

A Study to Evaluate the Effectiveness of a Planned Teaching Programme on Knowledge Regarding Tracheostomy Care Among 2nd Year Gnm Students in A Selected College.

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Abstract—Introduction: Tracheostomy care is an important nursing responsibility that requires adequate knowledge to maintain airway patency and prevent complications. Structured educational interventions may help improve nursing students' understanding of tracheostomy care.

Aim: To evaluate the effectiveness of a planned teaching program on knowledge regarding tracheostomy care among 2nd-year GNM students in a selected college.

Materials and Methods: A quantitative approach with a pre-experimental one-group pre-test and post-test design was adopted. The study included 80 2nd-year GNM students selected using the purposive sampling technique. Data were collected using a structured knowledge questionnaire. A planned teaching program on tracheostomy care was administered, and pre-test and post-test knowledge scores were compared using descriptive and inferential statistics.

Results: In the pre-test, 40 (50%) students had average knowledge, 28 (35%) had good knowledge, and 12 (15%) had poor knowledge. In the post-test, 60 (75%) students had good knowledge, 16 (20%) had average knowledge, and 4 (5%) had poor knowledge. The mean knowledge score increased from 12.15 ± 4.68 in the pre-test to 15.50 ± 3.80 in the post-test, with a mean difference of 3.35. The calculated paired t value was 5.02 ($p < 0.001$), indicating a statistically significant improvement.

Conclusion: The planned teaching programme was effective in improving knowledge regarding tracheostomy care among 2nd-year GNM students.

Index Terms—Tracheostomy Care, Planned Teaching Programme, Knowledge, GNM Students, Nursing Education.

I. INTRODUCTION

Tracheostomy is a commonly performed surgical procedure in which an opening is made in the trachea to establish an alternative airway for breathing [1]. It is frequently required for patients with prolonged mechanical ventilation, upper airway obstruction, severe respiratory problems, neurological conditions, and other situations in which maintaining a normal airway is difficult [2]. In critically ill patients, tracheostomy can facilitate airway management, improve patient comfort, assist in the removal of respiratory secretions, and support prolonged ventilatory care [3]. However, patients with a tracheostomy remain at risk of complications such as bleeding, infection, tube obstruction, accidental decannulation, aspiration, and other airway-related problems [4].

Proper tracheostomy care is an essential component of nursing practice because the nurse is closely involved in maintaining the airway and observing the patient for early signs of complications [5]. Routine care includes maintaining tube patency, providing appropriate suctioning, caring for the stoma, maintaining cleanliness, checking the tube and cuff, and ensuring proper fixation of the tracheostomy tube [6]. Nurses also have an important role in educating patients and their caregivers about tracheostomy care and precautions [7]. Inadequate knowledge or improper care may increase the risk of complications and can

adversely affect the safety and recovery of the patient [8].

Nursing students need to develop adequate knowledge and skills before providing care to patients with complex airway procedures such as tracheostomy [9]. During their clinical training, 2nd-year GNM students may come into contact with patients requiring tracheostomy care. Previous studies have reported that nursing students and healthcare professionals may have gaps in their knowledge related to tracheostomy management, including suctioning, tube care, infection prevention, and recognition of complications [10]. These findings indicate the importance of providing nursing students with systematic and structured learning opportunities to strengthen their knowledge and prepare them for clinical practice.

A planned teaching programme provides an organized approach to learning by presenting information systematically through appropriate teaching methods and educational aids [11]. Evidence from previous studies suggests that structured teaching interventions can improve knowledge related to tracheostomy care among nursing students and healthcare professionals [10,11]. Therefore, providing a planned teaching programme may help students understand the principles of tracheostomy care more effectively and improve their preparedness for clinical practice. Based on this need, the present study was undertaken to assess the effectiveness of a planned teaching programme on knowledge regarding tracheostomy care among 2nd-year GNM students in a selected college.

Aim

The aim of the present study was to evaluate the effectiveness of a planned teaching programme on knowledge regarding tracheostomy care among 2nd-year GNM students in a selected college.

