

**EFFECTIVENESS OF DEEP BREATHING EXERCISE
AMONG CHRONIC OBSTRUCTIVE PULMONARY
DISEASE PATIENTS AT SELECTED
HOSPITALS,CHENNAI**



**A PROJECT WORK SUBMITTED TO
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)
CHENNAI**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF BACHELOR OF SCIENCE IN NURSING
2019-2023**



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**BY
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Ms.MARIYA M JOSE**

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CERTIFIED PROJECT WORK DONE BY

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2019 - 2023


RESEARCH GUIDE

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BONAFIDE CERTIFICATE

This is a bonafide work done by **Mr.Arun B** and **Ms. Mariya M Jose B.Sc (N) III** Year, Sathyabama college of Nursing, Sathyabama Institute of Science and Technology , Chennai, submitted in partial fulfillment for the Degree of Bachelor of Science in Nursing under the Sathyabama Institute of Science and Technology(Deemed to be University) , Chennai.

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ENDORESEMENT BY THE RESEARCH GUIDE

This is to certify the project work entitled “ **Effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients at selected hospitals, Chennai** “ is a bonafide research work done by **Mr.Arun B** and **Miss. Mariya M Jose** in partial fulfillment of the requirement for the degree of Bachelor of science in nursing



SEAL AND SIGNATURE OF

THE RESEARCH GUIDE

DECLARATION

We hereby declare that the present project report entitled “**EFFECTIVENESS OF DEEP BREATHING EXERCISE AMONG CHRONIC OBSTRUCTIVE PULMONARY DISEASE PATIENTS AT SELECTED HOSPITALS,CHENNAI**”. Is the outcome of the original research work undertaken and carried out by us under the guidance of **Prof. Bhuvaneswari S [RN, RM, M.Sc(Nursing), MA(Public Administration)]**, Sathyabama College of Nursing, Chennai.

We also declare that the material of this project report as not formed in anywhere, the basis for the award of any degree in this university or any other university.

BY

Mr.ARUN B



Ms.MARIYA M JOSE



(Sathyabama college of nursing)

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“He makes all things beautiful in his time”

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This study drew upon the knowledge and help, experience and expertise of many persons of good will, though too numerous to name, each one of them is remembered for their individual contributions without which the realization and presentation of this research would not have been. So I shower my great deal of thanks to those who helped directly and indirectly in this study.

ABSTRACT

A Quasi experimental study was conducted to evaluate the effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients .The objective of the study were, to assess the breathing pattern before and after breathing exercise among chronic obstructive pulmonary disease patients in control and experimental group. To evaluate the effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients in experimental group. To find out the association between the breathing pattern with selected demographic variables in the control and experimentalgroup

In this study quasi experimental, non randomized control group pre test-post test design was adopted. The study include 60 samples patients who were selected by purposive sampling technique .the study was conducted in Sathyabama General Hospital, Chennai demographic data ,modified dyspnea Borg scale and intervention for deep breathing exercise these are method used for data collection procedure. the tool was finalized of five medical and nursing experts and pilot study for the its clarity ambiguity and feasibility on similar subject to analyse the experimental data statistical analysis was used Modified Borg scale was used to evaluate the dyspnea. Experimental group received intervention of deep breathing exercise for 25 minutes twice a day for without treatment

With regard to age, 9(30%) in experimental group and 10(33.3%) in control group belongs to the age group of 31-45 years and 9(30%) in experimental group and 9(30%) in control group belonged to the age group of above 46years.

Considering the sex, 17 (56.6%) subjects in the experimental group and 14 (46.6%) in the control group were males and the remaining were females.

In relation to education, 9(30%) of them had high secondary school and 8(26.7%) of them had illiterate in experimental group and 8(26.7%) of them are illiterate and 6(20%)

of them had higher secondary education in control group.

With regard to the occupation, 9(30%) were jobless and 9(30%) were industrial workers in experimental group and 9(30%) were jobless and 8(26.7%) were industrial workers in the control group.

In relation to marital status 22(73.3%) were married and 6(20%) unmarried in experimental group and 15(50%) were married and 6(20%) unmarried in control group

Regarding the history of previous copd, 18(60%) in experimental group and 24(80%) in control group had no history of previous copd.

Considering the duration of illness, 10(33.3%) subjects having 6 years in and 10(33.3%) subject having 2-5 years in experimental group and 12(40%) subject having 6 years and 9(30%) subject having 2-5 years in control group.

With regard to the treatment of copd, 16(53.3%) subjects in the experimental group and 14(46.7 %) of subjects in the control group.

The control group the pre 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 maximum 12(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.

The calculated 't' values in the control group were 2.07 which are not significant. It is concluded that there was no significant differences between the pre and post test level of breathing pattern among chronic obstructive pulmonary disease patients

The calculated 't' value in the experimental group were 2.64 was statistically significant at $p < 0.05$ level which clearly shows that there was a significant reduce in the level of breathing pattern among patients among chronic obstructive pulmonary disease after giving breathing exercise .Hence H_1 is accepted.

The obtained 't' values for level of pain between the control and experimental group is 4.51 which were highly significant at $p < 0.05$ level. These findings revealed that the subjects in experimental group had decreased level of breathing pattern after giving breathing exercise compared to control group. Hence research hypothesis H_2 is accepted.

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CHAPTER - I

INTRODUCTION

“I’m breathing and trust me that’s a huge accomplishment”
-unknown

In the history of medicine, there have always been periods when one disease or group of related diseases presented as an unusually grave threat to the health of the individual and to the community. In the particular period in which we live, we are concerned by the growing number of men disabled by chronic respiratory disease and by the disruption. Such illnesses are causing in the life of the individual.

“When you can’t breathe, nothing else matters”, is the mantra of the American Lung Association. The chronic obstructive pulmonary disease results from increased resistance to airflow because of airway obstruction or airway narrowing.

Chronic Obstructive Pulmonary Disease (COPD) is a progressive inflammatory 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 hypersecretion, dysfunction of the cilia, airflow limitation and hyperinflation of the lungs, gas exchange abnormalities, pulmonary hypertension, and cor pulmonale.

Persons with COPD are greatly underestimated 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.

Breathing exercises may assist the patient during rest and activity by decreasing dyspnea, improving oxygenation, and slowing the respiratory rate.

M Vtacca 1998A study was conducted in Japan to evaluate the effects of a short term pulmonary rehabilitation program on patients with chronic respiratory failure due to pulmonary emphysema. 15 samples were selected for the program which includes pursed-lip breathing, diaphragmatic breathing, respiratory muscle stretch gymnastics, and walking with synchronized breathing. Visual analog scale, 6-minute walk. The study reveals that there is a significant decrease in dyspnea ($P<0.01$), an increase in functional exercise capacity ($P<0.01$), and a significant decrease in total lung capacity (TLC) and residual volume (RV) ($P<0.01$). The findings suggest that this program relieves dyspnea, increases functional exercise capacity, and decreases Total lung capacity and residual volume in patients with chronic respiratory failure due to pulmonary emphysema

Robert Bianchi MD 2004 A study conducted on COPD is estimated to be responsible for more than 13.4 million physician visits and 13% of hospitalizations nationally. These hospitalizations are usually caused by acute exacerbations characterized by an increase in symptoms including dyspnea or shortness of breath (SOB), cough, wheezing and sputum production, which affects an individual's quality of life more than does the physiological impairment. Despite optimal medical and pharmacological therapy, most people with COPD continue to suffer chronic and progressive dyspnea and other symptoms of cough and fatigue. The study result reveals that the patients had no dyspnea at rest, during exercise dyspnea was variably affected by pursed-lip breathing. Changes in the individual score were significantly correlated with changes in the end-expiratory lung volume ($p=0.002$) and mean inspiratory ratio of pleural pressure to the maximal static⁴ inspiratory pressure-generating capacity ($P=0.001$). This study concluded that pursed lips breathing can have a variable effect on dyspnea when performed volitionally during exercise by patients with COPD. The effect of pursed-lip breathing on dyspnea is related to the combined change that it promotes in the tidal volume and end-expiratory lung volume and their impact on the available capacity of the respiratory muscles to meet the demands placed on them in terms of pressure generation

Dechman, G., 2005 A study was conducted in Canada to assess the effects of imposed pursed lips breathing on respiratory mechanics and dyspnea at rest and during exercise in COPD. Eight patients with stable mild to severe COPD participated in the study. The subjects underwent pulmonary function tests and bicycle ergometry. Breathlessness visual

analog scale, inspiratory capacity maneuvers, and esophageal balloon were the instruments used. The study result reveals that the patients had no dyspnea at rest, during exercise dyspnea was variably affected by pursed-lip breathing. Changes in the individual score were significantly correlated with changes in the end-expiratory lung volume ($p=0.002$) and mean inspiratory ratio of pleural pressure to the maximal static inspiratory pressure-generating capacity ($P=0.001$).

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Minas M, Hatzoglou C 2010 A retrospective study was conducted to assess the Incidence and prevalence of COPD in south India. The data reported that 13680 patients who underwent PFT during the 3 year period there were 9702 males and 4164 females. 946 patients (6.8%) were diagnosed to have COPD according to the COPD guidelines of which 811 were males (86%) and 135 more females (14%). smoking was seen in 830 patients (87.7%) & 116 patients were non-smokers (12.3%). mean age was 44.65 and 4.15 years. out of 946 patients 284 had mild COPD 30%. 286 had moderate diseases 30% and the remaining 387 patients 40% had to severe COPD. The overall prevalence of COPD in the present study was 6.85% with the prevalence of disease in males being 7.4% and females at 4.64%. there for, there is a significant burden of COPD as a disease in the community with an overall prevalence of 6.85 in south India

NEED FOR THE STUDY

The World Health Organization (WHO) (2013) estimated that 300 million people suffer from COPD and 2,55,000 people died of COPD (WHO). The COPD statistics in India in 2004 detail 57.5 estimated total deaths and 5.1 estimated deaths per 1 lakh population. And 277 disability-adjusted life years (DALYs) per 1 lakh and 268 age standardized disability adjusted life years (DALYs) per 1 lakh. The global statistics of asthma (WHO 2004) details 2, 87,000 (0.5%) 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 standardized death per 1 lakh and 19.4 million disability and constitutes 6.6 million YLD among men and 1.8 million YLD in high-income countries.

Globally as of (2011) COPD is estimated to result in economic costs of \$ 2.1 trillion , half of which occur in the developing world.the 6th commonest cause of death., males had a higher prevalence of COPD 11.1 percent compared to females 4.5 percent. Statistics show 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. The global prevalence of 10.7% confidence interval 7.3-14% in the age group the number of COPD cases increased to 3.84 million in 2010 .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 the southeast.

United states(2011) Chronic obstructive pulmonary disease is one of the leading causes of death, illness, and disability in the united states, and an estimates 10 million American adults were diagnosed with the condition in 2000,but the data from the national health survey suggest that as many as 24 million Americans were actually affected .in 2000 chronic obstructive caused about 119,000 deaths,726,000 hospitalizations and 1.5 million visits to hospital emergency rooms. A study was to explore dyspnea self-management in African Americans with chronic obstructive pulmonary disease resulting from sarcoidosis. The study concluded that self-care actions should be encouraged and thought and self care resources facilitated. The breathing techniques used by patients with COPD and those with sarcoidosis

should be considered during patient and family education . Hence the investigator felt that it is very essential to educate about breathing exercises to reduce the dyspnea in respiratory diseases patients In the state of Karnataka prevalence of the chronic obstructive pulmonary disease is 64.3 percent affected chronic obstructive pulmonary disease. Prevalence of chronic cough is an important indicator of respiratory morbidity in the community COPD is projected to be 3rd leading cause of death and affected around 210 million people worldwide. COPD is estimated among Indian population is 7.4% Most common in women aged 65-74 and 75-84 years.(20%) Men aged at age of 75-84 (11.2%) Tamil Nadu has 4,000 cases of COPD per one lakh population.

As COPD progresses, people find it more difficult to carry out their normal daily activities, often due to breathlessness. There may be a considerable financial burden due to limitation of workplace and home productivity,

BACKGROUND OF STUDY

Cary P et al (1990) A randomized, control study was conducted at Los Angeles to assess the efficacy of pursed-lip breathing: a breathing pattern retraining strategy for dyspnea reduction. 40 samples were randomized to 1) pursed-lip breathing 2) expiratory muscle training or 3) control. Changes in dyspnea and functional performance were assessed by modified Borg after 6-minute walk distance (6MWD), shortness of breath Questionnaire, Human Activity Profile, and physical 1011 function scale of short-form 36-item Health Survey. The study result reveals that there is a significant reduction for the modified Borg Scale after 6 MWD ($P=0.05$) and physical function ($P=0.02$) from baseline to 12 weeks was only present for pursed-lip breathing. The findings suggest that pursed-lip breathing improved exertion dyspnea and physical function.

Breslin EH, et al (1992) conducted the study to indicate a change in the the pattern of chest wall muscle recruitment and improved ventilation with pursed-lip breathing (PLB) in COPD. Pursed lip breathing led to the increased rib cage and accessory muscle recruitment during inspiration and expiration, increased abdominal muscle recruitment during expiration, decreased duty cycle of the inspiratory muscles and respiratory rate, and improved SaO_2 . In addition, PLB resulted in no change in pressure across the diaphragm and a less fatiguing breathing pattern of the diaphragm.

Changes in chest wall muscle recruitment and respiratory temporal parameters concomitant with the increased SaO₂ indicate a mechanism of improving ventilation with PLB while protecting the diaphragm from fatigue in COPD. Alterations in the pattern of respiratory muscle recruitment with PLB may be associated also with the amelioration of dyspnea. The study suggested further investigation is necessary to explore the relationship between the pattern of respiratory muscle recruitment during PLB and dyspnea

Elisabeth Westerdahl, et al (1994) A study was conducted for validation of a structured questionnaire and prevalence of COPD in the rural areas of Mysore. The study included 900 adults above 40 years. The instruments used were structured questionnaires and spirometry. Data were collected by survey method. The study reveals that a structured questionnaire is a useful tool for the screening of COPD in field studies and the total prevalence of COPD was 7.1%. Males had a higher prevalence (11.1%) compared to females (4.5%).) conducted a study regarding breathing pattern retention and exercise in persons with chronic obstructive pulmonary disease. They used a method in pulmonary rehabilitation to help alleviate the symptoms of dyspnea endured by people who suffer from airflow obstruction secondary to chronic obstructive pulmonary disease (COPD). Other techniques such as biofeedback also have been successfully used. The article described the altered breathing patterns used by patients with COPD at rest and during physical activity regarding techniques of breathing pattern retraining that have been developed to improve the capacity of persons with COPD to perform activities of daily living, a primarily rehabilitative outcome

Masoli et al (2003) A study was conducted by showed the global burden of asthma estimates approximately 300 million people worldwide currently have asthma. The study suggested that asthma prevalence increases globally by 50% every decade. With the projected increase in the proportion of the world urban population from 45- 50% in 2025. there is likely to be a marked increase in the number of asthmatics worldwide over the next two decades. It is estimated that there may be additional 100 million persons with asthma by 2025. Deep breathing exercises selected in this study for improving the pulmonary function of the patients are simple, can be performed without any expenses or complex devices, and don't require a particular area in a hospital for the practices.

Framingham (2007) study focused on the long term predictive power of vital capacity and forced exhalation volume as the primary markers for life span and pulmonary function measurement appears to be an indicator of general health and vigor and literally a measure of living capacity. Breathing exercises can be trained for both negative and positive influences on health. Our exercise promotes relaxation and proper breathing techniques will strengthen the lungs. There are many benefits of breathing exercise that it cleanses the body's diseases, steadies the mind, helps in concentration, improves digestion, and improves appetite.

United status Chronic obstructive pulmonary disease is one of the leading cause of death, illness, and disability in the united states and an estimates 10 million American adults were diagnosed with the condition in 2000, but the data from the national health survey suggest that as many as 24 million Americans were actually affected .in 2000 chronic obstructive caused about 119,000 deaths, 726,000 hospitalizations and 1.5 million visits to hospital emergency rooms. A study was to explore dyspnea self-management in African Americans with chronic obstructive pulmonary disease resulting from sarcoidosis. the study concluded that self-care actions should be encouraged and thought and self-care resources facilitated. The breathing techniques used by patients with COPD and those with sarcoidosis should be considered during patient and family education. Hence the investigator felt that it is very essential to educate about breathing exercises to reduce the dyspnea in respiratory disease patients.

Murthy K JR(2010) A pre-experimental study was conducted on breathlessness in patients with COPD. The twenty-two patients with mild to severe COPD were studied. A Modified Borg Scale assessed dyspnea. The patients with deep breathing exercises exhibited a significant reduction in the end-expiratory volume of the chest wall. Deep breathing exercises decrease the end-expiratory volume of the chest wall and reduce breathlessness. The study showed that a deep breathing exercise is more effective in reducing dyspnea in COPD patients

Das S, Mukherjee S, Kundu et al (2008) A comparative study was conducted on the effects of deep breathing exercises on dyspnea at rest and during exercise in COPD. The eight COPD patients (6male and 2 female) with a mean age of 11 years. Deep breathing exercises promoted a slower and deeper breathing pattern both at rest and during exercise.

Deep breathing has a variable effect on dyspnea when performed politically during exercise by patients with COPD. The study showed the effectiveness of deep breathing exercises in patients at rest.

Geddes E L, et al (2008) conducted a study to update an original systematic review to determine the effect of inspiratory muscle training (IMT) on inspiratory muscle strength and endurance, exercise capacity, dyspnea, and quality of life for adults with chronic obstructive pulmonary disease (COPD). Randomized controlled trials, with adults with stable COPD, comparing IMT to sham IMT or no intervention, low versus high-intensity IMT, and different modes of IMT were included. Nineteen of 274 articles in the original search met the inclusion criteria. The updated search revealed 17 additional articles; 6 met the inclusion criteria, which compared targeted, threshold, or normocapnic hyperventilation IMT to sham IMT.

An update of the sub-group analysis comparing IMT versus sham IMT was performed with 10 studies from the original review and 6 from the update. Sixteen meta-analyses are reported. Results show that significant improvements in inspiratory muscle strength (PI(max), PI(max) % predicted, peak inspiratory flow rate), inspiratory muscle endurance (RMET, inspiratory threshold loading, MVV), exercise capacity (Ve(max), Borg Score for Respiratory Effort, 6MWT), Transitional Dyspnea Index (focal score, functional impairment, magnitude of task, magnitude of effort), and the Chronic Respiratory Disease Questionnaire 7 (quality of life). Results suggest that targeted, threshold or normocapnic hyperventilation IMT significantly increases inspiratory muscle strength and endurance, improves outcomes of exercise capacity and one measure of the quality of life, and decreases dyspnea for adults with stable COPD.

