

Review Article

# Self-Confidence and Satisfaction of Nursing Students after Simulation Experience: Literature Review

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**Abstract** - Simulation is becoming increasingly important in nursing education programs. Ensuring patient safety is the basis of the healthcare system. Nursing students and nurses can improve their skills and abilities in a safe environment through simulation, which helps to ensure patient safety.

The purpose of the review is to provide the best available evidence on the effectiveness of simulation on the self-confidence and satisfaction of nursing students.

A literature review on simulation in nursing education from 2011 to 2021 was conducted. The two databases that were included are Science Direct and Web of Science. The search terms were: simulation, undergraduate nursing students, education, nursing, satisfaction, confidence, self-confidence, Saudi Arabia, and worldwide. In total, there were 106 articles included in the review. Studies with quantitative, qualitative, and mixed-methodology designs were included.

This review revealed that simulation is an effective teaching strategy that helps nursing students gain the necessary self-confidence for future clinical practice. However, the gap between theory and practice; and the transferability to real-world practice weren't covered in the research articles.

Simulation is an effective educational method in nursing education. The results suggest future research studies about the transferability to real clinical practice and simulation's impact on patient outcomes based on the patient perspectives.

**Keywords** - Simulation, Nursing, Satisfaction, Self-confidence, Literature review.

## I. INTRODUCTION

The evaluation of learning outcomes among nursing students is challenging. There is a need for conducting more research studies that assess the impact of simulation on

nursing students' self-confidence and satisfaction. In the current paper, a review is conducted to offer comprehensive information and answer the following review question: What is the impact of simulation on nursing students' satisfaction and self-confidence in nursing education programs? This review aims to provide the best available evidence on the effectiveness of simulation in nursing education programs and its impact on the self-confidence and satisfaction of nursing students around the world.

## II. BACKGROUND

The simulation history can be traced back to World War II, when Jon Von Neumann and Stanislaw Ulam worked on a problem involving neutron behaviour. In nursing education programs, simulation is becoming increasingly important. Simulation has been a part of all nursing curriculums and programs since the 1950s. Simulation-based clinical education is a beneficial educational strategy that allows nursing students to practice their clinical and decision-making abilities in various real-life situations without jeopardizing the patient's safety [1]. Simulation ranges from low-fidelity to high-fidelity [54].

Ensuring patient safety is the basis of the healthcare system. In 2012, medical errors by nurses and other healthcare personnel were responsible for 45.78 per cent of Saudi Arabia's deaths [8]. Research studies suggested continual training for nursing students and freshly graduated nurses to reduce medication errors in the clinical setting due to new nurses' high prevalence of medication errors [102]. Nursing students and nurses can improve their skills and abilities in a safe environment through simulation, which helps to ensure patient safety [37].

Simulation is described as an imitation of real practice [83]. For the past 20 years, simulation has been employed in nursing education since students benefit much from experience. Simulation is a successful teaching approach that increases nursing student enrolment while also reducing staff



shortages [91]. The advantages of simulation include providing immediate feedback, repetitive performance or practice, adjusting the difficulty level, the opportunity for individualized learning, and adaptability to various types of learning methods [54]. On the other hand, assessing the learning outcomes of students is challenging.

### III. REVIEW METHOD

A literature search was undertaken to find accessible research studies on simulation experiences among nursing students in Saudi Arabia and worldwide. This contributes to a better understanding of the impact of simulation experiences on nursing students' self-confidence and satisfaction. The review method has undergone the following phases: identification, screening, quality, and including articles in review.

#### A. Searching Criteria: Selection Criteria

Since the introduction of simulation in 1950, there has been no time limit for assessing research findings to produce good evidence. The study design, period, and setting were not included in the inclusion criteria for the research studies to be reviewed. The search included quantitative, qualitative, and mixed-methodology designs about the simulation experiences and an evaluation of the students' self-confidence and satisfaction levels after simulation experiences.

#### B. Searching Strategy: Databases Searched

It has been searched in the Science Direct and Web of Science databases. These databases provide comprehensive literature sources in the domains of healthcare and nursing.

#### C. Searching Keywords

The following keywords and terms were used in the search: 'simulation,' 'undergraduate nursing students,' 'education,' 'nursing,' 'satisfaction,' 'confidence,' 'self-confidence,' 'Saudi Arabia,' and 'worldwide.' Moreover, linking conjunctions such as "AND" and "OR" was utilized to link between words in the search.

#### D. Methods for Quality Assessment

The duplicates were removed. Studies with unclear results were not included. Assessing the quality of data has been done by focusing on the nature of the topic and the richness of data.

