Original Research Article

To Assess the Effectiveness of the Video Assisted Teaching on Knowledge and Practice Regarding Tracheostomy Care among Staff Nurses with a View to Develop Protocol on Tracheostomy Care

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Abstract: *Background*: The staff nurses services of tracheostomy patients care play a very vital role based on the principle of 'time saving is lifesaving'. Tracheostomy care is a major health issue in various parts of the world. The number of patients with tracheostomy is increasing in both developed and developing countries. This study was conducted with the aim of investigating the effectiveness of video assisted teaching on knowledge and practice regarding tracheostomy care among the staff nurses and to develop protocol on tracheostomy care. *Methods*: A pre-experimental research approach, one group pre-test and post-test research design was adopted to carry out the present study non probability convenient sampling technique was used to select 30 staff nurses. Data was collected by means of structured knowledge of questionnaire to assess the knowledge and observational checklist to assess the practice of staff nurses regarding tracheostomy care. The analysis was done using descriptive and inferential statistics in terms of frequency, percentage, means, median, mode, standard deviation, mean difference t-test and chi square test in IBM SPSS Statistics 20. The significance level was set at $P \leq 0.05$. *Results*: A purely improvement in the score of knowledge and practice regarding tracheostomy care among staff nurses was observed ($P < 0.05$). There was also a significant association between the knowledge score and the clinical experience ($P = 0.03$) and CNE on tracheostomy care ($P = 0.01$). *Conclusion*: The staff nurse has inadequate knowledge and fair practices regarding tracheostomy care. A video assisted teaching and protocol administration is an effective strategy to increase their knowledge and improve their practice. Also, holding in-service training courses regarding the tracheostomy care is considered necessary.

Keywords: Tracheostomy Care; Assess; Nurses performance evaluation; Medical education; Video assisted teaching; Protocol.

INTRODUCTION

"It is not how much you do, but how much love you put in doing". (Mother Teressa) [1].

Most patients who require mechanical ventilation are initially managed with an endotracheal tube, which can be quickly inserted in an emergency. Tracheostomy is a surgical procedure to create an opening in the neck at front of the windpipe (trachea). A surgical procedure which consists of making an incision on the anterior aspect of the neck and opening a direct airway through an incision in the trachea. The resulting stoma can serve independently as an airway or as a site for tracheostomy tube to be inserted. Tracheostomy is performed by making an incision in the lower neck. It can be performed as an emergency elective procedure [2].

Tracheostomy care is a basic nursing skill, while it is a matter of routine procedure in the practice of otolaryngology and critical care nurses, general nurses in other areas may perform infrequently [3]. A tracheostomy is an

incision into the trachea that forms a temporary or permanent opening to allow airflow and permit the removal of broncho tracheal secretions [4].

A tracheostomy may be performed as an emergency or planned procedure. The aim of tracheostomy is to bypass obstruction in the upper airway; to aid prolonged and assisted ventilation; and to facilitate the removal of respiratory secretions [5].

In India the prevalence of tracheostomy was 10% in the long-term ventilated patients (defined as 24 h), or 1.3% of all patients. Most tracheotomies were performed during the 2nd week of ventilation, the procedure was more often performed in the ICU (65%) than in the operating theatre (35%). Units where the intensives had exclusive control used only percutaneous techniques. An overall complication rate of 13% was reported, bleeding and infections being at the top of the scale the patient leaving the hospital with a new tracheostomy will face problems with secretion management, increased risk of infections, alterations in body image & impaired vocalization. To ensure a safe transition from the hospital to home, the patient and family must demonstrate competence in all aspects of tracheostomy care, able to recognize signs and symptoms that should be reported to the physician and have adequate support at home. Nurses can help a patient successfully manage these problems through comprehensive discharge planning [6].

To ensure the quality of tracheostomy care, it is important to use a special nursing training program that includes the knowledge and skills required by nurses to effectively perform care, improve cost effectiveness, reduce patient problems and complications, and improve patient clinical outcomes [7].

