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# The Evidence in Simulation-Based Learning Experiences in Nursing Education and Practice: An Umbrella Review

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## KEYWORDS

umbrella review  
evidence base;  
systematic review;  
umbrella review;  
simulation-based  
learning experiences;  
systematic review

## Abstract

**Background:** There has been an exponential growth in the research base for simulated-based learning experiences (SBLE). The purpose of this paper is to present the findings of an umbrella review, an examination of published reviews, to examine the state-of-the-science in SBLE

**Method:** This project used the Joanna Briggs Institute guidelines for an umbrella review. Eight electronic data bases were searched for eligible reviews from 1990 through August 2016, yielding 97 reviews for inclusion.

**Results:** Four themes emerged from the current literature, centering on (a) specific clinical practice area or learner, (b) learner outcomes/identified skill acquisition, (c) elements of simulation design, and (d) simulation as pedagogy. The quality of the reviews ranged widely in methods and rigor.

**Conclusion:** The evidence examining SBLE has relied too heavily on self-reported outcomes among learners. Objective evidence obtained through the use of reliable and valid measurement tools used by trained and objective raters is needed. Adherence to standard research reporting guidelines for health care simulation research would benefit the evidence base.

## Cite this article:

Cantrell, M. A., Franklin, A., Leighton, K., & Carlson, A. (2017, December). The evidence in simulation-based learning experiences in nursing education and practice: an umbrella review. *Clinical Simulation in Nursing*, 13(12), 634-667. <http://dx.doi.org/10.1016/j.ecns.2017.08.004>.

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Simulation is a focal point of academic education across health care disciplines and levels of learners (Adamson, Kardong-Edgren & Willhaus, 2013). There is agreement about the need for investigations involving simulated-based

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learning experiences (SBLEs) to advance the science of nursing education. Specifically, the literature is clear about the need to generate evidence that explicates SBLE as effective teaching–learning strategies to engender safe practice behaviors and improve patient outcomes (Aebersold &

### Key Points

- Four themes were identified in this umbrella review: (a) specific clinical practice area or learner, (b) learner outcomes/identified skill acquisition, (c) elements of simulation design, and (d) simulation as pedagogy.
- There is evidence of increased sophistication in the design methods of simulation studies and of studies being focused on skill transfer to the practice setting, patient safety and outcomes.
- This umbrella reviews revealed three needs in simulation-based research: (a) translational research, (b) measures of higher order thinking, and (c) increased methodological rigor in research designs.

Tschannen, 2013; Cantrell & Mariani, 2016; Dieckmann et al., 2011; Issenberg, Ringsted, Ostergaard & Dieckmann, 2011). Findings of the 2014 NCSBN National Simulation Study support the further development and evaluation of SBLE as effective teaching–learning strategies in health care education, especially to engender safe conscious practice among learners (Hayden, Smiley, Alexander, Kardong-Edgren & Jeffries, 2014). The current state of the science in simulation-based research calls for intervention studies that examine skill development and skill transfer from simulation to actual patient care settings to support improved patient outcomes (Franklin, Leighton, Cantrell & Rutherford-Hemming, 2015).

Reflecting on the volume of health care literature being published, the simulation-based literature, including reviews of simulation studies, has also grown dramatically

in the last 10 years. The purpose of this article is to present the findings of an umbrella review, guided by the methodology of the Joanna Briggs Institute (JBI) to examine the state of the science in SBLE, primarily within the nursing discipline. An umbrella review is a review methodology used in conducting a review of existing previous research syntheses (JBI, 2014). The primary reason to conduct an umbrella review is to summarize the evidence from many research syntheses (Becker & Oxman, 2011). Aromataris et al. (2015) explained that the aim of an umbrella review is not to repeat the research methodology of previous reviews, such as conducting searches, examining eligibility criteria, assessing studies for risk of bias, or conducting meta-analyses, but rather to provide an overall, broader picture of the research base in a given body of research or of treatments in clinical practice. An umbrella review can uncover a broad scope of issues related to a topic of interest

(JBI, 2014). Although the application of the findings in an umbrella review typically informs guidelines for clinical practice, the intent of this umbrella review is to summarize the findings of existing reviews on SBLE to further highlight known strengths and identify gaps in this area of pedagogical research. The intended outcome of this umbrella review is to identify an agenda for future research to enhance the rigor, depth, and breadth of the evidence base for SBLE as pedagogy primarily in nursing education among a variety of learning outcomes. The two previous published umbrella reviews were narrower in scope. Focused review of Doolen et al. (2016) only examined high-fidelity simulation reviews in undergraduate nursing education, excluding those reviews that included practicing nurses and other health care professionals. Likewise, the literature review by Lusk and Fater (2013) was limited to the effects of postsimulation debriefing related only to one learning outcome—clinical judgment development.

## Methodology

A JBI umbrella review protocol, inclusive of only quantitative studies, should contain the following elements: (a) a clearly articulated research question using the PICO (Population, Intervention, Comparator, and Outcome) mnemonic, (b) a structured search process to locate and select relevant existing reviews, (c) a method for critical appraisal of the reviews included, (d) a formal process of data extraction followed by a structure to summarize and present the data, and (e) fidelity to the identified protocol (Aromataris et al., 2015).

## Review Questions

1. What is the impact of SBLEs on learner outcomes for nurses across all levels of education and practice?
2. What have been the advances in the conceptualization and design of SBLEs?

## Inclusion Criteria

Inclusion criteria for syntheses in a JBI umbrella review requires that consideration to be given to (a) types of participants, (b) interventions/phenomena of interest, (c) outcomes, (d) context, and (e) types of studies (JBI, 2014). Details pertaining to characteristics of participants, such as age and other qualifying criteria, should parallel the research question. For this umbrella review, studies with participants who were nursing professionals at any level of education, including nursing students or nurses in practice, were included. The intervention/phenomena of interest was SBLE. The outcomes of interest were learner outcomes (e.g., knowledge, skills, attitudes), which were intentionally broadly defined in order to fully capture the state of simulation science. According to JBI (2014), the context will vary widely depending on the objective(s)/question(s) constructed

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