
“Effectiveness of an Educational Intervention on Knowledge Regarding Tracheostomy Care Among Staff Nurses Working in a Selected Private Hospital, Bhopal, Madhya Pradesh.”

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ABSTRACT

Background: Tracheostomy is an important procedure for maintaining airway patency in patients requiring prolonged ventilation or management of respiratory secretions. Staff nurses play a vital role in providing continuous tracheostomy care; therefore, adequate knowledge is essential for safe and effective patient management. The researcher, while working as a Nursing Officer in a private hospital in Bhopal, Madhya Pradesh, observed variations in nurses' knowledge regarding tracheostomy care, creating a need for planned educational intervention.

Aim: To assess the effectiveness of an educational intervention on knowledge regarding tracheostomy care among staff nurses working in a selected private hospital, Bhopal, Madhya Pradesh.

Methods: A quantitative evaluative research approach with a pre-test and post-test control group design was adopted. Staff nurses working in the selected private hospital were included in the study and divided into experimental and control groups. A structured knowledge questionnaire was used to assess knowledge regarding tracheostomy care. The experimental group received a planned educational intervention, followed by a post-test assessment. Descriptive and inferential statistics were used for data analysis.

Results: The mean pre-test knowledge score of the experimental group was 13.66 ± 3.73 , which increased to 24.48 ± 5.29 in the post-test, showing a mean improvement of 10.82 . The calculated t value was 14.35 , which was greater than the table value of 1.99 at the specified degrees of freedom. The findings demonstrated a statistically significant improvement in knowledge following the educational intervention.

Conclusion: The study concluded that the educational intervention was effective in improving staff nurses' knowledge regarding tracheostomy care. Regular in-service education, continuing nursing education, and competency-based training may help strengthen nurses' knowledge and promote safe and standardized tracheostomy care in hospital settings.

KEYWORDS: Tracheostomy care, staff nurses, knowledge, educational intervention, nursing education, private hospital.

INTRODUCTION

Tracheostomy is a surgical procedure in which an opening is created in the trachea to provide and maintain a secure airway. It is commonly performed to manage upper airway obstruction, facilitate prolonged mechanical ventilation, and assist in the removal of respiratory secretions.

Tracheostomy care involves maintaining airway patency, preventing infection, ensuring proper tube function, and protecting the surrounding skin. Because complications such as tube blockage, displacement, bleeding, and infection can occur, safe and effective care is essential.

Staff nurses play a vital role in the continuous care and monitoring of patients with tracheostomies. Adequate knowledge and clinical skills are therefore essential for providing safe and competent care and preventing complications. Regular education and training can **help improve nurses' knowledge and proficiency in tracheostomy care.**

Background of the Study

Clinical nursing is considered as the heart of a nurse's professional practice and therefore the evaluation/ assessment of nursing students' clinical competence is critical to their education and it is an essential requirement of health professional education. Effective and exact clinical evaluation should be the first aim for all nursing faculties and clinical instructors. Objective Structured Clinical Evaluation is one form of objective evaluation method that includes both summative and formative evaluation components. Therefore, the application of objective structured clinical evaluation in nursing students' clinical evaluation increase their competencies.

Nurses are the largest group of health care professionals and they deal directly with the lives of human beings. This means that they are expected to perform procedures competently. Determining the clinical competency of nursing students before graduation involves many challenges. During their education, undergraduate nursing students should acquire skills necessary for future professional activity. Nursing institutions teach students to perform the necessary skills and test those skills with competency assessments. Using the right method of evaluation plays a significant role in getting the appropriate result and making the right judgment.¹

Process of evaluation helps the learner to know what they should learn. It also provides information about their progress and recognizes the areas of learning difficulties. Clinical evaluation is a critical element in the professional education program. Further they explained that evaluation is very important to assess the student's competency in actual practice. The main purpose of the clinical evaluation in nursing is to assess the quality and standards of clinical performance and to give the students feedback on their performance to facilitate the achievement of their learning objectives.²

