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ORIGINAL ARTICLE

An Experimental Study to Assess the Effectiveness of Planned Teaching Programme on Knowledge and Practice Regarding Chest Physiotherapy Among Staff Nurses Working in Selected Hospitals of the City

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Abstract

Introduction: The trillions of cells in the body require an abundant and continuous supply of oxygen to carry out their vital functions. We cannot "do without oxygen" for even a little while, as we can without food or water.[1] Our body needs a constant supply of oxygen to support metabolism. Without oxygen we can't live for more than a few minutes. The respiratory system brings oxygen through the airway through the lungs into the alveoli, where it diffuses into the blood for transport to the tissues. This process is so vital, that any difficulty in breathing is experience as a threat to life itself. People with respiratory disorder are often anxious and fearful that they may die, perhaps agonizingly. Chest physiotherapy is a well proven effective therapy for people in improving breathlessness, exercise tolerance and quality of life.[6] *Background:* It is estimated that 235 million people suffer from asthma, more than 200 million people have chronic obstructive pulmonary disease (COPD), 65 million endure moderate-to-severe COPD, 1–6% of the adult population (more than 100 million people) experience sleep disordered breathing, 8.7 million people develop tuberculosis (TB) annually, millions live with pulmonary hypertension and more than 50 million people struggle with occupational lung diseases, totaling more than 1 billion persons suffering from chronic respiratory conditions. Chest physiotherapy is a well proven effective therapy for people in improving breathlessness, exercise tolerance and quality of life. *Objective:* 1) To assess the pre-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group. 2. To assess the post-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group. 3. To compare the pre-test, post-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group. 4. To associate the knowledge and practice score with selected demographic variable in experimental and control group. *Materials and methods:* A experimental study with Quasi Experimental Non-Randomized Control Group Design. is used among 60 staff nurses in selected hospitals of the city. The non-probability purposive random sampling technique is used. The collected data was tabulated and analyzed appropriate statistical methods wherever required. *Results:* The study reveals, in experimental group mean difference of knowledge score was 9.23 and in control group was 0.16. and calculated *t*-value for knowledge is 15.51 which is greater than table value. In experimental group mean difference of practice score was 10.23 and in control group was 0.16. and calculated *t*-value for practice is 16.71 which is higher than table value. Hence, H_0 is rejected and H_1 is accepted. *Conclusion:* Planned teaching programmed on chest physiotherapy among staff nurses in the experimental group was effective and there is significant increase in knowledge and practice regarding chest physiotherapy among staff nurses in experimental group than in control group.

Keywords: Assess; Chest physiotherapy; Knowledge; Practice.

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Introduction

Respiratory problems are widespread. Acute disorders range from minor inconvenience (cold or flu) to more life-threatening problems (asthma, pneumonia and chest trauma). Chronic disabling conditions include COPD, and certain restrictive lung disease. The most significant factor in chronic respiratory illness and lung cancer is cigarette smoking.[1]

Proper medication and comprehensive nursing care helps the individual to come out of the disease progression and overcome their health problem health education to patients and family members about pulmonary rehabilitation will help to improve the quality of life. a regular exercise can improve the pulmonary function.[1]

For their treatment one of the best therapy is used i.e., chest physiotherapy.[2]

Background of the Study

Each year, 4 million people die prematurely from chronic respiratory disease. Infants and young children are particularly susceptible. Nine million children under 5 years of age die annually and lung diseases are the most common causes of these deaths. Pneumonia is the world's leading killer of young children. Asthma is the most common chronic disease, affecting about 14% of children globally and rising. COPD is the fourth leading cause of death worldwide and the numbers are growing. The most common lethal cancer in the world is lung cancer, which kills more than 1.4 million people each year, and the numbers are growing. Each year, 4 million people die prematurely from chronic respiratory disease. Infants and young children are particularly susceptible. Nine million children under 5 years of age die annually and lung diseases are the most common causes of these deaths. Pneumonia is the world's leading killer of young children. Asthma is the most common chronic disease, affecting about 14% of children globally and rising. COPD is the fourth leading cause of death worldwide and the numbers are growing. The most common lethal cancer in the world is lung cancer, which kills more than 1.4 million people each year, and the numbers are growing.[3]

