EFFICACY OF SELECTED PULMONARY REHABILITATION PROGRAMME ON HEALTH WELLBEING AMONG PATIENTS WITH COPD

BY

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A dissertation submitted to the Tamil Nadu Dr. M. G. R. Medical University, Chennai.

In partial fulfillment of the requirements for the degree of Master of Science in Medical Surgical Nursing

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ACKNOWLEDGEMENT

"Peace I (God) leave with you; My peace I give you. I do not give to you as the world gives. Do not let your hearts be troubled and do not afraid".

- ***Bible (John 14:27)***

"Many people hear the call of God which comes through His revelation of Himself through two things- the creation and the conscience within us. But only a 'few' will respond because they are the ones who are truly hearing". As a chosen one I gratefully thank **The LORD Almighty** for His grace and shower upon me throughout the study.

It is not merely possible for a person to carry the ventures all alone. I take the opportunity to extend my sincere gratitude to all those who have encouraged, guided and supported me in the successful completion of this research work.

I would like to express my great sense of gratitude and hearty thanks to my research Co-ordinator **Prof. Dr. C. Jothi Sophia, M. Sc. (N), Ph. D.,** Principal, C. S. I. Jeyaraj Annapackiam College of Nursing, for her expert guidance, inspiration, motivational efforts throughout the period of this study. Her generous assistance, have proved a great source of inspiration to me in completing this study.

I express my immense thanks to **Prof. Dr. Merlin Jeyapal, M. Sc. (N), Ph. D.,** Vice Principal, C. S. I. Jeyaraj Annapackiam College of Nursing for her support and opinion towards the study.

It is my delight and privilege to express my wonderful, most fervent gratitude and genuine thanks to my research guide **Prof. Dr. Jaya ThangaSelvi, M. Sc. (N), Ph. D.,** Head of Medical and Surgical Nursing Department, C. S. I. Jeyaraj Annapackiam College of Nursing for her support to ensure the best quality of this piece of work. Her

assuring glance, valuable proposals, incitement, and keen scrutiny, patience enlighten, critical suggestion at the right time and galvanizing words will never be forgotten.

Some memories are unforgettable, remaining ever vivid and heart-warming- my down to earth gratitude to my medical guide. His part in the dissertation covers the whole value of the content which makes it more valuable to the

I intimate my immense thanks to our PG coordinators **Prof. Dr. Y. John Sam Arun Prabhu, M. Sc. (N), Ph. D.,** Head of Community Health Nursing Department and **Assos. Prof. Mrs. Jeyajothi, M. Sc. (N),** C. S. I. Jeyaraj Annapackiam College of Nursing for their support, whole hearted encouragement and opinions towards this study.

It gives me a great pleasure to express my unfeigned gratitude and respect to **Prof. Dr. Priscilla, M. Sc. (N), Assos. Prof. Mrs. Esther Jennifer, M. Sc. (N), Mrs. Sasikala, M. Sc. (N)** Faculty of Medical and Surgical Nursing for their abiding encouragement and erudite suggestion throughout the study with enrichment words and also being an inflame in every phase of this dissertation.

I extend my sincere thanks to **the panel of experts** for the valuable suggestions to conduct towards this study.

I extend my sincere thanks to **the panel of judges** in the dissertation committee for the valuable suggestion throughout this study.

My sincere gratitude and thanks to **Mr. Mani, M. Sc., M. Phil.,** Statistician for his meticulous opinion, suggestion in analysis and interpretation of data without which the dissertation would not have been accomplished.

I am compelled to **Mrs. Angeline Mannova, the Librarian of C. S. I. Jeyaraj Annapackiam College of Nursing, and library staff of Dr. Tamil Nadu M. G. R. Medical University, Chennai and CMC, Vellore** for their cooperation and

Mrs. Mercy Mary Arulmani, M. A., D. C. A., computer department staff in-charge for assistance towards building a sound knowledge base for this study.

My hat-tip thanks to all the **teaching** and **non-teaching** faculty of C. S. I. Jeyaraj Annapackiam College of Nursing for their invigorating and support.

My special thanks to all the **participants** who participated in this study.

I have no word to appreciate all my ***BESTIES*** **VINEYARD AT BAALHAMON'16** those bestowed their endurance in one or another way to the triumphant of the study.

My emotions fall short of right vocabulary to express my immense debts to my beloved father **Mr. Elangovan,** my mother **Mrs. Jayamary,** my lovable brother **Mr. Premnath,** my lovable uncle **Mr. Jayarajan** and **Ms. Divya Sebastini, B. Sc. (N).,** who are the person for all this hard work and study. Their constant prayers, love, sacrifice, encouragement and support throughout this master programme without which this study would not have been possible. Once again my deepest thanks to all.

I am very much bewitched to express my heart full extension of thanks to my beloved **Mr. Britto, M.Sc.(N)., Mr. John Jeba Sundar, M.Sc.(N).,** for their constant encouragement and suggestion towards the stratagem of this research work.

My special thanks are extended to **SMART SHALOMIANS AND SHINNING SAPPHIRE FAMILY, CROWNED CANNAIANS** boys for their valuable endorsed ratification in finishing this research work.

ABSTRACT

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) people suffer from severe physical impairments, which often elicit significant physiological distress and impact their quality of life. The Global Initiative for Chronic Obstructive Lung Disease defined Chronic Obstructive Pulmonary Disease as airflow limitation that tends to not be fully reversible and which is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases.

STATEMENT OF THE PROBLEM

A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD at Vadamalayan Hospital in Madurai.

OBJECTIVES

Objectives of the study were;

1. To assess the pre test and post test health wellbeing among patients with COPD in the control and experimental group.
2. To determine the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD by comparing the pre test and post test scores within and between the control and experimental group.
3. To associate the health wellbeing of the patients with COPD with their demographic and clinical variables.

MATERIALS AND METHOD

In this study, quasi experimental pre-test and post- test control group design was adopted. The researcher has chosen Vadamalayan Hospital from Madurai, Tamil Nadu as the control and experimental group for the study. The sample comprised of 60 patients who were diagnosed with COPD at Vadamalayan Hospital in Madurai, among which 30 patients were assigned in the control group and 30 patients were in the experimental group. The samples were recognized based on the inclusion criteria and selected by non probability convenient sampling technique. The patients were subjected to assess both pre test and post test.

RESULTS

The data obtained was analyzed using descriptive and inferential statistics. The paired ‘t’ test of the health well-being score within the control group was 0.03 and p= 0.97. in experimental group, the paired ‘t’ test of the health well-being score was 0.52 and $p > 0.05$. The unpaired ‘t’ test of the health well-being score between control and experimental group was 15.07 and $p = 0.001$.

CONCLUSION

The study results revealed that, there was a statistical significant difference in the health well-being among patients with COPD in the control and experimental group. The study concluded that the selected pulmonary rehabilitation programme (Respiratory muscle exercise, Muscle strengthening and Smoking cessation) was highly effective in improving the health wellbeing among patients with COPD. Hence, it is clearly judged that the health wellbeing has improved to in the experimental group after implementing pulmonary rehabilitation programme among patients with COPD.

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CHAPTER – I

INTRODUCTION

Courage doesn't always roar. Sometimes courage is the quiet voice at the end of the day saying, 'I will try again tomorrow'

- Mary Anne Radmacher

Chronic Obstructive Pulmonary Disease (COPD) caused by long-term exposure to irritating gases or particulate matter, most often from cigarette smoke. People with COPD are at increased risk of developing heart disease, lung cancer and a variety of other conditions. It is a crucial health issue and ranks fifth in the global burden of disease. Even though the disease is identified by the symptoms of intensified respiratory manifestations and decline in functional status, exacerbation gives rise to the substantial threat for morbidity and early mortality.

Worldwide, 210 million people are approximately to have COPD. It is also expected to be the third leading cause of death worldwide by 2020. Both in developing as well as in developed countries the prevalence is increasing, might be due to the tobacco consumption. Exacerbations of COPD are characterized by increased dyspnea and poor quality of life.

COPD is characterized by persistent and usually progressive airflow limitation, which occurs in response to long-term exposure to noxious particles or glass (e.g. air pollution or smoking). These irritants cause an inflammatory response in the lungs, leading to shortness of breath, coughing and sputum production. In addition, in the majority of cases, acute exacerbation of COPD is triggered by respiratory tract infections. Diagnosis of COPD severity is based on symptoms, exacerbation frequency and the degree of airflow limitation as assessed by pulmonary

function testing. Treatment of COPD involves lifestyle modifications as well as the use of pharmacotherapy which includes bronchodilators and corticosteroids for exacerbation of COPD. Notably, it is known to be associated with several important chronic co morbid diseases such as Hypertension, Cardiovascular disease, Obstructive sleep apnea and Type-2 Diabetes Mellitus which were already partially interrelated.