STATEMENT OF THE PROBLEM

“effectiveness of deep breathing exercise among patients with chronic obstructive pulmonary disease at selected hospitals, Chennai”

OBJECTIVES OF THE STUDY

- ❖ □ To assess the breathing difficulty before and after breathing exercises among Chronic obstructive pulmonary disease patients in the control and experimental group.
- ❖ □ To evaluate the effectiveness of deep breathing exercises among chronic obstructive pulmonary disease patients in the experimental group.
- ❖ □ To find out the association between the pretest level of breathing difficulty with selected demographic variables in the control and experimental group.

HYPOTHESIS

H₁:

The mean post-test level of breathing difficulty will be significantly lower than the mean pre-test level of breathing patterns among chronic obstructive pulmonary disease in experimental group

H₂:

There is a significant difference between the mean pretest and mean posttest level of breathing difficulty in the experimental group.

H₃:

There will be a significant association between the pretest level of breathing difficulty with selected demographic variables for the experimental group

OPERATIONAL DEFINITIONS

Chronic obstructive pulmonary disease

Chronic obstructive pulmonary disease results from increased resistance to airflow, because of airflow obstruction or airflow narrowing .chronic obstructive the disease is a progressive inflammatory disease characterized by chronic obstruction in the peripheral bronchus and pulmonary emphysema.

Assessment

It is a process of documenting the information usually in measurable terms

Effectiveness

It refers to the significant reduction in dyspnea determined by significant the difference in pre and post-test assessment scores.

Deep breathing exercise

It is a type of diaphragmatic breathing which helps in the expansion of lung tissue surface. Thereby increasing the area of respiratory exchange.

Location

In this study, patients who are diagnosed as COPD and got admitted in Sathyabama general hospital, Chennai

ASSUMPTION

□

- After the breathing exercise breathing difficulty will be improved among patients with chronic obstructive pulmonary disease in the experimental group
- Deep breathing exercises reduce breathlessness □
- Breathing exercise training has some effect on the knowledge of patients with respiratory diseases

DELIMITATION

□

- The data will be collected for 6 weeks □
- Who those are admitted at the time of hospital □
- Patients having severe dyspnea.

PROJECT OUTCOME

□

- This study will be able to evaluate the effectiveness of deep breathing exercises to improve the breathing pattern among chronic obstructive pulmonary disease □
- Non-pharmacological approaches □
- Deep breathing exercises will improve the breathing pattern

CHAPTER - II

REVIEW

OF LITERATURE

A review of literature is the systematic identification, critical analysis, and reporting of existing information on the topic of material for the study. The review of literature is a key step in the research process excessive review of literature relevant to research was alone to collect maximum information for laying the foundation of this study. The purpose of the review of literature is to gain maximum relevant information and perform the study in a scientific m Review of literature is the systematic identification, critical analysis, and reporting of existing information on the topic of material for the study.

Izadi-avanji FS, ET AL (1990) A true experimental study was conducted on deep breathing exercise on dyspnea in moderate COPD patients. The subjects of the study were 240. Out of which 120 subjects were manipulated and the rest were getting no intervention. The study, it revealed that there were considerably more effective subjects given exercise rather than those without intervention. Thus it proved that deep breathing exercise was better than those compared to other groups.

Mc Glone ,ET AL (1991) A pre-experimental was conducted on the effectiveness of deep breathing exercises in COPD. A randomized controlled clinical trial. 145 subjects were included among them 100 men and 45 women. Deep breathing exercises are well tolerated in COPD and significantly improve dyspnea randomized controlled trial study was conducted on hospital based physiotherapeutic exercise in COPD self management among 142 patients. Out of which 74 intervention and 68 control patients were included. This study demonstrates that a hospital based re activation program improves exercise capacity in patients with moderate and severe COPD. Exercise tolerance capacity is more in COPD patients. A study was conducted on the effectiveness of deep breathing exercises in managing breathlessness in respiratory illness. 220 subjects were included and the study revealed that breathlessness is a debilitating and distressing symptom to manage. Therefore, a deep 25 breathing exercise was one of the effective nonpharmacological interventions in treating dyspnea.

Minas M ,ET AL (1992) A experimental study was conducted on the impact of deep breathing exercises on breathing pattern and dyspnea in severe COPD patients. The subjects of the study were 125 patients. This study shows deep breathing exercise is effective in improving breathing patterns and inpatient with COPD. A cohort study was conducted on

efficient integrated education for older patients with COPD using deep breathing exercises. A total of 85 patients. This study shows that integrated education for older patients with COPD effectively improved patients' deep breathing exercises.

Das S, Mukherjee S, ET AL (1992) A pre- experimental study was conducted on breathlessness in patients with COPD. Twenty-two patients with mild to severe COPD were studied. A Modified Borg Scale assessed dyspnea. The patients with deep breathing exercises exhibited a significant reduction in end-expiratory volume of the chest wall. Deep breathing exercises decrease end-expiratory volume of the chest wall and reduce breathlessness. The study showed that deep breathing exercises are more effective in reducing dyspnea in COPD patients. Dyspnea at rest and during exercise in COPD. The eight COPD patients (6male and 2 2324 female) with a mean age of 11 years. Deep breathing exercises promoted a slower and deeper breathing pattern both at rest and during exercise. Deep breathing has a variable effect on dyspnea when performed volitionally during exercise by patients with COPD. The study showed the effectiveness of deep breathing exercises in patient at rest.

Van der Schans CP, et al (1992) conducted a study to assess the effect of breathing with a positive expiratory pressure of 5 cm H₂O, simulating pursed lips breathing (SPLB), on respiratory muscle activity and pulmonary function during induced airway obstruction. In twelve asthmatic patients, tonic and phasic electromyography (EMG) activity of the following muscles was obtained: scalene muscle, parasternal muscle, and abdominal muscles. Pulmonary function and EMG measurements were performed before and after propranolol induced airway obstruction. The results have shown that simulated pursed lips breathing resulted in a significant increase of functional residual capacity and tidal volume both at baseline and during airway obstruction. Phasic respiratory muscle activity during PEP breathing increased especially at baseline. It shows the beneficial effects of breathing with a positive expiratory pressure of 5 cm H₂O, which is similar to pursed lips breathing and cannot be explained by changes in respiratory muscle activity or pulmonary function.

Breslin EH, et al (1994) conducted the study to indicate a change in the pattern of chest wall muscle recruitment and improved ventilation with pursed-lip breathing (PLB) in COPD. Pursed lip breathing led to the increased rib cage and accessory muscle recruitment

during inspiration and expiration, increased abdominal muscle recruitment during expiration, decreased duty cycle of the inspiratory muscles and respiratory rate, and improved SaO₂. In addition, PLB resulted in no change in pressure across the diaphragm and a less fatiguing breathing pattern of the diaphragm. Changes in chest wall muscle recruitment and respiratory temporal parameters concomitant with the increased SaO₂ indicate a mechanism of improving ventilation with PLB while protecting the diaphragm from fatigue in COPD. Alterations in the pattern of respiratory muscle recruitment with PLB may be associated also with the amelioration of dyspnoea. The study suggested further investigation is necessary to explore the relationship between the pattern of respiratory muscle recruitment during PLB and dyspnea.

Sutbeyaz ST, et al (1996) conducted a study to determine whether two types of exercise--breathing retraining (BRT) and inspiratory muscle training (IMT)-- improve on cardiopulmonary functions and exercise tolerance in patients with stroke. They used a randomized controlled trial technique in which forty-five patients with stroke (24 men, 21 women) were recruited for the study. The subjects were randomized into three groups: 15 assigned to receive inspiratory muscle training (IMT); 15 assigned to receive breathing retraining, diaphragmatic breathing, and pursed-lips breathing (BRT); 15 assigned to a control group. All study groups participated in a conventional stroke rehabilitation program. Each subject underwent pulmonary function and cardiopulmonary exercise tests. The results showed that after the training program, the IMT group had significantly improved forced expiratory volume at 1 second (FEV (1)), forced vital capacity (FVC), vital capacity (VC), forced expiratory flow rate 25-75% (FEF 25-75%) and maximum voluntary ventilation (MVV) values compared with the BRT and control groups, although there were no significant differences between the BRT and control groups ($P < 0.01$). Peak expiratory flow rate (PEF) value was increased significantly in the BTR group compared with the IMT and control groups. The IMT group also had significantly higher peak oxygen consumption (VO_{2peak}) than the BRT and control groups, although there were no significant differences between the BRT and control groups ($P < 0.001$). There was a statistically significant increase in maximum inspiratory pressure (PI (max)) and maximum inspiratory and expiratory pressure (PE (max)) in the BRT group and, PI (max) in the IMT group compared with baseline and the control group. In the IMT group, this was associated with improvements in exercise capacity, the sensation of dyspnea, and quality of life.

Nihon Kokyuki Gakkai Zasshi et al (1996) conducted a study to evaluate the effects of a short-term pulmonary rehabilitation program on dyspnea, exercise capacity, and lung function. 15 patients with chronic respiratory failure due to pulmonary emphysema were enrolled in such a program for 3 weeks as an inpatient. The program consisted of pursed-lip breathing, diaphragmatic breathing, respiratory muscle stretch gymnastics, and walking with synchronized breathing. The results had shown that dyspnea as measured with a visual analog scale at the end of a 6-minute walk before and after the program (49.7 $\pm$ 4.0% to 24.2 $\pm$ 3.8%) decreased significantly ($p < 0.01$). As a measure of functional exercise capacity, the 6-minute walking distance (226.9 $\pm$ 32.4 m to 292.1 $\pm$ 35.8 m) increased significantly ($p < 0.01$). As an indicator of maximal exercise capacity, endurance time on an incremental treadmill test did not improve. Spirometric data did not change during the study. Total lung capacity (TLC) (8.44 $\pm$ 0.70 L to 7.58 $\pm$ 0.74 L) and residual volume (RV) (5.13 $\pm$ 0.53 L to 4.28 $\pm$ 0.59 L) decreased significantly ($p < 0.01$). The findings suggest that this program relieves dyspnea, increases the functional capacity and decreases the functional exercise capacity, and decreases TLC and RV in patients with chronic respiratory failure due to pulmonary emphysema.

Ritz T, et al (1997) conducted a review of the behavioral interventions in asthma and breathing training. And the review found that the systematic documenting of the benefits of these techniques in asthma patients. The physiological rationale for abdominal breathing in asthma is not clear, and adverse effects have been reported in chronic obstructive states. Theoretical analysis and empirical observations suggest positive effects of pursed-lip breathing and nasal breathing but clinical evidence is lacking. Modification of breathing patterns alone does not yield any significant benefit. There is limited evidence that inspiratory muscle training and hypoventilation training can help reduce medication consumption, in particular beta-adrenergic inhaler use. Breathing exercises do not seem to have any substantial effect on the parameters of basal lung function. They suggested additional research on the psychological and physiological mechanisms of individual breathing techniques in asthma, differential effects in sub-groups of asthma patients, and the generalization of training effects on daily life.

Collins EG, et al (2003) conducted a study regarding breathing pattern retraining and exercise in persons with chronic obstructive pulmonary disease. They used a method in pulmonary rehabilitation to help alleviate the symptoms of dyspnea endured by people who suffer from airflow obstruction secondary to chronic obstructive pulmonary disease (COPD). Other techniques such as biofeedback also have been successfully used. The article described the altered breathing patterns used by patients with COPD at rest and during physical activity. The literature is reviewed regarding techniques of breathing pattern retraining that have been developed to improve the capacity of persons with COPD to perform activities of daily living, a primarily rehabilitative outcome.

EMMA DICKINSON ET AL (2006) A study was conducted on COPD is a common diseases, the early diagnosis of which allows effective management and treatment. The prospective observational longitudinal study comprised 164 high-risk smokers aged 40 and 76 years. Age, sex, weight, height, and smoking habits were recorded and spirometry was performed. Patients were informed of their results and given brief advice on how to stop smoking. After 3 years, the patients underwent the same evaluation. The result of the study revealed that 22% of smokers were diagnosed with COPD. Three years later, an additional 16.3 % were diagnosed as having COPD, and the disease had worsened in 38% of those already diagnosed. Of the patients with FEV1 less than 90%, 44.8% develop COPD. An accelerated decrease in FEV1 was found in 18% of the patients. Mean tobacco consumption in 1999 was 28.1 pack years in subjects without COPD and 31.7 pack years in those with COPD, whereas in 2002, consumption was 30.6 packs in the patients with COPD and 31.9 packs per year in those without. In the years, 22.8% had stopped smoking studies related to deep breathing exercises.

HARRIS. ET AL (2006) It is estimated that there may be as many as an additional 14 million or more in the United States still undiagnosed, as they are in the beginning stages and have little to minimal symptoms, and have not sought health care yet. Men are 7 times more likely to be diagnosed with emphysema than women, though the prevalence in women is on a steady increase and this number is lowering with each year People over the age of 50 are more likely to be considered disabled, however, the damage started years before About 1.5 million emergency department visits by adults 25 and older were made for COPD in 2000. More emergency department visits for COPD were made by adult females than adult males (898,000 vs. 651,000).

- About 726,000 hospitalizations for COPD occurred in 2000. More females than males were hospitalized for COPD (404,000 vs. 322,000).
- According to the Center for Disease Control (CDC), there were 124,816 deaths in the US in 2002
- It is the only major disease with an increasing death rate, rising 16%⁹

COPD prevalence estimated based on Global Initiative for COPD staging criteria were adjusted for the target population. Logistic regression was used to estimate adjusted odds ratios for COPD associated with 10 years increments and 10 year pack increments. The meta-analysis provided pooled these risk factors. The findings of the stage or higher COPD was 10.1% for men and 8.5 % for women. The ORs for 10 years age increments were much the same across sites and for women and men. The pooled estimate was 1.94% per 10 years increment. Sites- specific pack year ORs varied significantly in women, but not in men.

According to the latest WHO estimates (2004), currently, 64 million people have COPD and 3 million people died of COPD. WHO predicts that COPD will become the third leading cause of death worldwide by 2030 The World Health Organization (WHO) estimates that COPD as a single cause of death shares 4th and 5th places with HIV/AIDS (after coronary heart disease, cerebrovascular disease, and acute respiratory infection). The statistics of the incidence of COPD in the world is as follows,

The WHO estimates that in 2007, 2.74 million people died of COPD worldwide. In 1990, a study by the World Bank and WHO ranked COPD 12th as a burden of disease; by 2020, it is estimated that COPD will be ranked 5th According to the WHO, passive smoking carries serious risks, especially for children and those chronically exposed. The WHO estimates that passive smoking is associated with a 10 to 43 percent increase in the risk of COPD in adults. Although cigarette smoking is the 16primary cause of COPD, the WHO estimates that there are 400,000 deaths per year from exposure to biomass fuels.

In Algeria, the prevalence of tuberculosis and acute respiratory infection has decreased since 1965, but an increase in chronic respiratory diseases (asthma and COPD) has been observed in the last decade. COPD is estimated to be 6.2 percent in Asian countries surveyed by the Asian Pacific Society of Respiratory Diseases. The use of biomass fuels,

especially in the rural areas, contributes to a higher prevalence of COPD in some of these countries and suggests that COPD may be significantly greater in this region of the world than previously estimated.

In China, where it is estimated that over 50 percent of men smoke, chronic respiratory diseases are the 4th leading cause of death in large urban areas, but the first leading cause of death in rural areas. In China, smoking rates among women remain low (estimated at 6 percent), although the prevalence of COPD in men and women is about the same. This points to the importance of risk factor other than smoking as a cause for COPD in Chinese women.

In Malaysia, respiratory illness is the primary cause of visits to health clinics and outpatient hospital clinics. It is estimated that 50 percent of the male population smokes, with higher rates in the rural areas than the urban areas. COPD is the third leading cause of death in the U.S. (It was originally projected to be the third leading cause of death for both males and females by the year 2020. - The Centers for Disease Control (CDC) and Prevention's National Center for Health Statistics (NCHS) released a report on Dec 10, 2010, "Deaths: Preliminary Data for 2008," confirming that Chronic Obstructive Pulmonary Disease (COPD) became the third leading cause of death in the U.S. for 2008.) The NHBLI reports that 12.1 million adults 25 and older were diagnosed in 2001. It is estimated that there may currently be 16 million people in the United States currently diagnosed with COPD.

JOSHI J.M ETAL (2007) Recent studies have made important contributions in examining temporal spatial, or multi pollutant patterns, in addition to day-to-day or seasonal variability in household concentrations and exposures in biomass using home. Collectively, the evidence from these studies shows that rural women, and children in solid fuel using settings experience extremely high levels of air pollutants often at least an order of magnitude higher than what is commonly considered as safe levels of exposure. WHO's Comparative Risk Assessment (15) estimated that about 950,000 children die each year from acute lower respiratory infections as a result of these exposures worldwide along with about 650,000 premature deaths of women from COPD and lung cancer.

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RON HALBERT ET AL (2008) Although smoking remains the predominant risk factor, it needs to be emphasized that the prevalence of COPD in non-smokers suggests the existence of other risk factors such as passive smoking, occupational exposure, and indoor air pollution. Recently, exposure to biomass smoke resulting from household combustion of solid fuels has been identified as an important risk factor for COPD, with rural women in developing countries bearing most of this disease burden. In addition to respirable particulate matter, biomass combustion results in high levels of pollutants such as carbon monoxide, oxides of nitrogen and sulphur, formaldehyde, benzo(a)pyrene, and benzene that are the major source of respiratory irritants in the etiopathogenesis of COPD. Although COPD affects twice as many males as females, this difference will diminish given the fact that more and more females throughout the world have taken up smoking in the past few years in developed countries, and non-smoking females are exposed to biomass combustion products in developing countries.

GUNEN.H ET AL (2008) A study conducted in different categories of chronic obstructive pulmonary disease in railway workers on Eastern India to evaluate the pulmonary function showed the pulmonary function test values were significantly deteriorated in all categories of chronic obstructive pulmonary disease patients as compared to normal non-smokers, significant deterioration was observed in emphysematous patients when compared to other categories and chronic obstructive pulmonary disease patients. Chronic obstructive pulmonary disease (COPD) is the fourth leading cause of death and 13th leading cause of burden of diseases worldwide with projected increases in its contributions over the next decade. The global initiative for chronic obstructive lung disease (GOLD) has classified COPD as 'a disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases'. Active smoking is the major risk factor for COPD worldwide, and the risk attributable to active smoking in COPD varies from 40 to 70% according to the country.

