Research, Society and Development, v. 13, n. 7, e1313746196, 2024
(CC BY 4.0) | ISSN 2525-3409 | DOI: http://dx.doi.org/10.33448/rsd-v13i7.46196

Decision support strategies for bedside nursing clinical reasoning: A scoping review protocol

Estratégias de apoio à decisão para o raciocínio clínico de enfermagem à beira do leito: Um protocolo de revisão de escopo

Estrategias de apoyo a la decisión para el razonamiento clínico de enfermería en el punto de atención: Protocolo de revisión de alcance

Received: 06/13/2024 | Revised: 06/23/2024 | Accepted: 06/24/2024 | Published: 06/28/2024

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Abstract
The aim of this scoping review is to map the evidence on self-instructed bedside decision strategies applied by nurses to support clinical reasoning. The ability to perform solid clinical reasoning is essential for providing healthcare with favourable patient outcomes. Accordingly, nurses should play an active role in developing clinical reasoning skills. Bedside support strategies are intended to be pragmatic, invaluable, and easy-to-apply resources to restructure cognitive processes when the clinical demands are complex. This review will consider studies that focus on bedside decision strategies, context-suitable, and practical to apply, self-instructed by nurses aimed to support nursing clinical reasoning. Studies focused on educational content, clinical case-specific studies, and studies related to software applications development or artificial intelligence will be excluded. The methodology will follow the JBI recommendations for scoping reviews. All published and unpublished sources of relevant evidence will be considered. Studies published in Portuguese, English, Spanish or Swedish will be included, without geographical or cultural limitations. Duplicates will be removed, and two independent reviewers will screen the abstracts and appraise the full text of the selected studies, based on the inclusion criteria. The results of the study selection will be summarized in a flowchart adapted from Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA). The overview of datasets will be presented in a narrative summary to provide a description of the existing evidence.
Keywords: Clinical problem-solving; Clinical reasoning; Decision-making; Decision support; Nursing.

Resumo

O objetivo desta revisão de escopo é mapear a evidência sobre as estratégias de decisão autoinstruídas no local de atendimento aplicadas por enfermeiros para apoiar o raciocínio clínico. A capacidade de realizar um raciocínio clínico sólido é crucial para garantir cuidados de saúde com resultados favoráveis para os pacientes. Os enfermeiros devem desenvolver ativamente essas competências. As estratégias de apoio no local de atendimento são recursos pragmáticos, valiosos e fáceis de aplicar, que ajudam a reestruturar processos cognitivos em situações clínicas complexas. Esta revisão considerará estudos que se concentrem em estratégias de decisão no local de atendimento, adequadas ao contexto e práticas de aplicar, autoinstruídas por/para enfermeiros e destinadas a apoiar o raciocínio clínico em enfermagem. Serão excluídos os estudos centrados em conteúdo educativo, estudos específicos de casos clínicos e estudos relacionados com o desenvolvimento de aplicações de software ou inteligência artificial. A metodologia seguirá as recomendações do JBI para revisões de escopo. Serão consideradas todas as fontes publicadas e não publicadas de evidência relevante. Serão incluídos estudos publicados em português, inglês, espanhol ou sueco, sem limitações geográficas ou culturais. Serão removidos os duplicados, dois revisores independentes analisarão os resumos e avaliarão o texto completo dos estudos selecionados, com base nos critérios de inclusão. Os resultados da seleção de estudos serão resumidos num diagrama de fluxo adaptado dos Itens de Relatório Preferidos para Revisões Sistemáticas e Meta-Análises (PRISMA). Os resultados serão apresentados num resumo narrativo para fornecer uma descrição da evidência existente.

Palavras-chave: Resolução de problemas; Raciocínio clínico; Tomada de decisões; Técnicas de apoio para a decisão; Enfermagem.

