



# EFFECT OF PLANNED NURSING CARE FOR PATIENTS WITH TRACHEOSTOMY:A CASE STUDY REPORT

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**Abstract:** A case study was conducted on patients with a tracheostomy to assess the effect of planned nursing care for patients with tracheostomy. In most critical care areas tracheostomy procedure is common for providing mechanical ventilator support. Tracheostomy is a surgical procedure in which a tube is placed in the trachea. During admission, almost half of the patients were having altered levels of consciousness, respiratory failure, profuse bleeding and resulting hypovolemia, and temperature irregularities. After using standardized tools for valuation and planned nursing care to the patients their retrieval process was acceptable. At the time of discharge or end of study, the patient's major symptoms got relieved or alleviated and their relatives were satisfied with the care provided. The planned nursing care was effectively applied for patients with tracheostomy in critical care settings.

**Index Terms** - Planned nursing care, tracheostomy, patients.

## I. INTRODUCTION

Trachea is the part of the respiratory tract that helps to support and maintain the patency of the airway, warming and filtering the air. [1] A tracheostomy is a surgical procedure that creates a hole in the portion of the trachea. [2]

A tracheostomy is used to bypass when there is an airway blockage. Also, it documents the long-term use of mechanical ventilation, to avoid aspiration of oral or gastric discharges in the unconscious or paralyzed patient. [3]

Brenner.M at al, reported that there are few rich countries tracheostomies performed annually are estimated at 2,50,000, with approximately 10% performed in children. [4]

Tracheostomy is the most common surgical procedure performed in ICU on critically ill patients. Crofts SL states that there are few reports in a study that documented considerable associated morbidity, along with complication rates from 6 to 66% [5]. A prospective study was conducted by Oreadi D at a university medical center in, the United States to assess the morbidity and mortality associated with tracheostomy procedures. This study reports on mortality associated with tracheostomy procedures ranging from 5% to 40%. [6]

Bodenham A et al, concluded the risks of aspiration are well recognized when nurses caring for patients with tracheotomies must use their scientific judgment as well as a harmless suction procedure based on evidence. The knowledge and practices of staff nurses in tracheostomy care are very much essential to improve the patient's condition. [7]

Russel C conducted a study on providing the nurse with a guide to tracheostomy care and management. This study stated that tracheostomy care and management are necessary in both intensive care settings and general wards. [8]

Watters KF, also found most medical and surgical intensive care areas tracheostomy patients developed the complications like early hemorrhage, pneumothorax and obstruction of the tracheostomy tube, stoma infections, etc. [9, 10] Hence the investigator felt that the provision of planned nursing care can improve the patient's health status and prevent complications.

**Methodology:**

This Case study uses descriptive design and the data was collected to assess the effectiveness of planned nursing care. The participant in this case study was a patient with a tracheostomy. A total of 4 patients with tracheostomy admitted in the intensive care area were the sample. A purposive sampling technique was used to select the subjects. The inclusion criteria of study subjects were having a tracheostomy tube, being admitted to the hospital, and being willing to participate in a study. The study focuses on the effect of planned nursing care on tracheostomy patients. The data was collected by interviewing patients, their family members, and from the patient's medical records. The tool consists of demographic data (Age, Sex, occupation, monthly income, and dietary pattern) and the Planned nursing care module consists of detailed history (Past medical, past surgical, present medical, and present surgical history), system-wise nursing assessment (head to toe assessment) and nursing diagnosis based on priority needs. This module was constructed after reviewing the related literature from nursing books, periodicals, and reports based on the theoretical model. The validity of the tool and module was established by consultation with the guide and experts from various fields like cardiothoracic, Emergency medicine, and Nursing.

Research ethics was applied to this study. Case study subjects are given the freedom to be part of a case study after understanding the purpose and benefits of planned nursing care. Case study subjects are required to sign an approval sheet prepared by the researcher and the name of the case study subject is not displayed in the publication text. The management of the obtained case study data was presented and analyzed to determine the effect of planned nursing care. The data of tracheostomy patients are presented in the form of tables.

**Results:**

Four subjects who had undergone tracheostomy were taken for the case study. All subjects were males between 25 to 45 years. Out of four subjects, one has a history of chronic smoking and alcohol consumption. Several days in the hospital were between 5 to 10 for one subject and between 10-15 for the remaining three subjects. The relevant history was collected among all four subjects and there was no one is having significant past medical and surgical history related to head and spinal cord injury. All 4 study subjects were admitted to the hospital for road traffic accidents within 10 km of hospital premises and underwent tracheostomy.

