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# A Pre-Experimental Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding COPD and Pulmonary Rehabilitation among COPD Patients in Selected Hospitals of District Hoshiarpur, Punjab

**Richa Sharma[1], Dr. Parampal Kaur Cheema[2], Harpreet Kaur[3]**

[1]M. Sc (N) Student, Swami Premanand College of Nursing, Mukerian

[2]Professor cum Principal, Swami Premanand College of Nursing, Mukerian

[3]Lecturer, Swami Premanand College of Nursing, Mukerian

**Abstract:** ***Introduction: COPD or chronic obstructive pulmonary disease is a chronic ongoing progressive disease of the lower respiratory tract in the lungs. COPD result of increasing airway resistance secondary to bronchial mucosal edema or smooth muscle contraction. It affects the movements of air in and out of lungs. Pulmonary Rehabilitation is an exercise and education program that can greatly benefit those with lung disease such as asthma, emphysema and chronic bronchitis. Methodology: Present study aims to assess the effectiveness of structured teaching programme on knowledge regarding COPD and pulmonary rehabilitation among COPD patients in selected hospitals of District Hoshiarpur, Punjab. Quantitative approach with pre-experimental study was adopted to achieve objectives in this study. A sample of 60 COPD patients was selected using consecutive sampling technique. Structured knowledge was used to collect the data. Pre-test data was collected and structured teaching programme was administered to COPD patients and post-test data was collected. The data was analyzed using descriptive and inferential statistics. Results: Results of study showed that mean pretest knowledge score was 13.0±3.974 lower than the mean posttest knowledge score 22.2±1.941 with mean difference of 9.2 and paired t value (t=18.23 and p=0.001) was highly significant at p<0.05. Findings indicated that structured teaching programme was effective in improving the knowledge regarding COPD and pulmonary rehabilitation among COPD patients. Conclusion: The findings of the study concluded that patients were having average knowledge regarding and structured teaching programme was effective in improving the knowledge regarding COPD and pulmonary rehabilitation among chronic obstructive pulmonary disease patients. Study findings suggests that educational programmes can be implemented to enhance their knowledge which can help them to prevent from complications of COPD and maintain the functional activity of the lungs among COPD patients.***

**Keywords:** COPD, breathing problems, pulmonary exercise, lungs

## 1. Introduction

COPD is a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and is associated with an abnormal inflammatory response of the lungs to noxious particles of gases, primarily caused by cigarette smoking. COPD is caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer and a variety of other conditions. Symptoms include breathing difficulty, cough, mucus (sputum) production and wheezing.1

The most important effects of Pulmonary rehabilitation in COPD patients are: Increasing the exertion capacity (exercise tolerance), the health status and health related quality of life. Reducing dyspnoea, anxiety, depression and disability. Decreasing the number of hospital admissions, hospital visits due to acute exacerbations and use of medical services. Decreasing the costs of health care paid by community and lengths of hospital admissions for respiratory conditions.2

According to WHO (World heath organization) in India 2018 there are 14, 90000 chronic cases of COPD in the age group of 30 years and above[3]. Although cigarette smoking is the primary cause of COPD. Chronic Obstructive Pulmonary Disease (COPD) is the third leading cause of death worldwide, causing 3.23 million deaths in 2019. Over 80% of these deaths occurred in low-and middle-income countries (LMIC). COPD causes persistent and progressive respiratory symptoms, including difficulty in breathing, cough and/or phlegm production. Environmental exposure to tobacco smoke, indoor air pollution, and occupational dusts, fumes, and chemicals are important risk factors for COPD.3

Pulmonary rehabilitation is a therapeutic process, which entails taking a holistic approach to the welfare of the patient with chronic respiratory illness-- most commonly chronic obstructive pulmonary disease (COPD). Pulmonary rehabilitation is considered essential throughout the lifetime management of patients with symptomatic chronic respiratory disease. It requires the coordinated action of a multidisciplinary healthcare team in order to deliver an individualized rehabilitation programme to best effect--incorporating multiple modalities, such as advice on smoking cessation, exercise training and patient self-management education.4


