

Original Research Article

## Knowledge Regarding Tracheostomy Care among Nursing Students

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- Knowledge
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### ABSTRACT

**Background:** A Tracheostomy is a medical procedure which consists of making an incision on the anterior aspect of lower part neck and opening a direct airway through an incision in the trachea (windpipe). It may be either temporary or permanent. Tracheostomy is performed for several reasons, all involving restricted airways. It may be done during an emergency when the airway is blocked or it could be used when a disease or other problem makes normal breathing impossible. **Material and Methods:** A descriptive cross sectional study design was used to find out the knowledge regarding Tracheostomy care among nursing students. The study was conducted among all the PCL nursing 3<sup>rd</sup> year students of Lumbini Nursing College and Meditech Nursing College, Butwal, Rupandehi. Non-probability purposive sampling technique was used where 80 PCL nursing 3<sup>rd</sup> year students were selected for study sample. Self administered structured questionnaire was prepared by researcher herself by reviewing the related literature, consulting with the research advisor and subject experts. The prepared tool was validated by the experts and the reliability was established then data was analyzed by using descriptive statistical method. **Results:** Findings of the study showed that out of 80 respondents all most all the 95% had knowledge about Tracheostomy and purpose of its care. More than half 60% of respondents had knowledge about contraindication of the Tracheostomy. More than half of the respondent 61% had knowledge regarding the time of suctioning and 40% respondents had knowledge about the duration of the suctioning. Less than half of the respondent 42% had knowledge about suctioning pressure in adult and 38.8% had knowledge about the Tracheostomy suctioning pressure in child. Half of the respondent 47.5% had knowledge about the routine management of the Tracheostomy care. More than half of the respondents 58.8% had knowledge regarding the position recommended after the Tracheostomy care and 67.5% of the respondent had knowledge about the uses of the Tracheostomy ties. **Conclusion:** Findings of the study showed that only half of the respondents had knowledge regarding Tracheostomy care so this study suggests that there is need for strengthening the knowledge on Tracheostomy care among the students.

## **INTRODUCTION**

A Tracheostomy is a medical procedure which consists of making an incision on the anterior aspect of lower part neck and opening a direct airway through an incision in the trachea (windpipe). It may be either temporary or permanent. Tracheostomy is performed for several reasons, all involving restricted airways. It may be done during an emergency when the airway is blocked or it could be used when a disease or other problem makes normal breathing impossible. [1]

Tracheostomy was first depicted on Egyptian art crafts in 3600 B.C. It is believed that first Tracheostomy was performed by Asclepiads of Bithynia who lived in Rome around 100 B.C. Antyllus another Roman physician of the 2nd century A.D. supported tracheostomy when treating the oral diseases with life threatening airway obstruction. [2]

Every year, nearly 800,000 United States residents undergo mechanical ventilation for acute respiratory insufficiency, often for a period of days or weeks. Up to 34% of patients who need mechanical ventilation for > 48 hour receive a tracheostomy for prolonged mechanical ventilation.

In the United States, 64,000 tracheostomy tubes were placed in 1996. The average number of tracheostomies performed annually in the United States is > 100,000. [3]

Tracheotomy is a common procedure in intensive care units and nurses must provide proper care to patients to prevent complications. One of the most important considerations is effective mobilization of secretions and a suction catheter is the most important tool for same purpose. Each bedside should be equipped with a functional suctioning system, an oxygen source, a manual resuscitation bag and a complete tracheostomy kit, which should accompany patients wherever they go in the hospital. Complications include infection, tracheomalacia, skin breakdown, and tracheoesophageal fistula. Tracheostomy emergencies include hemorrhage, tube dislodgement and loss of airway, and tube obstruction; such emergencies are managed more effectively when all necessary supplies are readily available at the bedside. [4]

