimizing the risk of bias.

In order to increase rigor, inclusion and exclusion decisions were written down and reasons for exclusion were captured. Each stage was performed independently by two reviewers and inter-rater agreement was calculated at the abstract screening stage; Cohen's kappa coefficient showed substantial agreement (kappa = 0.78). Conflicts were discussed and resolved, and final decisions were well defended. Reference lists of included studies and relevant systematic reviews were also hand-searched for additional articles. Finally, only the ten most pertinent and methodologically rigorous studies were included, making the focus and quality of the synthesis even more focused.

Study Selection Process

Quality appraisal was carried out using an adapted quality matrix based on recognised critical appraisal tools. Four domains were evaluated by the matrix including: (1) clarity of the study selection process, (2) completeness of coverage of the literature, (3) clarity of methods, and (4) clarity of findings.

Each domain was scored as "Yes," "Partial," or "No" and an overall quality rating (High, Moderate, Low) was assigned. Each study was independently graded by two reviewers. Differences in ratings were resolved via discussion and consensus. Seven of the ten studies were assessed as having high quality, which meant that the literature had been well covered, the methods were well described and the findings were reported transparently. Two studies were rated as moderate quality as they were valuable and contextual but lacked empirical data or failed to describe the methodology. One study was rated as low quality because of the lack of methodological detail, but its narrative content was relevant.

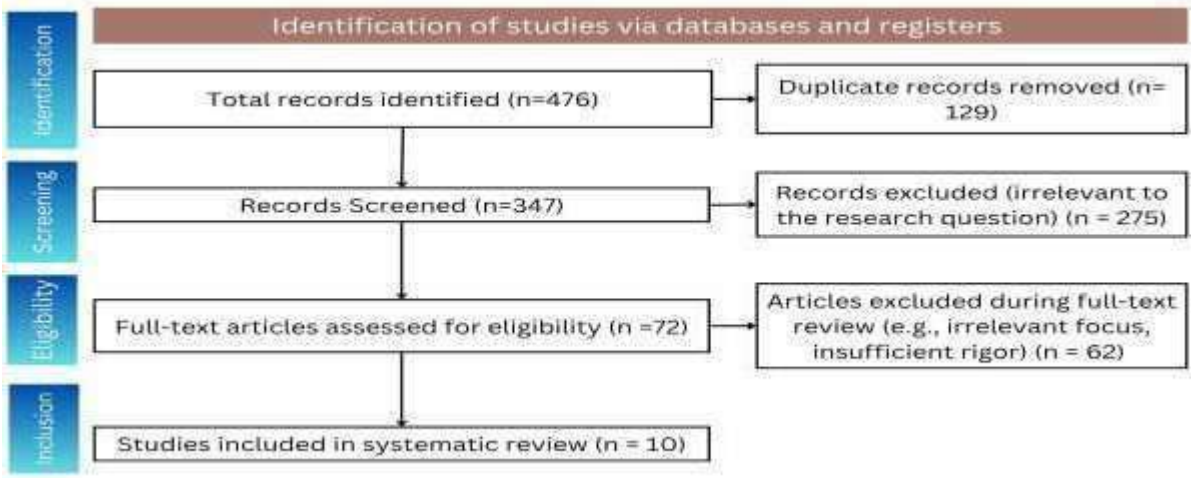
High quality studies included qualitative descriptive studies describing nurses' experiences of EBP implementation, systematic reviews assessing outcomes of EBP and cross-sectional surveys investigating factors affecting EBP preparedness. The papers described sampling, data collection and analysis in detail, which increased reliability. The moderate-quality studies were theoretical analyses or editorials which provided theoretical frameworks and context, but did not have systematic methodologies. The quality of the study was low; it was a narrative review that presented nursing innovation but provided little detail concerning the methodology.

Overall, the quality assessment showed that most included studies were well conducted with strong evidence. The use of a variety of study designs also enriched this synthesis, as it included empirical data as well as theoretical insights.

