

A Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge Regarding Maintaining Airway Patency in Patients with Mechanical Ventilator among B.Sc. Internship Nursing Students at Selected College of Nursing, Moradabad

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ABSTRACT

Suctioning is a common procedure performed by nurses to maintain the gas exchange, adequate oxygenation and alveolar ventilation in critical ill patients under mechanical ventilation and aim of this research is to provide knowledge regarding maintaining airway patency with suctioning care that will help in the implementation of the quality of nursing care, eventually it will lead to better results. The planned study is a pre experimental study to assess the effectiveness of planned teaching programme on knowledge regarding airway patency on patients with mechanical ventilator among the B.Sc. internship students of selected college of nursing at Moradabad. To assess the level of knowledge regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. Nursing internship students. To assess the effectiveness of planned teaching programme in term of knowledge regarding airway patency among B.Sc. nursing internship students. The purpose of this study is to examine the association between knowledge and effectiveness regarding airway patency among B.Sc. Nursing internship demographic students and their selected partner variables. A pre experimental study was conducted among 86 participants, selected by non probability convenient sampling method. Demographic Performa and self structured questionnaire was used to collect the data from the B.Sc. internship students.

KEYWORDS: *airway patency, knowledge, effectiveness, B.Sc. nursing internship*

Level of knowledge in the post test score was relatively higher than that of pre test. Hence, there is a significant difference between the mean pre test score (15.40) and mean post test knowledge score (24.86) regarding airway patency on patients with mechanical ventilator among the B.Sc. internship students. Effectiveness of planned teaching programme regarding airway patency on patients with mechanical ventilator among the B.Sc. internship students result revealed that there was significant improvement from pre-test score mean (15.40) to post test score mean (24.86), at 0.05 level of significance. Depicted there was no significant association found between the pre-test score with selected demographic variables.

Conclusion: present study concludes that that there was significant difference between the mean test score and also the effectiveness regarding airway patency among B.Sc. Nursing internship students result revealed that there was significant improvement from pre test score to post test score.

1. INTRODUCTION

Patent airway is an airway that is clear and open without interference to the passage of air into and out of the body. Most reliable method of opening the airway is head-tilt chin-lift method. Most common procedure is endotracheal suctioning in patients with artificial airways. Indications for the use of airway management are failure to oxygenate, failure to

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ventilate or failure to maintain a patent airway. Important factors affecting the maintenance of upper airway patency are upper airway geometry, negative intrapharyngeal pressure, activation of upper airway dilator muscles. Once the airway is maintained, it is important to ensure adequate oxygenation and ventilation through the airway. Airway patency is managed by utilization of both invasive and non-invasive techniques: non-invasive airway management includes passive oxygenation, bag-valve-mask ventilation, supraglottic airways and non-invasive positive –pressure ventilation. Invasive airway management includes advanced skills such as tracheostomy, endotracheal intubation and cricothyroidotomy.

2. Background

Airway management consists of clearing the upper airway, maintain an open air passage with a mechanical device and sometimes assisting respirations. Whatever airway management techniques are used, tidal volume should be 6 to 8 ml/kg and ventilator rate should be 8 to 10 breath/minute, slower rates are commonly used in patients with severe air trapping like in asthma and COPD. Passive oxygenation without positive pressure ventilation shows promise in the first minutes after cardiac arrest. In any state of hemodynamic instability, smaller volumes and slower respiratory rates are also desirable.

The important thing to remember is that positive pressure ventilation is the opposite of physiologically normal negative pressure ventilation. An unconscious patient who has upper airway obstruction is initially managed with CPR. In these patients, chest compressions increase intra thoracic pressure in the same manner that abdominal thrusts do in conscious patients. Tracheal suctioning is an important aspect of effective airway management. An accurate and timely judgment based on knowledge is important in critical care nursing practice. According to a recent survey 80% of respondents use closed system suctioning devices for suctioning the airways of patients.

3. Need of the study

The airway is the most important priority in management of the severely injured patient. To allow free access of air to the distal endobronchial tree it is essential to open and clear the airway. Essential aspect of effective airway management is tracheal suctioning. It is imperative that nurses know about the risks and they are able to practice according to the current research recommendations.

4. Aim

This study aims to assess the effectiveness of planned teaching programme on knowledge regarding

maintaining airway patency in patients with mechanical ventilator among B.Sc. internship nursing students at selected college of nursing, Moradabad.

