Student and educator experiences of maternal-child simulation-based learning: a systematic review of qualitative evidence protocol

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Review question/objective
The overall aim of this systematic review is to identify the appropriateness and meaningfulness of maternal-child simulation-based learning for undergraduate or pre-registration nursing students in educational settings to inform curriculum decision-making.

1. What are the experiences of nursing or health professional students participating in undergraduate or pre-licensure maternal-child simulation-based learning in educational settings?
2. What are the experiences of educators participating in undergraduate or pre-licensure maternal-child simulation-based learning in educational settings?
3. What teaching and learning practices in maternal-child simulation-based learning are considered appropriate and meaningful by students and educators?
Background

Maternal-child care is one of the pillars of primary health care. Health promotion and illness/injury prevention begin in the preconception period and continue through pregnancy, birth, the postpartum period and the childrearing years. Thus, lifelong wellness is promoted across the continuum of perinatal and pediatric care which influences family health and early child development.\(^1\) Registered nurses (RNs) are expected to have the knowledge and skills needed to provide evidence-based nursing with childbearing and child-rearing families to promote health and address health inequities in many settings, including inner city, rural, northern, indigenous and global communities.\(^2,3\) The Canadian Maternity Experiences survey\(^4\) and the Report by the Advisor on Healthy Children and Youth\(^5\) provide information on current shortages of perinatal and child health care providers and stress the importance of the role of nurses as providers of rural and remote care. From a global health perspective, continued concern with both perinatal and child health morbidities and mortalities highlight the importance of maintaining and strengthening the presence of maternal and child health learning opportunities within undergraduate nursing curriculum.\(^6\)

Despite this importance, educators in many countries have acknowledged difficulties providing nursing students with maternal-child hospital learning experiences\(^7,8\) due to declining birth rates, women’s changing expectations about childbirth (i.e. birth as an intimate experience), increased outpatient and community management of early childhood health conditions, and increased competition for clinical placements. Canadian nurse educators and practice leaders have also identified gaps in recent RN graduates’ readiness to provide safe, competent and evidence-based care for childbearing and child-rearing families.\(^9\) Newly graduated RNs working in acute care hospitals and in rural/remote community practice settings report feeling unprepared for providing maternity, neonatal and early childhood care.\(^10\)

Recent concerns about the clinical reasoning skills of new graduates and the link to poor patient outcomes (e.g. not recognizing deteriorating patients)\(^11\) have led to calls to reform nursing education. In the Carnegie report, Benner, Sutphen, Leonard and Day\(^12\) identified four essential themes needed in the thinking and approach to nursing education, including: (1) a shift in focus from covering decontextualized knowledge to “teaching for a sense of salience, situated cognition, and identifying action in particular clinical situations”\(^12\) (p.89); (2) better integration of classroom and clinical teaching; (3) more emphasis on clinical reasoning; and, (4) an emphasis on identity formation rather than socialization. Brown and Hartrick Doane\(^13\) propose that nurses need to draw on a range of knowledge that enhances the nurse’s “sensitivity and ability to be responsive in particular moments of practice”.\(^13\) Theoretical or decontextualized knowledge becomes a “pragmatic tool” used to improve nursing practice. Simulation has been identified as a promising pragmatic educational tool for practice learning that can be integrated with theoretical knowledge from nursing and other disciplines.\(^14,15\)

Bland, Topping and Wood conducted a concept analysis and defined simulation in nursing education as:

“A dynamic process involving the creation of a hypothetical opportunity that incorporates an authentic representation of reality, facilitates active student engagement, and integrates the complexities of practical and theoretical learning with opportunity for repetition, feedback, evaluation and reflection.”\(^16\)
They also proposed that “simulated learning is a dynamic concept that deserves empirical evaluation not merely to determine its effects but to uncover its full potential as a learning strategy.”

Simulation usually involves student(s) providing nursing care to a simulated patient who might be a manikin or actor based on a standardized scenario. Following the experiential learning opportunity the scenario is debriefed and the clinical situation analyzed with opportunities for reflection on performance. In nursing education, simulation is usually used in a way that complements learning in practice settings. However simulation has also been used: to make up some clinical practice hours, to provide opportunities to practice and assess particular clinical skills, and for remedial learning when students encounter difficulties in practice settings. In addition simulation provides the opportunity to focus on quality and safety competencies (QSEN) that have been identified for nurses. New forms of simulation are being developed with multiple patients so that nursing students can learn to prioritize care needs and delegate care to other team members.

Nurse educators have identified several advantages for learners using simulation, including: providing a safe environment to improve nursing competence, allowing learners to become more comfortable with receiving feedback about their clinical performance, providing consistent and comparable experiences for all students, and learning a mix of technical and non-technical skills including communication, teamwork and delegation. Within the Canadian context, students and instructors have reported positive learning experiences with simulation, particularly in understanding complex patient care scenarios, multidisciplinary team scenarios, team-based learning, and reflective debriefing. Furthermore, simulation technology has been proposed as a strategy for developing clinical reasoning skills, enhancing nurses’ abilities to build upon previous knowledge and past experiences, and manage new or unfamiliar situations.

