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A Study To Assess The Effectiveness Of Structured Teaching Programme On Knowledge Regarding Tracheal Suctioning Among Staff Nurses In Selected Hospitals, Bikaner, Rajasthan

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Abstract

Background:
Tracheal suctioning is a vital nursing procedure performed to maintain airway patency in patients with respiratory compromise. Improper suctioning techniques may lead to complications such as hypoxia, infection, and mucosal trauma. Continuous education and structured teaching programmes help enhance nurses' knowledge and improve patient safety.

Objective:
To assess the effectiveness of a Structured Teaching Programme (STP) on knowledge regarding tracheal suctioning among staff nurses working in selected hospitals of Bikaner, Rajasthan.

Methods:
A quantitative pre-experimental one-group pretest–posttest research design was adopted. A total of **100 staff nurses** were selected using non-probability convenient sampling. Knowledge was assessed using a structured questionnaire before and after implementation of the STP. Data were analyzed using descriptive and inferential statistics.

Results:
Post-test knowledge scores showed significant improvement compared to pre-test scores, indicating the effectiveness of the structured teaching programme. Statistical analysis demonstrated a significant difference ($p < 0.05$) between pre- and post-test knowledge levels.

Conclusion:
The structured teaching programme was effective in improving knowledge regarding tracheal suctioning among staff nurses. Regular in-service education is recommended to maintain competency and ensure safe nursing practice.

Keywords: Structured teaching programme, tracheal suctioning, staff nurses, knowledge, nursing education.

Introduction

Tracheal suctioning is one of the most common and essential nursing procedures performed in critical care settings to maintain airway patency and ensure adequate oxygenation among patients who are unable to clear respiratory secretions independently. It is frequently required for patients who are mechanically ventilated, unconscious, or suffering from respiratory disorders that impair effective coughing mechanisms. The primary purpose of tracheal suctioning is to remove accumulated secretions from the tracheobronchial tree, thereby preventing airway obstruction, improving ventilation, and reducing the risk of pulmonary complications such as atelectasis and infection.

Despite being a routine procedure, tracheal suctioning carries potential risks and complications when performed incorrectly. Inadequate knowledge or improper technique may lead to adverse events such as hypoxia, cardiac dysrhythmias, mucosal trauma, infection, increased intracranial pressure, and bronchospasm. These complications highlight the importance of evidence-based practice and strict adherence to standard guidelines during the procedure. Therefore, nursing professionals must possess accurate knowledge regarding indications, contraindications, preparation, procedure steps, infection prevention measures, and post-procedure care related to tracheal suctioning.

Staff nurses play a vital role in delivering direct patient care in intensive care units, emergency units, and general wards, where airway management is a critical component of patient safety. As frontline healthcare providers, they are expected to perform tracheal suctioning competently and safely. However, variations in clinical exposure, educational background, and availability of continuing professional education may influence the level of knowledge and skill among nurses. Continuous updating of knowledge through structured educational strategies becomes essential to bridge the gap between theoretical understanding and clinical practice.

Structured Teaching Programmes (STPs) are systematic educational interventions designed to enhance knowledge, develop skills, and promote safe clinical practices among healthcare professionals. These programmes provide organized, evidence-based information using planned teaching methods such as lectures, demonstrations, audiovisual aids, and interactive discussions. Educational interventions have been shown to improve nurses' competency, confidence, and adherence to standard clinical guidelines, ultimately contributing to improved patient outcomes and quality of care.

Considering the critical nature of tracheal suctioning and the potential risks associated with improper technique, it is essential to assess the existing knowledge level of staff nurses and evaluate the effectiveness of planned educational strategies. A structured teaching programme can serve as an effective approach to strengthening nurses' understanding and ensuring standardized practice across healthcare settings. Therefore, the present study was undertaken to assess the effectiveness of a structured teaching programme on knowledge regarding tracheal suctioning among staff nurses working in selected hospitals of Bikaner, Rajasthan.

Need of the Study

Tracheal suctioning is a frequently performed and essential nursing procedure used to maintain airway patency and remove secretions in critically ill and mechanically ventilated patients. It plays a crucial role in preventing respiratory complications and ensuring adequate oxygenation. Since staff nurses are directly responsible for performing this procedure, their knowledge and competency significantly influence patient safety and clinical outcomes. Any lack of knowledge or deviation from standard guidelines may result in serious complications such as hypoxia, infection, mucosal trauma, cardiac dysrhythmias, and increased patient discomfort.

