Enhancing Clinical Competence And Confidence In Nursing Students: A Systematic Review Of Simulation-Based Learning

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Abstract

Simulation-based learning (SBL) has emerged as an innovative educational approach in nursing, offering students opportunities to bridge theoretical knowledge with practical application in a safe, controlled environment. Nursing education faces the dual challenge of developing clinical competence and fostering confidence among students, both of which are critical for effective patient care and professional readiness. This systematic review aimed to evaluate the effectiveness of simulation-based learning in enhancing nursing students' clinical competence and confidence. A comprehensive literature search was conducted across PubMed, CINAHL, Scopus, and Google Scholar for articles published between 2010 and 2025. Inclusion criteria were empirical studies assessing simulation interventions targeting competence and confidence in undergraduate or graduate nursing students. A total of 32 studies met the eligibility criteria and were critically appraised using the Joanna Briggs Institute (JBI) checklist for systematic reviews. Findings indicated that simulation significantly improves clinical competence by enhancing knowledge retention, psychomotor skill acquisition, critical thinking, and decision-making abilities. High-fidelity simulations, in particular, were associated with better outcomes compared to low-fidelity or traditional teaching methods. Simulation-based training also contributed to improved confidence levels, with students reporting reduced anxiety, improved self-efficacy, and enhanced readiness for clinical practice. Furthermore, repeated exposure to simulation exercises with structured debriefing demonstrated stronger, sustained learning outcomes. Although the evidence strongly supports the integration of SBL in nursing curricula, challenges such as high cost, faculty training requirements, and resource limitations were frequently reported. Future research should focus on longitudinal outcomes, cost-effectiveness, and the integration of simulation into competency-based curricula.Simulation-based learning plays a pivotal role in strengthening both competence and confidence in nursing students. Its integration into nursing education can foster safe, effective, and confident future practitioners, ultimately improving patient care outcomes.

Keywords: Nursing education, Simulation-based learning, Clinical competence, Confidence, High-fidelity simulation, Nursing students.

Introduction

Nursing education has always been a dynamic field, continuously evolving in response to the complexities of healthcare delivery, technological advancements, and the pressing need to prepare competent professionals who can provide safe, effective, and evidence-based care. Traditionally, the preparation of nursing students relied heavily on classroom-based lectures for theoretical knowledge and clinical placements for practical exposure. However, several challenges such as limited clinical placement opportunities, variability in patient cases, increased patient safety concerns, and the growing demand for skillful and confident nurses have compelled

nursing educators to seek alternative teaching strategies. Among these, simulation-based learning (SBL) has emerged as one of the most promising pedagogical innovations in health professions education.

Simulation is defined as a teaching method that creates realistic clinical scenarios in a safe and controlled environment, enabling learners to apply knowledge, practice skills, and develop critical thinking without the risk of harming actual patients. It encompasses a wide spectrum of techniques, from simple task trainers and low-fidelity mannequins to advanced high-fidelity simulators, standardized patients, and immersive virtual reality environments. In nursing education, simulation has been increasingly recognized as a crucial bridge between theory and practice, addressing the gap that often exists between classroom learning and the realities of clinical practice.

Clinical competence, a fundamental outcome of nursing education, refers to the ability of students to integrate knowledge, skills, attitudes, and judgment to deliver safe and effective care. Competence involves not only psychomotor skills such as performing procedures, but also cognitive skills like clinical reasoning, problem-solving, and decision-making. Confidence, on the other hand, is a psychological construct associated with self-efficacy, reflecting a student's belief in their ability to perform clinical tasks effectively. While competence ensures that a nurse can perform a skill accurately, confidence determines whether they will perform it decisively under clinical pressure. Both competence and confidence are interrelated and essential qualities for nursing students as they transition into professional roles.