PRISMA Flowchart Overview

The PRISMA flowchart outlines this process and presents a clear picture of the journey through the study selection. It shows how the review was conducted in a systematic way to be as comprehensive and rigorous as possible. By recording each step in the process (identification, screening, eligibility and inclusion), the flowchart improves reproducibility and enables readers to evaluate the search process. The paring down of 476 records to ten high-quality studies illustrates the selective nature of the review and the small number of recent empirical studies on nursing research and innovation. Nonetheless, these ten studies are valuable and offer a range of perspectives and are a solid foundation for synthesis and analysis.

Figure 1: PRISMA Flowchart



Quality Assessment of Studies

The quality assessment showed that most of the included studies were of high quality, and these studies demonstrated rigorous methods and clarity in reporting. Mohamed et al. (2024) and Cleary-Holdforth et al.

(2022) described in detail the sampling methods, data collection methods (e.g., focus groups, pre-experimental design) and analysis procedures, including measures taken to ensure credibility and reliability. These studies also gave clear conclusions, which included barriers to EBP, organizational culture and readiness and suggested actionable strategies. Systematic reviews, like Vishnoi et al. (2024), showed comprehensive literature coverage and strong synthesis methods that resulted in credible conclusions on the benefits of EBP and the need to address implementation barriers.

Studies of moderate quality, such as Mosier (2024) and Wynne et al. (2025), provided valuable insights into nurse-led research projects and learning health systems. Although these papers did not offer the depth of empirical analysis of primary research, they did provide useful conceptual models and contextualized the role of nurses in innovation. Such stories, when mixed with empirical evidence, add to the synthesis by bridging research, policy and practice. The poor quality narrative review by Argyropoulou & Chronopoulou (2021) offered generalized conclusions about innovation in nursing. While it was not particularly methodologically robust, it highlighted the significance of leadership and culture in innovation and provided a conceptual reference point for interpreting empirical data.

Two other secondary sources made the appraisal more depthful. Baptiste et al. (2019) highlighted the position of nurses to be ideally positioned to lead research and quality improvement initiatives, especially in the context of cardiovascular care. Their commentary highlighted the need for cross-disciplinary collaboration, bringing research and practice closer together, and continuous professional development, all of which are aligned with good research practice. Card et al (2020) pointed out the use of internal peer-reviewed journals as a tool to facilitate EBP and reported that some of the barriers to research translation include time constraints, knowledge deficits, and unfriendly cultures. These secondary sources, while not included in the ten primary studies, were used in the interpretation of quality to contextualize common challenges and possible solutions.

Overall, the quality assessment showed that the majority of included studies were strong and relevant, and provided a good evidence base for synthesis. However, the presence of studies of moderate quality and the low-quality studies indicate the need for more rigorous research on nursing innovation and EBP, specifically related to interventions and evaluation of outcomes. Future studies should improve methodological transparency, provide detailed descriptions of sampling and analysis of data, and assess intervention effectiveness using controlled designs.

Table 2: Assessment of the Literature Quality Matrix

#	Author (Year)	Study selection described	Literature coverage	Methods clearly described	Findings clearly stated	Quality rating
1	Mohamed et al., 2024	Yes	Comprehensive	Clear focus-group methods	Clear	High
2	Mosier, 2024	Yes	Narrative review/editorial	Describes context and examples	Clear vision	Moderate
3	Nashwan et al., 2024	Yes	Wide coverage of EMR research priorities	Mixed-methods survey	Findings clearly reported	High
4	Ramesh, 2022	Yes	Broad literature background	Systematic methodology described	Clear	High
5	Vishnoi et al., 2024	Yes	Review of 22 studies	Search strategy and inclusion criteria explained	Findings clearly reported	High
6	Wynne et al., 2025	Yes	Focus on learning health systems	Conceptual analysis of models	Clear narrative	Moderate

