# Transfer of Learning using Simulation Based Education among Students of Teaching Institutions

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## ABSTRACT

Nursing is a scientific profession, based on theory and art of care. However, the theory-practice gap has become the biggest challenge of this profession and decreases the quality of service both in teaching and practice. The simulation method allows students to repeatedly practice their clinical skills until they develop a sense of proficiency; to learn at their own pace; and to freely make mistakes. A simulation is an educational process that can replicate clinical practices in a safe environment. **Purpose:** The purpose of this study was to explore and describe how the fourth year and clinical intern nursing students perceived simulation-based learning in contributing their ability to transfer their learning from theory into practice. **Objectives:** To explore the conceptualization of Simulation based learning amongst final year and intern nursing students, and to explore their challenges and perception in implementing it, during their clinical practice. **Methods:** The study used descriptive mixed method and data was collected using focus groups and pre-validated semi-structured questionnaire. All focus group discussions were audiotaped, transcribed verbatim, and narratives were compared with the recordings to establish accuracy, credibility and reliability of data. Qualitative narratives were translated to English and analysed through an inductive thematic content analysis. **Results:** Two major themes were identified: Self-confidence and satisfaction subcategorized in terms of enhancing collaboration, improve personal and interpersonal skills, and patient outcomes.

*KEYWORDS: Simulation based learning, Perception, Self-confidence, Satisfaction and Patient outcome*

## INRODUCTION

Simulation Based Learning has been said to be a more effective teaching strategy than classroom teaching for the development of assessment skills for the care of patients with deteriorating conditions. (C.D.Merriman et al; 2014). The relationship between theory and practice is a complex challenge in professional education. This is widely documented and commonly termed as a "gap" (K. R. Hatlevik 2012). To reduce this gap, theoretical knowledge and practical experience must be integrated. SBL is a pedagogical approach that can be considered a "third learning space" between course work and practicums; this approach may bring the content and process of theoretical work and practical training closer to each other (P. F. Laursen, 2015). Nurse educators endeavour to promote students' critical thinking skills and confidence and are confronted with interactive technology for improving student cantered learning. D'Souza et al; 2014.

There are a variety of simulation-based education (SBE) and training methods, sometimes delivered in combination, dependent on the content and learning outcomes. The levels of difficulty, complexity and challenge can be tailored to suit the context, learning or assessment objectives and the experience level of the students. (Doolen J, et al; 2014). Simulations technology constructs real critical care scenarios for improving active participation, clinical reasoning, judgment, and acute decision making skills. (Alexander.M et al; 2015). Independent of educational level, the findings by (Randi Tosterud et al; 2013) indicated that simulation with various degrees of fidelity could be used in nursing education. In spite of advancements in the field of SBL elsewhere, it has so far not been formally explored among students during their internship training in our settings. With this background, this study was conducted to explore the perception of nursing students in South India towards SBL.

### Background:

Many studies claim that simulation-based nursing educational interventions were effective with particularly large effects in the psychomotor domain. (S.Shin, J.H.Park, and J.H.Kim; 2015) A review by Foronda, Liu, and Bauman suggested that simulation was an effective anagogical method for teaching skills and knowledge and called for

more research to strengthen the evidence related to what types of nursing knowledge and nursing content could be effectively developed through SBL. Professional and regulatory organizations have also begun to accept teaching hours spent on simulation-based practice as a proxy for some clinical placements or operative skills. (Rosenthal ME, et al; 2010). Elspeth.M., & McDougall(2015 ) identifies that Simulation is well-accepted teaching strategy for training health care professionals, both technical skills such as wound closure and nontechnical skills such as communication can be taught using simulation technologies that ranges from low-fidelity segmented clinical task trainers to high-fidelity full-body manikins. Further evidence of reduced anxiety in student nurses regarding working with people who have mental health problems has come from the study of (Brown, 2015; Lehr and Kaplan, 2013; and SBE better prepare students for practice especially in communication and clinical understanding (Brown, 2015). Elspeth M., & McDougall (2015) has stated that simulation is an ideal educational and practice platform for the adult learner because it provides an opportunity to build on an existing knowledge base and that the good simulation-based practice addresses the health care professional's needs in a practical and clinically relevant way that has immediate application to daily professional activities.

## Ethical approval:
Appropriate permission had been obtained from the nursing institution scientific ethic review board for the approval to conduct the study among Final year and intern students who had already been explored to simulation learning during their course in the year 2014-2018 in their 4 years nursing program. During their first and second year program they were explored to moderate simulators, in their third year low fidelity human simulators were used for their simulation learning. In fourth year program both methods along with standardized patients were also used to train them on simulation.

## Aim of the study:
Exploring and describing how the nursing students are contributing their ability to transfer their learning from theory into practice using simulation-based learning practices.

