

Nurses Knowledge and Practices Regarding Tracheostomy Care in ICU Patients

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ABSTRACT

Background: Tracheostomy care in ICU patients is a basic nursing procedure. It can lead to many complications and is associated with a lot of distress among clients.

Study design: Cross sectional descriptive study.

Methodology: Total of 75 nurses were recruited in study that involved ICU of three tertiary care hospitals in Lahore. Convenient sampling technique was used. For data collection a self-structured questionnaire was used. The collected data was analyzed by using SPSS version 25. Chi Outcome was applied with p-value of less than 0.05 as significant.

Results: There was significant association (p-value <0.05) between nurses knowledge and practice regarding tracheostomy care in ICU patients. The majority of the nurses > 65% had adequate knowledge.

Conclusion: The findings of the current study revealed, that nurses are having adequate level of knowledge and practices regarding tracheostomy in managing tracheostomy in ICU patients. Hence, health care settings are required to provide organized clinical guidelines and protocols for patient's safety.

Keywords: Tracheostomy Care, Assessment, Knowledge and Practice.

INTRODUCTION

Tracheostomy is the oldest known surgical procedures since ancient times. Tracheostomy care is an integral part of the everyday practice in both acute and long term care facility by nurses. Effective tracheostomy care has significant effect on the patient's recovery. The nurses are the first to assess the situation and call the attending physician or surgeon immediately in case of any problem. About one third of the patients in ICU need tracheostomy for long-term ventilation. As frequency of tracheostomy is increasing globally so tracheostomy care is very important in both the Intensive Care Setting and the general ward.^{1,2} Hence, it is important that nurses should be well prepared with appropriate skills and knowledge regarding tracheostomy care to prevent possible complications.

It is therefore, more important that trained nurses are equipped with appropriate skills knowledge and support to meet the unique needs of each patient safely and competently. Having insufficient knowledge and inadequate skills can lead to many serious complications. The trachea is a wide resonating tube that connects the larynx to the bronchi of the lungs. It starts at the bottom of the larynx and ends at the carina. The trachea is surrounded by rings of cartilage; Inner diameter of an adult's trachea is about 1.5-2cm. It is a basic part of the airway and plays a vital function for providing ventilation for respiration³.

Tracheostomy is done by making an opening between three and four rings of cartilage on the front wall of trachea to preserve airway and to overcome upper airway obstruction⁴. Tracheostomy tube is placed in the trachea to secure an airway. The tracheostomy tube allows the patient to inhale the air directly in to windpipe as alternate through the mouth and nose. The indications for tracheotomy are airway obstruction, bilateral vocal cord paralysis, cancer of larynx, chronic obstructive pulmonary disease, congenital airway obstruction, head injury, burns patients with airway injury. It is also needed in neurological diseases like trauma, coma, head and neck surgery, acute airway obstruction, when oral or nasal intubation is not feasible. It can be performed as an emergency procedure or as a scheduled operation; might be temporary or permanent⁵. It needs comprehensive and specialized nursing care, to avoid potential complication. Emergencies which may occur immediately after tracheostomy operation bleeding from the skin, tube displacement and loss of airway, and tube blockage⁶.

Such kind of emergencies managed more efficiently with skilled health care team. When all necessary equipment are easily available at the bedside⁷. The late Complications may include tracheal stenosis and tracheal esophageal fistula, tracheomalacia. During tracheostomy care active suctioning is a dynamic procedure for airway management in the critically ill patient, before suctioning it is necessary to assess and prepare the patient.⁸ Suctioning is a sterile procedure and the suction catheter is the most important tool. Ensure that the suction catheter is in proper size, when passing through the trachea⁹. It is also necessary to maintain the aseptic techniques. Before suctioning some breathes are given to patient by oxygen. the suction catheter can stimulate irritation The tip of the nelaton catheter should be placed in normal saline at 7-10cm. It is necessary to gently introduce the catheter without suction. The tracheal suctioning should be stopped in case of decrease in oxygen saturation less than 90%¹⁰.

One study revealed that normal saline instillation lower respiratory tract infection¹¹. It is usually a misconception that it helps in liquefying secretions. The potential hazards of normal saline instillation include a fall in PaO₂; a survey found that 33% of nurses still use saline before and during suctioning. It is vital that the nurses should be adequately trained and competent enough in the care of a patient with a tracheostomy¹². One of the practices that create anxiety among many nurses is tracheostomy care. Persistent demand for critical care bed means that standardized information should be provided because newly formed tracheostomies require sufficient time in the formation of stoma. It is necessary that the tube should not be change for the first 7-10 days¹³. It is constantly striking that nurses must be prepared with the appropriate skills and knowledge to meet up the requirements of the patients with tracheostomy care safely and competently.

The objective of the study was to assess the nurses knowledge and practices regarding Tracheostomy care in ICU patients.

