

# A Study to Assess the Effectiveness of Learning Package Regarding Care of a Patient on Mechanical Ventilator to the Staff Nurses of a Selected Hospital in Kanpur

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## INTRODUCTION

The patient in the intensive care unit often requires mechanical assistance to maintain airway patency. Inserting a tube into the trachea by passing upper airway and laryngeal structures creates an artificial airway.

Endotracheal intubation is more common in intensive care unit patients. It can be performed quickly and safely at the bedside. A tracheostomy is a surgical procedure that is performed when there is need for an artificial airway for a longer period of time.

Mechanical ventilation is the process by which room air or oxygen-enriched air is moved into and out of the lungs mechanically.

### Background of the problem:

Mechanical ventilation is not curative. It is a means of supporting patients until they recover the ability to breathe independently.

In patients receiving prolonged ventilation, sputum cultures often grow gram negative bacteria such as pseudomonas, serratia and klebsiella.

These are abundant in the hospital. Organisms can spread in number of ways including contaminated respiratory equipment, inadequate hand washing, adverse environmental factors such as poor room ventilation and decreased patient ability to cough and clear secretions<sup>2</sup>.

Endotracheal tube bypasses normal airway defense. Poor nutritional state, immobility and the underlying disease process (e.g., immune suppression, organ failure) make the patient more prone to infection. The prevalence of ventilator-associated pneumonia is very high compared to other types of pneumonia. In addition, patients who develop ventilator associated pneumonia have significantly longer hospital days and higher mortality rates<sup>2</sup>. Infection can be minimized using strict aseptic technique while suctioning.

### Need for the study:

Mechanical ventilation is widely used therapeutically for critically ill patients. Endotracheal suctioning is the necessary procedure carried out in the intensive care units. Ventilator-associated pneumonia is the major complication. Hence, it is essential for the nurses to have adequate knowledge of and expertise in

performing this procedure safely and effectively to minimize these hazards.

The scientific knowledge on which nurses base their clinical practice is often lacking. Nurses' lack of adherence to aseptic technique may be a factor in transmitting infection or cross infection. When an infection can be prevented by ordinary and reasonable care, nurses must use such care. Adequate knowledge is required to follow the aseptic technique<sup>5</sup>.

The nursing staff in collaboration with other members of the healthcare team are responsible for providing comprehensive care to the mechanically ventilated patients. Therefore, they need to have a good working knowledge of concepts related to mechanical ventilation, working principle, components of general nursing interventions, communication needs of a patient, potential complications of mechanical

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ventilation, strategies for prevention of complications, and guidelines for weaning.

### **Statement of the problem:**

“A Study to assess the Effectiveness of learning package regarding care of a patient on mechanical ventilator to the staff nurses of a selected hospital in Kanpur”

### **Objectives:**

1. To assess the knowledge of staff nurses regarding the care of a patient on mechanical ventilator as measured by structured knowledge questionnaire
2. To assess the skill of staff nurses in performing endotracheal suctioning procedure as measured by observation checklist.
3. To determine the effectiveness of learning package in terms of gain in knowledge score and skill score of the staff nurses.

### **Operational Definition:**

#### **Effectiveness:**

In this study, it refers to the extent to which the learning package has achieved the intended result in the staff nurses in terms of gain in knowledge and skill score as measured by knowledge questionnaire and observation checklist.

#### **Learning package:**

In this study, learning package refers to a systematically written educational material containing instructional module for the staff nurses regarding the care of a patient on mechanical ventilator and demonstration of endotracheal suctioning.

The package consists of 3 sections with a total of 10 modules.

#### **Staff nurses:**

In this study, it refers to the nursing personnel who have successfully completed diploma in nursing or B. Sc. nursing with at least two months of clinical experience and are working in a Intensive Care Units of selected hospital in Kanpur.

#### **Knowledge**

In this study it refers to the correct responses obtained from the staff nurses regarding the care of a patient on mechanical ventilator expressed in terms of gain in knowledge score as measured by structured knowledge questionnaire.

#### **Skill**

In this study, it refers to the explanation and step-wise actual performance of endotracheal suctioning as per the written and validated guidelines for endotracheal suctioning as measured by an observation checklist.

### **Assumptions:**

1. The staff nurses will have some knowledge regarding the management of patients on mechanical ventilator.
2. Learning package is considered as an accepted teaching strategy to improve the knowledge and skill of staff nurses.

### **Hypotheses:**

All hypotheses will be tested at 0.05 level of significance.

**H<sub>1</sub>:** The mean post-test knowledge score of staff nurses regarding the care of a patient on mechanical ventilator will be significantly higher than the mean pre-test knowledge score.

**H<sub>2</sub>:** The mean post-test skill score of staff nurses in performing endotracheal suctioning procedure will be significantly higher than the mean pre-test skill score.