Objectives

The objectives of the present study were to assess the knowledge regarding tracheostomy care among 2nd-year GNM students, to evaluate the effectiveness of a planned teaching programme on knowledge regarding tracheostomy care among 2nd-year GNM students, and to determine the association between the level of pre-test knowledge regarding tracheostomy care and

selected socio-demographic variables among 2nd-year GNM students.

II. METHODOLOGY

A quantitative research approach was adopted for the present study, using a pre-experimental one-group pre-test and post-test research design to evaluate the effectiveness of a planned teaching programme on knowledge regarding tracheostomy care among 2nd-year GNM students. The study was conducted in a selected nursing college, and the study population consisted of 2nd-year GNM students. A total of 80 students were included in the study using a purposive sampling technique. Data were collected using a structured knowledge questionnaire consisting of items related to selected socio-demographic characteristics and knowledge regarding tracheostomy care. A pre-test was conducted to assess the baseline knowledge of the students, followed by administration of the planned teaching program on tracheostomy care using appropriate teaching methods and audiovisual aids. After the intervention, a post-test was conducted using the same structured knowledge questionnaire to assess the change in knowledge.

The collected data were organized, tabulated, and analysed using descriptive and inferential statistics. Frequency and percentage were used to describe the socio-demographic characteristics and levels of knowledge, while mean and standard deviation were used to summarize the knowledge scores. The paired t-test was used to determine the difference between pre-test and post-test knowledge scores and to assess the effectiveness of the planned teaching programme. The chi-square test was used to determine the association between the pre-test knowledge level and selected socio-demographic variables. A p value of less than 0.05 was considered statistically significant. Necessary permission was obtained from the concerned authority before conducting the study, and confidentiality and privacy of the participants were maintained throughout the research process.

III. RESULTS

A total of 80 2nd-year GNM students participated in the study. The findings were organized and presented according to the objectives of the study.

Socio-demographic characteristics

Table 1 shows the distribution of 2nd-year GNM students according to selected socio-demographic characteristics. The majority of students, 72 (90%), belonged to the age group of 18–22 years, while 6 (7.5%) were aged 23–27 years and 2 (2.5%) were aged 28–32 years. Regarding religion, the majority, 68 (85%), were Hindu, followed by 7 (8.75%) Christians, 3 (3.75%) belonging to other religions, and 2 (2.5%) Muslims. With respect to gender, 59 (73.75%) were female and 21 (26.25%) were male.

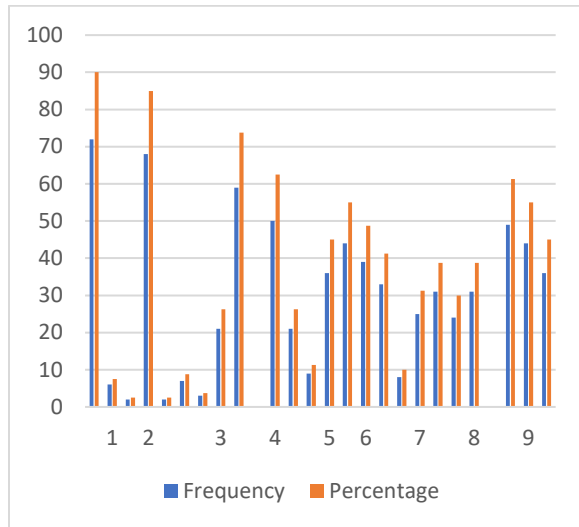
Regarding type of family, 50 (62.5%) students belonged to nuclear families, 21 (26.25%) belonged to joint families, and 9 (11.25%) belonged to extended

families. In relation to clinical experience with tracheostomy care, 44 (55%) students had no previous experience, whereas 36 (45%) had experience. Regarding place of residence, 39 (48.75%) were from urban areas, 33 (41.25%) were from rural areas, and 8 (10%) were from semi-urban areas. Concerning monthly family income, 31 (38.75%) reported an income of more than ₹10,000, 25 (31.25%) reported less than ₹10,000, and 24 (30%) reported above ₹20,000. Regarding participation in related workshops or seminars, 49 (61.25%) had not participated, whereas 31 (38.75%) had participated. More than half of the students, 44 (55%), reported an interest in surgical nursing, while 36 (45%) did not.