Resumen

El objetivo de esta revisión de alcance es mapear la evidencia sobre las estrategias de decisión autoinstruidas en el punto de atención aplicadas por enfermeras para apoyar el razonamiento clínico. La capacidad de realizar un razonamiento clínico sólido es crucial para asegurar una atención médica efectiva y favorable para los pacientes. Las enfermeras deben jugar un rol activo en el desarrollo de estas habilidades. Las estrategias de apoyo en el punto de atención son herramientas prácticas, invaluablemente útiles y de fácil aplicación que permiten reorganizar los procesos cognitivos en situaciones clínicas complejas. Esta revisión considerará estudios que se centren en estrategias de decisión en el punto de atención, adecuadas al contexto y prácticas de aplicar, autoinstruidas por enfermeras y destinadas a apoyar el razonamiento clínico en enfermería. Se excluirán los estudios centrados en contenido educativo, estudios específicos de casos clínicos y estudios relacionados con el desarrollo de aplicaciones de software o inteligencia artificial. La metodología seguirá las recomendaciones del JBI para revisiones de alcance. Se considerarán todas las fuentes publicadas y no publicadas de evidencia relevante. Se incluirán estudios publicados en portugués, inglés, español o sueco, sin limitaciones geográficas o culturales. Se eliminarán los duplicados, y dos revisores independientes revisarán los resúmenes y evaluarán el texto completo de los estudios seleccionados, basándose en los criterios de inclusión. Los resultados de la selección de estudios se resumirán en un diagrama de flujo adaptado de los elementos de referencia preferidos para revisiones sistemáticas y metanálisis (PRISMA). Los conjuntos de datos se presentará en un resumen narrativo para proporcionar una descripción de la evidencia existente.

Palabras clave: Resolución de problemas clínicos; Razonamiento clínico; Toma de decisiones; Apoyo a la decisión; Enfermería.

1. Introduction

Clinical reasoning (CR) reflects the cognitive process and the result of sustained thinking that a healthcare providers uses to solve and manage a clinical problem (Young et al., 2020)**.** It is defined as "*a complex cognitive process that uses formal and informal thinking strategies to gather and analyse patient information, evaluate the significance of this information and weigh alternative actions*" (Simmons, 2010, p. 1155). Effective, high-quality CR requires broad evidence-based knowledge and the ability to isolate relevant healthcare-related information to ensure that decision-making positively impact patient care (Dissanayake et al., 2020)**.**

Complex clinical decision-making has become the standard for current nursing practice. The diversity of care experiences and the fast pace of clinical care place nurses in difficult circumstances, in which solid CR must be demonstrated from the outset of their professional practice (Ludin, 2018). A continuous improvement of CR skills is thus required to ensure their usefulness in clinical problem-solving. The Dual Process Theory Reasoning Model (DPTRM) (Pelaccia et al., 2011) and The Conscious Competence Model (Gruppetta & Mallia, 2020) are some theoretical frameworks useful to assist the CR process.

Thus, DPTRM (Pelaccia et al., 2011) appears as a moderator of cognitive processes interconnected with learning/memory, which may influence judgments and behaviors through two distinct processes: non-analytical clinical reasoning (an abductive, intuitive, pattern-recognition and automatic assimilation mode of processing that normally exists outside of consciousness and has the advantage of requiring little effort) and analytical clinical reasoning (a rule-based inference mode of processing that requires greater cognitive effort). As these processes can be simultaneous and difficult to dissociate, they can lead healthcare providers to unintentional reasoning bias related to limited professional experience, overconfidence in pattern recognition, limited cognitive flexibility related to exposure to the *status quo*, the ageing process associated with a loss of analytical reasoning and a greater reliance on heuristics and emotions (Croskerry, 2009). Additionally, The Conscious Competence Model (Gruppetta & Mallia, 2020), which addresses the path of competence and learning in clinical practice, considers the beginning stage to be simultaneously unconscious and incompetent. Once an individual is unable to assess their own competence in professional practice, it is possible to maintain their performance and not evolve in the process of reasoning and learning (Keeley, 2021). Alongside these reasoning processes, it is essential to consider the use of specific strategies to support CR that can be applied pragmatically and easily in daily clinical situations.