Need of the Study

According to various studies, chest physiotherapy has been shown to be effective in patients who suffer from both acute and chronic respiratory problems. Respiratory rehabilitation attempts to return patients with respiratory disability to as normal life as possible with independence in life activities.[4]

The study reported that there is a lack of up-to-date literature for the nurses to refer. And also found that there is deficit in knowledge and evidenced–based nursing care. Nursing managers are encouraged to identify educational needs in these fields.[5] Chest physiotherapy is one of the most effective procedure to improve respiratory efficacy and to promote lung expansion. But, generally these procedure is neglected by nurses because of lack of knowledge and practice and due to busy schedule. So the researcher felt need to determine knowledge and practice of staff nurses regarding chest physiotherapy and update their knowledge and practice with the help of planned teaching programme and evaluate effectiveness of teaching programme.

Objectives

1. To assess the pre-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group.
2. To assess the post-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group.
3. To compare the pre-test, post-test knowledge and practice score regarding Chest Physiotherapy among staff nurses in experimental and control group.
4. To associate the knowledge and practice score with selected demographic variable in experimental and control group.

Operational Definition

1. *Assess:* In this study assess means, to find out effectiveness of planned teaching programme.
2. *Effectiveness:* In this study effectiveness means, the desired change brought about by the planned teaching program on knowledge and practice regarding chest physiotherapy.
3. *Planned teaching programme:* In this study planned teaching programme means, systematically providing information regarding chest physiotherapy which includes Introduction, anatomy and Physiology, definition, purposes, indication and contraindications, general instructions, techniques and complications of chest physiotherapy.

4. *Knowledge:* In this study knowledge means, responses obtained from the staff nurses regarding their knowledge on chest physiotherapy.
5. *Practice:* In this study, practice means, the techniques adopted by nurses when they performing the clinical activities. Chest physiotherapy i.e., Turning, Coughing, Deep breathing, Postural drainage, Percussion.
6. *Chest physiotherapy:* In this study Chest physiotherapy means an airway clearance technique like Turning, Coughing, Deep breathing, Postural drainage, Percussion, Vibration.
7. *Staff nurses:* In this study staff nurses refers to, GNM, B.Sc nursing and PBBSc nursing qualified registered nurses working in selected hospitals of the city.

Delimitation

This study is delimited to the staff nurses working in selected hospitals of the city.

Hypothesis

Level of significance 0.05

- H_0: there will be no significant difference in the knowledge and practice regarding chest physiotherapy among staff nurses in experimental and control group.
- H_1: there will be significant difference in the knowledge and practice regarding chest physiotherapy among staff nurses in experimental and control group.

Conceptual Framework

The conceptual framework used in this study is Emestine Wiedenbach's Prescription Theory.

