

PROTOCOL

The use of simulation-based education in cancer care: a scoping review protocol

Amina Silva^{1, }, Jacqueline Galica¹, Kevin Woo¹,
Amanda Ross-White^{1, }, Marian Luctkar-Flude^{1, }

¹School of Nursing, Queen's University, 99 University Ave, ON, Kingston, K7L 3N6, Canada

Corresponding author: Amina Silva, aminareginasilva@gmail.com

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ABSTRACT

Background

Simulation-based education can be an effective strategy to educate nurses and physicians across the continuum of cancer care. However, there is still a lack of studies collating and synthesizing the literature around the types, functionalities and delivery systems of simulation-based education to educate different professional groups about cancer care.

Aim

To collate and synthesize the literature on how simulation has been used to educate nurses and physicians about cancer care.

Methods

Scoping review methodology according to the Joanna Briggs Institute framework. Published literature is going to be searched through Medline (OVID), CINAHL, EMBASE and PsycINFO. Unpublished literature will be searched through ResearchGate, OpenGrey and open access theses and dissertations. Articles will be considered if the population is nurses (including nurse practitioners) and/or physicians, if they use any type of simulation as an educational strategy as the concept of interest, and if the context is cancer care. This review will consider experimental, quasi-experimental, observational, quantitative and qualitative studies designs, text and opinion papers and unpublished literature.

Expected results

Results from this scoping review will generate a solid underpinning for nursing and medical community to empower evidenced innovation through the further development of simulation-based educational interventions.

Introduction

Cancer is a major public health issue, and it has a huge impact on the healthcare system and professionals [1]. Additionally, the number of people affected by cancer is constantly increasing, and, in Canada, it is expected that 44% of the population will develop cancer during their lifetime [2]. Health care for cancer patients is complex and involves different stages and processes that can include prevention, screening, diagnosis, active treatment and post-treatment (survivorship and end-of-life care) [3]. Even though there are different healthcare professionals working together to provide cancer care to patients, the major stakeholders are usually nurses and physicians due to the scope of their practice [4–6].

Also, although there is an increasing number of people living with and beyond cancer, there is evidence that cancer patients have several unmet needs before,

during and after cancer treatment that can negatively impact their quality of life [7,8]. Studies investigating different barriers that hamper cancer patients' access to the care required have highlighted that interventions to improve nurses' and physicians' knowledge and/or practice are currently needed [9–11]. There are different types of educational strategies that can be used to improve healthcare professionals' skills, but simulation-based education is an area, which, despite being relatively new, has shown promising results to improve healthcare professionals' knowledge, critical thinking, skills, performance and satisfaction [12].

Simulation-based education can be an effective strategy to educate adult learners as it builds on existing knowledge and helps to increase proficiency levels related to specific practices, consequently reducing the risk of errors in the processes [13]. Additionally, there are different types of clinical simulation, the most common being *in situ* simulation and virtual simulation. *In situ* simulation involves the use of standardized patients and/or life-like manikins in a replicated or authentic clinical environment with the learner playing the role of healthcare professional, or an educator/actor being the professional during a clinical scenario [14]. Virtual simulation can include video recordings of high-fidelity simulation to be used as a more accessible and flexible learning intervention, or computer games where the learner accesses a game and needs to choose answers related to clinical decision-making points (can be virtual-reality or recordings of life-like scenarios) [15–17].

Although it is important to understand the role of simulation-based education to improve nurses' and physicians' care for cancer patients, currently, there is a gap related to this area as publications are still fragmented in the literature. What is more, a recent integrative review investigating simulation-based education use to improve nursing professionals' and students' provision of cancer care highlighted a lack of publications in this area, as well as a lack of studies collating and synthesizing this evidence [11]. Therefore, we are proposing a scoping review approach with an exploratory nature and systematic search to collate the literature around simulation-based education to educate nurses and physicians about cancer care.

