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A PRE-EXPERIMENTAL STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON THE KNOWLEDGE REGARDING TRACHEOSTOMY CARE AMONG B.SC. NURSING 3rd SEMESTER AND GNM 2nd YEAR STUDENTS AT MAHARAJA AGRASEN NURSING COLLEGE, BAHADURGARH

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ABSTRACT

INTRODUCTION: A tracheostomy is an artificial opening in the neck [into the trachea(windpipe)]. This opening is called stoma. It allows air to go in and out of the lungs. It also allows any mucus to be removed. A small tube (tracheostomy tube) is inserted through this opening. breathing occurs. through this tube.

AIM:-The aim of the study is to assess the knowledge of students regarding tracheostomy care.

MATERIAL &METHOD: In the present study pre-experimental design were used. A self-structured knowledge questionnaire was developed & utilized for data collection. 50 Nursing students were selected by using non probability convenient sampling method. The conceptual framework adopted for the study was based on Ludwig Von Bertalanffy 24 (1968) theory. The research design used was pre-experimental design. The study was conducted in Maharaja Agrasen Nursing College, Bahadurgarh.

VARIABLE: The dependent variable of the study is the knowledge of students regarding tracheostomy care.

RESULT: The mean pre-testscore 15.3 on level of knowledge regarding tracheostomy care is lower than post-test 19.1 with the mean difference of 3.8. The obtained mean difference was found to be statistically as evident from obtained z value (0.801) which is less than the tabled z test value.

•There is high positive correlation between pre-test and post-test knowledge score regarding tracheostomy care.

•There is no significant relationship between the knowledge score and the demographic variable except course in which enroll and place of living.

INTRODUCTION & BACKGROUND OF THE STUDY

The trachea, also known as the windpipe, is a cartilaginous tube connecting the larynx to the bronchi of the lungs, enabling the passage of air. Present in almost all animals with lungs, the trachea extends from the larynx and branches into two primary bronchi. Its structure includes horseshoe-shaped rings joined by ligaments and the trachealis muscle, while the cricoid cartilage attaches it to the larynx. The epiglottis closes the airway during swallowing. In humans, the trachea is about 15 cm long and 2-3 cm in diameter, serving as a passage for air, warming and moistening it while protecting the respiratory surfaces from foreign particles.[1] The inner lining consists of a mucous membrane with ciliated pseudostratified columnar cells and goblet cells, which secrete mucus to trap and expel debris through the movement of cilia. The trachealis muscle aids in expelling mucus through coughing[2].

A tracheotomy, a surgical procedure creating an opening in the neck into the trachea, provides a direct airway for patients with severe respiratory conditions. General anaesthesia is typically used, except in emergencies, where local numbing is applied. After cleaning the neck area, an incision is made to expose the cartilage rings, and a tracheostomy tube is inserted and secured. This tube bypasses the upper airway, helping patients breathe directly through the trachea[3].

The tracheostomy tube has three main components: the outer cannula to keep the airway open, the inner cannula to manage mucus buildup, and a band or tie to secure the tube. Post-procedure care includes regular cleaning of the surrounding skin to prevent infection, monitoring mucus colour for signs of complications, and using humidification to counter the drying effect of bypassing the upper airway. A speech pathologist evaluates swallowing function, and dietary adjustments are often necessary to ensure proper

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nutrition. Patients with a tracheostomy may also require alternative communication methods, such as covering the opening with a finger or using writing tools[4] .

Recovery varies, typically requiring two weeks for initial healing. Continued care focuses on maintaining hygiene, suctioning as needed, and ensuring the patient adapts to breathing and communicating effectively. Long-term management may involve collaboration with speech therapists and healthcare providers to optimize quality of life[5].

OBJECTIVES OF THE STUDY

1. To assess the pre-test knowledge regarding tracheostomy care among B.Sc. Nursing 3rd semester and GNM 2nd year students.
2. To assess the post-test knowledge regarding tracheostomy care among B.Sc. Nursing 3rd semester and GNM 2nd year students.
3. To determine the correlation between pre-test and post-test score regarding tracheostomy care among B.Sc. Nursing 3rd semester and GNM 2nd year students.
4. To find out association of pre-test score with social demographic variables.