5. Methods

A quantitative research approach was used to assess the student knowledge regarding airway patency. The pre-experimental one group pre-test and post-test research design. The setting for the study was Teerthanker Mahaveer College of Nursing, TMU, Moradabad (U.P.). The accessible population of the present study was BSc 4th year internship student of Teerthanker Mahaveer College of Nursing, TMU, and Moradabad (U.P.). Sample consists of BSc 4th year internship student of Teerthanker Mahaveer College of Nursing, TMU, and Moradabad (U.P.). Who met the eligibility criteria? The present student utilized standard formula to determine sample size and was found 88. Sample criteria is included inclusion criteria that is Nursing Student of B.Sc. fourth year from Teerthanker Mahaveer college of Nursing, those students are willing to participate at the time of data collection and student available during the time of data collection. Exclusion criteria are nursing student of B.Sc. first to third year, students who were absent at the time of data collection and student who are not willing to participate in the study. Non- probability convenient sampling method was used to select the 88 students of BSc 4th year internship. A self structured questionnaire method was used for collecting the data. The content of tool was validated by different expertise of nursing regarding relevance, clarity and appropriateness. Validity of tool is 0.99. Reliability of the tool was tested by introducing tool among BSc 4th year internship students by using split-half formula. The result of reliability was 0.942.

6. Findings

The cumulated data was systematized in master data sheet and analyzed using descriptive statistics as per objective of the study using SPSS, version16 software. Objectives of the study are to assess the level of knowledge regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. nursing internship students, to assess the effectiveness of planned teaching programme in terms of knowledge regarding airway patency among B.Sc. nursing internship students and to find out the association between the pretest level of knowledge regarding airway patency among B.Sc. internship nursing students with their selected demographic variables.

Section A: Description of the Sample characteristics and clinical Performa.

This section elaborated with the frequency and percentage distribution of sample characteristics.

Table 1 Frequency and percentage of demographic characteristics

		(n=88)	
	Demographic characteristics	f	%
1)	Age in years		
	a) 18-20 Years	18	20.45%
	b) 21-23 Years	53	60.22%
	c) 24 And Above	17	19.3%
2)	Gender		
	a) Male	36	40.90%
	b) Female	52	59.0%
	c) Transgender	0	0%
3)	Religion		
	a) Hindu	45	51.1%
	b) Muslim	28	31.8%
	c) Christian	12	13.6%
	d) Others	3	3.4%
4)	Marital status		
	a) Unmarried	73	82.95%
	b) Married	15	17.0%
	c) Divorce/Separate	0	0%
	d) Widow/Widower	0	0%
5)	Educational Status Of Father		
	a) No formal educational	3	3.4%
	b) Upto primary school	4	4.54%
	c) Secondary(10 th)	14	15.9%
	d) Higher secondary(12 th)	17	19.3%
	e) Graduation and above	50	56.81
6)	Educational Status Of Mother		
	a) No formal educational	9	10.2%
	b) Upto primary school	12	13.6%
	c) Secondary(10 th)	19	21.5%
	d) Higher secondary(12 th)	17	19.3%
	e) Graduation and above	31	35.22
7)	Types of family		
	a) Nuclear	66	75%
	b) Joint	21	23.9%
	c) Extended	1	1.1%
8)	Family income per month		
	a) Rs <10,000/- per month	11	12.5%
	b) Rs10,001/- to20,000/- per month	12	13.6%
	c) Rs 20,001/- to 30,000/- per month	23	26.1%
	d) Rs >30,000/- per month	42	47.7%
9)	Area of residence		
	a) Urban	36	40.9%
	b) Rural	43	48.9%
	c) Semi urban	9	10.2%

Table 1- revealed that approx hefty of the participants 53(60.2%) pertained to the age group of 21-23, 18(20.5%) respondents were pertained to the age group of 18-20, and the rest of the respondents were pertained to the age group of 24 and above 17(19.3%).

The majority 52(59.1%) were females Rest 36(40.9%) were males.

Hefty 45(51.1%) participants belonged to Hindu religion approx ¼ participants belonged to Muslim religion and left over belonged to Christian and other religion.

Majority of participants 73(83.0%) were unmarried and 15(17%) were married.

Most of the participants father education status was 29(33.7%) belonged to graduation and above, 17(19.3%) belonged to higher secondary 12th, 14(15.9%) belonged to secondary 10th, 4(4.5%) belonged to primary school and the rest 3(3.4%) belonged to no formal education.

Majority of the participants education status of mother was 31(35.2%) belonged to graduation and above, 19(21.6%) belonged to secondary 10th, 17(19.3%) belonged to higher secondary, 12(13.6%) belonged to primary school and left over 10(11.6%) belonged to no formal education.

