Simulation and Its Role in Improving Oxygen Therapy Competencies Among BSc Nursing 3rd Year Students in Selected College of Nursing Bhopal

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Abstract: *Simulation is a great way to improve oxygen therapy competencies. By using simulation healthcare professionals can develop and maintain the competencies needed to provide safe and effective oxygen therapy to patients. This study aimed to determine the mean pre - test knowledge score of B. Sc. nursing 3rd year student in oxygen therapy competencies, evaluate the value of simulation in improving these competencies and determine the association between pre - test knowledge score and selected demographic variables. Finding of the present study that post - test mean Skills score was higher than the pre - test. It was observed in the present study that there was significant relationship between knowledge and skill among B. Sc. nursing 3rd year nursing students related to oxygen therapy competencies.*

Keywords: oxygen therapy, nursing education, simulation training, healthcare skills, competency development

1. Introduction

Oxygen is required for normal cellular metabolism. However excessively high concentration can result in oxygen toxicity leading to lung damage and respiratory failure. Oxygen saturation of 94 - 96% is adequate. In case of CO_2 retention, cardiac arrest or carbon monoxide toxicity the oxygen saturation has to be maintained as high as possible. Air typically has 21% oxygen by volume oxygen therapy can increase oxygen content of air up to 100%.

Oxygen often useful in chronic hypoxemic conditions oxygen can be delivered via nasal cannula, face mask, endotracheal intubation, head box or hyperbaric chamber. It can also be given through bypassing airway such as ECMO Therapy.

Problem Statement:
A pre - experimental study to assess the effectiveness of Structured teaching programme on knowledge and simulation skill of oxygen therapy to increase survival rate of Neonate among B. Sc. nursing 3rd year students in selected College of nursing, Bhopal.

Objectives:

1) To assess mean pre - test knowledge score of BSc nursing 3rd year student regarding oxygen therapy.
2) To assess mean post - test knowledge score of BSc nursing 3rd year student regarding Oxygen therapy.
3) Assess the mean pre - test skill score regarding oxygen therapy among BSc nursing 3rd year students.
4) Assess the mean post - test skills score regarding oxygen therapy among BSc nursing 3rd year student.
5) To determine the effectiveness of simulation and its role in improving competencies of oxygen therapy.
6) To find out association between pre - test knowledge score with selected demographic variable.
7) To find out association between pre - test skill score with selected demographic variable.

Hypothesis:

H1: The main post - test knowledge score will be significantly higher than pre - test knowledge score of B. Sc. nursing 3rd year students regarding simulation and its role in oxygen therapy competencies at 0.05 level of significance.

H2: The main post - test simulation skill score will be significantly higher than pre - test simulation skills score of B. Sc. nursing 3rd year students regarding simulation and its role in oxygen therapy competencies at 0.05 level of significance.

2. Research Methodology

Quantitative research will be used. Experimental research design was used. Independent variable is the simulation on oxygen therapy competencies. Dependent variable is the clinical competency of BSc nursing 3rd year students on simulation on oxygen therapy competencies. Extraneous variable includes the demographic characteristics of the subjects namely age, sex, educational status, Exposure to information, sources of information.

Setting chosen for the study was foundation lab of INCT College of Nursing Bhopal. Target population for the study was BSc nursing 3rd year students from nursing colleges of Bhopal. Convenience sampling is used to facilitate maximum power dissipation within the data collection period. Sample of study consisted of sixty nursing students with structured questionnaire and observational checklist was used.

Section 1: This describes the social demographic variable.

Section 2: It consists of structured questionnaire and observational checklist.

3. Data Analysis and Interpretation

The investigator had planned to analyse the data by using descriptive and inferential statistics; all the data were analysed by using frequency distribution percentage and cross tabulation and it was presented in the form of the table and graphs. Chi Square test was used to find out association between selected demographic variable and knowledge.

4. Result

Table 1: Mean, mean difference, SD, paired "t" test value showing pre - test and post - test knowledge score of the BSc nursing 3rd year students, N - 60

Test	Max Score	Mean	Mean difference	SD	SEMD	T value
Pre test	40	25.13	14.17	5.47	0.875	24.12
Post test	40	39.30				

Data predicted in table 1. The main post - test knowledge Score of B. Sc. Nursing 3rd year students is higher than the mean pre - test knowledge score the T value of 24.12 at the 0.05 level of significance indicate that the data is statistically significant.