Table 1. Distribution of 2nd-year GNM students according to selected socio-demographic characteristics

Sr.No.	Demographic Variables	Category	Frequency	Percentage
1.	Age in years	18-22 years	72	90
		23-27 years	6	7.5
		28-32 years	2	2.5
2.	Religion	Hindu	68	85
		Muslim	2	2.5
		Christian	7	8.75
		Others	3	3.75
3.	Gender	Male	21	26.25
		Female	59	73.75
		Transgender	0	0
4.	Types of family	Nuclear	50	62.5
		Joint	21	26.25
		Extended	9	11.25
5.	Clinical experience with tracheostomy care	Yes	36	45
		No	44	55
6.	Place of residence	Urban	39	48.75
		Rural	33	41.25
		Semi-urban	8	10
7.	Family income per income	Less than 10,000	25	31.25
		More than 10,000	31	38.75
		Above 20,000	24	30
8.	Participation in any related workshop /seminar	Yes	31	38.75
		No	49	61.25
9.	Interest in surgical Nursing	Yes	44	55
		No	36	45

Graph No.1: Distribution of 2nd-year GNM students according to selected socio-demographic characteristics



Pre-test and post-test knowledge level

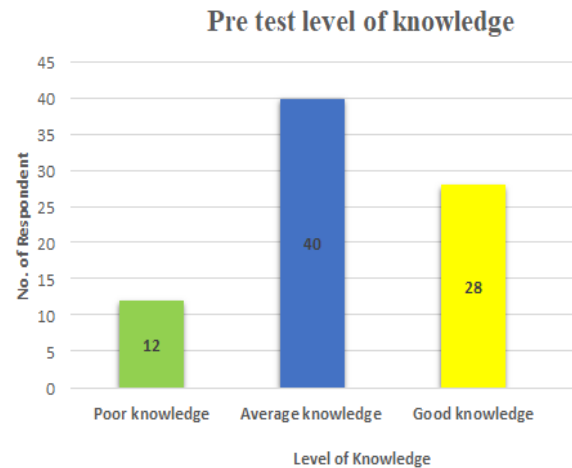
Table 2 presents the distribution of students according to their pre-test and post-test levels of knowledge regarding tracheostomy care. In the pre-test, 40 (50%) students had average knowledge, 28 (35%) had good knowledge, and 12 (15%) had poor knowledge. Following the planned teaching programme, the post-test findings showed that 60 (75%) students had good knowledge, 16 (20%) had average knowledge, and only 4 (5%) had poor knowledge. Thus, an improvement in the level of knowledge was observed following the planned teaching programme.

Graph 2(a) presents the distribution of students according to their pre-test level of knowledge, while Graph 2(b) presents their post-test level of knowledge. The graphs demonstrate a shift from average and poor knowledge in the pre-test towards good knowledge in the post-test.

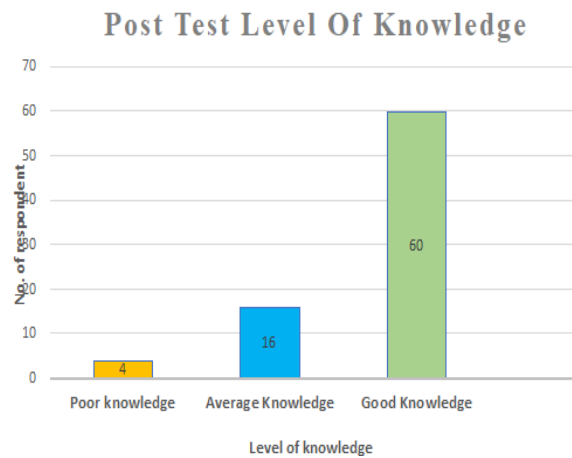
Table 2. Distribution of students according to pre-test and post-test level of knowledge regarding tracheostomy care

Level of knowledge	Pre-test n (%)	Post-test n (%)
Poor	12 (15%)	4 (5%)
Average	40 (50%)	16 (20%)
Good	28 (35%)	60 (75%)
Total	80 (100%)	80 (100%)

Graph 2(a): Distribution of students according to pre-test



Graph 2(b): Distribution of students according to post-test



Comparison of pre-test and post-test knowledge scores Table 3 shows the comparison of pre-test and post-test knowledge scores regarding tracheostomy care. The mean pre-test knowledge score was 12.15 ± 4.68 , whereas the mean post-test knowledge score increased to 15.50 ± 3.80 . The mean difference between the pre-test and post-test scores was 3.35. The calculated paired t value was 5.02, which was statistically significant at $p < 0.001$. This finding indicates that there was a statistically significant improvement in knowledge following the planned teaching programme.

