

# Effect of Video Assisted Teaching Module (VATM) on Endotracheal Suctioning Among Staff Nurses Working in Selected Hospitals, Maharashtra

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**Abstract—** Introduction: Background of the study: Ventilator Associated Pneumonia (VAP) is commonest nosocomial infection in intubated patients with 6 to 20 times higher prevalence rates for at least 48 hours after intubation. It contributes to 30% mortality rate in ventilated patients. A number of other complications are associated with malpractice of endotracheal tube suctioning such as lesions in the tracheal mucosa, pain, discomfort, infection, variations in the hemodynamic parameters and arterial gases measurements, bronchoconstriction, atelectasis, raised intracranial pressure, and alterations in cerebral blood flow. Hypoxia is one of the most common complications which is avertible as well.<sup>6</sup> Therefore; it is decided to do this research study for creating awareness regarding Endotracheal suctioning to improve the quality of life among ventilated patients. Objective: The objective of the study was assessing the effect of VATM on endotracheal suctioning among staff nurses. An experimental research approach and one group pre-test post-test research design was used to collect data before and after an administration of questionnaire on endotracheal suctioning. The staff nurses were the samples selected by a purposive sampling technique and data was collected by using Standardized Chronic Respiratory Questionnaire with structured interview schedule. The analysis was done by using descriptive and inferential statistics. Results: It was observed that the percentages of knowledge (control group; 45.50% & experimental group; 49.10%) had poor knowledge on endotracheal suctioning among staff nurses were more or less similar before intervention. However, after an intervention, the overall percentage of knowledge on endotracheal suctioning was decreased from 12.09 % to 12.45% in experimental group. However, during pre-test the level of very good knowledge was 45.5% whereas it was significantly increased to 49.1% during post-test in experimental group. However, the knowledge was almost

remained unchanged in control group. There was a significant difference ( $p < 0.0001$ ) between pre-test and post-test knowledge scores in experimental group. And, there was also a significant difference ( $p < 0.0001$ ) between the post tests of control and experimental group. No significant association ( $p > 0.05$ ) was found between knowledge on endotracheal suctioning and age, gender, qualification, clinical experience, & source of information. Conclusion: Analysis of data showed that there is significant difference between pretest and posttest on endotracheal suctioning. Hence, VATM has significantly brought out their improvement of staff nurses in the Endotracheal suctioning.

**Index Terms—** Video Assisted Teaching Module, Self-Administered Questionnaire, Ventilated Associated pneumonia.

## I. INTRODUCTION

The term Endotracheal suctioning refers to a method for defining and standardizing the best clinical procedure, is defined as “A component of bronchial hygiene therapy and mechanical ventilation and involves the mechanical aspiration of pulmonary secretions from a patient with an artificial airway in place”. The procedure is associated with complications and risks including bleeding, infection, atelectasis, hypoxemia, cardiovascular instability, elevated intracranial pressure, and may also cause lesions in the tracheal mucosa. Endotracheal suctioning is therefore important in order to reduce the risk of consolidation and atelectasis that may lead to inadequate ventilation.<sup>1</sup> Endotracheal suctioning (ETS) is one of the top ten essential nursing care delivered by critical care nurses to intubated patients. ETS is a type of bronchial hygiene therapy for

mechanically ventilated patients in which a suction catheter is introduced into the trachea via an endotracheal tube and bronchial secretions are cleared by applying negative pressure to the lungs. It prevents excessive secretion from accumulating in the lungs, maintaining airway patency ensuring adequate oxygenation and saving the patients' lives.<sup>2</sup> It is crucial that this procedure is performed with professional competence based on updated scientific evidence and guidelines that guarantee efficiency and the safety of the patient. Nurses whose responsibility is to provide care to patients must perform ETS efficiently and effectively by maintaining sterility in order to avoid infections.<sup>5</sup>

II. OBJECTIVES

The objectives of the study are:

1. To assess the knowledge of staff nurses on endotracheal suctioning in before intervention in experimental and control group.
2. To find out the effect of VATM on endotracheal suctioning among staff nurses after intervention in experimental and control group.
3. To find out the association between the posttest knowledge scores and selected demographic variables of staff nurses in experimental group

