EFFECTIVENESS OF PURSED LIP-BREATHING EXERCISE ON BREATHING PATTERN AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN MEDICAL WARD AT GOVERNMENT RAJAJI   HOSPITAL MADURAI.

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CERTIFICATE

This is to certify that this dissertation titled, **"EFFECTIVENESS OF PURSED LIP-BREATHING EXERCISE TO PROMOTE BREATHING PATTERN AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN MEDICAL WARD AT GOVERNMENT RAJAJI HOSPITAL, MADURAI".** is a bonafide work done by **Mrs. R.LATHA,** M.Sc(N) Student, College of Nursing, Madurai Medical College, Madurai - 20, submitted to **THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI-32** in partial fulfillment of the University rules and regulations towards the award of the degree of **MASTER OF SCIENCE IN NURSING**, **Branch-I, Medical Surgical Nursing**, under our guidance and supervision during the academic period from 2013—2015.

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At times of sorrow all think about god but during their happy moments none do it. There will be no shadows of sorrow if one thinks about god even during his/her happy moments

A.Mizbah

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ABSTRACT

Title: Effectiveness of Pursed Lip-Breathing Exercise on breathing pattern among patients with Chronic Obstructive Pulmonary Disease in Medical Ward, Government Rajaji hospital,Madurai-20. **Objectives:** Assess the breathing pattern among patients with Chronic Obstructive Pulmonary disease. To evaluate the effectiveness of pursed lip breathing exercise among patients with chronic obstructive pulmonary disease .To associate the breathing pattern with selected demographic and clinical variables among patients with Chronic Obstructive Pulmonary disease. **Hypotheses:** There is a significant difference between the breathing pattern among patient with Chronic Obstructive Pulmonary disease before and after pursed lip breathing exercise. There is a significant association between the breathing pattern among patients with Chronic Obstructive Pulmonary Disease with their selected demographic and clinical variables. **Conceptual Frame Work**: Ludwig Von Bertalanffy General System Theory Model (1968). **Methodology:** Study conducted with Pre experimental –one group pre test post test research designwith100 samples selected in consecutive sampling technique at Medical Ward **.** Pursed-Lip Breathing Exercise for 3minutes,3 times day for about 10days was given to the subjects. **Findings:** There is significance difference between the pre and post test mean score (150.14- 171.32) **Conclusion:** Findings suggests that the Pursed Lip Breathing Exercise can be practice regularly by patients with Chronic Obstructive Pulmonary Disease to improve the breathing pattern .

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LIST OF ABBREVATION

COPD	:	Chronic Obstructive Pulmonary Disease
NICE	:	National Institute for Health and Clinical Excellence
PLB	:	Pursed Lip Breathings Exercise
MBC	:	Maximum Breathing Capacity
GARD	:	Global Alliance against Chronic Respiratory Disease
GOLD	:	Global Initiative For Chronic Obstructive Pulmonary Disease Programme
PFT	:	Pulmonary Function Test
FEV$_1$	:	Forced Expiratory Volume
PPL min	:	Pleural Pressure Litre / Minute
PaCo$_2$	:	Partial Carbon di-Oxide
FRC	:	Functional Residual Capacity
TLC	:	Total Lung Capacity
COPD SME	:	Chronic Obstructive Pulmonary Disease Self Management Education
IPA	:	Invasive Pulmonary Aspergillosis
VT $_{max}$	:	Maximal Tidal Volume
IC	:	Inspiratory Capacity
FVC	:	Forced Volume Control
ERV	:	Expiratory Residual Volume

IRV	:	Inspiratory Residual Volume
PEF	:	Pulmonary Expiratory Flow
AQ 20	:	Airway Questionnaire 20
ABG	:	Arterial Blood Gas
6 MWD	:	6 Minute Walk Distance
EELV	:	End Expiratory Lung Volume
TLC	:	Total Lung Capacity
FRC	:	Functional Residual Capacity
QoL	:	Quality Of Life

Introduction

CHAPTER I

INTRODUCTION

"A non smoker is forced to find food, but for a smoker breakfast can   be a cigarette"   **-Brock Faint**

Oxygen is very much important for the human body. Oxygen plays a vital role in breathing processes and in the metabolism of the living organism. The respiratory system is an anatomical system. The primary purpose of respiratory system is gas exchange which involves the transfer of oxygen and carbon dioxide between the atmosphere and blood. Molecules of oxygen and carbon dioxide are passively exchanged by diffusion between the gaseous external environment and the blood. The exchange process occurs in the alveolar region of the lungs.

The respiratory system enables us to produce energy by supply the body with a continuous supply of oxygen. It is also responsible for eliminating carbon dioxide, a byproduct of cell metabolism, where as oxygen is necessary for human respiration.

There can be various disorders of this respiratory system which can be reversible or irreversible. The major disorders of respiratory system include Chronic Obstructive Pulmonary Disease (COPD), tuberculosis, pneumonia, pulmonary embolism, and pulmonary hypertension.

Health is a Fundamental human right and health is central to the concept of quality of life. It is the responsibility of every   individual.   The society faces many health problems because   of over population, pollution, bad habits like alcoholism

and smoking etc., These are the main risk factors causing Respiratory infections which finally leads to chronic obstructive pulmonary disease

Chronic Obstructive Pulmonary Disease is a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gaseous it is primarily caused by cigarette smoking and other risk factors including air pollution ,occupational exposure to irritating fumes, severe recurring respiratory infection, the most commonest causative organisms are Homophiles influenza, strepto coccus pneumonia, and genetic abnormalities including deficiency of Alpha-1 anti trypsin and aging.

Smoking is the single largest preventable cause of disease and premature death. Cigarette smoking is the most common method of consuming tobacco, and tobacco is the most common substance for smoking. As the year of 2000 smoking was practiced around 1.22 billion people. Current rates show that by the year of 2025, smoking may reach around 1.9 billion people.

In India, smoking kills 9, 00, 000 people every year. Of these, 20% of all male deaths and 5% of all female deaths among Indians between the ages of 30 and 69.Men who smoke full-sized cigarettes lose about 10 years of life. According to a recent World Health Organization observation, though there is a general awareness in many countries that tobacco harms health, consumers lack specific knowledge of the serious health risks of tobacco.

Chronic Obstructive Pulmonary Disease is the third leading cause of death in the world and the second leading cause of death in India. It costs the Indian economy

more than Rs 35,000 crores every year, which is more than the annual budget allotted to the Ministry of Health and Family Welfare, Government of India. Half a million people die due to Chronic Obstructive Pulmonary Disease every year in India. Chronic Obstructive Pulmonary Disease causes more deaths than those due to tuberculosis, malaria and diabetes, all combined.

Worldwide Chronic obstructive pulmonary disease ranked 6th as the cause of death in 1990. It is projected to be the 2nd leading cause of death worldwide by 2020 due to an increase in smoking rates and demographic changes in many countries. According to the World Health Organization, deaths due to Chronic Obstructive Pulmonary Disease are estimated to increase by 160 per cent by the year 2030. Despite this enormous health burden, Chronic Obstructive Pulmonary Disease remains an unknown disease in India.

The Chronic Obstructive Pulmonary Disease prevalence in 12 Asia-Pacific countries and regions was 6.3% which was higher than the overall rate of 3.8% as extrapolated from world health organization data. The total burden was estimated at 56.6 million patients of moderate to severe Chronic Obstructive Pulmonary Disease. The Prevalence of Chronic Obstructive Pulmonary Disease in India in 2001 is 149.35 Lakhs of total population and it is expected to increase to 222.16 lakhs in the year 2016. The prevalence of Chronic Obstructive Pulmonary Disease reported in different population based studies from India is highly variable. The prevalence rates in male subjects of 2.12% to 9.4% in studies reported from north are generally higher than 1.4% to 4.08% reported from south India.

Chronic Obstructive Pulmonary Disease is an important public health problem, not only because of its high morbidity and mortality, but also because it is a preventable disease in many cases. For example cessation of smoking , the main risk factor for Chronic Obstructive Pulmonary Disease could prevent millions of cases.

Indians have lung function values that are 30 per cent lower than Europeans, when corrected for age, gender and height. Already weakened lungs and a huge population exposed to myriad risk factors for Chronic Obstructive Pulmonary Disease are believed to be largely responsible for the growing prevalence of this ailment in India. There are very few good quality studies that have studied the prevalence of Chronic Obstructive Pulmonary Disease in India. Based on some of the recent data, an estimated 5-10 per cent of the adult population in India suffer from Chronic Obstructive Pulmonary Disease.

Chronic Obstructive Pulmonary Disease is characterized by progressive airflow obstruction and lung hyperinflation owing to loss of elastic recoil and air trapping. These physiological changes are associated with an altered pattern of ventilator muscle recruitment. The musculature of the rib cage makes an increased contribution to chest wall movement and there is increased activity of the accessory muscles of ventilation. In the event of inspiratory muscle fatigue, there may be asynchrony between rib cage and abdominal movement with paradoxical abdominal in drawing during inspiration.

Breathlessness is a progressive symptom that patients with Chronic Obstructive Pulmonary Disease. experience and can affect the patients' quality of life. The most common and at the same time the most distressing symptom in Chronic

Obstructive Pulmonary Disease is dyspnoea: "**I just can't get enough air any more"** **or "I get so terribly out of breath"** are common phrases when the patients are describing their problems. The lung function impairment is most often experienced by the patients as if they cannot get enough air into their lungs, especially during activities. In spite of this, total lung capacity is usually normal or larger than normal. However, expiratory airflow is limited because of the obstruction, leading to air trapping and hyperinflation.

This accentuates when the pulmonary rehabilitation is recognized as effective in helping to alleviate symptoms of breathlessness. Not all patients are able to attend a structured pulmonary rehabilitation class. (National Institute for Health and Clinical Excellence [NICE] 2010). Breathing exercises aim to alter respiratory muscle recruitment in order to reduce dyspnoea, lessen hyperinflation, improve respiratory muscle performance and optimize thoraco-abdominal motion.

Pursed lip breathing, or exhaling through tightly pressed, Pursed Lip Breathing Exercise -- is an instinctive response by some people with Chronic Obstructive Pulmonary Disease, simply because it makes breathing easier. Doctors and respiratory therapists teach the technique to their patients to ease shortness of breath and make exercise more tolerable. Pursed Lip Breathing Exercise improves the mechanics of breathing for with Chronic Obstructive Pulmonary Disease patients.

According to a 2007 report in the "Journal of Cardiopulmonary Rehabilitation & Prevention," narrowing airways in with Chronic Obstructive Pulmonary Disease progressively trap more air inside your lungs over many years. This raises your ribs

toward maximal inhalation, held shoulders high and diaphragm downward. Deep breaths become nearly impossible, and breathing becomes exhausting.

The normal chest wall diameter is 1/2.(Antero posterior diameter and transverse diameter) .In patients with Chronic Obstructive Pulmonary Disease that has a primary emphysematous component, chronic hyperinflation leads to the barrel chest and thorax configuration. It leads to the chest wall diameter is 2/1.(Antero posterior diameter and transverse diameter) .This result from fixation of the ribs in the inspiratory position(due to hyperinflation)and from loss of lung elasticity. Pursed Lip Breathing exercise is to improve exhalation. This relieves some strain on over-stretched chest muscles and some work of breathing, and returns the inhalation-to-exhalation ratio toward a normal 1:2.

Pursed- Lip Breathing (PLB) is an exercise in which one elongates the breath through resistance. Doing so slows respiration in a way that opens the airwaves, reducing anxiety and improving lung performance

 Pursed-Lip Breathing exercise is frequently used by patients with chronic obstructive pulmonary disease in pulmonary rehabilitation programs and in their activities of daily living, in order to improve breathing efficiency and to decrease dyspnea during these activities. When the lips are closed during Pursed Lip Breathing Exercise resistance is imposed on the expiratory flow, thus leading to a positive expiratory pressure in the airways.

This stabilizes and dislocates the point of equal pressure in the bronchial tree from the periphery to a more proximal location. This, in turn, decreases the resistance

of the airways to the release of air and consequently decreases the residual volume. In addition, expiratory delay promotes homogenous emptying of the lungs, thereby maintaining the intra bronchial pressure and favoring gas exchange and ventilation. This promotes increased pulse oxygen saturation (SpO2) and partial pressure of oxygen in the blood (PaO2), and decreased partial pressure of carbon dioxide in the blood (PaCO2). There is also an increase in tidal volume, greater recruitment of expiratory muscles and a reduction in respiratory rate, with a decrease in minute ventilation at rest.

This study also utilized incentive spirometer as an outcome measure to assess the breathing pattern by means of scoring Maximum Breathing Capacity (MBC).

Health team members need to create awareness about this disease and its symptoms and encourage patients to seek lung function testing and to teach about importance of pursed lip breathing exercises in order to lead a quality life.

1.1 NEED FOR STUDY

Mortality rate of Chronic Obstructive Pulmonary Disease (COPD) is more than 3 million people every year, making it 3rd largest cause of death in the world. It has been estimated that by the year 2030 Chronic Obstructive Pulmonary Disease will become the third biggest cause of death.

World health organization leads the Global Alliance against Chronic Respiratory Disease (GARD) a voluntary alliance of national and international organization, institution and agencies working towards the common goal of reducing the global burden of Chronic Obstructive Pulmonary Disease. Its vision is a worldwide where all the people breathe freely.

Over 9, 00,000 - People in United Kingdom are diagnosed with Chronic Obstructive Pulmonary Disease and estimated 2.1 million have it and the incidence is much higher mainly due to increasing population.

Chronic Obstructive Pulmonary Disease is the 4th leading cause of death in United States., and the economic burden of Chronic Obstructive Pulmonary Disease in the United states in 2007 was 42.6 billion in health care cost and lost productivity.

The recent statistics in 2011 says almost 26 million adults over the age 40 in India had Chronic Obstructive Pulmonary Disease data monitor expect this number to increase 34% to approximately 32 million by 2020.

Chronic Obstructive Pulmonary Disease in India is now recognized in 4 to10% of adult male population of India and several other Asian countries. The regional Chronic obstructive pulmonary disease working group for 12 Asia pacific country and region used Chronic Obstructive Pulmonary Disease prevalence model and estimated an overall prevalence rate of 0.3%.The smoking association with Chronic obstructive pulmonary disease were high from most countries that is 2.65in India 2.57in china, and 2.12 in Japan in a large multi centre study from in India, the population prevalence of Chronic Obstructive Pulmonary Disease was   male to female ratio of 1.56:1.

The data reveal that the total burden had increased tremendously because of an increase in the total population. Although the prevalence rate reported from south India were earlier consider as lower, almost similar findings were reported in

population survey 9946 inhabitants from rural south India that is a prevalence of 40.8/1000 for males and 25.5/1000 for female .

Chronic Obstructive Pulmonary Disease is a progressive and often debilitating lung disease. It affects breathing to the point that even simple everyday tasks – such as talking, bathing, dressing and taking short walks – become difficult. Long term smoking the most common cause of chronic obstructive pulmonary disease – responsible for 80-90% of all cases. Over 9, 00,000 - People in United Kingdom. are diagnosed with Chronic Obstructive Pulmonary Disease and estimated 2.1 million have it and the incidence is much higher mainly due to increasing population.

Over the last decade, between the years 2000-2010, the deaths due to smoking have increased drastically. About 6000 adolescents under 18 years pick up the habit every day of these nearly one third will become regular adult smokers. By 2030, if current trends continue, smoking will kill 1 in 6 people. Among teens (aged 13 to 15) about 1 in 5 smokers worldwide. Between 80,000 and 4, 00,000 children worldwide start smoking everyday roughly half of whom live in Asia.

It is projected that the number of acute and chronic Chronic Obstructive Pulmonary Disease patients will be 8.8 lakhs and 222.16 lakhs in 2016 respectively.

Statistics of Chronic Obstructive Pulmonary Disease in Government Rajaji Hospital

In Government Rajaji Hospital totally they are receiving Chronic Obstructive Pulmonary Disease patient in wards 1800 patients per year. Every month in medical ward they are receiving 150 patients both male and female. In outpatient department

they are receiving 12 patients per day both male and female. In review outpatient department they are receiving 20 patients per day both male and female.

The United states National Heart Lung and blood Institute and the World health organization recognizing to initiate the Global Initiative for Chronic Obstructive Lung Disease (**GOLD**) Programme. The National Lung health Education Program is currently on mission to encourage Chronic obstructive pulmonary disease patients to be aware of their pulmonary function testing results by focusing on their mantra **"Test your Lungs; know your numbers"**

A study was conducted regarding the prevalence of Chronic obstructive pulmonary disease in patients attending chest clinic in a tertiary hospital .To assess the true prevalence of Chronic obstructive pulmonary disease in south India and to estimate the burden of diseases .Three years of retrospective analyses all subject who underwent PFT between January 2005 to December 2007.The cohort included individuals who underwent spirometer as part of routine health check up and patients with respiratory medical problem.

The data reported that13680 patients who underwent Pulmonary Function Test (PFT) during the 3 year period there were 9702 males and 4164 females 946 patients (6.8%)were diagnosed to have Chronic obstructive pulmonary disease according to Chronic Obstructive Pulmonary Disease guide lines of which 811were males (86%)and 135 more females (14%).smoking was seen in 830 patients(87.7%)and 116patients were non smokers (12.3%).mean age was 44 .65 and 4.15years.out of 946 patients 284 had mild Chronic Obstructive Pulmonary Disease 30%.286 had moderate diseases30% and the remaining 387 patients 40% had severe Chronic

Obstructive Pulmonary Disease. The overall prevalence of Chronic Obstructive Pulmonary Disease in presence study was 6.85%with prevalence of disease in males being 7.4%and females 4.64%.their for, there is a significant burden of Chronic Obstructive Pulmonary Disease in the community with overall prevalence of 6.85 in south India.

Chronic Obstructive Pulmonary Disease is a Chronic progressive disease strongly associated with dyspnoea and exercise limitation in activities of daily life. So far no cure for this disease only effort to alleviate the symptoms. It is therefore of great importance to define effective Pursed Lip Breathing technique to relieve symptoms and to motivate patient to exercise. Pursed Lip Breathing Exercise is good for relaxation and easily understandable and practicable, it helps lungs exchange oxygen and carbon dioxide better to help maintain the vital balance of blood gases and also to relieve shortness of breath.

Investigator personally witnessed many of the populations are affected by Chronic Obstructive Pulmonary Disease and found that they have decreased quality of life and activities of daily living.

Looking in to the above mentioned reason the researcher decided to conduct the study in order to assess the effectiveness of Pursed Lip-Breathing Exercise to promote breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

1.2 STATEMENT OF THE PROBLEM :-

A study to assess the effectiveness of Pursed Lip-Breathing Exercise on breathing pattern among patients with Chronic Obstructive Pulmonary Disease in Medical Ward, Government Rajaji Hospital,Madurai-20

1.3 OBJECTIVES :-

- To assess the breathing pattern among patients with Chronic Obstructive Pulmonary Disease.
- To evaluate the effectiveness of Pursed Lip Breathing exercise among patients with Chronic Obstructive Pulmonary Disease .
- To associate the breathing pattern with selected demographic and clinical variables among patients with Chronic Obstructive Pulmonary Disease .

1.4 HYPOTHESIS

H1   There is a significant difference between the breathing pattern among patient with Chronic Obstructive Pulmonary Disease before and after Pursed Lip Breathing exercise.

H2   There is a significant association between the breathing pattern among patients with Chronic Obstructive Pulmonary Disease with their selected demographic and clinical variables.

1.5 OPERATIONAL DEFINITION:-

EFFECTIVENESS: - In this study, it refers to the extent to which the Pursed Lip Breathing exercise has achieved its effect on breathing pattern, as measured by Incentive spirometer and Modified Respiratory Status Assessment Scale.

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PURSED LIP BREATHING EXERCISE-

In this study it refers to the exercise that the patient are taught to inhale to the count three and then exhale slowly to the count of seven by keeping their lip like a purse until the air is exhaled. . This exercise will be done for 3 minutes (each minutes for 6 cycles) per 3 times a day and for the duration of 10days.

BREATHING PATTERN

In this study it refers to both breathing pattern and breathing capacity as measured by the use of Incentive spirometer and Modified Respiratory Assessment Scale.

Patients With Chronic Obstructive Pulmonary Disease

In this study, it refers to individuals with suffering as Chronic Obstructive Pulmonary Disease admitted in the Medical Ward.

1.6 ASSUMPTION

This study assumes that,

- Pursed Lip Breathing exercise is good for relaxation

- Pursed Lip Breathing exercise is easily understandable and practicable

- Pursed Lip Breathing helps the lungs exchange oxygen and carbon dioxide better to help maintain the vital balance of blood gases.

- Pursed lip breathing exercise to reduce the shortness of breath

1.7 DELIMITATIONS

The study is delimited to .

- Sample size is limited to 100 patients.

- Short duration of the study period 4-6 weeks.

1.8 PROJECTED OUTCOME

The study will reveal the importance of Pursed Lip Breathing Exercise to improve the breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

Review of Literature

CHAPTER II

REVIEW OF LITERATURE

Review of literature is a key step in the research process. Review of literature refers to an extensive, exhaustive and systematic examination of publication relevant to the research project. The important purpose of literature review is to convey to the readers about the work already done and knowledge and ideas that have been already established on a particular topic of research.

The review of literature for the present study has been done on effect of pursed lip breathing exercise on Chronic Obstructive Pulmonary Disease patient from published articles, text books, reports, newsletters, need line internet search. Finally the review of literature organized and presented as follows.