CONCEPTUAL FRAME WORK

The conceptual frame work of the present study was developed by the investigator is based on Nola benders health promotion model (1997)that is mostly applicable while dealing with improve the breathing pattern and promoting deep breathing exercise

Major concept

A. Person

Man has the ability to express human health potential and has the capacity for reflective self awareness ,including the assessment of his own competencies

The important of a individual's unique personal factors or characteristics and experiences will depend on the target behavior for health promotion

B. Health

- ◆ Health promotion is defined as client behavior towards developing well being and actualization human healthpotential
- ◆ Health protection is client behavior geared towards preventing illness detecting it early or maintainingfunction

C. Nursing

- ◆ The trend towards health promotion has created the opportunity for nurse to strengthen the professions influences on health information disseminate information that promotes an educated public and assist individuals and communities to change long –standing healthbehavior

D. Environment

- ◆ Individuals are more apt to perform behavior if they are comfortable with

the environment versus feeling alienated environment that are consider safe as well as facilitate health promotionbehavior

Key concept

Individual characteristics and experiences

- Prior relatedbehavior
- Most of the person have breathing problem and less know about the deep breathing exercise and to treat for chronic obstructive pulmonarydisease
- Personalfactors people have inadequate experience about deep breathing exercise

Behavior specific cognitions and affect

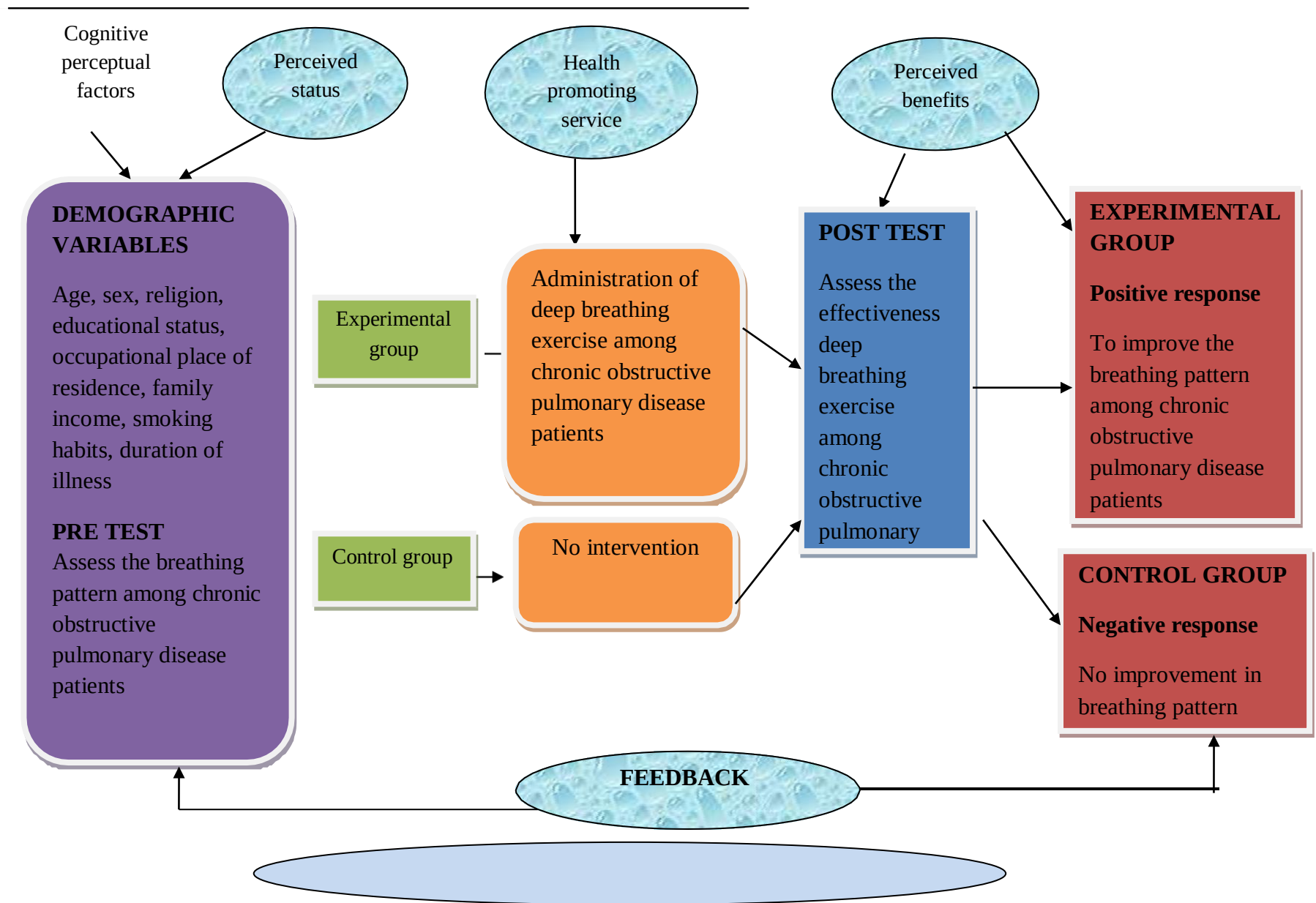
- Perceived benefits of action
- In this study the effectiveness of deep breathing exercise amongchronic obstructive pulmonary disease to improve breathingpattern
- **Perceived barriers toaction**
 - Perceived self–efficacy
 - Activity –relatedaffect
 - Interpersonalinfluences
 - Situationalinfluences

In this study the interpersonal and situational influences act as a perceived barrier to action

Behavior outcomes

- Commitment to a plan ofaction
- Immediate competing demands andpreferences
- Health –promotingbehavior

After deep breathing exercise, most of the person adequate information and effectiveness deep breathing exercise which indicated health promoting behavior



CHAPTER - III

METHODOLOGY

The methodology of research indicates the general pattern of organizing, the procedure of gathering valid and reliable data for the problem under investigation

(pilot andbeck, 2010)

Methodology is a significant part of any study, which enables the research to logically project the research undertaken .research methodology is the systemic way to carry out an academic study and research in flawless manner. The chapter includes research design, sample, population, and sample size, sampling technique, development of the tool, content validity, pilot study, ethical considerations .data collection procedure and plan for data analysis

RESEARCH APPROACH

The researcher approaches is a adopted a quantitative evaluative approach.

RESEARCH DESIGN

The research design is the overall plan, structure and method of investigation of answers the research question or problem.

For this study research design is quasi experimental. Pre experimental (one group pre and post test) design will be used for the study.

SCHEMATIC REPRESENTATION OF THE STUDY

The Schematic representation of the study design is given below.

<i>GROUP</i>	<i>PRE TEST</i>	<i>INTERVENTION</i>	<i>POST TEST</i>
<i>Experimental group</i>	<i>O₁</i>	<i>X</i>	<i>O₂</i>
<i>Control group</i>	<i>O₁</i>	-	<i>O₂</i>

O₁, O₂ - Effect of deep breathing exercise

O₁- Assessment of breathing pattern among chronic obstructive pulmonary disease(pretest)

X- Intervention { deep breathing exercise }

O₂ - Assessment of breathing pattern among chronic obstructive pulmonary disease(posttest)

VARIABLES UNDER THE STUDY

A variable is defined as a concept or abstract idea that can be described in measurable terms. In research, this term refers to the measurable characteristics, qualities, traits, or attributes of a particular individual, object, or situation being studied.

There are two types of variables. were identified in this study. They are independent variables and dependent variables.

Independent variables

An independent variable is a variable that is manipulated to determine the value of a dependent variable deep breathing exercise

Dependent variable

A dependent variable is what you measure in the experiment and what is affected during the experiment chronic obstructive pulmonary disease (breathing difficulty)

Demographic variables

:

Personal statistics that includes information like income level, location, ethnicity, race and family size. Age, sex, education, marital status, occupation, previous history of smoking habits, continuous breathing difficulty presented, income of the family, previous history of respiratory disease

SETTING OF THE STUDY

Setting is the general location and condition in which data collection is taking place for the study (pilot, and beck, 2010)

The research will be conducted at Sathyabama General Hospital, Chennai. The samples for the experimental group will be selected from Sathyabama General Hospital in Chennai

Sample

It is a subset of a population selected to participate in a study (pilot and bungler)

The sample selected for the present study was 60 patients admitted in Sathyabama General Hospital, Chennai.

Sample size

A sample of 60 chronic obstructive pulmonary disease patients who fulfilled the criteria were selected (30 samples for the experimental group and 30 samples for the control group) Total number of samples includes is 60

Sample technique

Sampling is a process of selecting a portion of the population to represent the entire population can be made. The sampling technique adopted for this study is non probability purposive sampling technique

Sampling criteria

The study samples will be selected in accordance to view of the following pre determined criteria

Inclusion criteria

□

➤ Patients who are available during the period and data collection.

□

➤ Patients affected with Chronic obstructive pulmonary disease who are willing to participate in

thisstudy

☐

- Patients those who are able to understand and speak Tamil or English

Exclusion criteria

☐

- Patients who are critical condition.

☐

- Patients using any other complementary treatment

☐

- Patients who were absent at the time of data collection

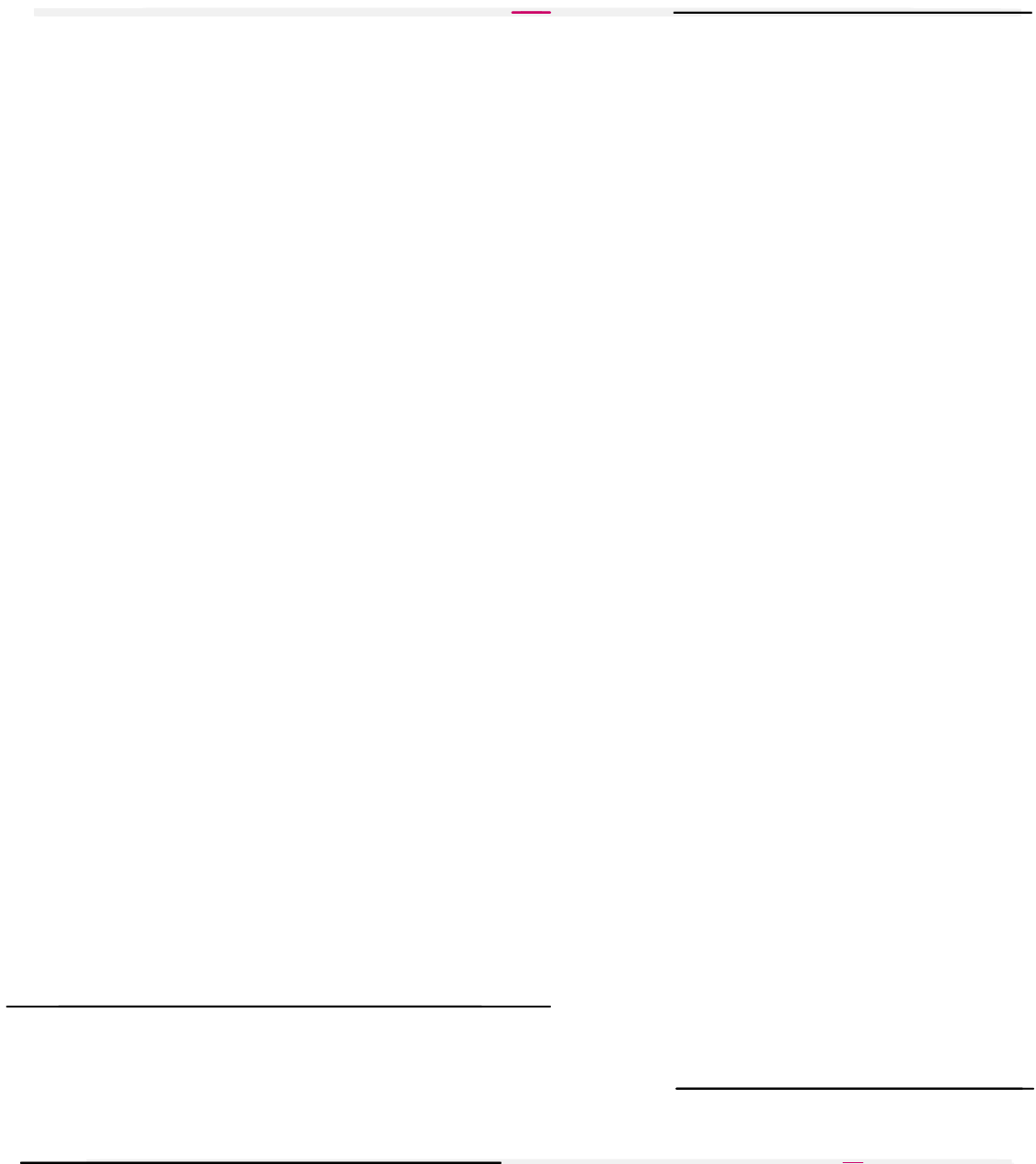


Figure 3.1. Schematic representation of the research methodology

POPULATION

A population is the entire aggregation of cases considered, that meet a designed set of criteria for some purpose

Target population

The total group of individual or subjects to which researchers are interested in generalising the conclusions

Here the target population is chronic obstructive pulmonary disease patients at selected hospitals, Chennai

Accessible population

The population of research to which the researchers can apply their interventions and conclusions

Here Chronic obstructive pulmonary disease patients who are having breathing problem at selected hospitals, Chennai is considered as Accessible population

DATA COLLECTION INSTRUMENT

Structured interview schedule will be used to collect the personal variables and observation technique will be used to assess breathing pattern. Data will be collected by using following tools:

Section I:

Personal Performance will be used to assess personal variable. (demographical variables)

Section II:

☐ Breathing pattern will be assessed using modified Borg dyspnea scale

Modified Borg dyspnea scale

Scoring	
0	No breathlessness
1	Very very slight
2	Very slight
3	Slight breathlessness
4	Moderate
5	Some what severe
6	severe breathlessness
7	Very severe breathlessness
8	Very very severe breathlessness
9	Maximum
10	Almost maximum

SCORING INTERPRETATION

3-4-moderate

5-6-severe breath

7-8- very very severe

9-10-Almost maximum

DATA COLLECTION METHOD

☐

➤ Data will be collected after obtaining prior permission from the hospitals.

☐

➤ Objective of the study will be explained and informed consent will be taken from the patients.

☐

➤ Data will be collected through demographic profile and modified dyspnea scale to assess the effectiveness of deep breathing p exercise among CPOD patients.

➤ Pre test breathing pattern can be measured by administering the deep breathing exercise .

☐

➤ Deep breathing exercise will be administered to the patients same day.

DESCRIPTION DATA COLLECTION

Data collection instrument consists of two Sections

Section- I Demographic variables

Section-II deep breathing exercise

SECTION I

Demographic variables

Contains of questions that elicit demographic data such as, Age, Gender, Education,

Occupation, family History of COPD, treatment of COPD, duration of illness, marital status, monthly income of the family, smoking habits and continuousbreathing difficulty presented at.

SECTION II

Modified Borg dyspnea scale

The modified Borg dyspnea scale (modified dyspnea scale)is

SCORING PROCEDURE

1-2-slight

3-4-moderate

5-6-severe breath

7-8- very very severe

9-10-Almost maximum

TESTING OF THE TOOL

Validity

The degree to which an instrument measures what it is intended to measure. Validity of the tool will be obtained from experts in the field of nursing.

Reliability

Reliability of an instrument is the degree of consistency in measures that attribute it is supposed to be measured. In order to established the tool .it will be demonstrated to patient there are insample area .it will be established through test and retest method .The reliability of

the tool will be established by implementing the tool on chronic obstructive pulmonary disease among experimental and control group

PILOT STUDY

A small scale version of a larger study that is conducted to prepare for the study .a pilot study can involve pretesting a research tool, like a new data collection method Pilot study will be conducted to evaluate the feasibility and reliability of the study. The pilot study will be conducted among chronic obstructive pulmonary disease in Sathyabama General Hospital, Chennai 6 sample will be taken for pilot study. Pre test will be conducted then deep breathing exercise will be given as intervention post test will be conducted after 15 mint of intervention

PROCEDURE FOR DATA COLLECTION

The investigator will get formal permission from the college authority, Sathyabama College of nursing and concerned authority of hospitals.

The study participantstthose who will fulfill the inclusion criteria were selected by convenience sampling technique. 30 subjects were assigned in experimental group and 30 subjects in control group.Brief explanation regarding the purpose of the study is given to the subjects.Assurance is given that the data will be utilized only for the purpose of the study. Oral consent is taken from each subject and it will be maintained the confidentiality. First investigator establishesa good rapport and introduce the study topic to the patients. The Investigator will collect data regarding demographic variables. The dyspnea scale will be used to assess the level of breathing difficulty in experimental group before each breathing exercise. The deep breathing exercise will be given to theexperimental group twice daily for 15-20 minutes. The post test will be conducted in experimental group 1 hour after each breathing exercise .For control group, the dyspnea scale will be used to assess the pre test level of breathing difficulty twice before giving exercise and post test level of breathing difficulty will be assessed 1 hour of each pre test assessment.

Weeks	Activity	Sample	
		Control group	Experimental group
1 st week	Pre test-Post test	13samples	-
2 nd week	Pre test-Post test	17samples	-
3 rd week	Pre test-intervention-Post	-	5samples
4 th week	Pre test-intervention-Post	-	12 samples
5 th week	Pre test-intervention-Post	-	13samples
6 th week	Data analysis & interpretation	30 samples	30 samples

STATISTICAL ANALYSIS

Collected data were analyzed by descriptive and inferential statistics. The data related to demographic variables were analyzed by using descriptive measures (frequency, percentage distribution). Inferential statistics of t-test was used to evaluate the effectiveness of deep breathing exercise on level of breathing difficulty.. Chi-square test was used to associate the level of breathing difficulty among patients' chronic obstructive pulmonary disease and their selected demographic variables.

PLAN FOR DATA ANALYSIS

- ◆ Data analyzed based on the objective of the study using descriptive inferential statistics
- ◆ Frequencies and percentages for the analysis of the demographic data
- ◆ Mean score, percentage and standard deviation for the level of breathing difficulty
- ◆ Paired "t" test used to find out the association of experimental and control group.

ETHICAL CLEARANCE

The proposed study was conducted after the approval of dissertation committee of the college, chief of the hospital also after the consent from the study participants without violating the human rights

CHAPTER - IV

DATA ANALYSIS AND INTERPRETATION

The process of evaluating data using analytical and logical reasoning to examine each component of the data provided. This form of analysis is just one of the many step that must be completed when conducting a research experiment. Data from various source is gathered ,reviewed, and then analyzed to form some sort of finding or conclusion. There are a variety of specific data analysis method, some of which include data mining, text analytics, business intelligence and data visualizations.