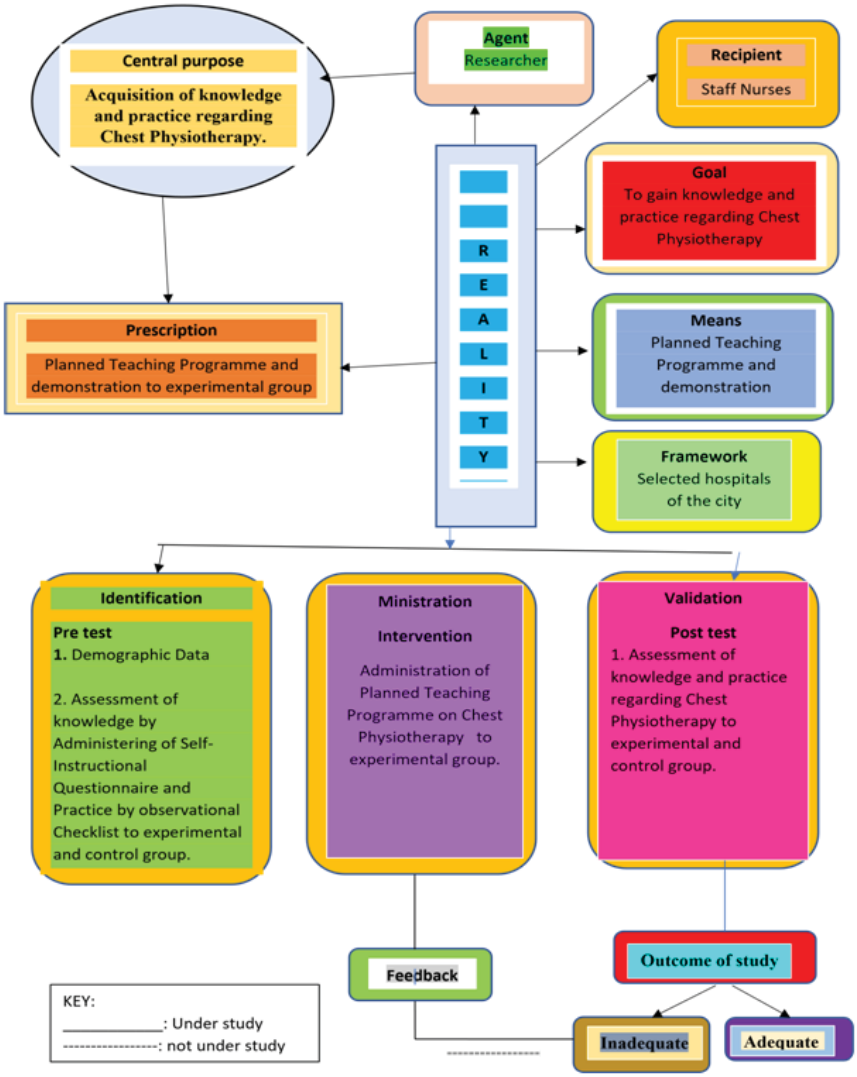


Fig. 1: Conceptual framework based on modified Widenbench'ss Perception theory 1969.

Review of literature

In the present study the literature reviewed has been organized into the following categories:

I. Review of literature related to incidence of respiratory diseases and disorder
II. Review of literature related to effectiveness chest physiotherapy
III. Review of literature related to effective planned teaching programme

Materials and Methods

Research approach: In this study quantitative approach is used.

Research design: In this study the design used Quasi experimental Non-randomized Control Group Design.

Setting of the study: Total 4 hospitals is selected for this study 2 for experimental group sand 2 for control group

Independent Variable

The independent variable in the study is planned teaching programme on knowledge and practice regarding Chest Physiotherapy.

Dependent Variable

The dependent variable in this study is knowledge and practice regarding Chest Physiotherapy among staff nurses.

Demographic variable: In the present study demographic variables includes age, gender, Marital status, Qualification, Experience (in years), Area of working, Monthly income (in rupees).

Population

Target population

It includes the all staff nurses

Accessible population

It comprises of staff nurses working in selected hospitals of the city and are available at the time of data collection and who were fulfilling the inclusive criteria.

Sampling

Sample: 60 registered staff nurses (30 in experimental group and 30 in control group).

Sample size: 60 staff nurses (30 in experimental group and 30 in control group).

Sampling technique: Non probability purposive sampling technique was used.

Sampling criteria

Inclusive criteria

In this study, inclusive criteria was, staff nurses who are:

- Registered as RGNM, B.Sc, PBB.Sc nursing and working in selected hospitals.
- Willing to participate in the study.
- Available at the time of data collection.

Exclusive criteria

In this study exclusive criteria was, staff nurses who are:

- Undergone in-service education programme on chest physiotherapy.
- Not willing to participate in the study.

Description of tools

Section I: Demographic Variables.

Section II: Semi structured knowledge questionnaire.

Section III: The investigator constructed checklist to identify the influence of participants clinical practice regarding chest physiotherapy.

Validity

Content and construct validity of tool was determined by 22 experts including medical surgical nursing subjects experts, cardiologist and statistician etc.

Reliability

Karl Pearson correlation coefficient formula was used. The correlation coefficient '*r*' of the questionnaire was 0.88, which is more than 0.8. hence the questionnaire was found to be reliable. And the checklist by using Interator method the reliability of the tool was 0.89, which is more than 0.8 and hence the tool was reliable.

Pilot study

Pilot study was conducted a period of 10 days.

The pilot study was feasible in terms of time, money, material and resources.

