



Assessing The Impact Of A Structured Teaching Program On The Knowledge Of Final Year B.Sc. Nursing Students Regarding Nursing Care For Patients On Mechanical Ventilators In Selected Nursing Colleges Of Gujarat.

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	<i>Abstract</i>
Received: 16 November 2023	<p>Introduction: Critical illnesses can affect individuals at any age, posing life-threatening challenges that disrupt various aspects of their well-being. Such conditions have profound effects on physical, psychological, socio-cultural, and spiritual dimensions. Goal-oriented care is crucial for survival, focusing on achieving optimal physical, psychological, and social potential. Nursing plays a pivotal role in restoring an individual's life processes to dynamic equilibrium, with nurses serving as catalysts by making timely and complex decisions to promote life processes.</p> <p>Aim: The purpose of this study is to evaluate the effectiveness of a structured training programme on nursing treatment for people on mechanical ventilation systems among B.Sc. nursing students in their final year.</p> <p>Materials & Methods: A critical evaluation was conducted using a “pre-experimental one-group pretest-post-test research design”. A convenient sampling method was employed to choose 50 final year students for the study purpose. Data collection involved the use of a well-structured questionnaire, and the effectiveness of knowledge transfer to the students was assessed through the implementation of a structured teaching program. This approach aimed to provide comprehensive insights into the impact of the educational intervention on enhancing the understanding of mechanical ventilator care among the selected nursing students.</p> <p>Results: The study evaluated the knowledge of “final year B.Sc. nursing students” regarding the care of patients on mechanical ventilators. In the pretest, 7 students exhibited average knowledge, while 43 had poor knowledge. In the posttest, 22 students demonstrated average knowledge, and 28 exhibited good knowledge. The overall mean percentage of knowledge in the pretest was 36.66% (SD=3.4), while in the posttest, it was 76.66% (SD=3.2) with a positive difference of 11.68 and 't' value 1.84.</p> <p>Interpretation and Conclusion: The post-test average score exhibited a significant increase compared to the pretest score ($p < 0.05$), registering</p>
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<p>CC License CC-BY-NC-SA 4.0</p>	<p>an overall mean of 11.68 points. This substantial improvement underscores the significant enhancement in final year B.Sc. nursing students' comprehension of patient care on mechanical ventilators. The researcher observed that the structured teaching program effectively conveyed information to these students, demonstrating its efficacy in facilitating knowledge acquisition. This highlights the program's potential impact in fostering a more informed approach to patient care in the field of nursing.</p>
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INTRODUCTION:

Patients who are critically or chronically ill and rely on mechanical ventilators for survival constitute a diverse group, encompassing both children and adults. Conditions necessitating mechanical ventilation range from genetic disorders to acquired issues such as trauma and postoperative complications. Mechanical ventilators have significantly extended the lives of individuals whose respiratory function has been compromised by various factors, including drugs. The reasons for employing mechanical ventilation vary, encompassing the control of respiration and addressing respiratory inadequacies. Mechanical ventilators, whether positive or negative pressure devices, play a crucial role in maintaining ventilation and ensuring prolonged oxygen delivery.

Caring for patients on mechanical ventilators has become an integral aspect of nursing in critical care units, general medical-surgical wards, extended care facilities, and even in-home settings. The nursing care for patients on mechanical ventilators requires comprehensive knowledge about the pathophysiology of pulmonary conditions that necessitate ventilator therapy. Understanding ventilation parameters, modes, and utilizing capnography for respiratory waveform monitoring are essential components of providing effective care. Nursing students must acquire knowledge in areas “such as airway management, patient positioning, nutritional therapy, medication administration, communication strategies, weaning protocols, and the prevention of complications” to ensure the safe and effective care of patients on mechanical ventilators.

This study aims to “evaluate the impact of a structured teaching program on the knowledge of final year B.Sc. nursing students regarding the care of patients on mechanical ventilators”. The diverse nature of patients requiring mechanical ventilation necessitates a comprehensive understanding of various aspects of care to provide optimal nursing interventions. The findings from this study are expected to contribute valuable insights that can enhance nursing education and improve patient outcomes in the critical and challenging field of mechanical ventilation care.

METHODOLOGY:

The absence of a substantial correlation between demographic characteristics and knowledge implies that hypothesis H2, asserting no significant link between pre-test practice scores and demographic factors “such as age, gender, parent health center, or cumulative academic percentage over three years”, is rejected. In this study, the structured teaching program served as the independent variable, influencing knowledge about caring for patients on mechanical ventilators among final-year B.Sc. nursing students. The dependent variable was the students' comprehension of patient care using mechanical ventilators. Demographic variables considered encompassed age, gender, alternative sources of information (excluding classroom lectures), parent hospital affiliation, and the overall academic performance over three years. These findings underscore the need for tailored educational interventions to enhance understanding irrespective of demographic characteristics.

