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### Effectiveness of structured education on airway management among nursing students

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#### ABSTRACT

**Aim:** To evaluate the effectiveness of structured education on knowledge and attitude on airway management among nursing students. **Participants and setting:** A pre experimental one group pretest posttest design was adopted for this study. The study was conducted in Vandhana school of Nursing, Kodhad, telugana, India. The investigator selected 50 nursing students who fulfilled the inclusion criteria were selected by using simple random sampling technique. **Intervention:** Data was collected regarding demographic variable, knowledge and attitude of the nursing students on airway management. The investigator assessed the level of knowledge and attitude of the nursing students by using structured questionnaire and modified three point Likert Scale and by using checklist through one to one teaching by lecture, demonstration, video clippings and verbalization. Structured teaching programme was conducted on the same day on group wise each group consists of 18 members. Data collection was done in English the questionnaire was distributed to each nursing students. At the end of the teaching the doubts were cleared. Then 10 minutes was allotted for discussion. **Measurement and findings:** The analysis finding indicates clearly that 31% of students had inadequate knowledge and 60% of them had negative attitude regarding airway management. A well planned structured teaching programme given to the same group. The effectiveness of programme showed high level of significant at  $p < 0.001$  level. It showed that structured teaching programme was an effective method to improve the knowledge and attitude. **Conclusion:** The study concluded that nursing student's knowledge and attitude regarding airway management was inadequate thus structured education helps to enhance the knowledge.

**Key words:** Airway Management Modalities, Nursing students, Knowledge, Attitude

#### INTRODUCTION

Airway management involves ensuring that the patient has a patent airway through which effective ventilation can take place. An obstructed airway means that the body is deprived of oxygen. If ventilation is not established, brain death will occur within minutes. When a patient is critically ill and requires an artificial airway and mechanical ventilation, it is the responsibility of the

health care professionals caring for the patient to ensure that the airway is secure.<sup>1</sup> In all patients, maintaining a patent airway is the most important intervention to improve oxygenation. Airway patency is especially important if the patient is unconscious, anaesthetized or obtund. Artificial airways may be placed to maintain patency of the airway, allow for suctioning of secretion and permit mechanical ventilation.<sup>2</sup> Airway management

is important because the presence of an artificial airway increases the risk for ventilator-associated conditions, including infections such as ventilator-associated pneumonia (VAP). Both ventilator-associated conditions and VAP double the mortality risk and result in prolonged ventilation and lengths of stay in the intensive care unit (ICU) and hospital.<sup>1-3</sup> Each case of VAP is also associated with up to \$40 000 in increased costs.<sup>3</sup> The pathophysiology of VAP is complex. Endotracheal intubation interferes with mucociliary clearance and the normal cough effort, resulting in retained tracheobronchial secretions. By maintaining the normally closed glottis in an open position, the ETT also provides a direct opening for micro aspiration of secretions. Secretions in the oropharynx become colonized with pathogens from dental plaque, equipment, and changes in the oral flora. Gastric contents may also be present in oropharyngeal secretions because of reflux. Micro aspiration of these secretions around the ETT cuff contributes to development of infection. Airway management must be comprehensive to address the many issues associated with the artificial airway: ETT suctioning to remove secretions, management of ETT cuff pressure to prevent micro aspiration, and endotracheal suctioning to remove secretions.<sup>4</sup> Mechanical ventilator has prolonged the lives of many clients whose respiratory function have been compromised by drugs. Mechanical ventilation may be required for a variety of reason including the need to control the patient respiration<sup>1</sup>. 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 or general medical surgical units, extended care facilities and home.<sup>5</sup> A client on ventilator always remains under severe physiological and psychological stress. Physiological stress leads to condition like inflammation and infections of the airways, pneumothorax, emphysema, decrease in blood pressure and cardiac function, etc. The close environment and isolation from relatives, often lead to ICU psychosis in patients admitted in critical care unit. This mandates that critical care nurses should provide high touch and high touch care to patient in order to prevent secondary complications related to ventilator and artificial airways<sup>6</sup>. Nurses in critical care unit are required to provide expertise care to patients on ventilator. As patients in

critical care unit are confined to bed nurses have to assist or perform various activities of daily living of the patient, until he/she regains his/her independence. Besides ventilator complications a nurse also has to see that the patient does not develop complication of immobility like bed sores, deep vein thrombosis, hypostatic pneumonitis, etc. The nurses thus need to have adequate knowledge patience and empathy for patient's conditions when he/she is on ventilator. An efficient nurse should also see that she acts as a liaison between the patients his/her relatives and the health care team members, in order to help the patients to progress towards recover.<sup>7</sup> As the investigator had been working in the critical care units during his professional career he found that the nurses do carry out the management of patient on ventilator but not up to the required standard resulting in so many complications such as ventilator induced lung injury, ventilator associated pneumonia, respiratory distress syndrome, infection etc. The investigator felt that every nurse should rationalize her actions while managing a patient on ventilator. This motivated the investigator to assess the effectiveness of knowledge and attitude on nursing care of patient with mechanical ventilator.<sup>8</sup>

## **MATERIALS AND METHOD**

In order to accomplish the main objective of evaluating the effectiveness of an information booklet on knowledge and attitude regarding airway management among nursing students in one group Pre test Post test design was adopted. The study was conducted in Vandhana School of nursing kodhad, telugana, India. 50 nursing students of Vandhana School of nursing, kodhad were selected by convenience sampling. After obtaining consent from the participants pretest was administered by using structured questionnaire and modified three point Likert Scale and by using checklist through one to one teaching by lecture, demonstration, video clippings and verbalization, After pretest researcher distributed information booklet on knowledge regarding electrocardiograph findings to participants, Seven days later post test was administered to assess the knowledge. The collected data were analysed using descriptive and inferential statistics.