A preliminary search of MEDLINE, Prospero, Epistemonikos, the Cochrane Database of Systematic Reviews and Joanna Briggs Institute (JBI) Evidence Synthesis was conducted, and no current or underway systematic reviews or scoping reviews on the topic were identified. In this study, we opted to use a scoping review methodology as it allows the researcher to use an iterative approach with an exploratory nature where the researcher can reflect at each step and repeat it if necessary to add new terms or look for more evidence [18]. Also, there is valuable evidence from different research paradigms in the literature approaching the topic of interest; thus, the use of a methodology that allows the researcher to include a wide range of literature with different methodologies (e.g. quantitative and qualitative evidence), such as scoping reviews, is essential. Therefore, the aim of this scoping review is to collate and synthesize the literature on how simulation has been used to educate nurses and physicians about cancer care.

Review question

This review question is proposed using the 'PCC' strategy as recommended by the JBI framework for scoping reviews [19], where the 'P' for population in this study are nurses (including nurse practitioners) and physicians, the 'C' for concept is simulation-based education and the 'C' for context is cancer care.

Overarching question: How has simulation-based education been utilized to educate nurses and physicians about cancer care?

Methodology

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews [19].

Inclusion criteria

Participants: This scoping review will consider as participants physicians from any speciality (as long as they hold an MD degree) and nurses also from any speciality, including nurse practitioners (as long as they hold an RN degree) caring for patients with cancer in any setting, including primary care, hospitals, home/community care, cancer centres or any other clinical settings with inpatient and/or outpatient services for cancer patients. Additionally, the focus is on professionals, so, if the population includes undergraduate students, the record will not be included in this review; however, if the population is graduate or post-graduate/specialization students and the students already hold a professional degree in nursing or medicine, then, we are going to include the report.

Concept: For this scoping review, the main concept of interest will be simulation-based education. We are going to consider the use of educational strategies that consists of, or is blended with, a simulation intervention (including *in situ* simulation and virtual simulation). We will consider simulation as being the representation of a real-life clinical experience as a model of clinical exercise to train healthcare professionals. However, if the focus of the study is on simulation modelling, which is the representation of a physical model through a digital prototype to predict performance, and/or if it does not involve the representation of a real-life clinical scenario in the educational exercise, then the report is going to be excluded. Also, if the focus in the use of simulation is only to evaluate skills and not to teach them, or if the simulation is mixed with educational strategies (other than briefing activities) and the results are reported together, the reports will be excluded.

Context: Articles will initially be considered for eligibility if they focus on the use of simulation-based education to train nurses (including nurse practitioners) or physicians about knowledge, skills and/or practices related to the care for oncologic patients, including cancer prevention, screening, treatment, diagnosis, symptom management, end of life and cancer survivorship care.

Types of sources: This scoping 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. This review will also consider descriptive observational study designs including case series, individual case reports and descriptive cross-sectional studies for inclusion. Qualitative studies will also be considered including, but not limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description, action research and feminist research. In addition, systematic, scoping and other types of reviews that meet the inclusion criteria will also be considered; however, the review will not be included; instead, we are going to review and screen their selection of articles. Text and opinion papers will also be considered for inclusion in this scoping review. Additionally, some sources of grey literature, such as theses, dissertations, conference papers and research reports, will also be considered.

Search strategy

The search strategy will aim to locate both published and unpublished studies. To develop and implement the search strategy, we have the support of two Health Sciences Librarian experts. An initial limited search of MEDLINE and CINAHL was undertaken to identify articles on the topic. The 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 (Appendix A). The search strategy, including all identified keywords and index terms, will be adapted for each included database and/or information source. The reference list of all included sources of evidence will be screened for additional studies. Studies published in any language will be included. We are not going to restrict the search to any date. The databases to be searched include Medline (Ovid), CINAHL, EMBASE and PsycINFO (Ovid). Sources of unpublished studies/grey literature to be searched include Research Gate, OpenGrey and Open Access Theses and Dissertations.

