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A Quasi Experimental Study to Evaluate the Effectiveness Of Pursed Lip Breathing Exercise on Reduction of Dyspnea Among Chronic Obstructive Pulmonary Disease Patients in Selected Hospital in Panipat, Haryana

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a progressiveinflammatory disease characterized by chronic obstruction in the peripheral bronchus and pulmonary emphysema. The disease is disabling with symptoms such as chronic cough, phlegm, wheezing, shortness of breath and increased infections of the respiratory passage. Changes in the lungs result in mucus hyper secretion, dysfunction of the cilia, airflow limitation and hyper inflation of the lungs, gas exchange abnormalities, pulmonary hypertension and cor pulmonale. Persons with COPD are greatly under estimated because the disease is usually not diagnosed until it is moderately advanced .Patients usually seek medical help when they have an acute respiratory infection, with dyspnea being the main concern. Dyspnea is often progressive, and initially occurs with exertion, gradually interferes with daily activities and in late stages dyspnea may be present at rest also. The person becomes more of a chest breather, relying on the intercostals and accessory muscles rather than effective abdominal breathing.

The objective of the study was, to assess the breathing pattern before and after pursed Lip breathing exercise among chronic obstructive pulmonary disease patients in control and experimental group. To evaluate the effectiveness of Pursed lip breathing exercise on the reduction of Dsypnea among chronic obstructive pulmonary disease patients in experimental group. To find out the association between the breathing pattern with selected demographic variables in thecontrol and experimental group.

Keywords: Evaluate, Effectiveness, Pursed-lip breathing exercise, Dyspnea, COPD .

INTRODUCTION

In the history of medicine there have always been periods when one diseases or group of related disease presented an unusually grave threat to the health of the individual and to the community. In the particular period in which we live, we concerned by the growing number of men disabled by chronic respiratory disease and by the disruption. Such illness are causing in the life of the individual. "When you can□t breathe, nothing else matters", is the mantra of the American Lung Association. Chronic obstructive pulmonary disease results from increased resistance to airflow because of airway obstruction or airway narrowing.[1]

The most common cause of COPD in high-income countries is tobacco smoking; other risk

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factors include indoor outdoor pollution and genetics. In developing countries, common sources of household air pollution are the use of biomass fuels such as wood and dry dung fuel for cooking and heating. Most people living in European cities are exposed to damaging levels of air pollution. A number of occupations and associated substances including cadmium dust or fumes, and dust from grains that promote respiratory symptoms has been published in the UK. Long-term exposure to any of these irritants causes an inflammatory response in the lungs, resulting in narrowing of the small airways and breakdown of lung tissue. The diagnosis is based on poor airflow as measured by spirometry.[2] Most cases of COPD can be prevented by reducing exposure to risk factors including smoking and indoor and outdoor pollutants. While treatment can slow worsening, there is no conclusive evidence that any medications can change the long-term decline in lung function. COPD treatments include smoking cessation, vaccinations, pulmonary rehabilitation, inhaled bronchodilators, and corticosteroids. Some people may benefit from long-term oxygen therapy, lung volume reduction (surgical) or (bronchoscopic), and lung transplantation. In those who have periods of acute worsening, increased use of medications, antibiotics, corticosteroids, and hospitalization may be needed.[3] As of 2019, COPD affected about 174.5 million people (2.4% of the global population) It typically occurs in males and females over the age of 35–40.In 2019 it caused 3.2 million deaths, 80% occurring in lower and middle income countries, up from 2.4 million deaths in 2020. The number of deaths is projected to increase further because of continued exposure to risk factors and an aging population. In the US in 2010 the economic cost was put at 32.1 billion US dollars, and projected to rise to 49 billion dollars in 2020.[23] In the UK this cost is estimated at £3.8 billion annually.[4]

NEED FOR THE STUDY

The World Health Organization (WHO) (2018) estimated 300 million people suffer from COPD and 2, 55,000 people diedof copd (WHO). The copd statistics in India in 2004 details 57.5 estimated total deaths and 5.1 estimated deaths per 1 lakh population.And 277 disability adjusted life year (DALYs) per 1 lakh and 268 age standardized disability adjusted life year (DALYs) per 1 lakh. The global statistics of asthma (WHO2004) details 2, 87,000 (0.5%) of total global deaths. In this 1, 51,000 men, 1,36,000 women and DALYs includes 8,856,000 for men 7,461,000 women and 1.8 standardizeddeath per 1lakh and 19.4 million disability and constitutes 6.6 million YLD among menand 1.8 million YLD in high income countries.[15] **Globally as of (2019)** COPD is estimated to result in economic costs of $ 2.1 trillion,half of which occurring in the developing world .the 6th commonest cause of death., males had a higher prevalence of COPD 11.1 percentage compared to females 4.5 percentage.