1. Review of literature related to Chronic Obstructive Pulmonary Disease.

2. Review of literature related to benefits of breathing exercise in Chronic Obstructive Pulmonary Disease.

3. Review of literature related to effectiveness of Pursed Lip Breathing Exercise in Chronic Obstructive Pulmonary Disease patient.

2.1 Review of literature related to Chronic Obstructive Pulmonary Disease.

James K.Stooler (2014) was conducted the study to find out the increasing prevalence, mortality, and disease burden. mortality. Recent estimates suggest that there are approximately 23.6 million men and women with COPD in the U.S. and more than 52 million sufferers around the world. The worldwide prevalence is likely to be underestimated for several reasons, including delays in establishing the diagnosis, the variability in defining COPD, and the lack of age-adjusted estimates. A

recent multinational population-based study, placed the worldwide overall prevalence of stage-II or higher COPD at 10.1% with a higher prevalence rate for men (11.8%) than for women (8.5 %). The rates and severity of Spiro metrically confirmed COPD were higher than those previously reported. Age adjustment is important because the prevalence of COPD in people aged <45 years is low and the prevalence is highest in patients aged >65 years. In 1995, 553,000 patients were treated for COPD in the U.S., two-thirds of them were aged >65 years. The prevalence of COPD in those aged >65 years was 4 times that among those aged 45-64 years.

Catherine E Rycroft, Anne Heyes, Lee Lanza, Karin Becker (2012) conducted a study to quantify the burden of chronic obstructive pulmonary disease (COPD) – incidence, prevalence, and mortality – and identify trends in Australia, Canada, France, Germany, Italy, Japan, The Netherlands, Spain, Sweden, the United Kingdom, and the United States of America. A structured literature search was performed (January 2000 to September 2010) of PubMed and EMBASE, identifying English-language articles reporting COPD prevalence, incidence, or mortality. Of 2838 articles identified, 299 full-text articles were reviewed, and data were extracted from 133 publications. Prevalence data were extracted from 80 articles, incidence data from 15 articles, and mortality data from 58 articles. Prevalence ranged from 0.2%–37%, but varied widely across countries and populations, and by COPD diagnosis and classification methods. Prevalence and incidence were greatest in men and those aged 75 years and older. Mortality ranged from 3–111 deaths per 100,000 populations. Mortality increased in the last 30–40 years; more recently, mortality decreased in men in several countries, while increasing or stabilizing in women. Although COPD mortality increased over time,

rates declined more recently, likely indicating improvements in COPD management. In many countries, COPD mortality has increased in women but decreased in men. This may be explained by differences in smoking patterns and a greater vulnerability in women to the adverse effects of smoking

R. Nielsen, M. Klemmetsby and A. Gulsvik (2008) conducted a study in Nordic population. The burden of diseases should be described in terms of costs. The available literature gives imprecise estimates of costs of chronic obstructive pulmonary disease (COPD) in the Nordic populations. Previous studies have methodological weaknesses related to choice of disease criteria, the use of highly selected populations and insufficient specification of the cost process. There are no robust estimates concerning the economics of COPD in Norway. They were conducted a 1 year follow-up cost of illness study in a general Population, recruiting ever smoking Global Initiative for Chronic Obstructive Lung Disease (GOLD) stage 2+ COPD patients and ever smokers without COPD. They were used diaries to recollect data, and comprehensive questionnaires to cover all costs of COPD.The main challenges were the participants' unwillingness to complete diaries, the large amount of information and the logistics related to following up476 individuals on four occasions during one year

Massimo Gorini, Gianni Misuri, (2014) conducted a study to assess the the factors leading to chronic hypercapnia and rapid shallow breathing in patients with severe chronic obstructive pulmonary disease (COPD) are not completely understood. In this study the interrelations between chronic carbon di-oxide retention, breathing pattern, dyspnea, and the pressure required for breathing relative to inspiratory muscle

strength in stable COPD patients with severe airflow obstruction were studied. Thirty patients with COPD in a clinically stable condition with forced expiratory volume in one second (FEV1) of <1 liter were studied. In each patient the following parameters were assessed: (1) dyspnea scale rating, (2) inspiratory muscle strength by measuring minimal pleural pressure (PPLmin), and (3) tidal volume (VT), flow, pleural pressure swing (PPLSW), total lung resistance (RiL), dynamic lung elastance (ELdyn), and positive end expiratory alveolar pressure (PEEPi) during resting breathing. Results - Arterial carbon dioxide tension (Paco2) related directly to RLiPPLmin, and ELdynIPPLmin, and inversely to VT and PPLmin. There was no relationship between Paco2 and functional residual capacity (FRC), total lung capacity (TLC), or minute ventilation. PEEPi was similar in eucapnic and hypercapnic patients. Expressing Paco2 as a combined function of VT and PPLmin (stepwise multiple regression analysis) explained 71% of the variance in Paco2. Tidal volume was directly related to inspiratory time (TI), and TI was inversely related to the pressure required for breathing relative to inspiratory muscle strength (PPLSW, %PPLmin). There was an association between the severity of dyspnoea and both the increase in PPLSW (%PPLmin) and the shortening in TI   The results indicate that, in stable patients with COPD with severe airflow obstruction, hypercapnia is associated with shallow breathing and inspiratory muscle weakness, and rapid and shallow breathing appears to be linked to both a marked increase in the pressure required for breathing relative to inspiratory muscle strength and to the severity of the breathlessness

K. Hill (2013) was conducted a study at School of Physiotherapy and Exercise Science Western Australia .Comprehensive pulmonary rehabilitation is an important component in the clinical management of people with chronic obstructive

pulmonary disease (COPD). Although supervised exercise training is considered the cornerstone of effective pulmonary rehabilitation, there are many other components that should be considered to manage the impairments and symptom burden, as well as the psychosocial and lifestyle changes imposed by COPD. These include approaches designed to: 1) facilitate smoking cessation; 2) optimise pharmacotherapy; 3) assist with early identification and treatment of acute exacerbations; 4) manage acute dyspnoea; 5) increase physical activity; 6) improve body composition; 7) promote mental health; 8) facilitate advance care planning; and 9) establish social support networks. This article will describe these approaches, which may be incorporated within pulmonary rehabilitation, to optimise effective chronic disease self-management.

Michael Stellefson, Bethany Tennant, and J. Don Chaney (**2012**) was conducted a study in USA chronic obstructive pulmonary disease (COPD) causes progressive airflow limitation which Chronic obstructive results in prolonged episodes of coughing and shortness of breath. COPD self-management education (COPDSME) programs attempt to enhance patient self-efficacy for managing symptoms. The purpose of this paper was to conduct a critical literature review that identified peer-reviewed articles assessing the effects of COPDSME on self-efficacy outcomes. Seven articles were located after an exhaustive search. Most studies ($n = 6$) reported statistically significant improvements in self-efficacy following intervention. Almost all of the studies tested interventions that drew upon at least 2 recommended sources of efficacy information. Two studies specifically noted increased self-efficacy for controlling physical exertion following COPDSME. Within the reviewed studies, the content within each educational treatment varied widely and showed a lack of

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standardization, and the types of instruments used to assess self-efficacy varied. This paper highlights the need for more controlled trials that investigate potential between-subjects effects of different types of COPDSME programs on self-efficacy outcomes. Incorporating practice models for patient-centered primary care in COPD requires the use of tailored efficacy building strategies for specific self-management behaviours.

Facchiano L, Hoffman Snyder C, Nunez DE. (**2011**) was conducted a study in missourito investigate the breathing retraining as a self-management strategy for individuals with chronic obstructive pulmonary disease (COPD) guided by Rosswurm and Larrabee's evidence-based practice model. Scientific literature review, grey literature review, and hand searching.An exhaustive review of the literature revealed evidence that regularly practiced pursed lip breathing is an effective self-management strategy for individuals with COPD to improve their dyspnea.They concluded that implementation of this non-pharmacological self-management intervention will improve perception of dyspnoea, functional performance, and self-efficacy in individuals with COPD.

DD Marciniuk, D Good ridge, P Hernandez, et al(2011) was conducted a study in Canada to investigate the dyspnoea and its severity and magnitude increases as the disease progresses, leading to significant disability and a negative effect on quality of life. Refractory dyspnoea is a common and difficult symptom to treat in patients with advanced COPD. There are many questions concerning optimal management and, specifically, whether various therapies are effective in this set- ting. The present document was compiled to address these important clinical issues using an evidence-based systematic review process led by a representative interprofessional panel of experts. The evidence supports the benefits of oral opioids, neuromuscular

electrical stimulation, chest wall vibration, walking aids and pursed-lip breathing in the management of dyspnoea in the individual patient with advanced COPD. Oxygen is recommended for COPD patients with resting hypoxemia, but its use for the targeted management of dyspnoea in this setting should be reserved for patients who receive symptomatic benefit. There is insufficient evidence to support the routine use of anxiolytic medications, nebulised opioids, acupuncture, acupressure, distractive auditory stimuli (music), relaxation, hand- held fans, counselling programs or psychotherapy. There is also no evidence to support the use of supplemental oxygen to reduce dyspnoea in nonhypoxemic patients with advanced COPD. Recognizing the current unfamiliarity with prescribing and dosing of opioid therapy in this setting, a potential approach for their use is illustrated. They concluded the role of opioid and other effective therapies in the comprehensive management of refractory dyspnoea in patients with advanced Chronic Obstructive Pulmonary Disease.

Amanda Gimenes Bonilha **(2009)** conducted a study in university hospital Ribeiraonpreto to investigate the effects of weekly singings classes on pulmonary function parameters and quality of life (QoL) of COPD patients. Forty-three patients were randomized to weekly classes of singing practice, or handcraft work. They performed spirometry and completed maximal respiratory pressure measurements, evaluations of dyspnoea, and the Saint George's Respiratory Questionnaire, before and after 24 training classes. A functional evaluation, immediately after 10 minutes of singing practice, was also performed at the end of the study. Fifteen subjects completed the study in each group. In comparison to controls the singing group exhibited transitory elevations on the dyspnoea Borg scale ($p = 0.02$), and inspiratory capacity ($p = 0.01$), and decreases of expiratory reserve volume ($p = 0.03$), just after a

short session of singing. There was a significant difference on changes of maximal expiratory pressures in the comparison between groups at the end of training. While the control group showed deterioration of maximal expiratory pressure, the singing group exhibited a small improvement ($p = 0.05$). Both groups showed significant improvements of QoL in within group comparisons. They concluded that singing classes are a well tolerated activity for selected subjects with COPD. Regular practice of singing may improve QoL, and preserve the maximal expiratory pressure of these patients.

Anna sap this and Sara booth (2008) conducted a study in to evaluate the increasing evidence that the end of life needs of those with advanced COPD is not being met by existing services. Many barriers hinder the provision of good end of life care in COPD, including the inherent difficulties in determining prognosis. This review provides an evidence-based approach to overcoming these barriers, summarizing current evidence and highlighting areas for future research. They conclude end of life needs, symptom control, advance care planning, and service development to improve the quality of end of life care.

P.samarakoon (2008) Conducted a study to investigate the increasing reports describing invasive pulmonary aspergillosis (IPA) in patients with chronic obstructive pulmonary disease (COPD) without the classic risk factors for this severe infection. The available literature on this association is based on case reports or small case series. The aim of this review is to systematically review these cases and describe the clinical features, diagnostic studies and outcome. They identified all the cases of IPA and COPD reported in the literature and had enough clinical information. They also

included five cases of IPA in patients with COPD identified by the authors. These cases were systematically reviewed for clinical features, diagnostic studies and outcome.

There were 60 cases of IPA in patients with COPD identified from the literature. The total number of cases reviewed was 65. The mean age was 65.1 years, the mean FEV1 was 39% of predicted (*n* = 17, range 19—56%). Forty-nine patients were documented to be on systemic corticosteroids. The mean dose was 24mg/day (range 15—65 mg/day). Five patients were only on inhaled corticosteroids and in 11 patients there was no documentation of corticosteroid therapy. They concluded thirteen patients had documented evidence of disseminated IPA. Sputum examination was positive for *Aspergillus* in 76% and bronchoscopy with bronchoalveolar lavage that was positive in 70%. The diagnosis of IPA was definite in 43 patients and probable in 22 patients. Forty-six patients were treated with anti-fungal therapy. Fifty-nine patients (91%) died with IPA. Invasive pulmonary aspergillosis is an emerging serious infection in patients with COPD. The majority of these patients have advanced COPD and/or on corticosteroid therapy.

Peng Yin Mei Zhang_et.al (2007) conducted a study in china to evaluate the socioeconomic status is independent risk factor for Chronic Obstructive Pulmonary Disease (COPD). They used data from the 2007 China Chronic Disease Risk Factor Surveillance of 49,363 Chinese men and women aged 30-70 years to examine the association between the prevalence of self-reported physician diagnosed COPD and socioeconomic status defined by both educational level and annual household income. Multivariable logistic regression modeling was performed with adjustment for

potential confounders. Both low educational attainment and low household income were independently associated with higher risk of physician-diagnosed COPD. Compared to subjects with high educational level, subjects with low educational level had a significantly increased risk of COPD (OR 1.67, 95%CI 1.32-2.13, p for trend< 0.001 for urban, OR 1.76, 95%CI 1.34-2.30, p for trend < 0.001 for rural) after adjusting for age, sex, smoking status, passive smoking and geographic regions. Similarly increased risk was observed for household income and COPD in urban (OR 1.64, 95%CI 1.28-2.09, P for trend< 0.001) but not rural areas. Among never smokers, low educational level and household income were still associated with a significant higher prevalence of COPD (OR 1.77, 95%CI 1.40-2.25, OR 1.31, 95%CI 1.05-1.62)..They concluded socioeconomic status is a risk factor for self-reported physician-diagnosed COPD independently of current or passive smoking.

O. D´ıaz (2000) conducted a study in Japan to investigate the role of Expiratory flow limitation (FL) at rest is frequently present in chronic obstructive pulmonary disease (COPD) patients. It promotes dynamic hyperinflation with a consequent decrease in inspiratory capacity (IC). Since in COPD resting IC is strongly correlated with exercise tolerance, this study hypothesized that this is due to limitation of the maximal tidal volume (VT,max) during exercise by the reduced IC. They investigated the role of tidal flow limitation at rest on: 1) the relationship of resting IC to VT,max; and 2) on gas exchange during peak exercise in COPD patients. Fifty-two stable COPD patients were studied at rest, using the negative expiratory pressure technique to assess the presence of FL, and during incremental symptom-limited cycling exercise to evaluate exercise performance. At rest, FL was present in 29 patients. In the 52 patients, a close relationship of VT, max to IC was found using

non-normalized values (r~0.77; pv0.0001), and stepwise regression analysis selected IC as the only significant predictor of VT,max. Subgroup analysis showed that this was also the case for patients both with and without FL (r~0.70 and 0.76, respectively). In addition, in FL patients there was an increase (pv0.002) in arterial carbon dioxide partial pressure at peak exercise, mainly due to a relatively low VT,max and consequent increase in the physiological dead space (VD)/VT ratio. The arterial oxygen partial pressure also decreased at peak exercise in the FL patients (pv0.05). they concluded, in chronic obstructive pulmonary disease patients the maximal tidal volume, and hence maximal oxygen consumption, are closely related to the reduced inspiratory capacity. The flow limited patients also exhibit a significant increase in arterial carbon dioxide partial pressure and a decrease in arterial oxygen partial pressure.

2.2 Review of literature related to benefits of breathing exercise in chronic obstructive pulmonary   disease patient.

   Kyo Chul Seo, (2013) conducted a study to examine the effects of a combination of inspiratory diaphragm exercise and expiratory Pursed-Lip Breathing Exercise on pulmonary functions and respiratory muscle activation of stroke patients. Thirty stroke patients were randomly and equally allocated to an experimental group and a control group, and the intervention was conducted five times per week for two weeks. In each session, both groups received rehabilitative exercise treatment for 30 minutes, and a feedback breathing device exercise for 15 minutes. In addition, the experimental group performed a combination of inspiratory diaphragm breathing exercise and the expiratory pursed-lip breathing exercise for 15 minutes. Prior to and after the intervention, patients' pulmonary functions were measured using a

spirometer. The pulmonary functions assessed were tests included FVC, FEV1, FVC/FEV1, PEF, VC, TV, IC, ERV, IRV. With respect to changes in the pulmonary functions of both groups after the intervention, the experimental group showed significant differences in FVC/FEV1, TV, and IC, but not in FVC, FEV1, PEF, VC, ERV, and IRV. The control group showed no significant differences. There were significant differences in FEV1, TV, and IC between the two groups, but no significant differences in FVC, PEF, FVC/FEV1, VC, ERV, and IRV after the experiment. The experimental group, which conducted a combination of breathing machine exercise and the respiratory muscle strengthening exercise, saw their respiratory ability increase more significantly than the control group. They concluded combination breathing exercise was found to improve pulmonary functions of stroke patients.

Masoumeh Zakerimoghadam et.al (2011) conducted a study to assess the effect of breathing exercises on fatigue level of the patients with COPD. Quasi-experimental research was conducted on 60 COPD patients hospitalized at hospitals affiliated to Tehran University of Medical Sciences. The subjects were randomized into "experience" and "control" groups. Data were gathered by interview and data registration from the files. The average fatigue severity before (55.766) and after (40.166) using the respiratory exercises (10DAYS) in the experience group (p=0%) was significantly different. While in the control group (p=0.002) before (54.166) and after (52.200) the study has a slight difference. There was a significant inverse correlation between using respiratory exercises and fatigue severity (r=-0.593, p=0.001). Mean fatigue intensity for the experience and control groups decreased to 40.916±14.4 and 52.20±8.539 after the study, respectively (p=0.001). They concluded

significant difference in fatigue severity between experience and control groups after the study. Conclusion: respiratory exercise is effective in reducing the fatigue in the patients with COPD.

Sarah wood ford (2011) conducted study in England to investigate the patients with Chronic Obstructive Pulmonary Disease [COPD] who cannot attend a structured rehabilitation class may benefit from undertaking breathing exercises at home to reduce breathless. Breathlessness is a progressive symptom that patients with COPD experience and can affect the patients' quality of life. Pulmonary rehabilitation is recognized as effective in helping to alleviate symptoms of breathlessness (National Institute for Health and Clinical excellence [NICE] 2010). Not all patients are able to attend a structured pulmonary rehabilitation To review the literature to ascertain if undertaking breathing exercises at home is beneficial in reducing breathlessness for the patient Pursed-lips breathing [PLB] was the one main theme which emerged from this process to be reviewed. Based purely on the literature alone, as there were many limitations, the use of PLB cannot be justified as a technique to use for reducing breathlessness for the patient with COPD. Further research is required in two areas to ascertain1.the benefits for patients with COPD employing PLB and; 2.to the role of the primary care clinician teaching breathing exercises to the patient with COPD .They concluded PLB is a spontaneously used method for some patients who have COPD when breathless. There is no suggestion that there is harm to the patient using this technique.

Suvi Hanninen (2010) conducted a qualitative study at Finnish Lung Health Association Jyvaskyla to evaluate the effect of breathing exercises and playing a

wind instrument was used to strengthen respiration and musical aspect for motivating practicing. Rehabilitation to Asthma group, two children and one adult, had music therapy sessions with woodwind instrument playing, and COPD patient individual music therapy sessions for 12 weeks. Can musical wind instrument in music therapy context, added to standard care, provide a beneficial effect for pulmonary patients. . They concluded PEF measures remained the same, but in diaries patients tell improved skills in asthma attack, mucus severing from lower part of the lungs, relieve from continuing coughing and improved capability to cure from common cold.

Georgeand xavier (2008) conducted a study in U.K with randomised parallel trials to compared breathing exercises to no breathing exercises or another intervention in people with COPD. Two review authors independently extracted data and assessed the risk of bias. Primary outcomes were dyspnoea, exercise capacity and health-related quality of life; secondary outcomes were gas exchange, breathing pattern and adverse events. .Main results Sixteen studies involving 1233 participants with mean forced expiratory volume in one second (FEV1) 30% to 51% predicted were included. There was a significant improvement in six-minute walk distance after three months of yoga involving pranayama timed breathing techniques (mean difference to control 45 metres, 95% confidence interval 29 to 61 metres; two studies; 74 participants), with similar improvements in single studies of pursed lip breathing (mean 50 metres; 60 participants) and diaphragmatic breathing (mean 35 metres; 30 participants). Effects on dyspnoea and health-related quality of life were inconsistent across trials. computerised ventilation feedback to exercise training did not provide additional improvement in dyspnoea-related quality of life (standardised mean difference -0.03; 95% CI -0.43 to 0.49; two studies; 73 participants) and ventilation

feedback alone was less effective than exercise training alone for improving exercise endurance they concluded breathing exercises may be useful to improve exercise tolerance in selected individuals with COPD who are unable to undertake exercise training.

2.3 Review of literature related to effectiveness of pursed lip breathing exercise in chronic obstructive pulmonary   disease patient.

Mohsen Adib-Hajbaghery et.al., (2011) was conducted study to examined the effects of pursed-lip breathing (PLB) on the respiratory function, arterial blood gases and the activities of daily living in patients with COPD.A before-after quasi-experimental study was conducted on 40 COPD patients in Kashan, Iran. Spirogram and ABG were tested before and after three-months of PLB exercise and the Airway Questionnaire 20 (AQ20) was used to assess activities of daily living. The result was O2sat was significantly increased (P < 0.05) and a tendency toward an increase in PaO2 was observed after three months of exercise. In addition, a decrease in PaCO2 (P < 0.05) and the respiratory rate (P < 0.001) was observed. Activities of daily living was also increased (P < 0.001). Forced expired volume second one (FEV1%) and forced vital capacity (FVC) did not change (P > 0.05).