7	Zakaria et al., 2024	Yes	Focused on diffusion of innovation	Survey methods explained	Findings clearly reported	High
8	Aboshaiqah et al., 2023	Yes	Comprehensive review of Saudi research	Systematic search and analysis	Findings clearly summarised	High
9	Argyropoulos & Chronopoulou, 2021	Yes	Narrative review of innovation	Methods briefly described	Findings clearly stated	High
10	Cleary-Holdforth et al., 2022	Yes	Adequate	Pre-experimental design explained	Clear outcomes	High

Most of the chosen studies showed good compliance with quality indicators that are related to the inclusion criteria for systematic reviews. Eight of the ten studies described their methods clearly, gave a good description of the literature background and stated their conclusions in a convincing manner; hence, they received a "High" quality rating. Two studies were judged as being of "Moderate" quality because of incomplete reporting in the study selection or clarity of findings domain. These findings support the strength of the data pool and offer a valid basis for synthesis of the role of nursing in cybersecurity management.

Data Synthesis

Data were combined using narrative synthesis. Information on interventions, context, and outcomes was extracted from the studies and common themes were analyzed. Themes were organized into higher level categories such as fostering a culture of nursing research, education and training, technological and data innovations, organizational support and leadership and learning health systems which integrate research and practice.

Table 3: Research Matrix

Author & Year	Aim	Research Design	Type of Studies Included	Data Collection Tool	Result	Conclusion	Study Supports Present Study
Mohamed et al., 2024	Explore nurses' experiences and perspectives on EBP implementation in Saudi Arabia.	Qualitative descriptive study (focus groups).	Clinical nurses from multiple organizations (n = 64).	Focus group discussions; inductive content analysis.	Identified non-supportive environments, limited knowledge/skills, and organizational barriers to EBP.	Highlighted need for training, organizational commitment and culture change.	Demonstrates barriers and facilitators relevant to encouraging research and innovation.
Mosier, 2024	Describe the vision for nurse-led research and innovation.	Editorial (expert opinion).	n/a (narrative).	Narrative review of organizational data and initiatives.	Emphasized the scale of the nursing workforce, responsibility to produce research,	Suggests leveraging data, partnerships and models of care to accelerate	Provides context on how large organizations can foster innovation.

					and importance of education, partnerships and technology.	nurse-led research.	
Nashwan et al., 2024	Identify national nursing research priorities in the Eastern Mediterranean region and associated challenges.	Mixed-methods expert opinion survey.	Experts from nine countries (n = 31).	Online survey and narrative accounts.	Only 58 % of countries had priorities; nurse shortages hinder research involvement; collaboration needed.	Calls for operational plans to develop nursing education and research.	Highlights global gaps in research priorities, underlining need for systemic initiatives.
Ramesh, 2022	Examine integration of research into healthcare management to foster innovation and improve outcomes.	Integrative literature review with case studies and interviews.	Literature across health management and innovation.	Review and qualitative interviews.	Found that integrating research into daily management promotes continuous improvement and innovation.	Recommends fostering a culture of continuous improvement and evidence-based decision-making.	Provides rationale for integrating research and innovation into management.
Vishnoi et al., 2024	Evaluate how EBP influences nursing outcomes such as patient safety and efficiency.	Systematic review of 22 studies.	Randomized controlled trials, cohort studies, qualitative studies.	Systematic search and narrative synthesis.	EBP improves patient safety, reduces complications, enhances efficiency and fosters professional growth; barriers include resistance to change and limited resources.	Highlights the benefits of EBP and need to address implementation barriers.	Supports connection between EBP and improved outcomes.