Simulation has previously been integrated into nursing curricula in a “piecemeal” fashion that lacks an integrative pedagogy or theoretical approach. More recently a number of theoretical and pedagogical frameworks and best practice standards have been published. In April 2014 a preliminary search of literature (in CINAHL, Medline, Academic Search Complete and Web of Science) was conducted with guidance from our library specialist to test the search strategy and ensure that there would be enough qualitative findings to include in the systematic review. A preliminary scan of the abstracts from these searches demonstrated that many experiential case reports with qualitative findings were missed with the use of research limiters (including our search strategy specifically constructed to retrieve qualitative research) so the decision was made to err on the side of caution by searching more broadly and review a larger number of abstracts for inclusion in the study. However, a number of reports with qualitative findings were identified. For example, from a review of the abstracts from a CINAHL search dated April 17, qualitative research papers (including two dissertations), 12 evaluation study reports, six mixed methods studies and nine case reports with qualitative findings were identified. It is timely then to review qualitative studies to better understand the meaningfulness and appropriateness of integrating maternal-child simulation-based learning activities in undergraduate nursing education programs.

A search of both the Cochrane Library of Systematic Reviews and the Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports has been conducted. No systematic reviews of qualitative studies of maternal-child simulation-based learning for undergraduate or pre-registration nursing students in educational settings are evident in the literature. Although a systematic review of the
meaningfulness and appropriateness of using human patient simulation manikins as a teaching and learning strategy in undergraduate nursing education had been planned and a protocol registered in October 2009, we learned from contacting the lead author that this systematic review was not completed. Currently little is known about how nursing students and/or educators have experienced maternal-child simulation or their understandings of the appropriateness and meaningfulness of particular simulation-based learning practices. Our proposed systematic review therefore fulfills all requirements for the PROSPERO database.

Definitions:

For this review we will use the definition of “simulation-based learning experience” adopted by the International Nursing Association for Clinical Simulation and Learning (INACSL):

“An array of structured activities that represent actual or potential situations in education and practice and allow participants to develop or enhance knowledge, skills, and attitudes or analyze and respond to realistic situations in a simulated environment or through an unfolding case study.”

We will include any use of simulation in an educational setting (with pre-registration or pre-licensure or undergraduate nursing or health professional students) with a focus relevant for maternal-child nursing. Maternal-child nursing has been variously defined in literature to include maternity care and pediatric nursing. For the purposes of this review, we will include perinatal, neonatal and pediatric contexts of care that focus on families with children under the age of five. We will exclude studies that focus on school age children, adolescents and/or youth.

We have adapted an earlier definition of “appropriateness” as the “best conditions under which simulation can be integrated into undergraduate nursing education.” In this review “meaningfulness” refers to the experiences and reflections of undergraduate nursing or health professional students and educators as presented in the studies reviewed.

Keywords

simulation*; maternal-child or maternity or obstetric*; pediatric or pediatric; undergraduate or pre-registration or pre-licensure nursing or medical or midwifery or allied health or interdisciplinary or interprofessional or multidisciplinary

Inclusion criteria

Types of participants

Participants will include undergraduate or pre-registration or pre-licensure nursing or midwifery or health professional students and educators participating in maternal-child simulation-based learning. Midwifery or undergraduate medical students are included as participants as their clinical learning experiences are similar to undergraduate nursing students. However students in graduate, postgraduate, or specialty education programs and practicing nurses or other health care professionals (continuing education) will be excluded from this review because the purpose is to identify the implications for undergraduate or pre-registration nursing programs. Undergraduate or pre-registration education differs from continuing professional education as students are more likely to be learning this
way of thinking or clinical reasoning for the first time. The pedagogical approaches used also differ from continuing professional development.\textsuperscript{12}

**Phenomena of interest**

This review will consider studies that investigate simulation-based learning experiences that are relevant to maternal-child nursing. Our primary interest in this review is in preparing nursing students for senior level maternal-child practice placements and transition to working as an RN. However, we will include all qualitative studies and case reports of simulation-based learning that involve pre-registration nursing or health professional students.

**Context**

The purpose of this review is to identify the implications of this body of knowledge for undergraduate or pre-registration nursing programs in Canada. This review will include qualitative research that may be applicable to the Canadian context for nursing education, such as reports from North America, Europe, Australia and New Zealand.

**Types of studies**

This review will consider qualitative studies and peer-reviewed case reports that provide qualitative findings, including, but not limited to, designs such as phenomenology, grounded theory, ethnography, action research and feminist research. Qualitative findings from evaluation research (including mixed methods studies) will be included when they report on the relevant learning experiences of students or educators. Studies published in English will be considered for inclusion in this review. Studies published in other languages will be tallied (but not translated) to provide an indication of the range of international literature available on this topic.