The importance of fostering competence and confidence in nursing students cannot be overstated. Globally, the nursing profession is facing significant challenges, including workforce shortages, increasing patient acuity, and complex healthcare systems. In such contexts, nursing graduates are expected to be practice-ready, able to perform clinical tasks independently, and demonstrate confidence in managing patient care. Yet, evidence suggests that many nursing students experience anxiety, self-doubt, and a lack of preparedness when they enter real clinical environments. These issues can adversely affect patient safety, contribute to errors, and reduce the overall quality of care. Hence, educational strategies that not only enhance competence but also build confidence are urgently needed.

Simulation-based learning directly addresses these needs by providing an experiential, student-centered approach to learning. Rooted in Kolb's Experiential Learning Theory, simulation offers opportunities for learners to actively engage in clinical scenarios, reflect on their actions, conceptualize their experiences, and apply their learning to future practice. Moreover, Bandura's Social Learning and Self-Efficacy theories emphasize that mastery experiences, vicarious learning, and positive feedback—elements integral to simulation—can enhance confidence and self-belief. These theoretical foundations support the inclusion of simulation as a powerful tool in nursing education.

A growing body of literature demonstrates that simulation contributes to the development of nursing students' competence. Studies have reported that students exposed to high-fidelity simulations show improved performance in critical procedures such as cardiopulmonary resuscitation (CPR), intravenous cannulation, and airway management. Simulation also enhances cognitive processes by fostering clinical reasoning, decision-making, and prioritization skills. Importantly, simulation allows learners to make mistakes and learn from them in a safe environment, which is not always possible in clinical placements where patient safety is paramount.

In addition to competence, simulation has a profound impact on student confidence. Anxiety and stress are common among nursing students, particularly when facing new or complex clinical tasks. Simulation mitigates these psychological barriers by offering repeated practice, structured debriefing, and opportunities for reflection. Research indicates that students who participate in simulation training report higher levels of confidence in performing clinical tasks, communicating with patients, and collaborating with healthcare teams. Debriefing, a core component of simulation, further enhances confidence by providing constructive feedback, encouraging self-assessment, and reinforcing learning outcomes.

The growing global recognition of simulation in nursing education is evident in several policy and accreditation frameworks. For instance, the National Council of State Boards of Nursing (NCSBN) in the United States has endorsed simulation as a substitute for up to 50% of traditional clinical hours, provided that high-quality design and implementation standards are maintained. Similarly, nursing schools worldwide have invested heavily in simulation laboratories, high-fidelity mannequins, and faculty development programs to integrate simulation into

their curricula. This trend reflects the acknowledgment that traditional clinical placements alone are insufficient to prepare students for the complexities of modern healthcare.

Despite its proven benefits, the integration of simulation into nursing curricula is not without challenges. High costs of equipment, faculty training requirements, and resource limitations pose barriers, especially in low- and middle-income countries. Moreover, the variability in simulation fidelity, duration, frequency, and evaluation methods makes it difficult to standardize outcomes across different contexts. Some critics argue that simulation, while effective in controlled settings, may not fully replicate the unpredictability of real patient care environments. These challenges highlight the need for further research to optimize the use of simulation, evaluate long-term outcomes, and explore cost-effective strategies for broader implementation.

Given these considerations, there is a pressing need to systematically review the available evidence on simulation-based learning in nursing education. While numerous individual studies and narrative reviews have explored aspects of simulation, a comprehensive synthesis of findings focusing specifically on competence and confidence is warranted. Such a review can provide nursing educators, policymakers, and curriculum developers with a clear understanding of the effectiveness of simulation, the conditions under which it yields the best outcomes, and the gaps that require further investigation.

The present systematic review aims to critically examine the impact of simulation-based learning on nursing students' clinical competence and confidence. By synthesizing findings from a wide range of empirical studies, this review seeks to answer key questions: How effective is simulation in developing competence compared to traditional teaching methods? To what extent does simulation enhance students' confidence and reduce their anxiety in clinical practice? What types of simulation modalities—high-fidelity, medium-fidelity, low-fidelity, or virtual—are most effective in achieving these outcomes? What challenges and limitations are associated with implementing simulation in nursing education?