**H<sub>3</sub>:** There will be significant relationship between knowledge score and skill score of staff nurses in endotracheal suctioning.

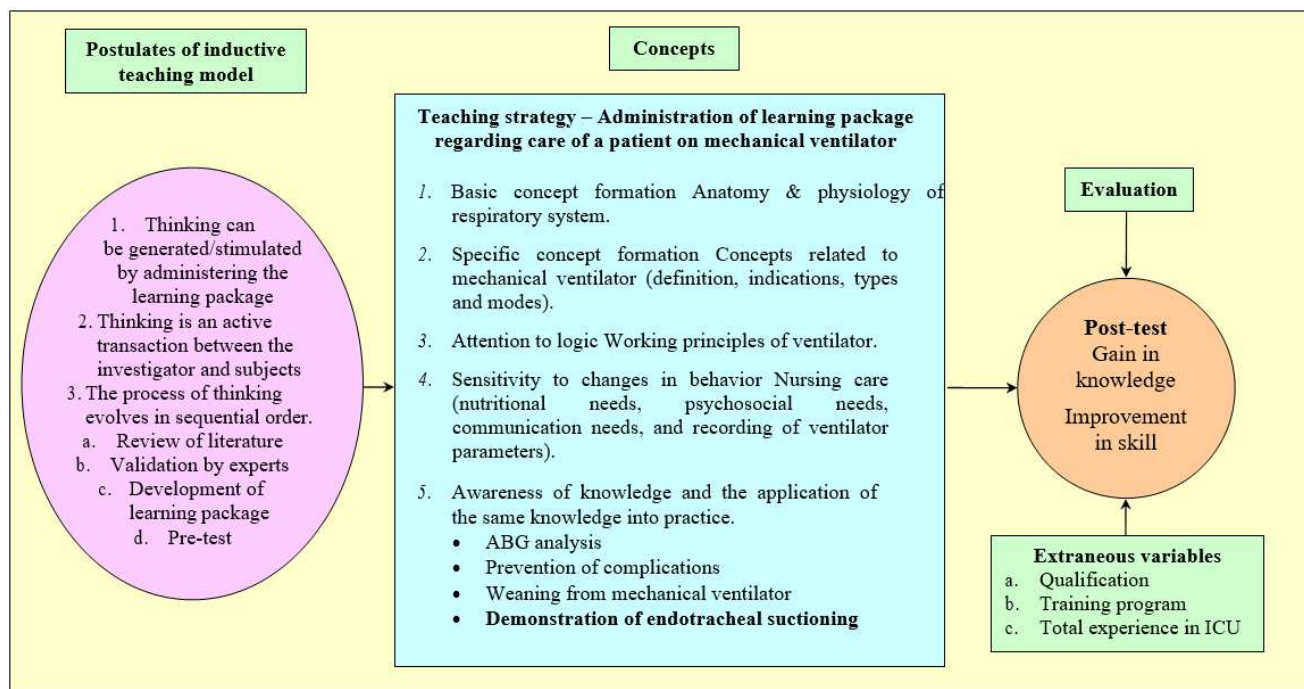
### **Delimitations:**

1. The study is delimited to those who are willing to participate in the study.
2. The study is delimited to the staff nurses working in the intensive care units at the time of data collection.

### **Scope of study:**

1. The findings of the study will reveal the existing knowledge and skill of staff nurses regarding care of a patient on mechanical ventilator.
2. Learning package can be used to educate the staff nurses as well as nursing students.
3. The staff nurses can use it as a handbook while caring for patients.
4. The study will also help in preventing nosocomial infection and bring about awareness on the prevention of complications associated with mechanical ventilators.
5. The study will also bring about awareness for further studies in other areas of nursing management of patient on ventilator.
6. Improved knowledge regarding care of a patient on mechanical ventilator will help staff nurses diagnose nursing problems and provide better quality care.

**Summary:** This chapter dealt with objectives, operational definitions, assumptions, hypotheses, conceptual framework, delimitations and scope of the study



**Figure 1: Conceptual Framework Based on Inductive Model of Teaching by Hilda Taba (modified)**

## REVIEW OF LITERATURE:

Review of literature is a key step in the research process. It refers to an extensive, exhaustive and systematic examination of publications relevant to the research project.

The investigator carried out an extensive review of literature on the research topic in order to gain information and insight to build the foundation of the study. The literature was reviewed under the following headings:

### 1. Literature related to knowledge and skill of staff nurses regarding care of a patient on a mechanical ventilator

An evaluator study was conducted to assess the effectiveness of planned teaching programme on nursing responsibilities when the patients are on mechanical ventilator in Delhi Mendacity Hospital using convenient sampling. The sample size was The nursing responsibilities like administering intravenous fluids, monitoring vital signs, analysis of arterial and venous blood gas, monitoring intake and output, positioning the patients, suctioning and chest physiotherapy were taught by planned teaching programme. The study revealed that there was significant increase in the post-test knowledge ( $t_{(29)} = 10.18, P = 0.01$ ).

