

ORIGINAL RESEARCH ARTICLE

PRACTICE REGARDING CARE OF ENDOTRACHEAL TUBE AMONG NURSES WORKING IN TEACHING HOSPITAL, BHARATPUR

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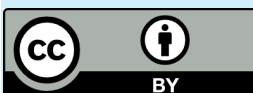
**ABSTRACT**

**Background:** Endotracheal intubation is a most common procedure to maintain oxygenation and ventilation among the patients who admitted to critical care unit. So, meticulous care is necessary to maintain airway patency and prevent from complications. The objective of the study was to assess the practice regarding care of endotracheal tube among nurses working at teaching hospital, Bharatpur.

**Methods:** A descriptive, cross-sectional study was conducted among 56 nurses working in critical care units of a teaching hospital, Chitwan. Sample was selected by using non probability, consecutive sampling technique. Data were collected through structured self-administered questionnaire to measure the socio-demographic and professional related information and observation checklist was used to measure the practice regarding care of endotracheal tube. Data were analyzed using descriptive and inferential statistics to find out the association between variables.

**Results:** Majority (89.3%) of the nurses were above 20 years old, 71.4% of them were completed Proficiency Certificate Level, 60.7% had work experience of equal and less than one year in critical care unit and all of them participated in in-service education. Among 56 nurses, 57.1% had satisfactory level of practice regarding care of endotracheal tube. Nurses had highest mean practice score (79.55%) on suctioning and lowest score (19.22%) on cuff pressure management.

**Conclusions:** It is concluded that nurses had marginally satisfactory level of practice regarding care of endotracheal tube. Hence, there is need to provide regular training for nurses regarding patient's care with endotracheal tube.



**INTRODUCTION**

Endotracheal tube (ETT) intubation is often an emergency procedure in critical care units. Its purpose is to maintain the airway as a life-saving measures in a patient with severe acute illness and injury associated with potential compromises to the patient's airway and ventilation.<sup>1</sup> Although, ETT is life saving measure, the presence of an endotracheal tube is a stressful condition and may cause significant discomfort to intensive care patients.<sup>2</sup> However the ETT in position, there may be various complications happened which may occur early (bleeding, pneumothorax, air embolism, aspiration, subcutaneous emphysema etc) or late (infections, dysphagia, trachea-esophageal fistula, tracheal ischemia and necrosis etc).<sup>3</sup>

Care of endotracheal tube is necessary for mechanically ventilated patient to avoid complications associated with ETT. So, the nurses play pivotal role for caring patients with ETT in critical care unit. Daily routine care includes oral care every 2 hourly, monitoring respiratory status and placement of the endotracheal tube and repositioning the client to prevent hazards of immobility (e.g. pneumonia, pressure sore), perform oral and endotracheal suctioning of secretions, monitoring ETT

cuff pressure.<sup>4,5</sup>

Many researches show that the nurses' knowledge and practice regarding care of patients with endotracheal tube was unsatisfactory.<sup>6-8</sup> Inadequate care of endotracheal tube may lead to many complications which leads to increase morbidity, hospitalization, and mortality too. Thus, nurses should have proper knowledge and practice during caring of patients with endotracheal tube.

The objective of this study was to assess the practice regarding care of endotracheal tube among nurses working in critical area of teaching hospital.

**METHODS**

A descriptive cross-sectional research design was used to find out the practice regarding care of endotracheal tube among 56 nurses working in critical care unit of Chitwan Medical College of Teaching Hospital, Bharatpur, Chitwan. Non probability consecutive sampling technique was used to select the sample. Inclusion criteria of this study were nurses who had more than 3 months of work experience in critical care units and available during the data collection

period.

The data collection instrument was divided into 2 sections: section1 contains socio-demographic and professional related information and section 2 contains practice regarding care of endotracheal tube. The level of practice was measured by calculating the total practice score which is further classified into two categories based on median score as satisfactory practice ( $\geq$  Median score 31) and unsatisfactory practice ( $<$ Median score 31).

Prior to data collection, ethical approval was obtained from Chitwan Medical College institutional review committee. Written informed consent was obtained from each respondent by clarifying the purpose of the study. Respondent's dignity was maintained by giving right to reject or discontinue from the research study at any time without any penalty.

Data were collected during the period of 2019/06/23 to 2019/07/06. First of all, researcher observed the practice regarding care of ETT in the morning shift by using the non-participatory observation method by using observation check list. After completing the observational checklist, researcher gave briefed to each respondent regarding observation of their practice regarding care of ETT and purpose of the study was also explained. Then distributed the self-administered questionnaire to respondents to assess the socio-demographic and profession related variables.