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Role of medical health care provider in caring with COPD is on large extent with depending on her area of work. Medical intervention are limited, nurses have a huge role in promoting healthy behavior in patients with COPD. They can provide advice and support to patients and their families at same time. Educate and encourage patients to manage their disease proactively because change in lung function in response to intervention is minimal Nurses should be assessing response in terms of improvements in patients to manage their daily life.5

The impact of pulmonary rehabilitation is to control and alleviate as much as possible the symptoms and path-physiologic complications of respiratory impairment and teach the patient how to achieve optimal capability for carrying out activity of daily living. Pulmonary rehabilitation programs include prevention of early recognition and treatment of morbidities inpatient, outpatient and extended care of patients with chronic respiratory illness. The anticipated patient outcomes of a comprehensive pulmonary rehabilitation program include increased independence and improve quality of life as well as fewer hospitalizations or shorter hospitalization time.6

### 1.1 Problem Statement

A pre-experimental study to assess the effectiveness of structured teaching programme on knowledge regarding COPD and pulmonary rehabilitation among COPD patients in selected hospitals of District Hoshiarpur, Punjab.

### 1.2 Objectives

- To assess the pre test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients.
- To assess the post test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients.
- To compare the pre test and post test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients.
- To find out the association of pre test and post test level of knowledge regarding COPD and pulmonary rehabilitation with selected demographic variables among COPD patients.

### 1.3 Hypothesis

**H1:** There will be statistically significant difference between the pre-test and post-test level of knowledge regarding COPD and pulmonary rehabilitation at $p<0.05$ level of significance.

## 2. Materials and Methods

### Research Approach

A Quantitative research approach was used to accomplish the objectives of the study.

### Research Design

Pre-experimental one-group pre test-post test design was used in present study.

### Research setting

The study was conducted in Civil hospital, Dasuya, Civil hospital, Mukerian, and S. P. N (ch.) hospital Mukerian Punjab.

### Target population

The target population of the study was COPD patients of selected hospitals of District Hoshiarpur, Punjab.

### Sample size

The sample for the present study was 60 COPD patients who meet the inclusion criteria of the study.

### Sampling technique

Consecutive sampling technique was used to select the sample from selected hospitals of District Hoshiarpur, Punjab.

### Inclusion criteria:

- Patients who are diagnosed with COPD before 3 months
- Patients who are co-operative.

### Exclusion criteria:

- Patients who were unconscious or incubated.
- Patients who are critically ill.

### Description of tool

**Part I: Socio-Demographic variables:** This part consisted of 8 items which includes age, Age, gender, education, occupation, Marital status, history of smoking, type of family, duration of disease and source of information.

**Part II:** Structured knowledge questionnaire. It includes 30 questions regarding COPD and pulmonary rehabilitation.

Criterion Measures

| Level of Knowledge | Score |
|---|---|
| Poor | ≤ 10 |
| Average | 11-20 |
| Good | 21-30 |

### Ethical Considerations

A written approval was taken from the research and ethical committee of S. P. N. College of Nursing, Mukerian for conducting the study. Written permission was also obtained from Senior Medical Officer of Civil Hospital, Dasuya, Civil Hospital, Mukerian and Administrator of S. P. N (ch.) Hospital, Mukerian, Punjab.


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**Reliability of tool**

Reliability of tool was computed by applying split half method and was calculated by Karl pearson‟s correlation coefficient. The reliability of tool was found to be 0.78. Hence tool was reliable.

