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RESEARCH ARTICLE

# Simulation-Based Learning in Nursing Education: Effects on Clinical Competency and Confidence

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Abstract: ***Background***: Simulation-based learning (SBL) is becoming one of the strategies used in nursing education to mitigate the theory-practice gap. Simulation provides a secure and guided place where learners can train clinical skills, make solutions, and evaluate their work regarding the patients without harm. ***Aim***: Simulation-based learning and its impact on clinical competency development and self-confidence development in nursing students. ***Methods***: 120 undergraduate nurses were grouped together in simulation and treatment teaching group to simulate the application of a quasi-experimental design. High-fidelity situations were involved in the simulation group related to important aspects of emergency response, drug delivery, and communication with patients. The measurement of clinical competency was done by use of an Objective Structured Clinical Examination (OSCE) and self-confidence by a valid Likert-scale questionnaire. Descriptive statistics and inferential statistics were used in data analysis. ***Results***: Students that were exposed to simulation-based learning had much more OSCE scores than those students who received traditional instruction ( $p < 0.01$). Furthermore, according to the self-reported confidence, the participants of the simulation group showed significant improvement in this domain as regards to decision-making, group work, and communication with the patient. Qualitative feedbacks demonstrated that students appreciated the ability to learn by doing and appreciated immediate instructor's feedback. ***Conclusion***: Learning is an effective educational strategy of nursing students that is useful in enhancing their level of clinical performance and self-belief. Its infringement in academic programs is able to promote honesty to the real world practice, and it also aids the student become a professional nurse. Nursing programs need to increase the usage of high-fidelity simulation as an adjunctious technique to clinical placements, which must offer equal chances to abilities development as well as confidence-building.

Keywords: Nursing education, experimental learning, self confidence, and simulations based learning, and high augmentation simulation.

## INTRODUCTION

This is because one of the key issues in nursing education is preparation of nursing students to remain safe and productive in clinical work. Conventionally learnt methods to teaching including lectures and clinical placements do not give a comprehensive opportunity to practice when dealing with high-risk/rare clinical conditions. Simulation-based learning (SBL) has been established as one of the innovative approaches to learning that is capable of mitigating these gaps due to there being a safe and controlled learning space through which students can acquire and sharpen the vital clinical skills without exposing patients to danger [1].

The scope of simulation in nursing education is broad and might include both low-fidelity training (task trainers) or standardized patients as well as high-fidelity mannequins (computer-based), and they are able to simulate realistic physiology. Through these tools, students are able to practice technical skills, clinical reasoning as well as decision making in situations that are similar to those practiced in the real world [2]. SBL has received a growing international interest because of its ability to improve the experiential learning, stimulate critical thinking, and increase the confidence in nursing students [3].

Among the major advantages of the simulation-based learning, the influence on clinical competency can be identified. The competence area in nursing is the assembly of understanding and technical expertise and professional decision making, which bring about the adequate and secure treatment of patients. It has been found out that SBL increase student performance on Objective Structured Clinical Examinations (OSCEs), especially in areas like medication administration, communication, and emergency response [4]. As compared to conventional classroom techniques, simulation allows students to practically integrate theory into practice, and destabilize the theoretical information by the hands-on experience and by the immediate feedback [5].

Student confidence is another very important sector that is affected by SBL. Nursing students have a tendency of feeling anxious in the transition phase as they leave the classroom and enter the clinical practice, and their performance and interaction with the patients may suffer.

Simulation allows students to have a psychologically protective learning experience wherein they can make errors, accumulate the experience, and develop confidence prior to venturing into real clinical situation [6]. It has been shown that with constant practice with simulation situations, self efficacy is augmented, clinical anxiety is decreased and students feel more confident to encounter actual patients [7].

Simulation in addition to the accountability of individual pupils is part of a larger objective of patient safety and health care. SBL promotes growth of non technical skills that are essential in interdisciplinary teamwork and error integration through allowing learners to instill the crisis management, teamwork, and communication skills under a safe environment [8]. Such skills are also gaining prominence as a component of the modern nursing environment in which the nurses are frequently privy to plan the care in the complicated healthcare context.

In total, the notion of simulated learning is a novel approach to educating nurses that breaks the limitations of more traditional education and promotion of clinical practice and confidence. The application of simulation within a nursing curriculum is no longer a luxury as it used to be some time ago, but rather a necessity due to the further requirements and demands in the health care sector and the need to develop the well-equipped graduates. The research question that will be answered in the paper will be the consequences of simulation-based learning on the clinical competence and confidence of nursing students and provide implications on future curriculum development and educational policy.