They concluded breathing retraining program can improve lung functions, arterial blood gas and the levels of activities of daily living. Therefore, breathing retraining should be included in respiratory physiotherapy programs in patients with COPD.

G.Dechman(2014) conducted a study to evaluate the efficacy of pursed-lip breathing (PLB) and diaphragmatic breathing (DB) in the rehabilitation of people with chronic

obstructive pulmonary disease (COPD) remains unclear. This review examines the evidence regarding the usefulness of these techniques in improving the breathing of people with stable COPD.. Pursed-lip breathing slows the respiratory rate, and evidence suggests that this decreases the resistive pressure drop across the airways and, therefore, decreases airway narrowing during expiration. This decrease in airway narrowing may account for the decreased dyspnoea some people experience when using this technique. Diaphragmatic breathing has negative and positive effects, but the latter appear to be caused by simply slowing the respiratory rate. They concluded evidence supports the use of PLB, but not DB, for improving the breathing of people with COPD.

Margaret A.Nield (2007) conducted a study to compare two programs of prolonging expiratory time (pursed-lips breathing and expiratory muscle training) on dyspnea and functional performance. A randomized, controlled design was used for the pilot study. Subjects recruited from the outpatient pulmonary clinic of a university-affiliated Veteran Affairs healthcare center were randomized to: 1) pursed-lips breathing, 2) expiratory muscle training, or 3) control. Changes over time in dyspnea [modified Borg after 6-minute walk distance (6MWD) and Shortness of Breath Questionnaire] and functional performance (Human Activity Profile and physical function scale of Short Form 36-item Health Survey) were assessed with a multilevel modelling procedure. Weekly laboratory visits for training were accompanied by structured verbal, written, and audiovisual instruction. Forty subjects with chronic obstructive pulmonary disease [age = 65 +/- 9 (mean +/- standard deviation) years, forced expiratory volume 1 second/forced vital capacity % = 46 +/- 10, forced expiratory volume 1 second % predicted = 39 +/- 13, body mass index = 26

+/- 6 kg/m^2, inspiratory muscle strength = 69 +/- 22 cm H$_2$O, and expiratory muscle strength (PE$_{max}$) = 102 +/- 29 cm H$_2$O] were enrolled. No significant Group x Time difference was present for PE$_{max}$ (P = .93). Significant reductions for the modified Borg scale after 6MWD (P = .05) and physical function (P = .02) from baseline to 2 weeks were only present for pursed-lips breathing They concluded .Pursed-lips breathing provided sustained improvement in exertional dyspnoea and physical function.

Jadranka Spahija et.al (2005) conducted a study to evaluate the effect of volitional pursed-lips breathing (PLB) on breathing pattern, respiratory mechanics, operational lung volumes, and dyspnoea in patients with COPD.Eight COPD patients (6 male and 2 female) with a mean (±SD) age of 58 ± 11 years and a mean FEV$_1$ of 1.34 ± 0.44 L (50 ± 21% predicted).: Wearing a tight-fitting transparent facemask, patients breathed for 8 min each, with and without PLB at rest and during constant-work-rate bicycle exercise (60% of maximum). PLB promoted a slower and deeper breathing pattern both at rest and during exercise. Whereas patients had no dyspnea with or without PLB at rest, during exercise dyspnoea was variably affected by PLB across patients. Changes in the individual dyspnoea scores with PLB during exercise were significantly correlated with changes in the end-expiratory lung volume (EELV) values estimated from inspiratory capacity maneuvers (as a percentage of total lung capacity; r^2 = 0.82, p = 0.002) and with changes in the mean inspiratory ratio of pleural pressure to the maximal static inspiratory pressure-generating capacity (PcapI) [r^2 = 0.84; p = 0.001], measured using an oesophageal balloon, where PcapI was determined over the range of inspiratory lung volumes and adjusted for flow.PLB can have a variable effect on dyspnoea when performed volitionally during exercise by

patients with COPD. They concluded the effect of PLB on dyspnoea is related to the combined change that it promotes in the tidal volume and EELV and their impact on the available capacity of the respiratory muscles to meet the demands placed on them in terms of pressure generation.

Mueller et al., 1970 conducted a study to evaluate the effects of PLB on ventilation and gas exchange during rest and exercise in 12 subjects with chronic airway obstruction. A standardized questionnaire was. Used first to determine whether or not the individual subjects did or did not get symptom benefit from PLB. Seven subjects claimed relief and five denied relief. The following sequence was used for each subject with steps three and five being randomly reversed and each step requiring six min-utes: 1) normal breathing at rest; 2) PLB at rest; 3) normal breathing during exercise; 4) rest period of 10 minutes or more; and 5) PLB during exercise. For each step, except number four, an arterial blood sample and respiratory count were done during the last minute. Minute ventilation was calculated from expired gas volume which in turn was used to determine tidal volumes. The data from the study indicated that PLB, during both rest and exercise, resulted in a marked drop in respiratory rate. Pursed lip breathing during exercise and rest did significantly increase tidal volumes in those subjects that felt PLB was beneficial. Pursed lip breathing at rest showed immediate and significant improvement in arterial p02; p^ and 02 saturation measurements compared to normal breathing. During exercise there were no changes in arterial blood gases as a result of pursed lip breathing. The authors concluded that PLB prevents airway collapse and as a result there is less air trapping, an increase in tidal volume and secondary decrease in respiratory rate.

Thoman, Stoker and Ross (1966) was conducted a study tocompared three different breathing patterns on 21 male ambulatory subjects with chronic obstructive pulmonary disease. Measurements of lung volumes were made initially using a Stead-Wells spirometer. Functional residual capacity and air-way resistance measurements were made by total body plethysmograph and arterial blood samples were obtained from an indwelling needle placed in the brachial artery. Each subject participated in three 10 minute sessions in the following order: 1) normal pattern of breathing used by the individual; 2) pursed lip breathing; and 3) controlled breathing rate using a light to signal the patient to inspire. The data collected showed that the controlled rate was very similar to pursed lip breathing in all parameters. Both techniques were able to significantly slow respiratory rates from a mean of 19.4 to 13.1 and increase tidal volumes an average of 224 mis. Arterial Pco2 levels also dropped significantly in 16 subjects. The authors measured the pressure drop across pursed lips using a water manometer and a small polyethylene tube positioned in the mouth prior to placing a face mask. The pressure drop measured was in the range of two to four cm. of water. The investigators suggested that pursed lip breathing does forestall or diminish early airway collapse by increasing intraluminal pressure; thus airway resistance is decreased and venti-lation enhanced. There was still uncertainty whether the slowed respiratory rate which occurs spontaneously during pursed lip breathing was responsible for some of the changes apparent in the data collected.

Schmidt (1964) was conducted a study to differentiate between airway functional mechanics during expiration in emphysema and bronchial asthma. The investigators tested 10 normal subjects, seven subjects diagnosed with bronchial asthma and 10 with emphysema. Expiratory airflow and induced positive oral pres-sures were

measured on each subject. Oral pressures were created by the addition of weights to the spirometer to simulate pursed lip breathing. The data collected reflected that increased oral pressures are not accompanied by increased vital capacities in the normal subjects or in patients with asthma or emphysema. In order to distinguish between the effects of changes in expiratory flow rates and oral pressure, the subjects' expiratory flow rate was displayed on the oscilloscope for observation by the subject. Observing his expiratory flow rates allowed the subject to control his rate of exhalation to a minimal flow rate prescribed by the experimenter. While the subject was performing these exhalation maneuvers, the investigator was changing oral pressures by adding weights to the spirometer to vary resistance. The same procedure was followed when all the subjects were asked to perform a maximum effort vital capacity maneuver. The normal and bronchial asthmatic subjects demonstrated no change in vital capacity, while the subjects with emphysema increased their vital capacity by 42.1 percent using minimal effort technique. The researchers concluded that The researchers concluded that increasing oral pressures alone does not account for improved vital capacities in the subject with emphysema but the benefit obtained is due to the reduction of expiratory flow rates.

Summary:

The literature reviewed above has provided a better understanding and also broadened the investigators outlooks, which is a pre requisite for the research study. It has also helped the researcher to establish need for the study, the conceptual frame work and research design, preparation of instructional demonstration, for the development of the tool and to divide upon for statistical data analysis.

2.4 CONCEPTUAL FRAME WORK

Conceptual frame work is a theoretical approach to the study of problems that are scientifically based and emphasis in the selection, arrangement and classification of its concepts.

The Conceptual Frame Work of the present study is based on the general systems theory with input, process, output and feedback. This was first introduced by **Ludwig Von Bertalanffy General system theory in (1968).**

According to this theory, a system is group of elements that interact with one another in order to achieve the goal. An individual is a system because he or she receives input from the environment. The input when processed provides an output. All living systems are open. There is a continuous exchange of matter, energy and information. The system is cyclical in nature and continues to be as long as the four parts – input, process, output and feedback – keep interacting with each other. If there are any changes in any of the parts, there will be alterations in all the parts. Feedback within the system or from the environment provides information which helps the system to determine its effectiveness.

The general system theory explained the meta para diagram as follows:
Person

Person is a social, rational, purposeful action and time oriental being, who requires fundamental health needs such as timely and useful health information, care that prevent illness and help when the self care demands cannot be met.

Environment

Environment described as the open system allows the exchange of matter, energy and the information.

Health

Health is described as the dynamic state in the life, using personal resources to achieve daily living.

Nursing

Nursing promotes, maintain and restores health and cares sick, uses a goal oriented approach in which the client and nurse interact to attain goal, so that they can function their own role independently.

Concepts based on Ludwig Bertalanffy General system theory (1968) in this study were;

INPUT

Consists of information material or energy that enters the system. The input includes the assessment among patients with Chronic Obstructive Pulmonary Disease of age, gender, religion, educational status, marital status, occupation, family income, duration of illness, number of previous hospitalization, history of smoking, treatment, allergies and frequently consuming non-vegetarian diet and pre assessment of breathing pattern by using incentive spirometer and Modified Respiratory Assessment Scale.

PROCESS

After the input is absorbed by the system it is processed in a way useful to the system. In this study it refers to demonstration of Pursed Lip Breathing Exercise was implemented for 3 minutes , three times a day in the morning ,afternoon and evening for ten consecutive days, post-test evaluation was conducted on the 10th day of the study.

OUTPUT

It refers to the energy matter or information disposed by the system as a result of the process. In the present study it refers to the improvement in the breathing pattern. This is achieved through the comparison of breathing pattern before and after pursed lip breathing exercise and post test scores as evaluated by Incentive Spirometer and Modified Respiratory Assessment Scale.

FEEDBACK

It is the process that enables a system to regulate itself and provides information about the system's output and the feedback as input.
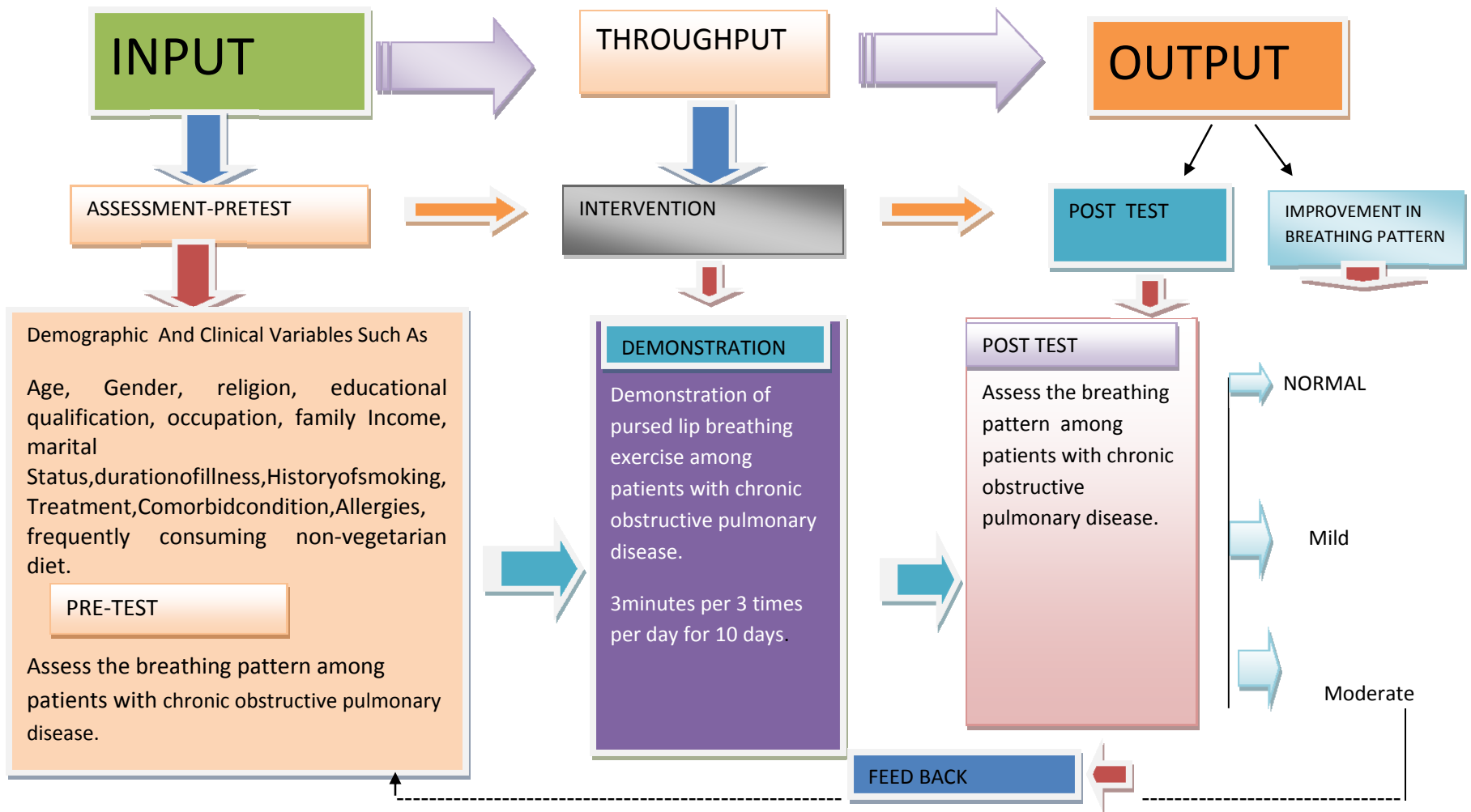
FIGURE-1CONCEPTUAL FRAME WORK BASED ON BY LUDWIG VON BERTALANFFY GENERAL SYSTEM THEORY (1968)

Methodology

CHAPTER III

RESEARCH METHODOLOGY

We ourselves feel that what we are doing is just a drop in the ocean
But the ocean would less because of that missing drop

Mother Theresa

This chapter deals with the methodology selected for the study. Research methodology is the most important part of research study. This enables the researcher to form a blue print of the research undertaken. Research methodology involves the systematic procedure by which the researcher starts from the time of initial identification of the problem to its final conclusion.

Research methodology helps the researcher to organizing the procedure for getting valid and reliable data for the problem under investigation. The methodology enables the researcher to project above the print of the details, data approach, research design, study setting, sample, sampling technique, sampling criteria, and development of the tool, description of the tool, pilot study, data collection procedure and plan for data analysis.

3.1 RESEARCH APPROACH. Quantitative approach

Quantitative approach was adopted by the researcher to assess the effectiveness of Pursed Lip Breathing Exercise on breathing pattern among patients with Chronic Obstructive Pulmonary Disease in Medical Ward. This research provides a basis for future quantitative research.

3.2 RESEARCH DESIGN

The investigator used a Pre experimental (one group pretest post-test) design for the study. There was a manipulation for the subjects without a control group and randomization.

0_1	X	0_2
PRE-TEST	INTERVENTION	POST TEST

O_1 - Pre test to assess the breathing pattern among patients with Chronic Obstructive Pulmonary Disease by use of Incentive spirometer and Modified Respiratory Status Assessment Scale.

X--- Demonstration of Pursed Lip Breathing exercise for 3 minutes, 3 times a day for 10 days.

0_2--- Post test to determine the breathing pattern among patients with Chronic Obstructive Pulmonary Disease by use of Incentive spirometer and Modified Respiratory Status Assessment Scale.

3.3 RESEARCH VARIABLES

Independent Variable: Pursed lip Breathing Exercise

Dependent Variable: Breathing pattern among patients with Chronic Obstructive Pulmonary Disease

Demographic Variable: Age, Gender, Religion, educational status, Occupation, Income, Marital status, Place of residence, Type of house

Clinical Variable: Duration of illness, number of previous Hospitalization, History of smoking, Treatment, Family History of Chronic Obstructive Pulmonary Disease,

Co-morbid condition, Activities of daily living, Exposure to Occupational Dust, Allergies, frequently consuming non-vegetarian diet and Exposure of airborne irritants.

3.4 SETTING OF THE STUDY

The study will be conducted in Medical ward Government Rajaji hospital Madurai-20. It is a 2518 bedded multi specialty and teaching hospital it provides comprehensive care to all. In Medical Ward 1800 Chronic Obstructive Pulmonary Disease patient per year admitted. It is one of the biggest institutions in south Tamilnadu. This Institution is rendering meritorious service to the patient with Chronic Obstructive Pulmonary Disease.

3.5 POPULATION

Population means all possible elements that could be included in research. It represents the entire group under study.

Target Population

The target populations were patients with Chronic Obstructive Pulmonary Disease.

Accessible Population

The accessible populations were patients with Chronic Obstructive Pulmonary Disease admitted in Medical Ward Government Rajaji Hospital, Madurai.20

3.6 SAMPLE

Chronic Obstructive Pulmonary Disease patient who were admitted in Medical Ward and who met the selection criteria .

3.7 SAMPLE SIZE

The total sample size is 100.

3.8 SAMPLING TECHNIQUE

The researcher adopted non-probability –Consecutive Sampling technique to select the subjects for the study.

3.9 CRITERIA FOR SAMPLE SELECTION

The sample selection was based on the following inclusion and exclusion criteria.

Inclusion criteria :

Subjects included in the study are

- Subjects in the age group between 30-70years.
- Admitted in the medical ward
- Those who are willing to participate in the study.
- Both Gender
- Subjects able to speak and understand Tamil.

Exclusion criteria

Subjects excluded from the study

- Subjects with critically ill
- Those who were participated in pilot study

- Those who were not willing to participate
- Who are all unconscious
- Subjects with co-morbid condition like cardiac disease

3.10 RESEARCH TOOL AND TECHNIQUE

TECHNIQUE

The technique to be used in the study is semi structured interview schedule

DEVELOPMENT OF THE TOOL

The investigator develops the data collection tool after review of literature and discussed with experts to collect the data needed for the study.

DESCRIPTION OF THE TOOL

The tool used in this study consists of two sections

SECTION-I –It comprised of 20 Items semi Structure Questionnaire including demographic variables like Age, Gender, Religion, Educational status, occupation, income, marital status, place of residence, type of house and clinical variable such as duration of illness, number of previous Hospitalization, History of smoking, Treatment, Family History of Chronic Obstructive Pulmonary Disease, Co-morbid condition, Activities of daily living, Exposure to Occupational Dust, Allergies, frequently consuming non-vegetarian diet and Exposure of airborne irritants.

SECTION-II

Part-A

Breathing capacity assessed by the use of Incentive spirometer.(MAXIMUM BREATHING CAPACITY)

Part-B

Breathing pattern   assessed by   the use of   Observation scale -Modified Respiratory status assessment scale   (Amal Shehata & Soheir Wehwida) (– Items are 10 including respiratory rate, Pulse rate, Body Temperature, chest retraction, use of accessory Muscles, Cough, Air Entry, Dyspnea, Breathing sounds,$o_2$saturation

SCORING PROCEDURE

SECTION-I - No scoring for allotted for the demographic variables and clinical variables.

SECTION-II

Part-A

Breathing Capacity assessed by the use of Incentive spirometer. (with in three minutes)

MAXIMUM BREATHING CAPACITY SCORES= (no. of times that all three balls reached the top of   column) ×2 + (no. of times that two balls reached the top of column) ×1.5 + (no. of times only one ball reached the column top) ×1.

SCORING KEY

SNO	LEVEL OF BREATHING DIFFICULTY	SCORING
1	Normal	>192
2	Mild	168-192
3	Moderate	143-167
4	Severe	109-142

SCORE INTERPRETATION

>192-NO RESPIRATORY PROBLEMS

168-192 -MILD RESPIRATORY PROBLEM

143-167-MODERATE RESPIRATORY PROBLEM

109-142-SEVERE RESPIRATORY PROBLEM

Part-B

Breathing pattern assessed by the use of Modified Respiratory Status Assessment

Scale. (Amal Shehata & Soheir Wehwida).

MODIFIED RESPIRATORY STATUS ASSESSMENT SCALE

SNO	FEATURES OBSERVED	SCORE			PRE-TEST	POST-TEST
		SCORE-0	SCORE-1	SCORE-2		
1	Respiratory rate	25-30/mt	30-40/mt	>40/mt		
2	Pulse rate	80-100/mt	100-120/mt	>120/mt		
3	Body temperature	37degree C	37-39	>39		
4	Chest retraction	None	Just visible	Marked		
5	Use of accessory muscles	None	Moderate usage	Maximal activity		
6.	Cough	None	Non-productive	Productive		
7.	Air entry	Bilateral	unilateral	Diminished bilaterally		
8.	Dyspnoea	Nil	Inactivity	At rest		
9.	Breathing sounds	Normal sounds	Occasional rale	Creptations		
10.	O2 saturation	98-100%	95-97%	<95%		

SCORE INTERPRETATION

0- NORMAL BREATHING PATTERN

1-6   -MILD RESPIRATORY PROBLEM

7-13 -MODERATE RESPIRATORY PROBLEM

14-20 -SEVERE RESPIRATORY PROBLEM

3.11   Content Validity

The content was validated by five experts of which four were nursing experts and one were physician. The suggestion of expert was incorporated in the study and the tool was finalized. After consulting guide, co-guide and statistician, the refined tool was used for data collection the tool was edited by an English language expert and translated in to Tamil by language experts without changing of the tool. It was found to be valid and suitable for patients with chronic obstructive pulmonary disease.