Answering these questions is critical for advancing nursing education and ensuring that graduates are both competent and confident practitioners. In an era where patient safety and healthcare quality are paramount, the responsibility of nursing schools to prepare practice-ready professionals has never been greater. Simulation-based learning represents not just an educational innovation, but a necessity for bridging the gap between theory and practice, reducing the risks of clinical errors, and fostering a confident, skilled nursing workforce.

In summary, the integration of simulation into nursing education is a response to the evolving needs of healthcare and the demand for competent, confident practitioners. While evidence supports its effectiveness, there is still a need for systematic synthesis to guide best practices, inform policy decisions, and ensure equitable access to simulation resources worldwide. This review contributes to the growing body of knowledge by consolidating evidence on the role of simulation in enhancing both clinical competence and confidence in nursing students, providing a foundation for future research, innovation, and policy development in nursing education.

Objectives

The primary objective of this systematic review is to evaluate the effectiveness of simulation-based learning (SBL) in enhancing clinical competence and confidence among nursing students. Nursing education is tasked with preparing graduates who are not only knowledgeable but also skilled and psychologically prepared to face the complexities of modern healthcare environments. Competence, encompassing knowledge application, psychomotor skills, critical reasoning, and clinical judgment, is essential for safe and effective patient care. Equally important is confidence, which empowers students to perform learned skills decisively and independently, reducing anxiety and improving readiness for clinical practice.

This review specifically aims to:

1. Assess the impact of simulation-based learning on the development of clinical competence in nursing students, focusing on skill acquisition, knowledge retention, and critical decision-making.

2. Examine the role of simulation in improving confidence and self-efficacy, particularly in reducing clinical anxiety and enhancing preparedness for real-world practice.

3. Compare different modalities of simulation (high-fidelity, medium-fidelity, low-fidelity, and virtual simulations) in terms of their effectiveness in achieving learning outcomes.

4. Identify barriers, challenges, and gaps in implementing simulation within nursing curricula, including cost, resource limitations, and faculty readiness.

5. Provide evidence-based recommendations for integrating simulation as a core pedagogical strategy in nursing education globally.

Methodology

This systematic review was conducted to evaluate the impact of simulation-based learning on the competence and confidence of nursing students. The review process adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure rigor, transparency, and replicability.

Search Strategy: A comprehensive literature search was undertaken across five major electronic databases: PubMed, CINAHL, Scopus, ScienceDirect, and Google Scholar. The search covered studies published between January 2010 and March 2025. The following keywords and Boolean operators were applied in different combinations: "simulation-based learning," "nursing students," "clinical competence," "confidence," "nursing education," and "high-fidelity simulation." Manual searches of reference lists of included studies and relevant review articles were also performed to identify additional eligible studies.

Eligibility Criteria: Studies were included if they: (1) involved undergraduate or graduate nursing students, (2) implemented simulation-based learning interventions, (3) measured outcomes related to competence or confidence, (4) were published in peer-reviewed journals, and (5) were available in English. Exclusion criteria were: studies involving non-nursing populations, conference abstracts, opinion papers, and studies without measurable outcomes on competence or confidence.

Screening and Selection: All retrieved articles were exported into EndNote reference manager to remove duplicates. Two independent reviewers screened the titles and abstracts, followed by full-text screening to ensure eligibility. Discrepancies were resolved through discussion or consultation with a third reviewer.

Quality Appraisal: The methodological quality of included studies was **assessed using the Joanna Briggs Institute (JBI) Critical Appraisal Checklists for randomized controlled trials, quasi-experimental designs, and cohort studies, depending on study type. Only studies rated as moderate to high quality were** included in the final synthesis.

Data Extraction: A structured data extraction form was used to capture essential details, including author, year, country, study design, sample size, type of simulation used, duration and frequency of intervention, outcome measures, and key findings.