HYPOTHESIS

- H1: There will be a significant difference between pre- test and post- test knowledge score regarding tracheostomy care.
- H2: There will be high positive correlation between pre-test knowledge score and post-test knowledge score regarding tracheostomy care.
- H3: There will be a significant association of the pre-test knowledge score with selected demographic variables of the B.Sc. Nursing 3rd semester and GNM 2nd year students.

OPERATIONAL DEFINITION

- Assess: It refers to judge or decide the amount, value, quality or importance of something.
- Structured teaching program: It refers to a systematically developed instructional aids, designed to provide information regarding tracheostomy
- Tracheostomy care: In this study it refers to procedure involving cleaning tracheostomy site, changing inner tube and changing dressing around the site.
- Knowledge: It refers to the familiarity, awareness and understanding in students on tracheostomy care by responding to the self-structured.

ASSUMPTION

1. Students may have some knowledge regarding tracheostomy care
2. Student may face problem regarding understanding of tracheostomy care.
3.Structured teaching program provides an opportunity for learning in better understanding about tracheostomy care.

DELIMITATION

The study is limited to:
* Students who are present at the time of data collection.

RESEARCH METHODOLOGY

RESEARCH APPROACH

A pre-experimental research approach was used to accomplish the objectives of present study.

RESEARCH DESIGN

According to **Polite and Beck (2008)** a research design depicts the overall plan for organization of scientific investigations. When embarking on research questions, a research design provides a framework that supports the study and holds it together[6].A pre-experimental design, one group pre-test post-test design was adopted for the study.

RESEARCH VARIABLE

Research variable in this study is knowledge of B.Sc. Nursing 3rd semester and GNM 2nd year students studying in Maharaja Agrasen Nursing College, Bahadurgarh (Haryana).

POPULATION

- TARGET POPULATION
  The target population for the present study includes B.Sc. Nursing 3rd semester and GNM 2nd year students of Maharaja Agrasen Nursing College, Bahadurgarh (Haryana).

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- ACCESSIBLE POPULATION
  The accessible population for the present study includes B.Sc. Nursing 3rd semester and GNM 2nd year students studying at Maharaja Agrasen Nursing College, Bahadurgarh (Haryana) present at the time of research.

SAMPLE SIZE

- The sample size of the study was 25 B.Sc. Nursing 3rd semester and 25 GNM 2nd year students studying in Maharaja Agrasen Nursing College, Bahadurgarh (Haryana).

SAMPLING TECHNIQUE

- Sampling technique is defined a process of selecting the samples for research studies. It can be by probability or non-probability method. In the present study non probability method (convenient sampling technique) was used.

RELIABILITY OF THE TOO

- The tool was tested for reliability using KR-20

MAJOR FRINDINGS OF THE STUDY

Table 1: Frequency and percentage distribution of B.Sc. Nursing 3rd semester and GNM 2nd year students based on demographic variables N=50

S. No.	Demographic Variables	Frequency(f)	Percentage (%)
1	Age (in years)		
	a) 17-20	38	76.0
	b) 20-23	11	22.0
	c) 23-27	1	2.0
2	Educational Background		
	a) Science	33	66.0
	b) Arts	16	32.0
	c) Commerce	1	2.0
3	Course in which enrolled		
	a) B.Sc. Nursing	25	50.0
	b) GNM	25	50.0
4	Place of Living		
	a) Rural	24	48.0
	b) Urban	26	52.0
5	Any previous knowledge regarding tracheostomy care		
	a) Yes	48	96.0
	b) No	2	4.0
6	Source of Knowledge		
	a) Internet	10	20.0
	b) Books	40	80.0
	c) Journal	0	0.0