“Analysis is a process of organizing and synthesizing data so as to answer research questions and test hypothesis”.

-Polit and Beck

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Data from various source is gathered ,reviewed, and then analyzed to form some sort of finding or conclusion. There are a variety of specific data analysis method, some of which include data mining, text analytics, business intelligence and data visualizations.

This chapter describes analysisof data collected to assess the effectiveness of deep breathing exercise among chronic obstructive pulmonary disease in Sathyabama general hospital, Chennai .

The collected data was organized, analyzed and tabulated by using descriptive and inferential statistics. These data were represented as follows.

1. Data on demographic variables of chronic obstructive pulmonary patients in experimental and control group.
2. Data on breathing pattern among chronic obstructive pulmonary disease in experimental and control group.

3. Data on effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients
4. Data on association between the pretest breathing pattern in experimental group and their selected demographic variables.
5. Data on association between the pretest level of breathing pattern in control group and their selected demographic variables
6. Data on demographic variables of chronic obstructive pulmonary patients in experimental and control group

OBJECTIVE – I

Data on demographic variables of chronic obstructive pulmonary patients in experimental and control group.

Table:4. 1 Distribution offrequency and percentage for chronic obstructive pulmonary patients according to their Demographic variables.

N=30+30

SL. NO	DEMOGRAPHIC VARIABLES	CONTROL GROUP		EXPERIMENT GROUP	
		FREQUENCY	PERCENTAGE	FREQUENCY	PERCENTAGE
1.	Age in (years):				
	a) 1 - 15	5	16.7	4	13.3
	b) 16- 30	6	20	8	26.7
	c) 31- 45	10	33.3	9	30
	d) 46 and above	9	30	9	30
2.	Gender:				
	a. Male	14	46.7	17	56.7
	b. Female	16	53.3	13	43.3
	c. Others	0	0	0	0

3.	Educational status :				
	a) Illiterate	8	26.7	8	26.7
	b) Primary	6	20	7	23.3
	c) High school	7	23.3	9	30
	D) Higher secondary	9	30	6	20
4.	Marital status :				
	a) Married	15	56.6	22	73.3
	b) Un married	6	20	6	20
	c) Divorce	5	16.7	0	0
	d) Widow	4	13.3	2	6.7
5.	Occupation :				
	a) Industrial workers	8	26.7	9	30
	b) Private employee	7	23.3	8	26.7
	c) Government Employee	6	20	4	13.3
	d) none	9	30	9	30
6.	Monthly income of the Family:				
	a) < 5000	12	40	10	33.3
	b) 5000-10000	9	30	10	33.3
	c) >10000	9	30	10	33.3
7.	Duration of illness :				
	a) < 1 year	9	30	10	33.3

	b) 2-5 year	9	30	10	33.3
	c) 6- 12 year	12	40	10	33.3
8.	Treatment of chronic obstructive pulmonary disease :				
	a) Regular	14	46.7	16	53.3
	b) Irregular	16	53.3	14	46.7
9.	Family history of chronic obstructive pulmonary disease :				
	a) Yes	6	20	12	40
	b) No	24	80	18	60
10.	Smoking habits:				
	a) Yes	12	40	24	80
	b) No	18	60	6	20
11.	Continuous breathing difficulty present at :				
	a) wake up	5	16.7	6	20
	b) walking	4	13.3	7	23.3
	c) sleeping at night time	5	16.7	6	20
	d) exercise	16	53.3	11	36.7
12.	Duration of sleep:				
	a. 6 - 8 hours	5	16.7	7	23.3
	b. 4 - 6 hours	5	16.7	6	20

	c. Less than 4 hours	16	53.3	11	36.7
	d. Disturbed sleep	4	13.3	6	20
13.	Breath holding capacity:				
	a) 30 - 35 sec	0	0	0	0
	b) 25 - 34 sec	0	0	0	0
	c) 20 - 24 sec	7	23.33	10	33.33
	d) 19 - 10 sec	11	36.66	9	30
	e) Below 10 sec	12	40	11	36.6
14	Difficulties felt other than breathlessness:				
	a. Wheezing	5	16.7	6	20
	b. Chest tightness	4	13.3	7	23.3
	c. Rapid weight loss	5	16.7	6	20
	d. All the above	16	53.3	11	36.7

CONTROL GROUP

The above table shows that among 30 samples, with regards to **age** majority belonged to above 46 years 10(33.3%) and With regards to **gender** male 14(46.7%), and female 16 (53.3%)

Regarding **educational** status illiterate 8(26.7%) of them ,6 (20%) of them had primary education,7(23.3%),of them had high school education and9(30%) had higher secondary education

In relation to **marital status**, 15(56.6%) of the samples belonged to married and Unmarried6(20%) and divorce 5(16.7%) , widow 4(13.3%)

With regards to occupational status Industrial workers8(26,7%), private employee,7(23.3%) , government employee,6(20%) and 9(30%) are jobless

About income of the **family monthly**, 12(40%) samples of them are<5000, 9(30%) samples of them belong to 5000-10000 and 9(30%) samples of them are>10000.

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

Regarding the **family history** of chronic obstructed pulmonary disease6(20%) of them were yes and 24(80%) were no

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 are 5(16.7%), the samples belonged to walking are 4(13.3%), the sample belonged to, sleeping at night time 5(16.7%) and samples of the belonged to, exercise 16(53.3%)samples

Regarding duration of sleep 5(16.7%) of them sleep 6-8 hours,samples sleeping 4-8 hours are 5(16.7%),16(53.3%) of them sleep less than 4 hours and 4(13.3%) are suffering from disturbed sleep

Regarding breath holding capacity in samples shows that 2(6.7%) has 30 -35 sec, 3(10%) has 25-29 sec, 5(16.7%) has 20-24 sec, 9(30%) has 19-10 sec and 11(36.7%) shows breath holding capacity below 10 sec.

When consider difficulties other than dypnea 5(16.7%) of them shows wheezing, 4(13.3%) shows chest tightness, 5(16.7%) shows rapid weight loss and 16(53.3%) shows all mentioned difficulties.

EXPERIMENTAL GROUP

The above table shows that among 30 samples, with regards to **age** majority belonged to both 31-45 years 9(30%) and above 46 years 9(30%), and With regards to **gender** male 17(56.7%), and female 13 (43.3%)

Regarding **educational** status illiterate 8(26.7%) of them ,7(23.3%) of them had primary education,9(30%)of them had high school education and 6 (20%) had higher secondary education

In relation to **marital status**, 22(73.3%) of the samples belonged to married and Unmarried6(20%) and divorce 0(0%) , widow 2(6.7%)

With regards to occupational status Industrial workers9(30%), private employee, 8(26,7%), government employee, 4(13.3%) and 9(30%) are jobless

About income of the **family monthly**, 10(33.3%) samples of them are<5000, 10(33.3%) samples of them belong to 5000-10000 and 10(33.3%) samples of them are>10000.

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 disease16(53.3%) samples are in regular14(46.7%) samples are in irregular

Regarding the **family history** of chronic obstructed pulmonary disease 12(40%) of them were yes and 18(60%) were no

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 up are 6(20%), the samples belonged to walking are7(23.3%), the sample belonged to, sleeping at night time 6(20%) and samples of the belonged to, exercise 11(36.7%)samples

Regarding duration of sleep 7(23.3%) of them sleep 6-8 hours,samples sleeping 4-8 hours are 6(20%),11(36.7%) of them sleep less than 4 hours and 6(20%) are suffering from disturbed sleep

Regarding breath holding capacity in samples shows that 1(3.3%) has 30 -35 sec, 4(13.3%) has 25-29 sec, 6(20%) has 20-24 sec, 8(26.7%) has 19-10 sec and 11(36.7%) shows breath holding capacity below 10 sec.

When consider difficulties other than dypnea 6(20%) of them shows wheezing, 7(23.3%) shows chest tightness, 6(20%) shows rapid weight loss and 11(36.7%) shows all mentioned difficulties.

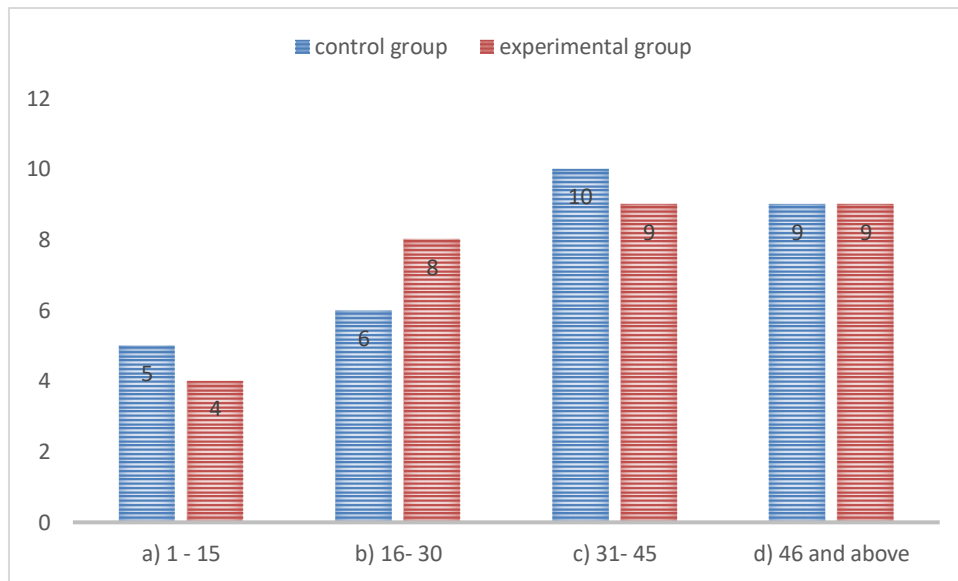


Fig 4.1 Distribution based on age in experiment and control group

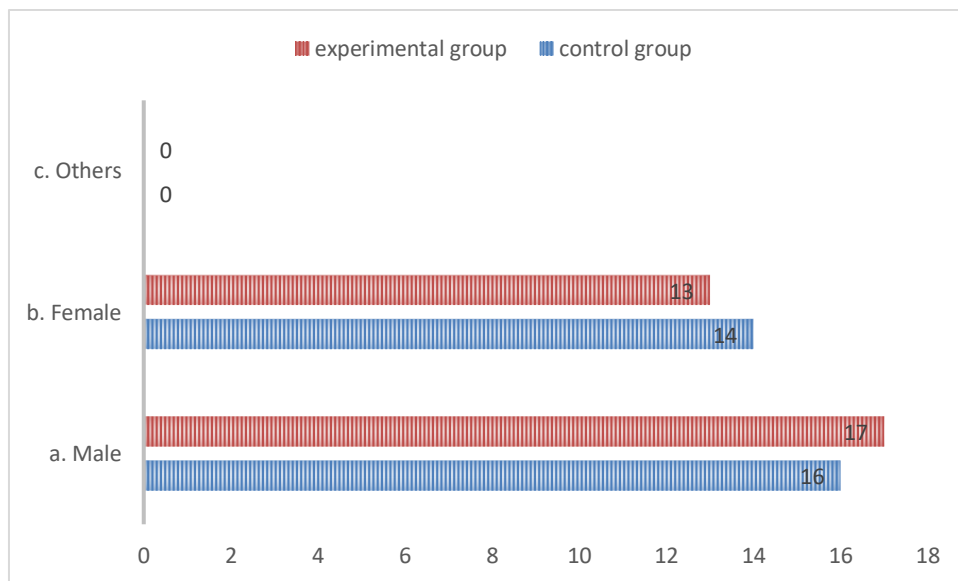


Fig 4.2 Distribution based on gender in experiment and control group

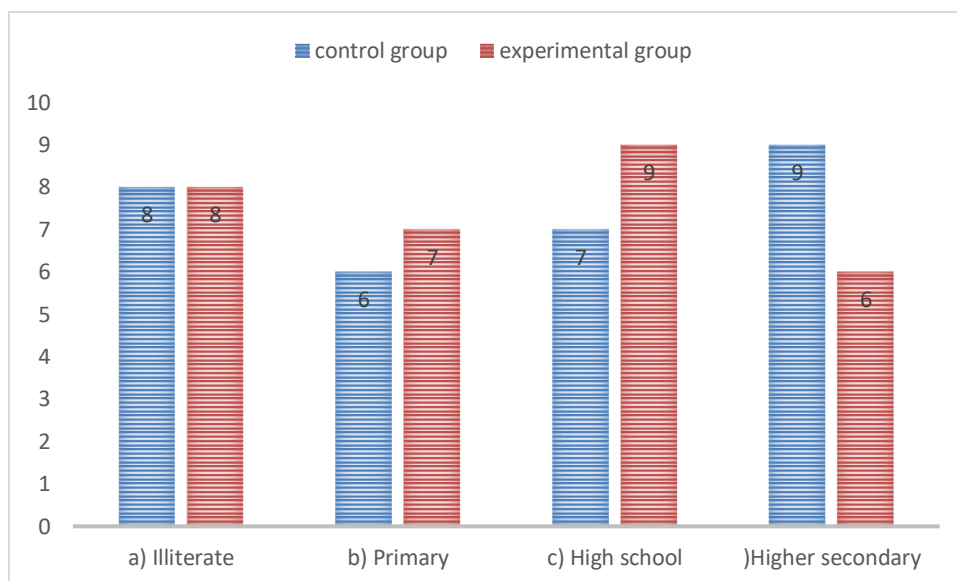


Fig 4.3 Distribution based on education status in experiment and control group

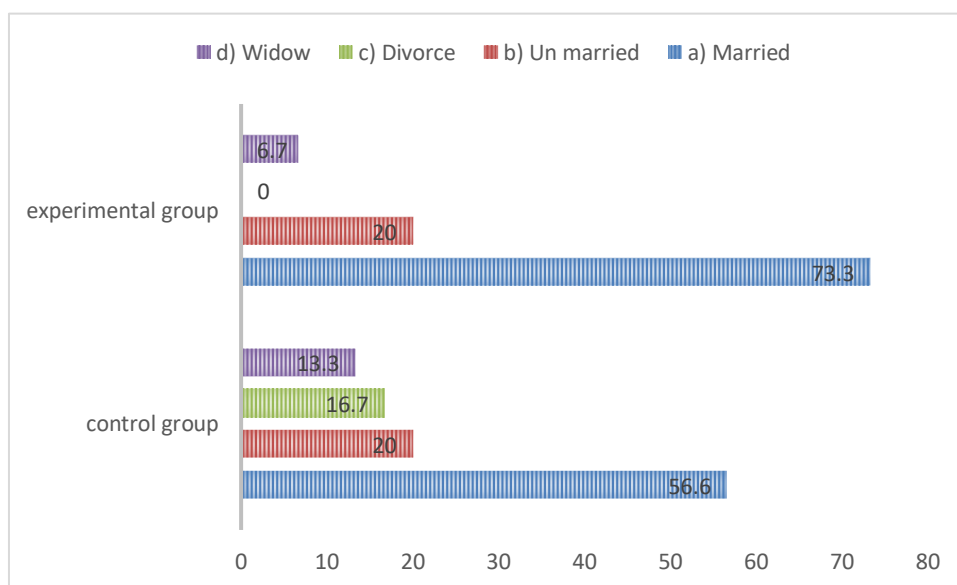


Fig 4.4 Distribution based on marital status in experiment and control group

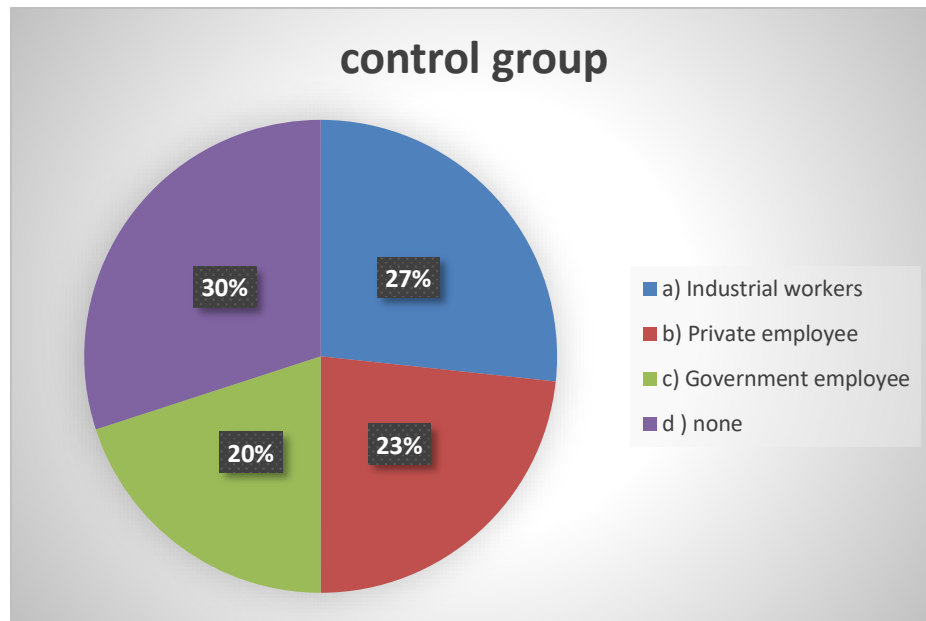


Fig 4.5 a

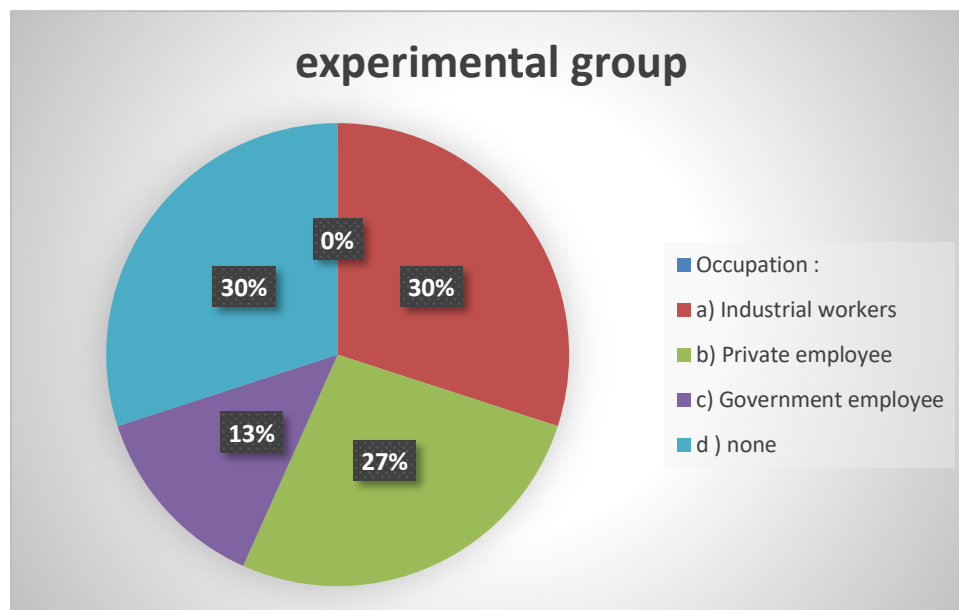


Fig .4.5 b

Fig 4.5 Distribution based on occupation in experiment (b) and control group (a)