A study was conducted to evaluate the effectiveness of weaning protocols for a mechanically ventilated patient to the staff nurses working in cardiothoracic intensive care units of M. H. Hospital of Lucknow. The sample size was 60 staff nurses. A variety of techniques were used for weaning trials. The study showed that there was significant increase in their mean post-test knowledge score ( $x_2 = 38.625$ ) with that of mean pre-test knowledge score ( $x_1 = 21.075$ ). The calculated 't' value was 33.36 at 0.01 level

### 2. Literature related to knowledge and skill of staff nurses in other areas.

An observation survey was conducted to find out the effectiveness of a hospital-wide programme to improve the compliance with hand hygiene in Geneva. They monitored the overall compliance with hand hygiene during routine patient care in intensive care unit before and during the implementation of a hand hygiene campaign. They observed 20,000 opportunities for hand hygiene from December 1994 to December 1997. Compliance improved progressively from 48% in 1994 to 66% in 1997 ( $P < 0.001$ ). During the study period the hand hygiene improved significantly among nurses during the same period, overall infection also decreased.

An evaluator study was conducted to assess the effectiveness of planned teaching programme on neurological assessment to the staff nurses of a selected hospital in Kanpur. The sample size was 60. The sample was selected using purposive sampling technique. A structured knowledge questionnaire was used to collect data. The study findings revealed that there was significant increase in their mean post-test knowledge score ( $x_2 = 28$ ) as against the pre-test knowledge score ( $x_1 = 20$ ) with 't' value 20.79 at 0.05 level. There was significant increase in their mean post-test skill score ( $x_2 = 35.51$ ) in comparison to the mean pre-test skill score ( $x_1 = 20.00$ ) with 't' value 43.86 ( $P < 0.05$ )<sup>4</sup>.

**Literature related to mechanical ventilation**

A study was conducted on prevalence of ventilator-associated pneumonia in intensive care units of Sainte Marguerite Hospital of France. The study findings showed that the prevalence of ventilator-associated pneumonia ranged from 5.6 to cases per 1000 ventilator days. In addition, patients who developed ventilator-associated pneumonia had significantly longer hospital days and higher mortality rates than those who had not developed ventilator-associated pneumonia.

A study was conducted on the effects of hyper-oxygenation and hyperinflation on arterial oxygen tension after endotracheal suctioning in Kyoto University, Japan. The investigator studied the hypoxemic response to suctioning during the four to six-hour postoperative period in 28 cardiac surgical patients. Protection from hypoxemia was achieved by hyperinflation in 25% of the sample, with pre-oxygenation alone through an increase in FiO<sub>2</sub> to 100% in 75% of the sample, and with a combination of hyperinflation and an FiO<sub>2</sub> of 100% in 96% of the sample. The investigator recommended that best protection from hypoxemia can be achieved with combination of hyperinflation and hyper-oxygenation.

**Summary:**

The literature reviewed above has provided a better understanding and also broadened the investigator’s outlook which is a prerequisite for the research study. It also helped the researcher to establish the need for the study, the conceptual framework, research design, learning package and development of the tool.

**RESEARCH METHODOLOGY**

This chapter deals with the methodology of the study on effectiveness of learning package regarding care of a patient on mechanical ventilator to the staff nurses of a selected hospital.

The research methodology organizes all the components of study in a way that is most likely to give valid answers to the sub-problems that have been posed. It also indicates the general pattern for organizing the procedures for development of the tool, pilot study, procedures for data collection and plan for analysis.

**Research approach:**

Evaluatory research is the process of collecting and analyzing information relating to functioning of a programme, policy or procedure in order to assist the decision-maker in choosing a course of action.

In order to accomplish the main objective of determining the effectiveness of learning package regarding care of a patient on mechanical ventilator, an evaluative research approach was adopted.

**Research design:**

Research design is the overall plan for addressing a research question, including specification for enhancing the integrity of the study.

The research design used in this study is one-group pre-test post-test pre- experimental design, which is represented below.

Subjects	Pre-test	Treatment	Post-test
Staff nurses	O <sub>1</sub>	X	O <sub>2</sub>

O<sub>1</sub>: Administration of structured knowledge questionnaire regarding care of a patient on mechanical ventilator to assess the knowledge of staff nurses, administration of observation checklist to assess the skill of staff nurses in performing endotracheal suctioning before the demonstration of endotracheal suctioning procedure.

X: Administration of learning package regarding care of a patient on mechanical ventilator followed by demonstration of endotracheal suctioning procedure to the staff nurses.