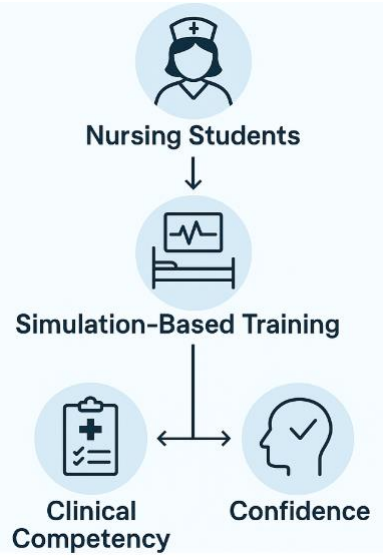



Fig.1. Nursing education: Conceptual flow of the study
This of figure 1 is a diagram of the study design model in Nursing Education: Effects on Clinical Competency and Confidence. It shows the effect of the training using simulation to enhance the professional proficiency and self-development of nursing students using an organized experiential learning.

# BACKGROUND WORK

The nursing education tradition has been that alongside classroom education, the students are supposed to be given a supervised clinical placement to enable them receive professional practice. However, increasing patient acuity, availability of fewer clinical sites, and patient safety threats have brought along some issues in terms of provision of adequate practical experience to the students [1]. Filled in these gaps, simulation-based learning (SBL) has widely been integrated into the curriculum of the nursing degree programs as an addition to teaching.

In order to attain simulation-based learning, low-fidelity task trainers and standardized patients as well as high-fidelity manikins are availed to obtain a simulated clinical setting. The assistance of the methods allows the students to practice clinical skills, utilize theoretical knowledge and make a choice in the situations that are quite close to the real practice without the exposing the patients to danger [2]. Compared with traditional teaching, simulation is an experiential and immersive platform where students are allowed to always interact and get immediate feedback besides reflecting on their outcomes [3].

One of the main advantages of SBL is the influence on the clinical competency. One of the studies has shown that simulation development enhances the performance of the technique procedures by the students as well as their abilities to communicate well and make sound decisions in complex scenarios [5]. This study conducted by the National Council of State Boards of Nursing (NCSBN) proved that the adjustment of replacing a small segment of the traditional clinical hours with the use of simulation did not affect their competency outcomes in student activities and instead, in most instances, enhanced these results at their fullest advantage [5].

It is also crucial that the impact of SBL on the student confidence. Anxiety during the transformation of nursing students into the practice domain might be a barrier to a successful performance. Research of repeated practice with simulated scenarios results in anxiety reduction and development of a sense of competence that gives a student a feeling of confidence when approaching clinical care [6,7]. As a developmental approach that incorporates both technical and non-technical skills development, simulation will help towards increased preparedness to professional practice, and assist in patient safety programs [8].

# MATERIALS & METHODS

**Study Design**

A quasi experimental, pretest-posttest control group was selected in this study and it introduced the impacts of simulation-based learning (SBL) when applied in nursing students to enhance their clinical competency

and confidence. The quasi experimental design was chosen due to the fact that it enables two groups to be compared, and it has the benefit to allow practical aspects of the educational context including the impossibility of switching students into two types of learning groups at random.


**Fig.2. Simulation based learning**

As shown the figure 2 it indicates that simulation-based learning is a revolutionary way of learning, the difference between theory and clinical conditions are closed, and lastly nursing students are ready to provide safe and effective care to patients and feel confident in their actions.

**Study Setting and Participants**

The research was carried out in one big public university College of Nursing. The number of participants was 120 undergraduate students of nursing enrolled in their third year in universities, when students start the intensive clinical training. Students were randomly separated into two groups, an intervention group (n = 60) who attended a simulation based training and control group (n = 60) who attended traditional classroom training and a supervised clinical experience.

**Inclusion criteria were:**

- Participation in the course of adult health nursing, No prior experience of high-fidelity simulation training, and Willingness to sign an informed consent.
- Students that underwent pre-simulation training or failed to have post as well as pre assessments were excluded.

**Intervention: Simulation-Based Learning**

The six high-fidelity sessions focused on the intervention were of the six-week period. The duration of each session was two hours; it was dedicated to key clinical competencies, such as:

1. Medication administration,
2. Monitoring of patients postoperative,
3. Treatment of hypovolemic shock,
4. Cardiac arrest response,
5. And respiratory distress treatment,
6. Effective communication of the nurse-patient.