## 3. Results

**Table 1:** Distribution of Demographic Variables of samples, N=60

| S. No | Demographic Variables | Frequency (f) | Percentage (%) |
|---|---|---|---|
| 1 | **Age in years** | | |
| | a) 31-35 | 3 | 5 |
| | b) 36-40 | 10 | 16.7 |
| | c) 41-45 | 20 | 33.3 |
| | d) Above 45 | 27 | 45 |
| 2 | **Gender** | | |
| | a) Male | 45 | 75 |
| | b) Female | 15 | 25 |
| 3 | **Marital status** | | |
| | a) Unmarried | 4 | 6.7 |
| | b) Married | 53 | 88.3 |
| | c) Divorced | 3 | 5 |
| | d) Widower | 0 | 0 |
| 4 | **Education** | | |
| | a) Illiterate | 17 | 28.3 |
| | b) Primary | 11 | 18.3 |
| | c) Middle | 10 | 16.7 |
| | d) Matric | 8 | 13.3 |
| | e) Senior secondary | 11 | 18.3 |
| | f) Graduation/above | 3 | 5 |
| 5 | **Occupation** | | |
| | a) Government service | 4 | 6.7 |
| | b) Private service | 11 | 18.3 |
| | c) Labour | 13 | 21.7 |
| | d) Home maker | 7 | 11.7 |
| | e) Self employed | 16 | 26.7 |
| | f) Unemployed | 9 | 15 |
| 6 | **Family income (Rs)** | | |
| | a) < 5000 | 16 | 26.7 |
| | b) 5001-10000 | 12 | 20 |
| | c) 10001-15000 | 20 | 33.3 |
| | d) >15000 | 12 | 20 |
| 7 | **Type of family** | | |
| | a) Nuclear | 29 | 48.3 |
| | b) Joint | 31 | 51.7 |
| 8 | **Source of information** | | |
| | a) Health personnel | 32 | 53.3 |
| | b) Newspaper/magazines | 13 | 21.7 |
| | c) Family/friends/relatives | 9 | 15 |
| | d) T. V/Internet | 6 | 10 |
| | e) Personal experience | 0 | 0 |
| 9 | **Duration of disease** | | |
| | a) 0-5 years | 9 | 15 |
| | b) 6-10 years | 24 | 40 |
| | c) 11-15 years | 19 | 31.7 |
| | d) 16-20 years | 8 | 13.3 |
| 10 | **History of smoking** | | |
| | a) 0-4 years | 19 | 31.7 |
| | b) 4-8 years | 19 | 31.7 |
| | c) 8-12 years | 12 | 20 |
| | d) 12-18 years | 10 | 16.6 |

Data on table 1 depicts the demographic variables of COPD patients showed that according to their age majority 27 (45%) were in above 45 years of age followed by 20 (33.3%) were in 41-45 years of age, 10 (16.7%) were in 36-40 years of age and 3 (5%) were in 31-35 years of age. Regarding majority 45 (75%) were male patients and 15 (25%) were female patients. As per marital status majority 53 (88.3%) were married followed by 4 (6.7%) were unmarried and 3 (5%) were divorced. With regard to their education majority 17 (28.3%) were illiterate followed by 11 (18.3%) had primary education, 11 (18.3%) had senior secondary education, 10 (16.7%) had middle education, 8 (13.3%) had up to matric or secondary education and 3 (5%) had completed graduation and above. According to their occupation majority 16 (26.7%) are self employed followed by 13 (21.7%) are working as labour, 11 (18.3%) are working in private service, 9 (15%) are unemployed, 7 (11.7%) are home maker and 4 (6.7%) are working in government service. Regarding family income 20 (33.3%) had income of Rs.10001-15000, 16 (26.7%) had below Rs.500, 12 (20%) had Rs.5001-10000 and 12 (20%) had income of above Rs.15000 per month. As per type of family majority 31 (51.7%) were living in joint family and 29 (48.3%) were living in nuclear family. With regard to source of information majority 32 (53.3%) had information from health personnel, 13 (21.7%) had from newspaper and magazines, 9 (15%) had from family, friends and relatives and 6 (10%) had information from television and internet. According to their duration of disease majority 24 (40%) had COPD for past 5-10 years, 19 (31.7%) for past 11-15 years, 9 (15%) had for past 0-5 years and 8 (13.3%) had for past 16-20 years. As per history of smoking majority 19 (31.7%) had smoking for 0-4 years, 19 (31.7%) had smoking for 4-8 years, 12 (20%) had smoking for 8-12 years and 10 (16.6%) had smoking for 12-18 years,

**Table 2:** Pre-test and post-test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients, N=60

| Level of Knowledge | Pre-test | | Post-test | |
|---|---|---|---|---|
| | f | % | f | % |
| Poor knowledge (21-30) | 18 | 30 | 0 | 0 |
| Average knowledge (11-20) | 37 | 61.7 | 12 | 20 |
| Good knowledge (0-10) | 5 | 8.3 | 48 | 80 |

Results showed that in pretest majority 37 (61.7%) had average knowledge, 18 (30%) had poor knowledge and 5 (8.3%) had good knowledge where as in post-test majority 48 (80%) had good knowledge and 12 (20%) had average knowledge regarding COPD and pulmonary rehabilitation.


