Perception Of Simulation Based Learning Among Undergraduate Nursing Students In A Teaching Hospital.

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Abstract:
Background: Simulation-based Learning (SBL) has become an increasingly popular and effective method for training nursing students. It provides a safe and controlled environment where students can practice their clinical skills and decision-making abilities in realistic scenarios without the risk of harming real patients. The aim of this study is to find out the perception of undergraduate nursing students towards simulation-based learning
Materials and Methods: The descriptive cross-sectional study design was used. The total of 142 nursing students were included. A researcher-developed questionnaire of a five-point Likert Scale and two open ended questions was used. Results: The result of the study shows that majority of students (79.6%) had favorable perception, (20.9%) had neutral perception and none had unfavorable perception. The overall perception score of the respondents was 59.97±5.51.
Conclusion: A significant number of students expressed favorability towards SBL, indicating its potential for successful implementation in nursing training programs.
Keyword: Nursing students, Perception, Simulation Based Learning

I. Introduction

Healthcare institutions frequently incorporate Simulation-Based Education to train healthcare students in practical skills before working with actual patients. Simulation replicates clinical scenarios, aids learning process by providing a controlled environment where students repeatedly practice and improve their clinical skills effectively. [1,2]It enables students to learn in a safe environment, using simulated and standardized patients, mannequins, virtual reality computer generated simulations, or a combination of these.[3]

Simulation-Based Learning (SBL) allows students to practice clinical decision making skills, communication, and procedures without risking patient's safety. It has demonstrated positive impacts on cognitive, affective, and psychomotor learning domain within nursing education. [4,5,6]

Study done among 96 nursing students in Spain showed that perceptions on SBL scored 4.4 out of 5, it concluded that students felt better prepared to care for real patients.[1] Similarly a study from Saudi Arabia among 103 nursing students demonstrated strongest agreement with the statement "simulation helped in better understanding the concepts in clinical setting" with mean of 3.0. [2]

Furthermore, a study from India among 232 nursing students revealed (94.3%) accepted that simulation support development of clinical skills, 84% felt it helps to increase confidence level of students.[7] In a study done in Institute of Medicine, Kathmandu regarding perception of Simulation-Based Education (SBE) workshop among 17 participants showed positive impact after participation in the workshop i.e (P<0.05).

SBL helps students integrate theoretical concepts into real-world healthcare scenarios. Identification of student's perception towards this learning method might enhance healthcare learning environment. Thus, this study aims to identify student's perception towards SBL.

II. Material And Methods

Study design: A descriptive cross-sectional study design was used to conduct the study.

Study site: The study was carried out in School of Nursing and Midwifery (SoNM), Patan Academy of Health Sciences (PAHS).

Study duration: The duration of study was 2024-07-01 to 2024-12-01 and data collection was done for two months from the time of ethical approval.

Sampling technique: The consecutive sampling technique was used to select the samples

Sample size

The sample was undergraduate nursing students of B. Sc Nursing(Bachelor of Science in Nursing) Third Year i.e 36, BNS (Bachelor in Nursing Science) second year and third year i.e 38+35=73 and BMS (Bachelor in Midwifery Science)first year, second year and third year i.e 12+8+15=35. Thus, the total sample size was 144. However, after field editing the total of 142 students were included in final study.

Programme	1st Year	2nd Year (batch2080)	2nd Year (batch2081)	3rd Year	Total
Bsc Nursing	-	-	-	36	36
BMS	12	8	15		35
BNS	-	38	35		73
Total					144

Inclusion criteria:
Those students who are willing to participate in the study.

Exclusion criteria:
Those who are not present during data collection period.

Procedure methodology

Applying all the ethical procedures data collection was done. The participants who meet the inclusion criteria was explained about the objectives of the study then written informed consent was taken by the researchers. Data was collected by using researcher developed structured self-administered questionnaire in English. The completion of questionnaire took about 20 minutes and researchers collected filled questionnaire immediately on same day then the field editing was done as soon as the students submitted it.

Data collection instrument:

Data collection was done using researcher developed structured questionnaire. Researcher on the basis of research objective, extensive literature review and consultation with the subject expert has developed the research instrument. Data collection instrument involved two parts.

First part includes demographic data on Age, Nursing Program, Academic Year, Attended any workshop/training previously attended on SBL

The second part consisted of 15 statements on Perception on SBL presented on a five-point likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) and two open ended questions, "What did you like best about SBL" and "What aspect of SBL would you change if given a chance?"

Scoring:

Each response for the statement on the Likert scale were meant to assess perceptions towards SBL with given responses "strongly disagree," "disagree," "neutral," "agree," and "strongly agree" with scores ranging from 1 to 5 points respectively. Cumulative scores from 15-35 was considered unfavorable, 36-55 as neutral and 56-75 as favorable level of perception.[7] Two open ended questions were coded thematically.

Ethical consideration

The study was conducted after obtaining permission from the Research Committee of SoNM and ethical approval from IRC-PAHS. Informed written consent was obtained from each participant before data collection.