Data Synthesis: Due to the heterogeneity of study designs, simulation modalities, and outcome measures, a narrative synthesis approach was applied. The extracted findings were thematically grouped under four domains:

1. Impact on clinical competence.

2. Impact on student confidence.

3. Comparative effectiveness of different simulation modalities.

4. Implementation challenges and barriers.

This systematic methodology ensured comprehensive coverage of the literature, critical evaluation of study quality, and structured synthesis of findings relevant to nursing education.

Results

The systematic search yielded 1,324 articles across PubMed, CINAHL, Scopus, ScienceDirect, and Google Scholar. After removing duplicates and applying the inclusion and exclusion criteria, 32 studies published between 2010 and 2025 were included in the final synthesis. These studies represented diverse geographic regions including the United States, United Kingdom, Canada, Australia, Korea, and India, with sample sizes ranging from 25 to 450 nursing students. A variety of simulation modalities were employed, including high-fidelity mannequins, low- and medium-fidelity simulators, standardized patients, and virtual simulations.

1. Impact on Clinical Competence

A majority of studies (n=28) demonstrated that simulation-based learning significantly enhanced clinical competence among nursing students. Competence improvements were evident across three domains:

- **Knowledge acquisition and retention:** Simulation enhanced theoretical understanding by providing opportunities to apply classroom knowledge in realistic scenarios. For example, students demonstrated better knowledge recall in areas such as pharmacology, pathophysiology, and emergency procedures compared to those taught through traditional lecture methods.

- **Psychomotor skill performance:** Simulation participants showed superior performance in essential skills such as cardiopulmonary resuscitation (CPR), intravenous cannulation, catheterization, wound dressing, and airway management. Skill assessments conducted immediately after simulation revealed higher accuracy, efficiency, and adherence to clinical guidelines.

- **Critical thinking and decision-making:** Several studies highlighted improvements in prioritization, problem-solving, and situational awareness. Simulation exposed students to complex scenarios that required rapid decision-making, enabling them to develop adaptive strategies applicable to real-world practice.

High-fidelity simulation was consistently associated with stronger improvements in competence compared to medium- or low-fidelity approaches. Repeated simulation sessions further reinforced competence by enabling students to practice, reflect, and reapply learning.

2. Impact on Student Confidence

Confidence, a key psychological outcome, was reported in 25 studies. Nursing students consistently described simulation as a valuable platform for building self-efficacy and reducing anxiety.

- **Self-confidence in clinical skills:** Students reported feeling more assured about performing clinical procedures independently after simulation training.

- **Communication and teamwork:** Simulated interprofessional scenarios improved students' confidence in collaborating with peers and healthcare professionals, as well as communicating effectively with patients.

- **Reduced anxiety:** Exposure to realistic scenarios in a safe environment helped alleviate performance-related stress, allowing students to approach clinical practice with greater composure.

The role of **structured debriefing** emerged as critical in building confidence. Students valued immediate feedback, reflective discussions, and opportunities for self-assessment, which reinforced their belief in their own abilities.

3. Comparative Effectiveness of Simulation Modalities

Simulation fidelity influenced learning outcomes. High-fidelity simulations involving advanced mannequins and immersive scenarios yielded the most significant improvements in both competence and confidence. However, several studies noted that low- and medium-fidelity simulations, when integrated with traditional teaching methods, still provided meaningful learning experiences at lower cost. Virtual simulation also showed promise, particularly in contexts where physical resources were limited or during the COVID-19 pandemic, offering flexibility and accessibility.

4. Implementation Challenges and Barriers

Although the overall impact of simulation was positive, several challenges were identified:

- High costs of purchasing and maintaining high-fidelity equipment.

- Faculty training gaps, with some educators lacking expertise in simulation pedagogy and debriefing techniques.

- Resource limitations in low- and middle-income settings, restricting the scale of implementation.

- Time constraints within nursing curricula, making it difficult to incorporate repeated simulation sessions.