## **DESCRIPTION OF RESEARCH TOOL**

It consists of three sections.

**SECTION A**

It consist of demographic variables which includes age of the individual, religion, education, type of family, previous exposure to knowledge of airway management.

**SECTION B**

Multiple choice questions to assess the knowledge on airway management

**SECTION C**

Modified three point Likert scale to assess the attitude regarding airway management, This section includes 10 items with choices as agree, uncertain and disagree.

**SCORING PROCEDURE**

**SECTION B**

The total number of knowledge questions was 20. All the questions had four alternatives with one right answer. A score of “one” was given for every correct answer and score of “zero” was given for every wrong answers. The total score was converted into percentage and interpreted as follows,

Adequate knowledge	-	>75%
Moderate knowledge	-	50 – 75%
Inadequate knowledge	-	<50%

**SECTION C**

To interpret the level of attitude the score was classified as,

Positive attitude	-	>75%
Favorable attitude	-	50 – 75%
Negative attitude	-	<50%

Attitude questions consist of both positive and negative statements. The score given for positive questions were as follows,

Agree	-	2
Uncertain	-	1
Disagree	-	0

Similar for attitude negative question scored as follows,

Agree	-	0
Uncertain	-	1
Disagree	-	2

**RESULTS**

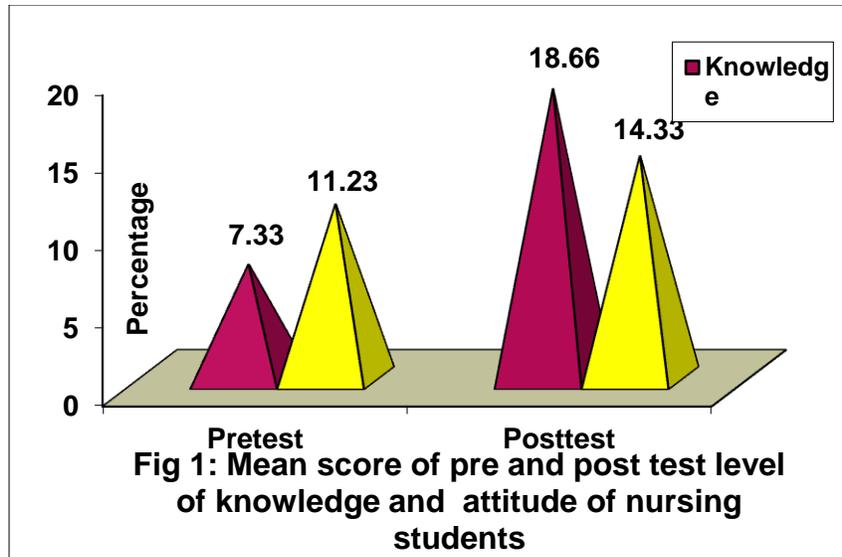
**Table 1: Mean and standard deviation of knowledge and attitude on airway management of nursing students N = 50**

Domain	Pretest		Posttest		‘t’ value
	Mean	S.D	Mean	S.D	
Knowledge	7.33	1.434	18.66	1.08	44.62*** (S)
Attitude	11.23	1.66	14.33	1.127	10.92*** (S)

**\*\*p<0.01, \*\*\*p<0.001, S – Significant**

Table 1denotes the mean and standard deviation of knowledge and attitude of nursing students on airway managements the pretest level of mean knowledge score was 7.33with S.D 1.434 and posttest level of mean knowledge score was 18.66 with S.D 1.08 and the‘t’ value

of 44.62 showed high level of significance. With respect to the pretest mean attitude score was 11.23 with S.D 1.66 and posttest mean attitude score was 14.33 with S.D 1.127 and the‘t’ value of 10.92 showed high level of significance.



**Table 2: Correlation of pre and posttest level of knowledge and attitude on airway managements of nursing students**

N = 50

Domain	Knowledge		Attitude		'r' value
	Mean	S.D	Mean	S.D	
Pretest	7.33	1.434	11.23	1.66	0.11*
Posttest	18.66	1.08	14.33	1.127	0.22***

\*p<0.05, \*\*\*p<0.001

Table 2 shows the correlation of pre and posttest level of knowledge and attitude on airway management of nursing students. The analysis reveals that the pretest level of knowledge mean score was 7.33 with S.D 1.434, the attitude mean 11.23 with S.D 1.66 and overall 'r' value was 0.11 which significant at p<0.05 level. The posttest level of knowledge mean score was 18.66 with S.D 1.08, the attitude mean 14.33 with S.D 1.127 and over all 'r' value 0.22 clearly indicates a positive correlation between knowledge and attitude which is significant at p<0.001 level.

## DISCUSSION

Table 1 denotes the mean and standard deviation of knowledge and attitude of nursing students on airway managements the pretest level of mean knowledge score was 7.33 with S.D 1.434 and posttest level of mean knowledge score was 18.66 with S.D 1.08 and the 't' value of 44.62 showed high level of significance. With respect to the pretest mean attitude score was 11.23 with S.D 1.66

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## CONCLUSION

The analysis finding indicates clearly that 31% of students had inadequate knowledge and 60% of them had negative attitude regarding electrocardiograph findings. A well planned structured teaching programme given to the same group. The effectiveness of programme showed high level

of significant at  $p < 0.001$  level. It showed that structured teaching programme was an effective method to improve the knowledge and attitude. It showed that structured

teaching programme was an effective method to improve the knowledge, attitude and there by promote the practice of airway management.

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