Training CR skills is a challenge due to the complex and tacit nature of professional practice performance and the ongoing controversies over the best means of teaching and developing it(Huesmann et al., 2023). The inadequacy of its acquisition and the lack of continuous training led to an increase in the rate of clinical errors, which is a major challenge for health systems around the world (Sudacka et al., 2021). Furthermore, in an international survey that assessed specific needs in CR training, 85% of respondents highlighted an unmet need for a longitudinal CR curriculum and identified shortcomings in terms of CR teaching strategies and the prevention of cognitive errors (Kononowicz et al., 2020). The most common perceived barriers were a lack of awareness of the need for explicit CR teaching, a lack of guidelines for curriculum development and a lack of qualified instructors (Kononowicz et al., 2020). Thus, DID-ACT was founded, a project that aims to develop, implement, and disseminate an adaptive CR curriculum for students and health educators (Kononowicz et al., 2020)**.**

Most of the evidence produced concerns support for undergraduate students' CR. A review explored the teaching strategies used to promote CR in nursing education (Tyo & McCurry, 2019). Strategies included simulation, active learning strategies (case studies, reflection, journaling, and collaborative learning), teaching strategies (think aloud or case studies with simulation) and clinical experiences. Also, another review identified the Outcome-Present Test (OPT) Model, Interactive Computer Decision Support, Think Aloud, Debriefing for Meaningful Learning, Developing Nurses' Thinking, SAFETY, Lasaster Clinical Judgment, Virtual patient Nursing Design Model, Newman's Health Expanding Consciousness theory, and IRUEPIC (Identify, Relate, Understand, Explain, Predict, Influence, and Control) (Tyo & McCurry, 2019). Although these teaching strategies can be useful in facilitating the development of nursing students' CR skills, they should be part of an overall curricular approach to continuing professional education (Mlambo et al., 2021).

Contemporary intellectual tools to support individualized diagnosis are focused on Computerized Clinical Decision Support Systems (CCDSSs), which algorithmically use an electronic data knowledge base to generate and present recommendations for clinical action (Ortiz et al., 2017). However, these systems still lack the increased availability of computing technology and do not tackle immediacy to match the workflow per se (Piscotty Jr et al., 2015). Since clinical practice requires quick and pragmatic decision-making, it is important to map out strategies that can be implemented in clinical settings without cost or additional time to nursing practice.

Giuffrida and colleagues (Giuffrida et al., 2023) stated macro strategies used to teach CR in advanced clinical practice, namely simulations-based education, visual intelligence training, and other learning activities such as gamification and case-based discussion. These methodologies are worth mentioning as initial efforts to support CR, however, system strategies have not addressed concerns at the individual nurse level. Nurses offers a unique perspective for identifying gaps in

practice, developing, evaluating, and implementing solutions, as a unique profession with a continuous presence at the patient's bedside (Mulkey, 2021).

This scoping review is expected to provide an overview of the evidence focused on decision strategies that can be applied pragmatically at the bedside, given the potential impact on clinical nursing practice to address clinical challenges quickly and distinctively. With the current demands imposed by the nursing workflow, the rapid integration of newly graduates into the workplace, the constraints of peer support regarding the nurse-patient ratio, bedside strategies could be considered a valuable resource. A preliminary search of MEDLINE, the Cochrane Database of Systematic Reviews, and JBI Evidence Synthesis was conducted on October 23, 2023, and no current or in-progress review on the topic was identified.

The aim of this scoping review is to map the evidence on self-instructed bedside decision strategies applied by nurses to support clinical reasoning. The proposed scoping review will inform the conduct of further research, including primary studies, and help review work that may involve the conduct of a systematic review to determine the effectiveness of supporting decision strategies of clinical reasoning at bedside, context-suitable, and practical to apply during the provision of nursing care.

2. Methodology

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews (Peters et al., 2017) and reported in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).(Tricco et al., 2018). This scoping review protocol is registered in Open Science Framework (https://doi.org/10.17605/OSF.IO/H96VQ).

2.1 Review question(s)

What is the evidence on self-instructed bedside decision strategies applied by nurses to support clinical reasoning? Additionally, the review will also address the following questions:

I. What are the key concepts, theories, or definitions scaffolding decision strategies to support clinical reasoning in the provision of nursing care?
II. What are the clinical contexts in which decision strategies to support clinical reasoning are being developed/applied?
III. What are the assessed outcomes of decision strategies to support clinical reasoning in the provision of nursing care?

2.2 Inclusion criteria

2.2.1 Participants

This review will consider studies that include nurses, alone or within multidisciplinary teams, including those from culturally and linguistically diverse backgrounds, of any professional level or academic background.