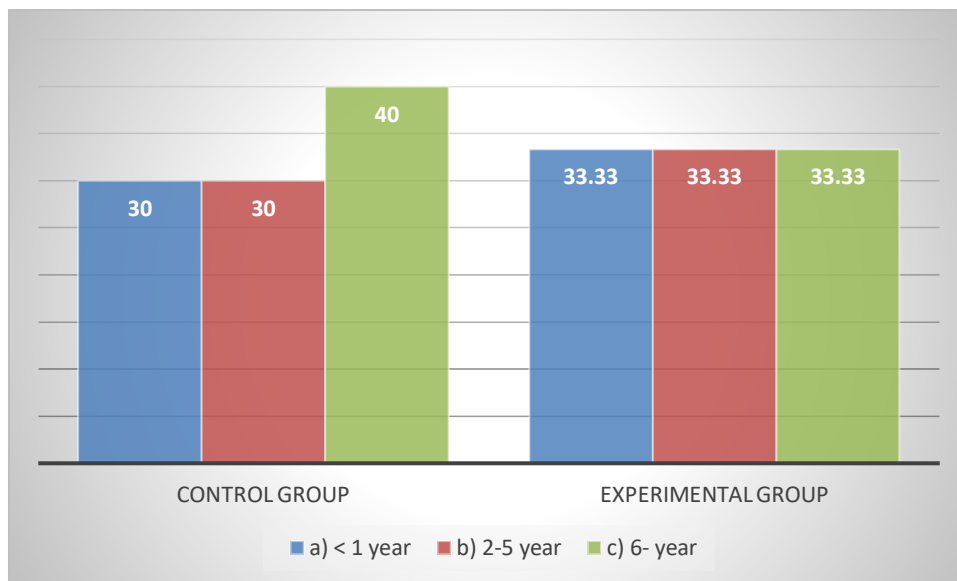


Fig 4.6 Distribution based on duration of illness in experiment and control group

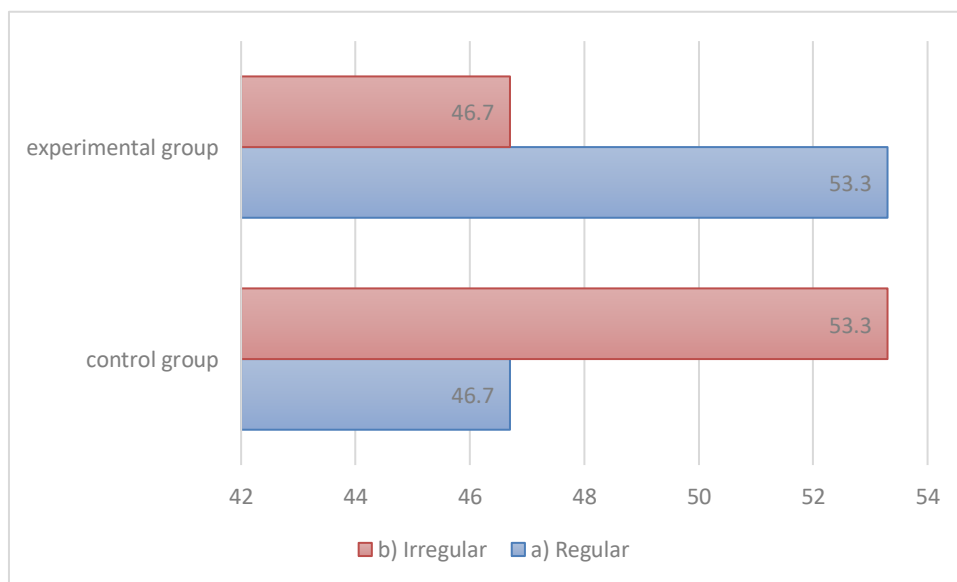


Fig 4.7 Distribution based on treatment in experiment and control group

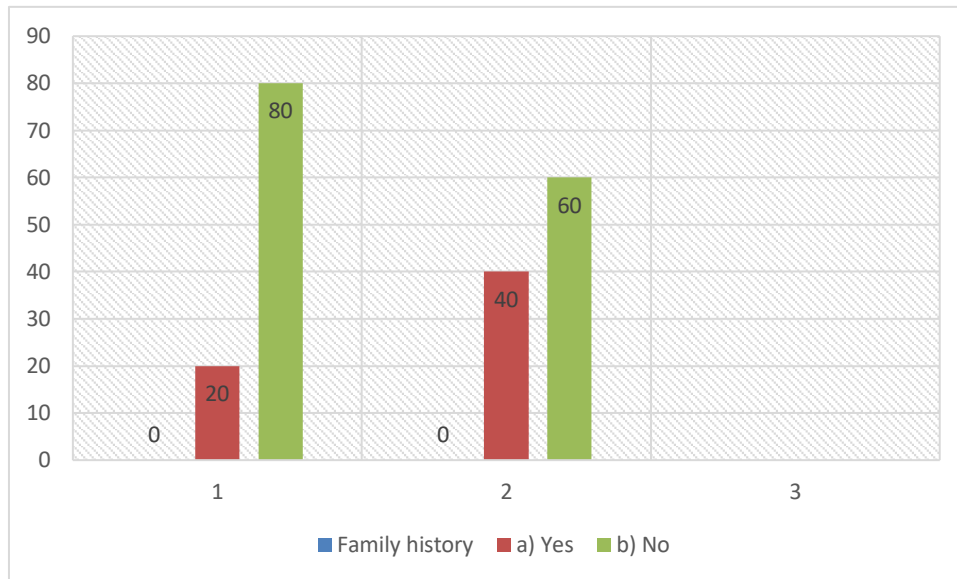


Fig 4.8 Distribution based on family history in experiment and control group

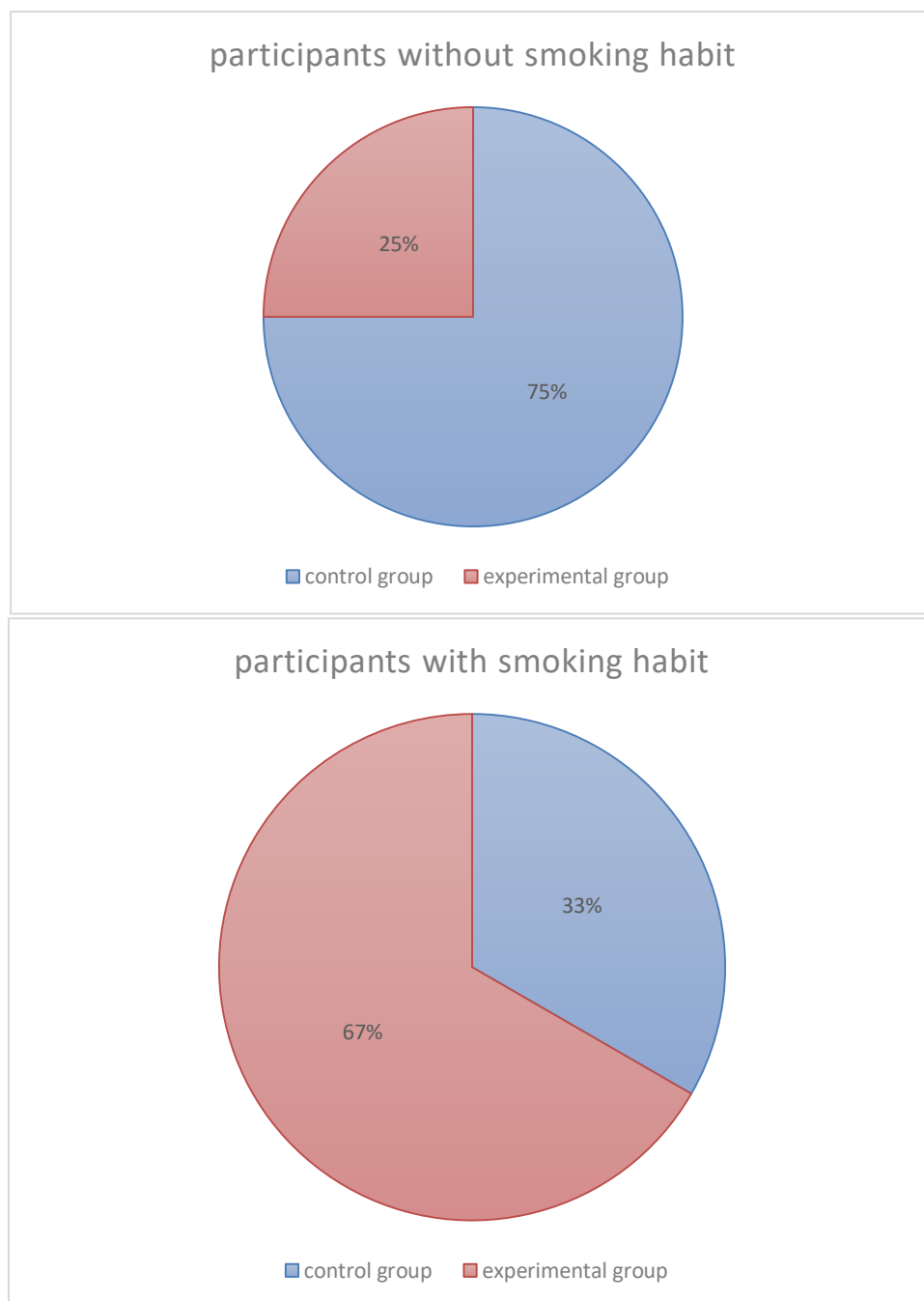


Fig 4.9 Distribution based on smoking habits in experiment and control group

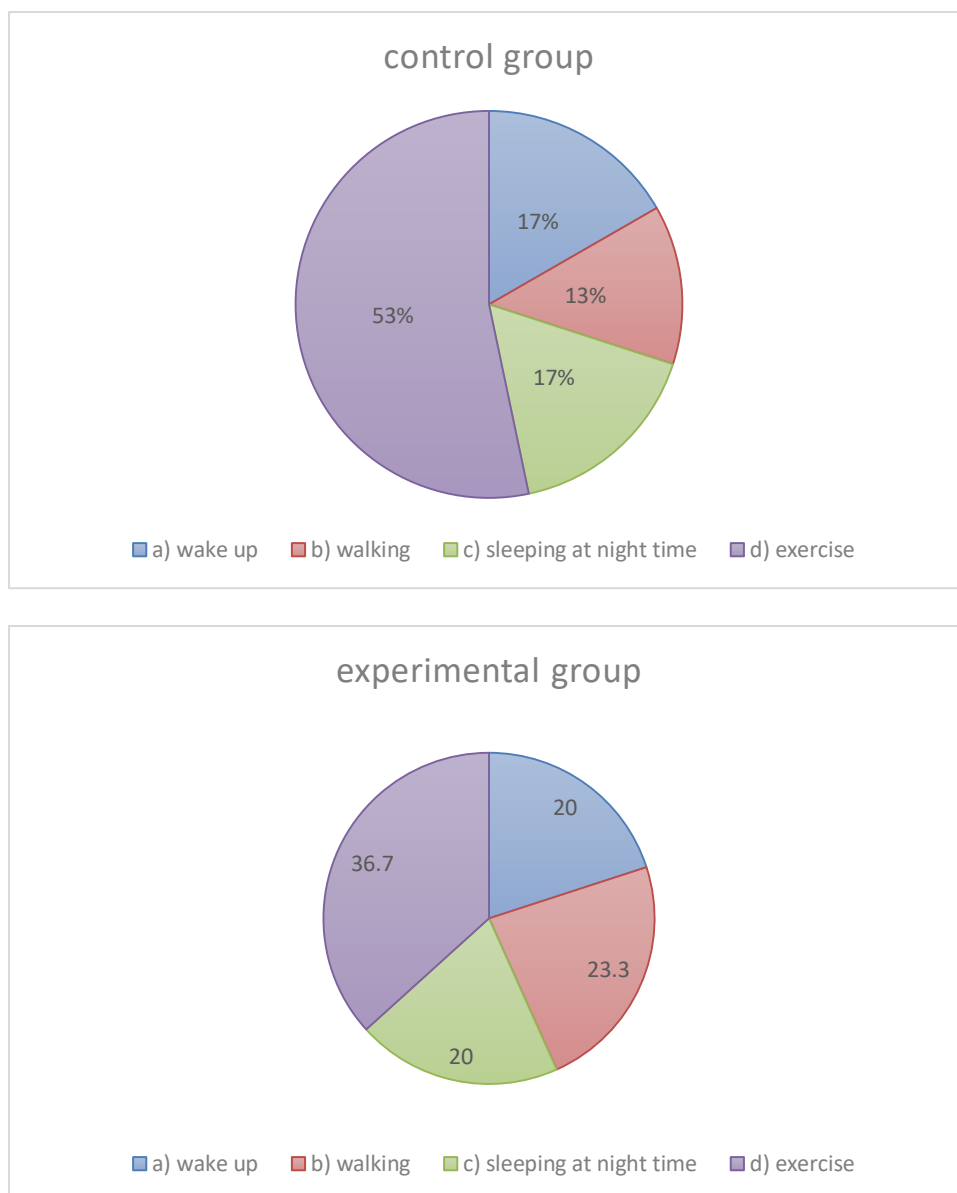


Fig 4.10 Distribution based on continuous dyspnea during in experiment and control group

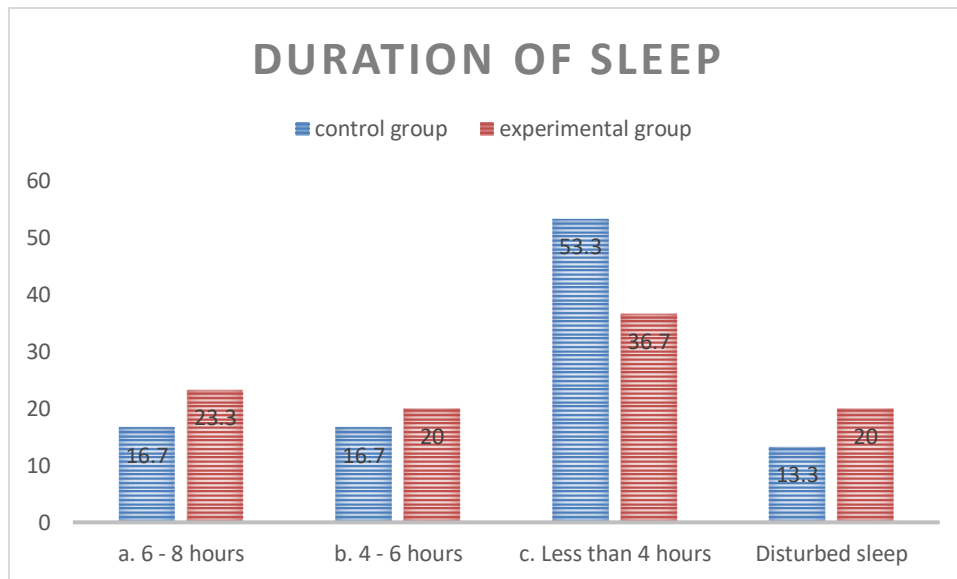


Fig 4.11 Distribution based on duration of sleep in experiment and control group

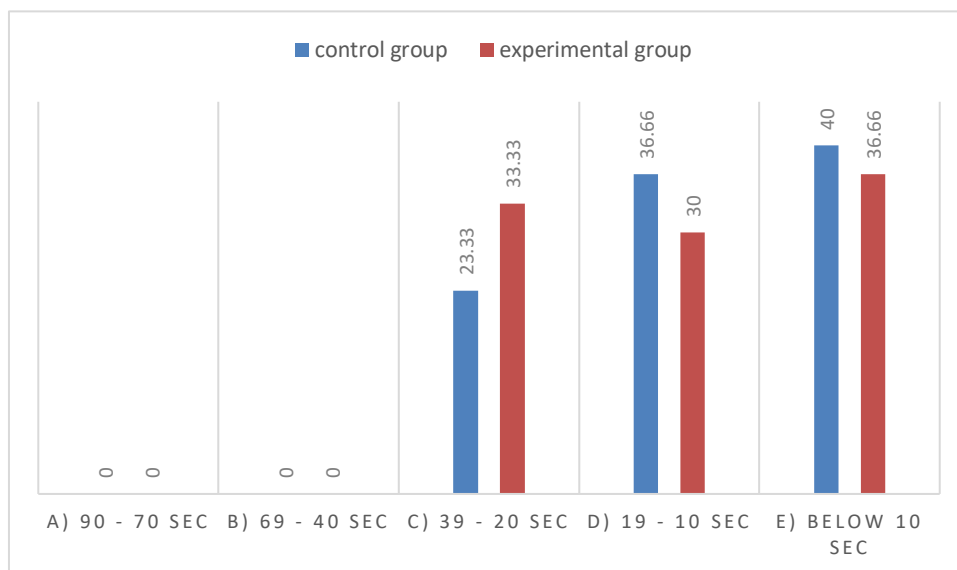


Fig 4.12 Distribution based on breath holding capacity in experiment and control group

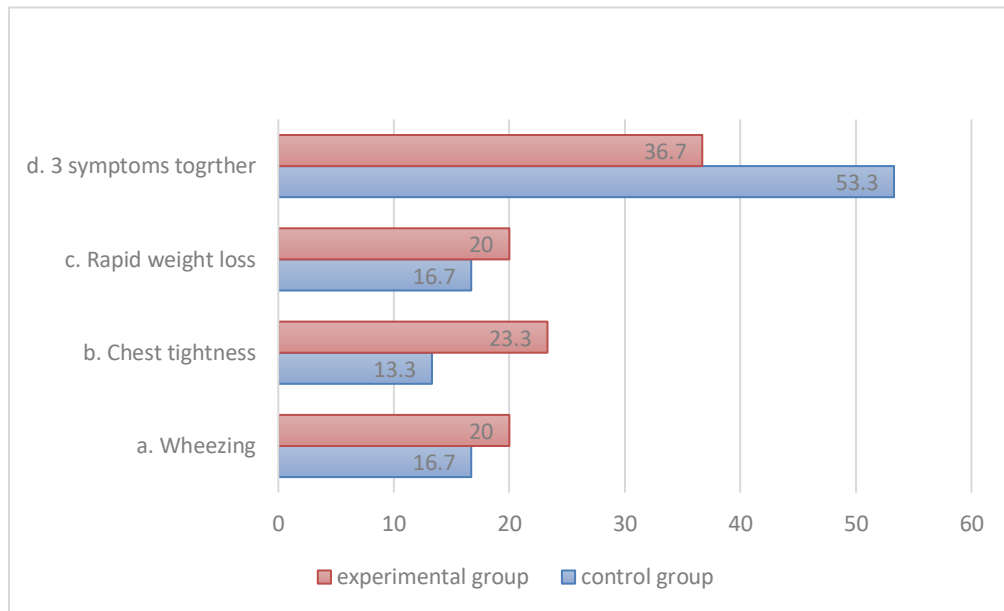


Fig 4.13 Distribution based on difficulties other than breathlessness in experiment and control group

OBJECTIVE-II

Data on the deep breathing exercise among chronic obstructive pulmonary disease patients in experimental and control group.

