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PROTOCOL

A scoping review of scoping reviews in healthcare simulation: a research protocol

Craig Brown[1], Susan Somerville[2], Andrea Doyle[3], Debra Nestel[4,5]

[1]*Institute of Education in Healthcare and Medical Sciences, Suttie Centre, Aberdeen, Scotland*
[2]*Dundee Institute for Healthcare Simulation, School of Medicine, University of Dundee, Ninewells Hospital, Dundee, Scotland*
[3]*RCSI SIM Centre for Simulation Education and Research, RCSI University of Medicine and Health Sciences, Dublin, Ireland*
[4]*School of Clinical Sciences, Monash University, Melbourne, Victoria, Australia*
[5]*Department of Surgery (Austin Precinct), University of Melbourne, Melbourne, Victoria, Australia*

Corresponding author: Debra Nestel, debra.nestel@monash.edu

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ABSTRACT

Introduction
Scoping reviews are widely used across healthcare disciplines to synthesize evidence, explore broad research questions and identify gaps in the literature. Despite their increasing prevalence, the application of scoping reviews within healthcare simulation is not well understood.

Research questions/objectives
This study aims to address this gap by mapping how scoping reviews are being utilized in healthcare simulation research and identifying gaps in current practice. The primary objectives are to quantify published scoping reviews in healthcare simulation, assess adherence to established scoping review methodologies and identify research questions addressed in these reviews.

Methods
This scoping review will be conducted following the JBI framework and reported as per the PRISMA-ScR standards. A systematic search will target databases including Embase, PubMed, CINAHL, Web of Science and Scopus. Eligible studies will include peer-reviewed scoping reviews or protocols focussing on any aspect of healthcare simulation. Analysis will involve quantitative and qualitative descriptions, supported by consultation with knowledge users for refinement and validation.

Conclusions
This paper describes a scoping review protocol that will provide insights into the use of scoping reviews in healthcare simulation, highlighting trends in methodology, identifying knowledge gaps and offering guidance for future research. The findings will enhance our understanding of how scoping reviews have been and could be applied in the context of healthcare simulation.

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Introduction

Scoping reviews are a common form of evidence synthesis, often utilized to explore areas where rapid social or technological change occurs, and as such are commonly used in health professions education [1,2]. Scoping reviews aim to gauge the scope of a body of literature and attempt to give an indication on the volume, focus and

characteristics of studies. They are considered useful for examining evidence, identifying gaps in the literature and suggesting areas for future empirical research [1,2]. In a recent bibliometric review of health professions education journals, from 1999 to 2019, scoping reviews were found to be the second most common review type after systematic reviews [2–4]. Doyle et al., in 2024, found that the number of published scoping reviews, both generally in health professions education and specifically in simulation, has risen steadily [5]. In contrast to systematic reviews, scoping reviews are often driven by broad exploratory research questions aiming to give an overview of a comprehensive body of literature relating to a specific topic. Typically, scoping reviews include studies with a variety of research methodologies and can be used to investigate a topic that has not been extensively reviewed or a research topic that is considered complex [3,6]. Nevertheless, despite the increasing volume of scoping reviews as a form of evidence synthesis [3,4], our understanding of how they are being utilized to address questions concerning simulation-based practices within health care is limited..

Scoping reviews of scoping reviews have been conducted to further advance the methodology within other areas of healthcare education. Pham et al. aimed to provide an overview of scoping reviews in the literature and map the characteristics of published scoping reviews [6], whilst Tricco et al. examined how reviews were conducted and reported in general. However, this research was conducted over a decade ago and did not conduct analysis for specific fields of interest, such as simulation [7].

By conducting this scoping review, we will show how researchers are using scoping reviews in healthcare simulation, what sorts of questions they are seeking to answer and which areas remain unaddressed. This is necessary because, without carefully synthesizing scoping reviews, we cannot fully understand how to best use this method to its full potential to address questions in healthcare simulation. To our knowledge, this will be the first scoping review of scoping reviews focussing on healthcare simulation literature.

Research team

Core review team

A core review team was established, all of whom had previously conducted scoping reviews and who had expertise in health professions education research and simulation or library science. They are employed in five universities in three countries – Ireland, Scotland and Australia. Craig Brown is a consultant in emergency medicine and has an academic post in clinical simulation. He has extensive experience in simulated practice and research across undergraduate and postgraduate healthcare environments and in particular literature reviews within simulation; Susan Somerville is an academic and a nurse with broad experience in simulation practice, faculty development ,and research in qualitative and literature review methodologies; Andrea Doyle is a medical physicist with an academic role focussed on simulation-based education and research, with particular expertise in curriculum design, scholarly reviews and the application of research methodology; and Debra Nestel is an academic where her teaching and research focus is faculty development in surgical education and in simulation-based education in the context of health care, and she mainly conducts qualitative research. Additionally, an information technologist supported the development and refinement of the search strategy and conducted the searches in each of the selected databases.

