



Contributions of clinical simulation in the supervisory process of nursing students: A scoping review protocol

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ARTICLE INFO

Received 31 July 2025

Accepted 01 October 2025

Keywords:

simulation training
students nursing
preceptorship
clinical supervision

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DOI: 10.62741/ahrj.v2i4.92

ABSTRACT

Introduction: Clinical simulation is a teaching and training methodology, used in clinical nursing super-vision, that uses scenarios and tools to reproduce real healthcare situations. It allows knowledge to be applied, skills to be developed and attitudes to be refined in a controlled and safe environment, according to the level of knowledge and experience, reinforcing the acquisition and development of skills in nursing students.

Objective: To map the available scientific evidence on the contributions of clinical simulation in the supervisory process of nursing students.

Methodology: The research will be based on the methodology of the Joanna Briggs Institute, using controlled terms in the following databases: PubMed; CINAHL Complete, MEDLINE Complete and B-on (via EBSCOhost). Grey literature will also be searched through OpenGrey and the Portuguese Open Access Scientific Repository. There will be no time and language restrictions. Studies will be extracted to the Rayyan Qatar Computing Research Institute platform and analyzed by two independent reviewers with a third reviewer consulted in case of disagreement. The principles of the Preferred Reporting Items for Systematic reviews and Meta Analyses extension for Scoping Reviews will be adopted and evidence tables will be drawn up for data extraction.

Conclusions: The proposed scoping review shall provide a comprehensive critical analysis of the potential of clinical simulation as a strategy to promote quality and safety in the clinical supervision process of nursing students, namely on the main programs, characteristics, result indicators and evaluation instruments used.

INFORMAÇÃO DO ARTIGO

Recebido 31 julho 2025

Aceite 01 outubro 2025

Palavras-Chave:

treino de simulação
estudantes de enfermagem
preceptoria
supervisão clínica

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DOI: 10.62741/ahrj.v2i4.92

RESUMO

Introdução: A simulação clínica é uma metodologia de ensino e formação, utilizada na supervisão clínica de enfermagem, que utiliza cenários e ferramentas para reproduzir situações reais de cuidados de saúde. Permite aplicar conhecimentos, desenvolver capacidades e aperfeiçoar atitudes num ambiente controlado e seguro, de acordo com o nível de conhecimentos e experiência, reforçando a aquisição e o desenvolvimento de competências nos estudantes de enfermagem.

Objetivo: Mapear as evidências científicas disponíveis sobre os contributos da simulação clínica no processo supervisivo de estudantes de enfermagem.

Metodologia: A pesquisa basear-se-á na metodologia do Instituto Joanna Briggs, utilizando termos controlados nas bases de dados: PubMed; CINAHL Complete, MEDLINE Complete e B-on (via EBSCOhost). A literatura cinzenta também será pesquisada através do OpenGrey e do Repositório Científico de Acesso Aberto de Portugal. Não haverá restrições de tempo nem de idioma. Os estudos serão extraídos para a plataforma do Rayyan Qatar Computing Research Institute, e analisados por dois revisores independentes com recurso a um terceiro em caso de desacordo. Adotar-se-ão os princípios do Preferred Reporting Items for Systematic reviews and Meta Analyses extension for Scoping Reviews. Elaborar-se-ão tabelas para a extração de dados.

Conclusões: A scoping review proposta, fornecerá uma análise crítica abrangente sobre o potencial da simulação clínica como estratégia de promoção da qualidade e segurança no processo de supervisão clínica de estudantes de enfermagem, nomeadamente sobre os principais programas, características, indicadores de resultados e instrumentos de avaliação utilizados.

Introduction

There have been major scientific advances in the health field, through the use of increasingly modern and sophisticated techniques and technologies. These have helped to solve problems that were previously difficult to resolve and to improve working conditions for health professionals and the quality of life of users.¹

The safety and quality of care provided is a topic that has been widely discussed and is one of the major challenges facing healthcare organizations. It is therefore important to reflect on teaching strategies in order to ensure a reduction in adverse events and, consequently, guarantee the quality and safety of the care provided. Clinical simulation (CS) is a teaching and training methodology that uses scenarios and tools to replicate real healthcare situations, *enabling participants to apply knowledge, develop skills, and refine attitudes* in a controlled and safe environment, according to the students' level of knowledge and experience.²