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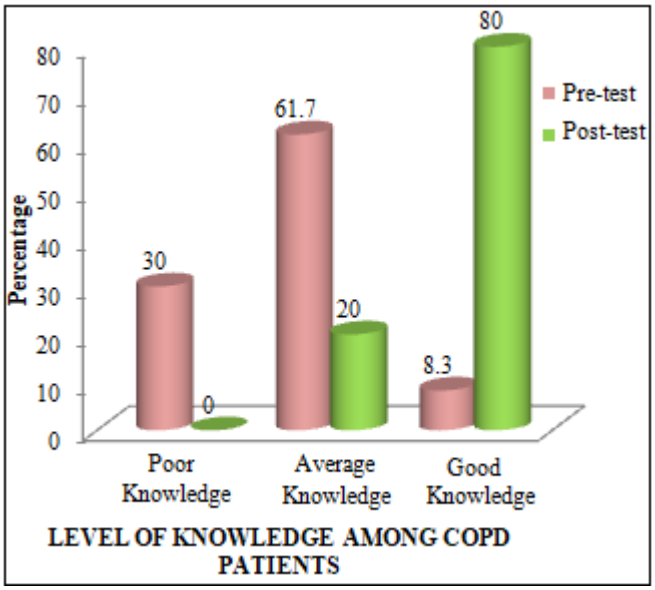


**Figure 1:** Distribution of pre-test and post-test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients

**Table 3:** Comparison of pre-test and post-test level of knowledge regarding COPD and pulmonary rehabilitation among COPD patients, N=60

| Comparison | Mean | SD | Mean D | t value | df | P value |
|---|---|---|---|---|---|---|
| Pre-test | 13.0 | 3.974 | 9.2 | 18.23 | 59 | 0.001* |
| Post-test | 22.2 | 1.941 | | | | |

***p<0.05 level of significance**

Findings of study revealed that mean pretest knowledge score was 13.0±3.974 lower than the mean posttest knowledge score 22.2±1.941 with mean difference of 9.2 and paired t value (t=18.23 and p=0.001) was highly significant at p<0.05. Findings indicated that structured teaching programme was effective in improving the knowledge regarding COPD and pulmonary rehabilitation among COPD patients.

**Table 4:** Association between pre-test knowledge score with selected demographic variables among COPD patients, N=60

| Demographic Variables | N | Mean | SD | df | Test Value |
|---|---|---|---|---|---|
| **Age in years** | | | | | |
| a) 21-25 | 3 | 10.33 | 0.57 | 3 | $F=0.574^{NS}$ |
| b) 26-30 | 10 | 13.8 | 5.05 | | |
| c) 31-35 | 20 | 13.05 | 4.33 | | |
| d) 36-40 | 27 | 12.96 | 2.49 | | |
| **Gender** | | | | | |
| a) Male | 45 | 13.09 | 4.113 | 58 | $t=0.298^{NS}$ |
| b) Female | 15 | 12.73 | 3.57 | | |
| **Marital status** | | | | | |
| a) Unmarried | 4 | 11.5 | 4.43 | 2 | $F=1.080^{NS}$ |
| b) Married | 53 | 13.26 | 4 | | |
| c) Divorced | 3 | 10.33 | 1.52 | | |
| d) Widower | - - | - - | - - | | |
| **Education** | | | | | |
| a) Illiterate | 17 | 14.47 | 5.58 | 5 | $F=1.034^{NS}$ |
| b) Primary | 11 | 12.18 | 2.45 | | |
| c) Middle | 10 | 13.3 | 2.79 | | |
| d) Matric | 8 | 13.37 | 3.66 | | |
| e) Senior secondary | 11 | 11.55 | 2.38 | | |
| f) Graduation/above | 3 | 11 | 1.73 | | |
| **Occupation** | | | | | |
| a) Government service | 4 | 10.5 | 2.64 | 5 | $F=0.549^{NS}$ |
| b) Private service | 11 | 13.82 | 4.49 | | |
| c) Labor | 13 | 12.85 | 3.5 | | |
| d) Home maker | 7 | 13.43 | 4.39 | | |
| e) Self employed | 16 | 13.5 | 4.16 | | |
| f) Unemployed | 9 | 12.11 | 4.19 | | |
| **Family income (Rs)** | | | | | |
| a) < 5000 | 16 | 14 | 4.22 | 3 | $F=0.456^{NS}$ |
| b) 5001-10000 | 12 | 12.75 | 4.65 | | |
| c) 10001-15000 | 20 | 12.7 | 2.45 | | |
| d) >15000 | 12 | 12.42 | 4.1 | | |
| **Type of family** | | | | | |
| a) Nuclear | 29 | 13.38 | 4.28 | 58 | $t=0.712^{NS}$ |
| b) Joint | 31 | 12.65 | 2.69 | | |
| **Source of information** | | | | | |
| a) Health personnel | 32 | 12.81 | 4.06 | 3 | $F=1.408^{NS}$ |
| b) Newspaper/magazines | 13 | 13.08 | 3.53 | | |
| c) Family/friends/relatives | 9 | 11.67 | 4.18 | | |
| d) T. V/Internet | 6 | 15.83 | 3.97 | | |
| e) Personal experience | 0 | - - | - - | | |
| **Duration of disease** | | | | | |
| a) 0-5 years | 9 | 13.89 | 5.37 | 3 | $F=0.650^{NS}$ |
| b) 6-10 years | 24 | 13.33 | 3.47 | | |
| c) 11-15 years | 19 | 12.84 | 4.29 | | |
| d) 16-20 years | 8 | 11.38 | 2.92 | | |
| **History of smoking** | | | | | |
| a) 0-4 years | 19 | 13.21 | 3.809 | 3 | $F=1.004^{NS}$ |
| b) 4-8 years | 19 | 13.26 | 3.856 | | |
| c) 8-12 years | 12 | 11.33 | 3.312 | | |
| d) 12-18 years | 10 | 14.1 | 5.109 | | |

