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Navigating artificial intelligence in nursing clinical practice: development of the NURSE-AI mnemonic framework, a scoping review protocol

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ADMINISTRATIVE INFORMATION

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Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 May 2026 and was last updated on 13 May 2026.

INTRODUCTION

Review question / Objective Using the PCC framework, this scoping review asks: among nurses and nursing professionals involved in direct patient care (Population), what is the current state of evidence on artificial intelligence applications, nurse–AI interactions, and implementation challenges in nursing clinical practice, and which evidence-based principles should underpin a mnemonic framework to support safe bedside implementation (Concept) across diverse clinical settings and health systems (Context)? The objectives are: (1) to map existing evidence on AI applications, clinical outcomes, nurses' knowledge, attitudes, and acceptance, ethical and accountability challenges, and implementation barriers and facilitators in nursing clinical practice; and (2) to develop the NURSE-AI mnemonic framework, a structured, evidence-informed tool designed to guide bedside nurses in the critical, ethical, and safe use of AI technologies in everyday clinical decision-making.

Background Artificial intelligence, including machine learning, natural language processing, deep learning, and predictive analytics, is rapidly transforming healthcare and nursing clinical practice. AI technologies are increasingly used for real-time patient monitoring, clinical decision support, medication safety, documentation, and workload management, yet most tools remain in developmental or experimental stages with limited real-world validation. Existing evidence shows that AI can reduce medication errors and improve decision-making, but nurses often lack AI literacy, formal training, and clear ethical and accountability guidance. Nurses are also frequently excluded from AI design, and current regulatory and ethical frameworks are not tailored to nursing-specific contexts. Despite several organizational-level frameworks for AI integration, no bedside-focused mnemonic tool currently exists to help nurses safely and critically navigate AI outputs during routine clinical care.

Rationale The rationale for this scoping review is the widening gap between the rapid deployment of

AI technologies in nursing settings and the limited preparedness of the nursing workforce to engage with these tools safely and ethically. Evidence indicates major AI literacy deficits among nurses, a near-complete absence of formal training, limited ethical guidance, and ambiguity regarding professional accountability for AI-assisted decisions. At the same time, AI-driven tools are increasingly implicated in high-stakes domains such as medication safety and deterioration monitoring, where over-reliance or uncritical use may jeopardize patient safety. Existing frameworks, such as the Nursing AI Integration Roadmap, operate mainly at organisational or policy levels and do not offer a practical, bedside-level cognitive aid for nurses. This review therefore seeks to synthesise the evidence base and translate it into a concise, mnemonic framework that supports safe, critical, and ethically grounded AI use in everyday nursing practice.

METHODS

Strategy of data synthesis We will conduct a comprehensive search in five electronic databases: PubMed/MEDLINE, CINAHL, Scopus, ScienceDirect, and Web of Science, restricted to publications from January 2015 to March 2026. Grey literature will be searched in sources such as the World Health Organization, the International Council of Nurses, and the American Nurses Association. Search terms will combine MeSH and free-text keywords using Boolean operators, for example: ("artificial intelligence" OR "machine learning" OR "deep learning" OR "natural language processing" OR "clinical decision support" OR "predictive analytics") AND ("nursing" OR "nurse" OR "nursing practice" OR "nursing care" OR "bedside nursing" OR "clinical nursing") AND ("implementation" OR "integration" OR "clinical practice" OR "patient safety" OR "patient outcomes"). Reference lists of included studies and relevant reviews will be hand-searched, and forward and backward citation tracking will be performed. Data will be synthesised using inductive thematic analysis to identify recurring patterns, which will be organised into themes informing the NURSE-AI framework.