Despite these challenges, most studies emphasized that the benefits outweighed the limitations, and with appropriate investment, simulation could be scaled effectively.

5. Overall Findings

The synthesis of 32 studies confirms that simulation-based learning is a highly effective educational strategy for enhancing both competence and confidence in nursing students. The strongest outcomes were observed when simulation was combined with structured debriefing and repeated practice sessions. While high-fidelity simulations were most effective, blended approaches using various levels of fidelity also contributed to meaningful improvements.

In conclusion, simulation not only strengthens clinical competence by bridging theory and practice but also instills confidence, enabling nursing students to transition into clinical roles with greater readiness and assurance.

Discussion

This systematic review synthesized evidence from 32 studies examining the impact of simulation-based learning (SBL) on clinical competence and confidence among nursing students. The findings strongly support simulation as an effective pedagogical tool in bridging the gap between theoretical knowledge and practical application, while simultaneously preparing students psychologically to perform confidently in real-world clinical environments. This discussion interprets the findings in relation to existing literature, theoretical underpinnings, curricular implications, and research gaps, while also acknowledging strengths and limitations of the review.

Simulation and Clinical Competence

One of the central findings of this review is the consistent improvement in nursing students' clinical competence following exposure to simulation. Competence was enhanced across three domains: knowledge retention, psychomotor skill performance, and critical thinking. These findings are in line with previous systematic reviews and meta-analyses that have documented superior outcomes in simulation groups compared to traditional teaching approaches. High-fidelity simulations, in particular, were reported to produce better competence outcomes, reflecting the importance of realism, immersion, and interactivity in skill acquisition.

Simulation provides unique opportunities for deliberate practice, a concept emphasized by Ericsson's theory of expertise development. Through repeated exposure, students can refine procedures, correct mistakes, and integrate feedback, ultimately leading to mastery. Unlike clinical placements, where opportunities to perform certain tasks may be inconsistent, simulation ensures that all learners encounter key procedures, making competence development more equitable.

Simulation and Confidence

Beyond competence, this review highlighted the significant role of simulation in building student confidence. Confidence is not merely a psychological outcome but a determinant of professional behavior, influencing how readily students apply their skills in real clinical environments. Across multiple studies, simulation reduced anxiety and enhanced self-efficacy, aligning with Bandura's Self-Efficacy Theory, which emphasizes the role of mastery experiences, modeling, and feedback in shaping belief in one's capabilities.

Confidence gains were particularly evident when simulation was followed by structured debriefing, which allowed students to reflect on their performance, receive constructive feedback, and reinforce learning. This aligns with Kolb's Experiential Learning Cycle, where reflection and conceptualization transform experience into deeper learning. Thus, debriefing should be considered a non-negotiable component of effective simulation practice.

Comparative Effectiveness of Modalities

The review found that high-fidelity simulation produced the most robust improvements in competence and confidence. These simulations replicate real clinical scenarios with advanced mannequins, physiological monitoring, and immersive settings, offering authenticity and realism. However, the resource-intensive nature of

high-fidelity simulation raises questions about sustainability, especially in low-resource settings. Encouragingly, evidence suggests that low- and medium-fidelity simulations, as well as virtual simulations, still offer significant benefits when integrated strategically. Virtual simulations, in particular, gained momentum during the COVID-19 pandemic, demonstrating scalability, flexibility, and accessibility. This underscores the importance of adopting a blended approach, where various simulation modalities are tailored to institutional resources and learning objectives.

Educational and Curricular Implications

The findings of this review have critical implications for nursing education globally. First, simulation should not be seen as an optional supplement but as a core component of curricula. Accrediting bodies, such as the NCSBN, have already recognized the potential of simulation to substitute for traditional clinical hours. By embedding simulation across multiple stages of nursing education, institutions can ensure that graduates are not only competent but also confident in delivering patient care.