A sample of 50 final-year B.Sc. nursing students from selected colleges in Gujarat was chosen using non-probability convenient sampling. Data on demographics and clinical information were collected through a structured questionnaire. A pilot study was undertaken with five B.Sc. nursing students in their last year at Sumandeep College of Nursing in Vadodara. Descriptive statistics such as frequency and percentage distribution, as well as measures of central tendency, were employed. Inferential statistics, including paired 't' tests and chi-square tests, were used for analysis.

RESULT:**SECTION – I: DEMOGRAPHY OF “FINAL YEAR B.SC NURSING STUDENTS”**

N=50

DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
Age		
➤ < 25 years	47	94%
➤ > 25 years	3	6%
Gender		
➤ Male	2	4%
➤ Female	48	96%
Educational programme except classroom lectures		
➤ Yes	18	36%
➤ No	32	64%
Parent Hospital		
➤ Yes	26	52%
➤ No	24	48%
Aggregated % in academics up to 3 yrs		
➤ < 50 %	3	6%
➤ 50-60 %	14	28%
➤ 60 %	33	66%

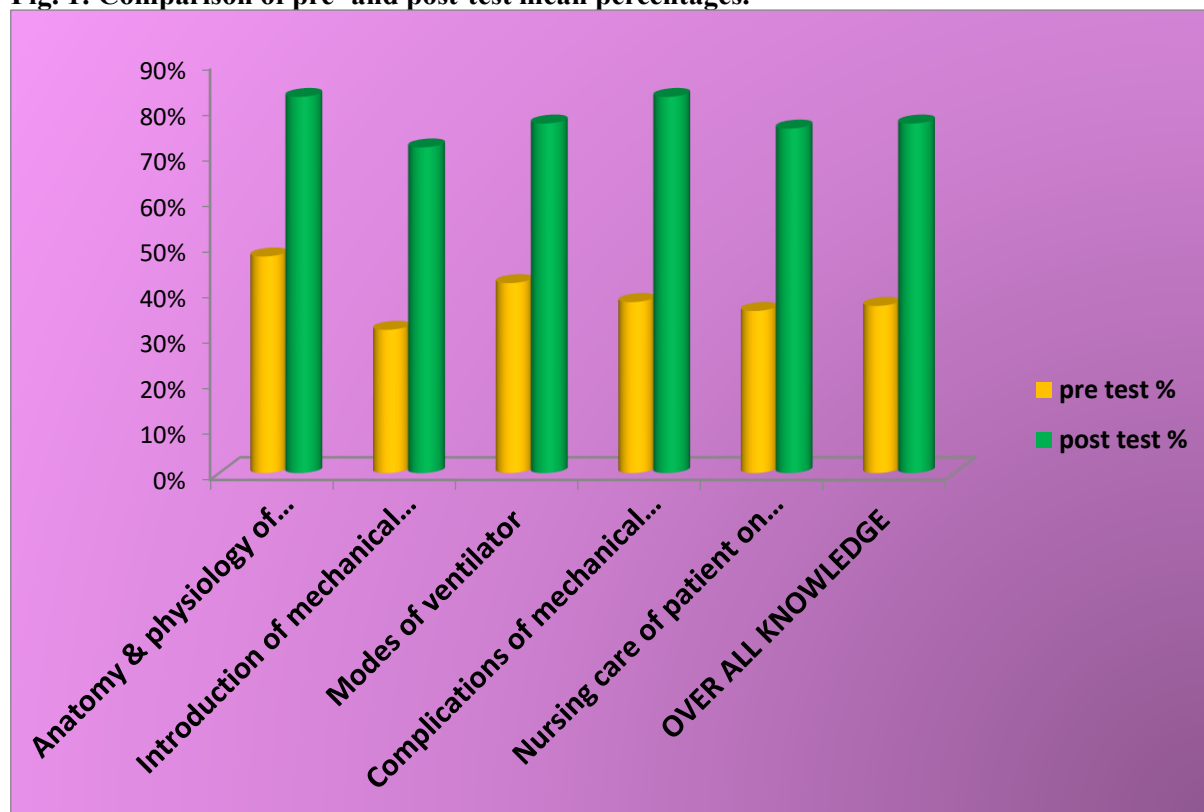
In Section I, the data reveals that most subjects fall within the age group of under 25 years (94%). Among the participants, 48 (96%) are female, while 2 (4%) are male. About 18 (36%) have attended educational programs related to the topic, whereas 32 (64%) have not participated in any educational programs related to the study. Additionally, 26 (52%) subjects have a parent hospital associated with their colleges, while 24 (48%) subjects do not have a parent hospital connected to their college. In terms of academic performance, 3 (6%) subjects obtained an aggregated percentage in academics below 50% over 3 years, 14 (28%) subjects scored between 50-60%, and the majority, 33 (66%) subjects, achieved an aggregated percentage above 60%.