3.12 Reliability of the tool

Reliability was established by test retest method. The tool was administered to ten samples representing the characteristics of the population. Coefficient correlation was calculated and found to be reliable r=0.81 and Modified Respiratory Assessment Scale r=0.82 respectively. Hence the tool was considered highly reliable for proceeding with the main study.

3.13 PILOT STUDY

Pilot study was conducted from 1.8.2014 to 7.8.2014 in Medical ward at Government Rajaji hospital, Madurai. The investigator obtained written permission prior to the study from the Head of the Department, Medicine Department, Government Rajaji hospital, Madurai. For enduring pilot study. The investigator 10 subjects who are met the inclusion criteria were selected. Informed consent obtained from the samples and the base line data was collected. Following major findings of the study was the mean of the pre test and post test was 158.5 and 159.4. The calculated T test value was 3.846; this was less than 5% level of significance 2.26. The pre-test level of breathing pattern was mild-30%,moderate-70%   and the post

level of breathing pattern was mild-60%,moderate-40% . The findings of the pilot study revealed that the study was feasible and practicable.

3.14 PROCEDURE FOR DATA COLLECTION

The investigator obtained prior permission from the head of the department in medical ward and Principal College of Nursing and Ethical committee to conduct this study. The data collection period was 5weeks (12.8.2014-15.9.2014).The researcher introduced herself to the selected subjects .Samples are drawn using non- probability consecutive sampling technique, Informed written consent was obtained. The subjects of 100 were interviewed in order to collect base line data. The investigator assessed the breathing pattern using incentive spirometer and Modified Respiratory Assessment Scale. After the pre-test, Pursed lip breathing exercise was taught to the subjects for 3minutes / 3 times/day for 10 days. At the end 10th day post test was done by using same instrument.

3.15 PLAN FOR DATA ANALYSIS

The data analysis was done according to the objectives of the study. Both descriptive and inferential statistics were used. Analysis of the demographic data was done by using the frequency and percentage distribution. mean and standard deviation were used to analyze the breathing pattern among patients with chronic obstructive pulmonary disease. Paired t' test was used to analyze the effectiveness of pursed lip breathing exercise among patients with chronic obstructive pulmonary disease . Chi-square test has been used to analyze the association between pre and post test level breathing pattern regarding pursed lip breathing exercise among chronic obstructive pulmonary disease patient with selected demographic variables.

3.16 ETHICAL CONSIDERATION

The proposed study was conducted after the approval of research committee of College of Nursing, Madurai Medical College, Madurai. Written Consent was obtained from each subject before starting the data collection. Confidentiality was maintained for each subject. The formal approval was obtained from the Head of the Department from medicine.. A positive benefit was explained to all the study subjects. They were also be explained that they may with draw from the study at any time without any penalty. Assurance was given to the subjects that confidentiality would be maintained throughout the study. Debriefing of the study results was done after the approval of dissertations.

SCHEMATIC REPRESENTATION OF THE STUDY

Research Approach – Quantitative approach

RESEARCH DESIGN

Pre Experimental -one group pre-test post-test design

Study setting: MEDICAL Ward Government Rajaji Hospital,Madurai.20

Target Population - PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.

Accessible population -(Patients with Chronic Obstructive Pulmonary Disease admitted Medical ward Government Rajaji Hospital,Madurai.20.

Sample size:100

Sampling technique: Non Probability Consecutive Sampling

PRE TEST-ASSESS THE BREATHING PATTERN BY USING INCENTIVE SPIROMETER AND MODIFIED RESPIRATORY ASSESSMENT SCALE

DEMONSTRATION OF PURSED LIP BREATHING EXERCISE

POST TEST-ASSESS THE BREATHING PATTERN BY USINGINCENTIVESPIROMETER AND MODIFIED RESPIRATORY ASSESSMENTSCALE

Analysis And Interpretation

Data Analysis and interpretation of the findings

Dissemination of the Research findings andRecommendation

Figure 2: Schematic Representation Of research Methodology

Data Analysis And Interpretation

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter explains the statistical analysis performed on the collected data and to assess the effectiveness of Pursed Lip-Breathing Exercise to promote breathing pattern among patients with Chronic Obstructive Pulmonary Disease in selected medical ward, Government Rajaji hospital,Madurai-20

Analysis is a method for rendering quantitative data meaningful and intelligible information, so that the research problem can be studied and tested, including relationships between the socio demographic variables. The data was collected from 100 samples, organized, grouped, classified, assembled, analyzed and subject to extensive descriptive and inferential statistics in the light of objective of the study.

The data was analyzed and presented in the following sections

SECTION I:

Distribution of patients with Chronic Obstructive Pulmonary disease according to their demographic variables and clinical variables.

SECTION II:

Description of pre and post test level of breathing pattern among patients with Chronic Obstructive Pulmonary Disease

SECTION III:

Effectiveness of Pursed Lip Breathing Exercise among patients with Chronic Obstructive Pulmonary Disease.

SECTION IV:

Association between breathing pattern among patients with selected demographic and clinical variables

SECTION- I

Distribution of demographic variables and clinical variables of patients with Chronic Obstructive Pulmonary   Disease

Table- 1

Frequency and percentage distribution of   demographic variables of Patients with Chronic Obstructive Pulmonary Disease

(n=100)

SNO	Demographic data	Frequency	%
1.	**Age (in years):** a. 30-40 years b. 41-50 years c. 51-60 years d. 61-70 years	11 11 29 49	11 11 29 49
2.	**Gender** a. Male b. Female	63 37	63 37
3.	**Religion:** a. Hindu b. Muslim c. Christian d. Others	77 10 13 0	77 10 13 0
4.	**Educational status :** a. Non-formal education b. Primary c. Secondary d. Graduate/Diploma	24 43 32 1	24 43 32 1
5.	**Occupation :** a. Unemployed b. Agriculture c. Private d. Industry e. Government	23 35 27 8 7	23 35 27 8 7

6.	**Family income:**		
	a. Rs. < 5000	54	54
	b. Rs.5001-6000	37	37
	c. Rs.6001-7000	8	8
	d. Rs.7000 and above	1	1
7.	**Marital Status :**		
	a. Married	76	76
	b. Unmarried	4	4
	c. Widow/widower	14	14
	d. Separated	6	6
	e. Divorced	0	0
8.	**a. Place of residence :**		
	b. Rural	36	36
	c. Sub urban	30	30
	d. Urban	34	34
9.	**Type of house:**		
	a. Thatched	22	22
	b. Tiled	29	29
	c. Cement	26	26
	d. Concrete	23	23

The above table reveals demographic variable among patients with Chronic Obstructive Pulmonary Disease such as Age, Gender, Religion, Educational Status, Occupation, Family Income, Marital Status. Place of residence and type of house.

Regarding age, the majority of the study participants (49%) were belongs to 61-70 years of age, 29% were belongs to 51-60 years of age ,11% belongs to 30-40years of age, and 11%were belongs to 41 -50years of age.

Regarding gender, most of the participants (63%) were male and 27% were female.

Regarding religion, majority of the subjects (77%)   were Hindu, 10% were Christian and 13% of them were belongs to Muslim.

Based with educational status among the participants **(**35%) were primary education, 32% had higher secondary education, 24% non-formal educations 1% were graduates/diploma.

Majority of the subjects (35%) were agriculture, 27% were private employee, 23% were unemployed, 8% were industry and 7% were government .

Regarding marital status, majority of the participants (76%) were married, 14% widow/widower 4% were unmarried, and 6% were separated .

With view of family income, majority of the subjects (54%)were earned < Rs.5,000 , 37% had Rs.5,001 to Rs.6,000, 8% had Rs.6,001 to7000 and 1% had Rs.7,000 to and above.

Mostly 36% participants belong to rural area, 30% belongs to sub urban area and 34% belongs to urban area.

Regarding type of house, majority of the subjects (29%) were lived in tiled house, 22% thatched house,26% subjects were cement house and 23% were concrete house.
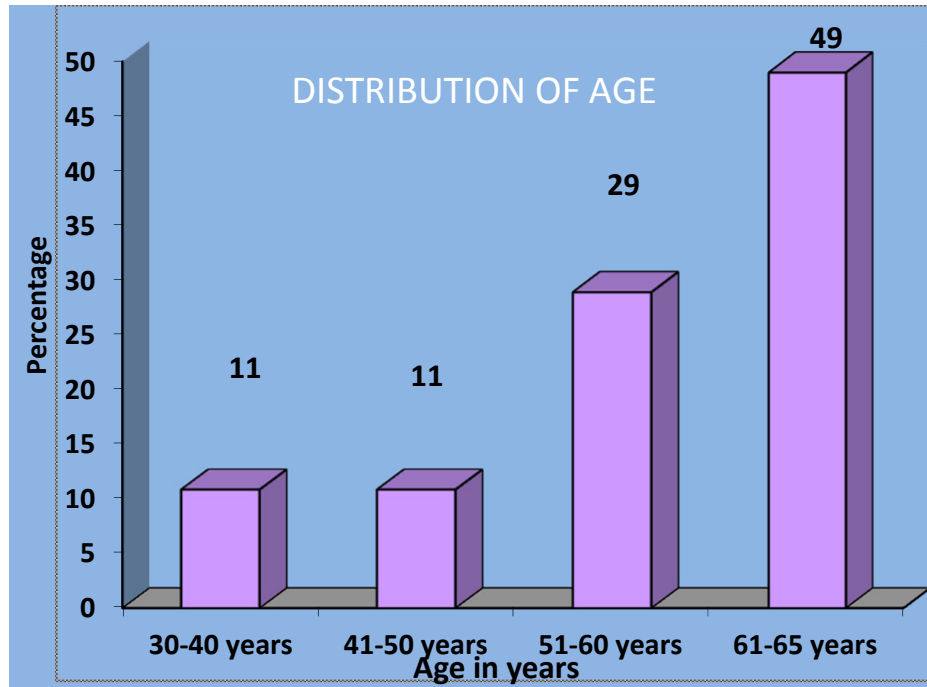
Figure.3 Percentage wise distribution of participants according to their Age

The above bar diagram shows that majority of the sample (49%) belongs to 61-70 years of   age and 29% belongs to 51-60years of age in age group 41-50 years 11% of participants,30-40years 11% in age group.
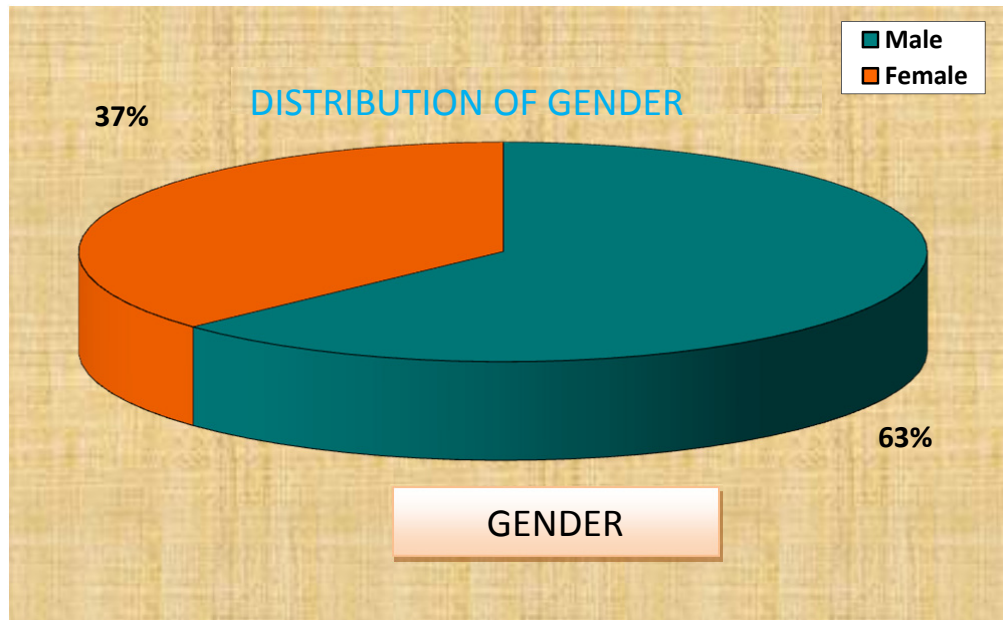
Figure.4.Percentage wise distribution of participants according to their Gender

The above diagram reveals that male participants accounts for 63% and female gender for 37%
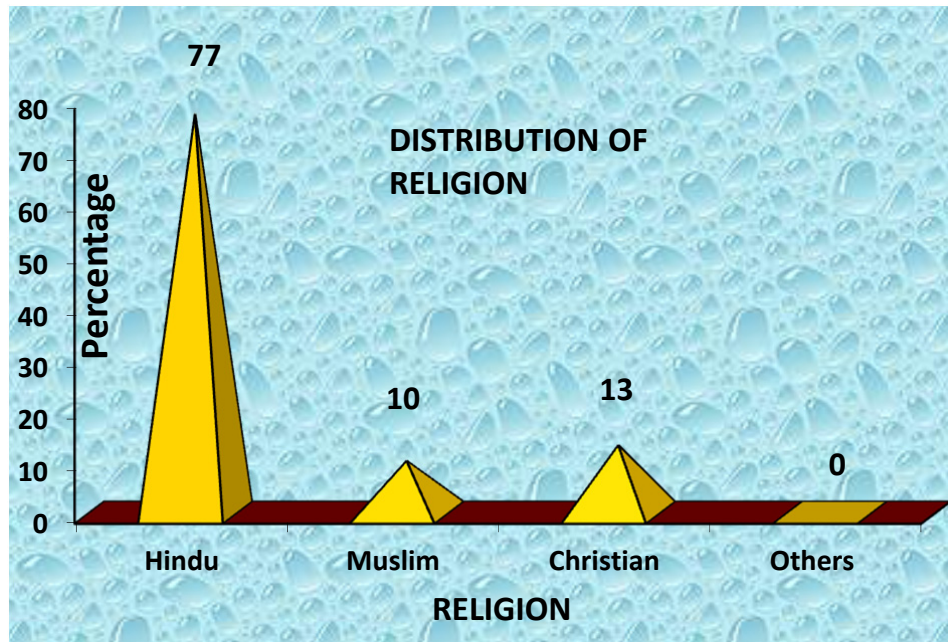
Figure .5. Percentage wise distributions of participants according to their religion.

The above cone diagram shows Hindu constitutes 77%   majority of participants,   10% of subjects   belongs to Muslim,13% of subjects belongs to Christian.
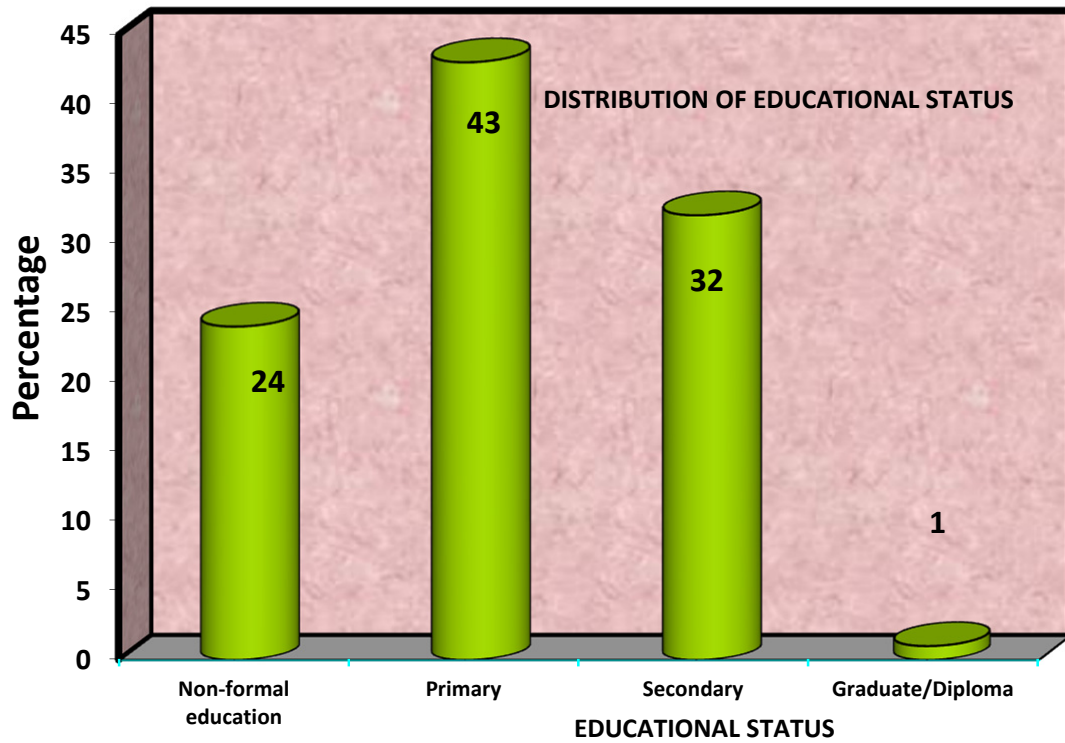
Figure.6 Percentage wise distribution of participants according to their educational status

For the above cylinder diagram it is deal that majority of the participants were education only up to primary education (43%), and the 1% participants were graduates/diploma. .
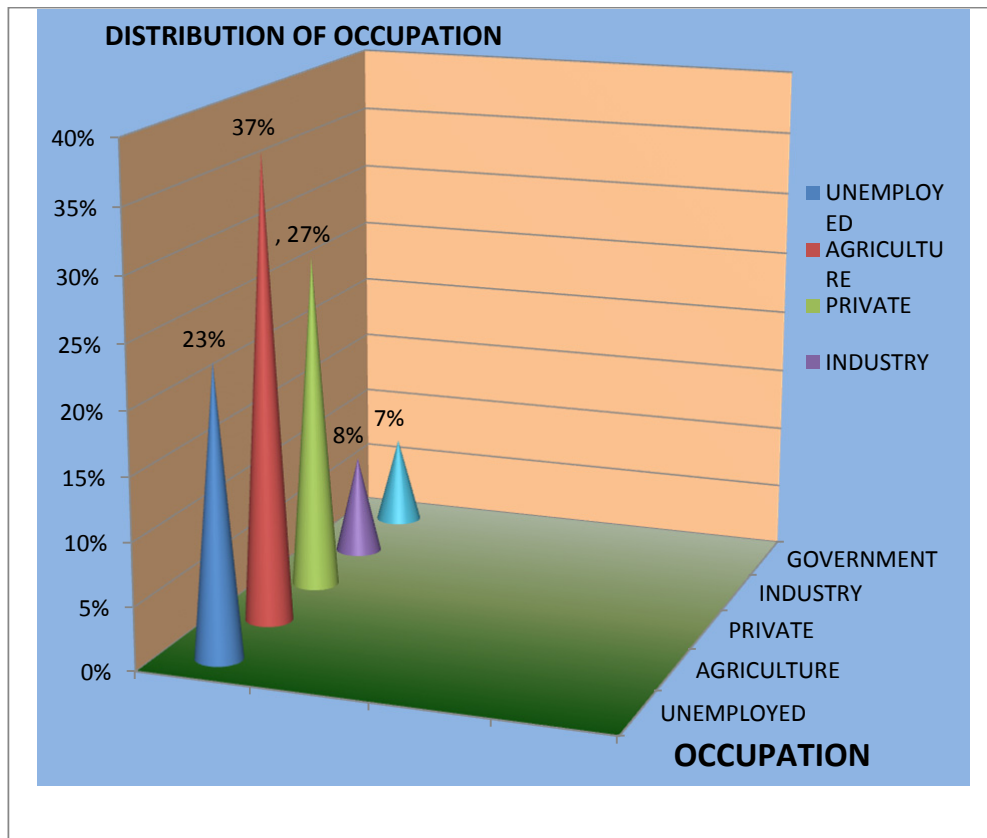
Figure.7. Percentage wise distribution of participants according to their occupation.

The above cone diagram shows most of the participants (37%) were agriculture population, 23% were unemployed, 27% were private employee,8% were industry and 7% were person who cooks open fires .
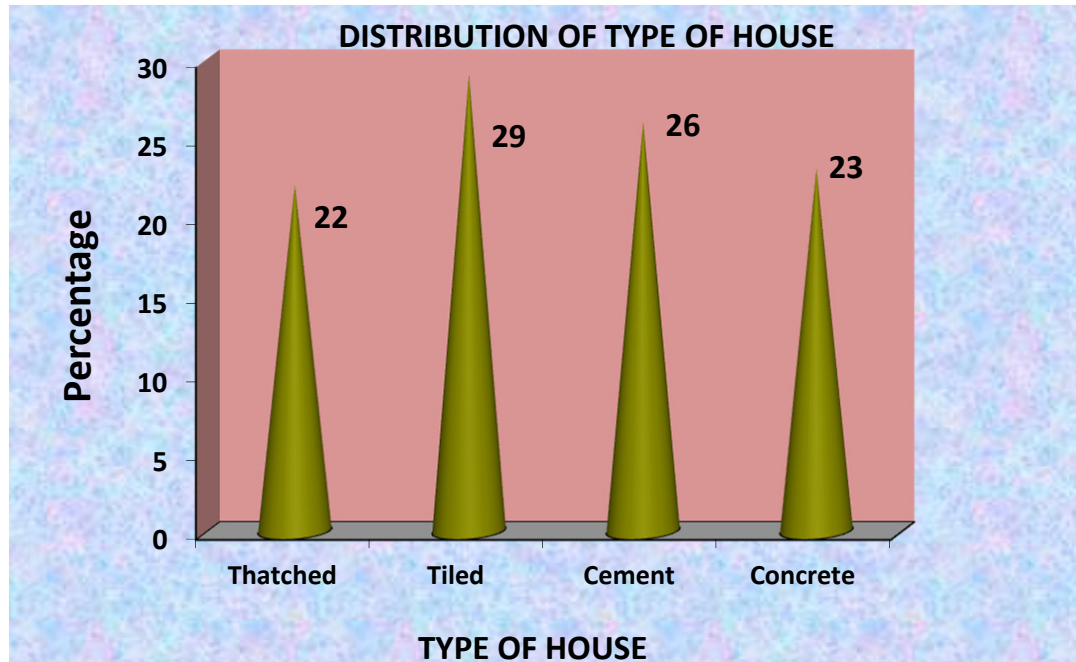
Figure.8. Percentage wise distribution of participants according to their type of house.