Knowledge users

In this scoping review, knowledge users (KUs) with deep expertise in simulation or scoping review methodology in the health professions have been engaged via the *co-creation through consultation* methodology [5]. The involvement of KUs is essential for driving high-impact research. A key principle for success in this area is emphasizing the process of collaborative knowledge generation [8]. While recommendations have been made to enhance the impact of scoping reviews in medical education by involving KUs, this valuable process is often poorly defined [3]. A recent Best Evidence in Medical Education (BEME) scoping review [9] describes an approach to collaborative knowledge generation termed *co-creation through consultation* [5]. Our approach will be to engage KUs throughout the review process, at specific pre-agreed time points, to provide their perspectives and feedback to help shape and direct the review. Our KU group is made up of relevant scholars, practitioners and methodologists, including Soledad Armijo, Cathy Smith, Guillaume Alinier, Vanda Raad and Heather Colquhoun, who are based in Chile, Canada, Qatar and Lebanon.

Review question, aims and objectives

We have used the CAPS framework: **C**urrent state of knowledge, **A**rea of interest, **P**otential impact for education and **S**uggestions from experts in the field to form the basis of our review question [10]. This review will quantify and map the current state of knowledge of how healthcare simulation researchers are engaging with scoping reviews. The area of interest is related to how researchers are conducting scoping reviews, that is, the methodological processes, such as which scoping review frameworks are being described by researchers [11–13]. Furthermore, we wish to explore whether and how KUs are engaged – since this is a noticeable difference between different scoping review frameworks (see Table 1 in Doyle et al. [5]) and the questions that they are seeking to answer. This review has the potential to impact how researchers will apply this methodology to healthcare simulation–based research questions. Furthermore, by inviting input from our KUs within the healthcare simulation community, we may re-frame the proposed review questions.

Aim

The aim of this scoping review is to explore the use of scoping reviews within healthcare simulation. Specifically, this review seeks to:

Table 1: Inclusion and exclusion criteria

Criteria	Include	Exclude
Review methodology	Scoping review or scoping studies or systematic scoping review	All other reviews
Focus of research	Scoping reviews in human healthcare simulation	Scoping review outside of healthcare simulation
Publication characteristics	All countries, English language only, full text available, not restricted by publication date	Non-English studies, no full text available

(A) quantify the number of healthcare simulation scoping reviews published,
(B) assess the extent to which these reviews adhere to established scoping review methodologies and protocols, and
(C) identify the research questions addressed in these reviews.

Review question

How are scoping reviews utilized in healthcare simulation?

Sub questions

- How many scoping reviews and scoping review protocols in healthcare simulation are published? Where are they published?
- What research questions have scoping reviews explored within healthcare simulation?
- To what extent are researchers in healthcare simulation following and reporting previously described scoping review methodological frameworks? If so, which one?
- How many reviews are using 'consultation' aspects of the scoping review framework or KU involvement? If so, what methods?

Methods

Our scoping review will be conducted alongside guidance from an information specialist as per the JBI framework, which is considered the most comprehensive and up-to-date guidance on scoping reviews [11]. The JBI framework consists of nine steps: (1) defining and aligning the research objectives and questions, (2) developing and aligning the inclusion criteria with the objectives and questions, and (3) describing the planned approach to evidence searching, selection, extraction, analysis and presentation. These three steps occur during protocol development. The subsequent three steps include (4) searching for, (5) selecting and (6) extracting the evidence. With the final steps (7) of analysing and (8) presenting the results and (9) summarizing the evidence in relation to review purposes [14]. Scoping reviews are particularly well suited for synthesizing the literature within the diverse field of healthcare simulation, as this allows for a comprehensive and systematic mapping of existing literature, identifying key concepts, evidence gaps and the scope of research activity in the field. This knowledge is critical for informing curriculum development and guiding future research efforts. Our review will be reported in accordance with Preferred Reporting Items for Systematic Review and Meta-Analysis Scoping Review extension [15] and Kus' involvement in accordance with the Guidance for Reporting Involvement of Patients and the Public (GRIPP2) recommendations [16].

Databases and search strategy

A systematic search will be conducted to identify relevant scoping reviews and scoping review protocols [13] within the healthcare simulation literature. The search terms will be identified from keywords. Expert KUs have been consulted to assist with defining the search terms and search strategy, to advise on the scope of the literature, ensuring that no key terms are overlooked.