The collected data were checked, reviewed, and organized daily for its accuracy, completeness and consistency. The data were entered in statistical package for social sciences (IBM SPSS) version 23.0 for further analysis. The data were analyzed in terms of descriptive statistics such as frequency, percentage, mean, median and standard deviation and inferential statistics such as Chi square test was used to measure the association between the practice regarding care of ETT and the selected variables.

## RESULTS

Table 1 shows that the mean age of the nurses was  $21.93 \pm 2.27$  with the minimum age was 18 and maximum age was 26 years. Majority of them (66.1%) were Brahmin/Chhetri and resided in Chitwan (51.8%). Most of them (85.7%) were Hindu and 71.4% were unmarried. In regard to professional qualification, 71.4% of the nurses had completed proficiency certificate level nursing and majority (73.2%) were graduated from private institution.

Similarly, each fifty percent of the nurses were working in medical and surgical intensive care unit respectively and 60.7% had equal and less than 1-year total work experience in the critical care unit. All nurses said that there is available of protocol on care of ETT and had attended in-service education (not shown in table). In regard to the care of patient in each shift, 85.7% of the nurses said that the nurse patient ratio is 1:3 (Table 2).

**Table 1: Respondents' socio-demographic characteristics (n=56)**

Variables	Frequency (%)
<b>Age group</b>	
$\leq 20$ yrs	6 (10.7)
$> 20$ yrs	50 (89.3)
<i>Mean age <math>\pm</math> SD =21.93<math>\pm</math> 2.27, Min= 18, Max= 26</i>	
<b>Place of residence</b>	
Chitwan	29 (51.8)
Outside Chitwan*	27 (48.2)
<b>Ethnicity</b>	
Brahmin & Chhetri	37 (66.1)
Others**	19 (33.9)
<b>Religion</b>	
Hindu	48 (85.7)
Non Hindu***	8 (14.3)
<b>Marital status</b>	
Married	16 (28.6)
Unmarried	40 (71.4)

\*Nawalparasi, Tanahun, \*\*Janajati, Dalit; \*\*\* Buddhist, Christian

**Table 2: Respondents' profession related information (n=56)**

Variables	Frequency (%)
<b>Professional qualification</b>	
Proficiency Certificate level of Nursing	40 (71.4)
Bachelor in Nursing	16 (28.6)
<b>Graduation institute</b>	
Government	15 (26.8)
Private	41 (73.2)
<b>Working unit</b>	
Medical Intensive Care Unit	28 (50)
Surgical Intensive Care Unit	28 (50)
<b>Total experience in critical care unit</b>	
$\leq 1$ year	34 (60.7)
$> 1$ year	22 (39.3)
<b>Nurse patient ratio</b>	
1:2	8 (14.3)
1:3	48 (85.7)

ETT= Endotracheal Tube

Table 3 depicts that the nurses' had highest mean percent score (79.55%) in suctioning and lowest score (19.22%) in cuff pressure management.

Table 4 shows the nurses' level of practice regarding care of ETT. The median score of overall practice was 31 with IQR (32-30). Out of 56 nurses, 57.1% had satisfactory level of practice whereas 42.9% had unsatisfactory level of practice regarding care of endotracheal tube.

**Table 3: Respondents' practice mean score and percentage of different component regarding care of ETT (n=56)**

Component of ETT Practice	Maximum Possible Score	Obtained Range	Mean ±SD	Mean %
Suctioning	29	20-28	23.07±1.867	79.55
Cuff pressure	4	0-3	0.769±0.769	19.22
Positioning of ETT	9	4-8	6.18±1.064	68.66
<b>Total</b>	<b>42</b>		<b>30.91±2.250</b>	<b>73.59</b>

**Table 4: Respondents' level of practice regarding care of ETT (n=56)**

Level of Practice	Frequency (%)
Satisfactory (≥31 median value)	32 (57.1)
Unsatisfactory (<31 median value)	24 (42.9)
Total	56 (100.0)

Median score of overall practice= 31(IQR=Q3-Q1=32-30)