II. MATERIALS AND METHODS

A quantitative research approach was selected to assess the knowledge of staff nurses on endotracheal

suctioning. A quasi - experimental design was used for this study. The study was carried out in the three selected hospitals of Maharashtra. The period of data collection was two weeks. The permission was obtained from concern authority of respective hospitals, at Maharashtra state. The convenient sampling technique was used to select 110 staff nurses from different settings of the selected hospitals. Written consent was obtained from the samples and pretest has been assessed for all the 110 patients using demographic and endotracheal suctioning questionnaire for assessing knowledge of staff nurses. Then the VATM on endotracheal suctioning was carried out for all staff nurses those who are participated to whom the pre-test was conducted. After two weeks, the post-test was taken and the data was analyzed.

IV. STATISTICAL ANALYSIS

The data was analyzed by descriptive and inferential statistics. Demographic data was analyzed using frequency and percentage, data from the endotracheal suctioning questionnaire before and after video assisted teaching module administered was also analyzed using frequency, percentage and student paired 't' test. The association between knowledge scores findings and demographic variables was analyzed by using t test and chi square test.

V. RESULTS

Table 1: Distribution of staff nurses according to their demographic variables in experimental and control group.

Sr. No.	Demographic Variables	Control Group		Experimental Group	
		Frequency	Percentage	Frequency y	Percent-age
1.	Age (years)				
	21-30 Year	37	67.3%	31	56.4%
	31-40 year	18	32.7%	21	38.2%
	41-50 year	0	0%	3	5.5%
	50 years and above	0	0%	0	0%
2.	Gender				
	male	17	30.9%	13	23.6%
	female	38	69.1%	42	76.4%
	Others	0	0%	0	0%
3.	Qualification				
	Post Certificate Courses	7	12.7%	4	7.3%

	GNM	38	69.1%	51	92.7%
	BSc Nursing	5	9.1%	0	0%
	Post Basic B.Sc. Nursing	5	9.1%	0	0%
Clinical Experience					
4.	01-5 years	35	63.6%	32	58.2%
	06-10 years	17	30.9%	20	36.4%
	11-15 years	3	5.5%	3	5.5%
	16 years & above	0	0%	0	0%
Source of information					
5.	In service training	5	9.1%	7	12.7%
	Workshop/conference	27	49.1%	32	58.2%
	Books/Journals	17	30.9%	12	21.8%
	Any other source	6	10.9%	4	7.3%

Table 2: Significance of difference between knowledge scores pre and post-test of selected knowledge on endotracheal suctioning among staff nurses.

Paired Samples Test								
	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	5% Confidence Interval of the Difference				
				Lower	Upper			
Control Group Pre-Test - Experimental group Pre-test	.364	6.219	0.839	-1.318	2.045	.434	54	0.006 P<0.05
Control Group Post-Test - Experimental group Post-test	-2.291	9.112	1.229	-4.754	.172	-1.865	54	0.007 P<0.05

This table shows the comparison of pretest and posttest knowledge on endotracheal suctioning among staff nurses, paired ‘t’ test was computed to find out the significant difference between pre-test and posttest knowledge score in experimental and controlled group respectively, whereas the calculated ‘t’ value of -1.318; p<0.05 i.e. 0.006 between pre-test and post-test knowledge of controlled group shows significant.

And whereas the calculated ‘t’ value of -4.754; p<0.05 i.e. 0.007 between pre-test and post-test knowledge of experimental group shows significant. (Table 4.4.2) Hence it is interpreted that, there is a significant difference between pre-test and post- test knowledge score on selected knowledge on endotracheal suctioning among staff nurses. Hence the hypothesis was accepted.

Table 3: Association of post-test knowledge score and demographic variables of staff nurses in experimental and control group.