High-fidelity mannequins that could portray concrete physiological reactions were used to provide the sessions. Faculty made the development of standardized patient scenarios that were created with an alignment to the learning outcomes of the course and were tested with three nursing education experts.

**The session was structured in a way:**

Pre-briefing (15 minutes): The learning objectives and the simulation environment and equipment were oriented to the students. Simulation practice (60 minutes): Students were involved in the group practice, changing positions of primary nurse, secondary nurse, and the observer. Reflection and feedback (45 minutes): As guided by facilitators, clinical reasoning, technical performance and teamwork were the areas of reflection and feedback.

**Control Group**

The students in the control group enjoyed the same theoretical training and clinical placements without the structured simulation part. Their clinical experience was a mere interaction with patients under supervision of an instructor.

**Data Collection Instruments**

**Two research-tested instruments were used:**

1. Objective Structured Clinical Examination (OSCE): This method is used in the assessment of clinical competence at ten its standardized rounds composed of technical and non-technical skills. The points of the checklist based on maximum score of 100 points were used to score every station.
2. Self-Confidence in Learning Scale (SCLS): A 5 -point Likert scale instrument that was transformed by adapting the Nationwide League in Nursing Student Satisfaction and Self Confidence in Learning tool and which measures student perceived confidence in clinical work.

The instruments were pilot tested, including 20 students of another cohort to make them clear and reliable (Cronbachs alpha=0.89 in OSCE and 0.92 in SCLS).

**Data Collection Procedure**

Each of the two interventions involved baseline assessments (OSCE and SCLS) prior to the intervention. Why matter It was found similar to other previous assessments after the completion of the six-week

program. Blindness was used to reduce bias since data collection was done by independent faculty evaluators, who were never aware of student group assignment.

**Data Analysis**

The data were entered into the SPSS version 26.0 coded and analyzed. The descriptive statistics (means, standard deviations and percentages) were used to describe the demographic counts and baseline scores. The t-tests of pre-test versus post-test in each group were performed in pairs but the independent t-test of pre-test-intervention versus post-test-intervention performed was conducted across controls versus intervention groups. A p-value lower than 0.05 was said to be statistically significant.

**Ethical Considerations**

The Institutional Review Board of the university was involved in the provision of ethical approval. Ethical approval was provided to the participants informed consent and data coded using anonymized code confidentiality was ensured. The control group also provided optional simulation sessions to the students at the end of studying so as to allow equality in terms of learning.

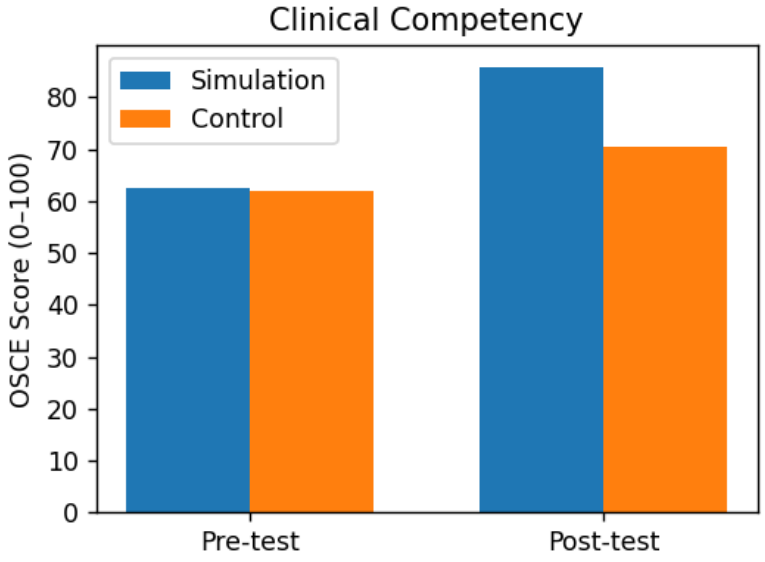
# ANALYSIS & DISCUSSION

One hundred and twenty (120) undergraduates in the nursing profession were used as the population in the study of 60 sex education (SBL) and the other 60 group as the control students. Objective Structured Clinical Examination (OSCE) and Self-confidence in learning scale (SCLS) showed no statistically significant barriers between groups in baseline pretested scores ($p > 0.05$), which is a reason to continue with the research method.