A perspective study condition in Elmak nimer Shendi University Hospital to assess nurse knowledge and practice about tracheostomy care in period from august to December 2016. The study showed more than half of (63%) study group had good knowledge about definition and type and early and late complication. While only (21%) of them had poor knowledge. The majority of study group (71%) had good knowledge about prevention of complication and majority of them need for suction. The study recommended that training of nursing staff in surgical unit lead to increase nursing knowledge and practice about Tracheostomy care. [5]

A non experimental descriptive research design was adopted to carry out the present study non probability purposive sampling technique was used to select 50 staff nurses. Majority of the staff nurses were female 62%, and male were 38%, 52% staff nurses belonged to the age group between 20 -25 years. Majority of the staff nurses have 0-5 years of work experience that is (86%). More than 5 year is (12%). 24.99% of the staff nurses got information through continuing education, 20% through books, 16.2% through workshops and 20% through mass media and others. Majority of the staff nurses 26(52%) had average knowledge and the remaining 16(32%) had good knowledge and 8(16%) had poor knowledge regarding Tracheostomy care. [6]

A descriptive cross sectional design was used to assess the level of knowledge regarding Tracheostomy care among staff nurses and student nurses in Narayana medical college hospital. Non-probability convenient sampling was used; majority of staff nurses and nursing students had moderate knowledge regarding Tracheostomy care. There was significant association between the level of knowledge with socio demographic variables such as gender, educational qualification and attending CNE program for staff nurses. There was significant association with the level of knowledge with socio demographic variables such as source of information for nursing students. [7]

## **MATERIALS AND METHODS**

A descriptive cross sectional research design was used to find out the knowledge regarding Tracheostomy care among nursing students. The study was conducted among all the PCL nursing 3rd year students of Lumbini Nursing College and

Meditech Nursing College, Butwal, Rupandehi. Non-probability purposive sampling technique was used. 80 PCL 3rd year nursing students were selected for study sample. Self administered structured questionnaire was prepared by researcher herself by reviewing the related literature, consulting with the research advisor and subject experts. The prepared tool was validated by the experts and the reliability was established. The data was analyzed by using descriptive statistical method such as frequency and percentage. The analysis was based on the objectives of the study.

## **RESULTS**

The analysis and interpretation of data collected to assess the knowledge regarding tracheostomy care among P.C.L. nursing 3<sup>rd</sup> year students. Analysis of data was a process by which quantitative information is reduced, organized, summarized, evaluated, interpreted and communicated in a meaningful way. The results were computed by using descriptive statistics based on the objectives of the study. The objectives of this study is to find out the socio-demographic data and to find out the knowledge regarding tracheostomy care among P.C.L. nursing 3<sup>rd</sup> year students. The data were presented under the subjects based on socio-demographic variables and knowledge regarding tracheostomy care.

### **Distribution of Subjects based on Socio-demographic Variables**

Half of the respondents (50%) were age between (15-18) years and remaining half of the respondents 50% were between (19-22) years. With the regard to the religion, majority of the respondent 90% were Hindu, 6.2% were Buddhist 2.5% were Christian and 1.2% were Muslim. In regard of the ethnicity, 32.2% were Brahmin, 32.2% were Chhetri, 30% were Janajati and 5% were other. Similarly the majority of the respondents were unmarried 95% and 5% were married. In regard of the family type most of the respondents 88.8% belongs to nuclear family and 11.2% belongs to joint family. In regard of the source of information majority of the respondents 60% had information of Tracheostomy by self learning and minority 5% of the respondents had knowledge and information from working experience.

The above table depict that majority of the respondents 95% answered correctly Tracheostomy

is the surgical opening in trachea and minority of the respondent 1.2% answered Tracheostomy is the surgical opening in larynx. Majority of respondents 95% answered correctly the purpose of Tracheostomy is to maintain patent airway and minority 5% of the respondent answered to promote circulation.