***p value < 0.05 level of significance**
**NS-Non Significant**

Result showed there was no significant association found between pre-test knowledge score with selected demographic variables of COPD patients.

**Table 5:** Association between post-test knowledge score with selected demographic variables among COPD patients, N=60

| *Demographic Variables* | *N* | *Mean* | *SD* | *df* | *Test value* |
|---|---|---|---|---|---|
| **Age in years** | | | | | |
| a) 21-25 | 3 | 23 | 1 | 3 | $F=2.790^{NS}$ |
| b) 26-30 | 10 | 22.2 | 2.48 | | |
| c) 31-35 | 20 | 23.05 | 2.03 | | |
| d) 36-40 | 27 | 21.52 | 1.47 | | |
| **Gender** | | | | | |
| a) Male | 45 | 22.31 | 1.86 | 58 | $t=0.650^{NS}$ |
| b) Female | 15 | 21.93 | 2.18 | | |
| **Marital status** | | | | | |
| a) Unmarried | 4 | 21.25 | 1.7 | 2 | $F=0.911^{NS}$ |
| b) Married | 53 | 22.34 | 1.97 | | |
| c) Divorced | 3 | 21.33 | 1.52 | | |
| d) Widower | - - | - - | - - | | |
| **Education** | | | | | |
| a) Illiterate | 17 | 22.06 | 1.91 | 5 | $F=1.153^{NS}$ |
| b) Primary | 11 | 22.91 | 2.02 | | |
| c) Middle | 10 | 21.5 | 1.43 | | |
| d) Matric | 8 | 22.25 | 2.25 | | |
| e) Senior secondary | 11 | 21.91 | 2.02 | | |
| f) Graduation/above | 3 | 24 | 1.73 | | |
| **Occupation** | | | | | |
| a) Government service | 4 | 21.5 | 3 | 5 | $F=1.077^{NS}$ |
| b) Private service | 11 | 21.91 | 1.64 | | |