In clinical practice, variations in suctioning techniques are often observed due to differences in educational background, clinical exposure, and access to updated evidence-based guidelines. Many nurses rely on routine practices learned during training rather than current standardized protocols. Rapid

advancements in critical care nursing and infection prevention measures emphasize the need for continuous updating of knowledge and skills among nursing personnel. Without regular educational interventions, gaps in knowledge may persist, which can adversely affect the quality of patient care.

Hospitals today focus on improving patient safety and reducing procedure-related complications, making competency-based training an essential component of nursing practice. Structured Teaching Programmes (STPs) are recognized as effective educational strategies that provide systematic, planned, and evidence-based learning experiences. Such programmes help reinforce theoretical knowledge, improve understanding of clinical procedures, and promote standardized nursing practices. Implementing structured educational interventions can enhance nurses' confidence and ensure safe, accurate, and efficient performance of tracheal suctioning.

Although tracheal suctioning is a commonly performed procedure, studies have indicated that many nurses possess inadequate or only moderate levels of knowledge regarding indications, infection control measures, suction pressure limits, duration of suctioning, and complication prevention. This highlights the need for assessing current knowledge levels and evaluating the effectiveness of educational interventions aimed at improving competency. Furthermore, limited research has been conducted in selected hospitals of Bikaner, Rajasthan, regarding the impact of structured teaching programmes on nurses' knowledge related to tracheal suctioning.

Therefore, the investigator felt a strong need to conduct this study to assess the effectiveness of a structured teaching programme on knowledge regarding tracheal suctioning among staff nurses. The findings of this study may help identify knowledge gaps, enhance professional competency, support evidence-based nursing practice, and ultimately improve patient safety and quality of care in hospital settings.

Statement of the Problem

"A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Tracheal Suctioning Among Staff Nurses in Selected Hospitals, Bikaner, Rajasthan."

Objectives of the Study

1. To assess the pre-test level of knowledge regarding tracheal suctioning among staff nurses.
2. To evaluate the effectiveness of the structured teaching programme on knowledge regarding tracheal suctioning.
3. To compare pre-test and post-test knowledge scores of staff nurses.
4. To find association between pre-test knowledge scores and selected demographic variables.

Hypotheses

- **H1:** There will be a significant difference between pre-test and post-test knowledge scores after administration of the structured teaching programme.
- **H2:** There will be a significant association between pre-test knowledge scores and selected demographic variables.

Research Methodology

Research Approach

The present study adopted a **quantitative research approach** to assess the effectiveness of a structured teaching programme on knowledge regarding tracheal suctioning among staff nurses.

Research Design

A **pre-experimental one-group pretest–posttest research design** was used to evaluate the effectiveness of the intervention.

Schematic Representation of Research Design

Pre-test	**Intervention**	**Post-test**
O_1	X (Structured Teaching Programme)	O_2

- **O_1** – Assessment of pre-test knowledge level
- **X** – Structured Teaching Programme (Intervention)
- **O_2** – Assessment of post-test knowledge level

Setting of the Study

The study was conducted in **selected hospitals of Bikaner, Rajasthan**.

Population

The target population comprised **staff nurses working in selected hospitals** of Bikaner, Rajasthan.

Sample Size

The sample consisted of **100 staff nurses**.

Sampling Technique

A **non-probability convenient sampling technique** was used to select the participants for the study.

Criteria for Sample Selection

Inclusion Criteria

- Staff nurses willing to participate in the study.
- Nurses working in selected hospitals.
- Nurses available during the period of data collection.

Exclusion Criteria

- Staff nurses who were on long leave during data collection.
- Nurses who had recently undergone similar training programmes related to tracheal suctioning.

Data Collection Tool

The tool used for data collection consisted of two sections:

- **Section A:** Demographic variables such as age, gender, qualification, work experience, and area of work.
- **Section B:** Structured knowledge questionnaire regarding tracheal suctioning to assess knowledge levels before and after intervention.

Description of Structured Teaching Programme

The Structured Teaching Programme (STP) was prepared based on standard nursing guidelines and evidence-based practices. The content included:

- Definition and purpose of tracheal suctioning
- Indications and contraindications
- Preparation and required equipment
- Steps of tracheal suctioning procedure
- Infection prevention and control measures
- Possible complications and their prevention
- Post-procedure care and documentation

Teaching methods:

Lecture method, group discussion, and use of visual aids were employed to facilitate effective learning.

Data Collection Procedure

Pre-test knowledge was assessed using the structured questionnaire. Following the pre-test, the Structured Teaching Programme was administered to the participants. Post-test assessment was conducted after the intervention to measure improvement in knowledge.