The researcher observed during her neurological ward's posting, that the staff nurses who are working over there do not have adequate knowledge regarding tracheostomy care as well as the do not follow correct practices while giving tracheostomy care to patient. Appropriate care for patients with tracheostomies in hospital settings is an important issue. Many of these tracheostomy patients commence their care in the intensive care unit (ICU) and once stabilized are then transferred to a general ward. Insufficient skills and experience of staff caring for tracheostomy patients may lead to sub-optimal care and increased morbidity. So, the researcher is interested to assess the skill and knowledge on tracheostomy care and prepare a protocol on tracheostomy care.

Aim of Study
The aim of this study was to investigate the effectiveness of video assisted teaching on knowledge and practice regarding tracheostomy care among the staff nurses and to develop protocol on tracheostomy care.
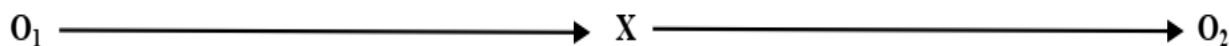
Research Hypothesis
The post mean knowledge and practices score of the nurses who will be exposed to the video assisted teaching will be higher than the pre-program mean score.

SUBJECTS AND METHOD
Research Design
A pre-experimental research approach, one group pre-test and post-test research design was utilized to achieve the purpose of this study.

$$O_1 \longrightarrow X \longrightarrow O_2$$

O$_1$: Pre-teat knowledge and practice score
X: Treatment Variable (Video assisted teaching)
O$_2$: Post-teat knowledge and practice score

The schematic representation of the study design shows that the study will be conducted in three phases as depicted in the flow chart below.
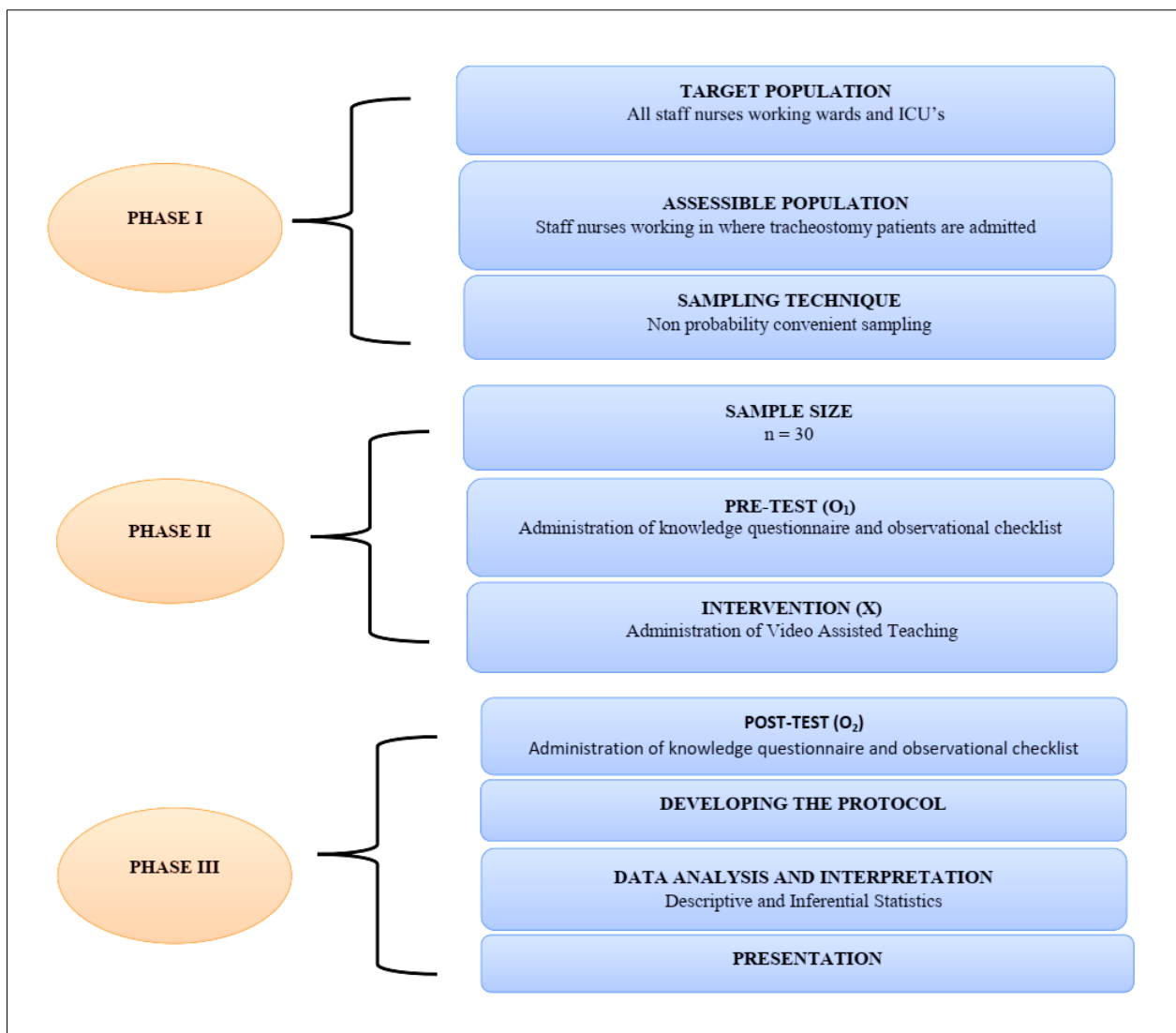