Association between pre-test knowledge and socio-demographic variables

Table 4 shows the association between the pre-test level of knowledge regarding tracheostomy care and

selected socio-demographic variables among 2nd-year GNM students. The findings revealed that there was a statistically significant association between pre-test knowledge level and gender ($\chi^2 = 17.85$, $df = 2$, $p = 0.0001$). A statistically significant association was also found with clinical experience with tracheostomy care ($\chi^2 = 10.71$, $df = 2$, $p = 0.0047$). Similarly, a significant association was observed between pre-test knowledge level and interest in surgical nursing ($\chi^2 = 6.02$, $df = 2$, $p = 0.04$).

However, there was no statistically significant association between pre-test knowledge level and age ($\chi^2 = 2.43$, $df = 4$, $p = 0.65$), religion ($\chi^2 = 6.96$, $df = 6$, $p = 0.324$), type of family ($\chi^2 = 0.47$, $df = 4$, $p = 0.976$), place of residence ($\chi^2 = 2.35$, $df = 4$, $p = 0.67$), family income per month ($\chi^2 = 3.76$, $df = 4$, $p = 0.44$), and participation in related workshop/seminar ($\chi^2 = 3.99$, $df = 2$, $p = 0.136$).

Thus, the pre-test knowledge level regarding tracheostomy care was significantly associated with gender, clinical experience with tracheostomy care, and interest in surgical nursing, whereas no significant association was found with the other selected socio-demographic variables.

Table 3. Comparison of pre-test and post-test knowledge scores regarding tracheostomy care

Knowledge assessment	Mean	SD	Mean difference	Paired t value	p value
Pre-test	12.15	4.68	3.35	5.02	<0.001
Post-test	15.50	3.80	-	-	-

Table 4. Association between pre-test level of knowledge regarding tracheostomy care and selected socio-demographic variables among 2nd-year GNM students

S. No.	Socio-demographic variable	Category	Poor	Average	Good	Total	χ^2 value	df	p value	Significance
1	Age in years	18–23 years	10	36	26	72	2.43	4	0.65	NS
		24–29 years	2	3	1	6				
		30–35 years	0	1	1	2				
2	Religion	Hindu	10	34	24	68	6.96	6	0.324	NS
		Muslim	1	1	0	2				
		Christian	1	2	4	7				
		Others	0	3	0	3				
3	Gender	Male	8	12	1	21	17.85	2	0.0001	S
		Female	4	28	27	59				
		Transgender	0	0	0	0				
4	Type of family	Nuclear	7	25	18	50	0.47	4	0.976	NS
		Joint	4	10	7	21				
		Extended	1	5	3	9				
5	Clinical experience with tracheostomy care	Yes	2	15	19	36	10.71	2	0.0047	S
		No	10	25	9	44				
6	Place of residence	Urban	5	18	16	39	2.35	4	0.67	NS
		Rural	6	17	10	33				
		Semi-urban	1	5	2	8				
7	Family income per month	Less than ₹10,000	5	12	8	25	3.76	4	0.44	NS
		More than ₹10,000	4	16	11	31				
		More than ₹20,000	3	12	9	24				

8	Participation in related workshop/seminar	Yes	2	15	14	31	3.99	2	0.136	NS
		No	10	25	14	49				
9	Interest in surgical nursing	Yes	3	21	20	44	6.02	2	0.04	S
		No	9	19	8	36				