## Sampling method:
Each of the four focus group participants who were willing to participate in this study was included, thus representing convenient sampling. Focus group participants are frequently selected using purposive sampling.(Vaughn,1996, Morgan, 1997), where the researcher select participants based on their knowledge and expertise of the subject under investigation. (Talbot, 1995, Polit and Tatano Beck, 2006). Therefore no claims should be made that findings can be generalized to the larger population from which the sample is selected.

## Setting& Subjects:
The study was conducted in Maternity unit of two different hospitals of suburban districts of southern region of India. Only students who have heard about SBL were invited to participate in this study. There are eight focus group and the participants in each group maximum of ten who were enrolled at the time of study to minimize bias and coercion. Sample size was calculated based on previous descriptive study (same population). In considering the Attrition rate in our research, here 20% of the sample was again added to the calculated sample size based on previous research.

## Tool:
The tool was categorized into three sections, as Part I (Demographic data), Part II, and Part III. Part II was "The Perceived Learning Scale" that was used as a gold standard test for the (SSCL) Students' Satisfaction and Self-confidence in learning Scale. This instrument is a 13-item scale used to measure student satisfaction with the simulation related context (5 items) and self-confidence in learning (8 items). Part III: The Educational Belief Scale was also used as the gold standard test for the EPQ. The Educational Belief Scale was developed by Yılmaz, Altınkurt, and Çokluk (2011). The EPQ instrument has 16 items and includes the following elements: learning (10 items); diverse ways of learning (2 items); high expectations (2 items); and collaboration (2 items). This instrument also used a 3-point Likert scale with categories ranging from 1 (strongly disagree with the statement) to 3 (strongly agree with the statement). The necessary modifications were done in Tool II and III, based on the objectives of this research study and the content validity was performed by the experts in Nursing Education.

## Validity and Reliability:
Student Satisfaction and Self Confidence in Learning (SSCL) instrument measures satisfaction and self-confidence in attaining the instruction for the simulation. The tool was used from published research Vasile unvar et al in 2017. (Cronbach's alpha value of 0.77–0.85 for SCLS). The content validity of SSCL was done by three nursing professionals who are specialized in Maternity nursing and nursing management.

## Pilot study:
It was carried out to assess the tool clarity and applicability. It applied to ten % of the sample from the selected departments. The sample which shared in piloting stage was excluded from the main subjects of the studied sample. Data was collected from the pilot study was analysed and necessary modifications were done prior to the final application of the study tools.

## Data collection:
Open ended questions were used to generate responses from the participants followed by documentation. The facilitator of the focus group also conducted in-depth semi structured interview to collect data on their perception on simulation based learning for the duration of 30 to 60 minutes. The students were briefed about the objective of the study and written informed consent was taken for their participation. All participants had been given enough opportunity to speak and express their opinion during the session and the consent was also obtained from each participant to audiotape their responses.

## Findings:
Of the total 80 participants who took part in this study completely filled in questionnaires were returned by 66 participants. The overall scores of both the instrument were obtained by calculating the mean of the scores on their respective number of items. Higher scores indicate increased recognition of educational best practices in simulation.

| Demographic characteristics | Neutral Response (%) | Good response (%) | Total: No's (%) |
|---|---|---|---|
| **Age in years** | | | |
| <21 | 1(1.51) | 4(6.06) | 5(7.57) |
| 21-22 | 8(12.12) | 12(18.18) | 20(30.30) |
| >22 | 11(16.66) | 30(45.45) | 41(62.12) |
| **Gender** | | | |
| Male | 15(22.72) | 6(9.09) | 21(31.81) |
| Female | 5(7.57) | 40(60.60) | 45(68.18) |
| **Level of study** | | | |
| Eighth semester | 14(21.21) | 22(33.33) | 36(54.54) |
| Internship training | 6(9.09) | 24(36.36) | 30(45.45) |

It was illustrated that among these 66 participants, about two third of them were females, while only one third of them were from males 33.33% (22/66). Mean age of students was 21.3 (standard deviation 1.9) years (95% confidence interval being 21.1 years to 21.5 years). Concerning their perceptions with regard to their application and benefits of their simulation training what was learnt during their training period, it was found that none of the participants were in the strongly disagree category, while most of them had a favourable perception about SBL 69.6% (46/66). Moreover the rest of them perceived neutrally, 21.21% (14/66). In terms of their demographic characteristics, the research revealed that the age of the students was not influencing their quality of perception towards SBL, but the level of the study is statistically associated with their level of perception during their training period at hospital. Favourable perception was found towards SBL that was significantly higher among female students. ($P < 0.05$). Participants felt SBL was a reliable tool for improving clinical skills, patient safety, level of confidence and to manage even the high risk and emergency situation. The result is compatible with PH Pucher et al 2017 in their study on simulation to enhance patient safety and outcome. It is inferred that pre-simulation training is necessary in order to support them to minimize their fatigue and stress, thus helping them in dealing with even highly uncooperative patient, supported by the research Joseph et al 2015. As in our study, in other study by Joseph et al 2015, participants wanted integration of SBL into nursing education curriculum so as to ensure continuity between simulated and clinical learning environments.