As shown the tble 1 and figure 3 the results of the intervention showed that the students in the SBL group achieved significant improvements in clinical competency and confidence after a period of six weeks. The median OSCE score of the simulation group was accompanied by an increase of 62.4 (SD = 7.8) to the mean of 85.7( SD = 6.5), and the same control group 61.8 (SD = 8.1) to 70.5 (SD = 7.3). In the same vein, the level of confidence in the SCLS in the simulation strong increased considerably with the pretest value taking place of 2.9 (SD = 0.6) to 4.3 (SD = 0.5), which is lesser in the control group where it starts with 3.0 (SD = 0.7) and ends with 3.5 (SD = 0.6). The independent t-tests were used to verify the statistical significance of the posttest differences between the groups ( $p < 0.01$).

**Table 1. Pre- and Post-Test Scores on Clinical Competency and Confidence**

| Outcome Measure | Group | Pretest Mean (SD) | Posttest Mean (SD) | Mean Difference | p-value |
|---|---|---|---|---|---|
| OSCE Score (0–100) | Simulation | 62.4 (7.8) | 85.7 (6.5) | +23.3 | <0.01 |
| | Control | 61.8 (8.1) | 70.5 (7.3) | +8.7 | <0.01 |
| SCLS Score (1–5 scale) | Simulation | 2.9 (0.6) | 4.3 (0.5) | +1.4 | <0.01 |
| | Control | 3.0 (0.7) | 3.5 (0.6) | +0.5 | <0.05 |



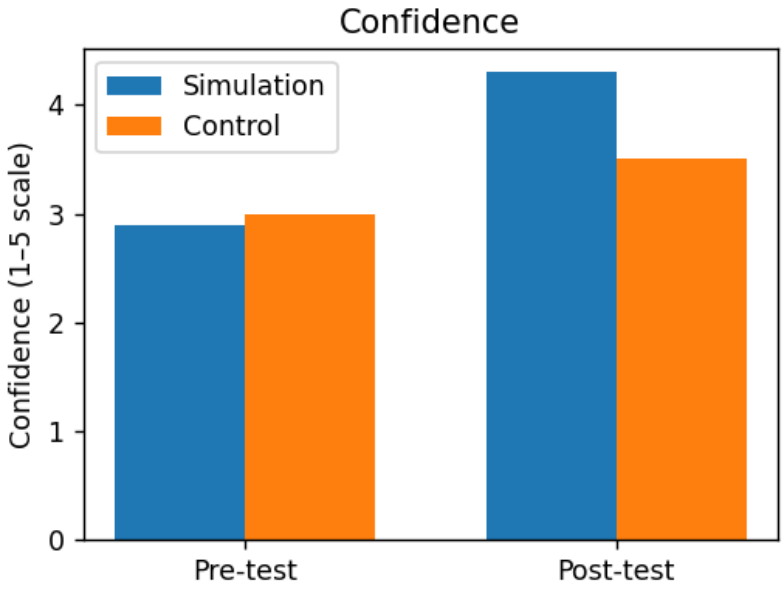



**Fig.3. Pre- and Post-Test Scores on Clinical Competency and Confidence**

# DISCUSSIONS

The findings in this research support the recent accumulation of evidence on simulation-based learning as a viable pedagogical approach in the nursing education process. There were strong results of increased clinical competency and confidence in students who got high-fidelity simulation as opposed to those who study based on traditional methods.

**Clinical Competency**

The approach to learning through immersive and experiential learning is deemed important, in order to reflect on the massive growth of OSCE scores within the simulation participants. The experiences of simulation as opposed to didactic instructions allow students to acquire the basics to practicability, through laying out the technical procedures, practicing theoretical knowledge and receiving an immediate response to the students within a controlled environment. This observation can be compared to one by Hayden et al. [4], who discovered that their use of simulation to substitute some of the clinical hours did not have an impact on competency, except that it was more likely to increase mastery of skills.

**Confidence and Self-Efficacy**

The high levels of student confidence that were achieved among the members of the simulation group can attest to the importance of SBL in decreasing performance anxiety and increasing the levels of self-efficacy. Confidence is the most significant factor to an effective practice in the clinical practice since it dictates decision-making and communication with the patient. The same level of credibility was observed in the replication study by Smith and Roehrs [7] who found that when simulations are repeated, more assertiveness is displayed by the nursing students because through this simulation circumstance, they develop the ability to conquer difficulties associated with the real-world practice.

