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## REVIEW ARTICLE

# A STUDY TO ASSESS THE EFFECTIVENESS OF COMPUTER ASSISTED TEACHING PROGRAMME ON KNOWLEDGE REGARDING MODES OF MECHANICAL VENTILATOR AMONG STAFF NURSES IN CRITICAL CARE UNITS

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### ABSTRACT

**Introduction:** Mechanical ventilator support is one of the major supportive modalities used in intensive care. The nurse requires knowledge about the indications, modes and settings of ventilator and different aspects of nursing care. **Methodology:** A Quantitative research approach and one group pre-test – post-test research design was selected. The study includes 60 staff nurses selected by convenient sampling technique. The study was conducted in Narayana Medical College and General Hospital at Nellore. Structured questionnaire was used to collect the data by period of 4weeks schedule. **Results:** The results revealed that, there was a significant difference between mean pre-test scores and mean post test scores of knowledge regarding modes of mechanical ventilator among staff nurses. Major finding of the study the 't' value for the experimental group knowledge on pre test 10 that the mean of the pre-test knowledge scores is 12.83 and the standard deviation 3.9 while the mean of the post-test knowledge scores is 24.2 and the standard deviation is 4.5 the calculated 't' value (14.05\*) is higher than the table value (2.00) at 0.05% level of significance. **Conclusion:** the study concluded that, the knowledge on modes of mechanical ventilator was effective and improved the level of knowledge among staff nurses.

## INTRODUCTION

A mechanical ventilator is positive or negative pressure breathing device that can maintain ventilation and oxygen delivery for a prolonged period. Caring for a patient on mechanical ventilator has become an integral part of nursing care in critical care facilities. A Mechanical ventilation has been used for decades to support the respiratory function of patients with various degrees of respiratory failure. Patients who have weak or absent spontaneous respirations usually require mechanical support to assist in ventilation and oxygenation. Because the ventilator is integral life support equipment in the critical care, it is important for the staff nurses to know the basic concepts and applications of mechanical ventilation. The nurses generally had reasonable influence on decisions made. Inter-professional collaboration varied according to the type of decision with physicians more likely to select initial ventilator settings and nurses more involved in the ongoing titration of ventilation and determination of extubation readiness.

**STATEMENT OF THE PROBLEM:** A study to assess the effectiveness of computer assisted teaching programme on knowledge regarding modes of mechanical ventilator among staff nurses in critical care units, nmcmh, nellore, ap.

## OBJECTIVES

- To assess the level of knowledge on modes of Mechanical Ventilator among staff nurses working in critical care units.
- To determine the effectiveness of computer assisted teaching program on modes of Mechanical Ventilator among staff nurses working in critical care units
- To compare the pre -test and post-test level of knowledge on modes of Mechanical Ventilator among staff nurses working in critical care units.
- To find out the association between selected demographic variables and post-test level of knowledge on modes of Mechanical Ventilator among staff nurses working in critical care units.

## REVIEW OF LITERATURE

A pre-experimental study was conducted to assess the effectiveness of structured teaching programme on modes of mechanical ventilator among staff nurses at Kempegowda Institute of Medical Sciences and Research Centre, Bangalore. The study involved one group pre-test and post-test using pre-

experimental design, with non-probability sampling technique in which purposive sampling method was used. 60 nurses working in Kempegowda Institute of Medical Sciences, Hospital and Research Centre were taken as samples (N=60) and requested to answer the structured knowledge questionnaire followed by implementation of structured teaching programme (STP) and post-test conducted after 8 days, using the same structured questionnaire to find out the effectiveness. With regard to effectiveness of structured teaching programme and association of demographic variables with knowledge scores, it was observed that there is no significant association found at 0.05 level between pre-test level of knowledge of nurses and the selected demographic variables. The mean percentage of pre-test and post-test knowledge scores were 39.85% and 74.72% respectively and the enhancement of the knowledge score noticed in this study is 34.87%. The overall findings of the study clearly showed that the Structure Teaching Program was significantly effective in improving the knowledge of nurses regarding modes of mechanical ventilator 25

A Correlational design study was conducted to assess knowledge regarding mechanical ventilator modes and practice of ventilator care by nurses in general Pulmonary and Medical wards. The study was conducted on registered staff nurses who were 16 assigned to patients on mechanical ventilator. Purposive sampling technique was used to select 86 subjects. An investigator prepared questionnaire and an observation check list was used to assess knowledge and practice of nurses, respectively. Descriptive and inferential statistics were used to analyse data Of the subjects, 46.5% had moderately adequate knowledge (score of 60-74%). Practice was found to be inadequate among 93% of the subjects (score) 24

## MATERIALS AND METHODS

A Quantitative research approach and one group pre test and post test design was adopted.

- **Sample Size:** 60 staff nurses were selected by convenient sampling technique.
- **Criteria for sample selection:** Inclusion criteria: • Student Nurses who are posted in critical care unit. • Available at the time of data collection. • Willing to participate in the study. 23 Exclusion criteria: • Not available at the time of data collection • Not willing to participate in the study. • Who are not student nurses.