Data collection

Permission was obtained from the Higher Authorities of the Hospitals. Purposive sampling done to select the samples for both, experimental group and control group from different hospitals. Before collecting the data, self-introduction was done by the investigator and the purpose of the study was explained. Consent of the samples was taken Pre-test on knowledge and practice was assessed in both experimental and control group. Same day planned teaching programme and demonstration on chest physiotherapy was given to experimental group. • Post-test was conducted on 7th day in both experimental and control group knowledge was assessed by questionnaire and practice was assessed by checklist.

Results

Section I: Description on Demographic Variable of Staff Nurses in Experimental and Control Group (Table 1).

Section II: Description on Pre-test Knowledge and Practice Score Regarding Chest Physiotherapy Among Staff Nurses in Experimental Group and Control Group (Table 2A, B).

Table 1: Table showing percentage wise distribution of staff nurses according to their demographic characteristics.

n = 30

Demographic Data	Experimental Group		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Age in years				
21–30 yrs	23	76.7	20	66.7
31–40 yrs	5	16.7	6	20
41–50 yrs	1	3.3	4	13.3
>50 yrs	1	3.3	0	0
Gender				
Male	5	16.7	2	6.7
Female	25	83.3	28	93.3
Marital Status				
Married	16	53.3	9	30
Unmarried	14	46.7	17	56.7
Divorced	0	0	4	13.3
Separated	0	0	0	0
Widow/widower	0	0	0	0
Qualifications				
RGNM/GNM	21	70	21	70
BBSc Nursing/BSc Nursing	8	26.7	9	30
PBBSc/PCBBSc Nursing	1	3.3	0	0
Experience(years)				
<1 yr	6	20	10	33.3
1–5 yrs	13	43.3	11	36.7
6–10 yrs	8	26.7	4	13.3
>10 yrs	3	10	5	16.7
Area of working				
Medicine Ward	12	40	6	20
Surgical Ward	4	13.3	5	16.7
Critical Care Unit	13	43.3	12	40
Other	1	3.3	7	23.3
Monthly income (Rs)				
<10000 Rs	9	30	12	40
10001–15000 Rs	16	53.3	16	53.3
15001–20000 Rs	2	6.7	2	6.7
>20000 Rs	3	10	0	0

Section III: Description on Post-Test Knowledge and Practice Score Regarding Chest Physiotheraphy among Staff Nurses in Experimental and Control Group (Table 3A, B).

Section IV: Description on the Comparison of Pre-test and Post-Test Knowledge and Practice Score Regarding Chest Physiotheraphy among Staff Nurses Working in Selected Hospitals of the City (Table 4A, B).

The table 4(A) shows the comparison of difference in the knowledge score of experimental and control group in the Pre-test and post-test of the staff nurses in selected hospitals of the city. Mean and standard deviation values are compared and student's unpaired '*t*' is applied at 5% level of significance. The tabulated value for n = (30-1) + (30-1) i.e 58 degrees of freedom was 2.00, the calculated '*t*' value is 15.51 which is much higher than the tabulated value at 5% level of significance which is statistically acceptable level of significance. In addition the calculated '*p*' value was < 0.05 which is ideal for any participants. Hence it is statistically interpreted that the research hypothesis H_1 is accepted. Thus, the planned teaching programme regarding chest physiotherapy was effective in the staff nurses in the experimental group, and the level of knowledge is significantly increased in the experimental group as compared to the control group.

The table 4(B) shows the comparison of difference in the practice score of experimental and control group in the pre-test and post-test of the staff nurses in selected hospitals of the city. Mean and standard deviation values are compared and student's unpaired '*t*' is applied at 5% level of significance. The tabulated value for n = (30-1) + (30-1) i.e 58 degrees of freedom was 2.00, the calculated '*t*' value is 16.71 which is much higher than the tabulated value at 5% level of significance which is statistically acceptable level of significance. In addition, the calculated '*p*' value was < 0.05 which is ideal for any participants. Hence it is statistically interpreted that the research hypothesis H_1 is accepted. Thus, the planned teaching programme regarding chest physiotherapy was effective in the staff nurses in the experimental group, and the level of practice is significantly increased in the experimental group as compared to the control group.

Section V: Description on Association of Post-test Knowledge and Practice Score with Selected Demographic Variable in Experimental and Control Group.

The analysis shows that none of the demographic variables were associated with knowledge score and practice score.