COPD is a deadly medical condition with under-estimated mortality and morbidity rates across the globe. It remains undiagnosed probably because it progresses gradually and show signs at a very late stage. The National Commission on Macroeconomics and Health has identified India as one of the country mostly affected by COPD. The Commission identified about 17 million Indians suffering from COPD in 2006, and the numbers are expected to reach 22 million by 2016. According to NCMH estimates, COPD is more prevalent in the rural areas of India comparing with the urban parts of the country, and the numbers are continuously on increase.

India is changing - not only in terms of its demographics, urbanization, economic profile, pollution but also in terms of its health burden, disease pattern, dominant-disease-composition, morbidity and mortality determinants.

China and India also contributes a significant and growing percentage of COPD mortality estimated to be the highest in the world; i.e. more than 64.7 of estimated age standardized death rate per 100,000 amongst both sexes in the WHO Global InfoBase Updated on 20thJanuary 2011 (India 102.3 and China 131.5). This would translate into approximately 556,000 in case of India (>20%) and 1,354,000 cases in China (about 50%) out of a world total of 2,748,000 annually.

According to the WHO, 80 million people have moderate to severe COPD worldwide, and 3 million people died from COPD in 2005.No treatment to date save

smoking cessation has proved to slow the deterioration of lung function. Thus, the objectives of treatment have been to decrease the burden of the disease through relief of symptoms, improvement of exercise tolerance, and prevention and treatment of exacerbations. COPD is a progressive irreversible airway disease characterized by emphysema and chronic bronchitis, resulting in breathlessness, cough and sputum.

The global burden of Diseases study showed that approximately 2.7 million deaths from COPD occurred in 2000, due to COPD half of them in the Western Pacific Region. About 400,000 deaths occur each year from COPD in industrialized countries and this can be expected to rise unless urgent action is taken to control leading risk factors, particularly tobacco. In India, the smoking association with COPD was reported as 82.3 percent of male patients on an average in an analysis of several population studies. Excertional dyspnea often causes patients COPD to unconsciously reduce their activities of daily living to reduce the intensity of their distress. The reduction in activities of daily living leads to reconditioning which, in turn, further increases dyspnea. Both dyspnea and fatigue are important factors affecting health-related quality of life. Though medications are used to control the symptoms of COPD, but it will not give permanent cure. Performing breathing exercises reduces the frequent dyspnea and improves relaxation and pulmonary function. Limited empirical documentation exists to support the effectiveness of a nurse managed rehabilitation programme for older patients with COPD. Pulmonary rehabilitation programme helps to reduce shortness of breath, increasing exercise tolerance, decrease the frequency and duration of hospital admissions, socio economic gains from reduced hospitalizations, a reduction in anxiety, depression and somatic concern, the return of patients to employment and the establishment of a better quality of life.

Emphysema and chronic bronchitis are the two most common conditions that contribute to COPD. Chronic bronchitis is inflammation of the lining of the bronchial tubes, which carry air to and from the air sacs (alveoli) of the lungs. It's characterized by daily cough and mucus (sputum) production. Emphysema is a condition in which the alveoli at the end of the smallest air passages (bronchioles) of the lungs are destroyed as a result of damaging exposure to cigarette smoke and other irritating gases and particulate matter. COPD is treatable. With proper management, most people with COPD can achieve good symptom control and quality of life, as well as reduced risk of other associated conditions. The pulmonary rehabilitation programme improves the health wellbeing of the patients.

SIGNIFICANCE AND NEED FOR THE STUDY

In the United states approximately 6.3% of the adult population. In 2011, there were approximately 730,000 hospitalizations in United States for COPD. COPD is the third leading cause of death in the United States, affecting an estimated 15 million Americans.

In England, an estimated 0.84 million people of 50 million have a diagnosis of COPD. This translates into approximately one person in 59 receiving a diagnosis of COPD.

WHO estimates suggest that 90% of COPD related deaths occur in low and middle income countries. India and China constitute 33% of the total human population and account for 60% of the global COPD mortality is likely to grow by 160% in the Southeast Asian region in the coming decades. Globally the increase in the burden of COPD has been attributed to cigarette smoking among men and women, longer survival of populations, and high levels of air pollution, particularly in

developing countries. India is a large country comprising of people with varying socio demographic profiles, cultural practices and ethnicities. Hence the risk factors for COPD are also likely to be different across various states and regions in India.

According to a global survey, morality rate due to COPD is the highest in India, and a few African countries. India has perhaps the highest percentage of COPD related mortality, and the number is growing constantly. The age standardized mortality rate is found to be around 65 per 100,000 for both male and female in India. This is around 20 percent of the global total per year.

COPD is reported to have an estimated disease burden of 210 million people worldwide. Globally COPD was the fourth leading cause of death (5.1%) in 2004 and is projected to occupy the third position (8.6%) in 2030. Also COPD is a major cause of chronic morbidity. It was ranked eleventh in 2002 and is projected to rise to seventh place in 2030. The prevalence of COPD in adults ranges between 0.2% in Japan and 37% in USA. The burden of obstructive lung disease group recently reported an average global COPD prevalence of 10.1% with wide variations across the participating countries. Additionally, COPD contributes to the economic burden faced by patients as well as the healthcare infrastructure in the country, incurring 2-4 fold higher costs compared with asthma and ischemic heart disease. Together COPD, asthma and other respiratory disease are the second (10.2%) leading cause of death in the population aged 25-69 years in India, as reported in 2001-2003 and they account for 3% of disability adjusted life years lost of the chronic respiratory disease, COPD accounts for about 500,000 deaths in India, which is more than four times the number of people who die due to COPD in USA and Europe. A recently completed nationwide questionnaire – based study estimated the prevalence of COPD at 3.49% in India (ranging from1.1% in Mumbai to 10% in Trivandrum). The spirometry test

was not employed for the diagnosis of COPD in this study and it is therefore possible that the reported COPD burden could be under estimated. Recently, the burden of obstructive lung disease study conducted in Pune, Mumbai and Srinagar reported overall COPD prevalence estimates of 6.25%, 6.8% and 10.05% respectively.

Dr. Pradyut Waghray, Director and senior consultant of Medical Specialties Private limited in 2011, says that COPD contributed Rs.35, 000 Cores as economic burden and today it is estimated to have reached Rs. 48,000crore.

Recently, the burden of obstructive lung disease study conducted in Pune, Mumbai and Srinagar reported overall COPD prevalence estimates of 6.25%, 6.8% and 16.05%, respectively.

Delhi may be one of the most polluted cities but it faces a marginally lower health impacts possibly due to transition from solid fuels. If calculated in terms of life years lost due to air pollution, it lead disabilities like COPD or Heart disease or what medical experts call Disability Adjusted Life Years, Delhi had a Disability Adjusted Life Years rate of 1890 from air pollution compared to 4308 in Bihar and 4390 in Uttar Pradesh.

During my clinical experience among the COPD patients very often I realized that they were not satisfied with the behavior of health care and no proper advocacy regarding the health, environment and social relationship were provided, which made a low impact in their health well-being. Hence, I felt that nowadays commonly the COPD patients were mostly affected in all the aspects of health dimensions like Physical, Social, Psychological, Intellectual and Spiritual components, which lead to poor health well-being. So, the researcher decided to do this study on selected

pulmonary rehabilitation programme to improve the level of health well-being among COPD patients.

STATEMENT OF THE STUDY

A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health well-being among patients with COPD in Vadamalayan Hospital at Madurai.

OBJECTIVES OF THE STUDY

1. To assess the pre test and post test health well-being among patients with COPD in the control and experimental group.
2. To determine efficacy of selected pulmonary rehabilitation programme on health well-being among patients with COPD by comparing pre test and post test scores within and between the control and experimental group.
3. To associate the health well-being of the patients with COPD with their demographic and clinical variables.

HYPOTHESIS

H_1- There is a significant difference in the pre- test and post- test of selected pulmonary rehabilitation scores of health wellbeing among COPD patients in the control and experimental group.

H_2- The mean post test score of health wellbeing is significantly higher in the patients with COPD who were exposed to selected pulmonary rehabilitation programme than the patients those who were not exposed to selected pulmonary rehabilitation programme.