### Data collection method

#### It consists of three parts

**Phase: 1** Formal administrative permission will be obtained from concerned healthcare setting authorities

- Demographic data and pre-test level of knowledge regarding modes of Mechanical ventilator was collected from the samples.

Phase-2 • Administered computer assisted teaching programme on knowledge regarding modes of Mechanical ventilator in critical care unit. Phase-3 The post data was collected from the sample after administering intervention.

**Ethical Clearance:** • Ethical clearance obtained from institution ethical committee. • Consent will be taken from the staff nurses in critical care units.

## RESULTS

Frequency And Percentage Distribution Of Staff Nurses According To Their Socio Demographic Variables

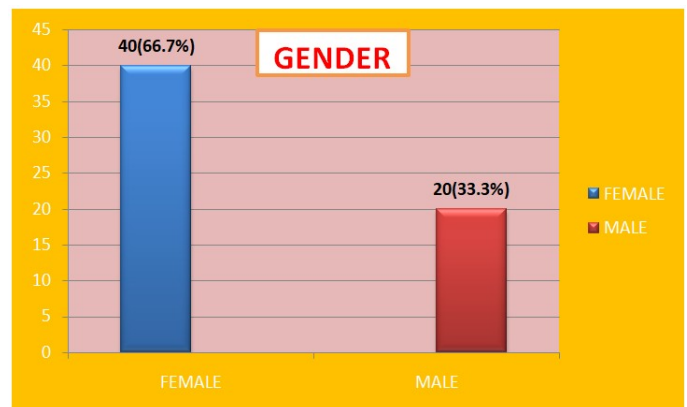


Fig. 1. Frequency percentage distribution of sample with gender

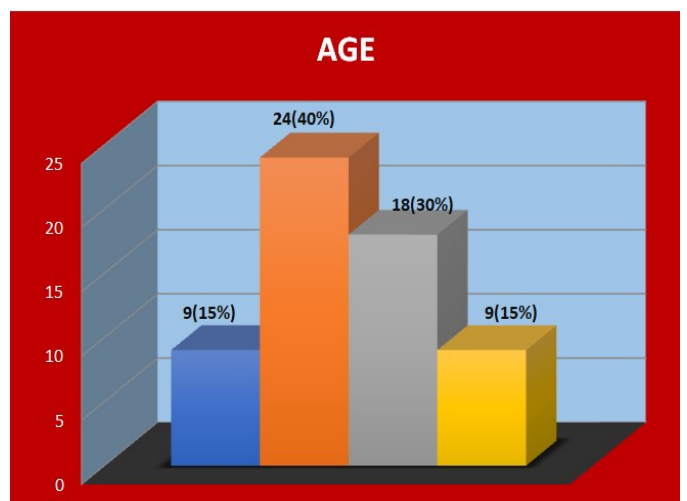


Fig. 2. frequency percentage distribution of samples with age

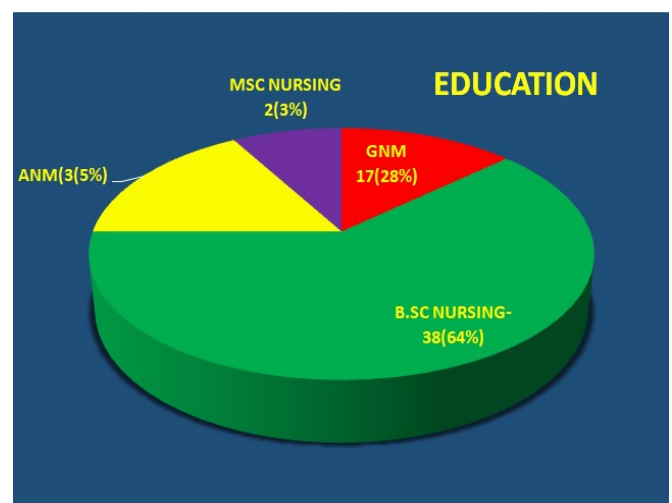


Fig 3. Frequency percentage distribution of education

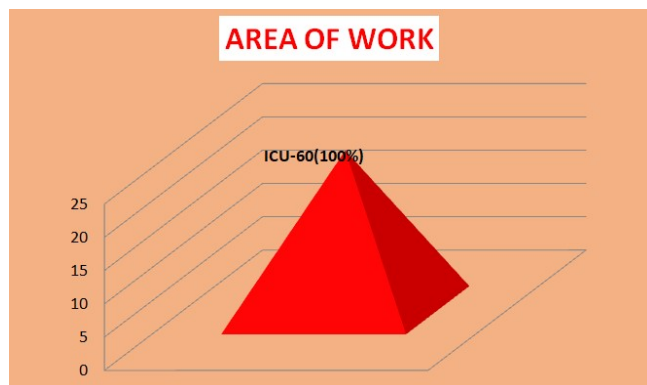


Fig 4. Frequency percentage distribution of the SAMPLE WITH AREA OF WORK

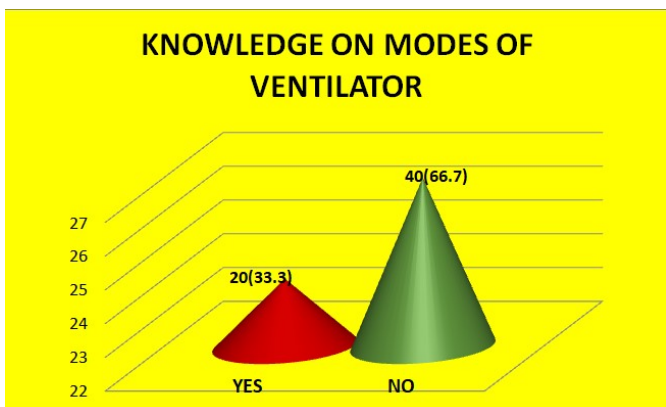


Fig. 5. frequency percentage distribution of SAMPLES WITH Knowledge

Table 1. mean, standard deviation and paired ‘t’ test of pre-test and post-test knowledge scores of modes of mechanical ventilator

S.NO	Item	Pre-test		Post-test		Paired ‘t’ Test (p=0.05)
		Mean	SD	Mean	SD	
1.	Knowledge	12.83	3.9	24.2	4.5	t=14.05* T=2.00 Df=59

Note: “T” denotes Table Value “DF” denotes Degree of Freedom. The information shows that the mean of the pre-test knowledge scores is 12.83 and the standard deviation 3.9 while the mean of the post-test knowledge scores is 24.2 and the standard deviation is 4.5. From the above table it is evident that the computer assisted teaching programme was effective in improving the knowledge of the nursing staff regarding modes of mechanical ventilator as the calculated ‘t’ value (14.05\*) is higher than the table value (2.00) at 0.05% level of significance.

Table 2. Association Of The Post-Test Knowledge Knowledge Of Student Nurses With Their Socio Demographic Variables

S.NO	Socio demographic variables	X <sup>2</sup> Calvalue	Table value (p=0.05)	Degrees of freedom
1.	Age Gender Education	12.6*NS	3.84	6
2.	Area of work	40.44 <sup>NS</sup>	3.84	27
3.	Previous knowledge	0.725*	3.84	1
4.	onmodes of mechanical ventilator	0.66*	3.84	1
5.		8.8068 <sup>ns</sup>	3.84	3