The above cone diagram shows majority of (29%) subjects were lived tiled house, 26% subjects were cement house and 23% were concrete house. 22%subjects were thatched house.

Table- 2

Frequency and percentage distribution of clinical variables of

Patients with Chronic Obstructive Pulmonary Disease

(n-100)

SNO	CLINICAL VARIABLES	FREQUENCY	PERCENTAGE (%)
1.	**Duration of illness:**		
	a. Less than 1 years	21	21
	b. 1-3 years	67	67
	c. >3 years	12	12
2.	**Number of previous hospitalization for respiratory problem**:		
	a. Nil	29	29
	b. 1-3 times	63	63
	c. 3-6 times	5	5
	d. More than 6 times	3	3
3.	**History of smoking**:		
	a. Do not smoke	35	35
	b. ≤ 1 pocket/day	47	47
	c. 2-3 pockets /day	17	17
	d. >3 pockets /day	1	1
4.	**Treatment** : pharmacological		
	a. Medications	66	66
	b. injections	20	20
	c. Meter dose inhalers	9	9
	d. Non-pharmacological.	5	5
5.	**Family history of chronic obstructive pulmonary disease:**		
	a. Parents	66	66
	b. Siblings	8	8
	c. Grand parents	24	24
	d. Relatives	2	2

SNO	CLINICAL VARIABLES	FREQUENCY	PERCENTAGE (%)
6.	**Co-Morbid condition:**		
	a) Hypertension	24	24
	b) Diabetes mellitus	12	12
	c) Tuberculosis	34	34
	d) Others	30	30
7.	**Activities of daily living:**		
	a. Bathing	21	21
	b. Dressing	14	14
	c. Washing	15	15
	d. Elimination	50	50
8.	**Exposure to occupational dust:**		
	a. Furnace workers	3	3
	b. Grain formers	19	19
	c. Miners	3	3
	d. Industrial fumes	38	38
	e. Others	37	37
9.	**Allergies:**		
	a. House dust	64	64
	b. Pet dander	1	1
	c. Plastic	32	32
	d. Pollen	0	0
	e. others	3	3
10.	**Frequently Consuming non-vegetarian diet:**		
	a. Chicken	37	37
	b. Mutton	32	32
	c. Pig	4	4
	d. Vegetarian	27	27
11.	**Exposure of air borne irritants:**		
	a. Hair spray	0	0
	b. Insecticides	9	9
	c. Smoke from wood fires	33	33
	d. Pain spray	0	0
	e. Auto mobile fumes	58	58

The above table reveals the clinical variables such as duration of illness, number of previous hospitalization for respiratory problem history of smoking, treatment, family history of chronic obstructive pulmonary disease, activities of daily living, exposure to occupational dust, allergies, frequently Consuming non-vegetarian diet, exposure of air borne irritants.

Regarding duration of illness, the majority of the subjects (67%) were 1 to 3 years 21%subjects were less than 1year, and 12% subjects were 3 years and above of the duration of illness.

Most of the subjects (63%) subjects were 1-3 times ,29% were no hospitalization ,5% subjects were 3-6 times,3% subjects were more than 6times of previous hospitalization.

Regarding history of smoking, majority of the subjects(47%) were <1pocket /day 35% were don't smoke,17%ubjects were 2-3 pockets/day and 1% subjects were >3pockets /day.

On the basis of treatment among the subjects 66% were used in pharmacological therapy like medications,20%were taking injection,9% subjects were meter inhaler,5%subjects were non pharmacological therapy.

Regarding family history of chronic obstructive pulmonary disease ,most of the subjects (66%)were parents, 8% subjects were siblings,24 % subjects were grandparents and 2% were relatives for family history of chronic obstructive pulmonary disease .

Most of the subjects (34%) were tuberculosis 24%were hypertension, 12%subjects were diabetes mellitus, and 30% were other co-morbid condition.

With the view of activities of the daily living of the participants (21%) bathing, 14%subject were dressing, 15% subjects were washing and majority of the (50%) subjects were elimination.

Most of the participants (38%) were industrial fumes ,3% were furnace workers,19% were grain formers, 3 % subjects were miners,38% subjects were industrial fumes, and37% subjects were other exposure to occupational dust.

Regarding allergies the subjects (64%)were house dust,1% subjects were pet dander,32% subjects were plastic and 3% subjects were others(food,paint,perfumes) for allergies.

Most of the participants consuming (37%) chicken, 32% were mutton,4% subjects were pig,27% subjects were vegetarian diet.

Regarding exposure of airborne irritants majority of the subject(58%) were auto mobile fumes ,33%were smoke from wood fires ,9% subjects were insecticides, and33%were smoke from wood fires .

DISTRIBUTION OF DURATION OF ILLNESS
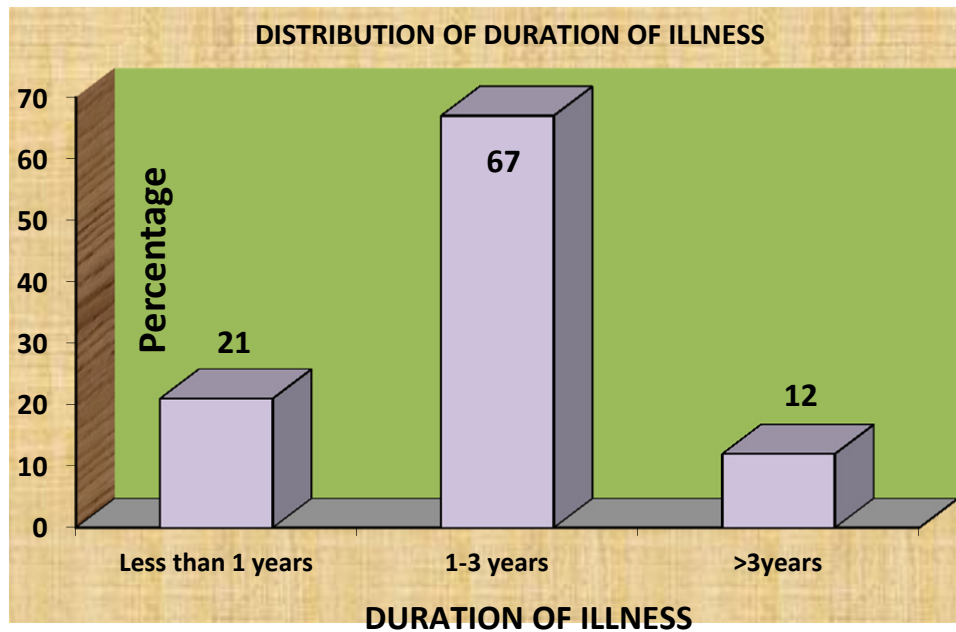
Figure 9.Percentage wise distribution of participants according to their duration of illness.

The above cylinder diagram shows majority of (67%) subjects were 1to 3 years 21%subjects were less than 1year, and 12% subjects were >3 years of illness duration.
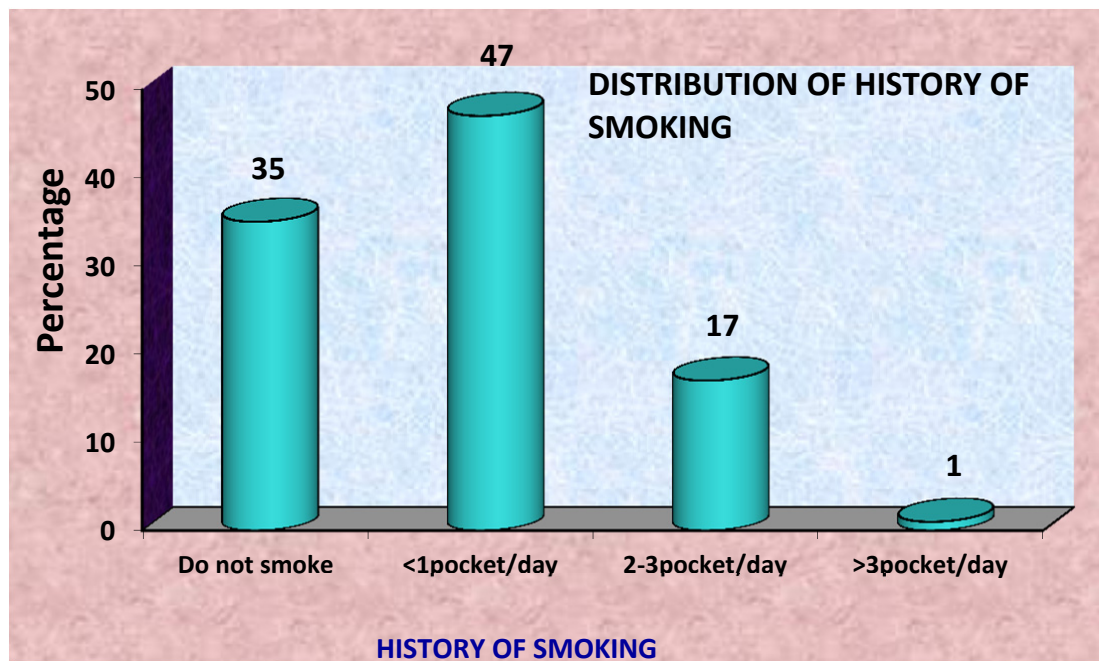
Figure.10. Percentage wise distribution of participants according to their history of smoking.

The above cylinder diagram shows among the participants were <1pocket /day of smoking. 35% were don't smoke,17%ubjects were 2-3 pockets/day and 1% subjects were >3pockets /day
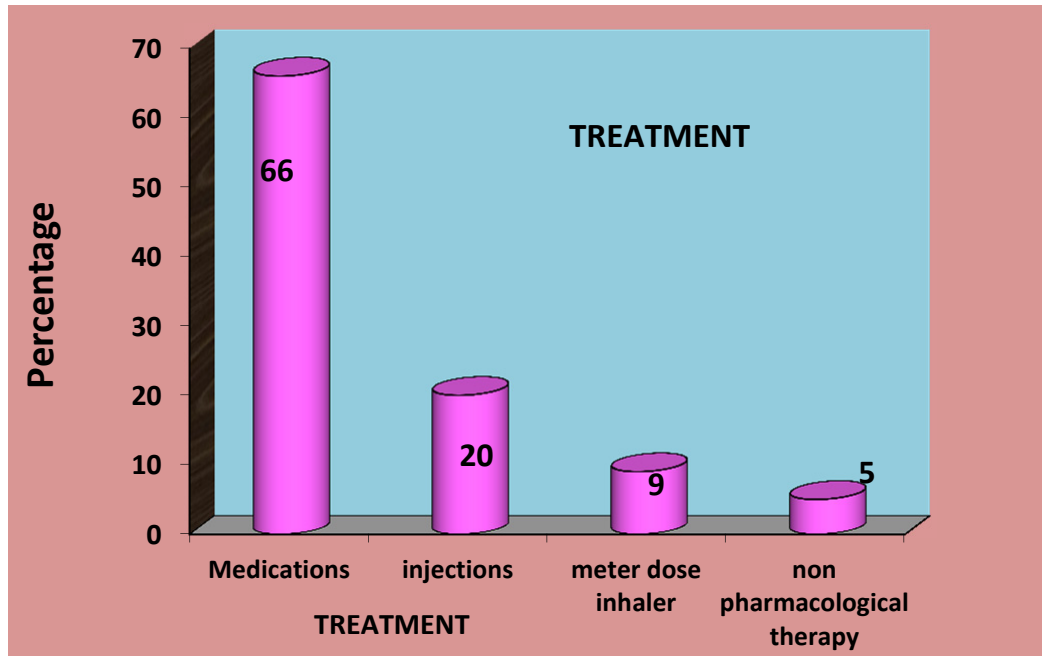
Figure.11.Percentage wise distribution of participants according to their Treatment

The above cylinder diagram shows among the majority of subjects(66%) were used in pharmacological therapy like medications,20%were taking injection,9% subjects were meter inhaler,5%subjects were non pharmacological therapy..
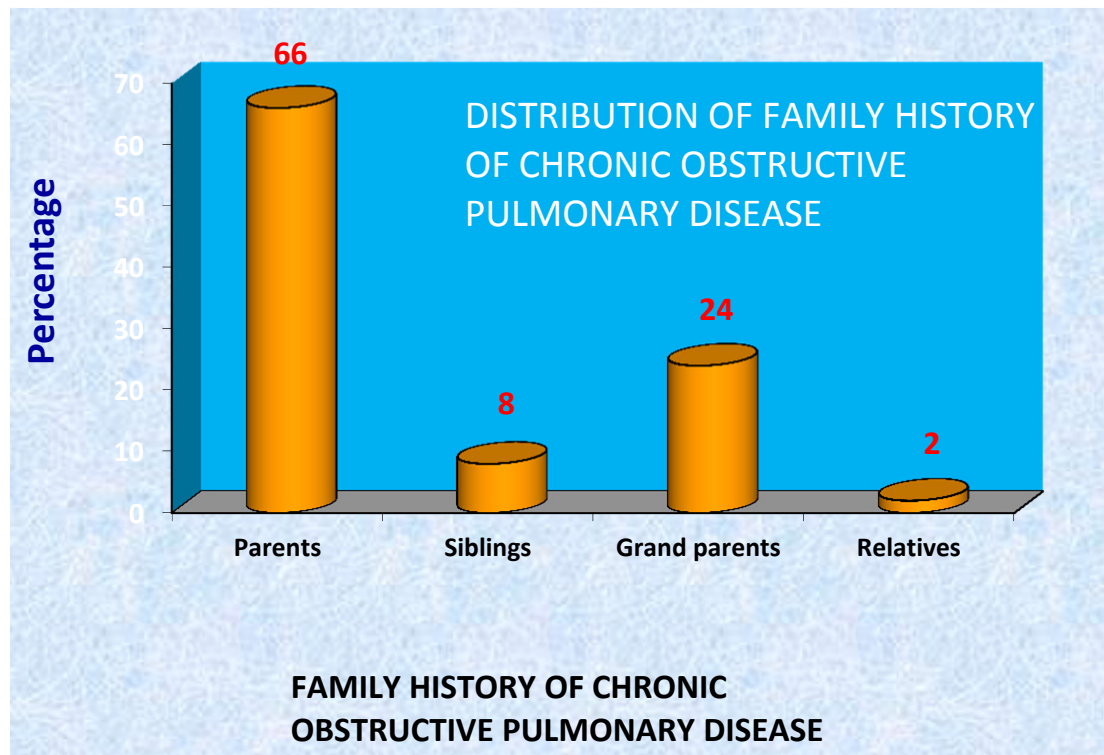
Figure.12. Percentage wise distribution of participants according to their family history of Chronic Obstructive Pulmonary Disease.

The above cylinder diagram shows constitutes the subjects (66%) were parents, 8% subjects were siblings,24 % subjects were grandparents and 2% were relatives for family history of chronic obstructive pulmonary disease .

CO-MORBID CONDITION
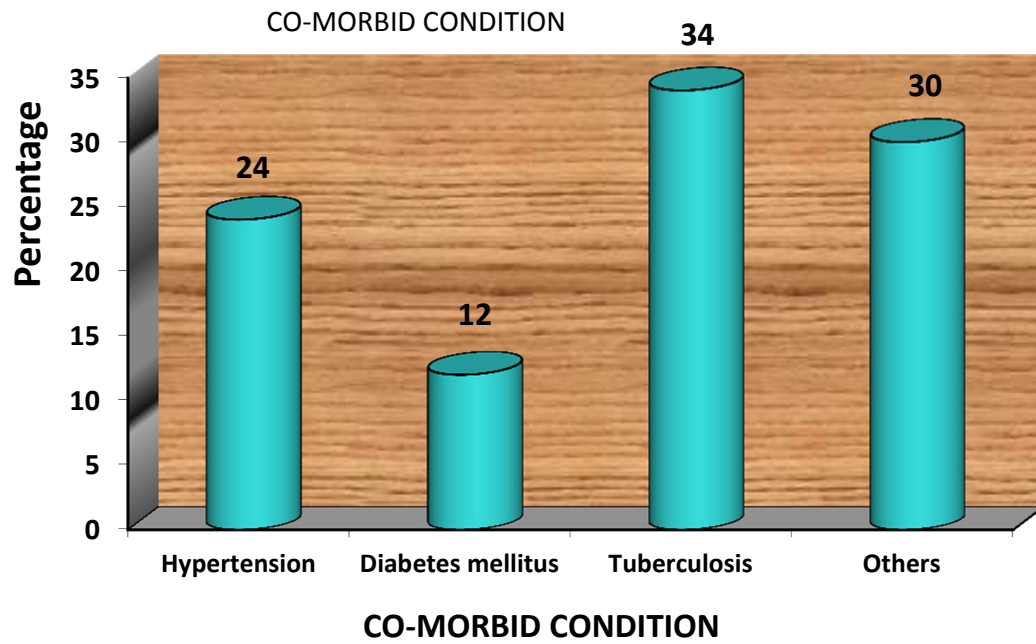
Figure.13. Percentage wise distribution of participants according to their family Co- morbid condition.

The above diagram shows the most of the subjects (34%) subjects were tuberculosis 24%were hypertension, 12%subjects were diabetes mellitus, and 30% were other co-morbid condition.
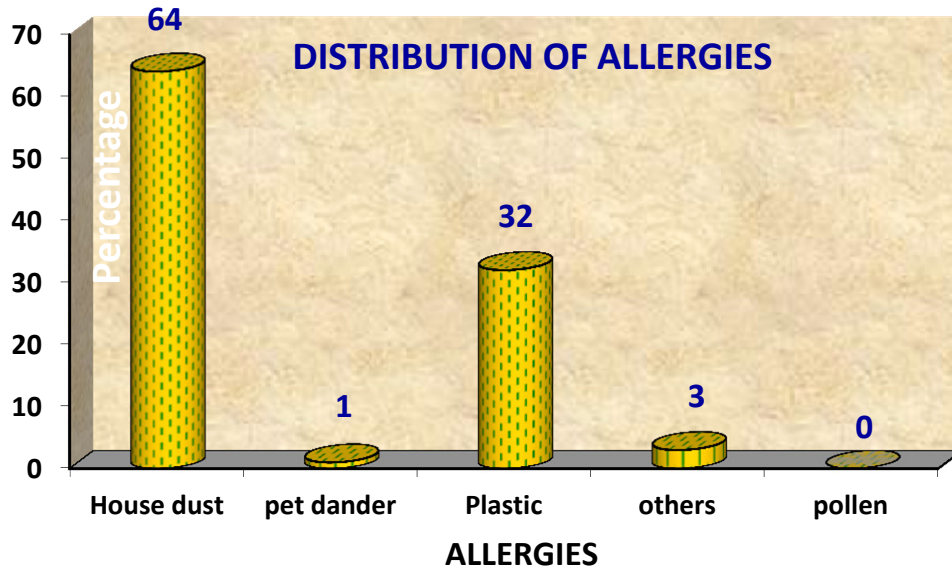
Figure14. Percentage wise distribution of participants according to their allergies.

The above cylinder diagram shows the allergies of majority of the subjects (64%) were house dust. 1% subjects were pet dander,32% subjects were plastic and 3% subjects were others(food, paint, perfumes) for allergies

SECTION II

Pre and Post test level of breathing pattern among patients with Chronic Obstructive Pulmonary Disease

TABLE -3

Frequency and percentage distribution of pre test and post test level of breathing Capacity by using Incentive spirometer

Breathing capacity	Pre test		Post test	
	f	%	f	%
Normal	-	-	4	4
Mild	-	-	96	96
Moderate	100	100	-	-
Severe	-	-	-	-
Total	100	100	100	100

The above table reveals that in pre test all the subjects (100%) were moderate level of breathing capacity. In post test, 96% of subjects were mild level of breathing capacity,4% of subjects were normal level of breathing capacity respectively.
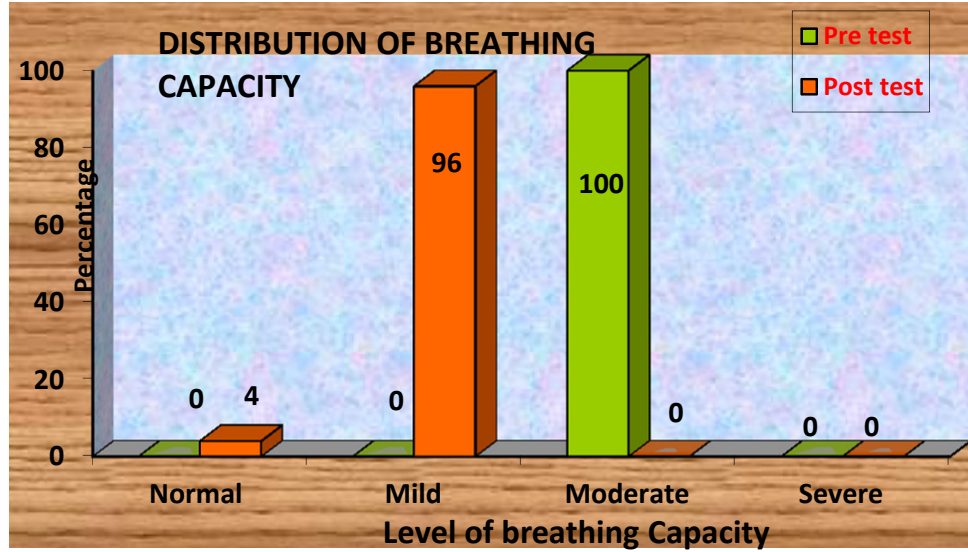
Figure-15.percentage wise distribution of participants according to their level of breathing capacity by using Incentive spirometer.

