



Knowledge and perception on Simulation Based Education (SBE) among the nursing faculty using simulation as a teaching methodology in India

Anu Grover¹, Ekta Malik², Amandeep Kaur³, Usha Yadav⁴, Satish Chander Sharma⁵

¹ Officiating Director cum Associate Professor, National Reference Simulation Centre, SGT University Haryana, anugrover0709@gmail.com, 9958513339

² Implementation Program Coordinator, Laerdal Global Health

³ Assistant Professor cum SLTO, NRSC, SGT University, Haryana,

⁴ Assistant Professor cum SLTO, NRSC, SGT University, Haryana

⁵ Professor, Faculty of Commerce and Management, SGT University, Gurugram, Haryana

ABSTRACT

Simulation Based Education is one of the newer methodologies that may play a pivotal role to involve the students as an active participant to bridge the educational gap theoretically and practically as well. Simulation allows the students to learn in a real like situation with the manikins and actors known as standardized patients for the different situation designed by the teachers in a controlled environment. The teachers trained in simulation methodology require intense planning to run an effective simulation session. A well planned and well executed simulation can result in development of technical and non-technical skills in students. Hence, the perception of faculty regarding the use of simulation and their knowledge is explored in this study. To assess the knowledge and perception on Simulation Based Education (SBE) among the nursing faculty using simulation as a teaching methodology in India and find association with their demographic variables. A Quantitative research approach and descriptive cross-sectional design was used. Purposive Sampling was used to collect data from 150 nursing faculty using Simulation Based Education across India regarding their knowledge and Perception towards Simulation Based Education using self-structured knowledge questionnaire and perception scale. The mean knowledge scores regarding simulation-based education was 6.77 ± 1.72 . Majority of the subjects (49.3%) had moderately adequate knowledge and (65.3%) of the subjects had highly positive perception regarding Simulation based education. There is significant association of knowledge score with age and educational status. The faculty who used simulation as a teaching methodology found to have more knowledge and higher perception. The nursing faculty using simulation as a teaching methodology in India have moderately adequate knowledge and higher perception regarding simulation-based education.

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INTRODUCTION

Over the last few decades' health care education has been improved in numerous ways. These days the traditional methodology has been considered the passive learning experience for the students. In today's era, educating the medical students is not sufficient with all the previous traditional methods. One of the newer methodologies, Simulation Based Education may play a pivotal role to involve the students as an active participant to bridge the educational gap theoretically and practically as well [1-3].

Simulation allows the students to learn in a real like situation with the manikins and actors known as standardized patients for the different situation designed by the teachers in a controlled environment. The three important health care elements are utilized while preparing for the simulation scenarios which are cognitive, psychomotor and affective to ensure the overall learning of the students [4, 5].

Simulation also enables the faculty to run the session multiple times with their students to have reflection of conduct without the exposure of patient to possible human errors.⁵ The interest of using simulation has grown in the health care sector. Due to its strengths, it has a tremendously effective tool of teaching for both the training programs of faculty as well as formal education. To understand the perception of faculty regarding the use of newer methodologies which may vary depending upon the different situations this study has been conducted to rule out the positive and negative aspects of Simulation Programs in health care education [6].

With realistic simulation scenarios one can be trained being a novice as well experienced to update their skills, which also helps them to develop non-technical skills, get an opportunity to practice rare medical

situations. Simulation-based learning is a complex intervention as it requires proper planning before the session.⁷⁻⁹The facilitator must make sure that safe environment and confidentiality is being taken care during the session so that supportive learning environment can be created¹⁰. So to create a safe container the use of small groups is recommended which is obviously difficult in nursing education due to the large student teacher ratio [11-13]. In addition to this the resources are the concern for the faculty needed for initial setup and maintenance of simulation laboratory, the preparation for the setting to bring the realism even with less resource setting are kind of concerns of the faculties for the simulation methodology for their students [14-16]. Based on one research study successful learning in large groups of medical students has been reported as it provides the possibility of repeating the sessions with the large group to involve the maximum students make them more confident in the specific topic [17]. Considering these above-mentioned facts, this survey was conducted to assess the knowledge and perception on Simulation based education among the nursing faculty. This will help to understand the attitude and their willingness towards the simulation as a teaching methodology.