Data Analysis Plan

Data were analyzed using descriptive and inferential statistics.

Descriptive Statistics

- Frequency and percentage
- Mean and standard deviation

Inferential Statistics

- **Paired t-test:** Used to compare pre-test and post-test knowledge scores.
- **Chi-square test:** Used to determine the association between pre-test knowledge scores and selected demographic variables.

Results

A total of **100 staff nurses** participated in the study. Data were analyzed using descriptive and inferential statistics to evaluate the effectiveness of the Structured Teaching Programme (STP) on knowledge regarding tracheal suctioning.

1. Demographic Characteristics

The demographic analysis showed that the majority of participants were in the age group of 21–30 years. Most participants were female staff nurses holding GNM or B.Sc. Nursing qualifications. A larger proportion had 1–5 years of clinical experience. Most of the participants had not attended any recent training programme related to tracheal suctioning.

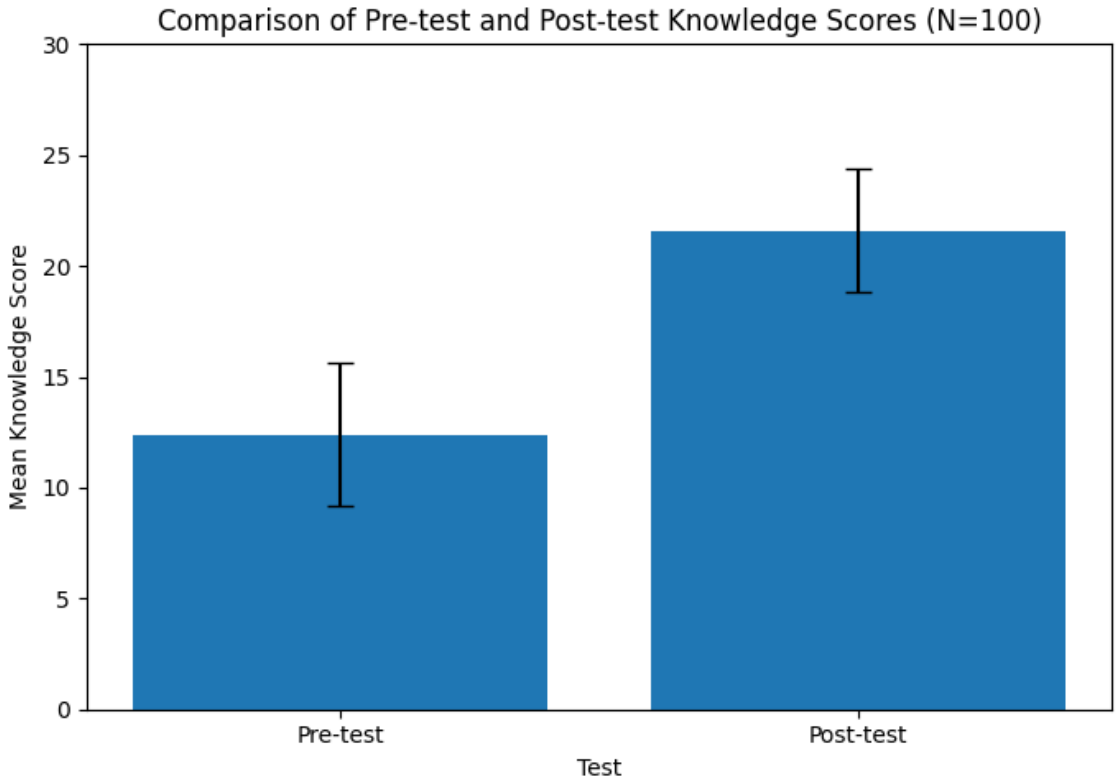
Table 1: Demographic Characteristics of Staff Nurses (N = 100)

S. No.	Variable	Category	Frequency (f)	Percentage (%)
1	Age (years)	21–30	56	56%
		31–40	28	28%
		41–50	16	16%
2	Gender	Male	18	18%
		Female	82	82%
3	Educational Qualification	GNM	48	48%
		B.Sc. Nursing	42	42%
		Post Basic B.Sc./M.Sc.	10	10%
4	Clinical Experience	1–5 years	52	52%
		6–10 years	30	30%
		Above 10 years	18	18%
5	Previous Training on Suctioning	Yes	22	22%
		No	78	78%

Table 2: Comparison of Pre-test and Post-test Knowledge Scores (N = 100)

Knowledge Score	Mean	Standard Deviation (SD)	Mean Difference	Paired t-value	p-value
Pre-test	12.4	3.2	9.2	18.45	< 0.05
Post-test	21.6	2.8			Significant

Interpretation:
The post-test mean knowledge score (21.6 ± 2.8) was higher than the pre-test mean score (12.4 ± 3.2). The calculated paired *t*-test value (18.45) showed a statistically significant difference, indicating the effectiveness of the Structured Teaching Programme.