O<sub>2</sub>: Administration of the same structured knowledge questionnaire and structured observation checklist to the staff nurses after administration of learning package and demonstration of endotracheal suctioning procedure to assess the post-test knowledge and skill.

Group	Phase I	Phase II			Phase III
Staff nurses	<ul style="list-style-type: none"> <li>Preparation of structured knowledge questionnaire and structured observation checklist.</li> <li>Preparation of learning package regarding care of a patient on mechanical ventilator.</li> </ul>	Pre-test (O <sub>1</sub> )	<ul style="list-style-type: none"> <li>Administration of learning package.</li> <li>Demonstration of endotracheal suctioning procedure.</li> </ul>	Post-test (O <sub>2</sub> )	Analysis of collected data.
	<ul style="list-style-type: none"> <li>Review of existing literature on various aspects of care of a patient on mechanical ventilator.</li> <li>Preparation of structured knowledge questionnaire and observation checklist.</li> <li>Preparation of blueprint.</li> <li>Development of learning package.</li> <li>Content validity.</li> <li>Pre-testing.</li> <li>Reliability of the tool.</li> <li>Pilot study.</li> </ul>	<ul style="list-style-type: none"> <li>Administration of learning package.</li> <li>Administration of observation checklist on the 1<sup>st</sup> day.</li> </ul>	<ul style="list-style-type: none"> <li>Administration of learning package.</li> <li>Demonstration of endotracheal suctioning on the same day.</li> </ul>	<ul style="list-style-type: none"> <li>Administration of knowledge questionnaire.</li> <li>Administration of observation checklist on 7<sup>th</sup> day using the same tool.</li> </ul>	Analysis by descriptive and inferential statistics.

**Figure 2: Schematic representation of study design**

#### Variables:

- Independent variables:** An independent variable is the variable that stands alone and does not depend on any other. It is the presumed cause of action.
- Dependent variables:** It is the outcome variable of interest, the variable that is hypothesized to depend on or caused by another variable.
- Extraneous variables:** Any uncontrolled variable that greatly influences the result of the study.

In this study it refers to the selected variables such as professional qualification, total working experience in intensive care unit, and exposure to teaching programme regarding care of a patient on mechanical ventilator.

#### Research setting:

The setting is where the population or portion of that population is being studied is located and where the study is carried out.

The study was conducted in Medical Intensive Care Unit (MICU) and Intensive Coronary Care Unit (ICCU) of Selected Hospital.

Selected Hospital is a 100-bed well-equipped super-specialty hospital in Kanpur and is well-known for its treatment and nursing care. Various types of patients such as cardio thoracic, orthopedic, renal, general medicine, surgery pediatrics and gynecology are treated here. The hospital has specialized departments such as intensive coronary care unit (ICCU – 7 beds), medical intensive care unit (MICU – 10 beds), intensive trauma unit (ITU – 4 beds) and step-down intensive care unit (11 beds). Intensive care units are situated in Basement 1. The 4 units are air-conditioned and have centralized oxygen and suction mechanical ventilator, pulse oximeter's, defibrillators, and crash carts. Each bed in the unit is well-equipped with cardiac monitors, infusion pumps, centralized oxygen, suction and other emergency equipment. The nurse-patient ratio is 1:1.

#### Population:

Population means all possible elements that could be included in research. It represents entire group under study.

In the present study population consisted of all the staff nurses who were working in the selected hospital during the time of data collection.

### **Sample and sampling techniques:**

A sample is a small portion of population selected for observation and analysis<sup>2</sup>.

In the present study a sample of 30 staff nurses who were working in medical intensive care unit, intensive coronary care unit of Selected Hospital was selected using purposive sampling technique.

### **Sampling criteria:**

Staff nurses working in the intensive medical care unit, intensive coronary care unit with minimum of two months of experience were selected for the study.

### **Selection and development of the tools:**

Tools are procedures or instruments used by the researcher to collect data<sup>12</sup>. The tools were prepared on the basis of the objectives of the study. The instruments in this study were:

1. Structured knowledge questionnaire
2. Observation checklist.

The following steps were adopted prior to the development of the tool:

- Review of literature provided adequate content for the tool preparation.
- Discussions with staff nurses and supervisors of the hospital.
- Opinion of experts from medicine, anesthesia, surgery and nursing departments.

### **Pilot study:**

Pilot study is a small preliminary investigation of the same general characters of the major study.

The main aim was to assess the feasibility, practicability and assessment adequacy of measurement.

The investigator conducted the pilot study in Selected hospital from 27<sup>th</sup> September 2024 to 12<sup>th</sup> October 2024. The sample size was 10. Written permission was obtained from the authorities of the hospital.

The purpose of the study was explained to the subjects prior to the study. The pre-test was done to assess the knowledge of the staff nurses using a structured knowledge questionnaire and an observation checklist on endotracheal suctioning was administered in the intensive care unit individually by the investigator to assess the skill of staff nurses in endotracheal suctioning. The average time taken to demonstrate endotracheal suctioning was 12-15 minutes.