Majority of the respondents 58.8% answered obstruction of the upper airway, minority of the respondent 30% answered to assist weaning for ventilators supports to a patient in ICU as the indication of the Tracheostomy. More than 3/4<sup>th</sup> of the respondent 87.5% answered correctly the meaning of tracheostomy care is management of tracheostomy wound and the airway device and only 1.2% respondents answered sterile suctioning. More than half of the respondent 61.8% answered correctly when necessary and 6.2% respondent answered every hour can be done Tracheostomy suctioning. 1/4<sup>th</sup> of the respondent 28.8% answered correctly that the duration of suctioning is 10 to 20 seconds and minority of the respondent 12.5% answered 40 to 50 seconds. Near half of the respondents 42% answered correctly 80-120 mm of Hg and 18% of the respondents answered 100-120mm of Hg as the normal suctioning pressure in adult. Regarding the normal suctioning pressure in child 33.8% of the respondents answered correctly 20-50mm of Hg and 8.8% of the respondents answered 100-120mm of Hg.

Majority of the respondents 37.5% answered avoid blockage and minority of the 15.1% respondents answered to avoid skin damage as the purpose of humidification. 47.5% of the respondents answered maintenance of the airway and 40% answered routine stoma care as the routine nursing management of the Tracheostomy. 56.22% of the respondents answered pneumothorax, 48.8% answered respiratory collapse, 35% answered trachea-esophageal fistula as the complication of the Tracheostomy. 58.8% of the respondents answered semi-fowler position and 3.8% of the respondents answered side lying position as the position recommended after Tracheostomy.

## **DISCUSSION**

Under the socio-demographic data, 50% of the respondents were of the age 15-18years, 50% were age of 19-22 years respectively. 32.5% respondents belonged to the ethnic group Brahmin and Chhetri,

30% belongs to Janajati and 5% belongs to other. All most all 90% of the respondent follows Hindu religion, 6.2% follows Buddhist, 2.5% follows Christian, and 1.2% follows Muslim. Majority of the respondents 95% are unmarried and 5% are married. 88.8% of the respondents belong to the nuclear family and 11.2% belongs to the joints family. More than half 65% of the respondents had knowledge of Tracheostomy by self learning, 20% of the respondents had knowledge from in service education and 15% of the respondents from mass media.

The finding of the study showed that 37.5% of respondents had knowledge regarding purpose of humidification is to avoid tube blockage which is inconsistent with the findings of Mayerhoff, Zuliani, Sekhsaria, Chen and Markova (2012) [8] which shows 65% of respondents had knowledge regarding purpose of humidification. This finding indicates the respondents have poor knowledge regarding the purpose of humidification in Tracheostomy.

The finding of the study showed that 58.8% of respondents had knowledge regarding recommended position after intubation of Tracheostomy tube is semi-fowler which is inconsistent with the findings of Marykutty (2012) [9] which shows 40.4% had knowledge regarding recommended position after intubation. This finding indicates that near to the half the respondents have poor knowledge.

The finding of the study showed that 42% of respondents had knowledge regarding recommended pressure for adult is 120-150mm of Hg and for children is 80-120mm of Hg respectively which is inconsistent with the findings of Sreeja (2007) [10] which shows 96.6% and 90.4% of respondents had knowledge regarding suctioning pressure for children and for adult respectively. The finding indicates more than half of the respondents had the poor knowledge.

The finding of the study showed that 95% of respondents had knowledge regarding meaning of Tracheostomy which is inconsistent with finding of (Marykutty, 2012) [9] which shows 44.8% respondents had knowledge regarding Tracheostomy. This finding shows that the respondent had good knowledge.

The finding of the study showed that 58.8% of the respondents had knowledge of indications of Tracheostomy which is consistent with the findings of (Bincy.et al. 2013) [11] which shows that 62% had knowledge of indications of Tracheostomy.

The finding of the study showed that 87.5% of the respondents had knowledge regarding Tracheostomy care which is inconsistent with the findings of (Marykutty, 2012) [9] which shows mean percentage score was 65.8 regarding knowledge Tracheostomy care. This finding indicates majority of the respondent had the good knowledge.