METHODOLOGY

Present study was a cross sectional study that enrolled 75 nurses. Non probability consecutive sampling technique was performed. The study tool used for this study was a self -structured questionnaire for tracheostomy care in ICU. Part-1: consisted of socio demographic data. Part-2: 21 questions related to nurses knowledge. The study tool was tested for validity by experts. The validated instrument was pilot tested. Reliability of the tool was computed using Cronbach alpha'. The result of the pilot study

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showed an internal consistency of 0.755 implying that the tool was reliable for data collection.

Statistical analysis: Data was analyzed by using SPSS v. 25. Descriptive statistics (means, standard deviations, percentages) were computed for socio demographic data. Analysis was stratified by knowledge score, practices, Professional Education, Experience. A P-value of <0.05 was considered significant in the entire analyses. A chi-square and Fisher Exact test was used for association of knowledge and practices.

RESULTS

The data analyzed by using descriptive statistics to present data in percentage and frequency as shown in table-1. Results showed that 40% nurses were from Surgical ICU while 60% nurses were working in different types of ICUs.

Table 1: Demographic distribution according to current working department

Department	Frequency	%age
Burn Unit ICU in JHL	3	4.0%
Emergency ward ICU in MHL	3	4.0%
ENT – ICU in MHL	14	18.7%
Medical ICU in JHL	19	25.3%
Neuro Emergency ICU in JHL	2	2.7%
Neuro ward ICU in SZHL	3	4.0%
Surgical ICU in SZHL	30	40.0%
Central ICU in MHL	1	1.3%

Analysis of total work experience of nurses was demonstrated by figure-1. It showed that majority (63%) nurses were having <5 years of experience, 29% nurses having 5-10 years while only minority (8%) nurses had >10 years of work experience.

Figure-1: Distribution of nurses according to work experience

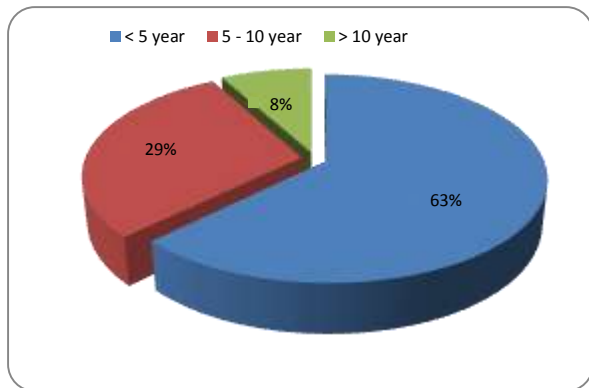


Table-2 showed that 27(57.4%) nurses were having <5 year experience with adequate skills whereas 13(59.1%) nurses were having 5–10 year experience with adequate skills. Only 4(66.7%) nurses were having >10 year experience had adequate skills. Results reported that there was no association between experience and practice with p-value of 0.358.

Table-2: Association between experience and practice among nurses

Experience	Practices	
	Inadequate skills	Adequate skills
< 5 year	20(42.6%)	27(57.4%)
5 – 10 year	9(40.9%)	13(59.1%)
>10 year	2(33.3%)	4(66.7%)

P value 0.358

In response to question one indication of tracheostomies acute respiratory 40(53.3%) nurses answered correctly, while 35(46.7%) answered incorrectly. In response to question two tracheostomy suction is a sterile procedure. There were 68(90.7%) answered “incorrectly”, whereas 7(9.3%) answered “Correctly”. In response

to question three normal suction pressure while doing tracheostomy suction in adult is 80-120mmHg. There were 41(54.7%) answered “inappropriately”, however 34(45.3%) answered “appropriately”. In response to question four suction should not exceed 15 Seconds. There were 18(24%) answered “imperfectly” even though 57(76%) answered “perfectly” as shown in table-3.

Table-3: Distribution of nurses knowledge on each item of self-structured questionnaire

Questions	Incorrect	Correct
Indication of tracheostomy is acute respiratory failure	40(53.3%)	35(46.7%)
Tracheostomy suction is a sterile procedure	68(90.7%)	7(9.3%)
Normal suction pressure while doing tracheostomy suction in adult is 80-120 mmHg	41(54.7%)	34(45.3%)
Suction should not exceed 15 Seconds	18(24.0%)	57(76.0%)
Ideal time for giving tracheostomy care is at least every four hour	30(40.0%)	45(60.0%)
The pressure in the tracheostomy cuff should not exceed 25 mmHg.	20(26.7%)	55(73.3%)
The cuff deflation will help to prevent laryngeal edema	58(77.3%)	17(22.7%)
Normal Saline 0.9% may help to liquefy secretions during suctioning.	28(37.3%)	47(62.7%)
In the presence of tracheostomy tube patient can eat food	35(46.7%)	40(53.3%)
The most important sign of infection that can be noticed first by a Nurse while giving tracheostomy care is color of stoma	33(44.0%)	42(56.0%)
After six months of tracheostomy tube removal there may be formation of tracheal stenosis.	46(61.3%)	29(38.7%)
For doing suctioning of the conscious patient the patient should be placed in semi-upright position	42(56.0%)	33(44.0%)
For un-conscious patient suctioning should be done in lateral position	64(85.3%)	11(14.7%)
Nelaton catheter with appropriate size should be dipped in which of the solution?	12(16.0%)	63(84.0%)
Before suctioning some breathes are given to patient by Oxygen and ambo bag at 100%	1(1.3%)	74(98.7%)
Before suction, the tip of the nelaton catheter should be placed in normal saline at 7-10cm.	27(36.0%)	48(64.0%)
The tracheal suctioning should be stopped in case of decrease in oxygen saturation less than 90%	46(61.3%)	29(38.7%)
The appropriate size of folded gauze used in appropriate method for tracheostomy dressing around stoma is 4x4.	26(34.7%)	49(65.3%)
Tracheostomy is a surgical procedure as well as medical procedure done in emergency and elective.	12(16.0%)	63(84.0%)
The suction should be stopped in case of arrhythmias	22(29.3%)	53(70.7%)
The tracheostomy care done for suctioning of the trachea and care of stoma.	9(12.0%)	66(88.0%)