Study/source of evidence selection

Following the search, all identified citations will be collated and uploaded into Covidence® and duplicates removed. After that, and following a pilot test, titles and abstracts will be screened by two independent reviewers for assessment against the inclusion criteria. Then the full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of sources of evidence at full text that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements between the reviewers at each stage of the selection process will be resolved through discussion or with the input of a third reviewer. The results of the search and the study inclusion process will be reported in full in the final scoping review report and presented in a Preferred Reporting Items for Systematic Reviews and Meta-analyses extension for scoping review (PRISMA-ScR) flow diagram [20].

Data extraction

Data will be extracted from reports included in the scoping review by two or more independent reviewers using a data extraction tool adapted from JBI by the researchers. The data extracted will include specific details about the

participants, concept, context, study methods and key findings relevant to the review question. A draft of the data extraction form is provided in Appendix B. The draft of the data extraction tool will be modified and revised as needed during the process of extracting data from each included evidence source, and modifications will be detailed in the scoping review final report. Any disagreements between the reviewers will be resolved through discussion or via consultation with a third reviewer. If appropriate, authors of papers will be contacted to request missing or additional data, where required.

Data analysis and presentation

The data extracted from this scoping review will be assessed through a content analysis and simple numerical count to find the majority consensus across the data. Results will be assembled and summarized qualitatively (using content analysis) and quantitatively (using a simple numerical count) to respond to the review question. The qualitative and quantitative summary will be presented in tabular form and accompanied by a narrative summary to answer the review question by describing how simulation has been used to educate nurses (including nurse practitioners) and physicians about cancer care, identifying possible gaps in the literature and providing guidance for future studies and policies.

Anticipated results and outcomes

Results from this scoping review will map the literature around the use of simulation-based educational strategies to educate nurses and physicians about cancer care. We expect that these findings will highlight the different types of simulation used, key aspects for successful implementation of simulation and aspects that need to be further developed and/or investigated. Also, our results can generate a solid underpinning for nursing and medical community to empower evidenced innovation through the further development of simulation-based educational interventions. Lastly, results from this scoping review will be used to guide the development of an interventional study to educate nurses and physicians working in the continuum of cancer care.

Declarations

Authors' Contributions

All authors have contributed to the ideas, design and writing of this scoping review research protocol.

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Availability of data and materials

The data supporting the findings of this study are available within the article.

Ethics approval and consent to participate

None declared.

Competing interests

There is no conflict of interest in this project.

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APPENDIX A. SEARCH STRATEGY MEDLINE

#	Query	Results from 27 May 2021
1	exp nurses/ or exp physicians/	234,389
2	exp Nursing Staff/	67,547
3	(nurse* or physician* or doctor*).ab,ti,kw.	772,593
4	exp Simulation Training/	10,007
5	simulat*.ab,ti,kw.	571,820
6	virtual patient*.mp.	1,149
7	computer simulation/ or augmented reality/ or patient-specific modeling/ or virtual reality/	198,433
8	exp Neoplasms/	3,471,247
9	(neoplasm* or cancer* or oncolog*).ab,ti,kw.	2,112,337
10	or/1-3	913,525
11	or/4-7	677,932
12	or/8-9	4,064,963
13	10 and 11 and 12	969

APPENDIX B. DATA EXTRACTION INSTRUMENT

Evidence source details and characteristics	
Authors	
Date	
Title of the report	
Type of publication (e.g. thesis, manuscript and webpage)	
Local of publication (journal, including volume, issue and page)	
Methodology and methods	
Methodology (design adopted, e.g. random control trial)	
Country of publication	
Sample (if applicable)	
Procedures (e.g. interviews, tools and institutional indicators)	
Data analysis performed	
Study data	
Aim/purpose	
Healthcare professional target (e.g. nurse and physician)	
Type of cancer (if applicable, e.g. breast and brain)	
Type of simulation (e.g. virtual, high-fidelity)	
Focus on the use of simulation (e.g. communication skills)	
Results from the use of simulation (if measured)	
Challenges identified by the authors in the use of simulation (if applicable)	
Benefits identified by the authors in the use of simulation (if applicable)	
Study/report limitations stated by the author(s)	
Author's overall suggestion for future studies	
Other notes	