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| | | | | | |
|---|---|---|---|---|---|
| c) Labor | 13 | 22.15 | 1.72 | | |
| d) Home maker | 7 | 23.29 | 2.05 | | |
| e) Self employed | 16 | 21.75 | 1.91 | | |
| f) Unemployed | 9 | 23 | 2 | | |
| **Family income (Rs)** | | | | | |
| a) < 5000 | 16 | 22.13 | 2.21 | | |
| b) 5001-10000 | 12 | 22.33 | 2.14 | 3 | $F=1.055^{NS}$ |
| c) 10001-15000 | 20 | 22.3 | 1.75 | | |
| d) >15000 | 12 | 22.08 | 1.88 | | |
| **Type of family** | | | | | |
| a) Nuclear | 29 | 22.38 | 2.12 | 58 | $t=0.625^{NS}$ |
| b) Joint | 31 | 22.06 | 1.76 | | |
| **Source of information** | | | | | |
| a) Health personnel | 32 | 22.12 | 1.91 | 3 | $F=1.060^{NS}$ |
| b) Newspaper/magazines | 13 | 21.85 | 1.95 | | |
| c) Family/friends/relatives | 9 | 22.22 | 1.92 | | |
| d) T. V/Internet | 6 | 23.5 | 2.07 | | |
| e) Personal experience | 0 | - - | - - | | |
| **Duration of disease** | | | | | |
| a) 0-5 years | 9 | 21 | 1.8 | 3 | $F=1.738^{NS}$ |
| b) 6-10 years | 24 | 22.46 | 1.74 | | |
| c) 11-15 years | 19 | 22.63 | 1.77 | | |
| d) 16-20 years | 8 | 21.88 | 2.69 | | |
| **History of smoking** | | | | | |
| a) 0-4 years | 19 | 22.16 | 2.21 | 3 | $F=1.075^{NS}$ |
| b) 4-8 years | 19 | 22.32 | 2.08 | | |
| c) 8-12 years | 12 | 22.33 | 1.72 | | |
| d) 12-18 years | 10 | 22 | 1.56 | | |

***p value < 0.05 level of significance**
**NS-Non Significant**

Table no 5 depicts that there was no significant association found between post-test knowledge score with selected demographic variables of COPD patients.

## 4. Discussion

The present study aims to assess the effectiveness of structured teaching programme on knowledge regarding COPD and pulmonary rehabilitation among COPD patients. Results showed that in pretest majority 37 (61.7%) had average knowledge, 18 (30%) had poor knowledge and 5 (8.3%) had good knowledge where as in post-test majority 48 (80%) had good knowledge and 12 (20%) had average knowledge regarding COPD and pulmonary rehabilitation. Study results was supported by **Chithra R. A, Raju J (2017)** [7] revealed that in pre-test out of 60 subjects majority of them 50 (83.33%) had inadequate knowledge, 10 (16.67%) of them had moderate knowledge and none of them had adequate knowledge. In the post test majority of them 35 (58.33%) had adequate knowledge, 25 (41.67%) had moderate knowledge and none of them had inadequate knowledge. Present study findings revealed that mean pretest knowledge score was 13.0±3.974 lower than the mean posttest knowledge score 22.2±1.941 with mean difference of 9.2 and paired t value (t=18.23 and p=0.001) was highly significant at p<0.05. Findings indicated that structured teaching programme was effective in improving the knowledge regarding COPD and pulmonary rehabilitation among COPD patients. Findings were similar with study conducted by **Chundawat D. S, Nagda S, Kumar D (2020)** [8] stated that mean knowledge regarding pulmonary rehabilitation in pretest was 14.68 and in posttest was 20.06% respectively. It revealed that structured teaching program was found to be effective in improving in knowledge regarding pulmonary rehabilitation among chronic obstructive pulmonary disease patients. Study findings was congruent with **Elango G (2018)** [9] revealed that pre test mean 14.7 and post test mean was 20.1 with mean difference 5.4 and paired t valve (23.18) was significant at p<0.05 there have significance. Present study result showed that there was no significant association between pre-test and post-test knowledge score and selected demographic variables. Similar study was conducted by **Karpukkarasi, Arasumani (2020)** [10] revealed that no significant association between selected demographic variables and knowledge score of COPD patients.

## 5. Conclusion

The findings of the study concluded that patients were having average knowledge regarding and structured teaching programme was effective in improving the knowledge regarding COPD and pulmonary rehabilitation among chronic obstructive pulmonary disease patients. Study findings suggests that nurses working in pulmonary units can educate the COPD patients regarding the disease and purpose of pulmonary rehabilitation. Educational programmes can be implemented to enhance their knowledge which can help them to prevent from complications of COPD and maintain the functional activity of the lungs among COPD patients.

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