Oliveira et al. add that CS can be considered an active methodology that uses simulators to reproduce clinical tasks in a structured way and in a controlled environment, replicating scenarios close to the real context. It is a strategy that is increasingly used in the training of nurses as it promotes effective learning by participants through the fulfilment of stages and criteria of good practice in simulation.³

It includes several stages: briefing, scenario and debriefing. It can be carried out with low or medium-tech simulators

(training specific technical skills) or with high-tech simulators (developing clinical reasoning, decision-making, technical skills, multi-professional team action and other broader competences based on complex clinical cases), offering students greater safety, confidence and skill in patient care and contributing to a more robust education.^{2,4}

Kaneko adds that CS is seen as a strategy to mitigate errors and prevent failures that could cause irreversible damage to the patient. In addition, it can enhance the development of technical skills (assertive decision-making and appropriate behavior) and non-technical skills (leadership, effective communication and safety when providing care).⁵

CS allows for the discussion and resolution of previously prepared clinical scenarios that promote reflective critical thinking and decision-making skills, as well as times management of students' emotions and stress.⁶ In addition, it allows students to repeat the technique with the possibility of making mistakes and corrections in environments that are close to the real thing, as well as being an ally in the continuing education of the healthcare team,⁷ reinforcing the need for research on the subject and highlighting its relevance and pertinence in the current context, which can inform future research.

Thus, after a preliminary search in PubMed (National Library of Medicine), PROSPERO, Cochrane Database of Systematic Reviews and Open Science Framework (OSF), no systematic literature reviews or ongoing studies on the subject were found. This highlights the importance of

mapping the available scientific evidence by carrying out a scoping review.

Therefore, the aim of this study is to map the available scientific evidence on the contributions of CS in the clinical supervision of nursing students (NS).

Methodology

This scoping review will be conducted following the methodology proposed by the Joanna Briggs Institute (JBI),⁸ and reported according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses for Scoping Reviews (PRISMA-ScR).⁹

This protocol review was registered prospectively in the OSF (DOI 10.17605/OSF.IO/KWDFN).

Review Question

This scoping review will consider the following main question: What scientific evidence is available on the contributions of CS in the nursing students supervisory process?

Subsequent questions will be considered as sub-questions: Which CS programs are used in the nursing students supervisory process? What are the main characteristics of CS in the nursing student's supervisory process? What results indicators and evaluation tools are used?

Inclusion Criteria

The eligibility criteria were defined using the Population–Concept–Context (PCC) framework:⁸

- **Population (P):** All studies that include NS attending a bachelor's or bachelor's degree course in nursing, and postgraduate, specialization, master's and doctoral courses in nursing will be considered. There will be no restrictions on gender, ethnicity or other personal or professional characteristics of the students;
- **Concept (C):** All studies exploring the use of clinical simulation as a strategy or tool within a formal supervisory process will be considered;
- **Context (C):** All studies exploring educational and clinical settings where nursing students undergo supervision will be considered.

Types of evidence sources

This scoping review will cover primary studies - including quantitative, qualitative and mixed-method approaches - as well as secondary studies of all types of review. Editorials, opinion articles, technical reports and academic theses will also be considered. No time or language restrictions will be applied.

This scoping review will consider a wide range of evidence sources, including empirical studies (quantitative, qualitative, and mixed methods), systematic reviews, guidelines, reports, and text and opinion papers. The inclusion of opinion articles is justified given the exploratory nature of scoping reviews, which aim to comprehensively map the breadth and depth of available evidence.

Text and opinion papers will be considered particularly relevant in areas where empirical research is limited, as they often provide expert insights, reflections, emerging perspectives, and preliminary recommendations that may not yet be captured in primary studies. Their inclusion ensures that diverse forms of knowledge are represented, preventing the omission of potentially important contributions to the understanding of the topic.

In line with the JBI Manual for Evidence Synthesis, which recognizes text and opinion papers as valid sources of evidence when transparently justified, these documents will be included to capture expert viewpoints and contextual considerations. To ensure methodological rigor, such sources will be critically appraised using the JBI Checklist for Text and Opinion where appropriate.

Search strategy

A three-stage strategy will be followed. In the first, an initial exploratory search was carried out in the PubMed database with the aim of identifying relevant publications on the subject. The analysis of the terms presents in the titles, abstracts and descriptors of the selected articles served as the basis for defining the second phase of the search, as detailed in table 1.