On the same day learning package was administered and demonstration of endotracheal tube suctioning was done.

Post-test was done on the 7<sup>th</sup> day with the same knowledge questionnaire and observation checklist on endotracheal suctioning.

### **Data collection process:**

In order to conduct the research study in Selected Hospital, written permission was obtained from the Director of Selected Hospital. The data collection period extended from 14<sup>th</sup> October 2024 to 3<sup>rd</sup> November 2024. The date, time, place was informed to the staff nurses and the time schedule fixed.

The purpose of the study was explained and confidentiality of the staff nurses was assured and consent was obtained from staff nurses. A structured knowledge questionnaire was administered to 30 staff nurses on 14<sup>th</sup> October 2024. Observation of the skill in endotracheal suctioning was carried out from 14<sup>th</sup> October to 19<sup>th</sup> October 2024 individually. Administration of learning package followed by demonstration of endotracheal suctioning procedure done on 20<sup>th</sup> October 2024. The average time taken was 15-20 minutes. Post-test was administered on 26<sup>th</sup> October 2024 and observation of skill in endotracheal suctioning was carried out from 25<sup>th</sup> October 2024 to 3<sup>rd</sup> November 2024.

All respondents cooperated with the investigator during the data collection process, which was terminated after thanking the respondents for their cooperation and patience.

### **Plan for data analysis:**

Data was planned to be analyzed on the basis of objectives and hypotheses.

- Baseline proforma would be analyzed in terms of frequency and percentage.
- The knowledge score and skill score of the staff nurses before and after the administration of learning package and demonstration of endotracheal suctioning procedure would be analyzed in terms of frequency, percentage, mean, median, and standard deviation, and would be presented in the form of tables and diagrams.

- The significance of difference between the mean pre-test and post-test knowledge scores and skill score would be determined by paired 't' test.
- The relationship between post-test knowledge and skill in endotracheal suctioning would be determined by Karl Pearson correlation.

## RESULTS:

Analysis is the process of organizing and synthesizing the data in such a way that research questions can be answered and hypotheses tested. The purpose of the analysis is to reduce the data in an intelligible and interpretable form, so that the relation of research problem can be studied and tested.

Analysis and interpretation of data collected from 30 staff nurses was done based on the objectives and hypotheses of the study using descriptive and inferential statistics.

### Organization of findings:

The data was analyzed and presented under the following headings:

**Section I:** Sample characteristics.

**Section II:** Knowledge level of staff nurses regarding care of a patient on mechanical ventilator.

**Section III:** Skill level of staff nurses in performing endotracheal suctioning.

**Section IV:** Significance of difference between mean pre-test and post-test knowledge score of staff nurses regarding care of a patient on mechanical ventilator.

**Section V:** Significance of difference between mean pre-test and post-test skill score of staff nurses in performing endotracheal suctioning.

**Section VI:** Relationship between the post-test knowledge score and skill score of staff nurses in endotracheal suctioning.

**Section VII:** Association between post-test knowledge level and selected variables such as professional qualification, total working experience in intensive care unit and exposure to training programme in caring for clients on mechanical ventilator.

**Section VIII:** Association between post-test skill score and selected variables such as professional qualification, total working experience in intensive care unit and exposure to training programme in caring for clients on mechanical ventilator.