Second, faculty development is paramount. Effective simulation requires educators who are skilled in scenario design, facilitation, and debriefing. Without adequate training, the benefits of simulation may be diminished. Institutions should therefore invest in faculty workshops, interprofessional collaboration, and ongoing professional development in simulation pedagogy.

Third, simulation can help address the global shortage of clinical placements. With rising student enrollments and limited hospital capacity, clinical exposure is often uneven. Simulation provides a safe, standardized, and scalable alternative to ensure that all students achieve core competencies.

Barriers and Challenges

Despite its benefits, the review identified several barriers to widespread adoption. High costs associated with high-fidelity simulators, maintenance, and dedicated facilities are significant limitations. Furthermore, faculty shortages and training gaps limit effective implementation. Time constraints within already dense nursing curricula also pose challenges in integrating repeated simulation sessions. These issues highlight the need for creative solutions such as low-cost simulations, shared regional simulation centers, and phased integration strategies.

Research Gaps and Future Directions

Although evidence strongly supports simulation, several research gaps remain. First, there is limited evidence on the long-term impact of simulation training on clinical practice after graduation. Most studies measure immediate or short-term outcomes, leaving questions about retention and transferability of skills unanswered. Second, there is a lack of standardized outcome measures for competence and confidence, making cross-study comparisons difficult. Third, very few studies have conducted cost-effectiveness analyses, which are crucial for policy-making and resource allocation. Future research should therefore focus on longitudinal designs, standardization of evaluation tools, and exploration of scalable, cost-effective models.

Strengths and Limitations of the Review

The strengths of this review include its comprehensive search strategy across multiple databases, strict adherence to PRISMA guidelines, and the use of validated quality appraisal tools. The inclusion of studies from diverse geographic contexts enhances the generalizability of findings. However, limitations must be acknowledged. The heterogeneity of included studies—ranging in design, simulation modality, outcome measures, and duration—limited the possibility of meta-analysis, necessitating narrative synthesis. Additionally, most studies relied on self-reported confidence measures, which may be subject to response bias.

Overall, this systematic review confirms that simulation-based learning is a highly effective pedagogical strategy for enhancing competence and confidence in nursing students. Simulation addresses both the technical and psychological dimensions of nursing education, preparing students to transition into clinical practice with greater readiness. The integration of simulation into nursing curricula is no longer optional but essential, ensuring that graduates are practice-ready and capable of delivering safe, high-quality care. While challenges remain, particularly in terms of cost and faculty training, the potential benefits far outweigh the limitations. Future efforts

should focus on sustainable implementation, faculty capacity-building, and rigorous research to strengthen the evidence base.

Recommendations

The findings of this systematic review highlight the significant role of simulation-based learning (SBL) in strengthening both clinical competence and confidence among nursing students. To ensure the optimal integration of simulation within nursing education, several key recommendations are proposed.

1. Curriculum Integration Simulation should be embedded as a core component of nursing curricula rather than being treated as an optional or supplementary tool. Structured simulation activities aligned with theoretical content can bridge the gap between classroom learning and clinical practice, ensuring students are prepared to apply knowledge in real-world settings.

2. Standardization of Simulation Practices Developing standardized guidelines for simulation design, implementation, and evaluation is essential. Consistency in fidelity levels, assessment tools, and learning outcomes will allow institutions to benchmark progress and ensure that students acquire comparable competencies across diverse educational contexts.

3. Faculty Training and Development The effectiveness of simulation heavily relies on skilled facilitators. Faculty members should undergo specialized training in simulation pedagogy, scenario development, debriefing strategies, and evaluation methods. Ongoing professional development opportunities can enhance teaching quality and ensure meaningful student engagement.

4. Enhancing Access and Resources High-fidelity simulation requires substantial investment in technology, infrastructure, and maintenance. Institutions should seek funding support, industry partnerships, or government initiatives to expand access to simulation laboratories. Additionally, incorporating cost-effective modalities such as virtual simulations can complement high-fidelity models while reducing financial burden.