Evaluation is always based on objectives. The method used for evaluation should be flexible, reliable, valid, feasible, and acceptable to clinical instructors and students.³

Evaluating students' clinical performance is one of the most challenging responsibilities of a nursing instructor. However, the realization that students gain various incomparable experiences clinically present a dilemma in measuring both individual and program outcomes. It is therefore evident that a wide range of evaluative methods are necessary to assess student nurse's clinical competence and greater emphasis should be placed on those methods which encourage the learning of clinical skills and concurrently provide an appropriate mechanism for assessing them.⁴

Evaluation is an organized assessment of the values or level of some object. It is also a systematic process of determining the extent to which the pupils are able to achieve educational objectives. Evaluation helps the learner to know what they should learn and provides information about their progress and helps to recognize the areas of difficulties in learning.⁵

Mainstream of patient care is provided by nurses so they must be invested with good preparation to improve care and services in order to maintain quality of patient care.⁶

The issues affecting nursing education today are increasingly complex and dynamic. Clinical teaching is one of the most important academic and health professionals' components and should be given utmost consideration to cope with the recent requirements of nursing education. Clinical nursing education is a heart of the nurse's professional practice. It is a critical to their education that provides students with the chance to translate theoretical knowledge into skills. Also, it enhances their competencies in both theory and clinical skills that required to give patient-centred care.⁷

NEED FOR THE STUDY

Tracheostomy is an important procedure used to maintain a patient's airway and assist in the management of patients requiring prolonged ventilation or removal of respiratory secretions. Tracheostomy patients require continuous observation and appropriate nursing care to maintain airway patency and prevent complications.

As a **Nursing Officer working in the same hospital**, the researcher observed that nursing staff are involved in the routine care of patients with tracheostomy. However, differences were noticed in the knowledge and practices of nursing staff regarding tracheostomy care, particularly in areas such as tube care, suctioning, stoma care, infection prevention, and identification of complications.

The researcher perceived that inadequate or inconsistent knowledge regarding tracheostomy care may affect the quality and safety of patient care. Since nursing staff are directly involved in providing continuous care, it is essential that they possess adequate knowledge and appropriate skills to manage tracheostomy patients safely.

Therefore, the researcher felt the need to assess the **knowledge regarding tracheostomy care among nursing staff working in the selected hospital**. The findings of the study may help identify existing knowledge gaps and provide a basis for planning appropriate educational programmes or in-service training to improve the competency of nursing staff and promote safe, effective, and standardized tracheostomy care.

TITLE

“Effectiveness of an Educational Intervention on Knowledge Regarding Tracheostomy Care Among Staff Nurses Working in a Selected Hospital.”

AIM

To assess the effectiveness of an educational intervention on knowledge regarding tracheostomy care among staff nurses working in a selected hospital.

OBJECTIVES

1. To assess the pre-test level of knowledge regarding tracheostomy care among staff nurses in the experimental and control groups.
2. To evaluate the effectiveness of an educational intervention on knowledge regarding tracheostomy care among staff nurses in the experimental group by comparing their pre-test and post-test knowledge scores.
3. To compare the post-test knowledge scores regarding tracheostomy care between the experimental and control groups.
4. To determine the association between pre-test knowledge scores regarding tracheostomy care and selected socio-demographic variables among staff nurses in the experimental and control groups.

HYPOTHESES

H₁: There will be a statistically significant difference between the pre-test and post-test knowledge scores regarding tracheostomy care among staff nurses in the experimental group.

H₂: There will be a statistically significant difference in the post-test knowledge scores regarding tracheostomy care between staff nurses in the experimental and control groups.

H₃: There will be a statistically significant association between the pre-test knowledge scores regarding tracheostomy care and selected socio-demographic variables among staff nurses in the experimental and control groups.

