ATHENA - HEALTH & RESEARCH JOURNAL
2025 • Volume II • Nº 1

Clinical simulation in teaching nursing students: Scoping review protocol

Daniel Ferreira [1] 0009-0004-9849-8763
Delfina Borges [2] 0009-0005-0738-9850
Maria José Oliveira [2] 0009-0007-0841-8259
Paula Flores [3] 0000-0002-9726-5229
Hélder Cunha [4] 0000-0002-7236-057X
Mafalda Silva [4] 0000-0002-2509-5566

[1] Unidade Local de Saúde de Santo António, Clínica Hospital Magalhães Lemos; Porto, Portugal.
[2] Unidade Local de Saúde de Gaia e Espinho, Unidade de Cuidados na Comunidade *Tempus*; Vila Nova de Gaia, Portugal.
[3] Universidade Federal Fluminense; Rio de Janeiro, Brasil.
[4] Instituto Politécnico Jean Piaget do Norte, Escola Superior de Saúde Jean Piaget em Gaia; Vila Nova de Gaia, Portugal.

ARTICLE INFO

Received 1 April 2025
Accepted 23 April 2025

Keywords:
Students, Nursing
Simulation Training
Education, Nursing

Corresponding Author:
Daniel Nunes Mota Ferreira; Unidade Local de Saúde de Santo António; u62311@chporto.min-saude.pt

DOI: 10.62741/ahrj.v2i1.39

ABSTRACT

Introduction: Clinical simulation is an innovative teaching technique in nursing education, allowing practical application of theory in a safe environment. It promotes the development of both technical and non-technical skills, such as critical thinking, decision-making, and teamwork. The student is the central agent of learning, enhancing confidence and autonomy. Despite its increasing use, the scientific evidence remains scattered. This scoping review aims to map the existing evidence about the subject, identifying benefits, effective approaches, and challenges.
Objective: To map the existing scientific evidence on clinical simulation in the education of nursing students.
Methods: This scoping review protocol will follow the Joanna Briggs Institute methodology and the PRISMA-ScR recommendations. The research began in March 2025, using the descriptors "Students, Nursing", "Simulation Training" and "Education, Nursing" in the following databases: MEDLINE® Complete (via PubMed); CINAHL® Complete, MedicLatina®, and Cochrane Central Register of Controlled Trials® (via EBSCOhost®). Studies related to clinical simulation in nursing student education, written in any language and available in free full text will be considered. Study selection will be carried out by two independent reviewers and a third reviewer will be consulted in cases of conflict. Studies will be archived and duplicates will be eliminated using the Qatar Computing Research Institute (Rayyan QCRI®) software. To assist data extraction, the authors will develop evidence tables.
Conclusion: It is expected that this review will promote an in-depth critical analysis of clinical simulation when it comes to teaching nursing students.

Please cite this article as: Ferreira DNM, Borges DCC, Oliveira MJSA, Flores PVP, Cunha HEF, Silva MSG. Clinical simulation in teaching nursing students: Scoping review protocol. *Athena Health & Research Journal*. 2025; 2(1). DOI: 1010.62741/ahrj.v2i1.39

INFORMAÇÃO DO ARTIGO

Recebido 1 abril 2025
Aceite 23 abril 2025

Palavras-Chave:
Estudantes de Enfermagem
Treinamento por Simulação
Educação em Enfermagem

Autor correspondente:
Daniel Nunes Mota Ferreira; Unidade Local de Saúde de Santo António; u62311@chporto.min-saude.pt