Overall, the findings of the study showed that the planned teaching programme was effective in improving the knowledge regarding tracheostomy care among 2nd-year GNM students. In the pre-test, 12 (15%) students had poor knowledge, 40 (50%) had average knowledge, and 28 (35%) had good knowledge. Following the planned teaching programme, the post-test findings showed an improvement, with 4 (5%) students having poor knowledge, 16 (20%) having average knowledge, and 60 (75%) having good knowledge. The mean knowledge score increased from 12.15 ± 4.68 in the pre-test to 15.50 ± 3.80 in the post-test, with a mean difference of 3.35. The calculated paired t value was 5.02, which was statistically significant at $p < 0.001$. Therefore, the planned teaching programme was found to be effective in enhancing knowledge regarding tracheostomy care among 2nd-year GNM students. The study also revealed a significant association between pre-test knowledge level and gender, clinical experience with tracheostomy care, and interest in surgical nursing, while no significant association was found with age, religion, type of family, place of residence, family income, or participation in related workshops/seminars.

IV. DISCUSSION

The present study evaluated the effectiveness of a planned teaching programme on knowledge regarding tracheostomy care among 80 second-year GNM students. At baseline, half of the participants (50%) demonstrated average knowledge, while 35% had good knowledge and 15% had poor knowledge. This finding indicates that, although some students had an acceptable understanding of tracheostomy care, important knowledge gaps remained before the educational intervention. Similar findings have been reported among nursing students and healthcare professionals, where knowledge regarding

tracheostomy care was frequently found to be moderate rather than consistently adequate.

Following the planned teaching programme, a substantial improvement in knowledge was observed. The proportion of students with good knowledge increased from 35% in the pre-test to 75% in the post-test, while average knowledge decreased from 50% to 20% and poor knowledge decreased from 15% to 5%. The mean knowledge score also increased from 12.15 ± 4.68 before the intervention to 15.50 ± 3.80 after the intervention, with a mean difference of 3.35. The paired t value of 5.02 was statistically significant ($p < 0.001$), demonstrating that the improvement was unlikely to be due to chance. These findings are consistent with previous studies showing that structured teaching, educational interventions, and demonstration-based programmes can improve knowledge regarding tracheostomy care among nursing students and nurses. [12-15]

The improvement observed in the present study may be attributed to the systematic delivery of the planned teaching programme, which provided students with organized information regarding essential aspects of tracheostomy care. Previous educational studies have similarly demonstrated that structured learning approaches can improve knowledge and confidence in tracheostomy management. For example, studies by Sajji and Jose and Kaur reported significant improvements following structured teaching interventions, while Sharma demonstrated improvement following a video-assisted teaching approach. [12,13,15] These findings support the use of planned educational interventions as an important component of undergraduate nursing preparation for patients requiring specialized airway care.

The study also examined factors associated with baseline knowledge. Pre-test knowledge was significantly associated with gender ($\chi^2 = 17.85$, $p = 0.0001$), previous clinical experience with tracheostomy care ($\chi^2 = 10.71$, $p = 0.0047$), and interest in surgical nursing ($\chi^2 = 6.02$, $p = 0.04$). In

contrast, age, religion, type of family, place of residence, family income, and participation in related workshops or seminars were not significantly associated with pre-test knowledge. The significant relationship with clinical experience is particularly relevant because direct exposure to tracheostomy care may provide students with opportunities to connect theoretical information with clinical practice. Similar associations between professional experience and tracheostomy-care knowledge have been reported in previous research. [16]

Overall, the findings demonstrate that second-year GNM students had room for improvement in their baseline knowledge of tracheostomy care and that a planned teaching programme produced a significant improvement in knowledge. The findings support the incorporation of structured and regular tracheostomy-care education into nursing curricula and clinical preparation. Strengthening students' knowledge before or during clinical exposure may help prepare them to provide safer and more appropriate care to patients with tracheostomies.

The study was limited to 80 students from one selected college and used a one-group pre-test/post-test design without a control group. Future studies should include larger samples, multiple settings, control groups, and assessment of practical skills and long-term knowledge retention.

V. CONCLUSION

The planned teaching programme demonstrated a significant and meaningful improvement in knowledge regarding tracheostomy care among 2nd-year GNM students. The increase in post-test knowledge confirms the value of structured education in strengthening students' preparedness for safe tracheostomy care. Integrating such programmes into nursing education may help promote competent, confident, and safer patient care.

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