ANOVA					
Post-test level of knowledge age in years					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.127	14	0.152	0.779	0.684
Within Groups	7.800	40	0.195		
Total	9.927	54			

Post-test level of knowledge score and gender					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	3.359	14	0.026	0.306	0.990
Within Groups	3.350	40	0.084		
Total	3.709	54			

Post-test level of knowledge score and qualification					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	4.942	14	0.353	0.956	0.512
Within Groups	14.767	40	0.369		
Total	19.709	54			

Post-test level of knowledge					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.827	14	0.488	0.777	0.686
Within Groups	25.100	40	0.628		
Total	31.927	54			

Analysis of variance (F-test) was computed to find out the significant association between the post-test knowledge score and the age in years. The finding of F value shows that there is no significant association ( $p > 0.05$ ) i.e.  $p = 0.817$ , between post-test experimental group and age of staff nurse. Hence, it was interpreted that the age of the staff nurses was not associated with the knowledge on endotracheal suctioning. However, F value was by chance and not true difference. Therefore, the research hypothesis was rejected for age of staff nurse. The finding of F value shows that there is no significant association ( $p > 0.05$ ) i.e.  $p = 0.684$ , between post-test experimental group and gender of staff nurse. Hence, it was interpreted that the gender of the staff nurses was not associated with the knowledge on endotracheal suctioning. However, F value was by chance and not true difference. Therefore, the research hypothesis was rejected for gender of staff nurse. The finding of F value shows that there is no significant association

( $p > 0.05$ ) i.e.  $p = 0.990$ , between post-test experimental group and qualification of staff nurse. Hence, it was interpreted that the qualification of the staff nurses was not associated with the knowledge on endotracheal suctioning. However, F value was by chance and not true difference. Therefore, the research hypothesis was rejected for qualification of staff nurse. The finding of F value shows that there is no significant association ( $p > 0.05$ ) i.e.  $p = 0.512$ , between post-test experimental group and clinical experience (years) of staff nurse. Hence, it was interpreted that clinical experience (years) of the staff nurses was not associated with the knowledge on endotracheal suctioning. However, F value was by chance and not true difference. Therefore, the research hypothesis was rejected for clinical experience (years) of staff nurse. The finding of F value shows that there is no significant association ( $p > 0.05$ ) i.e.  $p = 0.686$ , between post-test experimental group and Source of information of staff nurse. Hence, it was interpreted

that Source of information of the staff nurses was not associated with the knowledge on endotracheal suctioning. However, F value was by chance and not true difference. Therefore, the research hypothesis was rejected for Source of information of staff nurse.

## VI. DISCUSSION

From the findings of the study, it was summarized as- Highest percentage (66.73%;56.40%) were belonged to the age group of 21-30 years in control & experimental group respectively. Highest percentage (69.10%;76.40%) were belonged to the female in both the group. Highest percentage (69.10%;92.70%) were belonged to the GNM Staff nurses in experimental and control group respectively. Highest percentage (63.60%;58.20%) were belonged to the 01-5 years of work experience in experimental and control group respectively. Highest percentage (49.10%;58.20%) were belonged to the workshop/conference source of information in experimental and control group respectively. Knowledge score on endotracheal suctioning among staff nurses in experimental group is more less than the controlled group before intervention respectively. Pre-test and post-test percentage of knowledge score were more or less similar in control group whereas post-test knowledge score in experimental group was significantly increased from 12.45 % to 17.67% making a difference in the knowledge percentage. Pre-test and post-test mean knowledge scores were more or less similar in control group whereas post-test mean knowledge score in experimental group was increased from 12.09±5.771 to 19.96±5.521 making a huge difference in the mean knowledge scores. Highly significant difference ( $p < 0.0001$ ) was found with a 't' value of -1.318 between a pre-test & post-test knowledge score in experimental group whereas the calculated 't' value of -4.754 between a pre-test and post-test knowledge score shows not significant difference in control group. Highly significant difference ( $p < 0.0001$ ) was found with a 't' value of -1.318 between post-test of control group & experimental group. There is no significant association ( $p > 0.05$ ) between post-test knowledge score and age, gender, qualification, clinical experience, source of information in experimental group

## VII. CONCLUSION

After the detailed analysis, this study leads to the following conclusion. The knowledge of staff nurses on endotracheal suctioning among staff nurses does not have 100% knowledge regarding endotracheal suctioning. There was a significant increase in the knowledge score after the interventions of VATM. Thus, it was concluded that VATM to improve knowledge of staff nurses was found effective. Demographic variables did not show a major role in influencing the pretest and posttest in control & experimental group among knowledge of staff nurses. Hence based on the above cited findings, it was concluded undoubtedly that the diligently implementing the VATM on endotracheal suctioning by the investigator helped the staff nurses to improve their knowledge in clinical practices.

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