**Table 5: Association between respondents' level of practice regarding care of ETT and selected variables (n=56)**

Variables	Level of Practice		χ <sup>2</sup>	p-value
	Satisfactory No. (%)	Unsatisfactory No. (%)		
<b>Age in years</b>				
≤ 20 yrs	2 (33.3)	4 (66.7)	1.546	0.385 <sup>f</sup>
> 20 yrs	30 (60)	20 (40)		
<b>Ethnicity</b>				
Brahmin/Chhetri	20 (54.1)	17 (45.9)	0.425	0.515
Others	12 (63.2)	7 (36.8)		
<b>Religion</b>				
Hindu	26 (54.2)	22 (45.8)	1.28	0.258 <sup>f</sup>
Non Hindu	6 (75.0)	2 (25.0)		
<b>Marital status</b>				
Married	8 (50.0)	8 (50.0)	0.467	0.495
Unmarried	24 (60.0)	16 (40.0)		
<b>Professional qualification</b>				
PCL Nursing	23 (57.5)	17 (42.5)	0.007	0.932
Bachelor Nursing	9 (56.2)	7 (43.8)		
<b>Working Unit</b>				
Medical intensive care unit	19 (55.9)	15 (44.1)	0.056	0.813
Surgical intensive care unit	13 (59.1)	9 (40.9)		
<b>Experience in critical area</b>				
≤1 year	20 (58.8)	14 (41.2)	0.002	0.752
>1 year	12 (54.5)	10 (45.5)		
<b>Nurse patient ratio</b>				
1:2	2 (25.0)	6 (75.0)	3.938	0.046 <sup>f</sup>
1:3	30 (62.5)	18 (37.5)		

Significance level at 0. 05, f-Fisher Exact Test

Table 5 shows that the level of practice regarding care of ETT was significantly associated with nurse patient ratio (p=0.046). There was no significant association between respondents level of practice regarding care of ETT and others socio demographic and professional related variables at p value 0.05 level.

## DISCUSSION

This study was designed to find out the practice regarding care of endotracheal tube among nurses of a teaching hospital, Bharatpur. The result of the present study revealed that the total mean score of nurses' practice regarding care of endotracheal tube was 30.91±2.25. Similar to our findings, Amira<sup>7</sup>

reported that the total mean score regarding care of ETT was  $36.8 \pm 3.1$ . Similarly, 57% of the nurses had satisfactory level of practice regarding care of ETT. The reason for this finding might be due to all nurses had attended in-service education regarding care of ETT and availability of standard protocol in the ward. This finding is inconsistent with the findings of the studies conducted in Sudan by Elbokhary<sup>9</sup> and in Tanzania by Mwakanyanga<sup>10</sup> reported that 76.7% nurses had fair and 85.7% had undesirable levels of practice on care of ETT respectively.

The present study reported that the total mean score of practice regarding endotracheal suctioning among nurses was  $23.07 \pm 1.86$  which is similar to the study<sup>11</sup> conducted in Ambala revealed the mean practice score on endotracheal suctioning was  $22.80 \pm 1.23$ . The total mean percentage of cuff pressure management among nurses was 19.22% which is similar to study conducted in Mexico (25.31%).<sup>12</sup> But this finding was inconsistent with the finding conducted in Iran<sup>13</sup> reported that the mean percentage of cuff pressure management was 30.97%. The lower mean percentage of nurses in cuff pressure management might be due to the reason that they don't measure the cuff pressure by manometer method.

The total mean percentage score of positioning of ETT among nurses was 68.66% which is similar with the finding conducted in Egypt (57.26%).<sup>14</sup> This might be due to majority of the nurses don't repositioned the ETT to the opposite side due to the threat of having dislodgement of ETT while repositioning of the tube. The Findings of the study showed that nurse patient ratio is significant association with the level of practice regarding care of ETT ( $p=0.046$ ) and no association with professional qualification, working experience and in-service education

which is similar with the study conducted by Mwakanyanga<sup>10</sup> in Tanzania concluded that there was no association between practice score and ICU training, level of education and working experience.

This study has some limitations that need to be considered when interpreting the results. This study was conducted on only one teaching hospitals and respondents were recruited using a non-probability sampling technique. Thus, the study finding may not be generalized for other setting. However, Chitwan district is central place where nurses are enrolled for job from different districts of Nepal thus the results still had strong generalizability.

## CONCLUSION

It can be concluded that more than half of the nurses have satisfactory level of practice regarding care of ET tube. The highest mean percent score on suctioning procedure and the nurse patient ratio is associated with the level of practice regarding care of endotracheal tube. So, there is need to provide continue in-service education to the nurses regarding care of ETT and should maintain appropriate nurse patient ratio.

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**CONFLICT OF INTEREST:** None

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