H_3- There is a statistical significant association between health wellbeing with their demographic and clinical variables in the both control and experimental group.

OPERATIONAL DEFINITION

Efficacy

In this study, it refers to the desired outcome of the pulmonary rehabilitation in terms of health well-being outcomes among COPD patients, as elicited through the difference between the pre and post score on pulmonary rehabilitation programme in experimental group.

Health Well-being

In this study, it refers to the harmonious function of diverse and interconnected dimensions of human being such as physical, psychological, social, intellectual and spiritual aspects.

Selected pulmonary rehabilitation

In this study, it refers to the multidimensional continuum of programme in which it is focused as follows,

1) **Respiratory muscle exercise** – It consists of Pursed lip, diaphragmatic and deep breathing exercise to improve lung capacity.
2) **Muscle strengthening exercise** -.It consists of front thigh, shoulder, palm down forearm, palm up, neck, leg lift, knee lift, knee bend, heel lift, leg extension stretching which helps to manage the chronic diseases.
3) **Smoking cessation** – It enables the loss of breath to be stabilized and reduces the frequency of coughing and expectoration.

Patient with COPD

In this study, it refers to the patients who have been diagnosed as COPD with the criteria of breathing difficulty without exacerbation on admission.

ASSUMPTIONS

It is assumed that:

1. The health well-being of the patients with COPD is assumed to be low.
2. Effect of selected pulmonary rehabilitation programme helps in enhancing the health well-being among patients with COPD.

DELIMITATION

The findings of the study were delimited to:

1. COPD patients with high level of well-being level in selected hospitals at Madurai.
2. COPD patients by screening with modified health well-being scale.
3. A period of 6 weeks.

PROJECTED OUTCOME

The findings of the study will help to:

1. Evaluate the efficacy of selected pulmonary rehabilitation programme among patients with COPD in selected hospitals at Madurai.
2. Determine the effectiveness of selected pulmonary rehabilitation programme by nurses to the needed population.
3. Improve the health well-being among patients with COPD.

CHAPTER – II

REVIEW OF LITERATURE

This chapter deals with the review relevant to the present study. It is presented under the following headings.

1. Studies related to pulmonary rehabilitation programme.
2. Studies related to chronic obstructive pulmonary disease.
3. Studies related to pulmonary rehabilitation programme on health wellbeing among COPD patients.

STUDIES RELATED TO PULMONARY REHABILITATION PROGRAMME

Renata Pires et al., 2013 conducted a study on Smoking Cessation Interventions for COPD. The aim of this systematic review is to establish the most effective stop smoking intervention approach for smokers with COPD. The search strategy included the electronic databases MEDLINE, EMBASE,AMED, PsycINFO, DARE, Cochrane Library, and CINAHL, between January 2006 and January 2010.References of the included studies were also screened for additional papers, and further hand searches were conducted. The selection criteria included randomized controlled trials or quasi-randomized controlled trials with at least one subject group diagnosed with COPD. Two independent reviewers reviewed the included studies, using a quality assessment form developed from the selection criteria. Divergence of quality assessment scores was resolved by the 2 reviewers agreeing on a score. The 4studies selected indicate that psychosocial interventions combined with pharmacotherapy are effective in smoking cessation at 12 months post-intervention, although the effect is not statistically significant, due to small sample size and heterogeneity between the studies (odds ratio 2.35, 95% CI 0.25–21.74,).However,

despite this medium effect size, due to a lack of universal use of pharmacotherapies in most of the studies, it makes a definitive comparison of efficacy difficult to determine. This review also shows the effectiveness of psychosocial treatment for people with or without COPD symptoms at 12 months, although the effect of disease severity is not clear. This review also highlights the difficulty of maintaining attendance at community-based locations, compared to acute or research settings.

Anna Norweg et al., 2008 conducted a qualitative study was to analyze participants' perceptions of a pulmonary rehabilitation programme, which combined occupational therapy with physical therapy. Semi-structured interviews were used to collect data from four adults with chronic obstructive pulmonary disease (COPD) who attended an outpatient pulmonary rehabilitation programme in New York City. Features of the occupational therapy programme reported to be valuable were biofeedback and clinician support. Participants reported more control of dyspnea, improved mental health and confidence in performing daily activities, less fatigue, more physically active lifestyles and hope for the future. Limitations of the study were that participants were interviewed only once and themes were not verified with participants. The study results also cannot be generalized. Further research is needed to evaluate the effectiveness of occupational therapy in promoting self-management and coping skills and restoring occupational performance in adults with COPD. Participants' responses provide additional support for developing cognitive-behavioral protocols in occupational therapy and measuring their effectiveness in relieving anxiety symptoms and promoting dyspnea management.

Nicholas S. Hill, 2006 conducted a pulmonary rehabilitation programs use multidisciplinary teams to optimize physical and social functioning of patients with chronic respiratory impairment. These programs provide rehabilitation in inpatient,

outpatient, or home settings, using at least three sessions weekly (one may be unsupervised) foe at least 6 weeks. The programs usually consist of exercise training, education and psychosocial/behavioral components. Upper extremity exercises and instruction on breathing technique are included in rehabilitation programs and reduce dyspnea, but the contribution of these to improved functional capacity remains unproven. Decreases in the sensation of dyspnea, increased functional exercise capacity, and enhanced quality of life of patients with COPD are established benefits of pulmonary rehabilitation. Evidence is lacking for the efficacy of rehabilitation for patients with non- COPD causes of pulmonary impairment, but many of these patients probably benefit. Despite the availability of strong evidence to support the efficacy of pulmonary rehabilitation programs in patients with severe COPD, third-party reimbursement policies have been inconsistent. Nonetheless, enrollment in a pulmonary rehabilitation program is encouraged for all appropriate candidates with chronic respiratory impairment, particularly for those with severe COPD.

Ralph J. H. Koppers et al., 2006 conducted a study on impaired exercise tolerance is frequently observed in patients with COPD. Respiratory muscle endurance training (RMET) by means of normocapnic hyperpnea can be used to improve respiratory muscle function and probably exercise capacity. RMET is not applied on a large scale because complicated equipment is needed to maintain carbon dioxide homeostasis during hyperpnea, which can also be done by enlarging the dead space of the ventilator system by breathing through a tube. Therefore, tube breathing might be a new, inexpensive method for home-based RMET. The aim of this study was to assess whether home-based RMET by means of tube breathing improves endurance exercise performance in patients with COPD. We randomized 36 patients with moderate-to-severe COPD to RMET by paced tube breathing (n _ 18) or sham

training (control, n _ 18). Both groups trained twice daily for 15 min,7 days per week, for 5 weeks. Patients receiving RMET showed significant improvements in endurance exercise capacity (constant-load exercise on cycle ergometry; 18 min vs 28 min, $p < 0.001$), in perception of dyspnea (Borg score; 8.4 vs 5.4, $p < 0.001$), and respiratory muscle endurance capacity(sustainable inspiratory pressure; 25 cm H_2O vs 31 cm H_2O, p _ 0.005). Quality of life (chronic respiratory disease questionnaire) also improved (78.7 to 86.6, p _ 0.001). The control group showed no significant changes. Home-based RMET by means of tube breathing leads to a significant improvement of endurance exercise capacity, a reduction in perception of dyspnea, and an improvement in quality of life in patients with moderate-to-severe COPD.

Hale Karapola et al., 2005 conducted a study on The effects of an outpatient pulmonary rehabilitation program on psychological morbidity (anxiety and depressive symptoms) were examined in patients with chronic obstructive pulmonary disease (COPD).The 26 rehabilitation patients with COPD were compared with 19 control patients with COPD similar in age, gender, COPD severity and other variables. Initial assessment included lung function testing, health status, exercise tolerance, dyspnea intensity and psychiatric interviews using Hamilton depression rating scale(HAM-D) and Hamilton anxiety rating scale (HAM-A). A pulmonary rehabilitation program was carried out during the following 2 months; psychiatric interviews and measurements of health status, exercise tolerance and dyspnea intensity were done again on completion of the study at 2 months. There was a decrease in HAM-A scores in the rehabilitation group and the decrease was statistically significant (P ¼ 0:010). On the contrary the HAM-A scores did not change in control group. The decrease in HAM-A scores in rehabilitation group was also statistically significant compared with the control group (P ¼ 0:042).There was no significant difference in HAM-D scores

within the two groups and also there was no significant difference between the two groups in HAM-D scores. The health status, exercise tolerance and dyspnea intensity improved significantly in the rehabilitation group compared to the control group. This study shows that our outpatient rehabilitation program leads to a benefit in anxiety and depressive symptoms in COPD patients. The benefit was especially significant in anxiety symptoms. In addition to the improvement in psychological symptoms, the health status, exercise tolerance and dyspnea intensity were also significantly improved in COPD patients who underwent the rehabilitation program. This outpatient-based rehabilitation program was well accepted by the patients. The relatively simple design of the program makes it feasible independently of expensive equipment.