**Search strategy**

The search strategy aims to find both published and unpublished studies. A three-step search strategy will be utilized in this review. An initial limited search of MEDLINE and CINAHL will be undertaken followed by an analysis of the text words contained in the title and abstract, and of the index terms used to describe article. A second search using all identified keywords and index terms will then be undertaken across all included databases. Thirdly, the reference list of all identified reports will be searched for additional studies. Because of recent changes in simulation technologies, studies published from January 2000 to the present will be considered for inclusion in this review.

The databases to be searched include: CINAHL, Health Source: Nursing/Academic Edition, ERIC, Pubmed, Medline, TRIP, Web of Science.

The search for unpublished studies will include: Grey literature sources such as government websites, OCLC PapersFirst for conference papers, OCLC Proceedings First for conference proceedings, Proquest Dissertations and Theses, the New York Academy of Medicine Grey Literature Collection, nursing education or simulation websites (such as the International Nursing Association for Clinical Simulation and Learning (INACSL), MedNar, and Google Scholar.

Initial keywords will include controlled vocabulary and keyword terms related to maternal child nursing, simulation based learning, and undergraduate nursing or health professional students. These terms will be identified, refined, and combined according to the conventions of each database searched. Initial
keywords to be used will be: simulation*; maternal-child or maternity or obstetric*; pediatric or pediatric; undergraduate or pre-registration or pre-licensure nursing or medical or midwifery or allied health or interdisciplinary or interprofessional or multidisciplinary. If a large volume of studies are identified without limiters, qualitative research terms will be used to focus the search.

The following search strategy will be used:

S1: simulation*

S2: undergraduate or baccalaureate or pre-licensure or pre-registration or midwifery

S3: maternal-child or obstetric* or matern* or perinatal or pediatric or paediatric or child health

S4: nurs* or medical or midwifery or allied health or interdisciplinary or interprofessional or multidisciplinary

S5: S1 and S2 and S3 and S4

S6: Limiters: Published since January 1 2000.

Reference lists of all studies that are retrieved for appraisal and review papers will also be searched. Abstracts will initially be reviewed for relevance by two independent reviewers. Papers that meet the review criteria will be retrieved for methodological review.

Assessment of methodological quality

Papers selected for retrieval will be assessed by two independent reviewers for methodological validity prior to inclusion in the review using standardized critical appraisal instruments from the Joanna Briggs Institute using the Qualitative Assessment and Review Instrument (JBI-QARI). Any disagreements that arise between the reviewers will be resolved through discussion, or with a third reviewer. When needed for clarification of findings authors of primary studies will be contacted.

Data collection

Qualitative findings will be extracted by two independent reviewers from papers included in the review using the standardized data extraction tools from JBI-QARI. The data extracted will include specific details about the simulation-based learning intervention, context, participants, pedagogical approach, study methods and findings relevant to the review question and specific objectives.

Data synthesis

Qualitative research findings will, where possible be pooled using JBI-QARI. This will involve the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings (Level 1 findings) rated according to their quality, and categorizing these findings on the basis of similarity in meaning (Level 2 findings). These categories will then be subjected to a meta-synthesis in order to produce a single comprehensive set of synthesized findings (Level 3 findings) that can be used to inform nursing education and practice. Where textual pooling is not possible the findings will be presented in narrative form. Unusual or cases that can be refuted will be described in narrative form.
Conflicts of interest

None identified. Members of the research team have no affiliation with companies that make manikins or have any other proprietary interests in simulation-based learning.

Acknowledgements

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References


doi: 10.11124/jbisrir-2015-1694


Appendix I: Appraisal instruments

QARI appraisal instrument

**JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research**

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<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Unclear</th>
<th>Not Applicable</th>
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<td>1. Is there congruity between the stated philosophical perspective and the research methodology?</td>
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<td>6. Is there a statement locating the researcher culturally or theoretically?</td>
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<td>7. Is the influence of the researcher on the research, and vice-versa, addressed?</td>
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<td>8. Are participants, and their voices, adequately represented?</td>
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<td>9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?</td>
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<td>10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?</td>
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Overall appraisal:  □ Include □ Exclude □ Seek further info. □

Comments (including reason for exclusion)

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Appendix II: Data extraction instruments

QARI data extraction instrument

**JBI QARI Data Extraction Form for Interpretive & Critical Research**

Reviewer: ____________________ Date: ____________________

Author: ____________________ Year: ____________________

Journal: ____________________ Record Number: ____________________

**Study Description**

Methodology

Method

Phenomena of interest

Setting

Geographical

Cultural

Participants

Data analysis

Authors Conclusions

Comments

Complete: Yes ☐ No ☐
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Extraction of findings complete: Yes □ No □