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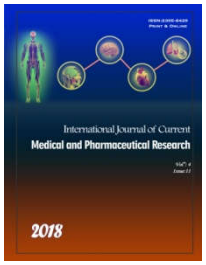

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE AND PRACTICE REGARDING ENDOTRACHEAL SUCTIONING AMONG STAFF NURSES IN INTENSIVE CARE UNITS OF SELECTED HOSPITALS IN KOLLAM

Mercy Thomas[1] and Binutha V.P[2]

[1]Department of Medical Surgical Nursing, BBCON, Kollam
[2] HOD Medical Surgical Nursing Department, BBCON, Kollam

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ABSTRACT

Subject: A study to assess the effectiveness of structured teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses in intensive care units of selected hospitals in Kollam**.**

Methods: Quantitative research approach was used with pre experimental one group pretest posttest design. Purposive sampling technique was used to select 50 intensive care unit staff nurses who meet the inclusion criteria. Pretest was done on the first day followed by structured teaching programme (Day 1) and reinforcement intervention (Day 7) to all the samples and posttest on the 7th and 14th day.

Result: The findings of the study showed that, there was a significant increase in mean posttest knowledge and practice score of the samples ($P < 0.05$) regarding endotracheal suctioning among staff nurses in intensive care units of selected hospitals in Kollam after structured teaching programme.

Conclusion: The present study suggested that Structured Teaching Programme was effective in improving knowledge and practice regarding endotracheal suctioning among staff nurses in different intensive care units. It also suggested that there is statistically strong positive relationship between knowledge and practice scores regarding endotracheal suctioning among staff nurses in different intensive care units in Kollam.

INTRODUCTION

Background of the problem

Mechanical ventilation is an essential, life-saving treatment for patients with critical illness and failure of respiratory function. Endotracheal suctioning is a procedure which has the aim to keep airways patent by mechanically removing accumulated secretions, in patients on artificial airways. All patients with an artificial airway usually will require endotracheal (ET) suctioning to remove secretions and prevent airway obstruction. Endotracheal suctioning is a most common procedure performed in patients with artificial airways. It is a segment of bronchial hygiene therapy and mechanical ventilation. The procedure normally includes preparation of the patient, the suctioning event, and the follow-up care. Endotracheal suctioning is a process in which the catheter is inserted in to the endotracheal tube and the secretions of patient's lung are removed by applying a negative pressure. This process helps in preventing accumulation of the secretions, thereby maintaining airway patency by ensuring optimal oxygenation and saving the patients' lives. However, the failure to meet the standards in the implementation of this procedure can lead to numerous detrimental effects. Probable complications of endotracheal tube suctioning include hypoxia, tracheal tissue injury, ventilator-associated pneumonia, bronchospasm, atelectasis, increase in intracranial pressure, and cardiac dysrhythmias. All intensive care nurses should be aware of these complications when performing this intervention on the patient and should endeavor to prevent or minimize them. Therefore, updating endotracheal suctioning practices is considered as a vital factor in reducing the occurrence of these complications.

Significance of the study

A study done in United Kingdom revealed that many nurses have failed to demonstrate an acceptable level of competence and some of the practices observed were potentially unsafe. Compliance with hand washing guidelines was reported by 82%, 75% reported wearing gloves, 50% elevated the head of bed, only 33% were reported performing proper suctioning and 50% had oral care protocol. An experimental study was conducted to assess the knowledge of nurses before, immediately after and 4 weeks after the intervention with the help of a self-developed validated tool. Knowledge scores of

Corresponding author:* **Mercy Thomas
Department of Medical Surgical Nursing, BBCON, Kollam

participants increased significantly after the educational intervention in the first post-test. The 5-hour teaching module significantly improved the nurse's knowledge towards evidence based guidelines for the prevention of Ventilator Associated Pneumonia. Hence, nurses should ensure that their knowledge and skills are maintained. Nurses should also ensure that they part take their role in accordance with the original protocols, policies and guideline. A study was conducted to determine the knowledge and practice of 48 nurses of cardiovascular surgical intensive care unit pre and post training for the development of standard practice guidelines for open and closed system suctioning methods in patients with endotracheal tube using a questionnaire and nurse observation forms. This study concluded that the nurses were compliant to the standard practice guidelines for open and closed suctioning and their knowledge on the subject was significantly increased after training, while the implementation of standards was satisfactory. A study assessed the performance of endotracheal suctioning by direct observation and knowledge was assessed using a self-administered questionnaire. This study concluded that the nurses had scientific knowledge of the suctioning procedure better than their clinical practice competency. Another study explored the knowledge and competence of nurses in performing endotracheal suctioning. Twenty eight nurses were observed using non participant observation and structured observation schedule. The study demonstrated that the majority of the subjects (n=14) had failed to perform the suctioning as accurately as subjects had reflected in their knowledge score. The mean score for knowledge was 11.1 and 10.3 for practice (maximum score 20). The study concluded that a poor level of knowledge for many subjects was reflected in their poor practice. This study suggested that nurses require support, education, and training relating to endotracheal suctioning.

