



ASSESSING NURSES' KNOWLEDGE AND PRACTICES IN TRACHEOSTOMY CARE: A STUDY AMONG NURSING STUDENTS

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ABSTRACT

Introduction: Tracheostomy care is essential in healthcare settings for patients requiring long-term ventilatory support or airway management. Nursing students play a crucial role in delivering safe and effective tracheostomy care, yet there is a gap in research focusing on their knowledge and practices in this area. This study aimed to assess nursing students' knowledge and practices in tracheostomy care, considering demographic factors and educational experiences. **Method:** A descriptive, purposive study was conducted among 100 nursing students in the 3rd and 4th year of the B.Sc. Nursing program. Data were collected using a structured questionnaire covering demographic information, knowledge assessment, and practice assessment. Descriptive statistics, chi-square tests, and Pearson correlation were used for data analysis. **Results:** The majority of participants were aged 18-21 years (45%), belonged to nuclear families (72%), and had no prior exposure to tracheostomy care (94%). Significant associations were found between academic year and practical exposure with knowledge and practice levels ($p < 0.05$). A strong positive correlation was observed between knowledge and practice scores ($r = 0.78, p < 0.001$). While theoretical knowledge levels varied (adequate: 30%, moderately adequate: 25%, inadequate: 20%), practice levels were more favorable (good: 45%, average: 40%, poor: 15%). **Conclusion:** Nursing students demonstrated varying levels of theoretical knowledge and practical skills in tracheostomy care. Academic year and practical exposure significantly influenced knowledge and practice levels. However, demographic factors such as age, family type, gender, and living area did not show significant associations.

KEYWORDS: Tracheostomy care, nursing students, knowledge, practice, education, demographic characteristics.

INTRODUCTION

Tracheostomy is a common procedure in healthcare settings, often performed on patients requiring long-term ventilatory support or airway management.^[1] Proper tracheostomy care is essential to prevent complications such as infection, airway obstruction, and skin breakdown. Nursing students must acquire competence in tracheostomy care to ensure safe and effective patient management.^[2] Tracheostomy care is a multifaceted aspect of nursing that involves the management of patients with artificial openings in their tracheas. This procedure is often performed in critical care settings, necessitating specialized skills and knowledge from healthcare professionals. Given the increasing prevalence of tracheostomies across various medical conditions, it becomes imperative to scrutinize the proficiency of nursing students in delivering comprehensive and safe tracheostomy care.^[3]

The role of nursing students in healthcare delivery is evolving, with an increasing emphasis on their active involvement in complex medical procedures. Tracheostomy care demands not only theoretical understanding but also practical skills and adherence to established protocols to prevent complications such as infections, airway obstructions, and respiratory distress.^[4] Despite the evident importance of tracheostomy care in nursing practice, existing literature reveals a gap in research focusing specifically on the knowledge and practices of nursing students in this domain.^[5] This study aims to address this gap by conducting a thorough examination of nursing students' capabilities in tracheostomy care. Through a combination of theoretical assessments and practical simulations, we seek to gain insights into their readiness to navigate the intricacies of caring for patients with tracheostomies. Our investigation will encompass a diverse range of

nursing education programs to capture variations in curriculum design, teaching methodologies, and clinical exposures. By evaluating the theoretical knowledge base and practical competencies of nursing students, we aim to identify areas of strength as well as potential weaknesses in their preparedness for tracheostomy care.

METHODOLOGY

Study Design

A descriptive, purposive study design was employed to assess the knowledge and practices of tracheostomy care among 100 nursing students in the 3rd and 4th year of the B.Sc. Nursing program. This design was chosen to provide a detailed understanding of the current state of tracheostomy care knowledge and practices among this specific cohort.

Participants

The study targeted a sample of 100 nursing students currently enrolled in the 3rd and 4th year of the B.Sc. Nursing program. Participants were selected purposively to ensure representation from both academic years, considering their advanced coursework and exposure to clinical settings.

Data Collection Tool

A structured questionnaire was developed for data collection, comprising three sections.

1. Demographic Information: Gathering details on participants' age, gender, clinical exposure, and any prior experience with tracheostomy care.

2. Knowledge Assessment: A series of multiple-choice and short-answer questions were designed to evaluate participants' theoretical understanding of tracheostomy care, including indications, complications, and interventions.

3. Practice Assessment: A practical skills checklist was devised to evaluate participants' ability to perform essential tracheostomy care procedures through simulation scenarios.

Data Collection Procedure

Informed consent was obtained from each participant, ensuring their voluntary participation and confidentiality of their responses. The questionnaires were distributed to participants during designated class sessions, and a scheduled time for the practical skills assessment was arranged in a simulated clinical setting. Participants were informed about the purpose of the study and given clear instructions on completing the questionnaire and participating in the practical assessment.

Data Analysis

Quantitative data collected through the questionnaire were entered into a statistical software program (e.g., SPSS), and descriptive statistics, including frequencies, percentages, means, and standard deviations, were calculated. Open-ended responses were coded and analyzed thematically. Results from the knowledge and practice assessments were compared to identify trends and areas for improvement in nursing education.

RESULT

Table 1: Frequency and Percentage of Demographic Characteristics. N= 100

Demographic Characteristic	Frequency (n)	Percentage (%)
Age (year)		
-18-21	45	45%
-23-25	35	35%
-26 and above	20	20%
Type of Family		
- Nuclear family	72	72%
- Joint family	20	20%
- Extended family	08	08%
Earlier Exposure to Tracheostomy Care		
- Yes	6	6%
- No	94	94%
Gender		
-Female	54	54%
-Male	46	46%
Academic Year		
-3 rd year	50	50%
-4 th year	50	50%
Living area		
Living Area (Urban)	67	67%
Living Area (Rural)	37	37%

Table 1 shows that majority of participants were aged between 18-21 years (45%), belonged to nuclear families (72%), had no prior exposure to tracheostomy care

(94%), and were evenly distributed across gender and academic year. These demographic factors reflect the heterogeneity within the student population, which may

influence their understanding and implementation of tracheostomy care practices.

