

Assessing the Impact of Simulation-Based Learning on Nursing Education: A Mixed-Methods Approach

Introduction

Nursing education has undergone a significant transformation in recent years, with an increasing emphasis on using simulation-based learning (SBL) to prepare students for the challenges of clinical practice. SBL provides a safe and controlled environment where nursing students can develop and refine their clinical skills, critical thinking, and decision-making capabilities. Despite the growing adoption of SBL in nursing education, there is a need for further research to assess its impact on student learning outcomes and readiness for clinical practice. This dissertation aims to investigate the effectiveness of SBL in nursing education using a mixed-methods approach, combining quantitative and qualitative data to provide a comprehensive understanding of the topic.

Several factors, including the increasing complexity of healthcare, the need for safe and effective patient care, and the limitations of traditional classroom-based instruction, have driven the use of SBL in nursing education. SBL allows nursing students to practice clinical skills and decision-making in a realistic setting without the risk of harming patients. It also provides opportunities for students to experience a wide range of clinical scenarios, including rare and high-risk situations that they may not encounter during their clinical placements.

However, despite the potential benefits of SBL, there is a lack of robust evidence on its effectiveness in nursing education. Previous studies have yielded mixed results, with some showing significant improvements in student learning outcomes, while others have found no significant differences compared to traditional teaching methods. There is also a need for further research on the factors that influence the successful implementation of SBL in nursing education programs, such as the design of simulation scenarios, the role of debriefing, and the integration of SBL into the nursing curriculum.

Research Questions

This dissertation aims to address the following research questions:

1. To what extent does SBL improve nursing students' clinical skills, critical thinking, and decision-making abilities compared to traditional teaching methods?
2. How do nursing students perceive the value and effectiveness of SBL in their learning experience?
3. What key factors influence the successful implementation of SBL in nursing education programs?

By addressing these questions, this research will provide valuable insights into the impact of SBL on nursing education and inform the development of evidence-based strategies for the effective use of SBL in preparing future nurses.

Literature Review

The literature review will provide a comprehensive overview of the current knowledge regarding SBL in nursing education. It will begin by examining the theoretical foundations of SBL, including experiential learning theory (Kolb, 1984) and situated learning theory (Lave & Wenger, 1991). Experiential learning theory emphasizes the importance of concrete experiences and reflective observation in learning. In contrast, situated learning theory highlights the role of social interaction and participation in communities of practice.

The review will then explore the various simulation technologies used in nursing education, such as high-fidelity patient simulators, virtual reality, and standardized patients. High-fidelity patient simulators are computerized mannequins that can simulate various physiological responses and clinical scenarios, allowing students to practice their skills in a realistic setting. Virtual reality simulations provide immersive learning experiences that can be accessed remotely, while standardized patients are trained actors who portray specific clinical cases and provide student feedback.

The literature review will also synthesize findings from previous studies investigating the impact of SBL on nursing students' learning outcomes. Several studies have reported significant improvements in clinical skills, critical thinking, and decision-making abilities among nursing students who participated in SBL compared to those who received traditional classroom instruction (Cant & Cooper, 2017; Shin, Park, & Kim, 2015). However, other studies have found no significant differences in learning outcomes between SBL and traditional teaching methods (Lapkin, Levett-Jones, Bellchambers, & Fernandez, 2010; Warren, Luctkar-Flude, Godfrey, & Lukewich, 2016).

The review will also examine the factors that influence the effectiveness of SBL in nursing education, such as the design of simulation scenarios, the role of debriefing, and the integration of SBL into the nursing curriculum. Well-designed simulation scenarios based on realistic clinical cases and incorporating evidence-based practices have been shown to enhance student learning outcomes (Jeffries, 2012). Debriefing, which involves a structured reflection and discussion of the simulation experience, is also considered a critical component of SBL that promotes deep learning and knowledge transfer to clinical practice (Dreifuerst, 2012). Integrating SBL into the nursing curriculum, including the timing and sequencing of simulation experiences, has also been identified as a key factor in successfully implementing SBL (Jeffries, Rodgers, & Adamson, 2015).

Methodology

This study will employ a mixed-methods approach, combining quantitative and qualitative data collection and analysis to provide a comprehensive understanding of the impact of SBL on nursing education.

Quantitative Phase

The quantitative phase will involve a quasi-experimental design, comparing nursing students' learning outcomes who participate in SBL with those who receive traditional classroom instruction. A sample of nursing students from multiple nursing programs will be recruited and randomly assigned to the SBL or control groups. The sample size will be determined using power analysis to ensure adequate statistical power to detect significant differences between groups.