The above table shows the pre test level of breathing pattern all the subjects (100%) were   mild. In post test majority of the subjects (96%) were mild,4% of subjects were normal breathing pattern.

TABLE - 4

Frequency and percentage distribution of pre and post test level of breathing pattern by using Modified Respiratory Assessment Scale

Level of Breathing pattern	Pre test		Post test	
	f	%	f	%
Normal	-	-	2	2
Mild	-	-	98	98
Moderate	100	100	-	-
Severe	-	-	-	-
Total	100	100	100	100

The above table reveals that in pre test all the subjects (100%) were moderate level of breathing pattern . In post test, 98% of subjects were mild level of breathing pattern,2% of subjects there is normal breathing pattern respectively.

DISTRIBUTION OF BREATHING PATTERN
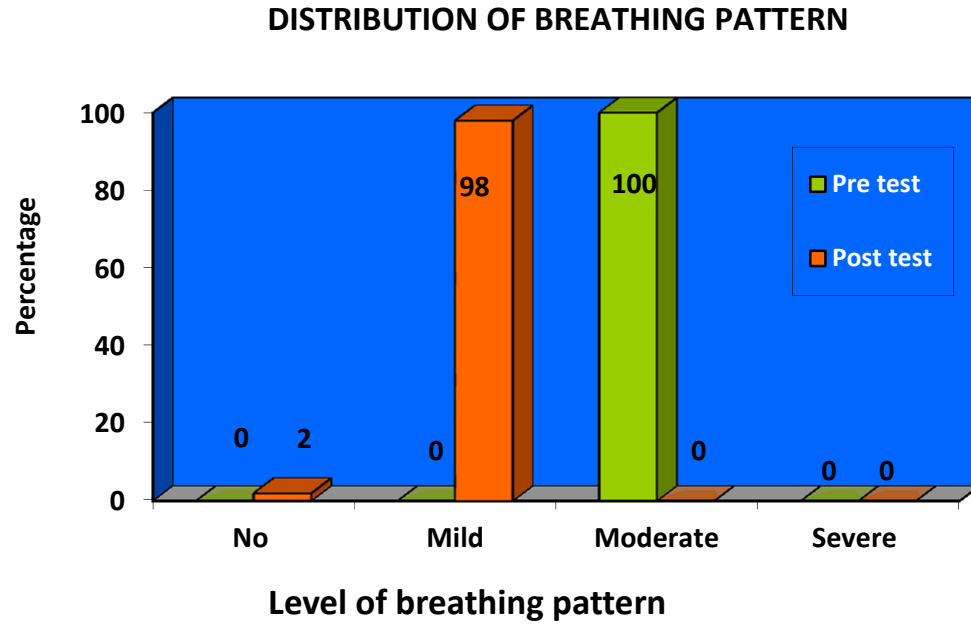
Figure.16. Percentage wise distribution of participants according to their level of breathing pattern by using Modified Respiratory Assessment Scale.

The above table shows the pre test level of breathing pattern all the subjects (100%) were Mild. In post test majority of the subjects (98%) were mild,2% of subjects were normal breathing pattern.

Table-5

Mean SD and difference in mean for pre and post test level of breathing pattern

<div align="right">n=100</div>

Subjects	Pre test			Post test			Difference in mean
	Range	Mean	SD	Range	Mean	SD	
Breathing capacity (Incentive spirometer)	143-160	150.14	4.55	168-196	171.32	5.25	21.18
Breathing pattern(modified respiratory assessment scale)	7-13	9.9	1.18	0-6	3.62	1.09	6.3

The above table reveals that the pre test of breathing capacity range was 143-160,mean was -150.14,standard deviation was -4.55andbreathing pattern range was7-13,meanpercentage was 9.9, standard deviation was - -1.18. difference in mean-21.8

After Pursed Lip Breathing Exercise the post test of breathing capacity by using Incentive spirometer range was 168-196,mean percentage was -171.32, standard deviation was -5.25 and by using modified respiratory assessment scale the range was 0-6,mean was -3.62, standard deviation -1.09.difference in mean-6.3. It reveals that there is significant difference in the mean percentage in breathing pattern and is observed as 21.18 and 6.3.

SECTION III

Effectiveness of Pursed Lip Breathing Exercise among patients with Chronic Obstructive Pulmonary Disease.

Table-6:

Paired' test to evaluate the effectiveness of Pursed Lip Breathing Exercise among patients with Chronic Obstructive Pulmonary Disease.

n=100

SUBJECTS	pre test		post test		Mean difference	't'-value	p-value
	Mean	SD	Mean	SD			
Breathing capacity (Incentive spirometer)	150.14	4.55	171.32	5.25	21.18	35.53	**p<0.0001***
Breathing pattern (Modified Respiratory Assessment Scale)	9.9	1.18	3.62	1.09	6.28	49.37	**p<0.0001***

*-p<0.05, significant   and   **-p<0.01 &***-p <0.001 , Highly significant

The above table reveals that there will be significance difference between the pre and post test level of breathing pattern   . The t' value of the breathing capacity by using incentive spirometer (35.53) was much higher than the 'p' value at 0.001 level of significance. The difference in mean scores shows a significant improvement of breathing pattern among patients with chronic obstructive pulmonary disease .and also the t' value of the breathing pattern by using   modified respiratory assessment scale (49.37) was much higher than the table 'p' value at 0.001 level of significance.

The pre and post test mean for breathing capacity (150.14-171.32),and standard deviation(4.55-1.09),and mean for breathing pattern (9.9-3.62)and standard deviation(1.18-1.09),

The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

So, the Pursed Lip Breathing Exercise was effective which improve the breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

SECTION IV
Association between breathing pattern among patients with Chronic Obstructive Pulmonary Disease and selected demographic and clinical variables.

Table-7

Association between breathing pattern among patients with Chronic Obstructive Pulmonary Disease and selected demographic data (by using Incentive spirometer)

Demographic variables	Normal		Mild		Moderate		Severe		χ^2	p-value
	f	%	f	%	f	%	f	%		
1.Age (in years):										
a. 30-40 years	1	1	10	10	-	-	-	-	3.64 (df=3)	0.303
b. 41-50 years	0	0	11	11	-	-	-	-		
c. 51-60 years	0	0	29	29	-	-	-	-		
d. 61-70 years	1	1	48	48	-	-	-	-		
2.Gender										
a. Male	1	1	62	62	-	-	-	-	0.15 (df=1)	0.7
b. Female	1	1	36	36	-	-	-	-		
3.Religion:										
a. Hindu	1	1	76	76	-	-	-	-	3.73 (df=2)	0.155
b. Muslim	1	1	9	9	-	-	-	-		
c. Christian	0	0	13	13	-	-	-	-		
d. Others	0	0	0	0	-	-	-	-		

Variable									χ²	p-value
4.Educational status :										
a. Non-formal education	1	1	23	23	-	-	-	-		
b. Primary	0	0	43	43	-	-	-	-	1.68	0.642
c. Secondary	1	1	31	31	-	-	-	-	(df=3)	
d. Graduate/Diploma	0	0	1	1	-	-	-	-		
5.Occupation :										
a. Unemployed	0	0	23	23	-	-	-	-		
b. Agriculture	1	1	34	34	-	-	-	-		
c. Private	1	1	26	26	-	-	-	-	1.31	0.860
d. Industry	0	0	8	8	-	-	-	-	(df=4)	
e. Government	0	0	7	7	-	-	-	-		
6.Family income:										
a. <Rs.5000	0	0	54	54	-	-	-	-		
b. Rs.5001-6000	2	2	35	35	-	-	-	-	3.47	0.324
c. Rs.6001-7000	0	0	8	8	-	-	-	-	(df=3)	
d. Rs.7000 and above	0	0	1	1	-	-	-	-		
7.Marital Status :										
a. Married	2	2	74	74	-	-	-	-		
b. Unmarried	0	0	4	4	-	-	-	-	0.64	0.886
c. Widow/widower	0	0	14	14	-	-	-	-	(df=3)	
d. Separated	0	0	6	6	-	-	-	-		
e. Divorced	0	0	0	0						
8.Place of residence :										
a. Rural	1	1	35	35	-	-	-	-		
b. Sub urban	0	0	30	30	-	-	-	-	0.88	0.645
c. Urban	1	1	33	33	-	-	-	-	(df=2)	
9.Type of house:										
a. Thatched	1	1	21	21	-	-	-	-		
b. Tiled	1	1	28	28	-	-	-	-	2.04	0.565
c. Cement	0	0	26	26	-	-	-	-	(df=3)	
d. Concrete	0	0	23	23	-	-	-	-		
Clinical variables										
10.Duration of illness:										
a. Less than 1 years	1	1	20	20	-	-	-	-	1.15	0.563
b. 1-3 years	1	1	66	66	-	-	-	-	(df=2)	
c. 3 years and above	0	0	12	12	-	-	-	-		

11.Number of previous hospitalization for respiratory problem										
a. Nil	0	0	29	29	-	-	-	-		
b. 1-3 times	2	2	61	61	-	-	-	-	1.19	0.753
c. 3-6 times	0	0	5	5	-	-	-	-	(df=3)	
d. More than 6 times	0	0	3	3	-	-	-	-		
12.History of smoking:										
a. Do not smoke	1	1	34	34	-	-	-	-		
b. $\leq$ 1 pocket/day	0	0	47	47	-	-	-	-	2.42	0.490
c. 2-3 pockets /day	1	1	16	16	-	-	-	-	(df=3)	
d. >3 pockets/day	0	0	1	1	-	-	-	-		
13.Treatment : pharmacological					-	-	-	-		
a. Medications	1	1	65	65	-	-	-	-		
b. Injections	0	0	20	20	-	-	-	-	4.40	0.221
c. Meter dose inhalers	1	1	8	8	-	-	-	-	(df=3)	
d. Non pharmacological therapy	0	0	5	5						
14.Family history of Chronic Obstructive Pulmonary Disease:										
a. Parents	0	0	66	66	-	-	-	-		
b. Siblings	1	1	7	7	-	-	-	-	6.46	0.091
c. Grand parents	1	1	23	23	-	-	-	-	(df=3)	
d. Relatives	0	0	2	2	-	-	-	-		
15. Co-Morbid condition:										
a. Hypertension	0	0	24	24	-	-	-	-		
b. Diabetes mellitus	0	0	12	12	-	-	-	-	1.16	0.763
c. Tuberculosis	1	1	33	33	-	-	-	-	(df=3)	
d. Other	1	1	29	29	-	-	-	-		
16.Activities of daily living										
a. Bathing	0	0	21	21	-	-	-	-		
b. Dressing	0	0	14	14	-	-	-	-	2.04	0.564
c. Washing	0	0	15	15	-	-	-	-	(df=3)	
d. Elimination	2	2	48	48	-	-	-	-		
17.Exposureto occupational dust:										
a. Furnace workers	0	0	3	3	-	-	-	-		
b. Grain formers	0	0	19	19	-	-	-	-	0.68	0.954
c. Miners	0	0	3	3	-	-	-	-	(df=4)	
d. Industrial fumes	1	1	37	37	-	-	-	-		
e. Others	1	1	36	36	-	-	-	-		

									Chi-square	P value
18.Allergies:										
a. House dust	1	1	63	63	-	-	-	-		
b. Pet dander	0	0	1	1	-	-	-	-		
c. Plastic	1	1	31	31	-	-	-	-	0.35	0.95
d. pollen	0	0	0	0	-	-	-	-	(df=3)	
e. Others	0	0	3	3	-	-	-	-		
19. Frequently Consuming non-vegetarian diet					-	-	-	-		
a. Chicken	0	0	37	37	-	-	-	-		
b. Mutton	1	1	31	31	-	-	-	-	12.3	0.006*
c. Pig	1	1	3	3	-	-	-	-	(df=3)	
d. vegetarian	0	0	27	27						
20.Exposure of air borne irritants										
a. Hair spray	0	0	0	0	-	-	-	-		
b. Insecticides	0	0	9	9	-	-	-	-		
c. Smoke from wood fires	1	1	32	32	-	-	-	-	0.38 (df=2)	0.825
d. Pain spray	0	0	0	0	-	-	-	-		
e. Auto mobile fumes	1	1	57	57	-	-	-	-		

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

The above table reveals that there is a significant association between breathing capacity and clinical variables such as consuming non-vegetarian diet. chi-square value(12.3,P<0.O5) were significantly improve the breathing pattern.

Table-8:

Association between breathing pattern among patients with Chronic Obstructive Pulmonary Disease and selected demographic and clinical variables.
(by using Modified Respiratory Assessment Scale)

Demographic variables	No		Mild		Moderate		Severe			p-value
	f	%	f	%	f	%	f	%		
1.Age (in years):										
a. 30-40 years	0	0	11	11	-	-	-	-		
b. 41-50 years	1	1	10	10	-	-	-	-	2.32	0.508
c. 51-60 years	2	2	27	27	-	-	-	-	(df=3)	
d. 61-70 years	1	1	48	48	-	-	-	-		
2.Gender									0.25	
a. Male	3	3	60	60	-	-	-	-	(df=1)	0.612
b. Female	1	1	36	36	-	-	-	-		
3.Religion:										
a. Hindu	2	2	75	75	-	-	-	-		
b. Muslim	2	2	8	8	-	-	-	-	7.61	0.022*
c. Christian	0	0	13	13	-	-	-	-	(df=2)	
d. Others	0	0	0	0	-	-	-	-		
4.Educational status :										
a. Non-formal education	0	0	24	24	-	-	-	-		
b. Primary	1	1	42	42	-	-	-	-	3.79	0.288
c. Secondary	3	3	29	29	-	-	-	-	(df=3)	
d. Graduate/Diploma	0	0	1	1	-	-	-	-		
5.Occupation :										
a. Unemployed	2	2	21	21	-	-	-	-		
b. Agriculture	1	1	34	34	-	-	-	-		
c. Private	1	1	26	26	-	-	-	-	2.07	0.723
d. Industry	0	0	8	8	-	-	-	-	(df=4)	
e. Government	0	0	7	7	-	-	-	-		
6.Family income:										
a. <Rs.5000	3	3	51	51	-	-	-	-		
b. Rs.5001-6000	1	1	36	36	-	-	-	-	0.88	0.831
c. Rs.6001-7000	0	0	8	8	-	-	-	-	(df=3)	
d. Rs.7000 and above	0	0	1	1	-	-	-	-		
7.Marital Status :										
a. Married	3	3	73	73	-	-	-	-		
b. Unmarried	1	1	3	3	-	-	-	-	5.43	0.143
c. Widow/widower	0	0	14	14	-	-	-	-	(df=3)	
d. Separated	0	0	6	6	-	-	-	-		
e. Divorced	0	0	0	0						

									χ² value	p value
8.Place of residence :										
a. Rural	3	3	33	33	-	-	-	-	3.11	0.211
b. Sub urban	0	0	30	30	-	-	-	-	(df=2)	
c. Urban	1	1	33	33	-	-	-	-		
9.Type of house:										
a. Thatched	0	0	22	22	-	-	-	-		
b. Tiled	2	2	27	27	-	-	-	-	3.95	0.266
c. Cement	0	0	26	26	-	-	-	-	(df=3)	
d. Concrete	1	1	21	21	-	-	-	-		
Clinical variable										
10.Duration of illness:										
a. Less than 1 years	1	1	20	20	-	-	-	-	0.57	0.751
b. 1-3 years	3	3	64	64	-	-	-	-	(df=2)	
c. 3 years and above	0	0	12	12	-	-	-	-		
11.Numberof previous hospitalization for respiratory problem:										
a. Nil	0	0	29	29	-	-	-	-	2.45	0.485
b. 1-3 times	4	4	59	59	-	-	-	-	(df=3)	
c. 3-6 times	0	0	5	5	-	-	-	-		
d. More than 6 times	0	0	3	3	-	-	-	-		
12.History of smoking:										
a. Do not smoke	1	1	34	34	-	-	-	-		
b. ≤ 1 pocket/day	2	2	45	45	-	-	-	-	24.84	0.000***
c. 2-3 pockets /day	0	0	17	17	-	-	-	-	(df=3)	
d. >3 pockets/day	1	1	0	0	-	-	-	-		
13.TREATMENT : **pharmacological**					-	-	-	-		
a. Medications	4	4	62	62	-	-	-	-	2.14	0.543
b. Injections	0	0	20	20	-	-	-	-	(df=3)	
c. Meter dose inhalers	0	0	9	9	-	-	-	-		
d. Non-pharmacological	0	0	5	5						
14.Family history of chronic obstructive pulmonary disease:					-	-	-	-		
a. Parents	3	3	63	63	-	-	-	-		
b. Siblings	0	0	8	8	-	-	-	-	0.47	0.926
c. Grand parents	1	1	23	23	-	-	-	-	(df=3)	
d. Relatives	0	0	2	2						

15. CO-Morbid condition:										
a. Hypertension		1	23	23	-	-	-	-	6.36	0.095
b. Diabetes mellitus	1	2	10	10	-	-	-	-	(df=3)	
c. Tuberculosis	2	1	33	33	-	-	-	-		
d. Others	1 0	0	30	30	-	-	-	-		
16. Activities cause respiratory problems:										
a. Bathing	0	0	21	21	-	-	-	-	4.16	
b. dressing	0	0	14	14	-	-	-	-	(df=3)	0.244
c. washing	0	0	15	15	-	-	-	-		
d. elimination	4	4	46	46	-	-	-	-		
17. Exposure to occupational dust:	0	0	3	3	-	-	-	-		
a. Furnace workers	1	1	18	18	-	-	-	-		0.951
b. Grain formers	0	0	3	3	-	-	-	-	0.704	
c. Miners	1	1	37	37	-	-	-	-	(df=4)	
d. Industrial fumes	2	2	35	35	-	-	-	-		
e. Others										
18. Allergies:										
a. House dust	4	4	60	60	-	-	-	-		
b. Pet dander	0	0	1	1	-	-	-	-		0.504
c. Plastic	0	0	32	32	-	-	-	-	2.34	
d. Pollen	0	0	0	0	-	-	-	-	(df=3)	
e. Others	0	0	3	3	-	-	-	-		
19. Consuming frequently taking non-vegetarian diet:				-	-	-	-			
a. Chicken	2	2	35	35	-	-	-	-	2.51	
b. Mutton	0	0	32	32	-	-	-	-	(df=3)	0.474
c. Pig	0	0	4	4	-	-	-	-		
d. vegetarian	2	2	25	25						
20. Exposure of air borne irritants:	0	0	0	0	-	-	-	-		
a. Hair spray	0	0	9	9	-	-	-	-	0.66	
b. Insecticides	1	1	32	32	-	-	-	-	(df=2)	0.718
c. Smoke from wood fires	0	0	0	0	-	-	-	-		
	3	3	55	55	-	-	-	-		
d. Pain spray										
e. Auto mobile fumes										

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

The above table reveals that there is a significant association between religion (p-0.288) smoking (p-0.288) and level of breathing pattern by using modified respiratory assessment scale.. Apart from other variables were not significantly associated.

Discussion

CHAPTER V
DISCUSSION

Based on the objectives of the study and hypotheses, this chapter deals with the detailed discussion of the result of the data interpretated from the statistical analysis. The purpose of study was study to assess the effectiveness of Pursed Lip-Breathing Exercise to promote breathing pattern among patients with Chronic Obstructive Pulmonary Disease in selected medical ward, Government Rajaji Hospital, Madurai.

100 samples were selected by non-probability consecutive sampling technique. The breathing pattern assessed by using Incentive Spirometer and Modified Respiratory Status Assessment Scale.

5.1 SUMMARY

DISCUSSION OF THE DEMOGRAPHIC VARIABLES

The majority of the study participants (49%) were belongs to 61-70 years of age, 29% were belongs to 51-60 years of age ,11% belongs to 30-40years of age, and 11%were belongs to 41 -50years of age.

Most of the participants (63%) were male and 27% were female. Majority of the subjects (77%) were Hindu, 10% were Christian and 13% of them were belongs to Muslim. Among the participants **(**35%) were primary education, 32% had higher secondary education, 24% non-formal educations 1% were graduates/diploma. Majority of the subjects (35%) were agriculture, 27% were private employee, 23% were unemployed, 8% were industry and 7% were Government. Majority of the

participants (76%) were married, 14% widow/widower 4% were unmarried, and 6% were separated .