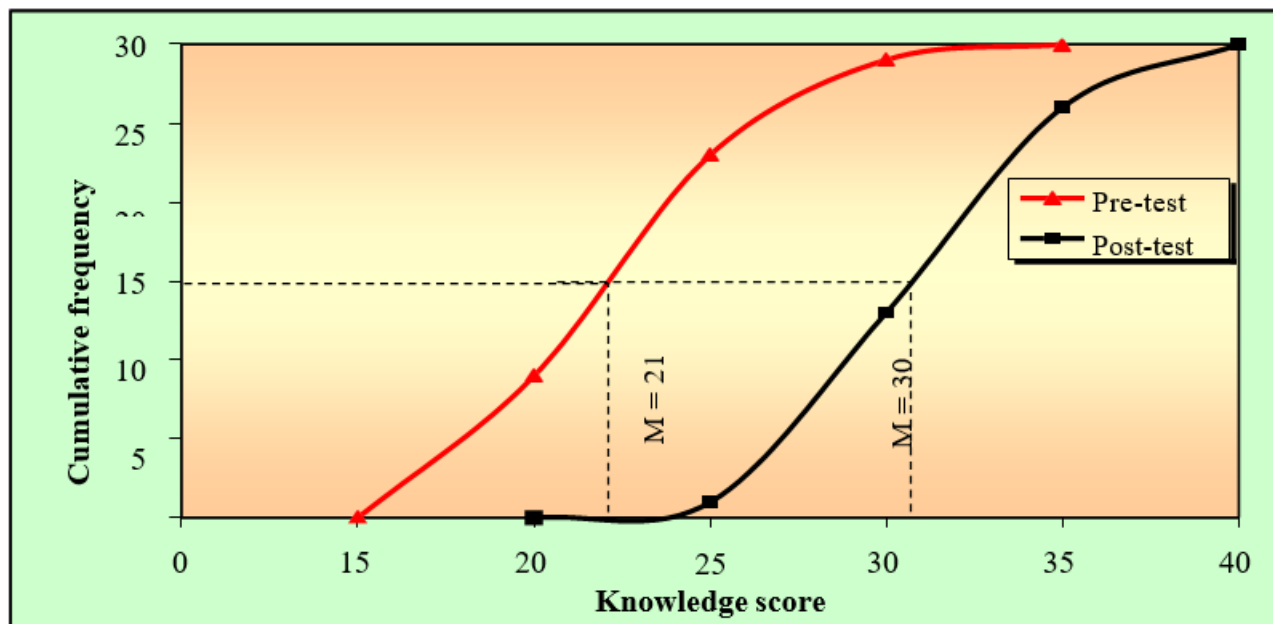
**Table 2: Frequency and Percentage Distribution of Staff Nurses According To Their Pre-Test and Post-Test Knowledge Score**

N = 30

Knowledge score	Pre-test			Post-test		
	frequency (f)	Percentage (%)	Cumulative frequency (cf)	Frequency (f)	Percentage (%)	Cumulative frequency (cf)
15-20	9	30.0	9	-	-	-
20-25	14	46.7	23	1	3.3	1
25-30	6	20.0	29	12	40.0	13
30-35	1	3.3	30	13	43.3	26
35-40	-	-	-	4	13.3	30