Statistics shows that chronic obstructive pulmonary disease is a leading cause of death and disability in the United States. Data from a national health survey suggests that at least 24 million Americans were affected by the disease in 2000.Global prevalence of 10.7%cofidence interval 7.3-14% in the age group the number of copd cases increased to 3.84 million in 2018. this increased of 68.9 %was mainly driven by global demographic changes .across the who regions the highest prevalence was estimated in the American 13.3% in 1990 and 15.2%2010 and lowest in south east.[16]

PROBLEM STATEMENT

"A Quasi experimental study to assess the effectiveness of Pursed lip breathing exercise on reduction of dyspnea among patients with chronic obstructive pulmonary disease who are aged between 41-60 years years in selected hospital at panipat district"

OBJECTIVES OF THE STUDY

- To assess the breathing difficulty before and after breathing exercise among chronic obstructive pulmonary disease patients in control and experimental group.

- To evaluate the effectiveness of Pursed lip breathing exercise among chronic obstructive pulmonary disease patients in experimental group.
- To find out the association between the pretest level of breathing difficulty with selected demographic variables in control and experimental group

OPERATIONAL DEFINITIONS

EVALUATE

To judge or determine the significance, worth, quality or form an idea. In this study, evaluate is to determine the resultof pursed lip breathing exercise to reduce dyspnea among patients with Chronic Obstructive Pulmonary Disease.

EFFECTIVENESS

The ability to produce specific result or to exert a specific measurable influence. In this study, effectiveness is the usefulness of pursed lip breathing exercise to reduce dyspnea among chronic obstructive pulmonary disease.

PURSED-LIP BREATHING EXERCISE

It is a respiration characterized by deep inspirations followed by prolonged expiration through pursed lips. It is done to increase expiratory airway pressure, improve oxygenation and help to prevent early airway closure. In this study, pursed lip breathing exercise is a technique in which breathe in slowly through nose for two counts and breathe out slowly and gently through pursed lips while counting to four for 4-5 times a day to reduce dyspnea.

DYSPNEA

It is a difficult or laboured breathing. In this study, dyspnea refers patient with shortness of breath.

COPD

It refers to a group of lung diseases that block airflow and make breathing difficult. Emphysema and chronic bronchitis are two most common conditions of Chronic Obstructive Pulmonary Disease. In this study, it refers obstruction of lung airflow results breathing difficulty

ASSUMPTIONS

The study assumes that:

- Chronic obstructive pulmonary disease can affect person above 40 years of age.
- The pursed lip breathing exercise reduces dyspnea among chronic obstructive pulmonary disease patients.
- There is no adverse effect in pursed-lip breathing exercise

DELIMITATIONS

The study will be delimited to:

- Period of four weeks.
- Sample of 30 in each experimental and control group.
- Those who will clinically diagnosed to have chronic obstructive pulmonary disease.
- Age group between 41-60 years.
- Those who will be willing to participate.

RESEARCH METHODOLOGY

RESEACH APPROACH

Quantitative approach adopted by the researcher for the accomplishment of the present study.

RESEARCH DESIGN :

Quasi Experimental Pre Post test Design

SETTINGS OF THE RESEACH

The present study research was conducted at selected hospitals in Panipat district.(Civil hospital, panipat and Dr.Prem hospital, Panipat.)

POPULATION:

- In this study, the target population consisted COPD patients at selected hospitals in Panipat district.

SAMPLE

The sample in this study includes COPD patients.

SAMPLE SIZE

In the present study, the sample size comprised of 60 COPD patients.

SAMPLING TECHNIQUE

The sample for this study was drawn by non-probability purposive sampling technique.

PLAN FOR DATA ANALYSIS

- Descriptive and inferential statistics was used to analyze the data.
- Frequency and percentage would be computed to describe demographic data.

ORGANIZATION OF FINDINGS

The analysis of data from study is presented under the following headings:

❖ **SECTION A**

Data on the Frequency and percentage distribution of chronic obstructive pulmonary patients according to their Demographic variables.

❖ **SECTION B**

Data on the Pursed lip breathing exercise among chronic obstructive pulmonary disease patients inexperimental and control group.

❖ **SECTION C**

Data on effectiveness of Pursed lip breathing exercise among chronic obstructive pulmonary diseasepatients

❖ **SECTION D**

Data on compare the pretest and posttest level of breathing difficulty between the control andexperimental group.

❖ **SECTION E**

Data on association between the pretest breathing pattern in control group and their demographic variables.

❖ **SECTION F**

Data on association between the pretest level of breathing difficulty in experimental group and theirdemographic variables..