Purpose of the study

Suctioning for ventilated patients is a routine nursing procedure, yet practices can vary among clinicians and hospitals. Endotracheal suctioning is a sterile procedure which the nurses must perform efficiently and effectively in order to avoid occurrence of infections. The lack of adherence to aseptic technique by the nurses is a contributing factor in transmission of infection or cross infection which in turn has a significant role in prolonging patient's stay and in turn makes the patient prone to more risk of infections. Patients may also have the experience of moderate to severe pain. Ventilator associated pneumonia is also a major complication. It is therefore imperative that the healthcare professionals are always aware about these risks and practice according to the current best evidence. Adequate knowledge along with the correct procedure performance is essential to practice asepsis which in turn prevents infection. The scientific knowledge on which the nurses should base their clinical practice is usually lacking.

Hence knowledge and experience are detrimental in assessing a nurse's ability to adequately perform the endotracheal suctioning. All nurses who perform suctioning must be provided approved training and prove their competence under supervision. They have the professional responsibility to ensure that their knowledge and practice skills are maintained. Nurses should also ensure that they participate in their role in accordance with the original protocols, policies and guidelines. This study will help to put ground and identify knowledge and practice pertaining to endotracheal suctioning for better patient outcome. From this we conclude that assessment of nurse's knowledge and practical experience regarding proper endotracheal suctioning is crucial in order to perform suctioning procedure with efficiency.

Objectives

1. To determine the effectiveness of structured teaching programme on knowledge regarding endotracheal suctioning among staff nurses in intensive care units.
2. To determine the effectiveness of structured teaching programme on practice regarding endotracheal suctioning among staff nurses in intensive care units.
3. To correlate between knowledge and practice of endotracheal suctioning among staff nurses in intensive care units.
4. To find out the association between mean pretest knowledge scores and demographic variables.
5. To find out the association between mean pretest practice scores and demographic variables.

Hypotheses

All hypotheses will be tested at a 0.05 level of significance,

H_1 - There is significant difference between mean pretest and posttest knowledge scores regarding endotracheal suctioning among staff nurses in intensive care units.

H_2 - There is significant difference between mean pretest and posttest practice scores regarding endotracheal suctioning among staff nurses in intensive care units.

H_3 - There is relationship between knowledge and practice scores regarding endotracheal suctioning.

H_4 - There is association between mean pretest scores of knowledge with demographic variables.

H_5 - There is association between mean pretest scores of practice with demographic variables.

MATERIALS AND METHODS

Research Approach

In view of nature of the problem selected and objectives to be accomplished, in this study a quantitative approach was adopted.

Research Design

A pre experimental, one group pretest posttest research design was selected to assess the knowledge and practice of the staff nurses regarding endotracheal suctioning.

Variables

Dependent variable, independent variable and demographic variables were the variables considered in this study. The dependent variable was the knowledge and practice of staff nurses in the intensive care unit regarding endotracheal suctioning. The independent variable was structured teaching programme and pamphlet reinforcement on knowledge and practice regarding endotracheal suctioning. The demographic variables were age in years, gender, designation, category, qualification, total years of professional experience, and total years of ICU experience.

Criteria for the Selection of Sample

The sample selection is based upon the inclusion criteria.

Inclusion Criteria

- Staff nurses those who work in general intensive care units.
- Staff nurses those who are involved in direct patient care.

Tool/ Instruments

Section A

It consists of demographic variables of the staff nurses such as age in years, gender, designation, category, qualification, total years of professional experience, and total years of ICU experience**.**

Section B

It consists of fifteen multiple choice questions related to knowledge regarding endotracheal suctioning. Questions covered various aspects related to endotracheal suctioning. Maximum score was 15 and minimum score was 0. One correct answer was given a score of 'one' and each wrong response a score of 'zero'. Score 0 - 5 was considered as poor knowledge, score 6 - 11 was considered as average knowledge and score 12-15 was considered as good knowledge.