Table 2(A): Showing distribution of pre-test knowledge score of the regarding chest physiotherapy in experimental group and control group.

n = 30

Level of knowledge score pre-test	Experimental Group		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Poor (0–5)	2	6.67	1	3.33
Average (6–10)	21	70	24	80
Good (11–15)	7	23.33	5	16.67
Very Good (16–20)	0	0	0	0
Excellent (21–25)	0	0	0	0
Mean ± SD	8.50 ± 2.11		8.76 ± 1.77	
Mean %	34 ± 8.45		35.06 ± 7.09	
Range	5 to 12		4 to 12	

Table 2(B): Showing distribution of pre-test practice score of the staff nurses regarding chest physiotherapy in experimental group and control group

n=30 n=30

Level of practice score pre-test	Experimental Group		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Poor (0–5)	16	53.33	19	63.33
Fair (6–10)	12	40	10	33.33
Good (11–15)	2	6.67	1	3.33
Very good (16–20)	0	0	0	0
Mean ± SD	4.83 ± 2.19		4.43 ± 2.19	
Mean %	24.16 ± 10.99		22.16 ± 10.96	

Table 3(A): Table showing distribution of post-test knowledge score regarding chest physiotherapy in experimental group and control group.

n = 30

Level of knowledge score post-test	Experimental Group		Control Group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage (%)
Poor (0–5)	0	0	1	3.33
Average (6–10)	0	0	28	93.33
Good (11–15)	6	20	1	3.33
Very-Good (16–20)	19	63.33	0	0
Excellent (21–25)	5	16.67	0	0
Mean ± SD	17.73 ± 2.82		8.60 ± 1.52	
Mean %	67.20 ± 8.67		34.40 ± 6.08	

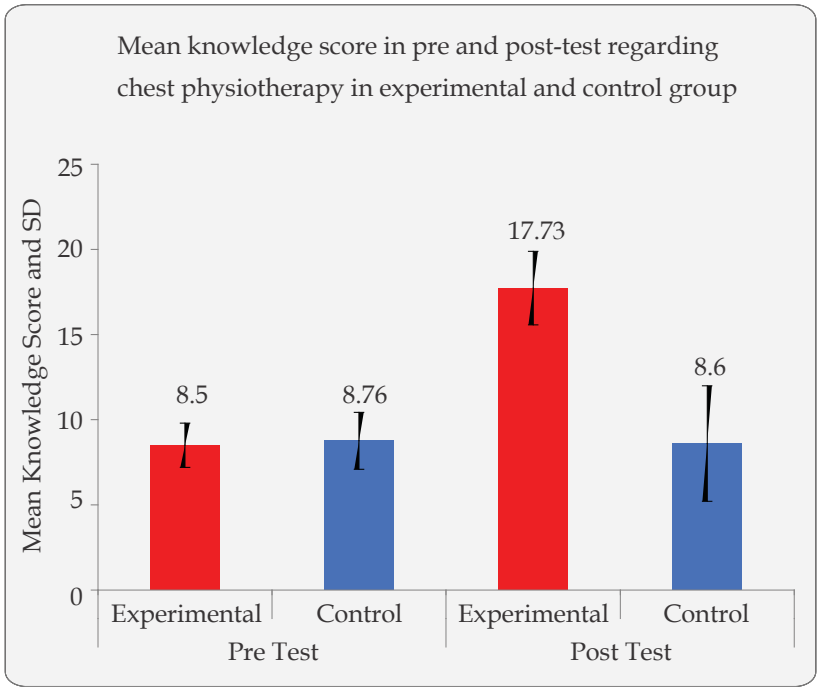
Table 3(B): Table showing distribution of post-test practice score regarding chest physiotherapy in experimental group and control group

n = 30

level of practice score post-test	Experimental group		Control group	
	Frequency (n)	Percentage (%)	Frequency (n)	Percentage(%)
Poor (0–5)	0	0	22	73.33
Fair (6–10)	1	3.33	8	26.67
Good (11–15)	15	50	0	0
Very good (16–20)	14	46.67	0	0
Mean ± SD	15.06 ± 2.13		4.60 ± 1.83	
Mean %	75.33 ± 10.66		23 ± 9.15	