Maria Rosa Guell Rous et al, 2004 Pulmonary rehabilitation (PR) has been shown to improve dyspnea, exercise capacity and health-related quality of life in patients with COPD. PR has also shown benefits in diseases other than COPD but the level of evidence is lower. The fundamental components of pulmonary rehabilitation programs are muscle training, education and chest physiotherapy. Occupational therapy, psychosocial support and nutritional intervention should also be considered. Home programs have been shown to be as effective as hospital therapy. The duration of rehabilitation programs should not be less than 8 weeks or 20 sessions. Early initiation of PR, even during exacerbations, has proven safe and effective. The use of oxygen or noninvasive ventilation during training is controversial and dependent on the patients situation. At present, the best strategy for maintaining the benefits of PR in the long term is unknown. Longer PR programs or telemedicine could play a key role in extending the results obtained.

Whelan TP, et al., 2004 conduct a study on little is known about gastro esophageal reflux disease (GERD) in patients with chronic obstructive pulmonary disease (COPD); however, GERD is common in many other chronic respiratory diseases. This study evaluated the prevalence, presentation, and predictors of GERD based on proximal and distal esophageal pH monitoring in patients with severe COPD. The overall prevalence of GERD was 57%, but only one-third reported heartburn or acid regurgitation during the study. Only higher body mass index was predictive of reflux on regression analysis. The authors concluded that while GERD is common in patients with COPD, most are asymptomatic and have a relatively high prevalence of isolated abnormal proximal reflux.

Dick et al., 1997 studied 11 hypoxemic COPD patients. The ventilator responses to hypercapnia and hypoxia were measured using evaluated re-breathing techniques. They have concluded that oxygen induced high carbon dioxide levels does not indicate any respiratory failure in all these 11 patients. Therefore it was proved that oxygen induced changes in the respiratory drive is not due to hypoxic drive in COPD patients.

Studies related to chronic obstructive pulmonary disease.

Mohamed Saleem et al., 2017 conduct a study on the prevalence of chronic obstructive pulmonary disease**.** Burden of disease estimation is important for decision making, planning, prioritising and allocating funds. It has been found that the recent data on prevalence of COPD is less in south India, especially Tamil Nadu. Hence this study was undertaken in order to estimate the prevalence of COPD in Madurai among adults and its association with socio demographic variables. This is a community based cross-sectional study done in Kallendiri block of Madurai district with adults aged >30 years of both the sexes as study population. Sample size was 480. Using

cluster sampling method, study participants were interviewed with semi-structured questionnaire and peak expiratory flow rate was measured using peak flow meter. Prevalence of COPD was 22.1% among the study population. Males (39.2%) had higher prevalence than females (12.2%). COPD prevalence was significantly higher among increasing age, male sex, illiteracy, low BMI, smokers, inadequate ventilation and those using biomass fuels for cooking. This study has established the fact that COPD is highly prevalent among adults in rural area. For practitioners, the results call for a high index of suspicion of COPD among >30 years with substantial exposure to risk factors. For health policy makers, the results of the current study urge for the development of COPD prevention programs failing which the burden of COPD might result in increased mortality, morbidity and economic burden.

Prabu Rajkumar et al., 2017 conducted a cross-sectional study will be undertaken among the populations of sub-urban areas of Chennai and Shillong cities, which represent the Southern and Northeastern regions of India. We will collect data on socio demographic variables, economic characteristics, risk factors of COPD and co-morbidities. The Global Initiative for Obstructive Lung Disease (GOLD) and Global Initiative for Asthma (GINA) definitions will be used for the diagnosis of COPD and asthma. Data will be analyzed for estimation of the prevalence of COPD, asthma and associated factors.

Amanda R. van Buul et al., 2016 conducted a study on Morning symptoms are common in chronic obstructive pulmonary disease (COPD). Many COPD patients consider the morning as the most troublesome part of the day, in which they experience more symptoms and physical activity limitations. To systematically report evidence of the association between morning symptoms and physical activity in COPD patients, a literature search was conducted using relevant MESH terms and

text words in PubMed, Embase, Web of Science, COCHRANE, CINAHL and PsycINFO. Quality of the articles was assessed with validated checklists. Eight studies were included. Morning symptoms were present in 39.8–94.4%. In 37.0–90.6% of all COPD patients, there was an association between physical activity and morning symptoms. However, causality could not be proved. Morning symptoms were associated with a sedentary lifestyle ($p<0.05$). Treatment in line with the guidelines improved the degree of activity limitations due to morning symptoms ($p<0.0001$). Across all disease stages, COPD patients experience morning symptoms which are negatively associated with physical activity. Physicians should consider morning symptoms as a treatment goal. Pharmacotherapy may improve the degree of activity limitations due to morning symptoms. More objective research should focus on symptoms, activity limitations and physical inactivity of COPD patients, especially in the morning.

Antonio Martin et al, 2013 conduct a study to determine the prevalence and analyze the most relevant clinical characteristics of three clinical phenotypes of COPD: emphysema (type 1), chronic bronchitis (type 2) or COPD-asthma (type 3). Observational, multicenter study performed with 331 COPD patients recruited in pulmonology outpatient services. The stratification in three phenotypes was performed with imaging tests, pulmonary function, and a standardized clinical questionnaire. The 43.2% presented an emphysematous phenotype, 44.7% were chronic bronchitic and the other 12.1% presented a phenotype showing mixed characteristics with asthma. There were no significant differences in the smoking level, in the gasometric values or time of disease evolution. Type 1 patients showed lower FEV1 values in comparison with types 2 and 3, 46.6% (21.1), 55.2% (21.2) and 54.4% (21.8), respectively ($p < 0.05$), and greater levels of dyspnea ($p < 0.05$). No

significant differences were observed in the percentage of patients who had at least one exacerbation in the last year (68.8%, 63.9%, 64.9%; p Z 0.25), in the number of exacerbations (pZ0.56), in the number of visits to the ER (total and due to COPD), or in the number of hospital admittances. Type 2 patients showed a greater prevalence of cardiovascular comorbidities and of sleep apnea syndrome (4.9%, 23.6% and 12.5%, respectively, $p < 0.001$).

Jean Bourbeau et al., 2013 conducted a study Making collaborative self-management successful in COPD patients with high disease burden 100 randomly selected charts of patients followed in a specialised COPD clinic in 2006 and 2009 (patients with higher burden of disease) were reviewed. Data on patients' characteristics, COPD severity and exacerbation management were extracted. Compared to the 2006 cohort, patients from the 2009 cohort had lower (0.85 L), but not statistically significant different FEV1 (L) than the 2006 cohort (0.98 L) and more exacerbations (2.6 exacerbations/ ptvs 3. 6 exacerbations/pt, pZ0.03). Despite having a higher burden of disease, patients in the 2009 cohort as compared to 2006 had more appropriate self-management behaviors in the event of an exacerbation (60% vs 42%, p Z 0.05) and fewer emergency room visits and/or hospital admissions (39% vs 57%, pZ0.02). There were more phone calls to the case managers (590 vs 382, $p < 0.001$) and fewer physician office visits (167 vs 179, p Z 0.024). This study of a real life situation adds to the current body of literature that a more severe COPD patient population can be taught self-management skills in the event of exacerbations, leading to fewer health care visits and hospital admissions.

Mohammed A. Zamzam et al., 2013 conducted a study To study quality of life in patients with COPD and to examine its relationship with the severity of the disease. Quality of life was determined in 40 COPD patients using the St. George's

Respiratory Questionnaire for COPD patients (SGRQ-C). Mild COPD patients differed significantly from other grades of COPD in their total SGRQ-C score, symptoms score, activity score and impact score (p 6 0.001). There was a statistically significant negative correlation between spirometric data (FEV1, FEV1/FVC, PEFR, FEF25–75%) and SGRQ-C score (total score, symptoms score, activity score and impact score). There was a statistically significant positive correlation between smoking index and both symptoms score and impact score. Quality of life is impaired in patients with COPD and it deteriorates considerably with increasing severity of disease. Increasing severity of COPD is associated with a significant increase in SGRQ-C score. A higher smoking index affects the COPD subjects' QOL especially with patients' symptoms and impact of disease. Psychological assessment and psychiatric consultation are important for improving COPD symptoms, QOL and for early detection and treatment of superimposed psychiatric symptoms that could worsen COPD condition and seriously affect QOL.