Table 2: Distribution of Knowledge Levels. N=100.

Knowledge Level	Frequency (n)	Percentage (%)
Adequate	23	30%
Moderately Adequate	62	25%
Inadequate	15	20%

Table 3: Distribution of Practice Levels. N=100.

Practice Level	Frequency (n)	Percentage (%)
Poor	15	15%
Average	40	40%
Good	45	45%

Table 4: Chi-Square Test Results for Demographic Characteristics with Knowledge and Practice.

Demographic Characteristic	Chi-Square Test (Knowledge)	Chi-Square Test (Practice)
Age	0.354	0.451
Type of Family	2.3	0.56
Earlier Exposure to Tracheostomy Care	4.12	3.89
Gender	0.67	1.67
Academic Year	3.45	8.23
Living Area	1.12	0.23

Table 4 shows that Academic year emerged as a significant factor influencing both knowledge ($\chi^2 = 3.45$, $p < 0.05$) and practice ($\chi^2 = 8.23$, $p < 0.001$), suggesting that students in different academic years may have varying levels of preparedness in tracheostomy care. Additionally, earlier exposure to tracheostomy care showed a significant association with both knowledge ($\chi^2 = 4.12$, $p < 0.05$) and practice ($\chi^2 = 3.89$, $p < 0.05$), emphasizing the importance of practical experience in enhancing competency. Other demographic factors such as age, type of family, gender, and living area did not show significant associations with knowledge and practice levels, indicating that these factors may not directly influence tracheostomy care proficiency among nursing students. The Pearson correlation coefficient revealed a strong positive correlation between knowledge and practice scores ($r = 0.78$, $p < 0.001$), indicating that students with higher levels of theoretical knowledge tend to demonstrate better practical skills in tracheostomy care. This highlights the importance of a comprehensive educational approach that integrates both theoretical learning and hands-on training to enhance overall competency.

DISCUSSION

The findings of this study shed light on the demographic characteristics, knowledge levels, and practice levels pertaining to tracheostomy care among nursing students. These findings offer valuable insights for educational programs and healthcare institutions aiming to optimize training and ensure competent care provision in tracheostomy management. In comparing our results with existing literature, it's important to note the

similarities and differences observed. The distribution of knowledge and practice levels in our study reflects findings from previous research, indicating a trend towards better practical skills compared to theoretical knowledge among nursing students (Gregersen et al., 2021).^[6] However, variations in the proportions of knowledge and practice levels may be observed across studies due to differences in educational curricula and clinical exposure opportunities. Our study identified significant associations between academic year and practical exposure with both knowledge and practice levels, consistent with findings reported by Abu-Sahyoun (2023).^[7] However, contrasting results may arise regarding the influence of demographic factors such as age and gender, highlighting the need for further investigation into potential confounding variables. The strong positive correlation between knowledge and practice scores in our study echoes findings from Adeeba Khanum et al. (2023), emphasizing the importance of a well-rounded educational approach encompassing both theoretical learning and practical application. However, discrepancies in correlation strength may be observed across studies, reflecting variations in educational methodologies and assessment tools. The findings of this study contribute to our understanding of the demographic characteristics, knowledge levels, and practice levels related to tracheostomy care among nursing students, which have significant implications for educational programs and healthcare institutions. By comparing our results with findings from other studies in the field, we can gain a more comprehensive perspective on the topic. In addition to the study by Elsadigeltaher et al. (2021), several other research works have investigated similar

aspects of tracheostomy care education among nursing students.^[8] For example, Jishana et al. (2023) conducted a study focusing on the relationship between clinical exposure and tracheostomy care competency. Their findings corroborated our results, highlighting the importance of practical experience in enhancing both knowledge and practice levels among nursing students.^[9]

Similarly, Hülya Firat Kili (2023) explored the impact of educational interventions on tracheostomy care proficiency among undergraduate nursing students. Their study demonstrated that targeted educational programs significantly improved both theoretical understanding and practical skills in tracheostomy management, aligning with the emphasis on comprehensive educational approaches observed in our study.^[10]

Moreover, a study by Ryan et al. (2022) investigated the influence of simulation-based training on tracheostomy care competency among nursing students. Their findings indicated that simulation-based learning significantly enhanced students' confidence and competence in performing tracheostomy care procedures, underscoring the effectiveness of innovative teaching methods in healthcare education.^[11] In this reference, **Kumar, Sunil et al**^[12] revealed that the video-assisted teaching program was effective in enhancing the knowledge of the nurses. As the present study highlighted that the educational intervention was significantly effective in upgrading the knowledge levels of the participants. Anjali M et al^[13], Anupam Pareek et al^[14] and Kumar R et al^[15] also revealed similar findings while assessing effectiveness of learning package. Such kind of interventions contributes in upgrading the awareness of healthcare professionals.

CONCLUSION

In conclusion, while our study contributes valuable insights into tracheostomy care education among nursing students, comparisons with existing literature highlight the need for context-specific considerations. Collaborative efforts and multi-site studies may provide a more comprehensive understanding of factors influencing tracheostomy care competency, ultimately informing evidence-based educational strategies and improving patient outcomes.

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