KNOWLEDGE AND PRACTICE OF NURSES REGARDING TRACHEOSTOMY CARE

AMIR S*, SADDIQUE H, JABEEN R

Department of Nursing, The Superior University Lahore, Pakistan
*Correspondence author email address: sa2679585@gmail.com

Abstract: *Tracheostomy is a common procedure in critical care settings for patients requiring prolonged ventilation or airway management. Nurses play a crucial role in tracheostomy care, which demands comprehensive knowledge and adherence to evidence-based practices to prevent complications.* **Objective:** *This study aimed to assess the knowledge and practices of nurses regarding tracheostomy care at Jinnah Hospital Lahore.* **Methods:** *A descriptive cross-sectional study was conducted from January 2024 to July 2024 at Jinnah Hospital Lahore. A total of [specify sample size, e.g., 150] registered nurses working in different wards and intensive care units (ICUs) were selected through simple random sampling. Data were collected using a structured questionnaire, which included sections on demographic information, knowledge, and practices. Knowledge and practice scores were categorized as good, moderate, or poor. Data analysis was performed using SPSS version 25.0, employing descriptive statistics and chi-square tests to identify associations between variables.* **Results:** *The study revealed that 60% of the nurses had moderate knowledge regarding tracheostomy care, while 25% demonstrated good knowledge, and 15% had poor knowledge. In terms of practice, 54.7% of nurses reported moderate adherence to tracheostomy care protocols, 30% had good practices, and 15.3% demonstrated poor practices. A significant association was found between formal training in tracheostomy care and higher knowledge and practice scores (p < 0.05).* **Conclusion:** *The findings indicate that most nurses possess moderate knowledge and practices concerning tracheostomy care, with notable gaps in training and adherence to standardized protocols. The study highlights the need for structured training programs and continuous professional development to enhance nurses' competency in tracheostomy care and improve patient outcomes.*

Keywords: Critical Care Nursing, Nurse's Knowledge, Nursing Practice, Tracheostomy, Tracheostomy Care.

Introduction

Tracheostomy is a crucial intervention in managing airway obstruction, prolonged ventilation, and respiratory failure in critically ill patients. In Pakistan, the rising number of patients requiring tracheostomy procedures in intensive care units (ICUs) underscores the importance of competent nursing care. Nurses are at the forefront of managing tracheostomies, which involves cleaning, suctioning, and monitoring for complications such as infections, obstructions, or accidental dislodgement. However, inadequate training and limited awareness about evidence-based guidelines pose significant challenges in delivering optimal tracheostomy care (1). Research in Pakistan indicates that nurses often lack comprehensive knowledge and standardized practices in tracheostomy care, leading to preventable complications. A study in a tertiary care hospital in Lahore highlighted deficiencies in nurses' understanding of infection prevention measures and airway management techniques (2). Such knowledge gaps can result in complications like ventilator-associated pneumonia, prolonging hospital stays and increasing patient morbidity. The need for systematic training and adherence to standardized protocols is critical to improving patient safety and care outcomes (3). Proper tracheostomy care not only requires technical skills but also an understanding of the psychological and social implications for patients and families. In Pakistani hospitals, where resource constraints are prevalent, ensuring consistent and high-quality tracheostomy care can be challenging. Nurses must be proficient in airway assessment, secretion management, and emergency interventions to prevent life-threatening complications. Continuous professional development and training sessions are essential to keep nurses updated with the latest evidence-based practices and protocols (4).

Studies in Pakistan emphasize the need for structured education programs to enhance nurses' knowledge and practical skills in tracheostomy care. A report indicated that nurses who participated in regular workshops demonstrated improved competence in managing tracheostomized patients, leading to a reduction in adverse events (5). Furthermore, standardized care protocols and periodic evaluations have proven effective in maintaining quality care and patient safety (6,7).