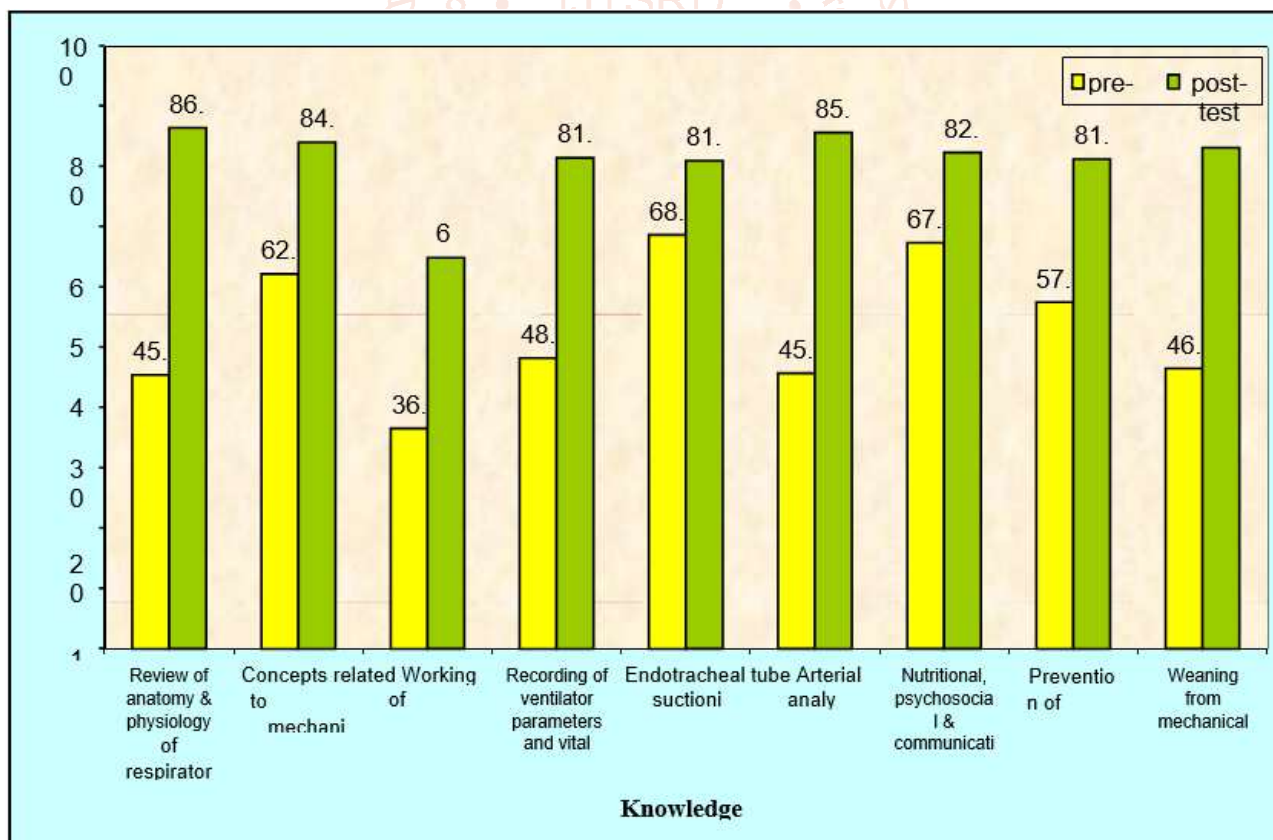
Maximum possible score = 38

Data in Table 2 indicates that 46.7% of the staff nurses' knowledge score ranged from 20-25 in pre-test whereas 43.3% of them scored from 30-35 in the post- test.

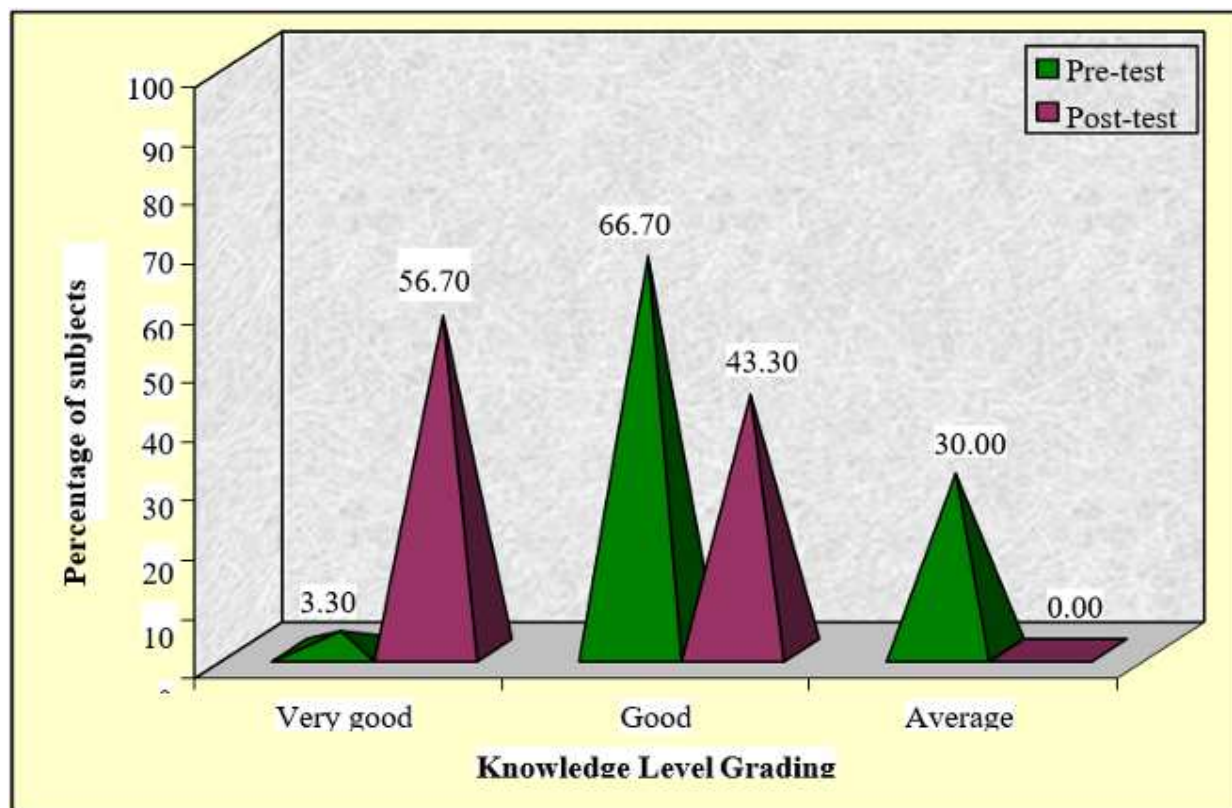


**Figure 3: Ogive representing pre and post-test knowledge score of staff nurses**

Cumulative frequency curve (ogive) of pre-test and post-test knowledge level of staff nurses is given in Figure 3. The post-test ogive lies to the right of the pre-test ogive showing the post-test knowledge score is consistently higher than the pre-test knowledge score. The 50<sup>th</sup> percentile shows that the median score of the post-test (M = 30) is higher than the median score of pre-test (M=21). This indicates that the post-test knowledge score is consistently higher than pre-test knowledge score.



**Figure 4: Bar diagram showing area-wise mean percentage and mean gain of pre-test and post-test knowledge score of staff nurses**



**Figure 5: Pyramid Diagram Showing the Distribution of Staff Nurses According To the Grading Of Pre-Test and Pot-Test Knowledge Score**

Data in Table 5 and Figure 5 show that 66.7% of the staff nurses attained “good” knowledge score in the pre-test, whereas in the post-test 56.7% of the staff nurses attained “very good” knowledge score and 43.3% of the staff nurses had “good” knowledge score.