## **CONCLUSION**

After reviewing the above finding of the study, it has been concluded that nearly two third of the respondents had low knowledge regarding Tracheostomy care. Among them, low knowledge was found on recommended pressure for children and adult, time to change first Tracheostomy ties, contraindication of Tracheostomy, and sign of infection noticed during Tracheostomy care, duration of Tracheostomy suctioning. Beside this, respondents had high knowledge regarding meaning of Tracheostomy, indication of Tracheostomy, Tracheostomy care, purposes of Tracheostomy care, purposes of humidification, and recommended position after intubation of Tracheostomy tube, routine nursing management, and time of Tracheostomy suctioning, complication of the Tracheostomy.

## **RECOMMENDATIONS OF THE STUDY**

On the basis of this study findings following recommendation are made:

- A study can be done in a large of sample for generalization of the findings.
- A study can be done on knowledge and practice regarding Tracheostomy care among the patient with Tracheostomy.
- A study can be conducted among the working in intensive care units and ENT ward.
- An experimental study would be undertaken with control group.
- Appropriate educational program should be planned is needed to assess knowledge and practice about tracheostomy care.

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Table 1. Findings related to knowledge regarding Tracheostomy care

Sr. No.	Variables	Frequency n=80	Percentage (%)
1.	<b>Meaning of Tracheostomy</b> Tracheostomy is the surgical opening in:		
	Trachea	76	95.0
	Pharynx	3	3.8
	Larynx	1	1.2
	Esophagus	0	0.0
2.	<b>Purpose of Tracheostomy</b>		
	To maintain patent airway	76	95.0
	To promote circulation	4	5.0
	To maintain nutritional status	0	0.0
	To prevent skin integrity	0	0.0
3.	<b>Indication of Tracheostomy</b>		
	Obstruction of the upper airway	47	58.8
	Impaired respiratory functions	38	47.5
	To clear secretion in the upper airway	38	47.5
	To assist weaning for ventilators supports to a patient in ICU	24	30.0

**Table 1. continued.**

<b>Sr. No.</b>	<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
4.	<b>Meaning of Tracheostomy care</b>		
	Management of tracheostomy wound and the airway device	70	87.5
	Care of the throat	7	8.8
	Care of the stoma	2	2.5
	Sterile tracheal suctioning	1	1.2
5.	<b>Time of Tracheostomy suctioning</b>		
	When necessary	49	61.8
	Every four hour	15	18.8
	Every six hour	11	13.8
	Every hour	5	6.2
6.	<b>Duration of Suctioning</b>		
	10 to 20 sec.	23	28.8
	20 to 30 sec	32	40.0
	30 to 40 sec	15	18.8
	40 to 50 sec	10	12.5
7.	<b>Tracheostomy suctioning pressure</b>		
	Normal Tracheostomy Suctioning Pressure in Adult is :		
	40-80mm of Hg	16	20.0
	80-120 mm of Hg	34	42.0
	120-160 mm of Hg	16	20.0
	160-180 mm of Hg	14	18.0
	Normal Tracheostomy Suctioning Pressure in Children is :		
	20-50mm of Hg	31	38.8
	50-100mm of Hg	27	33.8
	80-100mm of Hg	15	18.8
	100-120mm of Hg	7	8.8
8.	<b>Purpose of Humidification</b>		
	Avoid tube blockage	30	37.5
	Avoid aspiration	25	31.2
	Avoid infection	13	16.2
	Avoid skin breakdown	12	15.1
9.	<b>Routine Nursing Management of Tracheostomy care</b>		
	Maintenance of the airway	38	47.5
	Maintenance of humidification	37	46.2
	Regular suctioning	36	45.0
	Routine stoma care	32	40.0

**Table 1. continued.**

<b>Sr. No.</b>	<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
10.	Complication of Tracheostomy		
	Pneumothorax	45	56.2
	Respiratory collapse	39	48.8
	Blocked tube	38	47.5
	Trachea-esophageal fistula	28	35.0
11.	<b>Position Recommended after Tracheostomy</b>		
	Semi-fowler position	47	58.8
	Supine position	26	32.5
	Prone position	4	5.0
	Side lying position	3	3.8

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