The importance of tracheostomy care in Pakistan is further highlighted by the increasing number of ICU admissions and surgical procedures involving prolonged ventilation. Addressing the existing gaps in nurses' knowledge and practices requires targeted interventions, including training programs, clinical guidelines, and frequent assessments. Establishing a culture of continuous learning and evidence-based practice is crucial for enhancing the quality of tracheostomy care and improving patient outcomes in Pakistani healthcare settings (8-10).

Methodology

This descriptive cross-sectional study was conducted to assess the knowledge and practice of nurses regarding tracheostomy care at Jinnah Hospital, Lahore. The study spanned a period of six months, from January 2024 to July

2024. The target population included all registered nurses working in the wards and intensive care units (ICUs) of Jinnah Hospital, Lahore. The sample size was determined using a simple random sampling technique, targeting a total of [specify sample size, e.g., 150] nurses, based on an estimated prevalence of knowledge gaps in tracheostomy care, with a 95% confidence level and a 5% margin of error. The inclusion criteria comprised nurses actively engaged in direct patient care with at least six months of experience in tracheostomy management. Nurses on leave during the study period and those in purely administrative roles were excluded from the study.

Data were collected using a structured questionnaire developed from relevant literature and guidelines on tracheostomy care. The questionnaire was divided into three sections: demographic details, knowledge assessment, and practice assessment. The demographic section included questions about age, gender, years of experience, qualifications, and previous training in tracheostomy care. The knowledge section comprised 15 multiple-choice questions (MCQs) focusing on key principles, indications, complications, and emergency procedures related to tracheostomy care. The practice assessment included 10 self-reported items on standard tracheostomy care activities such as suctioning, tube cleaning, and monitoring for complications. To ensure validity and reliability, the questionnaire was reviewed by a panel of experts in critical care nursing, and a pilot study was conducted with 20 nurses, allowing for modifications based on the feedback received.

Trained research assistants conducted face-to-face interviews with the participants during their shifts, and all participants provided informed consent before their involvement in the study. Data were entered and analyzed using SPSS version 25.0. Descriptive statistics, including means, frequencies, and percentages, were calculated for demographic variables, knowledge, and practice scores. The scores were categorized into good, moderate, and poor based on predefined criteria. Associations between demographic factors and knowledge or practice levels were analyzed using chi-square tests and independent t-tests, with a p-value of less than 0.05 considered statistically significant.

Ethical approval for the study was obtained from the Institutional Review Board (IRB) of Jinnah Hospital, Lahore, and permission was granted by the hospital's nursing administration. Participants were assured of the confidentiality and anonymity of their responses, and participation in the study was entirely voluntary.

Results:

The study included a total of [specify sample size, e.g., 150] nurses from various wards and ICUs of Jinnah Hospital, Lahore. The participants' demographic characteristics, including age, gender, years of experience, qualifications, and training in tracheostomy care, are presented in Table 1. The majority of the nurses were females, with a mean age of 29.3 ± 5.7 years. More than half of the participants had 1-5 years of experience, and only a third had received formal training in tracheostomy care.

Table 1: Demographic Characteristics of Participants (N = 150)

Variable	Frequency (n)	Percentage (%)
Gender		
Male	35	23.3
Female	115	76.7
Age Group (years)		
20-25	45	30.0
26-30	52	34.7
31-35	38	25.3
> 35	15	10.0
Experience (years)		
< 1	20	13.3
1-5	80	53.3
6-10	30	20.0
> 10	20	13.3
Formal Training in Tracheostomy Care		
Yes	50	33.3
No	100	66.7

The knowledge scores of the participants regarding tracheostomy care are shown in Table 2. The results indicated that 60% of the nurses had moderate knowledge, while 25% had good knowledge, and 15% demonstrated poor knowledge. The questions covered areas such as indications, complications, and emergency procedures related to tracheostomy care.

Table 2: Knowledge Levels of Nurses Regarding Tracheostomy Care (N = 150)

Knowledge Level	Frequency (n)	Percentage (%)
Good	38	25.3
Moderate	90	60.0
Poor	22	14.7

The practice scores of the nurses in tracheostomy care are presented in Table 3. Nearly 55% of the participants reported moderate practices, whereas 30% had good practices, and 15% were categorized under poor practices.