REVIEW OF LITERATURE

Ana P. Quilici et al. [6] conducted a qualitative study to identify the perceptions of simulation programs in health care education. 14 healthcare instructors were selected with intentional sampling technique from a teaching school who employs simulation in its syllabi. The data was gathered telephonically with an interview technique which was taken till the repetition of information and adequate objective was met. It is concluded that faculties consider simulation a useful tool in the healthcare program and the main difficulties reported by them are logistics. Therefore, there are logistical needs to be addressed and one of these points is to revise the ratio of students to faculty members in trainings involving simulation, so they can effectively apply the proposed methodology.

Howard, V. M., Englert, N., Kameg, K., &Perozzi, K. [8] conducted a research on Integration of Simulation Across the Undergraduate Curriculum: Student and Faculty Perspectives. Kolb's experiential learning theory and Jeffries's Nursing Education Simulation Framework provided the framework for this research project. Creative methods for implementation of simulation in various courses are described. A mixed-methods (survey and focus group) research design was used to measure student and faculty perceptions of this process. Following the simulation experience, students (N = 151) completed the simulation evaluation survey, and faculty (N = 6) participated in focus groups to provide insight into the experience. Results/Conclusions: Student responses related to the experience were overwhelmingly positive, and while faculty agreed that the use of simulation was beneficial to the achievement of learning objectives, many challenges related to the use of the technology were experienced. This study supports the use of simulation in an undergraduate nursing curriculum and offers suggestions for faculty faced with implementing simulation. A study to assess the knowledge and perception on Simulation Based Education (SBE) among the nursing faculty using simulation as a teaching methodology in India.

Objectives:

1. To assess the knowledge on Simulation Based Education (SBE) among the Nursing Faculty using Simulation as a teaching methodology in India.
2. To assess the perception on Simulation Based Education (SBE) among the Nursing Faculty using Simulation as a teaching methodology in India.
3. To find out the association of knowledge and perception of nursing faculty regarding simulation-based education with their selected demographic variables.

Assumption

1. Nursing faculties are using simulation as a teaching methodology.
2. Nursing faculties who are using simulation will as a teaching methodology will have some knowledge and perception regarding Simulation Based Education.

Delimitations

The study is delimited to nursing faculties who are using simulation as a teaching methodology.

Operational Definitions:

- **Knowledge:** It refers to awareness of the nursing faculty regarding simulation as a teaching methodology.
- **Perception:** It refers to the opinion of the nursing faculty using the simulation methodology after they have experienced this with their students.
- **Simulation Based Education:** It refers to the education imparted to the students with an artificial representation of a real-life situations to achieve the educational objectives through experiential learning.

MATERIAL AND METHODS

Research approach: Quantitative Approach.

Research design: The descriptive cross-sectional design
Population: Nursing Faculty using Simulation Based Education
Sample: Nursing Faculty using Simulation Based Education across India
Sampling technique: Purposive Sampling.
Sample size: 150

Inclusion criteria

The study will include the nursing faculty who:

- gives consent to participate in study.
- understands and read English.

Tool description (Appendix-I)

1. Demographic variable Performa
2. Knowledge questionnaire regarding Simulation based education
3. Perception scale towards Simulation Based Education

Validity

Content validity of the tool was done by 5 experts in simulation.

Ethical clearance

- Ethical approval to conduct the study was obtained from the institutional ethical committee of SGT University Gurugram, Haryana.
- Informed consent was obtained from the faculty.

Data collection techniques: Self-report. Data was collected through google form viae-mails and whatsapp.

RESULT

The analysis was done using descriptive and inferential statistics using SPSS version. The results are presented based on objectives of the study.

Table I: Demographic profile of nursing faculty in India N=150

Demographic variables	Category	Frequency (%)
Age (years)	23-33	34 (22.7)
	34-43	74 (49.3)
	44-53	33 (22)
	54-63	9 (6)
Gender	Male	18 (12)
	Female	132 (88)
Educational status	B.Sc. Nursing	3 (2)
	M.Sc. Nursing	120 (80)
	PhD in Nursing	27 (18)
Have you attended any workshop/seminar/hands-on training on Simulation based education?	Yes	149(99.3)
	No	1 (0.7)
If yes, which training	6-days TOT on SBE	96(64)
	5-days SSST	45(30)
	1-day SBE Orientation	(0)
	SimBegin Training	(0)
	EUSIM Training	(0)
	Multiple	9(6)
Do you have simulation lab facilities in your institution?	Yes	66 (44)
	No	84 (56)
Do you used simulation as a teaching methodology?	Yes	106 (70.7)
	No	44 (29.3)