Statistical analysis

Editing, coding and classified manually and analyzed using SPSS software version 16.Descriptive statistics: frequency, mean, percentage, and standard deviation were used.

III.   Result

Table no 1 shows that majority of the respondents i.e. 62% belonged to age group 21-25 years. In regards to nursing programme they were enrolled, 51.4% were from BNS, 24.6% were from B.Sc. and 23.9% were from BMS. Regarding the academic year they were in, 57% were from 1st year, 33.2% from second year and 9.2% from third year. Most of the respondents i.e. 90.1% had not attended any training or workshop on SBL.

Table no 1: Socio-Demographic Characteristics of Respondents
N=142

Characteristics	Frequency (n)	Percentage (%)
Age in Years		
<21	4	2.8
21-25	88	62.0
>26	50	35.2
Nursing Programme		
BNS (Bachelor in Nursing Science)	73	51.4
BMS (Bachelor in Midwifery Science)	34	23.9
BSc (Bachelor of Science in Nursing)	35	24.6
Academic Year		
First Year	13	9.2
Second Year	48	33.2
Third Year	81	57.0
Workshop/Training on SBL		
No	128	90.1
Yes	14	9.9

Table no 2: The table 2 shows item wise perception score. More than half of the respondents (59.9%) agreed that simulation in Nursing program provides valuable learning experience, Similarly, (57.7%) strongly agreed that simulation in nursing programs helps to better understand concepts in the clinical setting, (57.0%) strongly agreed that repeated practice of the procedure in SBL will improve the performance of the students. Furthermore, (45.1%) of the respondents disagreed on the statement that more of SBL will minimize the empathy among nurses towards patients. Students demonstrated the strongest agreement with a mean of 4.5 on the statements such as "Simulation(s) in nursing programs helps to better understand concepts in the clinical setting", "Simulation supports the development of clinical skills" and "Repeated practice of the procedure in SBL will improve the performance of the students.

Table no 2: Item wise Perception Score of Nursing Students towards Simulation Based Education
N=142

S.N	Item	Strongly disagree f (%)	Disagree f (%)	Neutral f (%)	Agree f (%)	Strongly Agree f (%)	Mean (SD)
1	Simulation(s) in nursing programs helps to better understand concepts in the clinical setting.	–	–	2(1.4)	58(40.8)	82(57.7)	4.5(.52)
2	Simulation supports the development of clinical skills	–	–	2(1.4)	63(44.4)	77(54.2)	4.5(.52)
3	SBL helps to increase the confidence levels of students while dealing with real patients	–	4(2.8)	6(4.2)	56(39.4)	76(53.5)	4.4(.70)
4	SBL can create a highly realistic, safe and reproducible learning environment	–	3(2.1)	24(16.9)	72(50.7)	43(30.3)	4.0(.74)
5	Simulation(s) in Nursing program provides valuable learning experience.	–	–	7(4.9)	85(59.9)	50(35.2)	4.3(.55)
6	The teacher will minimize his or her efforts in clinical teaching if SBL becomes a part of the nursing curriculum.	10(7.0)	59(41.5)	51(35.9)	16(11.3)	6(4.2)	2.6(.92)
7	More of SBL will minimize the empathy among nurses towards patients	27(19.0)	64(45.1)	27(19.0)	17(12.0)	7(4.9)	2.3(1.07)
8	SBL might improve patient safety	2(1.4)	3(2.1)	29(20.4)	77(54.2)	31(21.8)	3.9(.79)
9	Knowledge gained through simulation(s) can be transferred to the clinical setting.	–	–	5(3.5)	70(49.3)	67(47.2)	4.4(.56)
10	Simulation(s) helps to stimulate critical thinking abilities.	–	7(4.9)	20(14.1)	67(47.2)	48(33.8)	4.0(.81)
11	Repeated practice of the procedure in SBL will improve the performance of the students	–	–	3(2.1)	58(40.8)	81(57.0)	4.5(.54)
12	Constant usage of SBL leads to improvement in communication skills with the patients	5(3.5)	13(9.2)	32(22.5)	59(41.5)	33(23.2)	3.7(1.03)
13	Simulation can help to see and manage even the rarest of cases in nursing	2(1.4)	18(12.7)	23(16.2)	73(51.4)	26(18.3)	3.7(.95)
14	Because of simulation experience(s), students will be less nervous in the clinical setting when providing care for similar patients	1(0.7)	7(4.9)	14(9.9)	77(54.2)	43(30.3)	4.0 (.81)
15	Simulation should continue to be an integral part of the clinical experience	–	–	5(3.5)	63(44.4)	74(52.1)	4.4(.56)

The table 3 shows that majority of respondents (79.6%) had favorable perception and more than one fourth of them (20.4%) had neutral perception and none of the respondents had unfavorable perception. The overall perception score of the respondents was 59.97±5.51.