REVIEW OF LITERATURE

Khanum A, et al. (2023)⁹

Khanum A, et al. (2023) conducted a descriptive study entitled “Evaluating Nurses’ Knowledge and Practices Regarding Tracheostomy Care in ICU Patients” at Mayo Hospital, Jinnah Hospital, and Shaikh Zayed Hospital. The study aimed to assess nurses’ knowledge and practices regarding tracheostomy care. A sample of **75 staff nurses** was selected using simple random sampling. Data were collected through a self-structured knowledge questionnaire and an observational checklist. The data were analyzed using SPSS version 20.0. The findings showed that **0–49%** of nurses had poor knowledge, **50–64%** had average knowledge, and **more than 65%** had adequate knowledge. The study concluded that although most nurses had adequate knowledge, variations existed in their knowledge and practices regarding tracheostomy care.

Bathwal Rahul, et al. (2023)⁴ conducted a **cross-sectional study** to determine the incidence of tracheostomy among children admitted to the pediatric intensive care unit of a tertiary care center. A total of **1,472 children** were selected using convenient sampling. Data were analyzed using SPSS version 20.0. Tracheostomy was performed in **65 children (4.41%)**. Among them, **33 (50.76%)** underwent tracheostomy due to prolonged ventilation, while **32 (49.23%)** underwent the procedure because of airway obstruction. Successful decannulation was achieved in **41 (63.07%)** children, while 9 (13.84%) were discharged with the tracheostomy tube in situ and 15 (23.07%) died. The most common complication was **tracheostomy tube blockage (7.69%)**. The study concluded that the prevalence of tracheostomy among children admitted to the pediatric intensive care unit was lower compared with other reported studies.

Khanum T, et al. (2023)⁹ conducted a **cross-sectional observational study** to assess healthcare workers' knowledge regarding tracheostomy care and the identification and management of early complications and emergencies. The study included **244 physicians and nurses** from four tertiary care hospitals. Questions covered important aspects of tracheostomy care, including suctioning, cuff care and management, tube blockage, and feeding. The findings indicated that knowledge levels ranged from **48% to 52%**, with scores above 50% considered satisfactory. The study identified important knowledge gaps among healthcare professionals regarding several aspects of tracheostomy care and emergency management. The researchers recommended continued education and standardization of tracheostomy care practices.

Mungan I, et al. (2023)¹¹ conducted a **descriptive cross-sectional study** to evaluate nurses' knowledge regarding tracheostomy care in tertiary intensive care units in Ankara, Turkey. The study was conducted between January and July 2018 and included **150 ICU nurses** selected on a voluntary basis. Data were collected using a questionnaire and analyzed using SPSS version 20.0. A total of **138 valid questionnaires** were obtained, giving a 92% response rate. The findings showed poor knowledge regarding emergency situations, with only approximately **30% of responses being correct**. Only **64 nurses (46.4%)** answered seven or more questions correctly. No significant association was found between nurses' knowledge and the selected variables. The study concluded that nurses' knowledge regarding tracheostomy care was below expectations and recommended educational programmes and standardized training.

Nazir S, et al. (2022)¹³ conducted a **descriptive study** entitled "**Knowledge and Practices of Nurses Regarding Tracheostomy Care for ICU Patients**" in three tertiary care hospitals in Lahore. The study included **75 ICU nurses**, who were selected through convenient sampling. Data were collected using a self-structured questionnaire and analyzed using SPSS version 25.0. The findings showed that **40%** of nurses worked in surgical ICUs, while **60%** worked in other ICU settings. Regarding professional experience, **63%** had less than five years of experience, 29% had five to ten years, and the remaining nurses had more than ten years of experience. The study highlighted the importance of assessing nurses' knowledge and practices regarding tracheostomy care.

Mahfoz TM (2022)¹² conducted a **cross-sectional descriptive study** to assess the attitudes and tracheostomy care practices of nursing staff in Saudi Arabia. The study was conducted from October 2020 to June 2021 among nurses working at a tertiary medical center. A self-administered questionnaire was used to collect information regarding socio-demographic

characteristics, confidence, training, and support related to tracheostomy care. A total of **315 nurses** participated in the study. The findings revealed that **more than two-thirds of nurses lacked adequate training** to care for patients with tracheostomies, while more than 30% had experience caring for such patients. The study concluded that **ongoing training and competency assessment are essential** to improve the quality and safety of tracheostomy care.