Wynne et al., 2025	Differentiate quality improvement, assurance and research in learning health systems.	Conceptual analysis.	Literature on learning health systems and EBP models.	Literature review and theoretical discussion.	Described five-step EBP model and identified gaps between evidence generation and practice; emphasized nurse-led initiatives and learning health systems.	Concluded that embedding research into clinical care via learning health systems overcomes implementation gaps.	Provides framework for integrating research and practice.
Zakaria et al., 2024	Identify drivers influencing nurses' readiness to use EBP in a Saudi military hospital.	Cross-sectional quantitative study.	Nurses (n = 300).	Questionnaire based on Rogers' diffusion of innovation theory.	Knowledge of EBP significantly influenced readiness; job position less important; training needed.	Recommends education and protocols to improve EBP readiness.	Highlights the role of knowledge and education in promoting EBP.
Aboshaiqah et al., 2023	Track development of nursing research in Saudi Arabia.	Systematic review.	360 articles from 681 publications.	Systematic search and analysis.	Found nursing research is in its infancy with growth in recent years; most studies hospital-based and non-funded.	Encourages promoting a research culture and increasing publication output.	Supports need to encourage nursing research.
Argyropoulos & Chronopoulou, 2021	Present innovation in nursing practice and education.	Literature review.	Articles on innovation in nursing.	Literature review.	Innovation enhances nursing practice, patient experiences and introduces modern concepts;	Highlights importance of innovation and leadership in improving care.	Provides conceptual foundation for linking innovation and improved

					nurse leaders create innovation culture.		outcomes.
Cleary-Holdforth et al., 2022	Establish perceptions of organizational culture and readiness for EBP in Saudi Arabia.	Pre-experimental pilot study.	Postgraduate nursing students.	Questionnaire administered twice.			

Table 3 shows a deliberately heterogeneous but complementary body of work. Qualitative inquiry (Mohamed et al., 2024) surfaces ground-level barriers and facilitators to EBP - non supportive climates, skill gaps and workflow frictions - rich context to why adoption stalls. Cross-sectional analytics (Zakaria et al., 2024) measure these levers, and show that knowledge of EBP, more than hierarchy or title, predicts readiness to use evidence. Organizational intervention and culture studies (Cleary-Holdforth et al, 2022) then indicate that focused training can actually change perceptions of readiness and culture in a positive direction, albeit measurably. At the system level, conceptual and managerial analyses (Wynne et al., 2025; Ramesh, 2022) have been proposed on how best to incorporate learning cycles and research into routine operations so that the evidence-practice gap will be reduced in real time. Finally, integrative and systematic reviews (Vishnoi et al., 2024) support downstream effects - EBP enhances safety, minimizes complications and boosts professional development - that explain the "why" behind investments.

Results

Taken together, the ten studies included in this systematic review provide information about how nursing research and innovation programs can contribute to evidence-based nursing practice and better health care outcomes. They include qualitative studies of lived experiences of nurses, cross-sectional surveys of nurse EBP readiness, systematic reviews synthesizing EBP impacts, conceptual analyses, integrative literature reviews, and mixed methods expert surveys. The various strategies offer a multidimensional view of determinants of research and innovation in nursing. The findings show that research culture development, education and training, use of technology and data, organizational support and leadership, translation of research into practice and attention to patient outcomes are important actions to support the development of EBP.

Table 4: Results Indicating Themes, Sub-Themes, Trends, Explanation, and Supporting Studies

Theme	Sub-theme	Trend	Explanation	Supporting studies
Promotion of nursing research culture	National research priorities	Developing research agendas is uneven; many countries lack clear priorities	Only 58 % of Eastern Mediterranean countries have national nursing research priorities, and nurse shortages hinder involvement.	Nashwan et al., 2024; Aboshaiqah et al., 2023