All case study subjects received a prophylactic broad-spectrum antibiotic like Inj. Cefotax 1g and an anti-helminthic like Inj. Metro 500 mg in the emergency department along with Inj. TT 0.5 ml and analgesics (e.g. Buscopan, Voveran). An osmotic diuretic was given to two subjects. One subject received antiemetic.

The initial assessment for four subjects included the assessment of important parameters related to their neurological and general hemodynamic status (Table 1)

Assessment parameter	No. of Subjects
Level of consciousness	
Conscious	2
Unconscious	2
Pulse	
Regular	3
Irregular	1
Respiration	
Regular	1
Irregular	3
Temperature	
Normal	4
Blood pressure	
Decreased	1
Normal	3
Pain	
Mild	1
Moderate	1
Tracheal secretions	
Present	4
Pulmonary crackles	

Present	2
Dysphagia	
Present	4

**Table 1: Shows the comparison of the initial assessment of case study subjects**

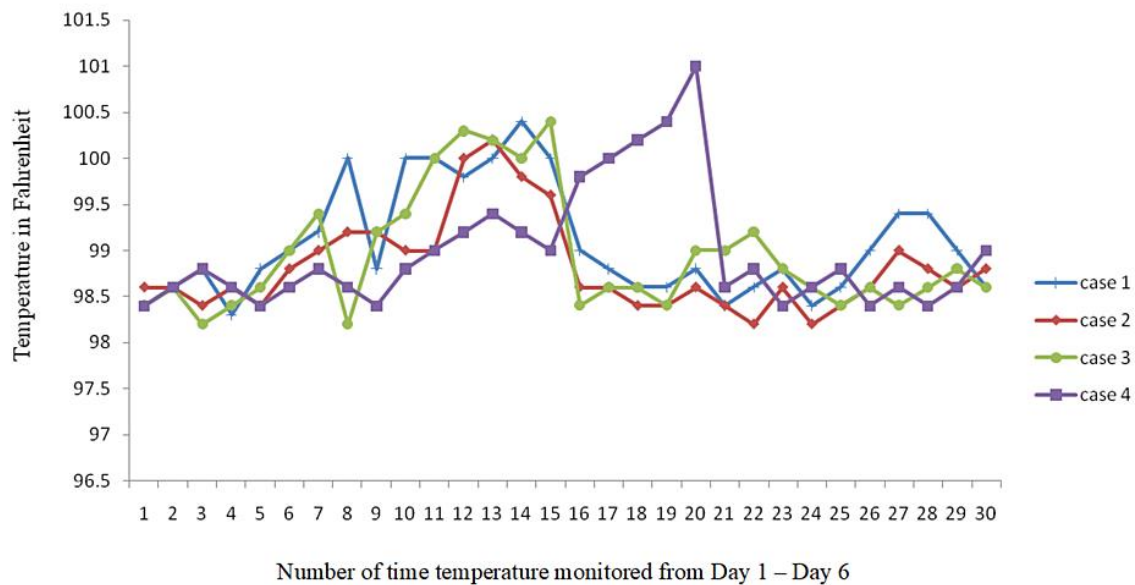
The planned nursing care was implemented for all case study subjects. The nursing diagnosis was formulated based on priority and the subject's needs. The standard of nursing interventions was provided to each subject separately according to their needs. Each subject's serial number indicates the formulation of a nursing diagnosis based on the subject's priority problem. Subjects 1, 2, 3 had more tracheal secretions hence the “Risk of ineffective airway clearance” nursing diagnosis formulated. Whereas subject 4 had less tracheal secretions but loss of consciousness with cerebral edema, so “Impaired cerebral tissue perfusion” was formulated as per priority needs. Every subject's serial number was assigned and nursing diagnosis was formulated according to their priority needs. The standard of nursing interventions was provided to each subject separately such as proper suctioning, maintaining adequate oxygen delivery, monitoring body temperature, intake and output chart, positioning, intravenous fluids, oral care, and nasogastric (ryles) tube feeding for all 6 days according to their needs. (Table 2)

S.No	Subject 1	Subject 2	Subject 3	Subject 4
1	Risk for ineffective airway clearance related to an increase in secretions as manifested by crackles heard base of both lungs during auscultations.	Risk for ineffective airway clearance related to tracheostomy as manifested by tracheal secretions	Risk for ineffective airway clearance related to tracheostomy as manifested by tracheal secretions	Impaired cerebral tissue perfusion related to cerebral edema as manifested by loss of consciousness
2	Impaired cerebral tissue perfusion related to excessive blood loss as	Risk for infection related to bypass of normal respiratory mechanism as manifested by fever	Risk for infection related to bypass of normal respiratory mechanism as manifested by fever	Risk for ineffective airway clearance related to tracheostomy as