Section C

It consists of clinical performance assessment checklist with 20 statementsregarding care of patients with endotracheal suctioning. Statements covered all the steps of the procedure from hand washing to documentation. Maximum score was 20 and minimum score was 0. One positive response was given a score of 'one' and each negative response a score of 'zero'. Score 0 - 9 was considered as poor practice, score 10-16 was considered as average practice and score 17 - 20 is considered as good practice.

Data collection process

The study was conducted in intensive care units of Bishop Benziger Hospital and Upasana hospital, Kollam. The data collection period extended from 04/12/2017 to 30/12/2017. Clearance certificate was obtained from the institutional ethics committee of Bishop Benziger College of Nursing, Kollam. A formal permission was obtained from the administrator of the selected hospitals before data collection. 50 samples were selected by using purposive sampling criteria. The researcher introduced herself and provided a brief introduction about research and a written informed consent was obtained from the staff nurses. Baseline data was collected from the participants. Then the knowledge was assessed by using structured questionnaire and practice was assessed by clinical performance assessment checklist. After the pretest, the researcher provided structured teaching programme for a period of 20 minutes on the same day. On the 7^{th} day of intervention, the 1^{st} posttest knowledge was assessed by using structured questionnaire and 1^{st} posttest practice was assessed by clinical performance assessment checklist and then a pamphlet with steps of procedure was given as a reinforcement intervention. On the 14^{th} day of the intervention, the 2^{nd} posttest knowledge was assessed by using same structured questionnaire and 2^{nd} posttest practice was assessed by clinical performance assessment checklist.

Statistical Analysis

The analysis of the data involves the translation of information collected during the course of research project into interpretable and manageable form. It involves the use of statistical procedure to give organization and meaning to the data. A master sheet was prepared by the investigator to analyze the data. The data was analyzed using both descriptive and inferential statistics on the basis of the hypotheses of the study. The analyzed data was presented in tables and figures.

- Baseline characteristics were analyzed by using frequency and percentage.
- Knowledge regarding endotracheal suctioning among staff nurses in intensive care units was analyzed using frequency and percentage distribution before and after structured teaching programme.
- Practice regarding endotracheal suctioning among staff nurses in intensive care units was analyzed using frequency and percentage distribution before and after structured teaching programme.
- Effectiveness of structured teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses in intensive care units was analyzed using repeated measures of ANOVA.
- Relationship between knowledge and practice of endotracheal suctioning among staff nurses in intensive care units was analyzed using Karl Pearson's Correlation Coefficient.
- Association between pretest knowledge, pretest practice and selected variables was analyzed using Chi square test.

RESULT AND OBSERVATION

The data was analyzed using both descriptive and inferential statistics on the basis of the hypotheses of the study.

- Majority of the sample belonged to the age group 26- 30 years (52%) and 41-45 years group had least number of samples (4%).
- Majority of the samples were of female gender (96%)
- While majority had GNM qualification (60%), only 28% were qualified as B.Sc. N
- It was also noted that majority of the samples were staff nurses (88%) and around 44% had 6-10 years of total experience.
- About 68% of the samples had 0- 5 years of ICU experience and around 74% of the samples were in temporary position.
- The findings of the study revealed that the mean posttest knowledge score of selected samples (13.82 ±0.74) was higher than the mean pretest score (6.46± 1.99). Mean, variance and f value of pretest and posttest knowledge score indicated that the calculated ANOVA value (389.34) is greater than the table value (3.05) at a 0.05 level of significance.

The findings of the study also revealed that the mean posttest practice score of selected samples (17.74 ± 0.80) was higher than the mean pretest score (8.04 ±2.49). Mean, variance and f value of pretest and posttest knowledge score indicated that, the calculated ANOVA value (424.81) is greater than the table value (3.05) at a 0.05 level of significance.

Group	Mean	Variance	f value
Pretest	6.46	3.96	
Posttest 1	10.92	0.76	389.34*
Posttest 2	13.82	0.55	

Group	Mean	Variance	f value
Pretest	8.04	6.24	
Posttest 1	13.58	1.47	424.81*
Posttest 2	17.74	0.64	

Pearson Correlation	Df	Table value	Inference
0.66	48	0.27	Significant

The calculated coefficient value (0.66) was $0 < r < 1$, which indicated that there is statistically strong positive relationship between knowledge and practice scores regarding endotracheal suctioning among staff nurses in different intensive care units.