Majority of the subjects (54%)were earned < Rs.5,000 , 37% had Rs.5,001 to Rs.6,000, 8% had Rs.6,001 to7000 and 1% had Rs.7,000 to and above. Mostly 36% participants belong to rural area, 30% belongs to sub urban area and 34% belongs to urban area. Majority of the subjects (29%) were lived in tiled house, 22% thatched house, 26% subjects were cement house and 23% were concrete house.

DISCUSSION OF THE CLINICALVARIABLES FINDING BASED ON THE OBJECTIVES

Majority of the subjects (67%) were 1 to 3 years 21%subjects were less than 1year, and 12% subjects were 3 years and above of the duration of illness. Most of the subjects (63%) subjects were 1-3 times, 29% were no hospitalization, 5% subjects were 3-6 times,3% subjects were more than 6times of previous hospitalization. Majority of the subjects (47%) were <1pocket /day 35% were don't smoke, 17% Subjects were 2-3 pockets/day and 1% subjects were >3pockets /day.

On the basis of treatment among the subjects 66% were used in pharmacological therapy like medications,20%were taking injection,9% subjects were meter inhaler,5%subjects were non pharmacological therapy. Constitutes the subjects (66%)were parents, 8% subjects were siblings,24 % subjects were grandparents and 2% were relatives for family history of Chronic Obstructive Pulmonary Disease . Most of the subjects (34%) subjects were tuberculosis 24%were

hypertension, 12%subjects were diabetes mellitus, and 30% were other co-morbid condition.

With the view of activities of the daily living of the participants (21%) bathing ,14%subject were dressing ,15% subjects were washing and majority of the (50%) subjects were elimination. Most of the participants (38%) were industrial fumes, 3% were furnace workers,19% were grain formers, 3 % subjects were miners,38% subjects were industrial fumes, and37% subjects were other exposure to occupational dust.

Majority of the subjects (64%) were house dust,1% subjects were pet dander,32% subjects were plastic and 3% subjects were others (food, paint, perfumes) for allergies. Most of the participants consuming (37%) chicken, 32% were mutton,4% subjects were pig,27% subjects were vegetarian diet. Majority of the subject (58%) were auto mobile fumes, 33%were smoke from wood fires 0%were hair spray,9% subjects were insecticides, and33%were smoke from wood fires for exposure of airborne irritants.

The major findings of the study are discussed in regard to the formulated objectives as follows.

THE FIRST OBJECTIVE WAS TO ASSESS THE BREATHING PATTERN MONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.

The findings revealed that among the total number of 100 subjects. Respiratory Status Assessment Scale And Incentive Spirometer was used in this study to assess the breathing pattern among patients with Chronic Obstructive Pulmonary

Disease in medical ward, Government Rajaji Hospital,Madurai-20. In pre test using incentive spirometer all the subjects (100%) were moderate level of breathing capacity. In post test, 96% of subjects were mild level of breathing capacity,4% of subjects were normal level of breathing capacty respectively.

In pre test by using modified respiratory assessment scale all the subjects (100%) were moderate level of breathing pattern. In post test, 98% of subjects were mild level of breathing pattern, 2% of subjects there is normal breathing pattern respectively.

The present study findings was consistent with **Powell T.Williams.** (et.al).(2009) was conducted a study to assess respiratory function that require little or no volitional effort on behalf of the participants being tested. Specifically to attempt to detach the behavior of the patient from the accuracy of the test of respiratory function, resulting in techniques that are simpler and easier to administer and undertake for both assessor and participant. It aims to develop methods that reduce the involvement of the participant during assessment of respiratory function. The human body's way of controlling respiration has evolved into a sophisticated system that optimizes breathing pattern to maintain the most efficient homeostatic action of the respiratory system. Eliciting and assessing this automatic response is the key to removing the action of participation from respiratory function testing. The focus must therefore be on developing non-invasive, sub-maximal techniques that allow participants to enter into a steady state of respiration and how this can be assessed. Two techniques were investigated; Respiratory Endurance (as the inspiratory work of breathing) and Tidal Breathing Flow Profile, and these were

successfully applied in 99 adult participants (68 healthy controls and 31 COPD patients) and 75 children (48 clinical group and 27 healthy controls) who completed 467 respiratory endurance trials whilst seated and exercising, and 249 relaxed tidal breathing trials. . Much recent emphasis has been put on developing existing devices and protocols rather than developing new techniques and approaching these difficulties from alternative viewpoints. This thesis has described the development of innovative techniques to assess the function of the respiratory systems that aim to overcome the issues associated with maximal testing. It was shown that these techniques are easy to undertake for a range of participants, simple to analyze and are able to reliably differentiate between health and disease, suggesting that they could become a useful adjunct to existing methods of respiratory assessment

THE SECOND OBJECTIVE WAS TO EVALUATE THE EFFECTIVENESS OF PURSED LIP BREATHING EXERCISE AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.

The obtained t' value of the breathing capacity using by incentive spirometer (35.53) was much higher than the 'p' value at 0.001 level of significance. The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease .and also the t' value of the breathing pattern by using Modified Respiratory Assessment Scale (49.37) was much higher than the table 'p' value at 0.001 level of significance.

The pre and post test mean for breathing capacity by using Incentive Spirometer (150.14-171.32),and standard deviation(4.55-1.09),and the mean value by using Modified Respiratory Assessment Scale (9.9-3.62)and standard deviation(1.18-

1.09), The difference in mean scores shows a significant improvement of breathing pattern among patients with chronic obstructive pulmonary disease. So, the pursed lip breathing exercise was effective which improve the breathing pattern among patients with chronic obstructive pulmonary disease.

The present study findings was consistent with **Vander lei (2009)** was conducted a study to assess the effects of pursed-lip breathing exercise at rest on the behavior of heart rate and its variability, and on variations in blood pressure , respiratory rate and pulse oxygen saturation in subjects with chronic obstructive pulmonary disease . Sixteen subjects with Chronic Obstructive Pulmonary Disease . Sixteen subjects with (seven in GOLD stage I, three in GOLD stage II and six in GOLD stage III; mean age 64±11 years; mean FEV1 60±25% of predicted value) were assessed at rest, in a seated position, under the following conditions: ten minutes of normal breathing without PLB (R1), eight minutes with Pursed Lip Breathing Exercise (R2) and ten minutes of normal breathing once more (R3). Heart rate was recorded, beat-to-beat, by means of a Polar S810 heart monitor. The RMSSD index (root mean square of the difference between successive R-R intervals) was determined. Blood pressure, respiratory rate and pulse oxygen saturation were also assessed during the trials. ANOVA for repeated measures followed by the Turkey test and Kruskal-Wallis test were used for data analysis, with a 5% significance level. There was a significant increase in the RMSSD index during R2, in comparison with R1. The heart rate variation between inspiration and expiration was 8.98 bpm, and the variation between heart rate at rest and heart rate with Pursed Lip Breathing Exercise was 8.25 bpm. During R2, respiratory rate decreased and pulse oxygen saturation increased significantly in comparison with R1 and R3. Blood pressure values did not

show significant changes. The results showed that pursed lip breathing exercise produced significant changes in heart rate, respiratory rate and pulse oxygen saturation , and did not alter blood pressure in subjects with chronic obstructive pulmonary disease . Furthermore, analysis of the RMSSD index showed that pursed lip breathing exercise promoted increased parasympathetic activity in these subjects, thus indicating that this technique influenced the autonomic cardiac modulation.

The present study findings was consistent with **Jadranka Spahija (et.al) (2005**) was conducted the effect of volitional Pursed- Lip Breathing (PLB) on breathing pattern, respiratory mechanics, operational lung volumes, and dyspnea in patients with COPD. Eight COPD patients (6 male and 2 female) with a mean (±SD) age of 58 ± 11 years and a mean FEV_1 of 1.34 ± 0.44 L (50 ± 21% predicted).: Wearing a tight-fitting transparent facemask, patients breathed for 8 min each, with and without PLB at rest and during constant-work-rate bicycle exercise (60% of maximum). Pursed lip breathing promoted a slower and deeper breathing pattern both at rest and during exercise. Whereas patients had no dyspnea with or without PLB at rest, during exercise dyspnoea was variably affected by Pursed Lip Breathing across patients. Changes in the individual dyspnoea scores with Pursed lip breathing during exercise were significantly correlated with changes in the end-expiratory lung volume (EELV) values estimated from inspiratory capacity maneuvers (as a percentage of total lung capacity; $r^2 = 0.82$, p = 0.002) and with changes in the mean inspiratory ratio of pleural pressure to the maximal static inspiratory pressure-generating capacity (PcapI) [$r^2 = 0.84$; p = 0.001], measured using an esophageal balloon, where PcapI was determined over the range of inspiratory lung volumes and adjusted for flow.

Pursed lip breathing can have a variable effect on dyspnoea when performed volitionally during exercise by patients with Chronic Obstructive Pulmonary Disease.

The effect of pursed lip breathing on dyspnoea 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.

The obtained t' value of the breathing capacity by using Incentive Spirometer (35.53) was much higher than the 'p' value at 0.001 level of significance. The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease .and also the t' value of the breathing pattern by using Modified Respiratory Assessment Scale (49.37) was much higher than the table 'p' value at 0.001 level of significance.

The pre and post test mean for breathing capacity (150.14-171.32),and standard deviation(4.55-1.09),and mean for breathing pattern (9.9-3.62)and standard deviation(1.18-1.09),

The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease. So, the pursed lip breathing exercise was effective which improve the breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

- Hence the stated hypothesis H_1: There is a significant difference between the breathing pattern among patient with Chronic Obstructive Pulmonary Disease before and after Purse Lip Breathing Exercise was accepted.

THE THIRD OBJECTIVE WAS TO ASSOCIATE THE BREATHING PATTERN WITH SELECTED DEMOGRAPHIC AND CLINICAL VARIABLES AMONG PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE.

There is a significant association between the breathing pattern and clinical variables such as consuming non-vegetarian diet (p-0.006) and there is a significant association between religion (p-0.288) smoking (p-o.ooo) and breathing pattern. Statistical significance calculated using chi-square test.

The present study findings was consistent with **Bartlett YK .(** et.al).(2013) who conducted study was to identify the behavior change techniques (BCTs) that are associated with greater effectiveness in smoking cessation interventions for people with chronic obstructive pulmonary disease (COPD).A systematic review and meta-analysis was conducted. Web of Knowledge, CINAHL, EMBASE, PsycINFO, and MEDLINE were searched from the earliest date available to December 2012. Data were extracted and weighted average effect sizes calculated; BCTs used were coded according to an existing smoking cessation-specific BCT taxonomy. Seventeen randomized controlled trials (RCTs) were identified that involved a total sample of 7446 people with COPD. The sample-weighted mean quit rate for all RCTs was 13.19%, and the overall sample-weighted effect size was $d_+ = 0.33$. Thirty-seven BCTs were each used in at least three interventions. Four techniques were associated with significantly larger effect sizes: Facilitate action planning/develop treatment plan, Prompt self-recording, Advise on methods of weight control, and Advise on/facilitate use of social support. Three new COPD-specific BCTs were identified,

and Linking COPD and smoking was found to result in significantly larger effect sizes. Smoking cessation interventions aimed at people with COPD appear to benefit from using techniques focused on forming detailed plans and self-monitoring. Additional RCTs that use standardized reporting of intervention components and BCTs would be valuable to corroborate findings from the present meta-analysis.

- Hence the stated hypothesis H2: There is a significant association between the breathing pattern among patient with chronic obstructive pulmonary disease with their selected demographic and clinical variables was accepted.

Summary, Conclusion & Recommendations

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter deals with the summary of the study and conclusions drawn. It also clarifies the limitations of the study, the implications for different areas like nursing educations, administration, nursing practice, nursing research and recommendations.

6.1 SUMMARY

The present study was conducted to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward, Government Rajaji hospital,Madurai-20

The objectives of the study were,

- To assess the breathing pattern among patients with chronic obstructive pulmonary disease.

- To evaluate the effectiveness of Pursed Lip Breathing Exercise on breathing pattern among patients with Chronic Obstructive Pulmonary Disease patient.

- To associate the breathing pattern with selected demographic and clinical variables among patients with Chronic Obstructive Pulmonary Disease .

The study assumptions were,

- Breathing exercise is good for relaxation

- Breathing exercise is easily understandable and practicable

- Pursed lip breathing helps the lungs exchange oxygen and carbon dioxide better to help maintain the vital balance of blood gases.

- Pursed lip breathing exercise to reduce shortness of breath

The following hypotheses were tested.

- H1   There is a significant difference between the breathing pattern among patient with Chronic Obstructive Pulmonary Disease before and after pursed lip breathing exercise.

- H2   There is a significant association between the breathing pattern among patients with Chronic Obstructive Pulmonary Disease with their selected demographic and clinical variables.

The Conceptual Framework for the study was based on Ludwig von bertalanffy general system theory (1968). Pre experimental –one group pre test post test research design was used in this study. The independent variable was pursed lip breathing exercise and dependent variables were breathing pattern. This study was conducted at the medical ward of Government Rajaji Hospital, Madurai – 625020. Target population is the Chronic Obstructive Pulmonary Disease patients who are admitting in medical ward age group between 30-70 years, Government Rajaji Hospital, Madurai.

The study subjects were selected sampling and were assigned to one group (100samples). The data collection tools used were,

1. Demographic Data.

2. Clinical data

3. Modified Respiratory Assessment Scale (Waheida, Soheir & Amal Shehata)

4. Incentive Spirometer

The reliability of Incentive spirometer and Modified Respiratory Assessment Scale was found to be high (r= 0.81) and r=0.82 reliable with test and re-test method.

Content validity was obtained from five experts specialized in medical surgical nursing and one experts in medicine department. Pilot study was conducted on 10 subjects to find out the feasibility of the study and it did not show any major flaw in the design of the study.

Data collection was carried out for five weeks. Based on the objectives and hypotheses, the data collected were analyzed by using descriptive and inferential statistics.

6.2 MAJOR FINDINGS OF THE STUDY

- ➢ Majority of the study participants (49%) were belongs to 61-70 years of age, 29% were belongs to 51-60 years of age, 11% belongs to 30-40years of age, and 11%were belongs to 41 -50years of age.

- ➢ Most of the participants (63%) were male and 27% were female.

- ➢ Majority of the subjects (77%)   were Hindu, 10% were Christian and 13% of them were belongs to Muslim.

- ➢ Majority of the subjects (47%)   were <1pocket /day 35% were don't smoke,17%ubjects were 2-3 pockets/day and   1% subjects were >3pockets /day.

- ➢ On the basis of treatment among the   subjects 66% were used in pharmacological therapy like medications,20%were taking injection,9% subjects were meter inhaler,5%subjects were non pharmacological therapy.

- ➢ Most of the subjects (34%) subjects were tuberculosis 24%were hypertension, 12%subjects were diabetes mellitus, and 30% were other co-morbid condition.

> In pre test by using Modified Respiratory Assessment Scale all the subjects (100%) were moderate level of respiratory problem. In post test, 98% of subjects were mild level of respiratory problem,2% of subjects there is no respiratory problem respectively.

In Paired t'test shows t' value of the breathing capacity by using incentive spirometer (35.53) was much higher than the 'p' value at 0.001 level of significance. The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease .and also the t' value of the breathing pattern by using Modified Respiratory Assessment Scale (49.37) was much higher than the table 'p' value at 0.001 level of significance.

The pre and post test mean for breathing capacity by using Incentive spirometer (150.14-171.32),and standard deviation(4.55-1.09),and the mean value by using Modified Respiratory Assessment Scale (9.9-3.62)and standard deviation(1.18-1.09), The difference in mean scores shows a significant improvement of breathing pattern among patients with Chronic Obstructive Pulmonary Disease. So, the Pursed Lip Breathing Exercise was effective which improve the breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

There is a significant association between the breathing pattern and clinical variables such as consuming non-vegetarian diet (p-0.006) and there is a significant association between religion (p-0.288) smoking (p-o.ooo) and breathing pattern.

6.3 CONCLUSION

According to the results of this study, patients with Chronic Obstructive Pulmonary disease who practiced pursed lip breathing exercise 3 minutes for 3 times a day for 10 days had improvement of the breathing pattern which is statically proved .So, Pursed Lip Breathing Exercise was cost effective, non invasive, and highly feasible. Hence the researcher concluded that Pursed Lip Breathing Exercise can be practice as an effective intervention on breathing pattern among patient with Chronic Obstructive Pulmonary Disease.

6.4 NURSING IMPLICATIONS

The investigator had drawn implications from this study for various areas such Nursing practice, Nursing education, Nursing administration and nursing research.

Implications for Nursing Practice

1. The nurses must be taught to assess the breathing pattern among patient who are hospitalized for diagnosis, treatment and other surgical procedures.

2. The nurses must provide non-pharmacological, cost effective approaches to improve the breathing pattern.

3. In the clinical area, provision of Incentive spirometer to patients with Chronic Obstructive Pulmonary Disease

4. Nursing personnel can incorporate routine assessment of the breathing pattern by using Modified Respiratory Assessment Scale among patients with Chronic Obstructive Pulmonary Disease it will help to identify the respiratory difficulties.

5. The nurses should know the pursed lip breathing exercise and educate them about the benefits of pursed lip breathing exercise and encourage the patients with Chronic Obstructive Pulmonary Disease and to practice it.

Implications for Nursing Education

1. Educate the nurses about the entire respiratory problem about Chronic Obstructive Pulmonary Disease condition.

2. The concepts of various breathing exercise included in the nursing curriculum of Undergraduate and Postgraduate programme.

3. A well organized Continuing Nursing Education programme may be conducted on various breathing exercise for all nursing personnel and students.

Implications for Nursing Administration

1. Breathing exercise therapy team can be formed in medicine department to assist the respiratory difficulty of hospitalization of the Chronic Obstructive Pulmonary Disease by implementing interventions (Pursed Lip Breathing Exercise). It maintains and restores a sense of comfort and free from respiratory difficulty.

2. The nurse administrators can motivate, supervise and guide the nurses in the assessment of breathing pattern, respiratory problem of hospitalization patients with Chronic Obstructive Pulmonary Disease

3. The nurse administrators can recommend for routine assessment of respiratory difficulty in the medicine wards and out-patient department area

4. The nurse administrators can also encourage the nurses to follow other safe, cost effective intervention.

Implications for Nursing Research

1. The nurse researcher should motivate the clinical nurses to apply research findings and can bring out new innovative procedures to promote the breathing pattern among patient with chronic obstructive pulmonary disease

2. The nurse researcher should encourage clinical nurse to conduct further research studies on the pursed lip breathing exercise on other aspects of hospitalized patients such as post operative wards, cardiology department, neurology and other pediatric departments.

3. This study can be used as a baseline study for further studies.

6.6 RECOMMENDATIONS

1. The study can be repeated with a large sample size for better generalization.

2. The study can be replicated with various areas of department such as oncology, post-operative, neurology, cardiology and other department.

3. A comparative study can be done between Pursed Lip Breathing Exercise and other breathing exercise to assess the effectiveness in breathing pattern among patients with Chronic Obstructive Pulmonary Disease.

4. A study can be conducted to assess the current knowledge, skill and attitude of nursing staffs on Pursed Lip Breathing Exercise for the management of respiratory status among patients with Chronic Obstructive Pulmonary Disease.

6.5 LIMITATIONS

The limitations of the study were,

1. The responses were based on self report of the study subjects that could not be generalized

2. As the sample size of this study was 100. So, caution must be taken in generalization of its findings.

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Appendices

APPENDIX I

LETTER SEEKING PERMISSION TO CONDUCT THE STUDY AT MEDICAL WARD GOVERNMENT RAJAJI HOSPITAL MADURAI

From

      R.Latha

      II year MSc (N) student,

      College of Nursing,

      Madurai Medical College,

      Madurai.

To

      The Professor and Head Of The Department

      Department of medicine,

      Government Rajaji hospital, Madurai.

    Through   The Proper channel

Respected Sir,

    Sub: College of nursing ,madurai--Madurai Medical college ,Madurai-
          M.Sc.,(N) I year medical surgical nursing student-permission letter for
          conducting study in medical ward at Requesting permission to conduct
          a dissertation study at Government Rajaji hospital, Madurai -
          Regarding

      As per the curriculum recommended byIndian the Tamilnadu DR MGR Medical University I[st]yearM.Sc Nursing students are required to conduct a dissertation study for the partial fulfilment of the course .I have selected a study topic**"A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic Obstructive Pulmonary Disease in Medical Ward at Government Rajaji hospital,Madurai-20"**for the partial fulfilment of the course**.** I assure that will not interfere with the routine activity of the department.

      Kindly consider my request and permit me to conduct the study.

Place: Madurai.

Date: 24/12/13

Yours faithfully,

R. Latha .
(R.LATHA)

APPENDIX II

Institutional Review Board / Independent Ethics Committee.

Captian. Dr. B. Santhakumar, M.D., (F.M.,)

Dean, Madurai Medical College &

Govt Rajaji Hospital, Madurai 625020. **Convenor**

Sub: Establishment-Govt. Rajaji Hospital, Madurai-20-

Ethics committee-Meeting Minutes- for January 2014

Approved list -regarding.

The Ethics Committee meeting of the Govt. Rajaji Hospital, Madurai was held on 20.1.2014, Monday at 10.00 am to 12.00.noon at the Anaesthesia Seminar Hall, Govt. Rajaji Hospital, Madurai. The following members of the committee have attended the meeting.