Shu-Hui Yu et al., 2013 conducted a study to explore the effects of self-management education on the quality of life of patients living with COPD. Eighty-four stable or discharged COPD subjects were recruited from April 2011 to January 2012 following treatment at Beijing Hospital or Peking Union Medical College Hospital. Subjects were divided into an intervention group who underwent self-management education or a control group who received usual care without additional education (n ¼ 42 each). The St George's Respiratory Questionnaire (SGRQ) was used to measure quality of life at three and six months. SGRQ impact domain scores revealed significant differences between the groups (t¼_2.167, p< 0.05) at three months. SGRQ symptom, impact, activity domain and total scores revealed significant differences between groups (t¼_3.482 to _2.530, p < 0.05) at six months.

A nurse-led, simple, structured self-management education program provided an effective method for the management of patients with COPD.

Mark D. Eisne et al.,2010 conducted a study on novel risk factors and the global burden of chronic obstructive pulmonary disease. To evaluate the risk factors for COPD besides personal cigarette smoking. We constituted an ad hoc subcommittee of the American Thoracic Society Environmental and Occupational Health Assembly. An international group of members was invited, based on their scientific expertise in a specific risk factor for COPD. For each risk factor area, the committee reviewed the literature, summarized the evidence, and developed conclusions about the likelihood of it causing COPD. All conclusions were based on unanimous consensus. The population-attributable fraction for smoking as a cause of COPD ranged from 9.7 to 97.9%, but was less than 80% in most studies, indicating a substantial burden of disease attributable to nonsmoking risk factors. On the basis of our review, we concluded that specific genetic syndromes and occupational exposures were causally related to the development of COPD. Traffic and other outdoor pollution, secondhand smoke, biomass smoke, and dietary factors are associated with COPD, but sufficient criteria for causation were not met. Chronic asthma and tuberculosis are associated with irreversible loss of lung function, but there remains uncertainty about whether there are important phenotypic differences compared with COPD as it is typically encountered in clinical settings. In public health terms, a substantive burden of COPD is attributable to risk factors other than smoking. To prevent COPD related disability and mortality, efforts must focus on prevention and cessation of exposure to smoking and these other, less well recognized risk factors.

JA Cramer et al., 2007conducted a study to assess the patterns of persistence with the above mentioned inhaled medications. Prescription claims data from the

Ontario Drug Benefit Program were analyzed to assess persistence (time to discontinuation) and compliance (percentage of days with doses available divided by days to last refill) of patients prescribed inhaled medications. Patients were grouped as naive (no inhaled medication in the previous year) or experienced (previous or current treatment), and by age (18 to 65 years of age and older than 65 years of age). Medications included ipratropium, ipratropium plus salbutamol, formoterol, formoterol plus budesonide, salmeterol, salmeterol plus fluticasone, and tiotropium. The database included 31,368 patients (4888 naive and 26,480 experienced) who were prescribed at least one of these medications. Fifteen per cent to 63% of patients continued on the index drug for more than six months, which decreased to 7% to 53% at 12 months, and 5% to 47% at 18 months. At 12 months, patients taking tiotropium had significantly longer persistence compared with other therapies (53% versus 7% to 30%; all P<0.0001), and fewer switches to alternative medications. Most naive patients had significantly shorter treatment persistence than experienced patients for all drugs (all P<0.0001), including tiotropium (27% versus 55%, P<0.0001). Compliance rates were similar for all drugs (i.e. 76% to 94%) but were highest for tiotropium. These data demonstrated that persistence with inhaled treatment was low overall, but patients treated with tiotropium remained on therapy significantly longer than when treated with other medications, and patients naive to inhaled treatment had shorter treatment persistence than experienced patients.

Ana Maria B Menezes et al., 2005 conducted a prevalence study on COPD seem to be increasing low and middle income countries complete information, including spirometry was obtained from 963 people in Sao Paulo, 1773 in Santiago, 1000 in Mexico City, 885 in Montevideo, and 1294 in Caracas. Crude rates of COPD ranged from 7.8%(78 of 1000; 95% CI 5.9-9.7) in Mexico rates to 19.7%(174 0f 885;

17.2-22.2) in Montevideo. After adjustment for key risk factors, the prevalence of COPD in Mexico City remained significantly lower than in other cities.

Brahma Prakash, 2004 conduct a study to the impact of COPD on activities of daily living and quality of life of patients and to correlate the impact with severity of disease in the set up of Indian conditions. In this prospective study conducted at a tertiary level hospital, stable COPD patients without any other coexisting co-morbidity were enrolled. The severity of COPD was classified as per GOLD 2006 guidelines. The quality of life and impact of COPD on activities of daily living was assessed using Seattle obstructive lung disease questionnaire translated in local language, 6 minutes walk test and visual analog scale for dyspnea. Seventy eight patients and 20 controls were enrolled for the study. The scores for physical functions, emotional functions, coping skills and treatment satisfaction obtained from questionnaire were decreased in COPD patients. The physical function and emotional function score, decreased significantly ($P < 0.05$) when compared from mild through moderate, severe and very severe stages of COPD, these scores also correlated positively with percent predicted FEV1 values in spirometry ($r=0.855$ and $r = 0.735$ respectively) There was a significant fall in the six minute walk distance as the stage of disease progressed. The Visual analog scale score significantly increased ($P < 0.05$) with the stage of COPD. Assessing quality of life and ability to perform activities of daily living is also important for assessing the disease severity.

Dick et al. 1997 studied 11 hypoxemic COPD patients. The ventilator responses to hypercapnia and hypoxia were measured using evaluated rebreathing techniques. They have concluded that oxygen induced high carbon dioxide levels does not indicate any respiratory failure in all these 11 patients. Therefore it was proved

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Murray et al.,1996 conducted a study on prevalence of COPD. It is a major but neglected public health problem and is a leading cause of death and disability worldwide. The World Bank estimates that COPD is responsible for > 29 million disability-adjusted life-years (DALYS) and 1 million years of life lost per annum around the world. These figures place COPD as the fifth most significant global health problem, and COPD is expected to become the third leading cause of death in the first quarter of the next century Furthermore, COPD is currently the 12th leading cause of disability worldwide and is expected to be the fifth leading cause of disability by 2020.

Easton et al., 1986 conducted a study on 20 isocapnic hypoxic adults, the ventilator responses were recorded. The breathing pattern, respiratory drive and the minute ventilation were studied in these individuals. It was concluded that the minute ventilation may reduce; the partial pressure of carbon dioxide might increase when oxygen is given.

Studies related to pulmonary rehabilitation programme on health wellbeing among chronic obstructive pulmonary disease

Chithra RA and Janula Raju, 2017 conducted a study to evaluate the effectiveness of structured teaching programme regarding respiratory therapy among patients with respiratory disorders. Convenient sampling technique was used to select the samples. The samples consists of 40 patients with Respiratory disorders. The data obtained was analyzed and interpreted in terms of the objectives. The findings of the study revealed that there was a marked increase in the overall knowledge score of post-test than pre-test score which represents the effectiveness of structured teaching programme. The calculated t test value was found to be 17.24 which are highly significant at 0.01. Thus the structured teaching programme was effective in improving the knowledge of patients with respiratory disorders regarding respiratory therapy. On the basis of findings the investigator concluded that STP has improved the knowledge of the patients with respiratory disorders.

Savita Jindal et al., 2017 conducted a study on pulmonary rehabilitation improve the well-being of COPD patients experience at a tertiary care hospital in Ahmedabad, Gujarat, India. Fifty patients with COPD were included and were followed up at 8, 24, 48 and 96 weeks. Patients were taught exercises to strengthen the lower limb muscles, breathing exercise along with upper limb exercises. The outcomes recorded after 96 week of rehabilitation programme were as follows taught

exercises to strengthen the lower limb muscles, breathing exercises along with upper limb exercises. The outcomes recorded after 96th week of rehabilitation programme were as follows: dyspnea grade at (4.1±1.06 versus 1.6±0.6 with paired 't' test of 20.8328, p<0.0001), health-related quality-of-life (57.7±11.6 versus 38.7±10.6, 't' test 75.9631, p<0.0001), forced expiratory volume in one second (FEV1) (43.1±16.0 versus 40.3±16.0, 't' test19.1064, p<0.0001) FEV1/forced vital capacity (FVC) (0.86±0.11 versus 0.80±0.12, 't' test 17.0750, p<0.0001). Pulmonary rehabilitation reduces dyspnea, increases the exercise capacity and improves quality of- life, reduces frequent exacerbations, thus, improves overall well-being of patients with COPD, resulting in reduction of significant cost of health burden on society indirectly.