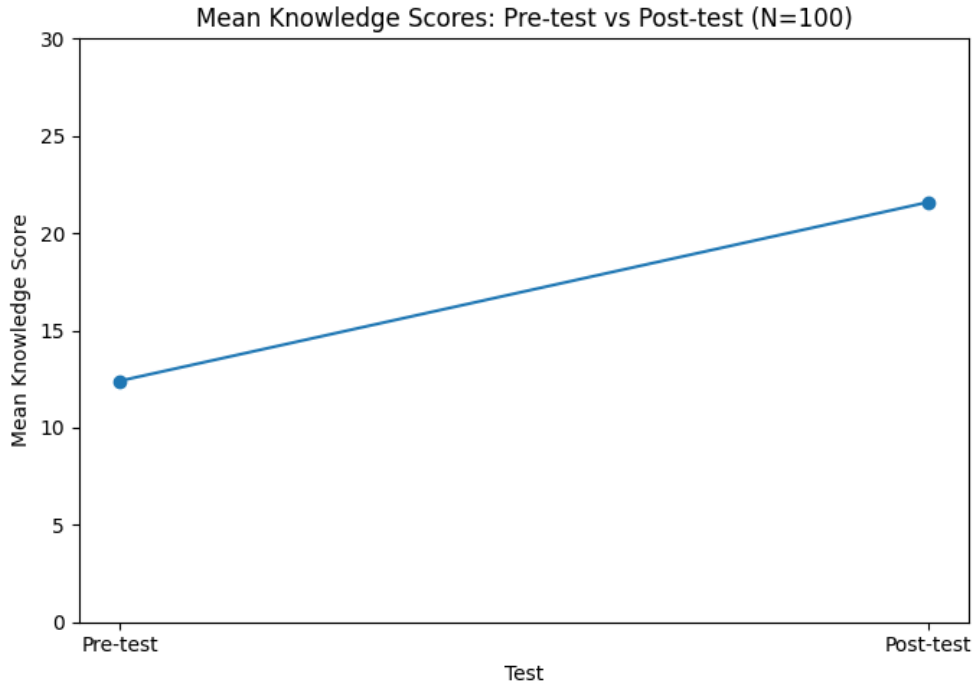


Table 3: Association Between Pre-test Knowledge Scores and Demographic Variables (Chi-square Test)

Demographic Variable	χ^2 Value	df	p-value	Significance
Age	2.14	2	>0.05	Not Significant
Gender	1.08	1	>0.05	Not Significant
Educational Qualification	8.62	2	<0.05	Significant
Clinical Experience	7.94	2	<0.05	Significant
Area of Work	3.11	2	>0.05	Not Significant

Summary of Tables

- Majority of participants were young female staff nurses with GNM/B.Sc. qualification.
- Post-test knowledge scores were significantly higher than pre-test scores.
- Structured Teaching Programme was statistically effective.
- Educational qualification and clinical experience showed significant association with knowledge.

Discussion

The study findings revealed that staff nurses had inadequate to moderate knowledge before intervention. Following the structured teaching programme, knowledge levels improved significantly. The results support previous research indicating that educational interventions are effective in enhancing nursing knowledge and promoting safe clinical practices. Structured teaching programmes provide organized and evidence-based information, which helps improve competency and reduce procedure-related errors.

Conclusion

The study concluded that the Structured Teaching Programme was effective in improving knowledge regarding tracheal suctioning among staff nurses. Continuous professional education and periodic training programmes are essential to ensure safe nursing practice and improve patient outcomes.

Implications for Nursing Practice

- Regular in-service education programmes should be conducted.
- Hospitals should adopt standardized suctioning guidelines.
- Periodic competency evaluation of nurses should be encouraged.

Recommendations

- Similar studies can be conducted with larger samples.
- Comparative studies using control groups may be undertaken.
- Skill-based evaluation can be included in future research.

Ethical Considerations

- Permission obtained from hospital authorities.
- Informed consent obtained from participants.
- Confidentiality maintained.