CONTROL GROUP

The above table shows that among 30samples, with regards to **age** majority belonged to 51--60years 10(33.3%) and with regards to **gender** male 14(46.7%), and female 16 (53.3%).Regarding **educational** status literate 14(46.7%) of them had primary education, 6(20%) of them had high school education 7(23.3), and uneducated 9(30%) With regards to **homemaker** 8(26,7%) of them are private employee,7(23.3%) of them are in government employee,6(20%) of them are in self employee 9(30%).Regarding the **family history** of chronic obstructed pulmonary disease yes 6(20%) of them were no and 24(80%).About **duration if illness** <1year 9(30%) and 2-5 year 9(30%), 6 year 12(40%) samples. Regarding the **treatment** of chronic obstructive pulmonary disease 14(46.7%) samples are in regular 16(53.3%) samples are in irregular. About income of the **family monthly,** 12(40%) samples of them <5000,9(30%) samples of them 5000-10000 and 9(30%) samples of them >10000.In regarding to **smoking habits** 12(40%) of the samples belonged to yes and 18(60%) of the samples belonged to no.Regarding **continuous breathing** difficulty presented at wake up 5(16.7%) of the samples belonged to and walking 4(13.3)of the samples of the sample belonged to,sleeping at night time 5(16.7%)samples of the belonged to, exercise 16(53.3)samples.

EXPERIMENTAL GROUP

The table Section B shows that among 30samples,with regards to majority age samples belonged to above 60 years where as 4(13.3%) of the sample belonged to the age group above 20-30years. Regarding gender 14(13.3%) male and 16(20%)female . Regarding educational status majority 7 (23.3%) of them had illerate, 4(13.3%) of them had primary school education, and 9(30%) of them had high school

education and 6(20%) of uneducated.With regards to homemaker 7(.233%) of them are illrate, where as 4(13.3%) of the sample belongs to primary school.Regarding the family history of chronic obstructed pulmonary disease yes 12(40%) of them were no and 18(60%). About duration if illness

<1year 10(33.3%) and 2-5 year 10(33.3%) ,6 year 10(33.3%) samples. Regarding the treatment of chronic obstructive pulmonary disease 16(53.3%) samples are in regular 10(46.7%) samples are in irregular.About income of the family monthly, 10(33.3%) samples of them <5000, 10(33.3%) samples of them 5000-10000 and 10(33.3%) samples of them >10000.In regarding to smoking habits 24(80%) of the samples belonged to yes and 6(20%) of the samples belonged to no.Regarding continuous breathing difficulty presented at wake up6(20%)of thesamples belonged to and walking 7(23.3)of the samples of the sample belonged to,sleeping at night time 6(20%) samples of the belonged to, exercise 11(36.7) samples .

❖ **SECTION B:**

Data on the Pursed lip breathing exercise among chronic obstructive pulmonary disease patients in experimental and control group (Table 1).

The table 1 shows that in control group the per test scores on the level of breathing pattern very severe were 4(13.3%)had very very severe,8(26.7%) had maximum, 6(20%) had almost maximum12(40%). whereas in post test scores on the level of moderate breathing were 6(20%) had very severe breath,4(13.3%) had very very severe breath, 8(26.7%) had maximum 12(40%)respectively. In experimental group the pre test scores on the level of breathing pattern moderate were 2(6.7%) had somewhat severe,3(10%) had moderate very very severe,5(16.7%) had maximum breathing pattern 9(30%) had almost maximum 11(36.7). whereas in post test scores on the level of very very slight were 12(40%) had slight breath 10(33.3%) had moderate breathing pattern 6(20%)had severe breathing pattern and no one maximum breathing pattern respectively.This finding reveals that in experimental group after the deep breathing exercise administration among chronic obstructive pulmonary disease were as decreased in post test than pretest.

❖ **SECTION C:**

Data on effectiveness of Pursed lip breathing exercise among chronic obstructive pulmonary diseasepatients (Table 2).

❖ **SECTION D:**

Data on compare the pretest and posttest level of breathing difficulty between the control andexperimental group.