Eleonora Volpato et al., 2015 conducted a study on relaxation techniques for people with COPD. COPD people suffer from severe physical impairments, which often elicit significant psychological distress and impact their quality of life. This meta-analysis aimed to assess evidence from the scientific literature on the effects of relaxation techniques. We investigated 9 databases to select 25 RCTs. Studies included both inpatients and outpatients with COPD. Both respiratory and psychological outcomes were considered. Relaxation techniques showed a little positive effect on the value of the percentage of predicted FEV1 (d = 0.20; 95% Cl: 0.40–0.01) as well as a slight effect on levels of both the anxiety (d = 0.26; 95% Cl: 0.42–0.10) and depression (d = 0.33; 95% Cl: 0.53–0.13).The higher effect size was found in the quality of life value (d = 0.38; 95% Cl: 0.51–0.24).The assessed quality of the studies, based on the PEDro Scale, was generally medium/high. Relaxation training can have a moderate impact on both psychological well-being and respiratory function, resulting in noticeable improvements in both. Although higher quality

research is required, our results sustain the importance of relaxation techniques as a tool to manage COPD.

Kylie Hill et al., 2013, conduct a study the importance of components of pulmonary rehabilitation, other than exercise training, in COPD 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: facilitate smoking cessation, optimize pharmacotherapy,) assist with early identification and treatment of acute exacerbations, manage acute dyspnea, increase physical activity, improve body composition, promote mental health, facilitate advance care planning and establish social support networks. This article will describe these approaches, which may be incorporated within pulmonary rehabilitation, to optimize effective chronic disease self-management.

Swati Shah et al., 2013 conducted a study to investigate the muscle strength and endurance of upper limbs (UL) in chronic obstructive pulmonary disease (COPD). We undertook this study to measure and compare the skeletal muscle strength and endurance of UL in COPD patients and age matched healthy controls and to study the association between lung function parameters and UL muscle strength and endurance. Forty one COPD patients and 45 height and weight matched healthy subjects of the same age group were studied. UL skeletal muscle strength and endurance were measured using the hand grip dynamometer test. Forced vital capacity (FVC), forced expiratory volume in 1 sec (FEV1), forced expiratory flow during

25-75% FVC (FEF25-75%) and peak expiratory flow rate (PEFR) were measured. The handgrip muscle strength and endurance between the two groups were compared and correlations between FVC and FEV1 with muscle strength and endurance were analyzed. The mean handgrip strength and mean muscle endurance in COPD patients were significantly lesser than the normal subjects in both males and females (P<0.001). There was significant positive correlation between muscle strength and FVC in males (r2=0.32, P<0.05) and between muscle strength and FEV1 in females (r2=0.20, P<0.05). The study showed that the handgrip muscle strength decreases as the FVC and FEV1decrease in patients with COPD. Identifying those patients who have reduced strength and endurance will allow early interventions targeted at improving the quality of life of the patient.

Fulvio Braido et al, 2011 conducted a observational study COPD patient well-Being and its relationship with clinical and patient reported outcomes. 164 patients, with a mean forced expiratory volume in 1s of 58.5%, were recruited. 40% of them had a moderately/severely impaired well-being, not correlated with forced expiratory volume in 1 s and the Charlson index value but significantly with the Medical Research Council score (p=0.0001) that appeared to be the dominant factor. Patients with impaired well-being showed a different illness perception in terms of correct identification of symptoms, disease consequences, emotional representation and confidence in treatment compared with those having a positive well-being. The later presented a lower alexithymia prevalence and a better health status. In order to minimize the disease-negative effects on patients lives, assessment of well-being and its determine factors, as well as planning specific behavioral, education and therapeutic interventions seem to be relevant and useful.

Adrinee S Scott et al., 2010 conduct a study on success of pulmonary rehabilitation in patients with chronic obstructive pulmonary disease. A chart review was performed on patients with a clinical diagnosis of COPD who were referred for PR. Success was defined according to clinically important changes in St George's Respiratory Questionnaire scores and/or 6 min walk test distance. The majority of subjects were men (58%) with a mean (± SD) age of 69±10 years (n=177). Sixty-two per cent of participants had a successful outcome with PR, with proportionally more responders noting subjective improvement than objective improvement on a 6 min walk test (73% versus 51%). Subjects with poor baseline St George's Respiratory Questionnaire scores tended to improve the most (P=0.011 [ANOVA]). Successful participants had a greater forced expired volume in 1 s (1.1 L versus 0.9 L; P<0.05) and a lower BODE index (body mass index, airflow obstruction, dyspnea, and exercise capacity index) at baseline (9.6 versus 10.3; P<0.05). Success of PR was not correlated with age, sex, chronic hypoxemic respiratory failure or other chronic conditions. Successful participants were more likely to be compliant and to experience fewer adverse events (P≤0.001).Our study reinforced the belief that the majority of participants with COPD benefit from PR. Few baseline characteristics were predictive of success. Subjectively measured improvement occurred more frequently than objectively measured improvement and was greatest in those with the poorest baseline values.

Gosselink 2004 conducted a study the efficacy of breathing techniques aiming at improving symptoms of dyspnea and eliciting physiological effects is discussed in this paper. In patients with COPD, breathing techniques aim to relieve symptoms and ameliorate adverse physiological effects by: 1) increasing strength and endurance of the respiratory muscles; 2) optimizing the pattern of thoraco abdominal motion; and

3) reducing dynamic hyperinflation of the rib cage and improving gas exchange. Evidence exists to support the effectiveness of pursed lips breathing, forward leaning position, active expiration and inspiratory muscle training, but not for diaphragmatic breathing. Careful patient selection, proper and repeated instruction and control of the techniques, and assessment of the effects are necessary. Despite the evidence that breathing techniques are effective, several problems need to be resolved. The limited evidence for the transfer of the effects of breathing techniques during resting conditions to exercise conditions raises several questions.

CONCEPTUAL FRAMEWORK

The concept is a thought, idea or mental image framed in mind response to learning something new. A framework is a basic structure supporting anything. (Christenson.j .paula, 2002)

In this study the Researcher adopted modified J.W Kenny's open system Model" (1999) as a basis for conceptual framework. According to J.W Kenny all living systems are open and there in continuous exchange of matter, energy and information, various degree of interaction, with the environment from which the system receives input and gives back output in the form of matter, energy of information. System model consist of 3 phases (i.e.) Input, Throughput, Output.

INPUT

It is the first component of the system in which information, energy, or matter that enters a system. For a system to work well, input should contribute in achieving the purpose of the system.

In this present study, it is referred as " pre test" in which collect demographic and clinical variable as well as health well-being level in both the groups.

THROUGHPUT

A system transforms, creates and organizes the process known as throughput. This results in a registration of the orientation. The matter of energy and information continually processed through the system, known as throughput. Process is the use of input energy and information for the maintenance of homeostasis of the system.

In this present study, throughput refers to the process of implementing selected pulmonary rehabilitation programme explained to the experimental group.

OUTPUT

A system exports products in a process known as output. J.W Kenny noted after processing the input, system return to output (matter energy, information) to the environment. Change is a feature of a process that is observable and return as output which should different from that which is entered in the system.

In the present study, output refers that evaluating the health wellbeing level among patients with COPD.

FEEDBACK

If there is any inadequacy in output, the feedback emphasis to strengthen the input and throughput. In this study, feedback is essential for the individuals health wellbeing level.

According to theorist, information of environmental responses to the system, output is utilized by the system in adjustment, correction and accommodations to the interaction with the environment.