Table-1 describes that out of 150 subjects, majority of the subjects 74 (49.3%) are from 33-43 years category, most of the subjects 132 (88%) were female and 120 (80%) were having M.Sc. Nursing qualification. Almost everyone (149) had attended training on simulation-based education out of which 96 (64%) had attended 6 days Training on Trainer program at NRSC. 66(44%) of the subjects have simulation lab facilities in their institution and 106 (70.7%) used simulation as a teaching methodology.

Table II: Knowledge scores of nursing faculty regarding simulation-based education N=150

AREAS	MEAN AND STANDARD DEVIATION	STANDARD ERROR	MIN- MAX (RANGE)
OVERALL KNOWLEDGE SCORE	6.77 ± 1.72	0.14	2-10 (8)

Maximum score = 10

Table 2 depicts that the mean knowledge scores and SD of the subjects regarding simulation-based education were 6.77 ± 1.72 and SE was 0.14. **N=150**

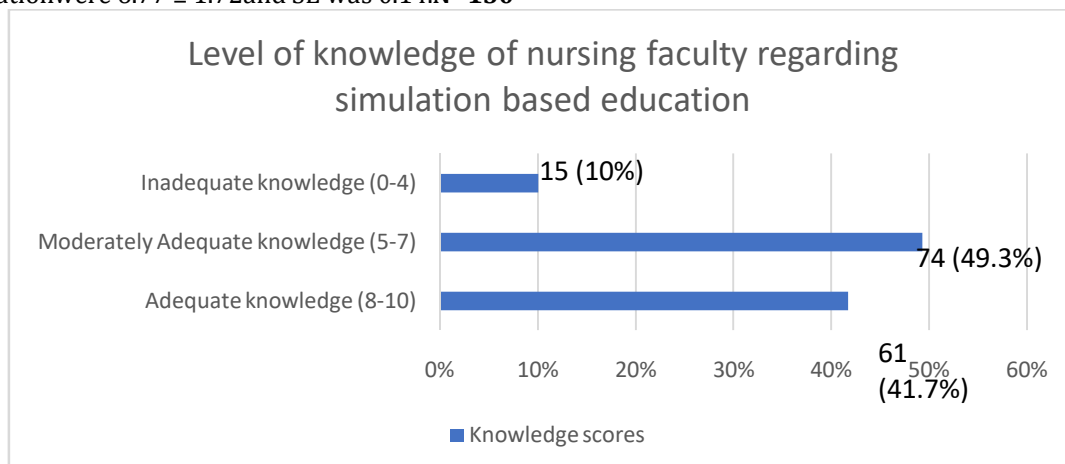


Fig I: Bar diagram showing the frequency distribution of Level of knowledge of nursing faculty regarding simulation-based education

The above figure -1 shows that out of 150 subjects, 15 (10%) had inadequate knowledge, 74 (49.3%) had moderately adequate knowledge and 61 (41.7%) had adequate knowledge.

TABLE III: Frequency and Percentage Distribution of Perception score of nursing faculty regarding Simulation based education N=150

Categories of Perception score	Frequency	Percentage (%)
Highly positive (105-125)	98	65.3
Positive (86-104)	49	32.6
Neutral (66-85)	02	1.4
Negative (46-65)	01	0.7
Highly negative (25-45)	00	00

Minimum Score: 25 Maximum score: 125

The data presented in the table 3 revealed that (65.3%) of the subjects had highly positive perception regarding Simulation based education, (32.6%) have positive perception and (1.4%) have neutral perception regarding Simulation based education.

TABLE IV: Association of Knowledge of nursing faculty regarding simulation-based education with their selected variables N=150

Variable	Category	Between groups mean difference	Test value	df	Level of significance
Age (years)	23-33	3.56	4.6	3	0.004*
	34-43				
	44-53				
	54-63				
Educational status	B.Sc. Nursing	4.21	6.44	2	0.002*
	M.Sc. Nursing				
	PhD in Nursing				
Do you used simulation as a teaching methodology?	Yes	1.21	4.141	148	0.00016*
	No				

Table no. 4 indicates that there is significant association of knowledge score with age and educational status. The faculty who has used simulation as a teaching methodology have more knowledge regarding simulation-based education as compared to those who have not used teaching methodology.