DOI: 10.62741/ahrj.v2i1.39

RESUMO

Introdução: A simulação clínica é uma técnica de ensino inovadora no ensino de enfermagem, permitindo a aplicação prática da teoria em ambiente seguro. Promove o desenvolvimento de competências técnicas e não técnicas, como pensamento crítico, tomada de decisão e trabalho em equipa. Coloca o estudante como protagonista da aprendizagem, reforçando a confiança e a autonomia. Apesar da sua crescente utilização, a evidência científica encontra-se dispersa. Esta scoping review visa mapear essas evidências, identificando benefícios, abordagens eficazes e desafios.
Objetivos: Mapear a evidência científica existente sobre a simulação clínica no ensino de estudantes de enfermagem.
Metodologia: O protocolo desta revisão de escopo segue a metodologia do Joanna Briggs Institute e as recomendações do PRISMA-ScR. A pesquisa foi iniciada em março de 2025, utilizando os descritores "Students, Nursing", "Simulation Training" e "Education, Nursing" nas bases de dados: MEDLINE® Complete (via PubMed); CINAHL® Complete, MedicLatina® e Cochrane Central Register of Controlled Trials® (via EBSCOhost®). Serão considerados os estudos relativos à simulação clínica no ensino de estudantes de enfermagem, redigidos em qualquer idioma, disponíveis em free full text. A seleção dos estudos será realizada por dois revisores independentes e recorrer-se-á a um terceiro revisor em situação de discordância. Os estudos serão arquivados e eliminados os duplicados através do software Qatar Computing Research Institute (Rayyan QCRI®). Para auxiliar a extração dos dados, os autores desenvolverão tabelas de evidências.
Conclusões: Espera-se que esta revisão promova uma análise crítica aprofundada sobre a simulação clínica no ensino de estudantes de enfermagem.

Introduction

Clinical simulation is an important teaching strategy when it comes to training health professionals, such as nurses, which has an impact on everything from satisfaction and personal safety to health care objectives. It is a process of cognitive and behavioural education, as it can stimulate self-esteem and self-confidence, facilitating the acquisition of knowledge and the learning process.[1]

This can be defined as a technique, not merely a technology, used to replace real experiences in a learning environment, where it seeks to reproduce substantial aspects of the real world in an interactive way. It is a set of activities carefully designed to reflect the reality of the clinical environment, where they aim to demonstrate procedures, stimulate decision-making and promote critical thinking, often through the use of techniques, such as role play and the use of devices, such as mannequins, with different levels of fidelity (low, medium or high).[2] It is viewed as an innovative teaching method, a valuable pedagogical strategy in nursing education, embedded in the principles of active education, which aims to promote effective teaching of technical and non-technical skills in a safe environment, while developing confidence and autonomy in clinical practice, also favouring the reinforcement of decision-making and teamwork.[1,3]

The student takes an active role in the teaching-learning process and is the main character of their training. This methodology is constantly evolving, integrating teaching, research and assistance, as well as promoting autonomy, stimulating problem-solving and critical thinking.[1]

The main aim of clinical simulation is to reduce errors by recreating scenarios based on real situations, in a safe environment where errors can occur without causing harm to patients. This methodology facilitates the understanding of theoretical concepts acquired with traditional teaching, allowing skills to be improved through training. It also helps to increase students' self-confidence and safety, preparing them more effectively for clinical practice before direct contact with patients.[1]

The study of clinical simulation is fundamental in health training, especially in nursing, as it allows theory to be applied in a safe environment that is close to clinical reality. As well as facilitating learning, it plays an essential role in the development of professional skills, such as psychomotor skills, clinical and critical thinking, prioritisation of activities, teamwork, communication, autonomy, confidence, decision making under pressure and leadership.[1]

Although the use of clinical simulation in nursing education is expanding, the literature on its impact, effectiveness and best practices remains vast and scattered, making it difficult to clearly assess its contribution to student training.

This scoping review aims to map the existing scientific evidence on clinical simulation in teaching nursing students, identifying the most effective approaches, the benefits experienced by students and supervisors, as well as the obstacles associated with implementing this methodology. Understanding this evidence is essential to inform future research, improve teaching practice and contribute to higher quality training for future nursing professionals, in a context where active and competency-based learning is becoming increasingly important.