Solving the Theory-Practice Gap.

The traditional clinical placements are not exposing the clinical students to strange and challenging situations. This weakness can be filled by sim]ation which may enable the students to be normalised to critical situations e.g. cardiac arrest or respiratory distress to ensure that no students will be poor at a high stakes job. This can tend to be associated with the results suggested by Kim et al. [3], who believed that simulation does not merely improve the technical proficiency of a person, but other aspects like teamwork and critical thinking.

**Nursing Education Implication:**

The findings then proceed to state that simulation cannot be treated as an extra component but as a component and parcel of the nursing curriculums. Incorporation of SBL into the standard courses will be able to boost competence and confidence giving graduates better preparedness to life in clinical practice. Furthermore, simulation promotes the interests of patient safety by facilitating students to be clinically ready before they work with vulnerable groups [8].

**Limitations**

This study is however promising but not devoid of limitations. The quasi-experimental study could have a selection bias, and it did not cover more than a single institution, which could limit the outcomes to generalization. Also, they did not measure long-term skills and confidence retention but only measured results immediately after the intervention. The next study is supposed to have longitudinal designs and multi-institutional sampling that could compare evidence.

# CONCLUSION

As the paper has already established, simulation based learning (SBL) is an effective pedagogical approach, which can be used to impart both clinical competence and confidence to the learning nurses. Not only did the persons that were exposed to structured and high-fidelity simulation programs score significantly higher in competency tests, but their self-confidence was also higher in comparison to their counterparts that were exposed to a traditional course. These findings would indicate that increasing levels of simulation do not only enhance the level of technical background but also the level of critical-thinking, decision-making, and self-efficacy- which would equip one to be a competent and safe nurse practitioner. The results also form fit with current evidence of SBL aiding in closing the knowledge intersection between theory and practice by offering the student a chance to rehearse in an environmentally safe, controlled way. The decreasing level of performance-related anxiety and the greater readiness of the students to travel into clinical positions make simulation more rational and managing to diminish the risks to patient safety and medical achievements in the long run.

Although techniques to integrate simulation within nursing programs were visited by the study, additional studies are required to determine skill and confidence retention over time, and research to assess cost-efficiency of the incorporation into the mainstream program. However, the findings highly support the idea of applying simulation-based strategies in the context of nursing education programmers. Summative, learning is one of the most recent tools in nursing education and it is a transformative intervention, which is represented by simulation based learning. Its effectiveness in promoting clinical competence and student confidence presents its ranking on the role of imparting experience to practice-ready graduates ready to handle the challenges of the contemporary healthcare setting.

# REFERENCES

1. Cant, R. P., & Cooper, S. J. (2017). Simulation-based learning in nurse education: Systematic review. *Journal of Advanced Nursing, 73*(1), 3–12.
2. Jeffries, P. R. (2015). *The NLN Jeffries simulation theory*. Wolters Kluwer.
3. Kim, J., Park, J. H., & Shin, S. (2016). Effectiveness of simulation-based nursing education depending on fidelity: A meta-analysis. *BMC Medical Education, 16*, 152.
4. Hayden, J. K., Smiley, R. A., Alexander, M., Kardong-Edgren, S., & Jeffries, P. R. (2014). The NCSBN national simulation study: A longitudinal, randomized, controlled study replacing clinical hours with simulation in prelicensure nursing education. *Journal of Nursing Regulation, 5*(2), S1–S64.
5. Lapkin, S., Levett-Jones, T., Bellchambers, H., & Fernandez, R. (2010). Effectiveness of patient simulation manikins in teaching clinical reasoning skills to undergraduate nursing students: A systematic review. *Clinical Simulation in Nursing, 6*(6), e207–e222.
6. Baptista, R. C. N., Martins, J. C. A., Pereira, M. F. C. R., & Mazzo, A. (2014). Students' satisfaction with simulated clinical experiences: Validation of an assessment scale. *Revista Latino-Americana de Enfermagem, 22*(5), 709–715.
7. Smith, S. J., & Roehrs, C. J. (2009). High-fidelity simulation: Factors correlated with nursing student satisfaction and self-confidence. *Nursing Education Perspectives, 30*(2), 74–78.
8. Lateef, F. (2010). Simulation-based learning: Just like the real thing. *Journal of Emergencies, Trauma, and Shock, 3*(4), 348–352.