- The Data represented the demographic characteristics of B.Sc. Nursing 3rd semester and GNM 2nd year students.
- Majority of samples were in between the age group of 17-20 years (76%), 22% of 20-23 and 2% of 23-26 years.
- Majority of samples were having science background (66%), 32% were having arts, 2% were having commerce background.
- Samples were enrolled in B.Sc. Nursing (50%) and (50%) of samples were enrolled in GNM.
- Majority of the samples were from the urban area (52%) and 48% were from the rural area.
- Majority of samples were having previous knowledge regarding tracheostomy care (96%) and 4% of sample were not having previous knowledge regarding tracheostomy care.
- Majority of samples were having previous knowledge through book sources (80%), 20% were having knowledge through internet and 0% were having knowledge through journal.

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Table 2: Pre-test knowledge of 3rd semester B.Sc. Nursing and GNM 2nd year Nursing students regarding tracheostomy care.

N=50

Level of knowledge	Frequency	Percentage	Range	Mean	S.D.
Inadequate (<33.33%)	1	2%	1-10	19.1	5.2
Moderately adequate (33.33-66.66%)	30	60%	11-20		
Adequate (>66.66%)	19	38%	21-30		

The data presented in Table 2 showed that 12% of the samples scored <33.33% which indicates inadequate knowledge, 78% students scored between 33.33 – 66.66% which indicates moderately adequate knowledge and 10% scored >66.66% which indicates adequate knowledge.

Table 3: Post-test knowledge of 3rd semester B.Sc. Nursing and GNM 2nd year Nursing students regarding tracheostomy care.

N=50

Level of knowledge	Frequency	Percentage	Range	Mean	S.D.
Inadequate (<33.33%)	6	12%	1-10	15.3	4.686
Moderately adequate (33.33-66.66%)	39	78%	11-20		
Adequate (>66.66%)	5	10%	21-30		

The data presented in Table 3 showed that 2% of the samples scored <33.33% which indicates inadequate knowledge, 60% students scored between 33.33 – 66.66% which indicates moderately adequate knowledge and 38% scored >66.66% which indicates adequate knowledge.

Table 4: Calculated z test showing effectiveness of structured teaching program regarding tracheostomy care among B. Sc. Nursing 3rd semester and GNM 2nd year students.

N=50

Knowledge score	Mean	S.D.	Z test value	Df	Table value of z test	Level of Significance
Pre-test	15.3	4.686	0.801	2	5.999	0.05
Post-test	19.1	5.2				

***Significant at 0.05 level of significance**

It shows that the mean pre-test scores 15.3 on level of knowledge regarding tracheostomy care is lower than the mean post test score 19.1. The obtained z test value is found to be statistically evident (0.801) which is less than the tabled z test value (5.999). This shows that the mean difference was a true difference and not by chance. Hence research hypothesis stated that there will be a significant difference in the knowledge score of B.Sc. Nursing 3rd semester and GNM 2nd year students selected for tracheostomy care, before and after applying structured teaching program was accepted. It can be inferred that the structured teaching program was effective for improving the knowledge regarding tracheostomy care.

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Table 5: Correlation of the pre-test knowledge score and post -test knowledge score regarding tracheostomy care.

N=50

Knowledge score	Mean	SD	R value	P value	Remarks
Pre-test	15.3	4.686	0.959	0.90000	High positive correlation
Post-test	19.1	5.2			

The data presented in Table 4 showed that the r value is more than the p value (0.959>0.90000)which indicates the high positive correlation betweenpre-test knowledge score and post-test knowledge score regarding tracheostomy care. Hence, research hypothesis stated that there will be high positive correlation between pre-test knowledge score and post-test knowledge score was accepted. It can be inferred that there is high positive correlation between pre-test knowledge score and post-test knowledge score regarding tracheostomy care.