Despite the relevance of the topic, the preliminary search conducted on the PROSPERO and Open Science Framework (OSF) platforms did not identify systematic reviews that comprehensively address the full range of approaches, benefits, and challenges of clinical simulation in the education of nursing students. Existing reviews tend to focus on specific aspects of simulation, such as particular techniques, clinical areas, or isolated effects, which does not provide a global perspective. This gap justifies the need for a scoping review that systematically and broadly maps the available scientific evidence.

With this in mind, the following research question was formulated: What scientific evidence exists on clinical simulation when it comes to teaching nursing students?

Methodology

This review will be conducted based on the Joanna Briggs Institute (JBI) methodological framework for scoping reviews,[4] which outlines the following operational steps: title; development of the title and question; introduction; inclusion criteria; search strategy; selection of information sources; data extraction; analysis of the evidence and presentation of the results, written in accordance with the guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR).[5] The protocol is registered on the OSF platform and can be consulted via the following link: https://doi.org/10.17605/OSF.IO/HP52V

Eligibility criteria

The eligibility criteria for this scoping protocol were established based on the acronym PCC (Population, Concept and Context), which is used for this type of review.[4] The population under analysis consists of nursing students; the central concept focuses on clinical simulation; and the context refers to nursing education. These criteria guide the selection of studies to be included, ensuring their relevance and alignment with the objectives of the review. Studies written in any language, available in free full text and with no time frame will be included. Studies of any methodological nature will be considered, including quantitative, qualitative, mixed, exploratory, analytical, review and grey literature approaches. All studies that do not respond to the PCC acronym and the objective of the study will be excluded.

Research strategy

The database search was planned in three stages to identify studies relevant to the aim of this review, consisting of: In the initial stage, a preliminary search was carried out in the MEDLINE® Complete (via PubMed); CINAHL® Complete, MedicLatina® and Cochrane Central Register of Controlled Trials® (via EBSCOhost®). The keywords of interest, identified in the titles, abstracts and indexing terms of the relevant studies, were used to develop a comprehensive search strategy. The Boolean operator AND will be used to combine the search terms and identify studies that address the topics of interest, as shown in Table 1. The following Boolean phrase was constructed: (("Students, Nursing"[Mesh]) AND "Simulation Training"[Mesh]) AND "Education, Nursing"[Mesh]. In the second stage, the search strategy developed previously was adjusted for each source of information, taking into account the specificities of each one, as shown in Table 1 and in the third stage, a search will be carried out in the list of references of the studies selected for data extraction, with the aim of identifying additional studies.

Table 1. Records of the searches conducted across all information sources

Database	Strategy	Results
MEDLINE® Complete	(("Students, Nursing"[Mesh]) AND "Simulation Training"[Mesh]) AND "Education, Nursing"[Mesh]	134
CINAHL® Complete	(("Students, Nursing") AND ("Simulation Training")) AND ("Education, Nursing")	19
MedicLatina®	(("Students, Nursing") AND ("Simulation Training")) AND ("Education, Nursing")	1
Cochrane Central Register of Controlled Trials®	(("Students, Nursing") AND ("Simulation Training")) AND ("Education, Nursing")	2

Sources of information

The search strategy and identification of studies was carried out in March 2025 in the following electronic databases: MEDLINE® Complete (via PubMed); CINAHL® Complete, MedicLatina® and Cochrane Central Register of Controlled Trials® (via EBSCOhost)®.

Study selection

The articles identified in the databases will be exported to the Intelligent Systematic Review platform (Rayyan®),[6] where the studies will be selected. The process will begin by identifying and removing duplicates, followed by analysing the title and abstract. The remaining studies from the previous stage will then be analysed by reading them in full. The reasons for excluding full-text studies that do not fulfil the inclusion criteria will be recorded and described in the scoping review. The selection will be conducted by two independent reviewers, with the intervention of a third reviewer in cases of disagreement. The entire process will be detailed and presented using a PRISMA diagram.[5]

Data extraction

Data extraction will be carried out according to the recommendations of the JBI.[4] Data will be extracted from the selected studies using an instrument developed by the authors, with the aim of answering the guiding question of this scoping review. This tool includes the following information: authors, title, year of publication, geographical location, study design, strategy used, student's curricular year, discipline implemented and main results (Table 2).