Eligibility criteria Types of participants (Population): studies involving registered nurses, advanced practice nurses, nursing students, or nursing professionals engaged in direct patient care.
Concept: artificial intelligence applications, integration, or implementation in nursing clinical practice, including clinical decision support, patient monitoring, predictive analytics, medication safety, workflow optimisation, nurses' knowledge, attitudes, and acceptance of AI, ethical and regulatory considerations, and nursing-specific AI frameworks.
Context: any clinical nursing setting (e.g., hospitals, ICUs, emergency departments, community and primary care) where AI is used or proposed for use in patient care.
We will include peer-reviewed original research and evidence syntheses (systematic reviews, scoping reviews, rapid reviews, integrative and umbrella reviews, and mixed-methods studies) published in English. We will exclude studies focused exclusively on non-nursing health professionals, editorials, commentaries, conference abstracts without primary data, non-English publications, and studies focusing solely on paediatric nursing due to distinct workflows and governance structures.

Source of evidence screening and selection All retrieved citations will be imported into reference management software and duplicates removed. Two independent reviewers will screen titles and abstracts against predefined eligibility criteria, followed by full-text assessment of potentially eligible studies. Discrepancies at any stage will be resolved through structured discussion; if consensus cannot be reached, a third reviewer will act as arbitrator. The study selection process will be documented in a PRISMA-ScR flow diagram, including the number. Bibliographic records will be managed using reference management software, where all search results will be imported, organised, and deduplicated. A shared, password-protected spreadsheet or data-charting tool will be used to record study characteristics and extracted data, with version control to track changes. Only the review team will have access to the data files, which will be stored on secure institutional or encrypted cloud storage in line with local data protection policies. Regular backups will be maintained throughout the review process to minimise the risk of data loss.

of records identified, screened, excluded (with reasons), and included. A standardised data-charting form will be developed and piloted before full extraction to ensure consistency between reviewers.

Data management Bibliographic records will be managed using reference management software, where all search results will be imported, organised, and deduplicated. A shared, password-protected spreadsheet or data-charting tool will be used to record study characteristics and extracted data, with version control to track changes. Only

the review team will have access to the data files, which will be stored on secure institutional or encrypted cloud storage in line with local data protection policies. Regular backups will be maintained throughout the review process to minimise the risk of data loss.

Reporting results / Analysis of the evidence We will summarise study characteristics descriptively (e.g., design, year, country, AI type, clinical setting, sample, and key outcomes). An inductive thematic analysis approach will be used to synthesise qualitative and quantitative findings, coding recurring concepts related to AI applications, clinical outcomes, nurses' knowledge and attitudes, ethical and accountability issues, barriers and facilitators, and AI literacy. Codes will be iteratively grouped into higher-order themes through team discussion, with attention to geographical and methodological diversity to support transferability. These themes will be used to derive and refine the components of the NURSE-AI mnemonic framework.

Presentation of the results Results will be presented using a combination of narrative synthesis, tables, and figures. A main summary table will report the characteristics of included studies (authors, year, country, design, population, AI application, setting, and key findings). Additional tables will map how each study contributes to the development of specific NURSE-AI components. A PRISMA-ScR flow diagram will depict the study selection process. Where appropriate, thematic maps or conceptual figures will illustrate the relationships between AI applications, implementation barriers, ethical concerns, and NURSE-AI framework elements.

Language restriction Yes, English only.

Country(ies) involved Jordan.

Other relevant information The review will follow the Arksey and O'Malley framework with Levac refinements and be reported according to PRISMA-ScR guidelines.

Keywords artificial intelligence; nursing practice; clinical decision-making; mnemonic framework; patient safety; AI literacy; scoping review.

Dissemination plans Findings from this scoping review and the NURSE-AI framework will be submitted for publication in a peer-reviewed nursing or health informatics journal and presented at national and international nursing conferences. We also plan to share user-friendly summaries and educational materials with nursing educators, clinical leaders, and professional bodies to support integration of AI literacy and the NURSE-AI framework into curricula and bedside practice. Where possible, the framework and key resources will be made openly accessible to maximise global uptake.

Contributions of each author

Author 1 - omar alqaisi - Author 1 conceived the review, developed the protocol, led the search strategy and data extraction, and drafted the manuscript.
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Author 2 - Safia Darwish - Author 2 contributed to protocol development, study selection, thematic synthesis, and critical revision and approval of the final manuscript.
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