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Effect of planned teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses working in ICU at selected hospital, Guwahati, Assam

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Abstract

Background: Endotracheal suctioning is a routine, essential part of care of the intubated patients with mechanical ventilation. When airway clearance cannot be accomplished via involuntary physiological mechanism then collaborative nursing intervention is needed such as, endotracheal suctioning to achieve optimal patient outcomes.

Objectives: 1) To assess the pre-test knowledge score and pre-test practice score regarding endotracheal suctioning among staff nurses working in ICU 2) To determine the effect of planned teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses working in ICU 3) To evaluate the post-test knowledge score and post-test practice score regarding endotracheal suctioning among staff nurses working in ICU 4) To determine the association between the knowledge score regarding endotracheal suctioning among staff nurses working in ICU with selected demographic variables 5) To determine the association between practice score regarding endotracheal suctioning among staff nurses working in ICU with selected demographic variables 6) To find the correlation between the knowledge and practice regarding endotracheal suctioning among staff nurses.

Methods: Pre-experimental research design study was undertaken among staff nurses working in ICU of Health City Hospital, Guwahati, Assam, India. The knowledge of thirty two staff nurses were assessed using structured knowledge questionnaire regarding endotracheal suctioning and practice were also assessed using observational checklist regarding endotracheal suctioning.

Result: The findings of the study revealed that majority of the ICU staff nurses had adequate knowledge level (71.9%) regarding endotracheal suctioning, in practice the findings revealed that there is good practice (65.6%) of the staff nurses regarding endotracheal suctioning. The mean post-test knowledge score (14.53) was higher than the mean pre-test knowledge score (8.22). Computed 't' (19.71) was found statistically significant at the level of $p < 0.05$. The mean post-test practice score (33.82) was higher than the mean pre-test practice score (19.53). Computed 't' (5.67) was found statistically significant at the level of $p < 0.05$. There is significant association found between pre-test level of knowledge of ICU staff nurses with Total years of clinical experience in ICU (χ^2 - 9.91), there is significant association found between pre-test level of practice of ICU staff nurses with Total years of clinical experience in ICU (χ^2 - 16.87) and Participation in any in-service program (χ^2 - 11.26), the study revealed that there was a positive correlation found between knowledge and practice score 'r' value is 0.44 significant at $p < 0.05$ levels.

Conclusion: Endotracheal suctioning is a common invasive procedure which aims at keeping airways of the patient with endotracheal tube patent by mechanically removing accumulated pulmonary secretions. Hence, the researcher on basis of the findings conclude that having a continuing nursing education and in-service topic related to endotracheal suctioning can further help the nurse in gaining more knowledge and practice and be competent enough to prevent any complications.

Keywords: Effect, planned teaching programme, knowledge, practice, endotracheal suctioning, staff nurses and ICU

Introduction

Respiration is a basic human need that man tends to ignore unless they feel some difficulty in breathing. Respiration is a physiological function that is almost synonymous with being alive. So if a patient experiences difficulty in breathing, it is a threat to his/her life itself. Patent airway is very essential for effective breathing.

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Airway patency is usually maintained by action of the mucocilliary system when a normal amount of mucus is produced. When airway clearance cannot be accomplished via involuntary physiological mechanism then collaborative nursing intervention is needed such as, endotracheal suctioning to achieve optimal patient outcomes^[1].

Endotracheal suctioning is a routine, an essential part of care of the intubated patients with mechanical ventilation. Complications associated with this technique include arterial oxygen desaturation, Cardiac arrhythmias, inability to maintain Positive End Expiratory Pressure (PEEP) and sudden death. The reported incidence of nosocomial pneumonia is 0.5% to 5% for all hospital admission whereas incidence in patients receiving mechanical ventilation is much higher^[2].

Endotracheal suctioning for patients receiving mechanical ventilation is routinely done in the acute care setting. Practice over time has varied from suctioning done at routine intervals with the instillation of normal saline along with checking breath sounds before and after suctioning to assess for improvement, to suctioning only when a clinician-based assessment indicates need^[3].