**Participants Responses in practice:**

| Focus group Perceptions | SA Nos (%) | Neutral Nos(%) | SDA Nos(%) | Mean | SD |
|---|---|---|---|---|---|
| Support in delivering clinical skills. | 58(87.8) | 4(6.06) | 4(6.06) | 4.15 | 0.72 |
| Helps to address the following problems | 50(75.75) | 11(16.66) | 5(7.57) | 3.91 | 0.89 |
| A.    Minimize learners fatigue | 55(83.33) | 6(9.09) | 5(7.57) | 4.02 | 0.83 |
| B.    Dealing with uncooperative patient<br>C.    Minimize stress. | 43(65.15) | 14(21.21) | 9(13.63) | 3.74 | 1.04 |
| Improve patient safety | 36(54.5) | 21(31.8) | 9(13.63) | 3.59 | 0.6 |
| Feel better than bedside teaching | 23(34.8) | 25(37.8) | 18(27.27) | 3.1 | 1.1 |
| Can be integrated into nursing curriculum | 45(68.18) | 15(22.72) | 6(9..09) | 3.81 | 0.88 |
| Increasing confidence level | 43(65.15) | 13(19.69) | 10(15.15) | 3.67 | 1.48 |
| Learning makes easier | 48(72.7) | 15(22.7) | 3(4.54) | 3.86 | 0.78 |
| Creates a highly realistic reproducible environment. | 37(56) | 14(21.2) | 15(22.7) | 3.46 | 1.07 |
| Ethical issues will be minimized | 38(57.5) | 20(30.30) | 8(12.1) | 3.64 | 0.97 |
| Helps to manage even the rarest high risk cases in nursing practices. | 46(69.6) | 13(19.69) | 7(10.6) | 3.73 | 1.04 |

**Satisfaction with current learning:**
The participants were interviewed based on the following items: The teaching methods used in this simulation were helpful and effective. The simulation provided me with a variety of learning materials and activities to promote my learning the concerned nursing curriculum. I enjoyed how my instructor taught the simulation. The teaching materials used in simulation were motivating and helped me to learn. The way my instructor(s) taught the simulation was suitable to the way I learn. I am confident that I am mastering the content of the simulation activity that my instructors presented to me. I am confident that this simulation covered critical content necessary for the mastery of nursing curriculum. I am confident that I am developing the skills and obtaining the required knowledge to perform necessary tasks in a clinical setting. My instructors used helpful resources to teach the simulation. It is my responsibility as a student to learn what I need to know during my clinical activity. I know how to get help when I do not understand the concepts covered in the simulation. I know how to use simulation activities to learn critical aspects of these skills. It is the instructor's responsibility to tell me what I need to learn of the simulation activity content during class time.

**Discussion:**
The results revealed that demographic characteristics were not influencing their perception towards SBL (P < 0.82) except in the category of gender and level of their education. It was evident by the data that favourable perception towards SBL was seen significantly higher among female students. (P < 0.05), whereas among the male participants, the perception was neutral. Of the 66 participants the majority 85.5% agreed that a pre-simulation scenario, what was learnt during their course is beneficial for

enhancing skill competencies during their clinical practice. The below picture of Kolb's experiential learning theory model was used as a conceptual model for this research, which represents four stages of learning cycle in which the learner touches all the bases such as concrete experience, reflective observation of the new experience, abstract conceptualization and active experimentation.

Favourable perception towards SBL was seen significantly more among intern nursing students than fourth year students. This could be because of increase in course requirements felt during final years which is when students begin to actually feel the need to see a variety of cases. Students reported that due to their simulation practices during their courses make learning nursing easier and felt SBL was indeed an interesting experience which was similar to their observations during their clinical training. Study findings are consistent with previous studies from other regions that have highlighted the benefits of simulation based education. (Abi smith et al; 2016). Participants In another study by Basher et al 2017 revealed reinforced the teamwork approach during the students' early phases of their course of study, and incorporating simulation into later phases can promote knowledge development, skill acquisition, and self-confidence.

It is quite interesting that male nurses gained an opportunity to overcome the barriers in dealing with maternity nursing unit during their internship program and to obtain valuable clinical competencies using pre-simulation based education. Research has shown that students expressed their concerns as their training motivates them to feel more comfortable and enjoyable. Furthermore the participants expressed that the pre-simulated sessions during their course facilitated them to achieve clinical learning outcomes.

## Conclusion:

The intern nursing students showed a positive perception and attitude toward simulation-based learning. They found that simulation-based learning increased their knowledge and understanding of the importance of the roles of other professions, as well as their own role in providing patient care. Furthermore, they perceived that simulation-based learning improved their personal and interpersonal skills. These positive findings may contribute to their future success in an inter-professional team, which could lead to improved patient outcomes. Therefore, future research is needed to compare various settings on how the reported benefits of simulation-based learning are reflected in clinical practice and related to patient outcomes.

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