Table 4.2: Frequency and percentage for deep breathing exercise among chronic obstructive pulmonary patients in control and experimental group

LEVEL OF BREATHING PATTERN (score)	CONTROL GROUP				EXPERIMENTAL GROUP			
	PRE TEST		POST TEST		PRE TEST		POST TEST	
	F	%	F	%	F	%	F	%
No breathlessness (0)	-	-	-	-	-	-	-	-
Very very slight (1)	-	-	-	-	-	-	-	-
Very slight (2)	-	-	-	-	-	-	12	40
Slight breath (3)	-	-	-	-	-	-	10	33.3
Moderate (4)	-	-	6	10	2	6.7	2	6.7
Somewhat severe (5)	-	-	-	-	3	10	6	20
Severe breath (6)	-	-	-	-	-	-	-	-
Very severe (7)	4	13.3	4	13.3	-	-	-	-
Very very severe (8)	8	26.7	8	26.7	5	16.7	-	-
Maximum (9)	6	20	12	40	9	30	-	-
Almost maximum (10)	12	40	-	-	11	36.7	-	-
Total	30	100	30	100	30	100	30	100

The above table 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 patients were decreased in post test than pretest.

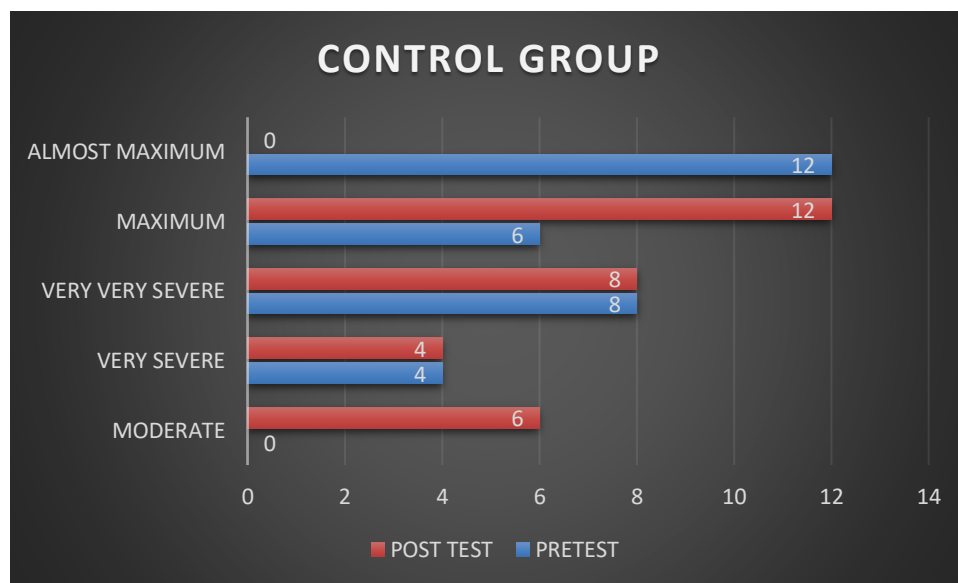


Fig.4.14 a

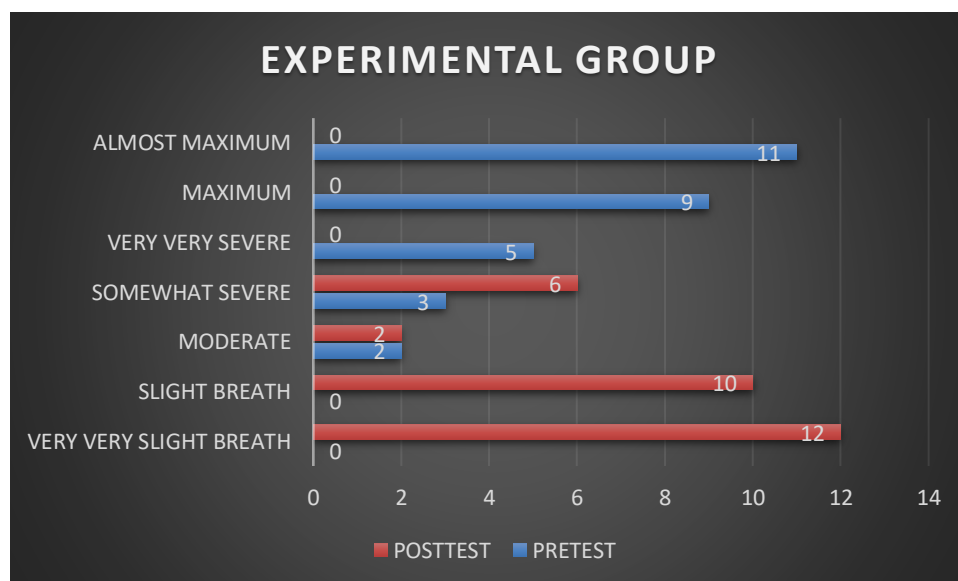


Fig.4.14 b

Figure: 4.14: Distribution of subjects based on the pretest and posttest dyspnea in control group (4.14 a) and experimental group(4.14 b).

OBJECTIVE –III

Data on effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients

Table 4.3: Mean, SD and paired ‘t’ –test of pre and posttest level of breathing pattern in control group

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 above table shows that the calculated t value’ in the control group was 2.07 which was not significantly at $P < 0.05$ level. It can be concluded that there is no much difference in pre test and post test in control group.

Table 4.4: Mean, SD and paired “t” test of pre and post level of breathing pattern in experimental 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 above table shows that the calculated “t” value in the experimental group was 2.64 which was statistically significant at $P < 0.05$ level. Hence H_1 is accepted. It can be concluded that deep

breathing exercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients.

Table 4.5: Mean, SD and unpaired ‘t’ test of posttest dyspnea in control and experimental group.

GROUP	<i>Control post test</i>		<i>Experimental post test</i>		Mean difference	t - value
	Mean	SD	Mean	SD		
Dypnea among patients	5.9	1.49	2.43	1.60	3.47	4.15*

(* - $P < 0.05$, significant and ** - $P < 0.01$ & *** - $P < 0.001$, highly significant)

The above table shows that the obtained ‘t’ value between control and experimental group is 4.51 which was significant at $p < 0.05$ level. Hence H_1 is accepted. It can be concluded that the deep breathing exercise was effective in reducing the dyspnea in experimental group among chronic obstructive pulmonary disease patients than control group.

OBJECTIVE - IV

. Data on association between the pretest and post test breathing pattern in experimental group and their selected demographic variables.

Table 4.6: Data on compare the pretest and posttest level of breathing difficulty between the control and experimental 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

N=30+30

(*- $P < 0.05$, significant and ** - $P < 0.01$ & ***- $P < 0.001$, Highly significant)

Experimental group

The above table shows that the calculated “t” value in the experimental group was 2.64 which was statistically significant at $P < 0.05$ level .Hence H_2 is accepted. It can be concluded that deep breathing exercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients

Control group

The above table shows that the calculated ‘t value’ in the control group was 2.07 which was not significantly at $P < 0.05$ level. It can be concluded that there is no much difference in pretest and posttest in control group

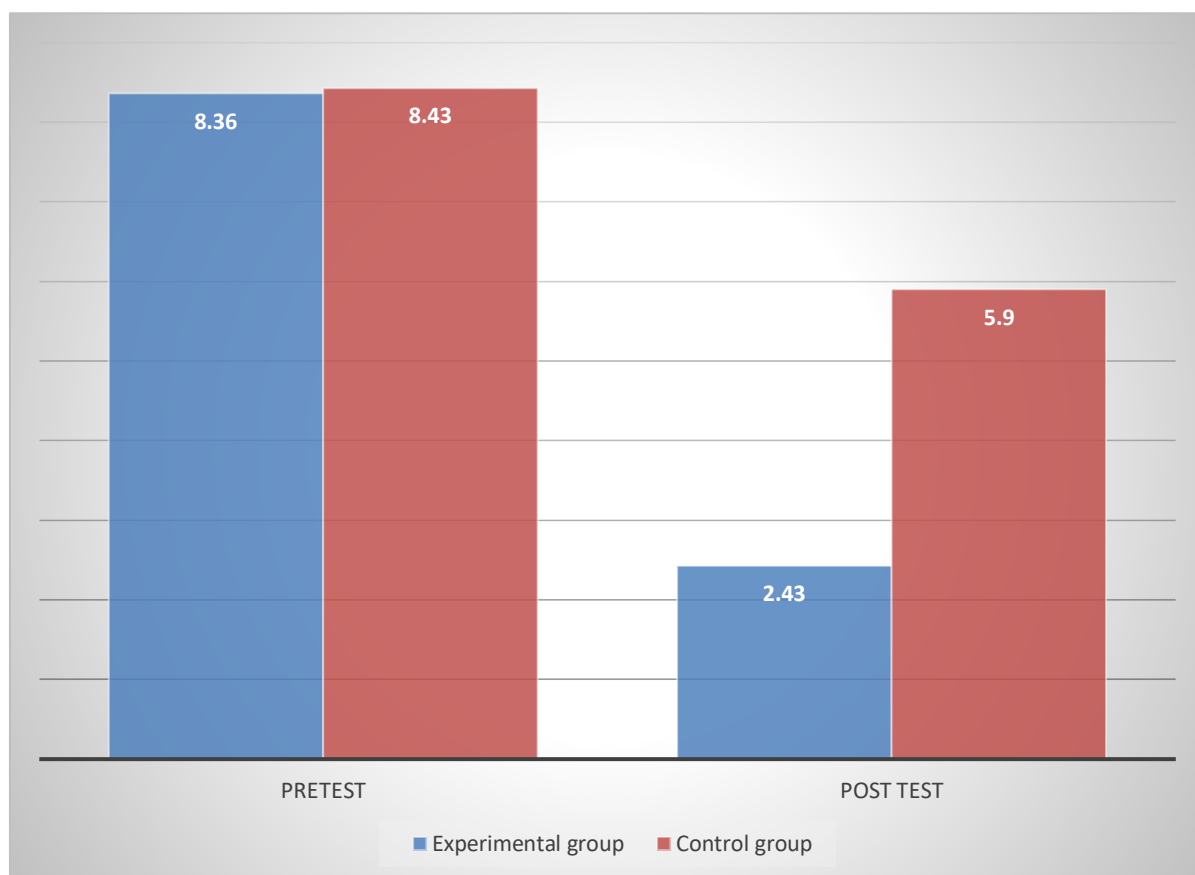


Figure 4.15: *Comparison effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients experimental and control group.*

OBJECTIVE – V

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

Table 4.7: Frequency and percentage distribution of chi-square value on control group

N=30

SL. NO	DEMOGRAPHIC VARIABLES	slight		moderate		Very Very severe		Maximum		X2	P-value
		F	%	F	%	F	%	F	%		
1.	Age in (years):										
	a) 1 - 15	1	3.3	2	6.7	0	0	2	6.7	25.63 Df=9	16.92 (S)
	b) 16- 30	1	3.3	1	3.3	2	6.7	2	6.7		
	c) 31- 45	1	3.3	5	16.7	4	13.3	0	0		
	d) 46 and above	1	3.3	0	0	0	0	8	26.6		
2.	Gender:										
	a. Male	2	6.7	5	16.7	4	13.3	3	10	4.46 Df=6	12.59 (NS)
	b. Female	2	6.7	3	10	2	6.7	9	30		
	c. Others	0	0	0	0	0	0	0	0		
3.	Educational status :										
	a) Illiterate	2	6.7	2	6.7	1	3.3	3	10	7.67 Df=9	16.92 (NS)
	b) Primary	1	3.3	3	10	2	6.7	0	0		
	c) High school	1	3.3	2	6.7	2	6.7	2	6.7		
	d) Higher secondary	0	0	1	3.3	1	3.3	7	23.3		

4.	Marital status :										
	a) Married	2	6.7	4	13.3	2	6.7	5	16.7		
	b) Un married	1	3.3	1	3.3	3	10	4	13.3	7.20 Df=9	16.92 (NS)
	c) Divorce	1	3.3	1	3.3	0	0	1	3.3		
	d) Widow	0	0	1	3.3	1	3.3	2	6.7		
5.	Occupation :										
	a) Industrial workers	2	6.7	3	10	1	3.3	2	6.7		
	b) Private employee	1	3.3	2	6.7	3	10	1	3.3	4.48 Df=9	16.92 (NS)
	c) Government Employee	1	3.3	1	3.3	1	3.3	3	10		
	d) none	0	0	2	6.7	1	3.3	6	20		
6.	Monthly income of the Family:										
	a) < 5000	2	6.7	3	10	4	13.3	3	10	6.16 Df=6	12.59 (NS)
	b) 5000-10000	1	3.3	2	6.7	1	3.3	5	16.7		
	c) >10000	1	3.3	3	10	1	3.3	4	13.3		
7.	Duration of illness :										
	a) < 1 year	1	3.3	2	6.7	2	6.7	4	13.3		
	b) 2-5 year	1	3.3	2	6.7	1	3.3	5	16.7	3.896 Df=6	12.59 (NS)
	c) 6- year	2	6.7	4	13.3	3	10	3	10		

8.	Treatment of chronic obstructive pulmonary disease :										
	a) regular	2	6.7	3	10	2	6.7	5	16.7	6.30 Df=3	7.82 (NS)
	b) Irregular	2	6.7	5	16.7	4	13.3	7	23.3		
9.	Family history of chronic obstructive pulmonary disease :										
	a)Yes	2	6.7	3	10	1	3.3	0	0	26.08 Df=3	7.82 (S)
	b) No	2	6.7	5	16.5	5	16.7	12	40		
10.	Smoking habits:										
	a)Yes	2	6.7	3	10	3	10	4	13.3	3.89 Df=3	7.82 (NS)
	b) No	2	6.7	5	16.5	3	10	8	26.7		
11.	Continuous breathing difficulty present at :										
	a) wake up	1	3.3	2	6.7	1	3.3	1	3.3	11.78 Df=9	16.92 (NS)
	b) walking	1	3.3	1	3.3	2	6.7	0	0		
	c) sleeping at night time	1	3.3	2	6.7	0	10	2	6.7		
	d) exercise	1	3.3	3	10	3	10	9	30		

12.	Duration of sleep:										
	a. 6 - 8 hours	2	6.7	3	10	1	3.3	2	6.7		
	b. 4 - 6 hours	1	3.3	2	6.7	3	10	1	3.3		
	c. Less than 4 hours	1	3.3	1	3.3	1	3.3	3	10	4.48 Df=9	16.92 (NS)
	d. Disturbed sleep	0	0	2	6.7	1	3.3	6	20		
13.	Breath holding capacity:										
	a) 90 - 70 sec	0	0	0	0	0	0	0	0		
	b) 69 - 40 sec	0	0	0	0	0	0	0	0	6.16 Df=6	12.59 (NS)
	c) 39 - 20 sec	2	6.7	3	10	4	13.3	3	10		
	d) 19 - 10 sec	1	3.3	2	6.7	1	3.3	5	16.7		
	e) Below 10 sec	1	3.3	3	10	1	3.3	4	13.3		
14	Difficulties felt other than breathlessness:										
	a. Wheezing	2	6.7	4	13.3	2	6.7	5	16.7		
	b. Chest tightness	1	3.3	1	3.3	3	10	4	13.3	7.20 Df=9	16.92 (NS)
	c. Rapid weight loss	1	3.3	1	3.3	0	0	1	3.3		
	d. All the above	0	0	1	3.3	1	3.3	2	6.7		

(* -P>0.05,significant) (NS=Not significant)S=(significant)

The above table shows that there was a significant association between dyspnea among chronic obstructive pulmonary disease patients and their demographic variables such as Age, family history of COPD, There was no association between the demographical variables such as gender, educational status, marital status, occupation,

duration of illness, treatment of COPD, family income, smoking habits, continuous breathing difficulty presented at, Duration of sleep, Breath holding capacity and Difficulties felt other than breathlessness

OBJECTIVE - VI

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

Table 4.8: Frequency and percentage distribution of chi-square value on experimental group.