Table 2. Tool proposed by the authors for extracting generic data

Article title	
Authors/ Year/ Country	Name and surname of each author of the study/ Year of publication/ Country of origin of the main author
Design	Describe the study design reported by the author
Objectives	Check the relevance of the objectives
Strategy used	Describe the simulation strategy used
Student's curricular year/ Discipline implemented	Curricular year attended/ Name of curricular unit that used this teaching method
Main results	Describe the main results obtained, of interest in answering the research question

Data presentation

The identified articles will be presented descriptively and narratively, according to the evidence tables constructed by the authors, which may be adjusted throughout the review as necessary to better interpret the results. The presentation and interpretation of the data will follow the recommendations of the JBI[4] for scoping reviews, in order to facilitate the identification of the mapping carried out in this synthesis of the evidence. Finally, using Table 3, our aim is to identify the most relevant thematic categories extracted from the selected articles.

Table 3. Tool proposed by the authors for extracting generic data

Thematic categories	Main results

Conclusion

Clinical simulation offers various advantages and contributions to the teaching-learning process in the training of nursing students, distinguishing it from traditional teaching. It provides a controlled and safe environment for the development of critical thinking, improving students' psychomotor skills, communication, performance and confidence.

This review will make it possible to analyse and systematise knowledge about clinical simulation in the teaching nursing students, promoting a detailed and comprehensive analysis that describes the challenges faced in this teaching method.

It will also provide a basis for the development and implementation of programmes to promote teaching in clinical simulation.

It is hoped that this scoping review will contribute to the formulation of new research questions, enabling the development of new studies on clinical simulation in teaching nursing students.

Conflict of interest

No conflicts of interest were declared by the authors.

References

1. Daniel MDC, Galante JFR, de Paiva Furtado JA, da Silva ML, Batista PVS, de Souza RF, et al. Contribuições no processo de ensino aprendizagem da prática de simulação realística: uma revisão sistemática. *Res Soc Dev*. 2021;10(14):e303101421956. doi:10.33448/rsd-v10i14.21956
2. Gonçalves SAT. Sentimentos estressores em estudantes de enfermagem no processo de ensino-aprendizagem utilizando a simulação realística: uma revisão de escopo. [dissertação]. 2022. Disponível em: http://tede2.unifenas.br:8080/jspui/handle/jspui/308
3. Meschial WC, de Paula A, Nespollo AM, de Lima MF, Marin SM, de Castro VC. Explorando a utilização da simulação clínica no ensino de Enfermagem em emergência: uma revisão integrativa. *Rev Enferm Cent-Oeste Min*. 2024;14. doi:10.19175/recom.v14i0.5148
4. Peters MDJ, Marnie C, Tricco AC, Pollock D, Munn Z, Alexander L, et al. Updated methodological guidance for the conduct of

scoping reviews. *JBI Evid Synth*. 2020;18(10):2119-2126. doi:10.11124/JBIES-20-00167

5. Tricco A, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation. *Ann Intern Med*. 2018;169(7):467-473. doi:10.7326/M18-0850
6. Ouzzani M, Hammady H, Fedorowicz Z, Elmagarmid A. Rayyan - a web and mobile app for systematic reviews. *Syst Rev*. 2016;5:210. doi:10.1186/s13643-016-0384-4Valderrabano V, Barg A, Paul J, Pagenstert G, Wiewiorski M. Foot and Ankle Injuries in Professional Soccer Players. *Sport-Orthopädie - Sport-Traumatologie - Sports Orthopaedics and Traumatology*. 2014/05/01/ 2014;30(2):98-105. doi:10.1016/j.orthtr.2014.04.002