Gaterega T, et al. (2021)⁶ conducted a **descriptive cross-sectional study** to assess nurses' knowledge and practices regarding tracheostomy care at a selected referral hospital in Rwanda. The study included **80 nurses** working in intensive care, surgical, and internal medicine departments. Participants were selected through convenient sampling, and data were collected using a modified structured questionnaire. The findings showed that **71% of nurses had moderate knowledge, 26.5% had low knowledge, and only 2.5% had high knowledge** regarding tracheostomy care. In terms of practice, **97.5% demonstrated poor practice**, while only 2.5% demonstrated good practice. No significant association was found between demographic characteristics and nurses' knowledge or practice. The study concluded that nurses had limited knowledge and practice and recommended **continuous professional development and regular training** in tracheostomy care.

RESEARCH APPROACH:

The research approach is the broad basic procedure for collecting data in a particular research institute. The research is the vehicle for hypothesis testing or answering research questions. The research approach tells the researcher what and how to collect data, how to analyze data. To achieve the study's objectives a **"Quantitative research approach"** was considered most effective.

RESEARCH DESIGN:

The design is concerned with overall framework for conducting the study. It helps the investigator in selection of the subjects, manipulation of independent variables, Observation to be made and type of statistical analysis is used to interpret the data. Selection of research design depend upon the condition under with the experiment may be conducted.

According to Pilot and Beck, "Research design is a researcher's overall plan for answering research questions", the research design selected for the present study is pre-test post-test only design will be to assess effectiveness of educational intervention regarding tracheostomy. Before & after the educational intervention program used a **True/classical experimental research design, with a pretest-posttest only design.**

RESEARCH SETTING:

The setting refers to the physical location and conditions where data collection for the study takes place. This study was conducted at selected hospitals in Madhya Pradesh, private Hospital Bhopal, involving both experimental and control groups. The selection of these hospitals was based on the accessibility of the sample and the feasibility of conducting the study.

Study sample and sample size:

Staff nurses holding qualifications such as GNM, B.Sc. Nursing, Post Basic Nursing, and MSc Nursing were chosen as the study sample.

final sample size was determined to be 160 participants. These participants were equally divided into two groups, with 80 assigned to the experimental group and 80 to the control group.

SAMPLING TECHNIQUE:

Simple Random Sampling Technique is used in the study for selection of sample.

SAMPLING CRITERIA

Inclusion Criteria:

1. Staff nurses employed in selected hospitals at Bhopal M.P.
2. Staff nurses willing to participate in the research project.
3. Staff nurses who are available during the time of data collection.

Exclusion Criteria:

1. Staff nurses working in the Medical Records Department (MRD).
2. Staff nurses not willing to participate in the research project.

VARIABLES OF STUDY:

- **Independent Variable:** Educational intervention on tracheostomy care among staff nurses.
- **Dependent Variable:** Knowledge about tracheostomy care among staff nurses.

ETHICAL CONSIDERATION

- Prior to conducting the study, ethical clearance was obtained from the Institutional Ethics Committee of selected Hospital Bhopal Madhya Pradesh.
- Permission was obtained from the Medical Superintendents of the selected hospitals.
- The data collection procedure was explained to the participants, and informed consent was obtained. Participants were assured that their data would be kept confidential and used solely for research purposes.
- Participants were informed of their right to withdraw from the study at any time without any consequences.

DATA COLLECTION TECHNIQUE:

The data was collected by using the structured and pre-test questionnaire.

DESCRIPTION OF RESEARCH TOOL

The structured questionnaire consists of two parts.

Part 1: Demographic tool

Part 2: Structured Knowledge Questionnaire to assess knowledge on Tracheostomy care.

Tool 1: This section consisted of 7 items on socio-demographic variables with an instruction to participants to put a tick mark (✓) against the appropriate choice closely representing their answers.