## IV. RESULTS

#### A. Searching Results

Research studies were published within the last ten years, from 2011 to 2021. In 1990, the first research study on nursing simulation experiences was published [41]. One research study was published in 2008, one study in 2009, and two studies in 2010. This study found and selected many relevant papers for review; nevertheless, hundreds of research projects and articles were deleted due to duplication. The results of the literature review search came from two

major databases. In the initial search of Science Direct, roughly 1,979 research studies were found, with 307 relevant findings. 102 studies were of good quality.

Moreover, the Web of Science yielded 156 initial search results. After deleting duplicates, ten articles related to the search topic were discovered. Four of the studies were of high quality. Overall, there were 106 studies included in the review. See Figure 1 for more information. The review included national and international research studies.

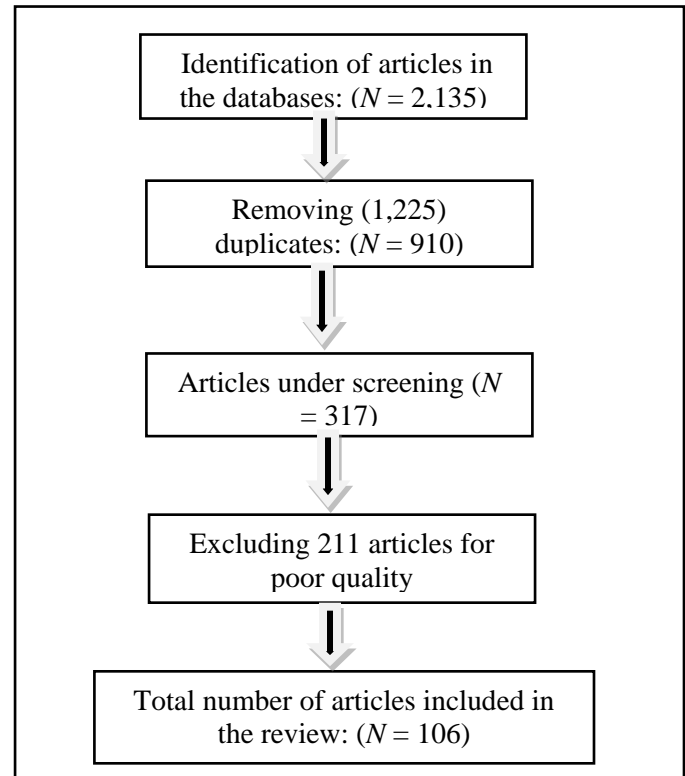


Fig. 1 Process of Literature Review

#### B. The Main Findings of Review

##### a) Self-Confidence

Many research studies highlighted the impact of simulation on the self-confidence of nursing students. A study revealed that after three simulation sessions, the critical thinking scores in School A increased by 2.45. While in school B, the score was 1.50 after two simulation sessions and 0.66 in school C after one simulation session [95]. A study showed that the critical thinking scores in the simulation group ( $12 \pm 1.6$ ) were higher than the scores in the control group ( $6.6 \pm 2.2$ ) [7]. Simulation improves nursing education as it increases nursing students' critical thinking [96]. Simulation is a good educational method that ensures patient safety [22]. A study reported high self-confidence scores of 3.70/5 after simulation experiences [8].

Several studies revealed that the clinical judgment skills of nursing students had been improved after simulation sessions [30, 107, 110]. 114 nursing students revealed that

their self-confidence increased after the simulation experience [15]. In addition, more studies showed that the self-confidence of nursing students had been increased after simulation as it improved their skills [9, 47]. Nursing students reported feeling more confident after simulation experiences [6]. A study reported high self-confidence scores in the simulation group (30.8) than the scores of the control group (24.7) [7]. A study found that 28 nursing students felt confident as simulation improved their problem-solving and decision-making skills [33].

Patient safety is ensured via simulation as it helps in reducing the number of errors in real practice [16]. Simulation provides an opportunity for nursing students to gain the necessary skills in a safe environment [22]. A study found that nursing students have better skills in medication administration in the simulation group (59.5%) than in the control group (9.3%) [42]. A study examined the effect of simulation on the self-confidence of 54 nursing students. They found that students' self-confidence has been increased as they have an improvement in communication, knowledge, documentation, and skills ( $p < 0.001$ ) [63]. A study revealed that 91 students had self-confidence after the simulation [76]. Moreover, a study reported that the self-confidence scores among 76 nursing students had been increased from 5.36 to 23.00 after simulation experiences [99]. A quasi-experimental study reported that the simulation group had higher self-confidence scores (43.67) than the control group (33.3) [17].