Results reported that majority of the nurses (40%) had average knowledge regarding tracheostomy care while 30% nurses has adequate knowledge as shown in table-4.

Table 4: Nurses knowledge gradation on the basis of questionnaire

Knowledge	Frequency	Percent
Poor (< 50%)	22	29.3%
Average (50 - 64%)	30	40.0%
Adequate (>=65%)	23	30.7%
Total	75	100.0%

DISCUSSION

Tracheostomy is a common procedure and the nurses might have knowledge about the indication. but still many of nurses do not have adequate knowledge regarding indication of tracheostomy. Tracheostomy is a surgical procedure as well as medical done in emergency and as an elective procedure. The collected data showed that almost 84% nurses answered correctly, knowledge of nurses on each self-structured questionnaire was taken with preselected criteria of knowledge level. Results shows that 40% nurses have average 50-64% knowledge and 30.7% nurses have adequate (>65%) knowledge and 29.3% nurses have poor knowledge. The finding showed that only 1/3 of nurses have correct knowledge regarding tracheostomy care.

These findings matched with the study results that showed half of nurses had deficient in their knowledge.¹⁴ This study shows that the nurses have average theoretical knowledge about it. In this

study majority of the nurses (90.7%) do not have sufficient knowledge regarding aseptic care of tracheostomy. Only 9.3% exhibited adequate knowledge. Our results were in line with results reported in previous study¹⁵.

In current study 70 participants (50%) were unaware about the basic knowledge regarding tracheostomy suction in a sterile environment, whereas a study¹⁶ showed contradictory results. The result showed that nurses had lack of knowledge regarding tracheostomy care. Hence, nurses who caring tracheostomy patients were having adequate knowledge, proficient skills in various aspects of tracheostomy care. However, it was observed that nursing care for tracheostomy patients in ICU focus mainly on aseptic measures, improper sterilization of tracheostomy leads to untoward effects. Another study findings were inconsistent that showed most of the nurses (88%) performed hand washing before suctioning, wear sterilized gloves, mostly nurses used face mask and most of them (78%) connected sterilized suction catheter¹⁷.

The findings exhibited that large number of nurses using aseptic techniques, while performing tracheostomy care. The risk is significant not only for patients, but also for nurses working on patients. It is important for nurses to have adequate knowledge about infection control practices. There is a lack of infection control training. Suction time should not exceed more than 15 Seconds. The collected data showed that (76%) answered it correctly. Long duration of suction results with an increased risk of hypoxemia and trauma.¹⁸ Majority of the nurses were regularly attending the workshops, seminars related to tracheostomy care. The findings are inconsistent with the study results which showed that due to certain reasons like shortage of nurses, lack of awareness, overwork load nurses do not attend any workshops, seminars in service education related to the tracheostomy care.¹⁹ The current study shows the inadequacy in this regard, that level of basic education, in service training, continuous nursing education, workshops, and seminars, make the nurses more proficient in their skills of imparting tracheostomy care. In the absence of standardized guidelines and continuous professional training the nurses remain confused even if they have ample experience.

Limitations: This study lacked big sample size with limited resources and financial constrains. Short duration of study with inadequate workshops led to its limitations.

CONCLUSION

It was concluded that despite of adequate knowledge nurse's performance was weak in tracheostomy care. It was also observed that the standardized guideline for nurses working in the ICU were not available. Therefore, inconsistency between knowledge and practice exist among nurses working in ICU .Therefore, the need was felt for the specific training in this procedure. The role of in-service education has become very important in recent years. Nurses are pleased to take part in such educational courses, it gives an impression that education alone, has little effect on nurse's performance therefore, and special attention must be paid to practical education and other nursing supervisory factors. The

nurses must be provided with appropriate guidelines for performing tracheostomy care efficiently.

Author's contribution: SN&SR: Conceptualized the study, analyzed the data, and formulated the initial draft, ZA&SA: Contributed to the proof reading, WL: Data analysis.

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