SECTION- II: COMPARISON OF PRE - TESTS AND POST KNOWLEDGE OF PATIENT CARE ON MECHANICAL VENTILATOR

N= 50

SR NO	KNOWLEDGE VARIABLES	PRE TEST		POST TEST		Mean difference	‘t’ TEST	INFERENCE
		MEAN	SD	MEAN	SD			
1.	Anatomy & physiology of respiratory system	1.9	0.8	3.3	0.8	1.40	0.18	NS
2.	Introduction of mechanical ventilator	2.2	1	5	1.1	2.82	0.36	NS
3.	Modes of ventilator	2.5	1.4	4.6	1.1	2.08	0.28	NS
4.	Complications of mechanical ventilator	1.5	0.9	3.3	0.9	1.80	0.26	NS
5.	Nursing care of patient on mechanical ventilator	3.2	1.6	6.8	1.6	3.84	0.36	NS
6.	OVER ALL KNOWLEDGE	11	3.4	23	3.2	11.68	1.84	S

The table data indicates that the mean overall knowledge score in the pretest was 11, while in the posttest, it increased to 23. The gain in mean for overall knowledge was 11.68, and the 't' value at df 49 was 1.67, indicating high significance at $p < 0.05$. At a threshold of significance of 0.05, the results indicate that the individuals' posttest knowledge scores are considerably greater than their pre-test scores. So, hypothesis H1 is accepted. This finding aligns with Paulus John's study on the effectiveness of STP on knowledge related to caring for a mechanically ventilated patient, where the mean difference in knowledge score was 14.7, with a t value of 2.38.

Fig. 1: Comparison of pre- and post-test mean percentages.

SECTION III: THE RELATIONSHIP BETWEEN “PRE-TEST KNOWLEDGE OF FINAL-YEAR B.S.C. NURSING STUDENTS” & “DEMOGRAPHIC VARIABLES”.

Median = 12

N=50

SR NO	VARIABLE	CATEGORY	TOTAL SCORE		CHI SQUIRE VALUE	TABLE VALUE	INFERENCE
			< MED IAN	> MED IAN			
1.	Age	<25 years	21	26	0.127	D f-1 3.84	NS
		> 25 years	1	2			
2	Gender	Male	1	1	0.028	D f- 1 3.84	NS
		Female	21	27			
3	Educational programme except classroom lectures	Yes	4	14	5.390	D f- 1 3.84	S
		No	18	14			
4	Parent Hospital	Yes	14	12	2.119	D f- 1 3.84	NS
		No	8	16			
5.	Aggregated % in academics up to 3 yrs	<50%	3	0	4.773	D f-2 5.99	NS
		50-75 %	7	7			
		>75%	12	21			

“S- Significant”, “NS – Non-Significant”, “P <0.05”

The analysis of chi-square values reveals a significant association between the education program (excluding classroom lectures) and the obtained scores, surpassing the table values. As a result, we accept hypothesis H₂, affirming a noteworthy connection between the pre-test practice scores of final year B.Sc. nursing students and certain demographic variables within the education program, excluding classroom lectures. On the other hand, the chi-square values for age, gender, parent hospital, and aggregated academic percentage over three years are observed to be less than the table values. This suggests that there is no substantial connection between these demographic characteristics and knowledge. As a result, we reject hypothesis H₂, which asserts that there is no significant link between pre-test practise scores and the demographic characteristics, “such as age, gender, parent hospital, and accumulated academic %” over three years.

CONCLUSION:

The study's results led to the conclusion that the current understanding of caring for patients on mechanical ventilators among students was insufficient. The implemented teaching program showed a significant improvement in knowledge (with a 't' value of 1.84) related to the care of patients on mechanical ventilators among these students. The statistical findings strongly suggest that offering structured teaching programs of this nature can inspire final year B.Sc. nursing students and enhance their knowledge acquisition in this area.

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