2.2.2 Concept

This review will consider studies that explored the concept of clinical reasoning referring to nursing practice, and used one or several decision support strategies, such as techniques, methods, approaches, interventions, or resources. This includes the suitability of knowledge, the ability to gather appropriate patient data, the employment of appropriate and specific reasoning strategies, as well as the ability to reflect on and evaluate the decisions undertaken (Gruppetta & Mallia, 2020). The review may include, but is not limited to, the different stages of the clinical reasoning process: assessing, planning,

implementing, and evaluating. Decision support strategies provided online or digitally will be considered. Studies focused on educational content, and clinical case-specific studies will be excluded. Studies on the development process of software applications or artificial intelligence will also be excluded.

2.2.3 Context

There will be no exceptions of healthcare settings and geographic area for consideration. As the context is transversal to all clinical scenarios, it will not be operationalized in the Boolean search.

2.2.4 Types of sources

The review will consider both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies and interrupted time-series studies. In addition, analytical observational studies including prospective and retrospective cohort studies, case-control studies and analytical cross-sectional studies will be considered for inclusion. Qualitative studies will also be considered that focus on qualitative data including designs such as phenomenology, grounded theory, ethnography, qualitative description, and action research.

The review will also consider descriptive epidemiological study designs including case series, individual case reports and descriptive cross-sectional studies, thesis, dissertations, and grey literature for inclusion. Systematic reviews that meet the inclusion criteria will also be considered, depending on the research question. Reports and opinion papers will also be considered.

2.3 Search strategy

An initial limited search of MEDLINE (PubMed) and CINAHL (EBSCOhost) was undertaken to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles were used to develop a full search strategy for MEDLINE via PubMed (Table 1). The search strategy, including all identified keywords and index terms, will be adapted for each included information source.

No language restrictions will be made at title and abstract screening. At full text, articles published in Portuguese, English, Spanish or Swedish will be included, as these languages are spoken by our review team.

The search will not be limited by a specific timeframe.

Table 1 - Search strategy to Medline (PubMed) on October 23, 2023.

Search	Query	Records retrieved
#1	((nurs*[Title/Abstract]) OR ("nursing care"[Title/Abstract])) OR (nursing[MeSH Terms])	663,625
#2	((((((((((“clinical reasoning”[MeSH Terms]) OR (“Clinical decision-making”[MeSH Terms])) OR ("clinical judgment"[Title/Abstract])) OR ("critical thinking"[Title/Abstract])) OR ("cognitive processing"[Title/Abstract])) OR ("knowledge adequacy"[Title/Abstract])) OR (reasoning[Title/Abstract])) OR ("clinical relevance"[Title/Abstract])) OR ("decision-making"[Title/Abstract])) OR (“clinical decision-making”[Title/Abstract])) OR ("information-processing"[Title/Abstract])) OR (“clinical reasoning”[Title/Abstract])	355,887
#3	(((((("Decision Support Techniques"[Majr:NoExp]) OR ("learning strategies"[Title/Abstract])) OR ("learning skills"[Title/Abstract])) OR ("decision support"[Title/Abstract])) Or ("information seeking behavior"[MeSH Terms])) OR ("information seeking behaviour"[Title/Abstract])	51,137
#4	#1 AND #2 AND #3	867
Limited to #Portuguese, English, Spanish or Swedish		

Source: Authors (2024).

2.4 Study/Source of evidence

The search strategy will aim to locate both published and unpublished primary studies, reviews, and text and opinion papers. The following electronic databases will be searched from inception: MEDLINE (PubMed), CINAHL (EBSCOhost), Web of Science, Scopus, Cochrane CENTRAL, Cochrane Database of Systematic Reviews, and ProQuest Central (ProQuest). The following sources for unpublished studies and grey literature will be searched: Google Scholar, GreyNet, and RCAAP (Repositórios Científicos de Acesso Aberto de Portugal). The databank ScienceDirect will additionally be searched without a date limit. The reference lists of articles included in the review will be screened for additional papers.