Figure 1: Schematic presentation of Research Design

Tools for Data Collection
The following two tools were utilized to collect data pertinent to the current study:
Tool 1: Demographic characteristics of the nurse s: This part composed of closed ended questions including age, gender, qualification, clinical experience, area of work and CNE on Tracheostomy care.

Tool 2: Self-structured questionnaire: Knowledge regarding Tracheostomy care composed of 30 closed ended questions.

Scoring System for Nurses' Knowledge
Scoring system was graded according to the items of questionnaire sheet; the answer of respondent (nurses) was evaluated through using key answer prepared by the researcher. The total score of the knowledge was (30) grades, (100%). Each correct answer was scored one (1) grade, and zero for wrong answer or didn't know. The total knowledge was classified as the following: Good 21-30, Average 11-20 and Poor 1-10.

Tool 3: Observation Checklist to assess the practice score of staff nurses regarding tracheostomy care. This was composed of 64 items including: tracheostomy care and tracheobronchial suctioning.

Scoring System for Nurses' Practice
The practice was observed by the researcher. Performance of the activity by the staff nurses, as mentioned in the item, is marked by the researcher in the Successful – 3, Unsuccessful – 2, Need Work – 1 and Omit – 0. The maximum

possible score is 64 and minimum possible score is 0. The level of practice is categorized as: Excellent 161-192, Good 129-160, Average 97-128 and Poor 64-96.

Validity

Testing validity was used for the modified tools and the designed booklet to determine whether the tools cover the aim. The stage developed by a Jury of fourteen experts from medical and nursing.

Reliability

Testing reliability of the proposed tools was done by Cronbach's alpha test, showed high reliability for the final version of knowledge was found to be 0.89 and practice was 0.81.

Pilot Study

The pilot study was applied on three nurses (10%) of the study sample to test the applicability of tools, arrangement of items, and to estimate the time needed for each tool and for testing the feasibility of research process.

Field Work

The collection of data, the implementation of the teaching program and the evaluation lasted over a period of 1 months.

The study was conducted through four phases: assessment phase, program development phase, implementation phase and evaluation phase.

Administrative Design

Ethical considerations: An official permission was obtained from the from the Institutional Ethics Committee/Review Board Services (IRB) No. INC/17/3523 i.e., College of Nursing Ethics Committee, Indore before conducting the study. Additional written consent was obtained from the staff nurses and they were assured that the information would be used for research purpose only (confidential).

Statistical Design
Statistical Analysis:

All collected data were organized, categorized, tabulated, entered, and analyzed by using computer SPSS, (Statistical Package for Social Sciences), soft-ware program version 15, which was applied to frequency tables, statistical significance and associations were assessed using t: paired t test, chi-square test to detect the relation between the variables (P- value). Mean and standard deviation were also used.