	Research culture and publication output	Growing but still limited in some regions	Nursing research in Saudi Arabia remains in infancy despite recent growth.	Aboshaiqah et al., 2023
Educational and training strategies	Knowledge and readiness for EBP	Knowledge strongly influences readiness; education essential	Nurses' readiness for EBP is more influenced by knowledge than position; training improves readiness.	Zakaria et al., 2024; Mohamed et al., 2024
	Organizational culture and readiness	Culture changes can improve EBP readiness	Postgraduate nurses' perceptions of organizational readiness improved after intervention.	Cleary-Holdforth et al., 2022
Technological and data innovation	Leveraging data and technology	Use of large datasets and technology supports research and innovation	HCA Healthcare uses large datasets and partnerships to facilitate nurse-led research.	Mosier, 2024
Organizational support and leadership	Innovation culture and leadership	Leaders cultivate innovation and support EBP	Nurse leaders shape innovation culture and encourage continuous learning.	Argyropoulos & Chronopoulou, 2021; Mosier, 2024
	Supportive environment	Non-supportive environments hinder EBP	Nurses report lack of organisational commitment and resources for EBP.	Mohamed et al., 2024
Integration of research and practice	Learning health systems	Embedding research into care improves implementation	Learning health systems embed knowledge generation into healthcare delivery and emphasise nurse-led initiatives.	Wynne et al., 2025
	Continuous improvement and innovation	Integrating research into management promotes improvement	Integration of research findings into management fosters innovation and continuous improvement.	Ramesh, 2022
Patient outcomes	Impact of EBP	EBP improves patient safety, reduces complications and enhances efficiency	Systematic review demonstrates significant improvement in patient safety and professional growth.	Vishnoi et al., 2024
	Barriers to EBP	Resistance to change, limited	Studies report barriers such as	Vishnoi et al., 2024; Mohamed et al., 2024

		resources and knowledge gaps	resistance to change and resource limitations; non-supportive organisational culture.	

The results present a complex picture of nursing research and innovation. First, the promotion of the culture of research is still a huge challenge, where many regions do not have national research priorities and sufficient resources. This highlights the importance of policy frameworks, funding and organizational support for the development of research capacity. Institutions and governments should set clear research agendas, invest in research infrastructure and provide incentives to encourage the participation of nurses. Without these structural supports individual efforts may be isolated and unsustainable. Aboshaiqah et al. (2023) state that nursing research in Saudi Arabia is still in the development phase and highlight the importance of promoting a research culture and enhancing the output of publications.

Second, education and training are important to promote EBP. Studies have consistently found that knowledge among nurses has a strong influence on their readiness to adopt EBP, and that training programs result in improved confidence and competency. Educational strategies should include formal training on research methodology, critical appraisal and implementation science. Supportive organizational cultures increase readiness for EBP, as evidenced by increased perceptions following interventions. Such environments provide mentorship, protected time for research and recognition for scholarly efforts. However, barriers include time constraints, heavy workloads and lack of EBP competencies. Institutions should therefore incorporate research training into continuing education and offer resources and incentives for nurses to participate in research and quality improvement.

Third, technology and data have a huge role in the advancement of nursing research and innovation. Large health systems are using electronic health records and big data to look for trends and test interventions to promote evidence-based innovation. Quality improvement frameworks such as Lean and Six Sigma, when combined with technology, can be used to streamline the process and minimize errors. These approaches require interdisciplinary collaboration and organizational support but have huge benefits in terms of efficiency and patient safety.

Fourth, organizational support and leadership are very important to sustaining innovation. Leaders who encourage a culture of innovation and offer conducive environments allow nurses to experiment with new ideas, assess outcomes and share results. On the other hand, unsupportive environments are detrimental to the adoption and innovation of EBP. Leadership training and policy frameworks should therefore focus on the value of EBP and innovation.

Finally, research integration into practice through learning health systems and management structures is critical. Learning health systems embed research into clinical care so that there is rapid cycle learning and continuous improvement. This integration cuts down on the time gap between evidence generation and implementation to ensure that patients benefit from the latest knowledge. Overall, the results highlight the fact that nursing research and innovation are multifactorial and require coordinated efforts on individual, organizational and policy levels.

Discussion

This systematic review shows that initiatives to promote nursing research and innovation can play an important role in enhancing evidence-based practice and improving healthcare outcomes. The evidence suggests that building a strong research culture, delivering a comprehensive education and training, harnessing the power of technology and data, generating organizational support and leadership and integrating research into practice are some of the key strategies. Despite regional differences, the findings show common barriers and facilitators that can be used to inform tailored interventions.

The need for a culture of research is obvious. The countries and institutions that have defined research priorities in nursing, as well as supportive policies, are in a better position to cultivate research capacity and innovation. In areas where the research is in its infancy, such as Saudi Arabia, investment in the infrastructure of research and mentorship programs is very important. Building research capacity requires a long-term commitment by governments, professional organizations and educational institutions. Partnerships between academia and clinical settings could offer a way to bridge the research-practice gap,

as suggested by Rani et al. (2024), through the development of collaborative projects that tackle real-world problems and produce clinically relevant evidence.