A related study was conducted by Shrestha S and Shrestha R (2018) on knowledge and practice regarding endotracheal suctioning among nurses, the study revealed 55.8% had adequate knowledge with the mean percentage of 61.6%. Similarly, 44.2% had satisfactory practice on endotracheal suctioning with the mean percent of 47.5%^[4].

Materials and Methods

Research approach: Quantitative Approach

Research design: Pre-experimental one group pre-test post-test design

Setting: Health City Hospital, Guwahati, Assam

Population: Staff nurses who were working in ICU in selected hospital

Sample size: Sample size selected was 32 staff nurses, the sample size was calculated using Raosoft sample size calculator

Sampling technique: Purposive sampling technique

Selection criteria

Inclusion criteria: ICU staff nurses, Staff Nurses who are willing to participate in the study, Staff nurses who are available during the period of data collection and Adult patient with endotracheal suctioning is included in the study.

Exclusion criteria: Those who are not involve or practice endotracheal suctioning.

Tool of the study: Demographic proforma, structured knowledge questionnaire and observational checklist on endotracheal suctioning.

Ethical consideration: Ethical approval was obtained from the institutional Ethical committee, concerned hospital authorities and the participants.

Data analysis: The collected data was analyzed in terms of objectives of the study by using descriptive analysis (frequency, percentage, mean and standard deviation) and inferential statistics (chi-square test was applied. A significance level of 0.05 was used.)

Results

The findings of the study revealed majority of the staff nurses had adequate knowledge level (71.9%) regarding endotracheal suctioning, in practice the findings revealed that there is good practice (65.6%) of the staff nurses regarding endotracheal suctioning. The mean post-test knowledge score (14.53) was higher than the mean pre-test knowledge score (8.22) with a mean difference of 6.31. Computed 't' (19.71) was found statistically significant at the level of 0.05 significance ('t'₍₃₁₎ = 2.04, $p < 0.05$). The mean post-test practice score (33.82) was higher than the mean pre-test practice score (19.53) with a mean difference of 14.29. Computed 't' (5.67) was found statistically significant at the level of 0.05 significance ('t'₍₃₁₎ = 2.04, $p < 0.05$). There is significant association found between pre-test level of knowledge of ICU staff nurses with Total years of clinical experience in ICU (χ^2 - 9.91), there is significant association found between pre-test level of practice of ICU staff nurses with Total years of clinical experience in ICU (χ^2 - 16.87) and Participation in any in-service program (χ^2 - 11.26), there is significant correlation found between knowledge and practice (r - 0.44) significant at $p < 0.05$ levels.

Discussion

Characteristics of demographic variables of the staff nurses working in ICU

The frequency and percentage distribution of staff nurses working in ICU regarding Endotracheal suctioning was done by Age, Gender, Professional qualification, Total years of clinical experience and participation in any in-service programme related to endotracheal suctioning. With regards to the age, majority 19(59.3%) of ICU staff nurses were in the age group of 21-25 years. With regards to gender, majority 29(90.6%) were females. With regards to professional qualification, majority 14(43.7%) were from GNM background and 12(37.5%) were from B.Sc background. With regards to the total years of clinical experience in ICU, majority 14(43.7%) had less than 1 year of clinical experience in ICU and 10(31.3%) had 1-3 years of clinical experience in ICU. With regards to participation in any in-service programme related to Endotracheal suctioning, majority 20(62.5%) participated in the in-service programme and 12(37.5%) were not involved in any in-service programme.

Level of knowledge regarding endotracheal suctioning among the staff nurses working in ICU

In the present study, the existing knowledge of the ICU staff nurses regarding endotracheal suctioning was assessed by a structured knowledge questionnaire.

The statistical findings of the present study reveals that majority 23(71.9%) of ICU staff nurses have adequate knowledge regarding endotracheal suctioning and in majority 21 (65.6%) ICU staff nurses have good practice regarding endotracheal suctioning.