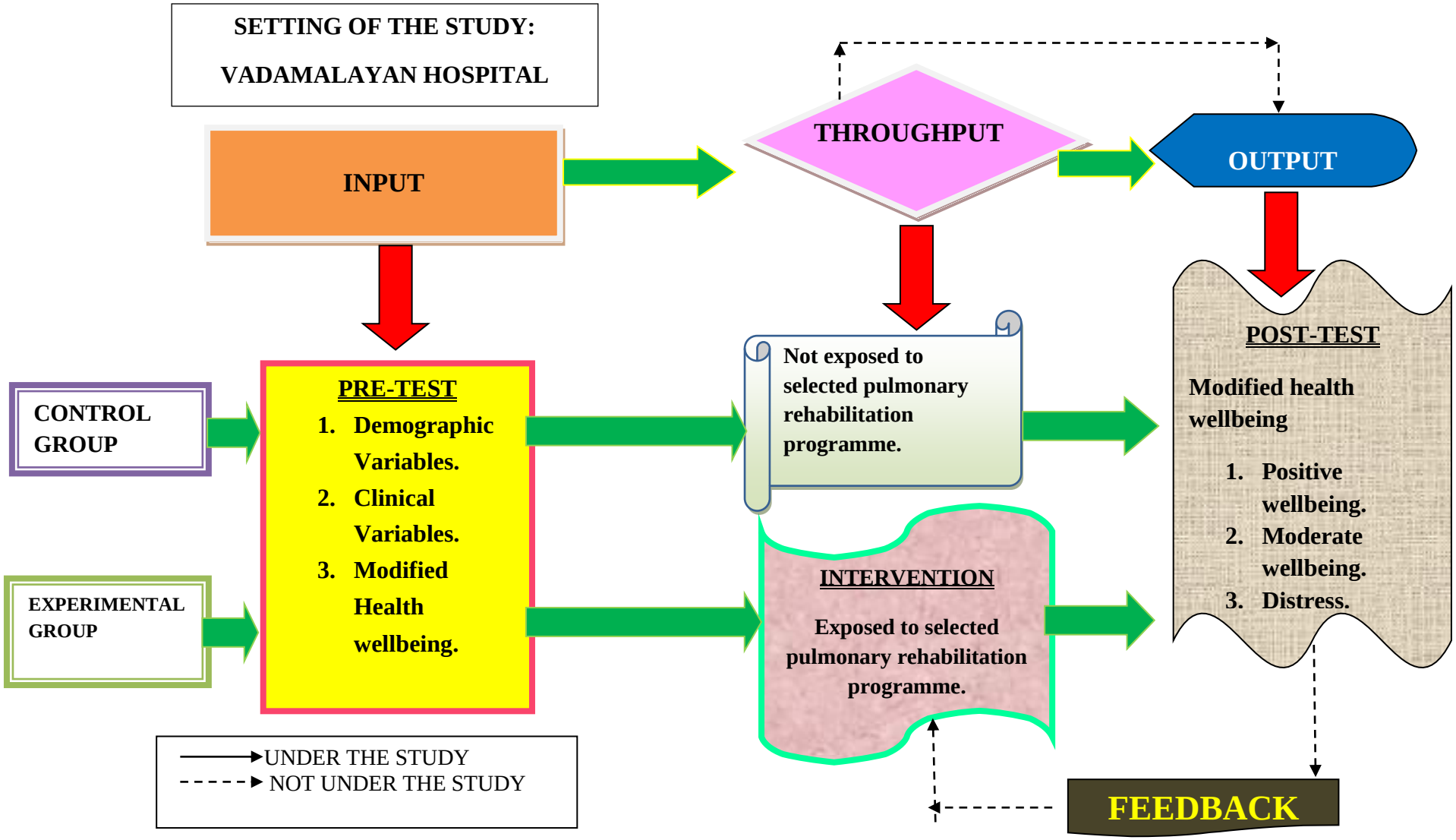


FIG. 2.1. CONCEPTUAL FRAMEWORK BASED ON MODIFIED J. W. KENNY'S OPEN SYSTEM

CHAPTER - III

METHODOLOGY

This chapter deals with the description of different steps undertaken by the researcher for this study. It includes the research approach, research design, setting of the study, population, sample, method of sampling, criteria for sample selection, sample size, development and description of the tool, validity and reliability of the tool, procedure for data collection, plan for data analysis, pilot study and ethical consideration.

RESEARCH APPROACH

In order to fulfill the objectives of this study quantitative approach was adopted to evaluate the efficacy of selected pulmonary rehabilitation programme on health well-being among patients with COPD at Vadamalayan Hospital in Madurai.

RESEARCH DESIGN

Quasi experimental Pre- test Post- test only control group design was adopted to evaluate the efficacy of selected pulmonary rehabilitation programme among patients with COPD. It is assessed by the notifications as follows:

GROUP	PRE TEST	MANIPULATION	POST-TEST
Control group	O_1	-	O_2
Experimental group	O_1	X	O_2

Keys:

C- Control group

E- Experimental group

X- Intervention- Selected pulmonary rehabilitation programme. (Respiratory muscle exercise, Muscle strengthening exercise and Smoking cessation).

O1- Pre score in the Control and Experimental group.

O2- Post score in the Control and Experimental group.

SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

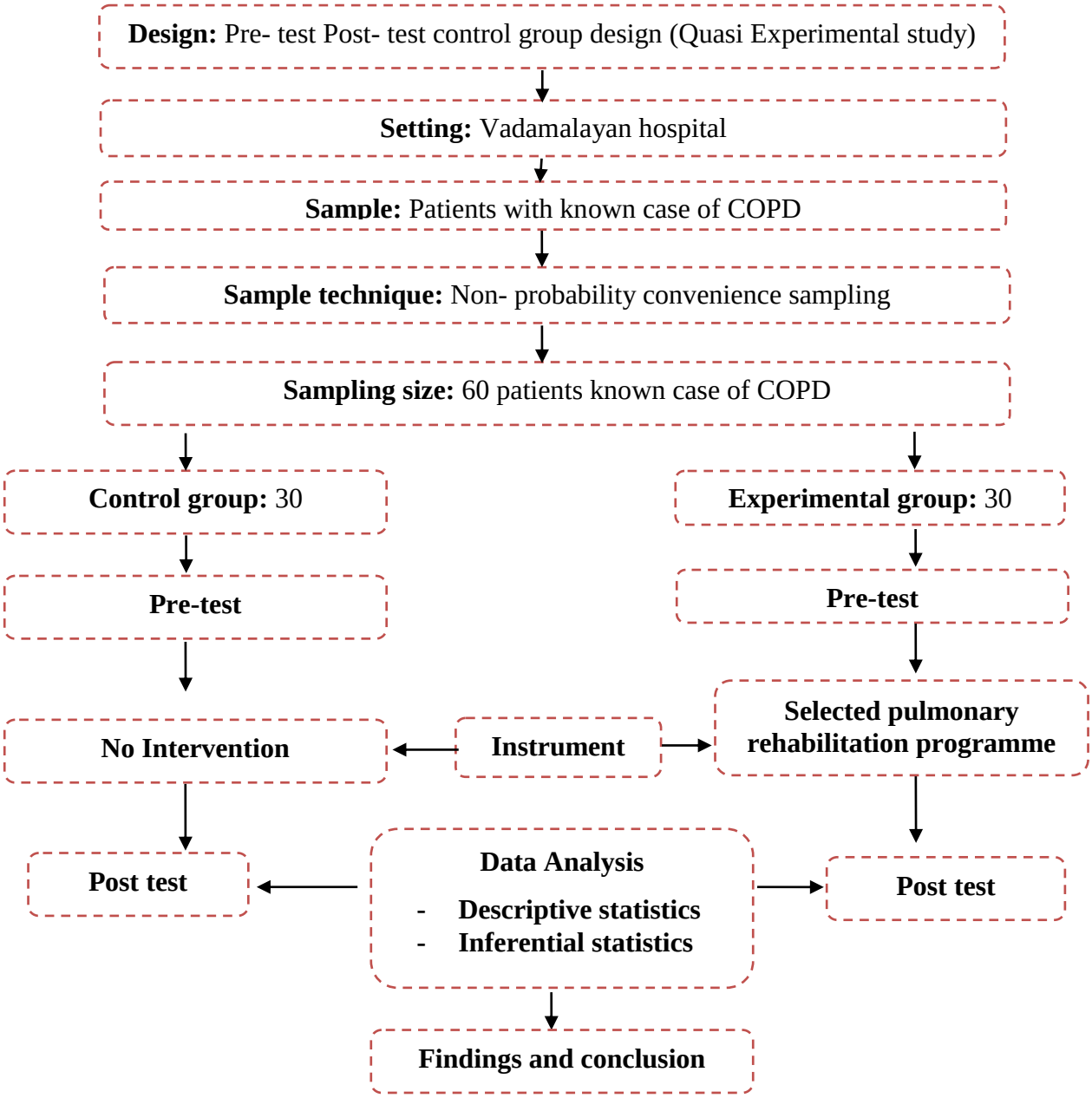


Fig.No.3.1 SCHEMATIC REPRESENTATION OF RESEARCH DESIGN

VARIABLES

The present study has the following variables:

- **Independent variable** – Selected pulmonary rehabilitation programme.
- **Dependent variable** – Health wellbeing among patients with COPD.