Table 2: Mean and mean difference standard deviation and paired "t" test value showing pre - test and post - test practice score of B. Sc. nursing 3rd year students regarding simulation on oxygen therapy.

Test	Max Score	Mean	Mean difference	SD	SEMD	T value
Pre test	40	22.36	10.36	3.89	0.803	42.12
Post test	40	32.11				

Data predicted in table 2 shown that mean of post test score of B. Sc. Nursing 3rd year student is higher than the mean of pre - test practice. The value was found statistically significant as evident from T value 42.12 at 0.05 level of significance.

Table 3: Mean standard deviation co - relation between knowledge and skill among B. Sc. nursing 3rd year student related to stimulation on oxygen therapy.

Test	Knowledge		Skill	
	Mean	SD	Mean	SD
Pre test	25.13	9.81	22.36	8.04
Post test	39.30	5.47	32.11	3.89

S= Significance P < 0.05

The co - relation value of knowledge and skill r =0.64, 0.47showed that there was statistically high positive significant relationship between knowledge and skill among BSc nursing 3rd year students regarding simulation on oxygen therapy competences.

5. Discussion

Finding of the present study showed that post - test mean knowledge score regarding Stimulation on oxygen therapy competencies is much higher than pre - test. Regarding skill score the Post test mean skill score was higher than the pre - test. It was observed in the present study that there was significant relationship between knowledge and skill among B. Sc. nursing 3rd year student related to oxygen therapy competencies.

6. Conclusion

Simulation can be recommended as an effective training strategy among B. Sc. nursing 3rd year students. Simulation technique on student was improving their skills regarding oxygen therapy.

Nursing Administration:
- Nursing should be given administrative assistance they need to create and implement teaching materials such as simulation of oxygen therapy competencies.
- Nursing administrator should work with the government to implement rules that ensure the availability of suitable facilities for teaching oxygen therapy competencies.
- Administrators should implement an in - service education programme for nurses so that they may increase their expertise and apply it to patients.
- Institution should conduct periodic inspection to ensure that students have proper knowledge of oxygen therapy procedures and process.
- Administrative assistant should be provided for the production of such teaching materials which are driven by simulation etc.

Nursing Research:
The findings of the study add to the knowledge in nursing. In the future, the investigators can utilise the finding and technique as reference material. It identifies the idea that it deserves more investigation. Other researchers undertaking more research in the same topic can use the idea and recommendations. Further research may be undertaken on this area to have a more comprehensive understanding of simulation for oxygen therapy competences among BSc nursing 3rd year students. A behaviour change message that will effectively raise awareness of simulation.

7. Recommendations

The following recommendations are made based on the finding of this study -
- A similar study can be undertaken on a large scale for making a more valid generalisation
- A comparative study can be arranged between knowledge and practise
- A similar study can be arranged for B. Sc. nursing students working in specialist hospitals or multi specialist hospitals in different settings
- An experimental study can be conducted to evaluate effectiveness of self - instructional module in term of knowledge and attitude of nursing student
- Periodical assessment of nursing officers who work in hospitals knowledge and attitude regarding oxygen therapy procedures and related competencies.
- A similar study can be undertaken with descriptive survey research design.

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References

[1] Journal of clinical monitoring and computing, Article oximetry feedback flow control simulation for oxygen therapy, Published - 05 January 2007, volume - 21, Page 115 - 123.

[2] Journal clinical anaesthesia, Volume 9, issue - 3, May - 1997, page 184 – 188

[3] Datta R Upadhyay K Jayadeep C, Simulation and its role in medical education, Med Armed Forces India, 2012, page no.167 - 172

[4] Walsh C M, Reise K S, Correia R., Simulation use in paediatrics student respiratory therapy training, Kana J respiratory therapy, Year - 2017

[5] Culbreath R, Clark K, Rojas JD Ali's models for strengthening graduate respiratory care education, respiratory care education, annual 2021, Page number 1 - 30.

[6] Caster L, Rice R, Stollar JK, Desperately care Continuing education, respiratory care clinic North America, year 2005, page number 501 - 515.

[7] Chest journal, respiratory care, volume 154, Issue 4, October 2018.

[8] Branson RD Johan Nigman J A, pre hospital oxygen therapy, j Respire care, year - 2013, Page no.86 - 97

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