Model respondents 66(75.0%) were from nuclear family, approx 1/3rd 21(23.9%) were from joint family and the rest were from extended family.

Most of the participants 42(47.7%) had monthly family income of Rs >30,000/- per month, 23(26.1%) had the family income of Rs 20,001/- to 30,000/- per month, some had family income of Rs 10,001/- to 20,000/- per month and the rest 11(12.5%) had family income of Rs <10,000/- per month.

More than half of the participants 43(48.9%) belonged to residence of rural area and participants 36(40.9%) belong to residence of urban area and remaining 9(10.2%) belonged to residence of semi urban area.

SECTION B: Assessment of level of knowledge regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. nursing internship students.

Table: 2.1 Assessment of level of knowledge in terms of range, median, mean standard deviation. (n=88)

Variable	Range	Median	Mean	Standard deviation
Pre-test	23-7=15	16.00	15.40	4.07
Post-test	29-20=9	25.00	24.86	2.13

Table no. 2.1 Revealed that the post test scores is relatively higher than that of pre test after giving the planned teaching programme to the B.Sc. nursing internship students. There is a significant difference between the mean pre test and mean post test knowledge score regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. nursing internship students.

Table: 2.2 Frequency and percentage distribution of the level of knowledge regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. nursing internship students. (n=88)

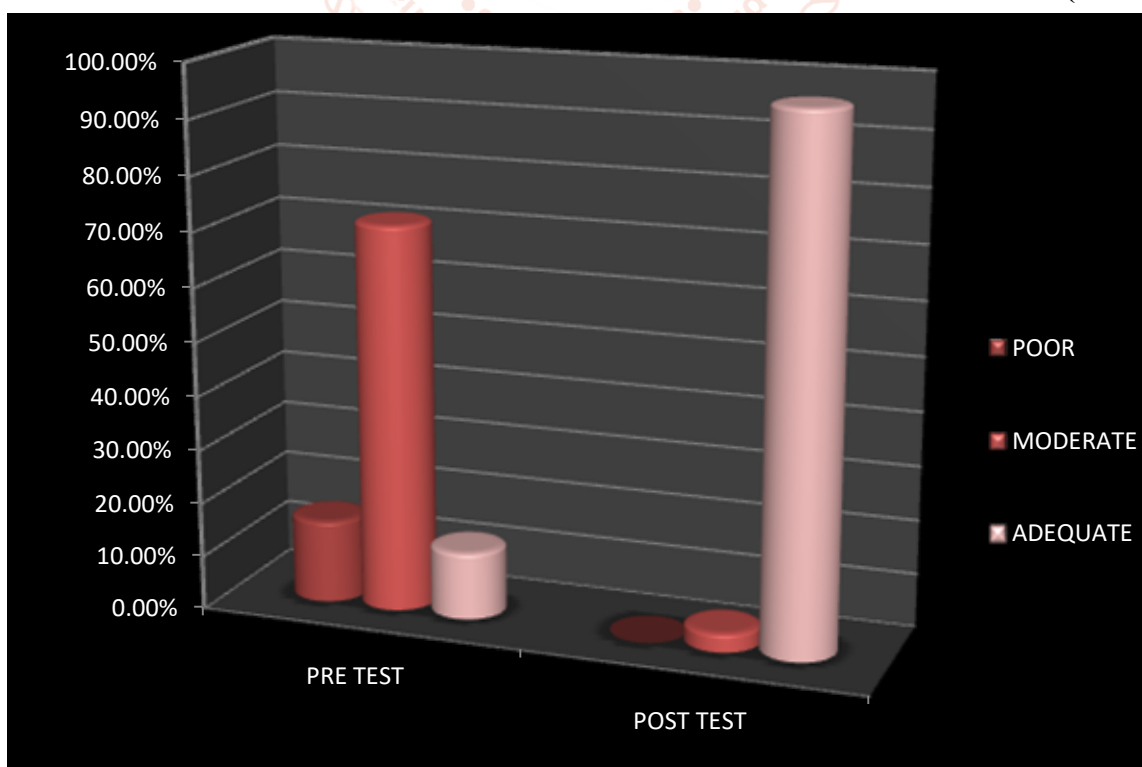


Figure 2.2 Column diagram showing percentage distribution of level of knowledge regarding maintaining airway patency in patients with mechanical ventilator among B.Sc. nursing internship students.

SECTION C: Assessment of the effectiveness of planned teaching programme regarding airway patency among B.Sc. nursing internship students.

Table 3: Effectiveness of planned teaching programme regarding airway patency among B.Sc. nursing internship students.