	manifested by loss of consciousness			manifested by tracheal secretions
3	Imbalanced Nutrition: Less than Body Requirements related to tracheostomy as manifested by the presence of ryles tube and IV line	Imbalanced Nutrition: Less than Body Requirements related to tracheostomy as manifested by the presence of ryles tube and IV line	Imbalanced Nutrition: Less than Body Requirements related to tracheostomy as manifested by the presence of ryles tube and IV line	Imbalanced Nutrition: Less than Body Requirements related to tracheostomy as manifested by the presence of ryles tube and IV line
4	Risk for infection related to bypass of normal respiratory mechanism as manifested by fever.	Impaired verbal communication related to the presence of a tracheostomy tube as manifested by the patient using nonverbal communication	Impaired verbal communication related to the presence of a tracheostomy tube as manifested by the patient using nonverbal communication	Risk for infection related to bypass of normal respiratory mechanism as manifested by fever.

**Table 2: Shows the priority nursing diagnosis of case study subjects**

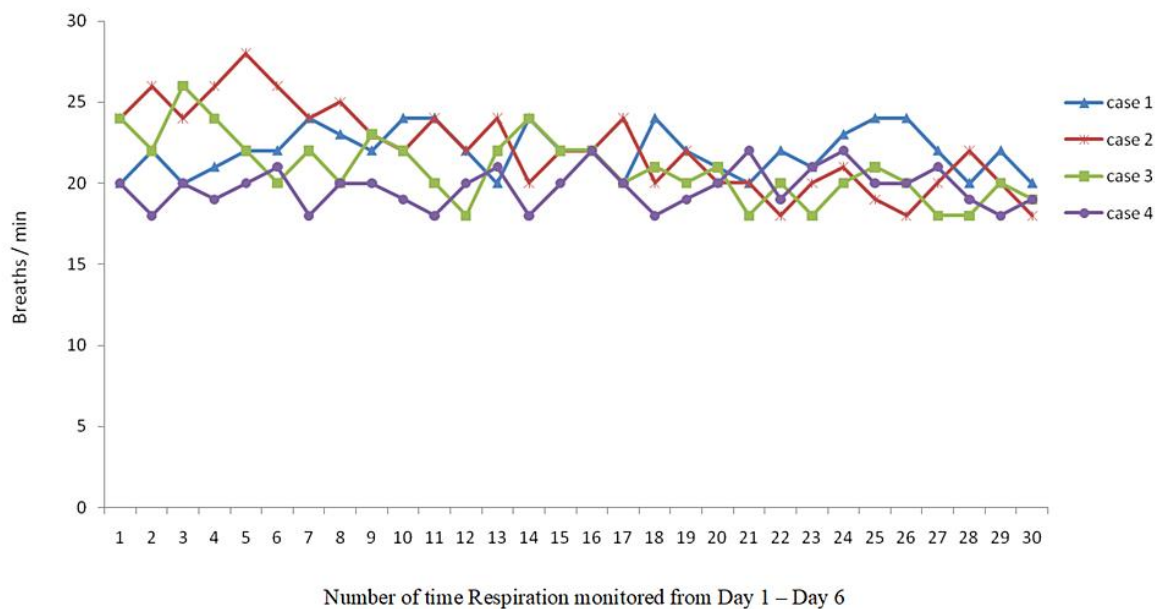
The temperature graph of the patients shows marked fluctuations as hyperthermia is most likely to occur in patients with tracheostomy. A total of 30 observations were done 5 times in a day from day 1 to day 6. On 1st day all subjects were normothermic. On 2nd day subject I, developed hyperthermia. On day 3 all subjects developed hyperthermia but it has reduced at evening. On day 4 subject IV developed hyperthermia and other subjects were normothermic. On 5th day subject III developed mild fever. On 6th day all subjects were normothermic. (Figure 1)



**Figure 1: Shows the comparison of body temperature for tracheostomy subjects**

The respiration graph of patients shows marked fluctuations over the days of study because of unstable hemodynamic status. All the subjects were having fluctuations in the respiratory rate except subject-IV. A total of 30 observations were done 5 times in a day from day 1 to day 6. On 1st day subject II and III were developed slightly increased respiration were subjects I and patient IV respiration were normal. On second day subject II was developed increase respiration but it was normal towards evening. From day 3 to day 4 all subjects were maintained normal respiration. On 5th day subject I has developed slight variation in respiration were other subjects maintained normal respiration. (Figure 2)





**Figure 2: Shows the comparison of Respiration for Tracheostomy subjects**

## Discussion

Age-wise distribution of case subjects with tracheostomy showed that the highest percentage (50%) of them were in the age group of 30 to 50 years. A retrospective review of the North Carolina Hospital Discharge Database, by Cox C.E (2002), reported among 125 tracheostomy patients' records revealed that the majority (67%) of patients' age group were 30-45 years. [11]

The major problems faced by the tracheostomy subjects in this study were breathing difficulty with increased secretions, fever, difficulty in performing daily activities loss of appetite, and open wounds. Through the implementation of planned nursing care, subjects got relief from these problems.