Table 1. MeSH terms and keywords.

Strategy	Mesh Terms	Entry Terms	Natural Terms
P (Population) – Students nursing	• Students, nursing	• Nursing student • Nurse, pupil	• Nurs* Student • Nurs*, pupil
C (Concept) – Clinical Simulation	• Simulation training • Virtual reality	• Training, simulation • Interactive learning • Learning, interactive • Education virtual reality	• Clinical Simulation • Education* virtual reality
C (Context) – Clinical Supervision	• Preceptorship • Clinical Supervision • Mentoring • Mentorship	• Clinical supervision • Coaching	• Preceptor* • Clinical supervision* • Mentor*

In a second phase, all the keywords and indexing terms identified will be adapted for each of the following databases: PubMed; CINAHL Complete, MEDLINE Complete, and B-on (via EBSCOhost). The search will also include gray literature, especially OpenGrey and the Portuguese

Open Access Scientific Repository (RCAAP). The particularities of each database selected for this scoping review are detailed in table 2.

Table 2. Search strategies used in each database.

Databases	Boolean Phrase	Results
PubMed (data searched: april 19, 2025)	("Students, nursing" [MeSH Terms] OR "Nursing student" [Title/ Abstract] OR "Nurse, pupil" [Title/ Abstract] OR "Nurs* student" [Title/ Abstract] OR "Nurs*, pupil" [Title/ Abstract]) AND ("Simulation training" [MeSH Terms] OR "Virtual reality" [MeSH Terms] OR "Training, simulation" [Title/ Abstract] OR "Interactive learning" [Title/ Abstract] OR "Learning, interactive" [Title/ Abstract] OR "Education virtual reality" [Title/ Abstract] OR "Clinical Simulation" [Title/ Abstract] OR "Education* virtual reality" [Title/ Abstract]) AND ("Preceptorship" [MeSH Terms] OR "Mentoring" [MeSH Terms] OR "Clinical Supervision" [MeSH Terms] OR "Clinical Supervision" [Title/ Abstract] OR "Coaching" [Title/ Abstract] OR "Perceptor*" [Title/ Abstract] OR "Clinical supervision*" [Title/ Abstract] OR "Mentor*" [Title/ Abstract])	20
CINAHL Complete (via EBSCOhost) (data searched: april 19, 2025)	(MH Students, nursing OR TI Nursing student OR AB Nursing student OR TI Nurse, pupil OR AB Nurse, pupil OR TI Nurs* student OR AB Nurs* student OR TI Nurs*, pupil OR AB Nurs*, pupil) AND (MH Simulations OR MH Computer simulation OR MH Patient simulation OR MH Virtual reality OR TI Training, simulation OR AB Training, simulation OR TI Interactive learning OR AB Interactive learning OR TI Learning, interactive OR AB Learning, interactive OR TI Education virtual reality OR AB Education virtual reality OR TI Clinical Simulation OR AB Clinical Simulation OR TI Education* virtual reality OR AB Education* virtual reality) AND (MH Preceptorship OR MH Clinical Supervision OR MH Mentorship OR TI Clinical Supervision OR AB Clinical Supervision OR TI Coaching OR AB Coaching OR TI Perceptor* OR AB Perceptor* OR TI Clinical supervision* OR AB Clinical supervision* OR TI Mentor* OR AB Mentor*)	96
MEDLINE Complete (via EBSCOhost) (data searched: april 19, 2025)	(MH Students, nursing OR TI Nursing student OR AB Nursing student OR TI Nurse, pupil OR AB Nurse, pupil OR TI Nurs* student OR AB Nurs* student OR TI Nurs*, pupil OR AB Nurs*, pupil) AND (MH Simulation training OR MH Virtual reality OR TI Training, simulation OR AB Training, simulation OR TI Interactive learning OR AB Interactive learning OR TI Learning, interactive OR AB Learning, interactive OR TI Education virtual reality OR AB Education virtual reality OR TI Clinical Simulation OR AB Clinical Simulation OR TI Education* virtual reality OR AB Education* virtual reality) AND (MH Preceptorship OR MH Mentorship OR TI Clinical Supervision OR AB Clinical Supervision OR TI Coaching OR AB Coaching OR TI Perceptor* OR AB Perceptor* OR TI Clinical supervision* OR AB Clinical supervision* OR TI Mentor* OR AB Mentor*)	15
B-on^{fe} (via EBSCOhost) (data searched: april 19, 2025)	(TI Nursing student OR AB Nursing student OR TI Nurse, pupil OR AB Nurse, pupil OR TI Nurs* student OR AB Nurs* student OR TI Nurs*, pupil OR AB Nurs*, pupil) AND (TI Training, simulation OR AB Training, simulation OR TI Interactive learning OR AB Interactive learning OR TI Learning, interactive OR AB Learning, interactive OR TI Education virtual reality OR AB Education virtual reality OR TI Clinical Simulation OR AB Clinical Simulation OR TI Education* virtual reality OR AB Education* virtual reality) AND (TI Clinical Supervision OR AB Clinical Supervision OR TI Coaching OR AB Coaching OR TI Perceptor* OR AB Perceptor* OR TI Clinical supervision* OR AB Clinical supervision* OR TI Mentor* OR AB Mentor*)	117
Total		248