TABLE 6: Chi square values showing association between pre-test knowledge score regarding tracheostomy care among B.Sc. Nursing 3rd semester and GNM 2nd year students

N=50

Demographic variables	<Mean	>Mean	Chi square value		Df	Significant
			calculated	Table		
Age (in years)						
• **17-20**	19	19	0.944	5.99	2	NS*
• **20-23**	9	2				
• **23-26**	1	0				
Educational background						
• **Science**	17	16	1.144	5.99	2	NS*
• **Arts**	11	5				
• **Commerce**	1	0				
Course in which enrolled						
• **B.Sc.Nursing**	13	12	6.589	3.84	1	S**
• **GNM**	16	9				
Place of living						
• **Rural**	14	12	8.333	3.84	1	S**
• **Urban**	15	9				
Any previous knowledge regarding tracheostomy care						
• **Yes**	27	21	0.867	3.84	1	NS*
• **No**	2	0				
Source of knowledge						
• **Internet**	9	1	1.839	3.84	1	NS*
• **Books**	20	20				
• **Journals**	0	0				

****significant at level 0.05, *non-significant at level 0.05**

The data presented in table shows that there was significant association of pre-test knowledge score with demographic variables, course enrolled ($x^2_{(1,0.05)}$ =6.589>3.84), place of living ($x^2_{(1,0.05)}$= 8.333>3.84. Other variables had no significant association between knowledge and demographic variables, age ($x^2_{(2,0.05)}$ =0.944<5.99), educational background ($x^2_{(2,0.05)}$ =1.144<5.99), previous knowledge ($x^2_{(1,0.05)}$ =0.867<3.84), and source of information($x^2_{(1,0.05)}$ 1.839<3.84).

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DISCUSSION

The finding of the study reveals that

- Majority of samples were in between the age group of 17-20 years (76%), 22% of age group 20-23 years and 2% of age group 23-26 years.
- Majority of samples having science background 66%, 32% belongs to the arts and remaining 2% belongs to commerce background.
- Equal number of samples were taken from the education of B.Sc. Nursing (50%) and GNM (50%)
- Majority of samples from rural area(52%) and 48% from urban area.
- Majority of the samples were having previous knowledge regarding tracheostomy care (96%) and 4% of samples were having no previous knowledge regarding tracheostomy care.
- In Pre-test 10% of the samples scored >66.66% which indicates adequate knowledge, 78% of the samples scored between 33.33-66.66% which indicates moderately knowledge and only 12% of the samples scored <33.33% which indicates inadequate knowledge score. Thus, the highest knowledge score is 78% which includes adequate knowledge on tracheostomy care.
- In Post-test 38% of the samples scored >66.66% which indicates adequate knowledge,60% of the samples scored between 33.33-66.66% which indicates moderately knowledge and only 2% of the samples scored <33.33% which indicates inadequate knowledge score.Thus, the highest knowledge score is 60% which includes adequate knowledge on tracheostomy care.
- There was significant association between knowledge and demographic variable place of living ($x^2_{(1,0.05)}$ = 8.333>5.99), course in which enroll($x^2_{(1,0.05)}$ =6.589>3.84). Other variables were no significant association between knowledge and demographic variable age $x^2_{(2,0.05)}$ = 0.944<5.99), educational background ($x^2_{(2,0.05)}$ =1.144<5.99), any previous knowledge ($x^2_{(1,0.05)}$ =0.867<3.84), source of knowledge ($x^2_{(1,0.05)}$ =1.839<3.84)

CONCLUSION

On the basis of the findings following conclusions can be drawn out:

The Mean Pre-test score 15.3 on level of knowledge regarding tracheostomy care is lower than Post-test Score 19.1 with the Mean different of 3.8. The obtained mean difference was found to be statistically as evident from (0.801) which is less than the tabled z test value.

Research Hypothesis stated that there will be a significant difference in the knowledge score of B.Sc. Nursing 3rdsemester & GNM 2nd year students selected for tracheostomy care, before & after applying structure teaching program was accepted. It can be inferred that the structure teaching program was effective for improving the knowledge regarding tracheostomy care.

There is high positive correlation between pre-test and post-test knowledge score regarding tracheostomy care.

There is no significant relation between the knowledge score & the demographic variables except the course in which students were enrolled and place of living.

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