The present study is supported by a similar study conducted by Paramjyothi B *et al.* (2016) on the knowledge regarding ET suctioning among staff nurses and student nurses in NMCH, Nellore.' Findings revealed that with regard to level of knowledge of ET suctioning among staff nurses 1(7%) had inadequate knowledge, 11(73%) had Moderate knowledge, and 3(20%) had adequate knowledge. Among nursing students 3(20%) had inadequate knowledge, and 12(80%) had moderate knowledge. The present study concluded that Staff nurses have more knowledge than nursing students regarding endotracheal suctioning ^[5].

Level of practice regarding endotracheal suctioning among the staff nurses working in ICU

In the present study, the existing practice of the ICU staff nurses regarding endotracheal suctioning was assessed by Observational Checklist. The statistical findings of the present study revealed that majority 21 (65.6%) of ICU staff nurses have good practice regarding endotracheal suctioning.

The present study is supported by a similar study conducted by Sabah A (2015) on 'Evaluation of the Nurse's Practice toward Endotracheal Suctioning of Intubated Critically ill Patients in the ICU at Baghdad Teaching Hospitals. The findings of the present study revealed that the majority of the participants is female (n=35;70.0%), more than half of them is within (18-27) years old age group (n=26;52.0%), more than half of them aren't married(n=27;54.0%), about one third of them is nursing, about one third of them are nursing institute graduates(n=17;34.0%), and the proportion of Nursing College graduate and above(n=17;34.0%) are the same, more than half of them reported that the number of nurses in the shift is 11-15 (n=27;54.0%), the mean number of training courses related to ICU is 1.74, SD=1.794, more than one third of them reported that they've (1-2) training courses (n=18;36.0%). Severity of complications is at a moderate level for most of the participants (n=30;60.0%), and there is no association between participants' socio-demographic characteristics and their practices ^[6].

Effect of planned teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses working in ICU

Findings of the present study revealed that the mean of post-test knowledge score (14.53) was higher than the mean of pre-test knowledge score (8.22) with a mean difference of 6.31. There was a significant difference between the pre-test and post-test knowledge with the t-value of 19.71 and it was found to be significant at $p<0.05$ level.

The mean of post-test practice score (33.82) was found to be higher than the mean of pre-test practice score (19.53) with a mean difference of 14.29. There was a significant difference between the pre-test and post-test practice score with the t-value of 5.67 and it was found to be significant at $p<0.05$.

The present study is supported by a study conducted by Thomas M, Binutha V (2018) to assess the effectiveness of a planned teaching programme on knowledge and practice regarding endotracheal suctioning among staff nurses in intensive care units of selected hospitals in Kollam. In this study a 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 a structured teaching programme (Day 1) and reinforcement intervention (Day 7) to all the samples and posttest on the 7th and 14th day. 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 planned teaching programme ^[7].

Association between the level of knowledge of staff nurses regarding endotracheal suctioning with selected demographic variables

The findings of the present study revealed that there is significant association found between knowledge of staff nurses with selected demographic variables *viz.* Total years of clinical experience in ICU.

Association between the level of practice of staff nurses regarding endotracheal suctioning with selected demographic variables.

The findings of the present study revealed that there is significant association found between practice of staff nurses with selected demographic variables *viz.* Total years of clinical experience and participation in any in-service programme related to endotracheal suctioning.

The present study is supported by a study conducted by Majeed S, Majeed A (2013) on the effectiveness of a planned teaching programme regarding endotracheal suctioning among staff nurses in selected hospitals of Mangalore. Findings reveal that work experience was significantly associated with the post-test level of knowledge (chi-square=7.1, $p=0.05$) and post-test practice (chi-square=8.45, $p=0.05$) ^[8].

Correlation between pre-test knowledge and practice of staff nurses regarding endotracheal suctioning

The findings of the present study revealed that there is a positive correlation obtained 0.44 between pre-test knowledge and practice of the staff nurses regarding endotracheal suctioning.