Search terms for the review were developed through an initial analysis of keywords from representative sources in the literature. These terms were then refined in collaboration with an information technologist to identify appropriate indexing terms and database-specific vocabulary (see Appendix 1). No date limits were applied, as preliminary searches returned a manageable volume of studies. KUs were consulted to refine the search terms and the search strategy, and their continued engagement throughout the review process will ensure key publications are included in the review.

The following databases were searched:

- Embase
- PubMed
- CINAHL
- Web of Science
- Scopus

A preliminary pilot search conducted across EMBASE, PubMed, CINAHL, Web of Science and Scopus identified 4452 potential articles. Following deduplication, 2202 articles remained for inclusion.

Eligibility criteria

Studies will be included where they are (1) peer-reviewed published scoping reviews or scoping review protocols and (2) looking into any aspect of human healthcare simulation activity.

We define 'simulation' as per the *Healthcare Simulation Dictionary* as – a technique that creates a situation or environment to allow persons to experience a representation of a real event for the purpose of practice, learning, evaluation, testing or to gain understanding of systems or human actions [17]. This covers the entire set of actions and events from initiation to termination of an individual simulation event. In the learning setting, this is often considered to begin with the briefing (pre-briefing) and end with the debriefing, although in some settings, they may have a different structure [17]. We will place no limit on

the *modality* of simulation or which *aspect* of simulation the authors have investigated [18].

We define human 'healthcare' as referring to any of a broad range of services that are designed and organized to maintain or improve the health and social care of individuals or communities. These services are often delivered by a variety of personnel, including doctors, nurses, pharmacists, carers and other allied health professionals in settings such as hospitals, clinics, care establishments or in healthcare users' own homes.

Studies will be excluded if (1) there is no available English language translated text; (2) they are editorials or opinion articles; (3) if studies were not published in peer-reviewed journals as a full manuscript, that is, conference proceedings or as part of thesis; and (4) if studies were not labelled as scoping reviews or scoping review protocols (Table 1).

Study selection

All retrieved articles will be assessed by two independent reviewers for inclusion. Any discrepancies or conflicts will be resolved by discussion with a third independent reviewer who has not been involved in the initial screening, who will also assist in determining the final inclusion or exclusion of articles. Screening will be conducted in two stages.

Stage 1: Title and abstract screening will be performed against the pre-defined inclusion and exclusion criteria by two independent reviewers (CB and SS); consensus will be reached by discussion between the reviewers or with a third independent reviewer from the KU group should there remain non-consensus on inclusion. At the screening stage, articles will be labelled for inclusion as Include, Exclude or Maybe/Uncertain. Maybe/Uncertain articles will progress to full-text screening, where eligibility will be determined.

Stage 2: Full-text screening will be performed once title and abstract screening is complete, with each article being assessed by two independent reviewers. All core reviewers will contribute to this stage; conflict will be resolved by discussion between the reviewers, or with a third independent reviewer from the KU group should there remain non-consensus on inclusion. Throughout the review process, regular meetings will occur to discuss progress and challenges and uncertainties related to study selection. These meetings will include all core reviewers and the KU group.

Data management

The literature search results will be stored and organized in the web-based collaboration software platform Covidence (Covidence systematic review software, Veritas Health Innovation, Melbourne, Australia. Available at www.covidence.org).

Data charting

A standardized data extraction form will be created and include extraction of the following data: Study Characteristics (Study Title, Author, Journal, Year of Publication, Keywords), Scoping review conduct (Evidence and location of protocol publication, scoping review methodological framework used, consultation or any KU involvement), Simulation context researched (research questions of scoping review, number of papers included in final scoping review analysis). Relevant data will be extracted from included studies by all reviewers to share the workload.

Data synthesis

Where appropriate, data will be displayed in the form of tables and charts supplemented with a narrative review. Current recommendations are that analysis within scoping reviews be limited to quantitative or qualitative descriptive approaches [19].

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Declarations

Authors' contributions

CB and DN conceived the idea for the project. CB, AD and SS drafted the initial study protocol and protocol manuscript. All authors extensively reviewed and contributed to the final protocol and protocol manuscript.

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Availability of data and materials

None declared.

Ethics approval and consent to participate

None declared.

Competing interests

There are no conflicts of interest in this project.