The observed differences and associations were considered as the following: Non- significant (NS) $p > 0.05$, Significant (S) $p \leq 0.05$.

RESULTS

Figure (2): Distribution of the staff nurses according to their demographic variables (n=30) which portrays that about 90% of the studied nurses were in age group of 21–30. Regarding area of work of the staff nurse, 46.67% of them were working in medical ward. Concerning years of clinical experience, it was found that 50% of the staff nurses had 0-2 years of experience. Relating to CNE on Tracheostomy care, it was found that 80% of the staff nurses have done induction training program.

Table (1): Presents that in relation to total knowledge score Mean ± SD, it was (14.10 ± 2.58) pretest, improved to (27.83 ± 1.59) posttest and 't-test' value was 23.09 with 'p' value <0.000. As to total practice score Mean ± SD, it was (53.70 ± 1.55) pretest, promoted to (174.80 ± 8.82) posttest and t value 41.50 with 'p' value <0.05.

Table (2): Depicts that there were statistically significant association found between staff nurses' clinical experience and CNE on Tracheostomy care and their total knowledge scores in pre implementation of video assisted teaching program with p - value of 0.030 and 0.010 respectively.
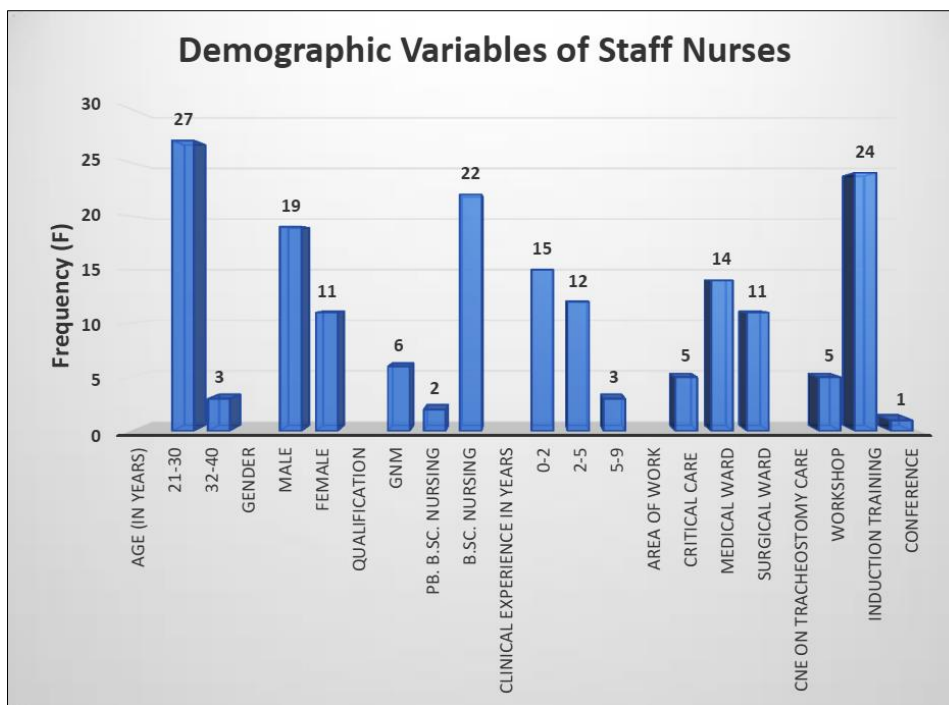
Figure 2: Distribution of the Staff nurses according to their demographic variables (n=30)

Table 1: Mean, mean difference, standard deviation and 't' value ('p' value) of the staff nurses according to their total knowledge and practice score n = 30

Variables		Mean ± S.D.	Mean difference	't' value ('p' value)
Total Knowledge score	Pre-test	14.10 ± 2.58	13.73	**23.09 (<0.000*)**
	Post-test	27.83 ± 1.59		
Total Practice Score	Pre-test	53.70 ± 1.55	121.10	**41.50 (<0.05*)**
	Post-test	174.80 ± 8.82		

*Highly Significant (P < 0.05)

Table 2: Association between nurses' knowledge and their demographic characteristics n = 30