The present study was supported by a study conducted by Aurang Z, Ali F, *et al.* (2017) on 'descriptive cross sectional study among ICU nurses regarding knowledge and practice of endotracheal suctioning, in Tertiary care private and public sector hospitals of Peshawar. Finding reveals that the majority of participants 70.8% were female and 29.2% were male with the mean knowledge of 50.04%±18.963% while the mean practice level was 80.37%±18.37%. A positive correlation was seen between knowledge and practice level among ICU nurses ^[9].

Table 1: Frequency and percentage distribution of selected demographic variables of ICU staff nurses N=32

Sample Characteristics	Frequency (F)	Percentage (%)
1. Age in years		
a. 21-25	19	59.3
b. 26-30	10	31.3
c. 31 and above	3	9.4
2. Gender		
a. Male	3	9.4
b. Female	29	91.6
3. Professional qualification		
a. G.N.M	14	43.7
b. B.Sc. Nursing	12	37.5
c. Post Basic B.Sc. nursing	6	18.8
d. M.Sc. Nursing	-	-
4.Total years of clinical experience in ICU		
a. < 1 years	14	43.7
b. 1-3 years	10	31.3
c. > 3 years	8	25
5. Participation in any in-service programme related to endotracheal suctioning		
a. Yes	20	62.5
b. No	12	37.5

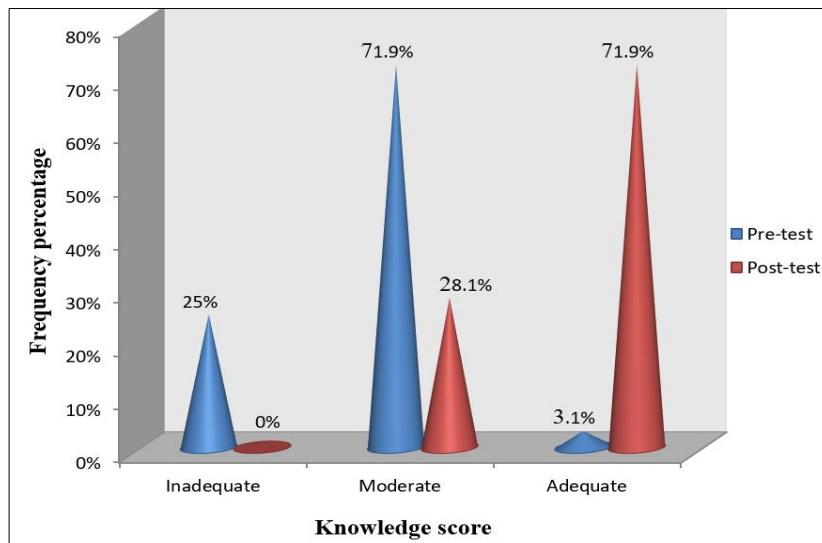


Fig 1: Bar diagram showing the frequency distribution of pre-test and post-test knowledge score on endotracheal suctioning N=32

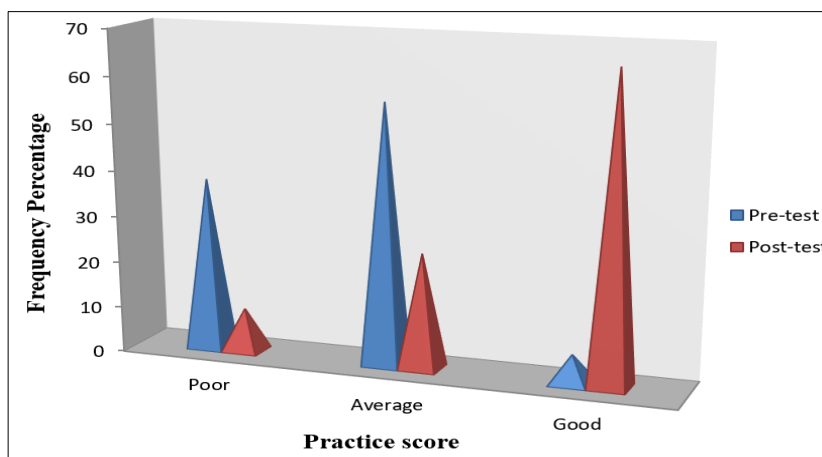


Fig 2: Bar diagram showing the percentage distribution of pre-test and post-test practice score on endotracheal suctioning