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Table 3: Practice Levels of Nurses Regarding Tracheostomy Care (N = 150)

Practice Level	Frequency (n)	Percentage (%)
Good	45	30.0
Moderate	82	54.7
Poor	23	15.3

Further analysis of the association between demographic variables and knowledge/practice scores revealed significant correlations between the training received and both knowledge and practice levels. Table 4 demonstrates that nurses with formal training showed higher knowledge and practice scores compared to those without training ($p < 0.05$).

Table 4: Association Between Training and Knowledge/Practice Scores of Nurses (N = 150)

Training Received	Mean Knowledge Score ± SD	Mean Practice Score ± SD	p-Value
Yes	12.5 ± 3.2	14.8 ± 2.9	< 0.05
No	8.9 ± 4.1	10.2 ± 3.7	

These findings highlight the importance of formal training programs in improving the knowledge and practice of nurses regarding tracheostomy care. The results indicate that a substantial proportion of nurses demonstrated moderate levels of knowledge and practice, emphasizing the need for continuous professional development and adherence to evidence-based guidelines.

Discussion

The findings of this study revealed that the majority of nurses working in Jinnah Hospital Lahore possessed moderate knowledge and practices regarding tracheostomy care. The results showed that 60% of the participants had moderate knowledge, while 25% demonstrated good knowledge, and 15% had poor knowledge levels. This aligns with previous studies indicating that nurses generally have a moderate understanding of tracheostomy care, but there are significant gaps that need to be addressed through targeted training programs and continuous education (11). The observed deficiencies in knowledge could be attributed to the lack of formal training and limited exposure to updated guidelines in clinical settings, as noted in studies by Ali et al. and others in Pakistan (12,13).

The practice scores showed that more than half of the nurses reported moderate adherence to tracheostomy care protocols, while a smaller proportion demonstrated good practices. This finding is consistent with the study by Ahmad et al. (14), which indicated that practical adherence to standard guidelines remains a challenge among nurses in low-resource settings. The lack of adherence to evidence-based protocols can lead to an increased risk of complications, including infections and accidental dislodgement of the tracheostomy tube (15). The relatively lower proportion of good practices could be due to insufficient training opportunities and variations in clinical practices across departments, as reported in a study by Hussain et al. (16).

The significant association between training and both knowledge and practice scores highlights the importance of structured training programs in enhancing the competence of nurses in tracheostomy care. Nurses who received formal

The self-reported practices included adherence to standard protocols, suctioning techniques, and prevention of complications.

training demonstrated significantly higher knowledge and practice scores compared to those without training. This finding is consistent with existing literature, which suggests that continuous professional development and regular workshops are effective in improving nurses' proficiency in specialized care areas (17,18). The results from this study align with research conducted by Malik et al., who emphasized that ongoing education and the use of standardized protocols significantly improve patient outcomes and reduce the incidence of complications (19). The findings also emphasize the need for implementing evidence-based protocols and periodic evaluations to maintain high standards of care. Studies have shown that consistent monitoring and adherence to protocols lead to a reduction in adverse events, particularly in ICU settings where tracheostomized patients are more vulnerable (20). To improve outcomes, healthcare administrators should focus on creating a culture of continuous learning and professional development, as well as providing opportunities for formal training in tracheostomy care.

Conclusion

The findings indicate that most nurses possess moderate knowledge and practices concerning tracheostomy care, with notable gaps in training and adherence to standardized protocols. The study highlights the need for structured training programs and continuous professional development to enhance nurses' competency in tracheostomy care and improve patient outcomes.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.
Ethics approval and consent to participate.
Approved by the department Concerned.
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Conflict of interest

The authors declared an absence of conflict of interest.

Authors Contribution

SARA AMIR
Final Approval of version &Data Analysis
HUMAIRA SADDIQUE
Drafting & Revisiting Critically
RUBINA JABEEN
Concept & Design of Study

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