(n=88)						
Group	Mean	Standard Deviation	Mean Difference	"T-Test Value"	P. Value	Inference
Pre-Test	15.4091	4.07300	-1.136	-20.330	<.00001	S*
Post-Test	24.8636	2.13446				

Table - 3 Depicted effectiveness of planned teaching programme regarding maintaining airway patency among B.Sc. nursing internship students. The result revealed that there was significant improvement from pre-test score mean (15.4091%) to post test score mean (24.8636%), at 0.05 level of significance.

SECTION D: Association between the knowledge regarding airway patency among B.Sc. internship nursing students with their selected demographic variables.

Table 4. Association between the level of knowledge regarding airway patency with their demographic variable.

S. no	Socio-demographic variables	Level of knowledge			Chi square	d.f	Table value, P value	Inference
		Poor	Moderate	Adequate				
		f	f	F				
1) Age								
	18-20	2	14	2	2.24	4	2.78, 0.69	NS*
	21-23	10	35	8				
	24 and above	2	14	1				
2) Gender								
	Male	6	24	6	1.70	2	4.30, 0.58	NS*
	Female	8	39	5				
	Transgender	0	0	0				
3) Religion								
	Hindu	4	32	9	7.70	6	2.45, 0.26	NS*
	Muslim	6	20	2				
	Christian	3	9	0				
	Others	1	2	0				
4) Marital status								
	Unmarried	3	12	0	2.629	2	4.30, 0.26	NS*
	Married	11	51	11				
	Divorce/separate	0	0	0				
	Widow/widowed	0	0	0				
5) Educational status of father								
	No formal education	1	0	2	13.60	8	2.31, 0.09	NS*
	Upto primary school	1	3	0				
	Upto Secondary(10 th)	3	10	1				
	Upto Higher secondary(12 th)	4	12	1				
	Graduation and above	5	38	7				
6) Educational status of mother								
	No formal education	1	6	2	5.64	8	2.31, 0.68	NS*
	Upto primary school	1	10	1				
	Upto Secondary(10 th)	1	15	3				
	Upto Higher secondary(12 th)	4	12	1				
	Graduation and above	7	20	4				
7) Types of family								

	Nuclear	9	48	9	1.73	4	2.78, 0.78	NS*
	Joint	5	14	2				
	Extended	0	1	0				
8)	Family income per month							
	Rs <10,000/-Per Month.	0	10	1	3.737	6	2.45, 0.71	NS*
	Rs 10,001/- To 20,000/- Per Month	2	8	2				
	Rs 20,001/- 30,000/- Per Month	3	17	3				
	Rs > 30,000/- Per Month	9	28	5				
9)	Area of residence							
	Rural	4	26	6	3.46	4	2.78, 0.48	NS*
	Urban	9	29	5				
	Semi urban	1	8	0				

Table 4 depicted that there was no significant association found between the pre-test score with selected demographic variables age, gender, education status of father, education status of mother, family income per month, type of family and area of residence except for marital status it depicts that there is significant association. The calculated chi value was less than table value thus it shows that there was no significant association. Hence the research hypothesis was rejected and null hypothesis was accepted.

7. Discussion

Present study revealed that more than hefty of the participants (60.22%) belonged to the age group of 21-23 years and respondents (20.45%) were pertained to the age group of 18-20 years and the rest of the respondents were (19.3%) belonged to the age group of 24 years and above. Level of knowledge among them was 96.5%, 3.4% and 0.0% respectively. This study finding are in the line with research done by **Sharama, S., Sarin, J. & Bala, G. K** (2014). Carried out the study to see the effectiveness of endotracheal suctioning protocol in terms of knowledge and practices of nursing personnel A sample of 30 nursing personnel were selected with the help of purposive sampling technique. Majority of nursing personnel (96.67%) were found to be female. Among them most of nursing personnel (73.33%) were of age group of 20-25 years old and rest (26.67%) of the nursing personnel were in the age group of 26-30. The study's implications for nursing education and administration is "Prevention is better than care" and good care can help in maintaining airway patency through suctioning. We had enhanced the knowledge of students regarding airway patency on patient with mechanical ventilation by implementing structured teaching programme. On the basis of this research study we can do nursing research on 'Finding of the study will act as activator to carry more comprehensive research related to level of knowledge regarding endotracheal suctioning". Based on outcome of present study the following recommendations were made for future research. Descriptive study can be conducted on students' level of knowledge. Further study can be conducted to explore the determinant factors of students' level of knowledge. Similar study can be reported by increasing the size of the sample.

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