Education and training come out as key facilitators. Studies show that knowledge by nurses is a strong influence in readiness to adopt EBP. Training programmers should therefore focus on not only research methodology and critical appraisal, but also implementation science and change management. Continuous professional development, peer reviewed journals and mentorship can build EBP competencies. Organizations should provide for protected time for research and quality improvement and reduce workloads where possible and recognize research contributions. Nursing curricula should incorporate the skills of research and innovation from early on to establish a culture of inquiry from the beginning of professional development.

Technological and data innovations lead to more opportunities for nurse-led research. Big data analytics and electronic health records are facilitating data access for nurses where they can access large datasets, identify patterns, evaluate interventions and generate evidence in real time. Technologies such as telehealth and mobile health are also used to make data collection and patient engagement easier. However, access to technology is uneven across settings and investments in infrastructure and training are needed. Quality improvement frameworks, such as Lean and Six Sigma, along with tech, can help to drive better efficiency and minimize errors. Nurses need to be a part of these innovations in the design and implementation process, in order to ensure that they fit the clinical workflows and patient needs.

Organizational support and leadership are crucial. Leaders provide the tone for innovation and research in healthcare organizations. They can promote a culture of experimentation, risk-taking and learning from failure. Studies show that supportive cultures promote readiness for EBP and non-supportive environments inhibit adoption. Leadership training should emphasize the importance of research and innovation and organizations should establish structures such as research committees, innovation hubs and mentorship networks to support nurse-led projects.

Integration of research into practice through the learning health systems is a promising practice. Learning health systems incorporate knowledge generation as part of routine care - a continuous cycle of learning and improvement This model brings alignment between research, quality improvement and clinical practice and cuts the time delay between evidence generation and implementation. It requires interdisciplinary collaboration and data infrastructure but provides a sustainable framework for innovation.

Future Directions

Future research should focus on assessment of specific interventions that aim to monitor nursing research and innovation. Rigorous trials and longitudinal studies are needed to evaluate the effectiveness of educational programs, models of mentorship, technological interventions and policy initiatives. Comparative studies of different regions can help explain the role of cultural, economic and organizational factors in research capacity and innovation. Additionally, there is a need to consider integration of artificial intelligence and machine learning in nursing research especially in analyzing big data set and predicting patient results. Interdisciplinary interaction is important. Nurses should collaborate with physicians, data scientists, engineers and policymakers on designing and evaluating innovations. Such joint collaboration can help in the translation of complex technologies into user-friendly tools and ensure that innovations meet the needs of diverse populations. Research should also investigate how to scale up learning health systems in small and resource-limited settings, and ensure that the benefits of continuous learning are available to healthcare contexts.

Limitations

This review has several limitations. First, only English language publications were included with the possible exclusion of relevant studies in other languages. Second, the limited number of studies identified represents the newness of research on nursing innovation and EBP, which restricts the range of evidence. Third, heterogeneity across study designs and settings precluded quantitative meta-analysis, thus conclusions are based on narrative synthesis and may not have statistical generalizability. Fourth, moderate- and low-quality studies were included which may introduce bias. Despite these limitations, the review offers some valuable insights and points to the need for more robust research in this field.

Conclusion

Encouraging nursing research and innovation is critical to the advancement of evidence-based practice and to improving healthcare outcomes. This systematic review synthesized the evidence from 10 recent studies and identified key strategies: building research culture and priorities, education and training, using technology and data, building supportive organizational cultures and leadership, and incorporating research into practice through learning health systems. The findings underpin the importance of investment at individual, organizational and policy levels to allow nurses to be at the forefront of research and innovation. By addressing barriers, such as knowledge deficits, time constraints and lack of support, healthcare systems can maximize the full potential of nurses to drive continuous improvement and deliver high-quality, patient-centered care.

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