Table 2 presents the association of the pre-test knowledge of the student nurses regarding their socio-demographic variables. The chi-square test was carried out to find out the association of the pre-test knowledge of the student nurses with their socio-demographic variables like age, gender, education, area of work, previous knowledge regarding modes of Mechanical Ventilator. The calculated values of socio demographic variables of the staff nurses such as age ( $\chi^2=12.6NS$ ), gender ( $\chi^2=40.44NS$ ) and previous knowledge

( $\chi^2=8.8NS$ ) are more than the table value and thus are found to be non-significant, associated with post-test knowledge. The calculated chi-square values of socio demographic variables of the staff nurse such as education ( $\chi^2=0.725$  area of work ( $\chi^2=0.6$ ), less than the table value and thus are found to be significant with the post-test knowledge of staff nurses at 0.05 level. Hence, the researcher accepts the research hypotheses.

**FINDINGS OF THE STUDY**

- That out of 60, 43 (71.6) respondents are in the age group of 18-20 years followed by 17 (28.3%) in the age group of 21- 25 years.
- Concerning education, it reveals that there are 2(3%) respondents are from M.sc nursing while 38 (64%) are from B.sc nursing, where 17 (28%) are from GNM and while there are 3 (5%) are from ANM.
- In all of the 60 samples 60 (100%) were from the ICU department.
- On the whole 40 (66.6%) respondents have no previous knowledge regarding knowledge on modes of Mechanical Ventilator, while 20 (33.3%) of them had previous knowledge.
- The pre-test knowledge scores is 12.83 and the standard deviation 3.9.
- The post-test knowledge scores is 24.2 and the standard deviation is 4.5.
- The paired ‘t’ test was found significant (14.05\*) at the 0.5% level of significance which indicates that the computer assisted teaching programme was effective in enhancing the knowledge of the student nurses regarding modes of Mechanical ventilator.
- A statistically significant association was observed between the age ( $\chi^2=12.6*$ ), gender ( $\chi^2=40.44*$ ) and previous knowledge ( $\chi^2=8.8*$ ) with knowledge of student nurses are more than the table value and thus are found to be significantly associated with post -test knowledge of the student nurse at level of non -significance.
- Education, area of work regarding modes of Mechanical Ventilator were found significant.

**RECOMMENDATIONS**

Based on the findings of the present study, the following recommendations have been made:

- A similar study can be done on a large sample to generalize the findings.
- A quasi-experimental study can be done.
- A similar study can be carried out to evaluate the effectiveness of various teaching strategies like self-instructional module, information booklet, structured teaching programme, on knowledge regarding modes of Mechanical Ventilator .
- A descriptive study can be done to assess the knowledge of staff nurses on modes of Mechanical Ventilator.

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