#### DISCUSSION:

This chapter presents the major findings of the study and discusses them in relation to similar studies conducted by other researchers.

The aim of this study was to find out the effectiveness of learning package regarding care of a patient on mechanical ventilator to the staff nurses as a means to improve the knowledge and skill of staff nurses.

#### CONCLUSION:

The main purpose of this study was to assess the knowledge of the staff nurses regarding care of a patient on mechanical ventilator and also to assess the skill of staff nurses in performing endotracheal suctioning procedure. Mechanical ventilation is a life support system designed to replace or support normal ventilatory lung function. Nosocomial pneumonia is most commonly seen in mechanically ventilated patients. In-service education programmes are necessary to update the knowledge of staff nurses and also to minimize complications associated with mechanical ventilation.

#### LIMITATIONS:

The limitations of the study are as follows:

1. Small number of subjects (30) restricted the generalization of results.

2. Data collection by observation checklist is likely to be influenced by environmental factors or investigator’s personal bias.
3. The investigator had no control on the events that took place between pre-test and post-test.
4. The study was limited only to Selected Hospital.

#### SUGGESTIONS:

1. Ongoing in-service education should be conducted periodically for the staff nurses in relation to care of a patient on mechanical ventilator.
2. In-service education to the nursing professionals to make them aware of the computer applications and reduce the workload so that they can spend more time in caring for patients.

#### RECOMMENDATIONS:

- The study could be replicated on a larger sample to identify specific nursing interventions provided to patients on mechanical ventilator.
- The study could be conducted in different hospitals or organizations like government, private, non-teaching hospitals, etc.
- The same study can be done with an experimental

research approach having a control group.

- A follow-up study can be conducted to evaluate the long-term effects of the learning package on care of a patient on a mechanical ventilator.
- Study can be done to assess the different skills of staff nurses.

#### SUMMARY:

Mechanical ventilator is one of the life saving devices that assists in breathing when an individual is not able to maintain adequate gas exchange. When such assistance is required for an extended period of many hours or days, one takes the help of a ventilator. Frequent arterial blood gas measurements are essential in these cases. However, there are inherent dangers of mechanical ventilation resulting in complications, which can be fatal and others can lead to long-term morbidity and even brain damage. Expert nursing, specialized monitoring and supervision by specially trained doctors and nurses significantly reduces the incidence of such complications.

#### BIBLIOGRAPHY

- [1] Anderson HL. What interventions facilitate weaning from the ventilator. 2004.
- [2] Available from: URL:<http://www.int.org/vent/>
- [3] Lewis SM, Medial surgical nursing. 6<sup>th</sup> ed. Philadelphia: Mosby Publications; 2004.
- [4] Susan L. Quality assurance. American Journal of Respiratory and critical care medicine 2003; 168(5); 56-9.
- [5] Harries, Bernstein. Clean versus sterile tracheostomy care and level of pulmonary infection. Journal of advanced nursing 2004; 80(6); 155-8
- [6] Crighton H. Legal aspects of nosocomial infection. Am J Nurs 1980; 789- 92.
- [7] Vicki A. Lindgsen. Nursing knowledge and assessment skills in the management of patients with head injury. Am j of Nurs 2005 May; 105(5): 52- 4.
- [8] Mary P. Effectiveness of standard endotracheal suctioning technique. Nursing Journal of India, 2005 May; 28(6): 5-7.
- [9] Sumithra P. Study to assess the knowledge and practice of nursing personnel regarding immediate post operations care of cardiac surgery client on ventilator in cardio thoracic intensive care units at selected hospitals of Hyderabad. Thesis submitted to N.T.R. university of health sciences Vijayawada, 1998.
- [10] Bernard. Insurance education and its importance. Am J Nurs 2001; 87(5): 56-7
- [11] Tharnamme. N Pneumonia in mechanically ventilated patients Journal of medical Association 1995; 56(2): 102-4.
- [12] Polit DF, Hungler BP. Nursing research principles and methods. 18<sup>th</sup> ed. Philadelphia: J. B. Lippincott Company; 2004.
- [13] Basavanthappa BT. Nursing research. New Delhi: Jaypee Brothers; 1998.
- [14] Abdellah FG, Levine E. Better patient care through nursing research. 3<sup>rd</sup> ed. Macmillan Publishing Company; 1986.
- [15] Sanatombi Devi E. Manipal manual of nursing education. 1st ed. New Delhi: CBS Publishers and Distributors; 2006.
- [16] Joyce B, Weil M. Methods of teaching. 2nd ed. New Delhi: Prentice-Hall of India; 1985.