Table 2: Mean, Mean difference, Standard deviation and t-value of pre-test and post-test knowledge scores. N=32

Knowledge score	Mean	Mean difference	Standard deviation	T-Value	DF	Inference
Pre-test	8.22	6.31	2.98	19.71	31	S
Post-test	14.53		3.15			

S=Significant at $p < 0.05$

Table 3: Mean, Mean difference, Standard deviation and t-value of pre-test and post-test Practice scores, N=32

Practice score	Mean	Mean difference	Standard deviation	T-Value	DF	Inference
Pre-test	19.53	14.29	9.40	5.67	31	S
Post-test	33.82		11.37			

S=Significant at $p < 0.05$

Table 4: Association of pre-test knowledge score of ICU staff nurses and selected demographic variables

Demographic variables	Knowledge score			χ^2	DF	Table Value	Inference
	Inadequate	Moderate	Adequate				
1. Age in years							
a. 21-25	8	11	-	4.46	4	9.49	NS
b. 26-30	3	6	1				
c. 31 and above	-	3	-				
2. Gender							
a. Male	-	3	-	1.92	2	5.99	NS
b. Female	7	21	1				
3. Professional qualification							
a. G.N.M	5	9	-	5.22	6	12.59	NS
b. B.Sc. Nursing	3	9	-				
c. Post Basic B.Sc. nursing	1	4	1				
d. M.Sc. Nursing	-	-	-				
4. Total years of clinical experience in ICU							
a. <1 years	9	5	-	9.91	4	9.49	*S
b. 1-3 years	3	6	1				
c. >3 years	-	7	1				
5. Participation in any in-service programme related to endotracheal suctioning							
a. Yes	8	9	3	5.82	2	5.99	NS
b. No	5	7	-				

Table 5: Association of pre-test practice score of ICU staff nurses and selected demographic variables N=32

Demographic variables	Practice score			χ^2	DF	Table Value	Inference
	Poor	Average	Good				
1. Age in years							
a. 21-25	9	10	-	8.63	4	9.49	NS
b. 26-30	2	5	3				
c. 31 and above	-	2	1				
2. Gender							
a. Male	-	2	1	1.82	2	5.99	NS
b. Female	10	15	4				
3. Professional qualification							
a. G.N.M	3	9	2	8.57	6	12.59	NS
b. B.Sc. Nursing	5	7	-				
c. Post Basic B.Sc. nursing	2	3	1				
d. M.Sc. Nursing	-	-	-				
4. Total years of clinical experience in ICU							
a. < 1 years	10	4	-	16.87	4	9.49	*S
b. 1-3 years	1	8	1				
c. > 3 years	-	6	2				
5. Participation in any in-service programme related to endotracheal suctioning							
a. Yes	5	11	4	11.26	2	5.99	*S
b. No	4	8	-				

*NS= Not significant, *S = Significant at $p < 0.05$

Table 6: Correlation between Pre-test knowledge and practice regarding endotracheal suctioning among ICU staff nurses N=32

Variables	Mean	Correlation coefficient	Inference
Knowledge	11.37	0.44	*S
Practice	26.68		

*S = Significant at $p < 0.05$

Conclusion

The present study was conducted to assess the effect of a planned teaching programme on knowledge and practice among staff nurses working in ICU at selected hospitals in Guwahati, Assam. The finding of the study revealed that the planned teaching programme on endotracheal suctioning was effective in improving knowledge and practice of staff nurses working in ICU and there was a significant

association between pre-test knowledge and the demographic variables viz. Total years of clinical experience in ICU, and practice with the demographic variables viz. Total years of clinical experience and participation in any in-service programme related to endotracheal suctioning. On the basis of the findings, the researcher concluded that through health programs, conferences and workshops regarding endotracheal suctioning can be held so as to enhance their knowledge, skills and confidence and focus on the health needs of the patient.

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