2.5 Study/Source of evidence selection

Following the search, all identified records will be collated and uploaded into EndNote v.X9.1 (Clarivate Analytics, PA, USA) and duplicates removed. Following a pilot test, titles and abstracts will be screened in Rayyan (Qatar Computing Research Institute, Doha, Qatar) by three independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant papers will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia) (Munn et al., 2019). The full text of selected citations will be assessed in detail against the inclusion criteria by two or more independent reviewers. Reasons for exclusion of full-text papers that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion or with an additional reviewer. The results of the search will be reported in full in the final scoping review and presented in a PRISMA flow diagram (Page et al., 2021).

2.6 Data extraction

Data will be extracted from the studies included by two independent reviewers using a data extraction tool developed by the review team. The extracted data will include the inclusion and exclusion criteria, characteristics of nurses and midwives, characteristics of clinical reasoning support strategies, characteristics of healthcare context, and characteristics of the study relevant to the review question.

A draft data extraction tool is provided (Table 2) and will be modified and revised as necessary during the process of extracting data from each included study. Modifications will be detailed in the full scoping review. Any disagreements between the reviewers will be resolved through discussion or with a third reviewer. Authors of papers will be contacted to request missing or additional data, where required.

Table 2 – Data Extraction Instrument.

Scoping review title: Decision support strategies for bedside nursing clinical reasoning: a scoping review protocol.
Review objectives: To map the evidence on self-instructed bedside decision strategies applied by nurses to support clinical reasoning.
Review Question: What is the evidence on self-instructed bedside decision strategies applied by nurses to support clinical reasoning?
Reviewer:
Date:
Inclusion criteria:
Population: Nurses, multidisciplinary (nurses included)
Other population characteristics: [instructor/beneficiary, professional level, length of professional practice, level of training]
Concept: Strategies for support clinical reasoning (techniques, methods, approaches, interventions, and resources)
Other strategies characteristics: [label, description, methods to apply, key concepts, theories, definitions, assessed outcomes]
Context: Clinical setting [hospital, community, virtual, other, please specify]
Other context characteristics: [healthcare domain]
Type of documents: empirical studies, policy, reports, guidelines
Details and characteristics of the analysed study
Citation details: [reference number, author(s), year of publication, title, source, volume, issue, pages]
Origin (publish or conducted):
Type of study: [primary research, systematic review, unpublished research]
Sample size:
Aim/purpose:
Methods:
Results:
Gaps identified in the documents:
Other key findings that relate to the scoping review question(s):
Comments:

Source: Authors (2024).

2.7 Data analysis and presentation

The extracted data will be presented in tabular format. Firstly, the features of the included studies will be presented, such as author(s), year of publication, title, source, volume, issue, pages, origin, type of study, sample size, aim/purpose, methods, and results. Then, three tables will be presented with data from each empirical study: the first one will display characteristics of the nurses and midwives (i.e. applicators/recipients of the strategy, professional level, length of professional practice or level of training), the second one will list the characteristics of the clinical reasoning support strategies (i.e. label, description, methods to apply, theories underpinning, and impact and outcomes reported) and, finally, the characteristics of the clinical context (i.e. setting and healthcare domain). The tabulated results will be accompanied by a narrative summary and the relationship between the results and the objectives of the review will be described.

2.8 Data storage plan

All data will be available at request immediately after the scientific results are published and will be stored for at least another five years on magnetic and optical storage devices (hard disks, CDs, DVDs).

3. Final Considerations

The completion of this scoping review offers a comprehensive mapping of the evidence on self-instructed bedside decision strategies used by nurses to support clinical reasoning. The ability to perform robust clinical reasoning is paramount in delivering high-quality healthcare and achieving favorable patient outcomes. By focusing on self-instructed, pragmatic, and contextually appropriate strategies, this review highlights the pivotal role nurses play in enhancing their clinical reasoning skills directly at the bedside. The findings of this review serve as a foundation for ongoing efforts to develop and implement effective decision-making strategies in nursing, ultimately contributing to the advancement of clinical practice and patient care.

Acknowledgments

The authors gratefully acknowledge the support of Health Sciences Research Unit: Nursing (UICISA: E), hosted by the Nursing School of Coimbra (ESEnfC) and funded by the Foundation for Science and Technology (FCT). This review is to contribute towards a doctoral degree for LC. The work developed by LC was funded by the Foundation for Science and Technology (FCT) - reference 2023.02974.BD.

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