A study recommended using simulation in nursing education to enhance the knowledge and confidence in medication administration [49]. The utility of simulation in the CPR program enhances the skills and self-confidence of the students [26]. The integration of simulation into traditional classes will increase the self-confidence of nursing students and will prepare them for National Council Licensure Examination (NCLEX) [71]. Simulation increases the confidence of students related to patient safety [18]. Also, it helps them to gain the skills of taking care of end-of-life patients [44, 84]. A study revealed a high self-confidence of nursing students after simulation ( $mean=31.16$ ) [27].

It was reported in a study that an increase in self-confidence scores from 3.57 to 9.84 after simulation sessions in practising basic life support [70]. It has been stated that simulation enhances the students' engagement [45]. A study reported that after using simulation with nursing students, their self-confidence scores increased by 1.28, and their grades increased by 0.87 [85]. In addition, a study showed an increase in self-confidence scores of nursing students from 4.01 to 5.92 [92]. Many organizations, such as American Nurses Association and National League for Nursing, recommend using simulation in nursing schools to achieve students' learning outcomes and high-quality care [56, 58, 111]. Several studies such as [64, 77, 108] recommend using simulation to decrease anxiety among students and increase their self-confidence.

Students can practice patient care in a safe environment via simulation and face their anxiety [81]. Students can practice skills in various areas such as maternity, mental health, and medical-surgical [98]. Stoodley et al. (2020) found a higher self-confidence score among nursing students at a university in South Australia, which increased from 1.4 to 3.6 after simulation sessions. Other studies found that students felt more confident after simulation as their knowledge and communication skills were improved [25, 59]. Organizing and managing the simulation help improve the self-confidence of nurses and students [12]. A study found an increase in students' self-confidence after simulation within three months [112]. Simulation helps students be confident in maternity and pediatric courses [29, 65]. Also, students can deal with complex case scenarios [82].

A qualitative study found that nursing students are more self-confident after simulation as they can practice skills that mimic clinical practice [60]. Nurse educators can encourage students to enhance self-confidence via simulation [14]. Simulation helps students in improving their collaboration. Also, it enhances their communication skills [43]. Simulation helps students to achieve their learning outcomes [110]. In addition, it helps the students be confident in providing safe care and enhances their clinical reasoning and critical thinking skills [3, 34, 93, 94, 113]. Simulation increases students' self-confidence about caring for mental health patients [61]. Also, it decreases their anxiety when dealing with them [19, 92]. Based on a study, self-confidence scores increased from 106.97 to 118.75 [109]. In another study, it increased from 46 to 57 [89]; and in an additional study, it increased from 1.3 to 2.0 [101].

A study found that students became confident in intravenous insertion after their simulation sessions [86]. Simulation makes students face their fears and prepares them for future practice [78, 88]. The more realistic the simulation, the more confidence the students will get [68]. Students have self-confidence in clinical practice as they had similar cases in the simulation laboratory [4]. Using many simulation sessions will increase self-confidence and skills among students [2, 5]

#### **b) Satisfaction**

Nursing students were satisfied with the simulation experience since they improved their commitment and self-esteem [103]. Stimulation helped in decreasing the students' stress levels [79]. A study reported that 77% of students agreed that clinical placement should be replaced with simulation [74]. 64% of students were satisfied with the simulation as it improved their skills [93]. 80.7% of students were satisfied with the simulation [94]. It was reported in another study that 95% of students were satisfied with the simulation as they had the opportunity to practice in a safe environment [67]. A study added that nursing students were

satisfied with 30 days of simulation sessions [38]. In addition, another study reported high satisfaction scores among nursing students ( $mean = 4.60$ ) [58].

A study found that nursing students were satisfied with simulation as it enhanced their communication skills [46]. In a study, 50 students were satisfied with the simulation experience because their self-confidence was improved [75]. An experimental study revealed a significant difference in the satisfaction scores ( $0.18, p < 0.05$ ) [40]. In a study, the mean satisfaction score of nursing students was  $23.98 / 25$ , reflecting high satisfaction with simulation [26]. In another study, the nursing students were satisfied with the simulation ( $mean = 23.45 \pm 2.07$ ) [27].

A descriptive study reported a high satisfaction score (8 out of 10) with their mental health course [35]. A mixed-methodology study revealed high satisfaction scores with simulation ( $mean = 58.69$ ) since it improved their self-confidence and communication [21]. A study found that students were satisfied with simulation as it helped them achieve their learning outcomes [111]. In a study, 81% of nursing students were satisfied with their simulation experiences [104]. A study reported that 74.4% of students found simulation very beneficial to them as it prepares them for future practice [36].