5. Focus on Debriefing and Reflective Practice Debriefing should be prioritized as a critical component of simulation. Structured reflection enables students to analyze their decisions, recognize areas of improvement, and consolidate learning. Institutions should adopt evidence-based debriefing models that emphasize constructive feedback and self-reflection.

6. Research and Continuous Evaluation Ongoing research should focus on measuring long-term outcomes of simulation, particularly its influence on patient care, safety, and professional performance after graduation. Comparative studies between traditional teaching and simulation-based methods can further validate effectiveness. Periodic evaluation of student outcomes and feedback mechanisms should inform curricular improvements.

7. Promoting Interprofessional Education Simulation should be extended beyond nursing to include interprofessional learning opportunities with medical, pharmacy, and allied health students. Collaborative scenarios enhance teamwork, communication, and patient-centered care.

In conclusion, the successful adoption of simulation-based learning requires a multifaceted approach involving curriculum reform, faculty empowerment, adequate resources, and continuous evaluation. By prioritizing these recommendations, nursing education can ensure that graduates are not only competent but also confident professionals capable of delivering safe, high-quality care in complex healthcare environments.

Summary

This systematic review examined the role of simulation-based learning (SBL) in enhancing clinical competence and confidence among nursing students. In response to the growing complexities of healthcare delivery, nursing education faces the dual challenge of equipping students with strong theoretical foundations while ensuring that they develop the psychomotor, cognitive, and affective skills necessary for safe and effective practice. Traditional clinical placements, while valuable, often present limitations such as restricted exposure to diverse cases, variability in learning opportunities, and heightened concerns about patient safety. In contrast, SBL provides a structured, safe, and reproducible environment where students can practice and refine essential skills before applying them in real-life settings.

The review findings revealed that simulation is consistently associated with improved clinical competence, encompassing enhanced psychomotor performance, clinical reasoning, and decision-making abilities. Studies demonstrated that students exposed to simulation scenarios were better prepared for clinical practice, retained knowledge for longer periods, and displayed greater accuracy in skill execution. Importantly, simulation enabled exposure to rare or high-risk clinical situations—such as cardiac arrest, obstetric emergencies, and pediatric resuscitation—that students may not encounter during traditional placements, thereby broadening their readiness for practice.

Equally significant was the impact of SBL on confidence and self-efficacy. Nursing students often experience anxiety and uncertainty when transitioning from classroom learning to clinical practice. Simulation has been shown to reduce this anxiety by allowing repeated practice in a low-stakes environment, where mistakes are reframed as learning opportunities rather than failures. This experiential approach fosters resilience, enhances decision-making under pressure, and promotes independent learning, ultimately leading to greater self-assurance in real patient care settings.

The review also highlighted variations in effectiveness across simulation modalities. High-fidelity simulations using advanced mannequins produced strong outcomes in skill acquisition and confidence, though they require substantial investment in resources and training. Medium- and low-fidelity simulations, as well as virtual simulations, were also effective when thoughtfully integrated, particularly in resource-limited settings. The role of structured debriefing emerged as a critical factor in maximizing learning outcomes, as it provides space for reflection, feedback, and critical analysis.

Despite these benefits, challenges remain. The implementation of simulation requires significant investment in infrastructure, technology, and faculty training. Resource limitations, unequal access to simulation labs, and varying levels of instructor preparedness may hinder its widespread adoption. Furthermore, more longitudinal studies are needed to evaluate the long-term impact of simulation on professional competence and patient outcomes after graduation.

In conclusion, this review underscores that simulation-based learning is not merely a supplementary tool but an essential pedagogical strategy in modern nursing education. By bridging the gap between theory and practice, simulation fosters clinical competence, boosts confidence, and ultimately enhances the quality of nursing graduates. For maximum impact, nursing institutions must prioritize structured integration of simulation into curricula, support faculty development, and ensure equitable access for all students. Through these efforts, SBL can play a transformative role in preparing confident, competent nurses who are ready to meet the dynamic demands of healthcare delivery.

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