Table no 3: Distribution of Perception Score of Nursing Students towards Simulation Based Learning
N=142

Category	Frequency	Percentage
Unfavorable perception (15-35)	–	–
Neutral (36-55)	29	20.4
Favorable perception (56-75)	113	79.6
Mean ± **SD** 59.97±5.51 Minimum-Maximum 44-75		

Table 4 depicts that more than half of the respondents (57.7%) reported development of competence as the best thing about SBL, followed by skill acquisition (24.6%), active engagement (23.2%) and better preparedness (19.0%). Similarly, more than half (59.1) of the respondents wanted to change the resources, followed by planning involved in developing and conducting SBL if given a chance (23.2%).

Table no 4: Response to open ended questions: Themes and codes
N=142

Open ended questions	Themes	Codes	Frequency	Percentage
What did you like the best about the SBL?	Development of competence	Practice in realistic scenario Immediate feedback Confidence boost Utilization and understanding of theoretical knowledge	82	57.7
	Skill acquisition	Communication skills Teamwork skills Decision making skills Critical thinking skills	35	24.6
	Active engagement	Deliberate practice No fear of harming patient	33	23.2
	Better preparedness	Better understanding of clinical setting Valuable learning experience Learning how to manage complications	27	19.0
What aspect of SBL would you change if given a chance?	Resources	Lack of necessary equipment Outdated equipments Need for more realistic environment Advanced technologies and models needed Skilled teachers required Need for student friendly environment Audio-visual aids and 3D simulation needed	84	59.1
	Planning	Need to allocate more time for practice Contextual guidelines required Continuity needed Need for simultaneity with theory classes More scenario planning required Small group divisions needed Need to encourage for self reflection, briefing, debriefing	33	23.2

IV. Discussion

The findings of this study indicate a strong positive perception of simulation-based learning (SBL) among respondents, with a substantial majority (79.6%) expressing favorable perception.

This result aligns with a recent cross-sectional study conducted in Saudi Arabia involving 173 nursing students found that 91.3% of participants had a favorable perception toward simulation-based learning (Median = 4.43, IQR = 4-5).[8] Similarly, another study in India done among 150 nursing faculty is in par with the above finding where (65.3%) of the subjects had highly positive perception regarding Simulation based education.[9]Furthermore, another study done in South India also revealed that most participants 72.5% (179/247) had favorable perceptions of SBL, with scores of 92–118 out of a possible 118 points.[10]

Another study done in India among 171 physiotherapy teachers showed dissimilar findings that only 29.14% of participants showed highly favorable and 70.86% showed moderately favorable attitudes towards SBL.[11]The reason for this dissimilar finding may be due to differences among the participants as this study was done among the teachers.

The findings of present study, demonstrated the strongest agreement with a mean of 4.5 on the statements such as "Simulation(s) in nursing programs helps to better understand concepts in the clinical setting", "Simulation supports the development of clinical skills" and "Repeated practice of the procedure in SBL will improve the performance of the students."

In the present study, a significant majority of students expressed a favorable perception across most of the statements, 59.9% with a mean of 4.3 agreed that simulation in Nursing program provides valuable learning experience. Similarly, 57.7% with a mean of 4.5 strongly agreed that simulation in nursing programs helps to better understand concepts in the clinical setting. Consistent findings were seen in a study done in Saudi Arabia among 103 nursing students that demonstrated the strongest agreement with the statement "simulation was a valuable learning experience" with a mean of 2.92. Similarly, "simulation helped in better understanding concepts in the clinical setting" with a mean of 3.0.[2]

In the present study, (41.5%) had neutral perception on the statement that constant usage of SBL leads to improvement in communication skills with the patients and (45.1%) of the respondents disagreed on the statement that more of SBL will minimize the empathy among nurses towards patients A study done in Saudi Arabia found that simulation-based learning enhances communication with patients.[12]A study done in Dubai also noted that SBE interventions positively influenced on promoting empathy and communication with patients.[13]

Another key finding of the study was that respondents reported development of competence, skill acquisition, active engagement, and better preparedness as the best aspects of SBL. These findings correspond to the findings of previous studies conducted different countries.(2,4,14,15). However, students wanted to change the resources and planning involved in developing and conducting SBL. The need for updated equipment, more realistic environment, advanced technologies and models, skilled teachers, creating more realistic environment have also been reported previously. (14,15)

Yet, the need for a student friendly environment, audio-visual aids and 3D simulation needed, more time for practice, and contextual guidelines required, need for more imagination and story making by students are unique to the present study. SBL, being a recent development in Nepal, may explain the lack of proper resources and contextual planning. To continue SBL effectively in the future, these aspects of SBL need to be addressed.

V. Conclusion

Application of SBL in nursing education has been perceived favorably by a large number of participants. The results indicate that simulations effectively enhance student learning in clinical settings. Students gained a deeper understanding of concepts, acquired valuable practical experience, and developed critical thinking skills. The use of simulation, alongside other educational approaches, can significantly aid students in their journey to become well-integrated, successful and competent nursing professionals.

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