Table 4(A): Table showing the comparison of pre-test and post-test of knowledge score of staff nurses in experimental group and control group

Group	Test	Mean	SD	Mean Difference
Experimental group (n=30)	Pre-test	8.50	2.11	9.23 ± 3
	Post-test	17.73	2.82	
Control group (n=30)	Pre-test	8.76	1.77	0.16 ± 1.41
	Post-test	8.60	1. 52	



Graph 1:

Table 4(B): Table showing the comparison of mean and standard deviation (SD) of knowledge score of staff nurses in experimental group and control group

n = 30

Groups	Mean difference	SD	Calculated t-value	df	Table Value	P value
Experimental group	9.23	3.00	15.51	58	2.00	0.0001, S
Control group	0.16	1.41				

S- Significant

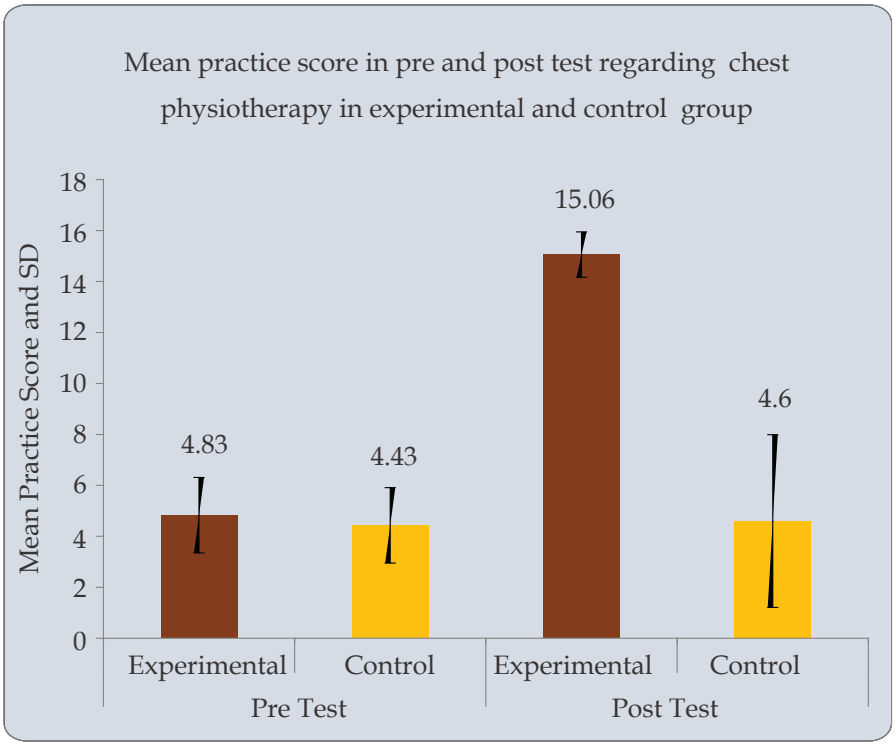
Table 4(C): Table showing the comparison of pre-test and post-test of practice score of staff nurses in experimental group and control group

Group	Test	Mean	SD	Mean Difference
Experimental group (n=30)	Pre-test	4.83	2.19	10.23 ± 3.15
	Post-test	15.06	2.13	
Control group (n=30)	Pre-test	4.43	2.19	0.16 ± 0.94
	Post-test	4.60	1.83	

Table 4(D): Table showing the comparison of mean and standard deviation (SD) of practice score of staff nurses in experimental group and control group n =30

Groups	Mean difference	SD	Calculated t value	df	Table Value	P value
Experimental group	10.23	3.15	16.71	58	2.00	0.0001, S
Control group	0.16	0.94				

Graph 2:



Discussion

Anitha Thankachan (2009) conducted a study to assess the effectiveness of self instructional module on knowledge and practice regarding chest physiotherapy among staff nurses working in post operative wards in selected hospitals at Bangalore. Demographic characteristic reveals that the highest percentage (69%) of the staff nurses were in the age group of 21–25 years, were females (74%) were having B.Sc. nursing degree (80%). Highest percentage were having 3–4 yrs years of experience (69%), were working emergency unit (3%), ICU (Intensive Care Unit) (20%), and general ward (29%) and other wards (48%) and did not attend inservice program (93%). The overall pre-test mean

score 22.06 + 1.92 which is 48% whereas in the post-test the mean score (30.04 + 2.82) which is 65% of the total score with an overall difference of 17% of pre-test score reveals good knowledge. Highly significant difference found between the pre-test and post-test knowledge score when compared with the demographic variables of staff nuses ($p < 0.05$). Indicated that self instructional module was effective.[6]