TABLE V: Post-hoc analysis of between group association of knowledge score with age of nursing faculty Multiple Comparisons with Bonferroni

(I) AGE	(J) AGE	Mean Difference (I-J)	Std. Error	Sig.
23-33	34-43	.13355	.34412	1.000
	44-53	.93494	.40587	.136
	54-63	1.81373	.62262	.025*
34-43	23-33	-.13355	.34412	1.000
	44-53	.80139	.34767	.135
	54-63	1.68018	.58634	.029*
44-53	23-33	-.93494	.40587	.136
	34-43	-.80139	.34767	.135
	54-63	.87879	.62459	.969
54-63	23-33	-1.81373	.62262	.025*
	34-43	-1.68018	.58634	.029*
	44-53	-.87879	.62459	.969

* The mean difference is significant at the .05 level.

Table no. 5 indicates post-hoc analysis of between group association of knowledge score with age of nursing faculty. The table depicts that the faculty from age 54-63 years have more knowledge regarding simulation-based education as compared to age 23-43 years.

TABLE VI: Post-hoc analysis of between group association of knowledge score with educational qualification of nursing faculty Multiple Comparisons with Bonferroni

(I) EDUCATION	(J) EDUCATION	Mean Difference (I-J)	Std. Error	Sig.
B.Sc. Nursing	M.Sc. Nursing	-3.06667	.97060	.006*
	PhD Nursing	-3.59259	1.01055	.002*
M.Sc. Nursing	B.Sc. Nursing	3.06667	.97060	.006*
	PhD Nursing	-.52593	.35369	.418
PhD Nursing	B.Sc. Nursing	3.59259	1.01055	.002*
	M.Sc. Nursing	.52593	.35369	.418

* The mean difference is significant at the .05 level.

Table no. 6 indicates post-hoc analysis of between group association of knowledge score with educational qualification of nursing faculty. The table depicts that the PhD faculty and M.Sc. Nursing faculty have more knowledge regarding simulation-based education as compared to B.Sc. Nursing.

TABLE VII: Association of Perception of nursing faculty regarding simulation-based education with selected variables N=150

Variable	Category	Mean difference	Test value	df	Level of significance
Do you used simulation as a teaching methodology?	Yes	3.42	2.03	148	0.044*
	No				

Table no. 7 indicates that there is significant association of perception score with use of simulation methodology. The faculty who has used simulation as a teaching methodology have higher perception regarding simulation-based education as compared to those who have not used teaching methodology.

Major Findings of the study

The major findings of the current study included that the mean knowledge score was 6.77 ± 1.72 . Out of 150 nursing faculty in India, 15 (10%) had inadequate knowledge, 74 (49.3%) had moderately adequate knowledge and 61 (41.7%) had adequate knowledge. Majority of subjects (65.3%) had highly positive perception regarding Simulation based education while (32.6%) have positive perception and (1.4%) have neutral perception regarding Simulation based education.

The result of present study is in congruence with the result of a study to assess the knowledge and perception towards nursing clinical simulation. A random sample of 99 nurse educators working at 17

nationally accredited health science teaching institutions located in Addis Ababa, Ethiopia which have a B.Sc. program in Nursing were taken. A self-structured questionnaire in English was used for data collection. This study concluded that out of 99 participants, 59(59.6%) had adequate knowledge about clinical simulation and 74(74.7%) had a positive perception toward clinical simulation [18].

The results are similar to the result of a cross-sectional descriptive study which was undertaken to identify the nurse educators' experiences in the use of simulation from various regions of China. 136 nurse educators shared demographic data, information regarding the use of simulation at their institutions, and perceived barriers and advantages of simulation use. Less than 92 (67.6%) of respondents reported using simulation technique more than ten times in the previous year, despite the fact that 108 participants in the survey reported using simulation in their work. The study found that nurse faculty adoption of simulation was hampered by four factors: (1) concerns about student readiness; (2) the need for faculty team-building for simulation teaching; (3) a lack of sufficient simulation resources; and (4) thoughtful integration of simulation into nursing curricula [19].

CONCLUSION

The present study has concluded that majority of the nursing faculties in India using simulation as teaching methodology have adequate knowledge and positive perception regarding Simulation based education.

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