Using debriefing in the simulation will increase satisfaction among nursing students [105, 114]. These findings were confirmed by other studies such as [52, 66, 69], which call for using debriefing within simulation sessions as it improves the confidence and autonomy of students. In a study, group 2 had higher satisfaction scores (7.72) than group 1 (6.92) as they received more simulation and debriefing than group 1 [55]. Third-year nursing students felt positively toward simulation, as reflected by their satisfaction scores (3.82 out of 5) [23]. Nursing students became very satisfied with simulation experiences because they make them confident in performing skills [8, 24, 100]. Therefore, it can be used instead of clinical placement as learning outcomes will be achieved. Moreover, the simulation will improve leadership skills besides confidence, leading to a high satisfaction rate among students [72].

In a study, 90% of students were satisfied with the simulation as they were provided with objectives at the beginning of the simulation. 72% of them were satisfied due to debriefing, 67% were satisfied as they have an orientation on simulation, and 67% were satisfied with the fidelity and realism of simulation [48]. Using peer tutoring in simulation sessions will increase the students' satisfaction as they experience reflection and feedback [62]. Students can discuss situations and scenarios with each other [57]. Students can share their experiences with other students [31]. This helps to achieve their learning objectives [97]. In addition, their communication and performance will be improved [13].

Feedback leads to improved skills, confidence, and knowledge [87].

A study revealed that students were satisfied with the simulation experience as their collaboration and communication were improved [73]. A study reported that students appreciated the simulation as it could be used if they missed practice in a hospital [32]. Another study revealed that 90% of nursing students found that simulation helped them collaborate with other healthcare providers, and 80% of them found simulation helpful in not making prejudgements about other healthcare workers [50]. In a study, the students were satisfied with the following: the reflection and debriefing scored (4.30 out of 5); clinical reasoning scored (3.97 out of 5); and clinical learning scored (4.10 out of 5) [106].

The students agreed that simulation was an effective method as their anxiety was decreased [90]. In a study, 98% reported that simulation should be used in their nursing educational program [74]. 93% of students were satisfied as they received support from their faculty, and 97% of the students were satisfied as they had feedback from their faculty [20]. In another study, the students had a positive experience with simulation, which increased their satisfaction and confidence [11]. Students have a positive attitude toward simulation because it enhances their skills and collaboration [39, 51, 52]. It was revealed in a study that high satisfaction scores among nursing students toward simulation ( $mean = 3.97$ ) [4]. Similar results in another study reported high satisfaction scores among students with their simulation experiences ( $mean = 3.77$ ) [80]. A systematic review supported that simulation is an effective method in nursing education as it enhances the students' satisfaction [5].

## V. DISCUSSION

Evidence-based practice is becoming increasingly important in nursing research. This review aims to offer the best accessible evidence on the impact of simulation on self-confidence and satisfaction among nursing students worldwide. In the nursing literature, simulation is becoming more common in nursing education. After analyzing the research studies, it has been discovered that simulation studies provided useful insights into the impact of simulation on self-confidence and satisfaction among nursing students. The review revealed that all analyzed research articles support that simulation experience in nursing education is an effective way of enhancing the self-confidence and satisfaction of the students.

Nurse educators have an important role in integrating simulation in nursing programs [28]. Using debriefing and providing feedback in the simulation sessions enhance the self-confidence, communication, and collaboration of nursing students and increase their satisfaction [52, 55, 66]. Some limitations have been found in the simulation studies.

There is insufficient evidence to back up the claim that improved performance and self-confidence translate to "real-world" clinical settings and, ultimately, better outcomes for service users. In addition, studies didn't include the patient perspective.

### VI. CONCLUSION

Simulation training appears to help ensure that students have real-world experience, which aids in the development of their self-confidence, skills, and abilities. According to the review, simulation training greatly improves participants' skills, self-confidence, and satisfaction. It was evident that nursing students value simulation as a learning and teaching approach. The students prefer simulation-based education to other educational methods. Nurse educators have a huge role in incorporating simulation into the nursing education program. The findings of this analysis could be utilized to persuade Saudi Arabia's Ministry of Health that simulation is an essential educational tool in nursing education that improves students' skills and that such training could lead to lower mistakes in future clinical practice. Future simulation efforts must incorporate a patient perspective; the role of future simulation initiatives must include a patient perspective, the involvement of information and communication technology, and environmental features. In addition, the ministry of education should make a policy to ensure using simulation in all nursing schools. Nurse educators can design a curriculum for simulation in clinical courses. Future research studies should look into the usefulness of simulation training in nursing programs in covering the theory-practice gap, knowledge retention, transferability to real-world patient settings, and simulation's impact on patient outcomes based on the patient perspectives.

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