Pre- and post-intervention assessments will be conducted to measure students' clinical skills, critical thinking, and decision-making abilities using validated instruments. Clinical skills will be assessed using the Creighton Competency Evaluation Instrument (CCEI), which is a standardized tool for evaluating nursing students' performance of clinical skills in a simulation setting (Hayden, Keegan, Kardong-Edgren, & Smiley, 2014). Critical thinking will be measured using the Health Sciences Reasoning Test (HSRT), a multiple-choice test that assesses reasoning skills in health-related contexts (Facione & Facione, 2006). Decision-making abilities will be evaluated using the Clinical Decision-Making Self-Confidence Scale (CDMSCS), a self-report measure of students' confidence in their clinical decision-making (White, 2014).

Qualitative Phase

The qualitative phase will involve semi-structured interviews with nursing students and faculty members to explore their perceptions and experiences of SBL. Purposive sampling will be used to select participants who can provide rich and diverse perspectives on the topic, including students with varying levels of exposure to SBL and faculty members with different roles and responsibilities in implementing SBL.

Interviews will be conducted using an interview guide that includes open-ended questions about participants' experiences with SBL, their perceptions of its effectiveness in promoting learning and preparing students for clinical practice, and their views on the factors that influence the successful implementation of SBL in nursing education programs. Interviews will be audio-recorded, transcribed verbatim, and analyzed using thematic analysis (Braun & Clarke, 2006). Thematic analysis systematically codes and categorizes qualitative data to identify key themes and patterns.

Data Integration

The quantitative and qualitative data will be integrated using a convergent parallel design (Creswell & Plano Clark, 2011). In this design, the quantitative and qualitative data are collected and analyzed separately, and the findings are then compared and contrasted to provide a comprehensive understanding of the topic. The quantitative data will provide objective measures of the impact of SBL on nursing students' learning outcomes. In

contrast, the qualitative data will provide insight into students and faculty members' subjective experiences and perceptions.

The findings from both phases will be integrated using a joint display, a visual representation of the quantitative and qualitative data side by side (Guetterman, Fetters, & Creswell, 2015). The joint display will allow for identifying areas of convergence and divergence between the quantitative and qualitative findings and will facilitate the development of a more comprehensive understanding of the impact of SBL on nursing education.

Significance and Implications

This dissertation will contribute to the growing body of knowledge on the effectiveness of SBL in nursing education. The findings will provide valuable insights into the impact of SBL on nursing students' learning outcomes and readiness for clinical practice and the factors that influence the successful implementation of SBL in nursing education programs.

This research has significant implications for nursing education and practice. By providing evidence-based recommendations for the effective use of SBL, this study can help nursing programs optimize their SBL practices and prepare nursing students for the challenges of clinical practice. The findings can also inform the development of best practices for designing and implementing SBL in nursing education, including selecting appropriate simulation technologies, designing realistic and challenging simulation scenarios, and using effective debriefing strategies.

In addition, this research can contribute to the ongoing debate about the role of SBL in nursing education and its potential to complement or replace traditional clinical placements. As the demand for clinical placements continues to grow and the availability of clinical sites becomes increasingly limited, SBL may offer a viable alternative for providing nursing students with the necessary skills and experience to enter the workforce as competent and confident practitioners.

Ultimately, the findings of this research can contribute to the development of a highly skilled and competent nursing workforce, which is essential for providing safe and high-quality patient care in an increasingly complex and challenging healthcare environment. By preparing nursing students with the knowledge, skills, and confidence to provide effective patient care, SBL can help to improve patient outcomes and enhance the quality of healthcare delivery.

Conclusion

This dissertation prospectus outlines a mixed-methods study to assess the impact of SBL on nursing education. By combining quantitative and qualitative approaches, this study aims to provide a comprehensive understanding of the effectiveness of SBL in improving nursing students' learning outcomes and readiness for clinical practice. The findings of this research will have important implications for nursing education and practice, contributing to the development of evidence-based strategies for the effective use of SBL in preparing future nurses.

The literature review will provide a foundation for understanding the current state of knowledge regarding SBL in nursing education, including the theoretical foundations, types of simulation technologies, and factors that influence its effectiveness. The methodology will employ a rigorous mixed-methods design, combining objective measures of student learning outcomes with subjective experiences and perceptions of students and faculty members.

The significance and implications of this research are far-reaching, with the potential to inform best practices for the design and implementation of SBL in nursing education, contribute to the ongoing debate about the role of SBL in nursing education, and ultimately improve patient outcomes and healthcare delivery. As the healthcare landscape continues to evolve and the demand for highly skilled and competent nurses grows, research on the effectiveness of SBL in nursing education will become increasingly important for ensuring the development of a workforce that is prepared to meet future challenges.

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