Above study reveals that knowledge of staff nurses was poor in pre-test. In present study also pre-test knowledge and practice score of staff nurses regarding chest physiotherapy was poor but after administration of planned teaching programme and demonstration on knowledge and practice score of staff nurses was increased.

Conclusion

After the detailed analysis, this study leads to the following conclusion:

In post-test the mean difference of knowledge score for experimental group is 9.23 ± 3 and the mean difference of control group is 0.16 ± 1.41. The calculated '*t*' value is 15.51 which is higher than table value. The mean difference of practice score for experimental group was 10.23 and control group was 0.16. The calculated '*t*' value was 16.71 which is higher than table value. Thus H_0 was rejected and H_1 accepted. This indicate that planned teaching programme was effective.

Thus it was concluded that planned teaching programme on knowledge and practice regarding chest physiotherapy among staff nurses in selected hospitals of the city was found to be effective as a teaching strategy. Hence, based on the above cited findings, it was concluded undoubtedly that the written prepared material by the investigator in the form of planned teaching programme helped the staff nurses to increase knowledge and practice regarding chest physiotherapy.

Implication of the Study

The findings of this study have implications for nursing practice, nursing education, nursing administration, and nursing research.

Nursing Practice

- Health care services are an essential component of community health care nursing, the role of the personnel is to conduct and participate in national programme to increase knowledge related to chest physiotherapy among staff nurses.
- It will also help the nurses to keep update knowledge regarding various aspects of chest physiotherapy.
- When professional liability is recognized, it defines the parameters of the profession and the standards of professional conduct. Nurses should therefore enhance their professional knowledge.
- The planned teaching programme can be used for imparting knowledge and practice regarding chest physiotherapy to health team members.
- Planned teaching programme would serve as a ready reference material for the health team members. The information is particularly useful for the nurses for educating the relatives and other health team members the benefits of proper apply the chest physiotherapy.

Nursing Education

- Nurse who are up to date with the knowledge and practice regarding chest physiotherapy are the better person to impart their knowledge and practice to the nursing student which will ultimately decrease the mortality related to respiratory diseases.
- Now days, much emphasis is given on comprehensive care in the nursing curriculum. So this study can be used by nursing teachers as an informative illustration for nursing students.
- Planned teaching programme could help educators to use it as a tool for teaching.
- Students must be given clinical field assignment, in which they must be given opportunity to interact with people and create awareness regarding chest physiotherapy.
- Teacher training programs must also include the topic of chest physiotherapy.

Nursing Administration

- Findings of the study can be used by the Nursing Administrator in creating policies and plans for providing education to the staff nurses and health professionals.
- It would help the nursing administrators to be planned and organized in giving

continuing education to the nurses and to others for applying and updating the knowledge regarding chest physiotherapy.

- In-service education must be conducted for the nurses to create awareness regarding chest physiotherapy.

Nursing Research

- The findings of the study have added to the existing body of the knowledge and practice in relation with chest physiotherapy which will enhance the knowledge and practice and would help to keep it updated.
- Other researchers may utilize the suggestions and recommendations for conducting further study.
- The tool and technique used has added to the body of knowledge and practice and can be used for further references.

Limitation

- The study was conducted only on staff nurses of selected hospitals.
- The sample size was small to generalize the findings of the study.
- The study was limited to measure the knowledge and practice of staff nurses in selected hospitals of the city.
- The tool for data collection was prepared by investigator herself. Standardized tool was not used.

Recommendations

- A similar study can be replicated on a larger population for a generalization of findings.
- A comparative study can be done to assess the knowledge on chest physiotherapy among staff nurses in community and in hospital setting.
- A descriptive study can be carried out to assess the attitude of staff nurses on chest physiotherapy.
- A similar study can be carried out to evaluate the effectiveness of video assisted self instructional module on chest physiotherapy.

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