Section A: Demographic Data includes Age, sex, marital status, Professional Education, Experience, Have you ever provided tracheostomy care to patient, Tracheostomy care.

Section B: This will include Structured Knowledge Questionnaire to assess knowledge on Tracheostomy care.

RELIABILITY OF TOOL:

The reliability of tool was determined by split half method and r-value of knowledge questionnaire was 0.87 which shows tool is highly reliable.

Phase 3: Pilot study is to be carried out. Based on this exercise, tools were finalized. Staff nurses of two hospitals were selected for the pilot study and they were not included for the final study. The pilot study was conducted from 2th May 2025 to 10th June 2025 staff nurses were selected by sampling random technique. Feasibility of tool administration and method of data collection were tested out and found suitable.

RESULTS

Section A: Description of Sample Characteristics

The demographic findings showed variation among the staff nurses in the experimental and control groups with respect to age, gender, marital status, educational qualification, professional experience, previous participation in in-service education, area of clinical posting, and source of information regarding tracheostomy care.

In the experimental group, the majority of participants were female, while the control group also had a higher proportion of female participants. Most participants in both groups were unmarried. Regarding educational qualification, the majority of staff nurses were GNM-qualified, followed by B.Sc. Nursing and Post Basic B.Sc. Nursing qualifications.

With regard to professional experience, most participants in both groups had **0–2 years of experience**. A considerable proportion of staff nurses had not previously participated in an in-service educational programme regarding tracheostomy care. The participants were posted in different clinical areas, including other wards, postoperative wards, emergency units, and operation theatres.

The findings indicate that staff nurses working in the selected **private hospital, Bhopal, Madhya Pradesh**, had varying levels of exposure and educational experience related to

tracheostomy care. Similar findings were reported by Gaterega T, et al. (2021), who found no significant association between selected demographic characteristics and nurses' knowledge and practices regarding tracheostomy care.

Section B: Effectiveness of Educational Intervention on Knowledge Regarding Tracheostomy Care

The findings demonstrated a marked improvement in knowledge among staff nurses in the experimental group following the educational intervention.

The **mean pre-test knowledge score was 13.66 ± 3.73** , which increased to **24.48 ± 5.29** in the post-test, with a mean difference of **10.82**. The calculated *t* value was **14.35**, which was greater than the table value of **1.99 at $df = 79$** . Therefore, the difference between the pre-test and post-test knowledge scores was statistically significant.

These findings indicate that the educational intervention was **effective in improving the knowledge of staff nurses regarding tracheostomy care** in the selected private hospital, Bhopal, Madhya Pradesh.

The findings are consistent with the study conducted by **K. V. Marykutty (2012)**, which reported an improvement in knowledge following a structured teaching programme on tracheostomy care. The mean knowledge score increased from **18.22 in the pre-test to 32.95 in the post-test**, demonstrating the effectiveness of structured education.

The present findings are also supported by **Khanum T, et al. (2023)**, who reported knowledge gaps among healthcare professionals regarding various aspects of tracheostomy care and management. Similarly, **Gaterega T, et al. (2021)** found that the majority of nurses had moderate knowledge, highlighting the need for continuing education and professional development in tracheostomy care.

6.3 CONCLUSION

The present study concluded that the **educational intervention was effective in significantly improving the knowledge of staff nurses regarding tracheostomy care** in the selected private hospital, Bhopal, Madhya Pradesh. The substantial improvement in post-test knowledge scores demonstrates that planned educational interventions can effectively address knowledge gaps among nursing staff.

The study highlights the importance of regular **in-service education, continuing nursing education, demonstrations, and competency-based training** on tracheostomy care. Improving nurses' knowledge can contribute to safer and more effective care and help in the prevention and early identification of tracheostomy-related complications.

The findings may serve as a useful basis for nurse educators and nursing administrators to develop standardized educational programmes for staff nurses. Similar studies may be conducted in other hospitals, with larger samples and different geographical settings, to further evaluate the effectiveness of educational interventions on tracheostomy care.

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