Selected variables	Chi- Square value	p value
Age in years	0.370	0.543
Gender	0.016	0.090
Qualification	1.212	0.545
Clinical experience in years	0.556	0.030*
Area of work	0.851	0.653
CNE on Tracheostomy care	0.833	0.010*

*Highly Significant (P < 0.05)

DISCUSSION

Characteristics and the Features Staff Nurses

The study revealed the main feature of the staff nurse, study was carried out on 30 staff nurses who were providing their care to tracheostomy patient e.g. The ENT ward, oncology medical, oncology surgical ward, neuro medical ward, neuro surgical ward and critical care ICUs of the selected hospital had taken part. These staff nurses were cauterized according to age group of the nurses 27 (90%) of staff nurses belonged to the age group of 21-30 years and 3 (10%) belonged to age group 31-40 years.

Out of 30 staff nurses, it was observed that 19 (63.33%) were male nurses and 11 (36.67%) were female nurses, showing a male preponderance of the male staff nurses over the female staff nurses.

The educational qualification of the staff nurses reveals that majority of 6 (20%) of the nurses had done their GNM Nursing, 2 (6.67%) had done their Post Basic B.Sc. and rest majority 22 (73.33%) of the nurses had done their B.Sc. Nursing. Thus, it can conclude that maximum 22 (73.33%) of the staff nurses had done their educational qualification as

B.Sc. nursing.

Out of 30 staff nurses 15 (50%) nurses had a clinical experience of 0-2 years and 12 (40%) nurses had a clinical experience between 2-5 years. Thus, it can conclude that maximum 3(10%) staff nurses had a clinical experience of 5-9 years.

Out of 30 staff nurses 5 (16.67%) had an experience in critical care area, 14 (46.67%) had experience in medical wards and 11 (16.67%) had experience in surgical wards. Thus, conclude that maximum 14 (46.67%) staff nurses critical care area.

The majority of staff nurses, 5 (16.67%) nurses had attended workshop regarding tracheostomy care, 1 (3.33%) had attended a conference while majority 24 (80%) of the nurses had attended induction training programme on tracheostomy care. The maximum 24 (80%) staff nurses had attended a induction training programme.

The pre-test and post-test knowledge score and effectiveness of the video assisted teaching regarding tracheostomy care among staff nurses.

Participants were given 30 questions regarding knowledge and each correct answer scored 1 and wrong answer scored 0. The 30 questions were classified into 3 categories as poor (1-10), good (11-20), excellent (21-30). The pre-test score of the staff nurses showed that 3 (10%) nurses had obtained poor grade, while 27 (90.00%) nurses had obtained good score. The total mean score by staff nurses in the pre-test is 14.10.

In order to update the knowledge regarding tracheostomy care a video assisted teaching was given after the intervention given post-test was done and the score obtained by the staff nurses was categorized into 4 categories. The total mean score of age group in the post-test was 27.83. After video assisted teaching of the 30 staff nurses were under excellent range. Thus, indicates at the pre-test score was lower before the administration of video assisted teaching and there was considerable gain in knowledge after the administration of video assisted teaching there proved the effectiveness of video assisted teaching

Further to know the statically significant between pre-test and post-test knowledge score 't' test was computed. The test value ('t'=-23.09 P<0.000) showed that there was a highly significant difference between pre-test and post-test knowledge score.

The results of the researcher's findings are in line with Prakash, 2024 which states that there is a statistically significant association between nurses' work experience in emergency room and their knowledge score (P=0.018) [7].

CONCLUSION
Based on study findings, it can be concluded that: The video assisted teaching has a remarkable significant improvement on nurses' knowledge and practice score regarding tracheostomy care. Also, holding in-service training courses regarding the tracheostomy care is considered necessary.

RECOMMENDATIONS
Maintaining an educational booklets, pamphlets, and boosters that contain all instructions and information about tracheostomy care and continuous CNE for nurses dealing with tracheostomy care using media as television programs, online videos and programs. Similar study can be done on large sample and by using other teaching strategies i.e. self-instructional modules, computer assisted instructions and demonstration on tracheostomy care among staff nurses.

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