In the final step of the search strategy, we will hand-search the reference lists of sources that have been selected for full-text review. All studies will be included, without language or time limitations, to reduce the risk of missing

relevant sources. Languages other than English, Portuguese or Spanish will be translated by colleagues fluent in the language or through qualified speakers. If those cannot be accessed, digital tools such as DeepL will be used. Any modifications will be detailed in the full scoping review.

Study selection

After de research, the studies identified in the databases will be exported to the Rayyan Intelligent Systematic Review tool (Qatar Computing Research Institute, Doha, Qatar), and the PRISMA-ScR guidelines⁹ will be applied. In the identification phase, duplicate studies will be removed.

The remaining studies will proceed to full-text screening, where a pilot teste will be conducted. Titles and abstracts will be reviewed, and studies that do not meet the eligibility criteria will be excluded.

All selected articles will be organized using the Mendeley reference manager. The remaining eligible studies will be assessed in full text, and those not meeting the inclusion criteria will be excluded. Studies that fulfill the inclusion criteria will proceed to the inclusion phase and be included in the review.

The selection process will be performed by two independent reviewers. In case of disagreement, a third reviewer will be consulted. The review results will be fully reported in the final scoping review and illustrated using a PRISMA-ScR flow diagram⁹. Reasons for excluding studies at the full text screening stage will be clearly documented and reported in a flowchart.

Data extraction

The data from the included articles will be extracted and analyzed by two independent reviewers, using a data extraction tool developed by the reviewers.

The data extracted will include specific details about the inclusion criteria (i.e., participants, concept and context, and types of evidence sources) and key findings relevant to the review questions. A draft extraction tool is provided, as presented in table 3. Throughout the data extraction process for each included study, the reviewers will implement the necessary modifications and revisions to the preliminary data extraction tool, with all changes detailed in the scoping review analysis. Any disagreements between the reviewers, will be resolved through discussion or with a third reviewer. The authors of the articles will be contacted via the correspondent's email address to request missing or additional data, wherever required.

Table 3. Data extraction tool.

Title	Article title
Authors/ Year	Name and surname of each author of the study/ Year of publication
Country of origin	Country of origin of the main author
Type of study	Describe the type of study reported by the author
Objective(s)	Check the relevance of the objectives
Methodology	Describe the used methodology
Participants	Identify the participants
Contributions of clinical simulation in the supervision process of nursing students	e.g. programs, main characteristics, result indicators and evaluation tools
Main results	Identify the main results
Author-reported limitations	Identify the limitations of the study

Data analysis and presentation

The extracted information from the included studies will be organized into tables, aligned with the main research question and its sub-questions. Alternative formats may also be considered after data analysis if they offer a clearer or more effective representation of the findings. In addition, a narrative summary will accompany the tables and/or visual displays, providing contextual interpretation and explaining how the results address the objectives and guiding questions of the review.

Conclusion

The proposed scoping review shall provide a comprehensive overview of the contribution of CS programs to the supervision of nursing students, including the CS programs that are used, the main characteristics of CS and the outcome indicators and assessment tools.

Given the importance of having a continuous quality improvement, based on a culture of quality and safety of care, we believe that the results of this study will be important for improving health outcomes.

Conflict of Interest

No conflicts of interest were declared by the authors.

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