1.Dr. V. Nagarajan, M.D., D.M (Neuro) Ph: 0452-2629629 Cell.No 9843052029	Professor of Neurology (Retired) D.No.72, Vakkil New Street, Simmakkal, Madurai -1	Chairman
2. Dr.Mohan Prasad , M.S M.Ch Cell.No.9843050822 (Oncology)	Professor & H.O.D of Surgical Oncology(Retired) D.No.72, West Avani Moola Street, Madurai -1	Member Secretary
3. Dr. Parameswari M.D (Pharmacology) Cell.No.9994026056	Director of Pharmacology Madurai Medical College	Member
4. Dr.S. Vadivel Murugan, MD., (Gen.Medicine) Cell.No 9566543048	Professor of Medicine Madurai Medical College	Member
5. Dr.S. Meenakshi Sundaram, MS (Gen.Surgery) Cell.No 9842138031	Professor & H.O.D of Surgery Madurai Medical College	Member
6. Mrs. Mercy Immaculate Rubalatha, M.A., Med., Cell. No. 9367792650	50/5, Corporation Officer's quarters, Gandhi Museum Road, Thamukam, Madurai-20	Member
7. Thiru.Pala. Ramasamy , BA.,B.L., Cell.No 9842165127	Advocate, D.No.72.Palam Station Road, Sellur, Madurai -2	Member
8. Thiru. P.K.M. Chelliah ,B.A Cell.No 9894349599	Businessman, 21 Jawahar Street, Gandhi Nagar, Madurai-20	Member
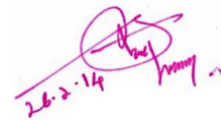
The following Project was approved by the committee

..2..

Name of P.G	Course	Name of the Project	Remarks
R.Latha	M.SC NURSING, College of Nursing, Madurai medical College,Madurai.	A Study to assess the effectiveness of pursed LIP-Breathing exercise onBreathingpattern amongPatients with chronic obstructive pulmonary disease inmedicalWard at Government Rajaji	Approved

Please note that the investigator should adhere the following:She/He should get a detailed informed consent from the patients /participants and maintain it Confidentially.

1. She/He should carry out the work without detrimental to regular activities as well as without extra expenditure to the institution or to Government.
2. She/He should inform the institution Ethical committee, in case of any change of study procedure,site and investigation or guide.
3. She/He should not deviate the area of the work for which applied for ethical clearance.She/He should inform the IEC immediately,in case of any adverse events are Serious adverse reactions.
4. She/He should abide to the rules and regulations of the institution.
5. She/He should complete the work within the specific period and if any Extension of time is required He/She should apply for permission again and do the work.
6. She/He should submit the summary of the work to the Ethical Committee on Completion of the work.
7. She/He should not claim any funds from the institution while doing the work or on completion.
8. She /He should understand that the members of IEC have the right to monitor the work with prior intimation.

Member secretary Chairman

Ethical Committee

DEAN/Convenor

Govt.Rajaji Hospital,

Madurai-20

To

The above Applicant

-thro. Head of the Department concerned

APPENDIX III

CERTIFICATE OF VALIDATION

This is to certify that the tool

      SECTION I – Demographic data

      SECTION II – Part A- incentive spirometer

           --Part B-Modified Respiratory Assessment Scale

        Prepared for data collection by R.LATHA II year M.Sc. (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled"**A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward at Government Rajaji hospital,Madurai-20"** has been validated by me.

SIGNATURE OF EXPERT

NAME   :

DESIGNATION   : Associate professor

DATE   : 07/08/14

CERTIFICATE OF VALIDATION

This is to certify that the tool

> SECTION I – Demographic data

> SECTION II – Part A- incentive spirometer

> Part B-Modified Respiratory Assessment scale

Prepared for data collection by R.LATHA II year M.Sc. (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled"**A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward at Government Rajaji hospital,Madurai-20"** has been validated by me.

SIGNATURE OF EXPERT

NAME : G. Jaya Thanga Selvi

DESIGNATION : HOD – Med-Surg Dept

DATE : 25/7/014.

CERTIFICATE OF VALIDATION

This is to certify that the tool

      SECTION I – Demographic data

      SECTION II – Part A- incentive spirometer

          Part B-Modified Respiratory Assessment Scale

          Prepared for data collection by R.LATHA II year M.Sc. (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled"**A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward, Government Rajaji hospital,Madurai-20"** has been validated by me.

SIGNATURE OF EXPERT

NAME   : Dr.B.SARA

DESIGNATION Reeder in Nursing

DATE   :

CERTIFICATE OF VALIDATION

This is to certify that the tool

      SECTION I – Demographic data

      SECTION II – Part A- incentive spirometer

          Part B-Modified respiratory assessment scale

       Prepared for data collection by R.LATHA II year M.Sc. (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled"**A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward
at Government Rajaji hospital,Madurai-20"** has been validated by me.

SIGNATURE OF EXPERT

      NAME   :

      DESIGNATION :

      DATE   :

CERTIFICATE OF VALIDATION

This is to certify that the tool

      SECTION I – Demographic data

      SECTION II – Part A- incentive spirometer

          Part B-Modified Respiratory Assessment Scale

          Prepared for data collection by R.LATHA II year M.Sc. (N) student, College of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on thesis entitled"**A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward**

at Government Rajaji hospital,Madurai-20" has been validated by me.

SIGNATURE OF THE EXPERT

L ANAND

LECTURER,
College of Nursing,
NEIGRIHMS,
Shillong

APPENDIX IV

<u>ஒப்புதல் அறிக்கை</u>

எனக்கு இந்த ஆய்வைப்பற்றிய முழு விவரம் விளக்கமாக எடுத்துரைக்கப்பட்டது. இந்த ஆய்வில் பங்குபெறுவதில் உள்ள நன்மைகள் மற்றும் தீமைகள் பற்றி நான் புரிந்து கொண்டேன். நான் இந்த ஆய்வில் தானாகவே முன்வந்து பங்கு பெறுகிறேன். மேலும் எனக்கு இந்த ஆய்வில் இருந்து எந்த நேரமும் விலகிக்கொள்ள முழு அனுமதி வழங்கப்பட்டுள்ளது. என்னுடைய சிகிச்சை ஆவணங்களைப் பார்வையிட்டு அதில் உள்ள விவரங்களை ஆய்வில் பயன்படுத்திக் கொள்ள அனுமதி அளிக்கின்றேன். என்னுடைய பெயர் மற்றும் அடையாளங்கள் ரகசியமாக வைத்துக் கொள்ளப்படும் என்றும் எனக்கு உறுதியளிக்கப்பட்டுள்ளது.

இப்படிக்கு,

APPENDIX V

SECTION-I

DEMOGRAPHIC DATA

Sample no-

1.   Age:

   a) 30 – 40 years   ☐

   b) 41 – 50 years   ☐

   c) 51 – 60 years   ☐

   d) 61- 70 years   ☐

2.Gender:

   a) Male   ☐

   b) Female   ☐

3. Religion:

   a) Hindu   ☐

   b) Muslim   ☐

   c) Christian   ☐

   d) Others   ☐

4.Educational Status

   a)   Non- Formal Education   ☐

   b)   Primary   ☐

   c)   Secondary   ☐

   d) Graduate/Diploma   ☐

5. Occupation

    a) Unemployed ☐

    b) Agriculture ☐

    c) Private ☐

    d) Industry ☐

    e)Government ☐

6. Family Income:

    a. Rs.< 5000 ☐

    b. Rs.5001 to 6000 ☐

    c. Rs.6001 to 7000 ☐

    d. Rs.7000 and above ☐

7.Marital status

    a) Married ☐

    b) Unmarried ☐

    c) widow/widower ☐

    d) Separated ☐

    e) Divorced ☐

8. Place of Residence:

    a) Rural ☐

    b) Sub urban ☐

    c) Urban ☐

9. Type of House:

      a. Thatched   ☐

      b. Tiled   ☐

      c. Cement   ☐

      d. Concrete   ☐

10. Duration of illness:

      a) Less than 1 year   ☐

      b) 1– 3 years   ☐

      c) >3 years   ☐

11. Number of hospitalization for respiratory problem:

      a)Nil   ☐

      b)1 – 3 times   ☐

      c)3 – 6 times   ☐

      d)More than 6 times   ☐

12. History of smoking

      a) Do not smoke   ☐

      b) ≤ 1 packet/day   ☐

      c) 2-3 packets/day   ☐

      d) >3 packets/day   ☐

13. Treatment:

Pharmacological

    a) Medications   ☐

    b) Injections   ☐

    c) Meter dose inhalers   ☐

    d) Non pharmacological   ☐

14. Family history of chronic obstructive pulmonary disease

    a) Parents   ☐

    b) Siblings   ☐

    c) Grand Parents   ☐

    d) Relatives   ☐

15. History of co morbid condition

    a) Hypertension   ☐

    b) Diabetes Mellitus   ☐

    c) Tuberculosis   ☐

    d) Others   ☐

16. Activities of daily living

    a) Bathing   ☐

    b) Dressing   ☐

    c) Washing   ☐

    d) Elimination   ☐

17. Exposure to occupational dust

        a)Furnace Workers ☐

        b) Grain Formers ☐

        c) Miners ☐

        d)Industrial fumes ☐

        e) others ☐

18.Allergies

      a)House dust ☐

      b)Pet dander ☐

      c) Plastic ☐

      d)Others ☐

      e) Pollen ☐

19 Frequently. Consuming non-vegetarian diet

      a)Chicken ☐

      b)Mutton ☐

      c) Pig ☐

      d) vegetarian ☐

20. Exposure to air borne irritants

      a)Hair spray ☐

      b)Insecticides ☐

      c)Smoke from wood fires ☐

      d)Pain spray ☐

      e)Auto mobile fumes ☐

தன்னிலை விவரக் குறிப்பு

1.வயது

    1. 30-40வயது   ☐

    2. 41-50வயது   ☐

    3. 51-60வயது   ☐

    4 60-65வயது   ☐

2.இனம்

    1. ஆண்   ☐

    2. பெண்   ☐

3.மதம்

    1. இந்து   ☐

    2. முஸ்லீம்   ☐

    3. கிறிஸ்தவம்   ☐

    4. பிறமதத்தினர்   ☐

4.கல்வீத்தகுதி

    1. படிக்காதவர்   ☐

    2. ஆரம்பக்கல்வி   ☐

    3. உயர்நிலைக்கல்வி   ☐

    4. பட்டப்படிப்பு   ☐

5.வேலையின் தன்மை

    1. வேலை செய்யாதவர்   ☐

    2. விவசாயம்   ☐

    3. தனியார் நிறுவன வேலை   ☐

    4. தொழிற்சாலை வேலை   ☐

    5. திறந்த வெளி சமையல் வேலை   ☐

6.மாத வருமானம்

    1.ரூ5000 - க்கு கீழ்   ☐

    2.ரூ5001 – 6000 வரை   ☐

    3.ரூ6001 - 7000 வரை   ☐

    4.ரூ7000 க்கு மேல்   ☐

7.திருமண நிலை

      1. திருமணமானவர் ☐

      2. திருமணமாகாதவர் ☐

      3. விதவை/மனைவியை இழந்தவர் ☐

      4. தனியாக வாழ்பவர் ☐

8.வசிப்பிடம்

      1. நகரம் ☐

      2. நகர்ப்புற பகுதி

      3. கிராமம் ☐

      ☐

9.எந்த வகையான வீடு

      1.குடிசை ☐

      2.ஓடு வீடு ☐

      3.சிமெண்ட் ☐

      4.கான்கீரிட் ☐

10.நோயின் நாட்காலம்

      1. குறைந்தது ஒரு வருடம் ☐

      2. 1-3வருடங்கள் ☐

      3. 3வருடங்களுக்கு மேல் ☐

11. முன்பு மருத்துவமனையில்அனுமதி பெற்ற நாட்கள்

      1. இல்லை ☐

      2. 3தடவைகள் ☐

      3. 3-6தடவைகள் ☐

      4. 3-6 தடவைக்கு மேல் ☐

12.பீடி சிகரெட் பற்றிய உங்களுடைய பழக்கவழக்கம்

      1. புகை பிடிப்பதில்லை ☐

      2. நாள் ஒன்றுக்கு குறைந்தது/ பாக்கெட் ☐

      3. நாள் ஒன்றுக்கு 2-3பாக்கெட் ☐

      4. நாள் ஒன்றுக்கு 3 பாக்கெட்டிற்கு/மேல் ☐

13. சிகிச்சை முறைகள்

    1.   மருந்துகள்

    2.   ஊசி மருந்துகள்   ☐

    3.   மருந்து நீராவி எந்திரங்கள்   ☐

    4.   மருந்தில்லா முறைகள்   ☐

    ☐

14.குடும்ப அங்கத்தினர்களின் நாள்பட்ட மூச்சடைப்பு நுரையீரல் நோயின் விவரம்

    1. பெற்றோர்கள்   ☐

    2. உடன் பிறந்தோர்   ☐

    3. தாத்தா/பாட்டி   ☐

    4. உறவினர்கள்   ☐

15..துணை நோய்கள்

    1.இரத்த கொதிப்பு நோய்   ☐

    2. நீரிழிவு நோய்   ☐

    3. காசநோய்   ☐

    4. இதர நோய்கள்   ☐

16. தினமும் செய்யும் வேலைகள்

    1. குளிப்பது உட்காருதல் (அ) படுத்தல்   ☐

    2. உடைஅணிவது   ☐

    3. துணிதுவைப்பது

    4. மலம் சிறுநீர் செல்வது   ☐

17.வேலை செய்யுமிடத்தில் எதிர்ப்படும் தூசிகள்

    1. உலோகத்தை சூடுபடுத்தும் வேலை   ☐

    2. உமி நீக்கும் விவசாயி   ☐

    3. சுரங்க வேலை   ☐

    4. திறந்தவெளிசமையல் வேலை   ☐

    5. தொழிற்சாலை புகை   ☐

18 ஒவ்வாமை

    1. வீட்டில் ஏற்படும் தூசிகள்   ☐

    2. மண்பாண்டங்கள்   ☐

    3. பிளாஸ்டிக்   ☐

    4. வேறு பொருட்கள்   ☐

    5. மகரந்த தூள்   ☐

19. அடிக்கடி சாப்பிடும் அசைவ உணவு

    1. கோழிக்கறி ☐

    2. ஆட்டுக்கறி ☐

    3. பன்றிகறி ☐

    4. சைவ உணவு ☐

20. காற்றினால் எதிர்ப்படும் கெடுதலை தரும் துகள்கள்

    1. முடி தெளிப்பான் ☐

    2. பூச்சி கொல்லி மருந்து ☐

    3. எரியும் மரக்கட்டையால் வரும் புகை ☐

    4. வலி நிவாரண தெளிப்பான்

    5. இலகுரக வாகன புகை ☐

3.TOOL FOR BREATHING PATTERN

PART-A

Incentive spirometer (with in three minutes)

MAXIMUM BREATHING CAPACITY SCORES= (no. of times that all three balls reached the top of   column) ×2 + (no. of times that two balls reached the top of column) ×1.5 + (no. of times only one ball reached the column top) ×1.

SCORING KEY

S.NO	LEVEL OF BREATHING DIFFICULTY	SCORING
1	Normal	>192
2	Mild	168-192
3	Moderate	143-167
4	Severe	109-142

SCORE   INTERPRETATION

>192-NO RESPIRATORY PROBLEMS

168-192-MILD RESPIRATORY PROBLEM

143-167-MODERATE RESPIRATORY PROBLEM

109-142-SEVERE RESPIRATORY PROBLEM

4.TOOL FOR RESPIRATORY STATUS ASSESSMENT SCALE

PART-B

MODIFIED RESPIRATORY STATUS ASSESSMENT SCALE

SNO	FEATURES OBSERVED	SCORE			PRE-TEST	POST-TEST
		SCORE-0	SCORE-1	SCORE-2		
1	Respiratory rate	25-30/mt	30-40/mt	>40/mt		
2	Pulse rate	80-100/mt	100-120/mt	>120/mt		
3	Body temperature	37degree C	37-39	>39		
4	Chest retraction	None	Just visible	Marked		
5	Use of accessory muscles	None	Moderate usage	Maximal activity		
6.	Cough	None	Non-productive	Productive		
7.	Air entry	Bilateral	unilateral	Diminished bilaterally		
8.	Dyspnoea	Nil	Inactivity	At rest		
9.	Breathing sounds	Normal sounds	Occasional rales	Creptations		
10.	O2 saturation	98-100%	95-97%	<95%		

SCORE

0 - NORMAL BREATHING PATTERN

1-6 -MILD RESPIRATORY PROBLEM

7-13 -MODERATE RESPIRATORY PROBLEM

14-20 -SEVERE RESPIRATORY PROBLEM

APPENDIX VI

CERTIFICATE OF ENGLISH EDITING

<u>TO WHOM SO EVER IT MAY CONCERN</u>

This is to certify that the dissertation **"A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in   medical ward at Government Rajaji hospital,Madurai-20.**done by Mrs.R.LATHA M.Sc., Nursing II year student, College of Nursing, Madurai Medical College, Madurai - 20 has been edited for English language appropriateness.

Name: Signature

Designation:

Institution:

Name: T.VENKATESH

Designation: Graduate teacher (English)

Institution: Mathalammman Hindu High school, Vadapudupatty Annanji (po), Periyakulam (tk), Theni (DD). PIN: 625 531.

Signature

APPEDIX VII

CERTIFICATE OF TAMIL EDITING

<u>TO WHOM SO EVER IT MAY CONCERN</u>

This is to certify that the dissertation **"A study to assess the effectiveness of pursed lip-breathing exercise on breathing pattern among patients with Chronic obstructive pulmonary disease in medical ward at Government Rajaji hospital,Madurai-20.**done by Mrs.R.LATHA M.Sc., Nursing II year student, College of Nursing, Madurai Medical College, Madurai - 20 has been edited for Tamil language appropriateness.

Name: Signature

Designation:

Institution:

Name   : அ.சரஸ்வதி எம்.ஏ (தமிழ்)
              எம்.எட், எம்.பில்

Designation: தலைமை ஆசிரியை

Institution : அரசு மேல்நிலைப்பள்ளி,
              சாலைமறுகுலாம் - 626607

Signature அ.சரஸ்வதி
07 08.14
தலைமையாசிரியர்,
அரசு மேல் நிலைப்பள்ளி,
சாலைமறுக்குலாம் - 626 607.
விருதுநகர் மாவட்டம்.

APPENDIX VIII

PROCEDURE FOR PURSED LIP BREATHING EXERCISE

PURSED LIP BREATHING EXERCISE

DEFINITION

Pursed lip breathing is one of the simplest ways to control shortness of breath. It provides a quick and easy way to slow your pace of breathing, making each breath more effective.

PURPOSES

- ❖ Improves ventilation
- ❖ Releases trapped air in the lungs
- ❖ Keeps the airways open longer and decreases the work of breathing
- ❖ Prolongs exhalation to slow the breathing rate
- ❖ Improves breathing patterns by moving old air out of the lungs and allowing for new air to enter the lungs
- ❖ Reduce shortness of breath
- ❖ Provides general relaxation

GOAL

- ❖ To prolong exhalation and increase airway pressure during expiration, thus reducing the amount of trapped air and the amount of airway resistance

Pursed lip breathing technique

- ❖ Use this technique during the difficult part of any activity, such as bending, lifting or stair climbing.

- ❖ Duration-3minutes/3 times a day for 10 days

GENERAL INSTRUCTIONS

➢ Breathe slowly and rhythmically to exhale completely and empty the lungs completely.   through the nose to filter, humidify, and warm the air before it enters the lungs.

➢ If you feel out of breath, breathe more slowly by prolonging the exhalation time.

➢ Keep the air moist with a humidifier.

➢ Prior to pursed lip breathing exercise, half an before eat or drink

➢ Relax your neck and shoulder muscles.

➢ Sit on comfortable place

➢ Both hands are kept in below the abdomen. You just felt the inspiration and expiration activity

PROCEDURE

❖ Inhale through the nose while counting to 3—the amount of time needed to say "Smell a rose."

❖ Exhale slowly and evenly against pursed lips while tightening the abdominal muscles.

❖ (Pursing the lips increases intra- tracheal pressure; exhaling through the mouth offers less resistance to expired air.)

❖ Count to 7 while prolonging expiration through pursed lipsthe length of time to say "Blow out the candle." Or Pucker or "purse" your lips as if you were going to whistle

❖ While sitting in a chair: Fold arms over the abdomen. Inhale through the nose while counting to 3. Bend forward and exhale slowly through pursed lips while counting to 7.

❖ While walking: Inhale while walking two steps. Exhale through pursed lips while walking four or five steps.

Inhale ⟶ *Pucker or purse* ⟶ *Exhale*

With regular practice, this technique will seem natural to you

Pursed lip breathing reminders

- Do not force the air out.
- Always breathe out for longer than you breathe in.
- Breathe slowly, easily, and relaxed ... in and out ... until you are in complete control.

APPENDIX X
PHOTOGRAPHS

THE VALLIAMMAL INSTITUTION (TVI)

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℡ 98942 49630; 98430 40226 email: ananthibetsy@rediffmail.com

Reg. No. PCC/39/June 14/273

Date: 11/06/14

Certificate Course in Basic Counselling Skills and Pursed-Lip Breathing Exercise

This is to certify that ....R. LATHA........... has completed our

CERTIFICATE COURSE IN BASIC COUNSELLING SKILLS AND PURSED-LIP BREATHING EXERCISE (24 hrs Part-time Education Programme designed and offered by experts) by effectively participating in theory & practical classes and successfully completing all the exercises. She has been placed in First Class

THE VALLIAMMAL INSTITUTION (TVI)
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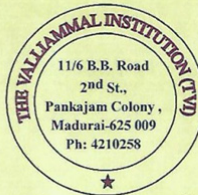
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Dr. B. Ananthavalli M.Sc.,M.A.,M.Phil.,Ph.D.,
Director & Secretary
The Valliammal Institution (TVI)