All the subjects were unable to maintain communication after the tracheostomy in situ and the subjects need to maintain communication with the nurse and family members. The planned nursing care demonstrated nonverbal communication techniques and encouraged subjects to practice with the health care team and family members. Magnus VS, also reported that the nurses working in the ICU and general ward need to maintain good communication with the patients to meet the needs of the tracheostomy patients. [12, 13]



All 4 Subjects had imbalanced nutrition status and the nutritional management was used timely by providing IV and oral fluids by ryles tube according to the physician's order. The hourly intake and output chart was maintained for all 6 days. All were maintained positive fluid balance. Doley J (2011), also stated in his study that nasogastric feeding of fluids is helpful to maintain the nutritional status of tracheostomy patients. [14]

Kim, has also quoted that through the nursing process or systematic planned process for care delivery, the tracheostomy patients can be managed by the nurse effectively. This involves assessment, goal setting or rationale of care, prescription of review, and evaluation. [15]

## Conclusions

All 4 tracheostomy patients received planned nursing care based on their priority needs. All subjects did not develop any complaints during the period of care. The duration of hospital stay was minimized. The quality of nursing care in all healthcare settings will be helpful in preventing major complications for patients with tracheostomy admitted in intensive care units. Thus, planned nursing care was found to be effective for all patients in preventing tracheostomy complications

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## REFERENCES

- [1] Bev-Lorraine T, Dreisbach RH 2019 Handbook of poisoning: 13<sup>th</sup> edition. 106-110
- [2] Bodenham A, Bell D, Bonner S, et al. 2014: [Standards for the care of adult patients with a temporary tracheostomy; Standards and Guidelines](#). Intensive Care Society. 29-32. [10.7748/ns2011.09.26.2.49.c8706](#)
- [3] Brenner. M, Pandian. V, Milliren. C, et al. 2020 [Global Tracheostomy Collaborative: Data-driven improvements in patient safety through multidisciplinary teamwork, standardization, education, and patient partnership](#). British Journal of Anaesthesia. 125:104-118. [10.1016/j.bja.2020.04.054](#)
- [4] Cox CE, Carson SS, Holmes GM, Howard A, Carey TS 2004 [Increase in tracheostomy for prolonged mechanical ventilation in North Carolina](#), Critical care medicine. 32: 2219-26.
- [5] Crofts SL, Alzeer A, McGuire GP, Wong DT, Charles D 1995 [A comparison of percutaneous and operative tracheostomies in intensive care patients](#). Canadian Journal of Anaesthesia. 42:775-9.

- [6] Dawson D 2014 [Essential principles: tracheostomy care in the adult patient](#). *Nursing in critical care*. 19: 63-72.
- [7] Doley J, Mallampalli A, Sandberg M 2011 [Nutrition management for the patient requiring prolonged mechanical ventilation](#). *Nutrition in Clinical Practice*. 26: 232-41.
- [8] Durbin CG 2005 [Techniques for performing tracheostomy](#). *Journal of Respiratory care*. 34: 488-96.
- [9] Kim, Y., Kyoung, K., Keum M, et al. 2018 [The Effect of Systematic Approach to Tracheostomy Care in Patients Transferred from the Surgical Intensive Care Unit to the General Ward](#). *Acute and Critical Care*, 33, 252-259.
- [10] Magnus VS, Turkington L 2006 [Communication interaction in ICU—patient and staff experiences and perceptions](#). *Intensive and Critical Care Nursing*. 22: 167-80.
- [11] Oreadi D, Carlson ER 2012 [Morbidity and mortality associated with tracheotomy procedure in a university medical center](#). *International journal of oral and maxillofacial surgery*. 41: 974-7.
- [12] Russell C 2005 [Providing the nurse with a guide to tracheostomy care and management](#). *British journal of nursing*. 14: 428-33.
- [13] Watters KF 2017 [Tracheostomy in infants and children](#). *Journal of Respiratory Care*. 62: 799-825.
- [14] Woodrow P 2018 [Intensive care nursing: a framework for practice](#). Routledge. 4<sup>th</sup> edition. 65-69.
- [15] Zouk AN, Batra H 2012 [Managing complications of percutaneous tracheostomy and gastrostomy](#). *Journal of Thoracic Disease*. 13:5314.