DISCUSSION

Demographic data

The age distribution data showed that a good majority of 52% of the samples belonged to 26 - 30 yrs, a low percentage (18%) of the samples belonged to 31 - 35 yrs, 14% belonged to 20 - 25yrs, 12% belong to 36 - 40 yrs and a negligible percentage (4%) belonged to 41 -45 yrs of age group.

The data according to gender distribution showed that a vast majority of 96% of the samples was females and a negligible 4% were males.

According to the designation, data showed that a negligible 2% of the samples were nurse incharges, 10% of the samples were senior nurses and a majority of 88% of the samples was staff nurses.

The data on category distribution showed that a very good percentage (74%) of the samples was temporary and a negligible 26% of the samples were in permanent position.

The qualification distribution data showed that a good percentage (60%) of the samples had GNM qualification, 28% were B.Sc. Nurses, 10% had Post Basic Nursing degree and 2% had M.Sc. Nursing qualification.

The data on distribution according to the total years of experience showed that, 46% of the samples had 6 -10 years and 36% of the samples had 0 -5 years of experience. Around 12% of the samples had 11 - 15 years and only 6 % of the samples had 16 - 20 years of experience.

It was observed that a majority of 68% of the samples had 0 -5 years of ICU experience, 30% of the samples had 6 - 10 years of experience in ICU and only 2% had 11- 15 years of experience.

Description of knowledge regarding endotracheal suctioning

It was observed that in pretest, majority of the samples (70%) belonged to average level of knowledge and the remaining 28 % had poor level of knowledge and only 2% had good knowledge level. In posttest 1 a major majority of the samples (84%) belonged to good level of knowledge and the remaining 16% had an average level of knowledge while in posttest 2 a vast majority of the samples (96%) had good level of knowledge.

Description of practice regarding endotracheal suctioning

Data showed that in pretest, majority of the sample (62%) belonged to poor level of practice, a low percentage (36%) had average and a negligible 2% had good level of practice. In posttest 1, a good majority of 78% belonged to average level and the remaining 22 % had a good level of practice while in posttest 2, a vast majority of the samples (92%) had good level of practice.

Comparison of pretest and posttest knowledge score after structured teaching programme

The findings of the study revealed that the mean posttest knowledge score of selected samples (13.82 ±0.74) was higher than the mean pretest score (6.46± 1.99). The calculated ANOVA value (389.34) was greater than the table value (3.05) at a 0.05 level of significance. This indicated that there was a statistically significant difference between mean pretest and posttest knowledge scores regarding endotracheal suctioning among staff nurses in different intensive care units after the structured teaching programme.

Comparison of pretest and posttest practice score after structured teaching programme

The findings of the study revealed that the mean posttest practice score of selected samples (17.74 ± 0.80) was higher than the mean pretest score (8.04 ±2.49). According to the data, the calculated ANOVA value (424.81) was greater than the table value (3.05) at a 0.05 level of significance. This showed that there was a statistically significant difference between mean pretest and posttest practice scores regarding endotracheal suctioning among staff nurses in different intensive care units after the structured teaching programme.

Relationship between knowledge and practice of endotracheal suctioning

The posttest knowledge and practice score of staff nurses were computed to correlate between knowledge and practice regarding endotracheal suctioning among staff nurses in intensive care units using Karl Pearson's Correlation Coefficient. Since the calculated value 0.66 was $0 < r < 1$, there is statistically strong positive relationship between knowledge and practice scores regarding endotracheal suctioning among staff nurses in different intensive care units.

Association between knowledge score with demographic variables

The association between the knowledge and demographic variables such as age in years, gender, designation, category, qualification, total years of experience and years of ICU experience were computed using chi square test. As the calculated chi square value for qualification (52.42) was more than the table value (12.59) at 0.05 of level significance, there was a statistically significant association between the knowledge and qualification.

Association between practice score with demographic variables

The association between the practice and demographic variables such as age in years, gender, designation, category, qualification, total years of experience and years of ICU experience were computed using chi square test. As the calculated chi square value of qualification (53.88) was more than the table value (12.59) at 0.05 of level significance, there was a significant association between the knowledge and qualification. As the calculated chi square value of age in years, gender, designation, category, total years of experience and years of ICU experience were less than the table value there was no significant association between practice and these demographic variables.

CONCLUSION

The findings of the study revealed that there was statistically significant difference in the knowledge and practice score of staff nurses regarding endotracheal suctioning among staff nurses before and after the administration of the intervention in the selected samples. The present study suggested that Structured Teaching Programme was effective in improving knowledge and practice regarding endotracheal suctioning among staff nurses in different intensive care units.

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