S no	Demographic variables	Slight		Moderate		Severe breath		Very very severe		Maximum		X ²	P- value
		f	%	f	%	f	%	f	%	f	%		
1	Age in (years):												
	a. 1 - 15	1	3.3	2	6.7	0	0	1	3.3	0	0	25.72 df-12	S 21.03
	b. 16- 30	0	0	0	0	1	3.3	0	0	7	23.3		
	c. 31- 45	1	3.3	1	3.3	2	6.7	3	10	2	6.7		
	d. 46 and above	0	0	0	0	2	6.7	5	16.7	2	6.7		
2	Gender:												
	a) Male	2	6.7	2	6.7	3	10	4	13.3	6	20	6.21 df-4	NS 9.49
	b) Female	0	0	1	3.3	2	6.7	6	20	5	16.7		
	c) Other	0	0	0	0	0	0	0	0	0	0		
3	Educational status												
	a) Illiterate	1	3.3	1	3.3	2	6.7	1	3.3	3	10	12.45 df-12	NS 21.03
	b)Primary school	1	3.3	0	0	1	3.3	2	6.7	3	10		
	c)High school	0	0	2	6.7	1	3.3	4	13.3	2	6.7		
	d)Higher secondary	0	0	0	0	1	3.3	2	6.7	3	10		

4	Occupation												
	a) Industrial workers	1	3.3	1	3.3	2	6.7	4	13.3	1	3.3	14.51 df-12	NS 21.03
	b) Private employee	0	0	0	0	1	3.3	2	6.7	2	16.7		
	c) Government Employee	0	0	1	3.3	1	3.3	0	0	2	6.7		
	d) none	1	3.3	1	3.3	1	3.3	3	10	4	13.3		
5	Marital status												
	e) Married	2	6.7	2	6.7	3	10	8	26.7	7	23.3	15.16 df-12	NS 21.03
	f) Unmarried	0	0	1	3.3	1	3.3	0	0	4	13.3		
	g) Divorce	0	0	0	0	0	0	0	0	0	0		
	h) Widow	0	0	0	0	1	3.3	1	3.3	0	0		
6	Family history of COPD											4.75 df-4	NS 9.49
	a) Yes	2	6.7	1	3.3	2	6.7	4	13.3	3	10		
	b) No	0	0	2	6.7	3	10	5	16.7	8	26.7		
7	Duration of illness												
	a) <1year	0	0	2	6.7	1	3.3	4	13.3	3	10	7.32 df-8	NS 15.51
	b) 2-5years	1	3.3	0	0	2	6.7	2	6.7	5	16.7		
	c) 6years	1	3.3	1	3.3	2	6.7	3	10	3	10		

8	Treatment of COPD												
	a) Regular	1	3.3	2	6.7	3	10	4	13.3	7	23.3	2.3 df-4	NS 9.49
	b) Irregular	2	6.7	1	3.3	2	6.7	5	16.7	4	13.3		
9	Monthly income the family												
	c) <5000	2	6.7	1	3.3	2	6.7	3	10	2	6.7	9.23	NS
	a) 5000-1000	0	0	1	3.3	2	6.7	2	6.7	5	16.7	df-8	15.51
	b) >10,000	0	0	1	3.3	1	3.3	4	13.3	4	13.3		
10	Smoking habits												
	a) Yes	2	6.7	2	1.7	3	10	8	26.7	9	30	4.56 df-4	NS 9.49
	b) No	0	0	1	3.3	2	6.7	1	3.3	2	6.7		
11	Continuous breathing difficulty presented at												
	a)wake up	1	3.3	0	0	1	3.3	2	6.7	2	6.7	21.03	S
	b)walking	0	0	1	3.3	2	6.7	1	3.3	3	10	df-12	21.33
	c)sleeping at night time	1	3.3	0	0	0	0	3	10	2	6.7		
	d)exercise	0	0	2	6.7	2	6.7	3	10	4	13.3		

12	Duration of sleep:												
	a) 6 - 8 hours	1	3.3	1	3.3	2	6.7	4	13.3	1	3.3		
	b) 4 - 6 hours	0	0	0	0	1	3.3	2	6.7	2	6.7	14.51 df=12	NS 21.03
	c) Less than 4 hours	0	0	1	3.3	1	3.3	0	0	2	6.7		
	d) Disturbed sleep	1	3.3	1	3.3	1	3.3	3	10	4	13.3		
13	Breath holding capacity:												
	a. 90 - 70 sec	0	0	0	0	0	0	0	0	0	0	9.23 df=16	NS 26.30
	b. 69 - 40 sec	0	0	0	0	0	0	0	0	0	0		
	c. 39 - 20 sec	2	6.7	1	3.3	2	6.7	3	10	2	6.7		
	d. 19 - 10 sec	0	0	1	3.3	2	6.7	2	6.7	5	16.7		
	e. Below 10 sec	0	0	1	3.3	1	3.3	4	13.3	4	13.3		
14	Difficulties felt other than breathlessness:												
	a) Wheezing	2	6.7	2	6.7	3	10	8	26.7	7	23.3		
	b) Chest tightness	0	0	1	3.3	1	3.3	0	0	4	13.3	15.16 df=12	NS 21.03
	c) Rapid weight loss	0	0	0	0	0	0	0	0	0	0		
	d) All the above	0	0	0	0	1	3.3	1	3.3	0	0		

(* -P>0.05, significant) (NS= Non significant)

The above table shows that there was a significant association between dyspnea among chronic obstructive pulmonary disease patients and their demographic variables such as Age, continuous breathing difficulty presented at there is no association between the educational status, marital status, family history, occupation, duration of illness, treatment of COPD, family income, smoking habits, duration of sleep, Breath holding capacity and Difficulties felt other than breathlessness.

CHAPTER - V

DISCUSSION

This study was conducted to evaluate the effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients at selected hospitals, Chennai

A convenience sampling technique was used to collect data from the study participants 60 samples were taken, 30 samples in control group, and 30 samples in experimental group. pre test and post was conducted. The Data were collected for a period of 8 weeks at Sathyabama general hospital.

The discussion is based on the objectives specified in this study

❖ **□ To assess the breathing difficulty before and after breathing exercise among Chronic obstructive pulmonary disease patients in control and experimental group.**

The findings shows that the pre test level of breathing pattern in control group, 4 subjects (13.3%) had very severe level of breathing difficulty and 8 subjects (26.7%) had very very severe level of breathing difficulty had 6 subjects (20%) maximum and 12 subjects (40%) almost maximum. And the post test level of breathing difficulty in control group, 6 subjects (20%) had moderate level of breathing difficulty and 4 subjects (13.3%) had very severe level of breathing pattern. And 8 subjects (26.7%) had very very severe level of breathing difficulty, and 12 subjects 40(%) had maximum level of breathing difficulty.

The findings shows that the pre test level of breathing pattern In experimental group were as, 2 subjects (6.7%) had moderate level of breathing difficulty and 3 subjects (10%) some what severe level of breathing difficulty 5 subjects (16.7%) had very very severe level of breathing difficulty, 9 subjects (30%) had maximum level of breathing difficulty, 11 subjects (36.7%) had almost maximum level, of breathing difficulty. The table 3 shows that the calculated "t" value 2.64 was significant at $p < 0.05$ level. The pre test mean in case of control group was 8.43 whereas the post test mean was 5.9 and its mean difference was 2.53 which had greater improvement than other parameters. It clearly concluded that there was a significant improvement in the level of breathing pattern among patients chronic obstructive pulmonary disease after giving breathing exercise in the experimental group. Hence research hypothesis H3 is accepted.

❖ **□To evaluate the effectiveness of deep breathing exercise among chronicobstructive pulmonary disease patients in experimental group.**

The calculated 't' value in the experimental group were 2.64 was statistically significant at $p < 0.05$ level which clearly shows that there was a significant reduce the level of breathing pattern among chronic obstructive pulmonary disease patients after giving breathing exercise. The mean post test level of breathing pattern will be significantly lower than the mean pre test level of breathing pattern among patients inchronic obstructive pulmonary disease in the experimental group. Hence H1 isaccepted.

The obtained 't' value for level of breathing pattern between the control and experimental group is 4.51which were highly significant at $p < 0.05$ level. These findings revealed that the subjects in experimental group had decreased level of breathing pattern after giving breathing exercise compared to control group. The meanpost test level of breathing pattern in experimental group will be significantly lower than the mean post test level of breathing pattern in control group among patients chronic obstructive pulmonary disease . Hence research hypothesis H2 is accepted

❖ **□To find out the association between the pretest level of breathing difficulty with selected demographic variables in control and experimental group.**

There was no association between the pre test level of breathing pattern and their demographic variable such as gender ,marital status ,occupation ,education,,duration of illness ,smoking habits ect. There was a significant association between the levels of breathing pattern and the other demographic variables among chronic obstructive pulmonary disease patients in the control group. Hence research hypothesis H₃ isaccepted.

There was a significant association between the demographic variables such as age, continuous breathing difficulty presented and their level of breathing pattern No other demographic variables were shown any association with their level of breathing pattern

among patients chronic obstructive pulmonary disease in the experimental group. Hence research hypothesis H_3 is partially accepted.

CHAPTER - VI

SUMMARY
AND
RECOMMENDATIONS

In this chapter we will summarize the whole study and get into a conclusion and suggest few recommendations for further studies or nursing implications

SUMMARY OF THE STUDY

The focus of the present study was to evaluate the effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients at selected hospitals, Chennai

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 deep 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.

HYPOTHESIS

H1:

The mean post test level of breathing difficulty will be significantly lower than the mean pre test level of breathing pattern among chronic obstructive pulmonary disease in experimental group

H2:

There is a significant difference between the mean pretest and mean post test level of breathing difficulty in experimental group.

H3:

There will be a significant association between the pretest level of breathing difficulty with selected of demographic variables of experimental group

The design of the study was quasi experimental, non-randomized control group pretest –posttest design. The conceptual frame work was based on health promotion model 1997.

The researcher approaches has adopted a quantitative evaluative approach. For this study research design is quasi experimental. Pre experimental (one group pre and post test) design was used for the study.

The sample selected for the present study was 60 patients admitted in Sathyabama general hospital, Chennai. This sample of 60 chronic obstructive pulmonary disease patients who fulfilled

the criteria of 30 samples for the experimental group and 30 samples for the control group. The sampling technique adopted for this study was non probability purposive sampling technique.

The investigator collected pre test data using modified dyspnea scale and for both group. Experimental group received intervention of deep breathing exercise for 15 minutes twice a day with daily routine exercise for COPD patients before giving oxygen therapy. Control group received routine exercise without intervention. Post test was conducted by the investigator for both groups. For experimental group, post test was conducted 1 hour after administration of deep breathing exercise. The data were analysed using both descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY

Control group

The table 4.1 shows that among 30 samples, with regards to **age** majority belonged to above 46 years 10(33.3%) and With regards to **gender** male 14(46.7%), and female 16 (53.3%)

Regarding **educational** status illiterate 8(26.7%) of them ,6 (20%) of them had primary education,7(23.3%),of them had high school education and 9(30%) had higher secondary education

In relation to **marital status**, 15(56.6%) of the samples belonged to married and Unmarried 6(20%) and divorce 5(16.7%) , widow 4(13.3%)

With regards to occupational status Industrial workers 8(26.7%), private employee, 7(23.3%) , government employee, 6(20%) and 9(30%) are jobless

About income of the **family monthly**, 12(40%) samples of them are <5000, 9(30%) samples of them belong to 5000-10000 and 9(30%) samples of them are >10000.

About **duration of illness** <1 year 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

Regarding the **family history** of chronic obstructed pulmonary disease 6(20%) of them were yes and 24(80%) were no

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 are 5(16.7%), the samples belonged to walking are 4(13.3%), the sample belonged to, sleeping at night time 5(16.7%) and samples of the belonged to, exercise 16(53.3%)samples

Regarding duration of sleep 5(16.7%) of them sleep 6-8 hours,samples sleeping 4-8 hours are 5(16.7%),16(53.3%) of them sleep less than 4 hours and 4(13.3%) are suffering from disturbed sleep

Regarding breath holding capacity in samples shows that 2(6.7%) has 30 -35 sec, 3(10%) has 25-29 sec, 5(16.7%) has 20-24 sec, 9(30%) has 19-10 sec and 11(36.7%) shows breath holding capacity below 10 sec.

When consider difficulties other than dypnea 5(16.7%) of them shows wheezing, 4(13.3%) shows chest tightness, 5(16.7%) shows rapid weight loss and 16(53.3%) shows all mentioned difficulties.

Experimental group

The table 4.1 shows that among 30 samples, with regards to **age** majority belonged to both 31-45 years 9(30%) and above 46 years 9(30%), and With regards to **gender** male 17(56.7%), and female 13 (43.3%)

Regarding **educational** status illiterate 8(26.7%) of them ,7(23.3%) of them had primary education,9(30%)of them had high school education and 6 (20%) had higher secondary education

In relation to **marital status**, 22(73.3%) of the samples belonged to married and Unmarried6(20%) and divorce 0(0%) , widow 2(6.7%)

With regards to occupational status Industrial workers 9(30%), private employee, 8(26,7%), government employee, 4(13.3%) and 9(30%) are jobless

About income of the **family monthly**, 10(33.3%) samples of them are <5000, 10(33.3%) samples of them belong to 5000-10000 and 10(33.3%) samples of them are >10000.

About **duration of illness** <1 year 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 14(46.7%) samples are in irregular

Regarding the **family history** of chronic obstructed pulmonary disease 12(40%) of them were yes and 18(60%) were no

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 up are 6(20%), the samples belonged to walking are 7(23.3%), the sample belonged to, sleeping at night time 6(20%) and samples of the belonged to, exercise 11(36.7%) samples

Regarding duration of sleep 7(23.3%) of them sleep 6-8 hours, samples sleeping 4-8 hours are 6(20%), 11(36.7%) of them sleep less than 4 hours and 6(20%) are suffering from disturbed sleep

Regarding breath holding capacity in samples shows that 1(3.3%) has 30 -35 sec, 4(13.3%) has 25-29 sec, 6(20%) has 20-24 sec, 8(26.7%) has 19-10 sec and 11(36.7%) shows breath holding capacity below 10 sec.

When consider difficulties other than dyspnea 6(20%) of them shows wheezing, 7(23.3%) shows chest tightness, 6(20%) shows rapid weight loss and 11(36.7%) shows all mentioned difficulties.

Breathing level

The table 4.2 shows that in control group the pre 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 patients were decreased in post test than pretest.

Effectiveness of deep breathing exercise

The table 4.3 shows that the calculated t value' in the control group was 2.07 which was not significantly at $P < 0.05$ level. It can be concluded that there is no much difference in pre test and post test in control group.

The table 4.4 shows that the calculated "t" value in the experimental group was 2.64 which was statistically significant at $P < 0.05$ level. Hence H_1 is accepted. It can be concluded that deep breathing exercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients.

The table 4.5 shows that the obtained 't' value between control and experimental group is 4.51 which was significant at $p < 0.05$ level. Hence H_1 is accepted. It can be concluded that the deep breathing exercise was effective in reducing the dyspnea in experimental group among chronic obstructive pulmonary disease patients than control group

Pre test post test level of breathing difficulty

Experimental group

The table 4.6 shows that the calculated “t” value in the experimental group was 2.64 which was statistically significant at $P < 0.05$ level .Hence H_2 is accepted. It can be concluded that deep breathing exercise was effective in reducing the dyspnea among chronic obstructive pulmonary disease patients

Control group

The table 4.6 shows that the calculated ‘t value’ in the control group was 2.07 which was not significantly at $P < 0.05$ level. It can be concluded that there is no much difference in pretest and posttest in control group

Pretest values and demographic variables

Control group

The table 4.7 shows that there was a significant association between dyspnea among chronic obstructive pulmonary disease patients and their demographic variables such as Age, family history of COPD, There was no association between the demographical variables such as gender, educational status, marital status, occupation, duration of illness, treatment of COPD, family income, smoking habits, continuous breathing difficulty presented at, Duration of sleep, Breath holding capacity and Difficulties felt other than breathlessness

Experimental group

The table shows that there was a significant association between dyspnea among chronic obstructive pulmonary disease patients and their demographic variables such as Age, continuous breathing difficulty presented at there is no association between the educational status, marital status, family history, occupation, duration of illness, treatment of COPD, family income, smoking habits, duration of

sleep, Breath holding capacity and Difficulties felt other than breathlessness.

CONCLUSION

The main conclusion of this present study was the deep breathing exercise is effectively reducing the dyspnea among chronic obstructive pulmonary disease clients. This study clearly stated that deep breathing exercise plays a vital role to reduce the dyspnea clients who have on chronic obstructive pulmonary disease.

IMPLICATIONS

The findings of the study have several implications in following field. It can be 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-pharmacological complements to medical care.
- Breathing exercise is one of touch therapy, which in this study has proved effective in reducing and improving the breathing pattern among patients chronic obstructive pulmonary disease.
- Nurses can adopt simple interventions like breathing exercise while providing care for the chronic obstructive pulmonary disease patients.
- Breathing exercise used in this study can be applied in the practice set up; thereby increasing the nursing practice based 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 progress of nursing education.
- Practical hours for complementary and alternative medicine including yoga, massage and reflexology can be included 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

LIMITATIONS

- Intervention was limited to 15 – 20minutes
- Study was conducted only on patients who have undergone chronic obstructive pulmonarydisease.
- Relatively small samplesize
- Randomization of samples could not bedone

RECOMMENDATIONS

- The study can be replicated on a larger samples to generalize theresults
- The comparative study can be conducted with more than oneintervention
- Training programmers for nurses can be given on complimentarytherapies
- A study can be conducted to evaluate the knowledge and attitude of nurses regarding breathing exercise in reducing breathing pattern among patients chronic obstructive pulmonarydisease

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APPENDICES

APPENDIX – I

Letter -1: Letter Seeking Permission to conduct the study



PERMISSION LETTER

From,
The Dean
Sathyabama College of Nursing
Sathyabama Institute of Science and Technology
Chennai -119
To,

Respected Sir / Madam,

Sub.: Request for permission to conduct research study - reg

Mr. Arun B and Ms. Mariya.M.Jose are bonafide B.Sc, Nursing students studying in our college. As a partial fulfillment of Sathyabhama Institute of Science and Technology (deemed to be University) requirement for the award of the B.Sc, Nursing Degree, they are undertaking (" EFFECTIVENESS OF DEEP BREATHING EXERCISE AMONG PATIENT WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN SATHYABAMA GENERAL HOSPITAL, CHENNAI"), they have identified your centre as the best place to conduct the study.

Further details of the proposed project will be furnished by the student personally, They will not hinder your routine in any way and they will abide to the rules and regulations of the institution. All the information collected from institution will be kept confidential.

I kindly request you to grant her permission to conduct the study at your esteemed institution.

Thank you.

Yours faithfully

Date:

Place:

APPENDIX-II

LETTER SEEKING EXPERT OPINION AND CONTENT VALIDITY

From
Mr.Arun B and Ms. Mariya.M.Jose
B. Sc (Nursing) III Year,
Sathyabama college of
Nursing,
Sathyabama Institute of
Science and Technology
Chennai -119

To

Respected Madam/Sir,

Sub: Requisition for expert opinion and content validity regarding.

We are B.Sc.(Nursing) III year student of Sathyabama College of Nursing, Chennai, under Sathyabama Institute of Science and Technology (deemed to be university). As a partial fulfillment of our B.Sc. (Nursing) degree program, We are conducting a research study on **“Effectiveness deep breathing exercise among patients with chronic obstructive pulmonary disease at selected hospitals, Chennai”**

I am sending the tool for content validity and for your expert & valuable opinion. I will be very thankful if you return it at the earliest. Here with I have enclosed the necessary documents.