	Control group				*Experimental group*			
	Pre test		*Post test*		*Pre test*		*Post test*	
Level of Breathing pattern	*f*	*%*	*f*	*%*	*f*	*%*	*f*	*%*
No breathlessness	-	-	-	-	-	-	-	-
Very very slight	-	-	-	-	-	-	12	40
Slight breath	-	-	-	-	-	-	10	33.3
Moderate	-	-	6	20	2	6.7	2	6.7
Somewhat severe	-	-	-	-	3	10	6	20
Severe breath	-	-	-	-	-	-	-	-
Very severe	4	13.3	4	13.3	-	-	-	-
Very very severe	8	26.7	8	26.7	5	16.7	-	-
Maximum	6	20	12	40	9	30	-	-
Almost maximum	12	40	-	-	11	36.7	-	-
Total	30	100	30	100	30	100	30	100

Group	Pre test		Post test		Mean difference	't-value'
	Mean	SD	Mean	SD		
Control group	8.43	1.43	5.9	1.49	2.53	2.07

(*- P<0.05, significant and ** -P<0.01 & *** -P<0.001, Highly significant)The table 2 shows that the calculated t value' in the control group was which was not significantly at P<0.05 level. It can be concluded that there is nomuch difference in pretest and post test in control group.

Group	Pre test		Post test		Mean difference	't' value
	Mean	SD	Mean	SD		
Experimental group	8.36	1.83	2.43	1.60	5.93	2.64*
(*- P<0.05, significant and ** -P<0.01 & *** -P<0.001, Highly significant)						

The table 3 shows that the calculated "t" value in the experimental group was 2.64 which was statistically significant at P<0.05 level. Hence H1 is accepted. It can be concluded that pursed lip breathingexercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients.

❖ **SECTION E:**

Data on association between the pretest breathing pattern in control group and their demographic variables.

Dyspnea among copd patients	Control post test		Experimental posttest		Mean difference	't' value
	Mean	SD	Mean	SD		
	5.9	1.49	2.43	1.60	3.47	4.51*
(* -P<0.05, significant and ** -P<0.01 & ***-P<0.001, highly significant)						

The table 4 shows that the obtained 't' value between control and experimental group is 4.51 which was significant at p<0.05 level. Hence H1 is accepted. It can be concluded that the pursed lip breathing exercise was effective in reducing the dyspnea in experimental group among chronic obstructive pulmonary disease patients thancontrol group.

	Group	Pre test		Post test		Mean difference	't' value
		Mean	SD	Mean	SD		
Breathing pattern	Experimental group	8.36	1.83	2.43	1.60	5.93	2.64*
	Control group	8.43	1.43	5.9	1.49	2.53	2.07
(*- P<0.05, significant and ** -P<0.01 & ***-P<0.001, Highly significant							

❖ **SECTION F:**

Data on association between the pretest level of breathing difficulty in experimental group and their demographicvariables..

Experimental group

The table 5 shows that the calculated "t" value in the experimental group was 2.64 which was statistically significant at P<0.05 level. Hence H2 is accepted. It can be concluded that pursed lip breathing exercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients

Control group

The table 5 shows that the calculated 't value' in the control group was 2.07which was not significantly atP<0.05 level. It can be

concluded that there is no much difference in pretest and posttest in control group.

NURSING IMPLICATIONS

The findings of the study have several implications in following field. It canbe discussed in four areas namely nursing practice, Nursing administration, Nursing education and Nursing research.

Nursing practice

- Complimentary therapies can provide effective economical, non-invasive, non-pharmacologicalcomplements to medical care.
- Pursed lip Breathing exercise is one of touch therapy, which in this study has proved effective in reducing and improving the breathing pattern among patientschronic obstructive pulmonary disease.
- Nurses can adopt simple interventions like Pursed lip breathing exercise while providing care for the chronicobstructive pulmonary disease patients.
- Pursed lip Breathing exercise used in this study can be applied in the practice set up; there by increasing the nursing practice based on evidence.

Nursing administration

- Nurse administrators can arrange seminars and workshops to educate learners and staff nurses regarding breathing pattern among chronic obstructive pulmonary disease.
- The findings of this study will help nurse administrator to plan and organize various in service programmes like in-service education and workshop on breathing pattern and its effects on chronic obstructive pulmonary patients.
- It helps to provide critical thinking regarding pain management in orthopedic surgical unit.
- The nurse administrator can take part in developing protocols related to breathing pattern.

Nursing education

- Several implications can be drawn from the present study for nursing education
- The curriculum incorporating the recent trends and demands of the changing society needed for the progressof nursing education.
- Practical hours for complementary and alternative medicine including yoga, massage and reflexology can beincluded in the nursing curriculum which will help the students to improve their skills.

Nursing research

- This study motivates nursing personnel to do further studies related to this field.
- Research can be conducted to find out the effectiveness of various non-pharmacological methods in pain management of patients who have chronic obstructive pulmonary disease.

ETHICAL CLEARANCE:

- Ethical clearance was obtained from the ethical committee:
- Formal permission was obtained from the concerned authorities in the hospital.
- Informed written consent was obtained from the sample enrolled for the study.
- All the information collected were kept confidential and used solely for the purpose of research study.

Source of Funding: Self.

Conflict of Interest: NIL

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