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APPENDIX 1

Initial search undertaken by RCSI Information Technologist (3rd March 2025)

	PubMed	
#1	'Simulation Training'[Mesh] OR 'High Fidelity Simulation Training'[Mesh] OR 'Problem-Based Learning'[Mesh] OR 'Competency-Based Education'[Mesh] OR 'Simulation' OR 'Simulation-based education' OR 'simulated learning' OR 'Experiential Learning' OR 'Simulation-based learning' OR 'OSCE' OR 'objective structured clinical examination' OR 'simulation assessment' or 'simulated assessment' OR 'simulation-based assessment' OR 'competency-based assessment' OR 'SIMS' OR 'SIM' OR 'PBL' OR 'problem based education' OR 'problem based training' OR 'hand* on learning' OR 'action learning' OR 'cooperative learning' OR 'co-operative learning' OR 'situated learning'	636,039
#2	"Scoping Review as Topic'[Mesh] OR 'Scoping Review' [Publication Type] OR 'scoping review*' OR 'scoping stud*' OR 'Scoping methodology*' OR 'systematic scoping review*' OR 'scoping literature review' OR 'scoping review'[Title/Abstract:~2]	35,582
#3	#1 AND #2	749
	Embase	
#1	'simulation training'/exp OR 'problem based learning'/exp OR 'competency-based education'/exp OR 'simulation'/exp OR 'simulation' OR 'simulation-based education' OR 'simulated learning' OR 'experiential learning' OR 'simulation-based learning' OR 'osce' OR 'objective structured clinical examination' OR 'simulation assessment' OR 'simulated assessment' OR 'simulation-based assessment' OR 'competency-based assessment' OR 'sims' OR 'sim' OR 'pbl' OR 'problem based education' OR 'problem based training' OR 'hand* on learning' OR 'action learning' OR 'cooperative learning' OR 'co-operative learning' OR 'situated learning'	787,595
#2	scoping review'/exp OR 'scoping review*' OR 'scoping stud*' OR 'scoping methodology*' OR 'systematic scoping review*' OR 'scoping literature review' OR ((scoping NEAR/2 review):ti,ab)	36,941
#3	#1 AND #2	1213
	CINAHL	
S1	(MH 'Patient Simulation') OR (MH 'Simulations+') OR (MH 'Problem-Based Learning') OR (MH 'Education, Competency-Based') OR 'Simulation' OR 'Simulation-based education' OR 'simulated learning' OR 'Experiential Learning' OR 'Simulation-based learning' OR 'OSCE' OR 'objective structured clinical examination' OR 'simulation assessment' or 'simulated assessment' OR 'simulation-based assessment' OR 'competency-based assessment' OR 'SIMS' OR 'SIM' OR 'PBL' OR 'problem based education' OR 'problem based training' OR 'hand* on learning' OR 'action learning' OR 'cooperative learning' OR 'co-operative learning' OR 'situated learning'	86,223
S2	(MH 'Scoping Review') OR 'scoping review*' OR 'scoping stud*' OR 'Scoping methodology*' OR 'systematic scoping review*' OR 'scoping literature review' OR TI scoping N2 review OR AB scoping N2 review	20,392
S3	S1 AND S2	407
	Web of Science	
#1	TS=('Simulation' OR 'Simulation-based education' OR 'simulated learning' OR 'Experiential Learning' OR 'Simulation-based learning' OR 'OSCE' OR 'objective structured clinical examination' OR 'simulation assessment' or 'simulated assessment' OR 'simulation-based assessment' OR 'competency-based assessment' OR 'SIMS' OR 'SIM' OR 'PBL' OR 'problem based education' OR 'problem based training' OR 'hand* on learning' OR 'action learning' OR 'cooperative learning' OR 'co-operative learning' OR 'situated learning')	2,758,525
#2	TS=('scoping review*' OR 'scoping stud*' OR 'Scoping methodology*' OR 'systematic scoping review*' OR 'scoping literature review' OR (scoping NEAR/2 review))	47,018
#3	#1 AND #2	998
	Scopus	
1	TITLE-ABS-KEY ('Simulation' OR 'Simulation-based education' OR 'simulated learning' OR 'Experiential Learning' OR 'Simulation-based learning' OR 'OSCE' OR 'objective structured clinical examination' OR 'simulation assessment' OR 'simulated assessment' OR 'simulation-based assessment' OR 'competency-based assessment' OR 'SIMS' OR 'SIM' OR 'PBL' OR 'problem based education' OR 'problem based training' OR 'hand* on learning' OR 'action learning' OR 'cooperative learning' OR 'co-operative learning' OR 'situated learning') OR INDEXTERMS ('Simulation Training' OR 'High Fidelity Simulation Training' OR 'Problem-Based Learning' OR 'Competency-Based Education' OR 'problem based learning' OR 'competency-based education' OR 'simulation' OR 'Patient Simulation' OR 'Simulations' OR 'Education, Competency-Based')	5,363,010
2	TITLE-ABS-KEY ('scoping review*' OR 'scoping stud*' OR 'Scoping methodology*' OR 'systematic scoping review*' OR 'scoping literature review' OR (scoping W/2 review*)) OR INDEXTERMS ('Scoping Review' OR 'Scoping Review as Topic')	45,300
3	1 and 2	1085