Thanking you,

Yours faithfully

Mr.Arun B and Ms. Mariya.M.Jose

Enclosure:

1. Statement of the problem & objectives of the study.
2. Tool for data collection.
3. Brief note on the research methodology and intervention tool.
4. Certificate of content validity.

APPENDIX-III

CERTIFICATE OF CONTENT VALIDITY

To Whom So Ever It May Concern

This is to certify that the tool prepared by **Mr.Arun B and Ms.Mariya.M.Jose** **B.SC (N)** III Year students of Sathyabama College of Nursing,Sathyabama Institute of Science and Technology (deemed to be university) for the conduction of the research study on **“Effectiveness of deep breathing exercise among patients with chronic obstructive pulmonary disease at selected hospitals, Chennai ”**is valid. They can proceed in conducting data collection.

Signature

Place:

Date:

APPENDIX – IV
RESEARCH CONSENT FORM

Dear Participants,

We are Mr. Arun B and Ms. Mariya.M.Jose B.Sc Nursing III year student of Sathyabama College of Nursing, Sathyabama Institute of Science and Technology, Chennai . As a part of our study, a research on “Effectiveness of deep breathing exercise among patients with chronic obstructive pulmonary disease in selected hospitals, Chennai” is to be conducted. The study will be helpful in reducing breathing difficulty.

I hereby seek your consent and co- operation to participate in the study. Please be frank and honest in your responses. The information collection will be kept confidential and anonymity will be maintained.

Thankyou

Signature of the researcher

I..... here by consent to participate and undergo the study.

Place:

Date:

Signature of the Participant

APPENDIX V
SATHYABAMA COLLEGE OF NURSING
CERTIFICATE FOR ETHICAL CLEARANCE

This is to certify that Mr.Arun B and Ms. Mariya.M.Jose B.sc nursing III year students, Submitted the protocol on study as ,

“Effectiveness of deep breathing exercise among chronic obstructive pulmonary disease patients”

The above protocol was received by ethical committee approved and mentioned that the study is feasible to carry out under the guidance of an eligible guide.

Signature of the Chairman

APPENDIX – VI

DEMOGRAPHIC DATA

INTRODUCTION TO PARTICIPATE

Dear participations

This section of personal information and you are requested to answer the questions correctly the information collected from will be kept confidential

1) Age (in years)

- a) 1-15 years
- b) 16 - 30 years
- c) 31 - 45 years
- d) 46 and above

2) Gender

- a) male
- b) female

3) Educational status

- a) Illiterate
- b) primary school
- c) High school
- d) High secondary school

4) Occupation

- a) industrial worker
- b) private employee
- c) Government employee
- d) None

5)Marital status

- a) Married
- b) Unmarried
- c) Divorce/separated
- d) Widow

6) Family history ofcopd

- a)yes
- b) No

7) Duration ofillness

- a) < 1year
- b) 2-5 year
- c) 6years

8) Treatment ofcopd

- a) Regular
- b) Irregular

9) Monthly income of thefamily

- a) < 5000
- b) 5000-10,000
- c) > 10,000

10) Smokinghabits

- a) Yes
- b) No

11) Continuous breathing difficulty presentedat

- a) Wakeup
- b) Walking
- c) Sleeping at nighttime
- d) Exercise

12) Duration of sleep:

- a) 6-8 hours
- b) 4-6 hours
- c) Less than 4 hours
- d) Disturbed sleep

13) Breath holding capacity:

- a) 30-35 sec
- b) 25 -34 sec
- c) 20-24 sec
- d) 19-10 sec
- e) Below 10 sec

14) Difficulties felt other than breathlessness:

- a) Wheezing
- b) Chest tightness
- c) Rapid weight loss
- d) All the above

Modified Borg dyspneascall

0	No breathlessness
1	Very veryslight
2	Very slight
3	Slight breathlessness
4	moderate
5	Some what severe
6	severe breathlessness
7	Very severe breathlessness
8	Very very severe breathlessness
9	Maximum
10	Almost maximum

Scoring

1-2-mild

3-4-moderate

5-6-severe breath

7-8- very very severe

9-10-Almost maximum

APPENDIX – VII

DEEP BREATHING EXERCISE

Breathing Exercises and Coughing

You and Your Lungs

The purpose of your lungs is to move oxygen from the air you breathe into your bloodstream so it can be used by your body.

Air enters your lungs through your mouth or nose and travels down your windpipe (trachea) into increasingly smaller airways. The structure of the airway tubes is similar to a tree trunk dividing into smaller and smaller branches. The smallest tube, which is about the thickness of a strand of hair, ends in bunches of tiny air sacs (alveoli). Each air sac is covered with very fine blood vessels (capillaries).

When you breathe in air, the air moves through the airways down to the air sacs. The oxygen passes from the air sacs into the blood stream and is carried to the rest of the body.

Pursed Lip Breathing

Pursed lip breathing is a technique that helps to control your breathing rate and improve your shortness of breath.

Practice

1. Breathe in slowly through your nose.
2. Pause. Inhale through the nose
3. As you breathe out, part your lips just enough to let a steady stream of air out. Exhale through pursed lips
4. Your breath out should be twice as long as your breath in. Keep your lips pursed. Do not try to force the air out. Do not let your cheeks relax or balloon out. Exhale through pursed lips

Diaphragmatic Breathing (optional)

The diaphragm is made up of two large, dome shaped muscles located just below the lungs. When they are tightened (contracted), there is more room in the chest cavity for your lungs to expand. The diaphragm also pulls the lungs downward and helps draw air into the lungs.

Practice

1. In a comfortable position. Place one hand on your abdomen above your belly button. Breathe in slowly through your nose.
2. Feel your belly rise slowly as you breathe in. Let the air out through pursed lips. The upper part

of your chest should stay relaxed.

3. Once you are able to do this type of breathing Both sitting and lying, try using it while standing and walking.

Coughing and Sputum Clearance

Cough and sputum are two other symptoms of your disease. Coughing is important because it helps remove sputum from your lungs. When sputum is removed you can breathe easier.

It is helpful to cough early in the day to remove the sputum that has built up during the night. It is also helpful to cough well, about a half an hour before lunch and supper it may help make your meal more enjoyable. Before going out, cough to clear any sputum. You will be less likely to cough while you are out.

There are also devices that may be suitable for you. These devices help in the movement of sputum. Consult a health care professional about the use of these.

Controlled Cough Technique

Practice

1. Sit comfortably with your feet resting firmly on the floor, and lean forward slightly.
- 2 Take three to four deep diaphragmatic breaths before coughing.
3. Take a deep breath, hold your breath for three seconds, tighten your abdominal muscles and cough twice. The first cough will loosen your sputum. The second cough will move the sputum high in your throat.
4. Spit it into a piece of tissue and check the colour. If it is a yellow, green or red in colour, talk to your doctor. Throw the tissue away.
5. Take a break and repeat once or twice if you do not cough up any sputum.

Relaxation Positions to Reduce Shortness of Breath

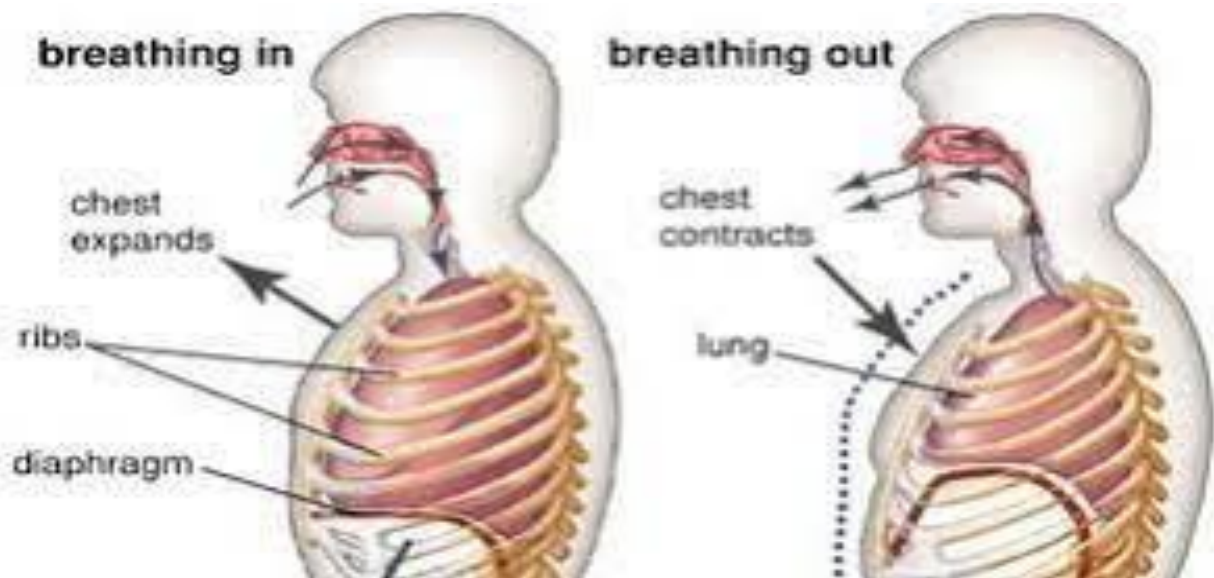
When breathing is difficult, use one of these positions to help you relax and regain control of your breathing:

Practice

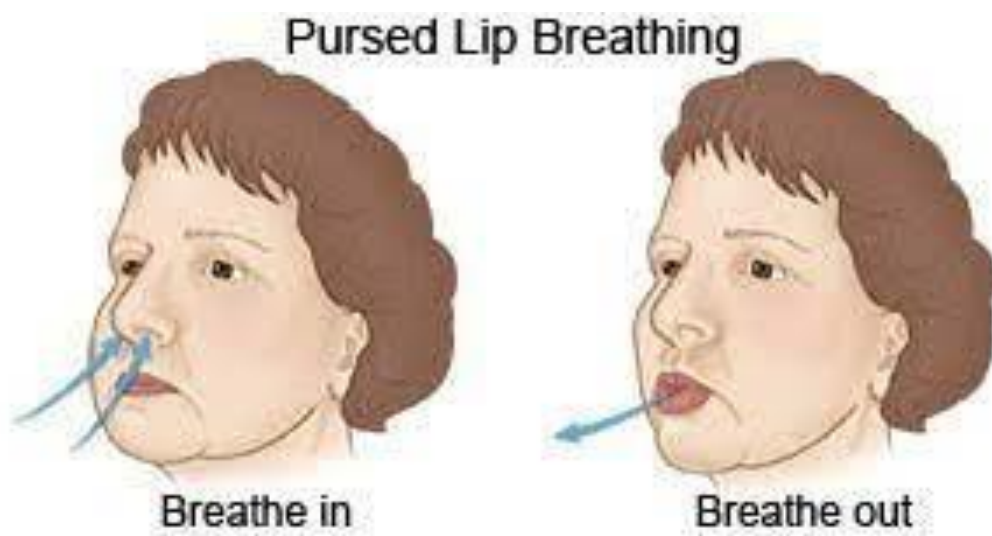
Lying Lie on your side, leaning on three or four pillows. Keep your head up and your shoulder supported.

Sitting Sit at a table, lean forward and rest your arms on the table.

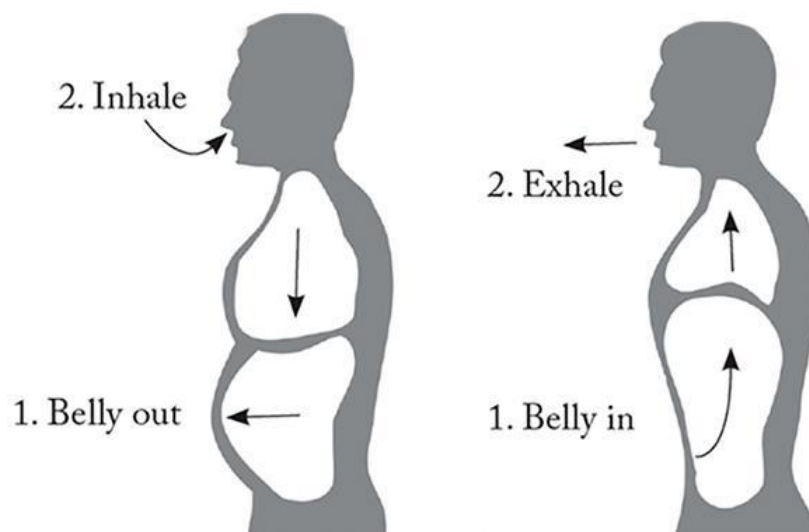
Rest your head on a pillow.



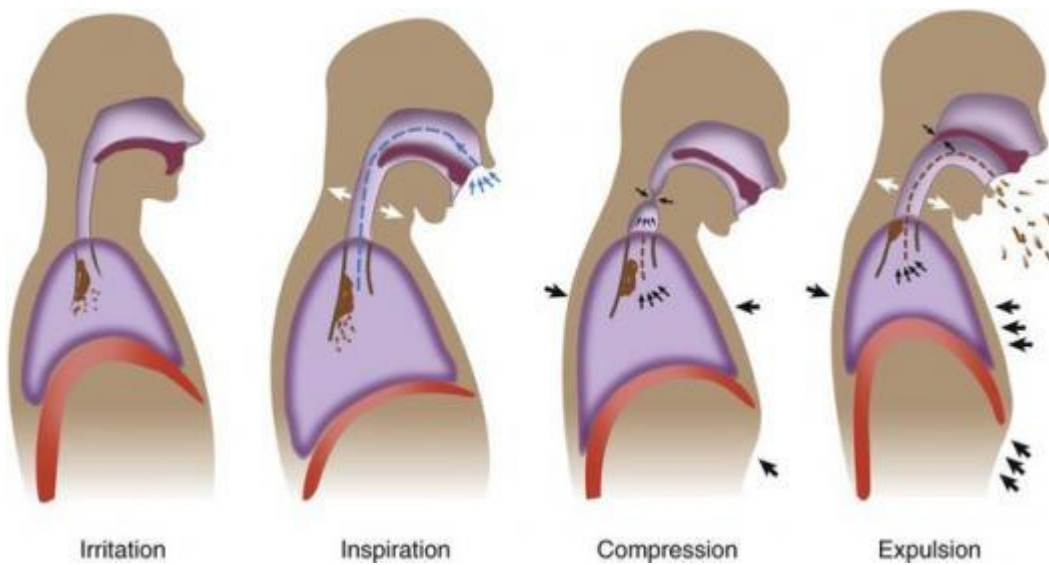
Mechanism of breathing



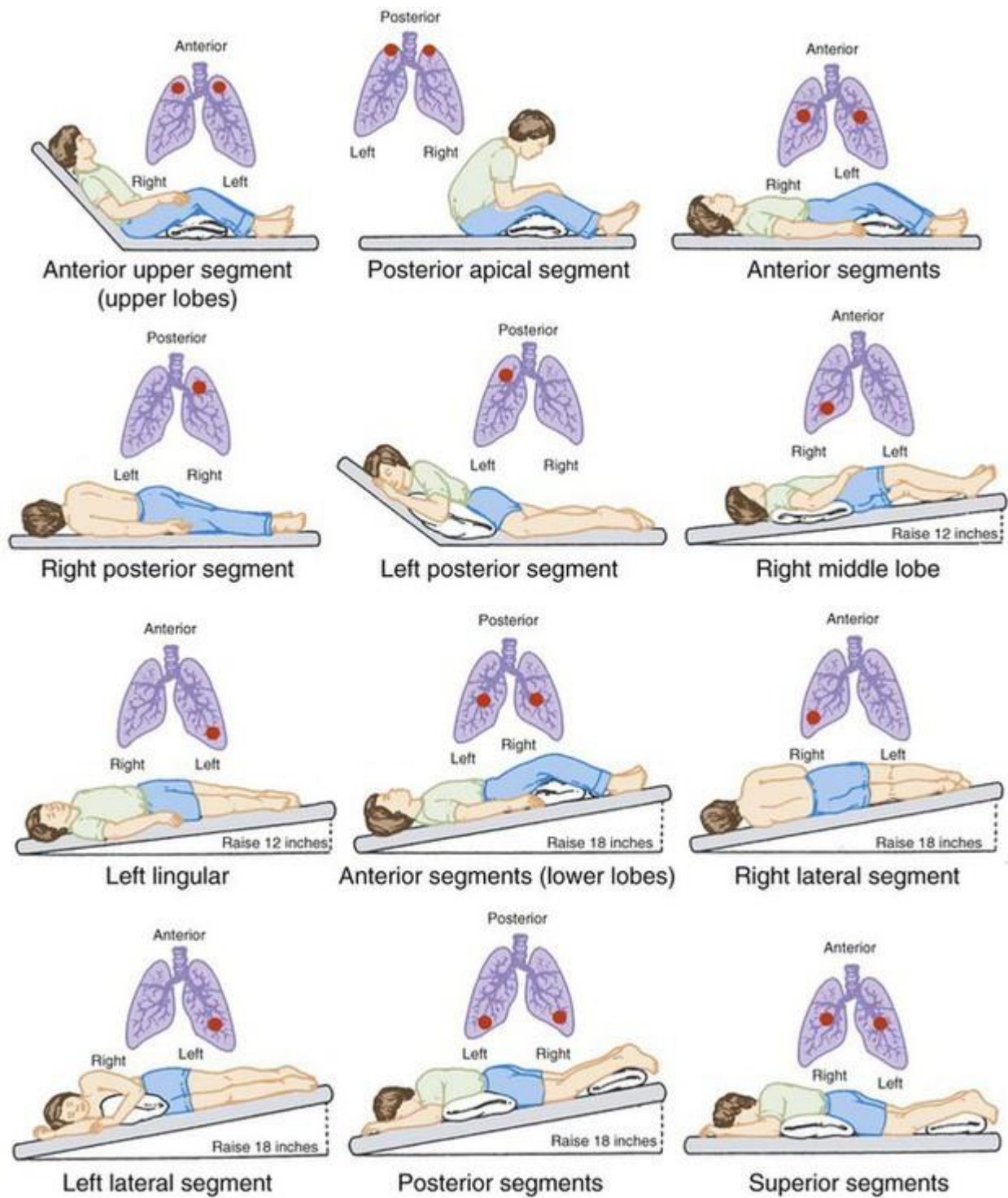
Pursed lip breathing



Diaphragmatic breathing



Sputum clearance technique



Relaxation positions to reduce dyspnea

APPENDIX – VIII

PHOTO GALLERY



Intervention provided to experimental group participants



Pretest assessment of participants