SETTING OF THE STUDY

The setting of the study was conducted at Vadamalayan Hospital in Madurai, which was 13 kilometers away from our college C. S. I. Jeyaraj Annapackiam College of Nursing. It was a 250 bedded multi-specialty hospital with an average of 15 patients in the medical ward per week. It has health facilities such as emergency unit, cardio thoracic unit, intensive care unit, post operative unit, pediatric intensive care unit, general male and female unit, oncology unit and dialysis unit.

POPULATION

The target population: All COPD patients who were admitted at various Hospitals in Madurai.

The accessible population: Patients with COPD at Vadamalayan Hospital in Madurai.

SAMPLE

The sample was the patients admitted with COPD who fulfills the inclusion criteria at Vadamalayan Hospital in Madurai.

SAMPLE SIZE

In this present study, the samples were patients admitted with COPD was selected at Vadamalayan Hospital in Madurai. The sample comprised of 60 COPD patients among which 30 people were selected under the category of control group

and remaining 30 people were selected under the category of in the experimental group.

SAMPLING TECHNIQUE

Samples for this study were selected through non probability of convenience sampling technique at Vadamalayan Hospital in Madurai. Samples were selected based on the sampling criteria.

CRITERIA FOR SAMPLE SELECTION

Inclusion criteria

Patients who

- have breathing difficulty without exacerbation.
- have saturation level >90%
- have limitation of daily activities.
- were between 21 to 60 years of age.
- were conscious and well oriented.
- were able to read Tamil or English.
- were willing to participate in this study.

Exclusion criteria

Patients who

- have breathing difficulty with exacerbation.
- have acute breathing difficulty.
- were able to perform regular breathing exercises or yoga.
- underwent any surgeries.(Valvular surgeries)
- have uncontrolled heart failure, severe lower limb arthritis

- have neurologic disorder
- were not willing to participate.
- were discomfort with the upper and lower extremities.
- have saturation level < 90%.

DESCRIPTION OF THE TOOL

The structured tool developed by the researcher with the guidance of experts opinions, various resources and review of literature. The tools consists of 2 parts:

PART I

Section –A: Structured tool to evoke socio demographic data of patients with COPD.

It consists of demographic variables of the patients include Age in years, Gender, Religion, Educational status, Occupation, Income and Type of family.

Section- B: Structured tool to obtain clinical data of patients with COPD.

It consists of clinical information of patients include Smoking history, Duration of respiratory illness in years, Number of previous hospitalization due to acute exacerbation of COPD, Reason for admission, Season of exacerbation, Triggers of exacerbation, Sleep disturbance due to, Comorbidity and Treatment modalities.

PART II

- Modified health wellbeing scale consists of the following components:

  I. Physiological health wellbeing – have 10 items with the response of 1- all the time, 2- some time and 3- not at all.

  II. Physical health wellbeing – have 5 items with the response of 1- much difficulty, 2- some difficulty and 3-no difficulty.

III. Emotional health wellbeing – have 4 items with the response of 1- much difficulty, 2- some difficulty and 3-no difficulty.

IV. Social health wellbeing – have 4 items with the response of 1- much difficulty, 2- some difficulty and 3-no difficulty.

V. Spiritual health wellbeing – have 2 items with the response of 1- much difficulty, 2- some difficulty and 3-no difficulty.

SCORING PROCEDURE

The efficacy of selected pulmonary rehabilitation programme on health wellbeing was measured by the following tool:

1. Modified Health Wellbeing tool- it consists of 25 questions allotted in the modified health wellbeing scale. Each question has 3 response and each response were given maximum score of 3 and minimum score 1. Total score of 75 was converted to 100%. The score was ranged as follows:

Health Wellbeing score	**Classification**
1-33%	Distress.
34-67%	Moderate wellbeing.
68-100%	Positive wellbeing.

VALIDITY AND RELIABILITY OF THE TOOL

VALIDITY

Validity of the tool had been determined by experts opinion from different fields. Experts evaluated the tool for its clarity, appropriateness, adequacy relevance and completeness. Few modifications and suggestions were made as per comments

given by experts. The instruments was refined and finalized after establishing the validity. Tool was developed in English and checked for language validity.

RELIABILITY

The reliability of the tool was done by test and retest method. The reliability of the tool was computed by Spearman coefficient – correlation method r = 0.80 was high positive. The modified structured questionnaire was found to be reliable.

PILOT STUDY

Pilot study was conducted at Velammal Hospital in Madurai. It was conducted among 10 COPD patients after obtaining permission from the concerned authorities. Out of 10 samples, each 5 samples in control and experimental group were taken for study. Pre-test was carried out for both groups regarding health well-being by using modified structured health well-being tools. On the same day after pre-test, patients in the experimental group were given selected pulmonary rehabilitation programme. Post- test carried out after 5 days by using the same health well-being tools for both groups. The study was found to be feasible with regard to time, availability of subjects and cooperation of samples. The pilot study revealed that the study was feasible. Data was analyzed to find out the suitability of statistics and found to be significant.

METHOD OF DATA COLLECTION

The data about the phenomenon under the study was collected from the adult clients who have diagnosed as COPD in medical unit of Vadamalayan Hospital, Madurai. The period of data collection was 6 weeks. The researcher got permission from the administrative authorities after a written requisition.

The samples were recognized based on the inclusion criteria and picked up with non-probability convenient sampling technique. The sample selected were 60, of which 30 samples were allotted in the control group and remaining 30 samples were in the experimental group. The samples were selected after the diagnosis. The researcher maintained a good rapport with the samples and explained the purpose of the study and obtained oral/verbal consent before proceeding with the rehabilitation programme. Following week rehabilitation was given only to experimental group in two times a day and thrice a week.

Data collection process

Period	**Task**	
	Control group	**Experimental group**
Day 1	**Step 1-** Pre test	**Step 1-** • Pre test • Exposure to selected pulmonary rehabilitation programme.
Day 5	**Step 2-** Post test.	**Step 2-** Post test.

DATA COLLECTION PROCESS

The data collection was done separately in the control and experimental groups from the Vadamalayan Hospital. The total data collection process was carried out in two phases as follows:

(1)First Phase

It consists of conduction of pre-test, which was performed as follows:

First phase of data collection process.

GROUP	FIRST PHASE (Pre-test)	
	DAY-1	
CONTROL	SESSION 1	NIL
EXPERIMENTAL	SESSION 1	SESSION 3

- **1ST SESSION: ORIENTATION**

The researcher oriented about the purpose of the study to the nursing staff and the patients in the control and experimental groups. A pre-test gathered by self-administration of structured questionnaire on demographic variables and clinical variables to each sample in the control and experimental groups. The patients were categorized according to the inclusion criteria as control and experimental group simultaneously and the pre test was done.

- **2ND SESSION: EXPOSURE TO SELECTED PULMONARY REHABLITATION PROGRAMME.**

The patients who were diagnosed with COPD in the medical ward were selected and the selected pulmonary rehabilitation programme was given to them as the following:

EXERCISE SCHEDULE

S.NO	TYPE OF EXERCISE	DURATION IN MINUTES	NO. OF TIMES
I)	**RESPIRATORY MUSCLE EXERCISE**		
1.	Pursed lip breathing.	2	4
2.	Diaphragmatic breathing.	2	2
3.	Deep breathing.	2	4
II)	**MUSCLE STRENGTHENING EXERCISE**		
1.	Front thigh stretch.	2	2
2.	Shoulder stretch.	2	2
3.	Palm down forearm stretch.	2	2
4.	Palm up forearm stretch.	2	2
5.	Neck stretch.	2	2
6.	Leg lift.	2	4
7.	Knee lift.	2	4
8.	Knee bend.	2	4
9.	Heel lift.	2	4
10.	Leg extension	2	4

Total time for all exercises including relaxation phase – 30 minutes. The topic was carefully chosen based on patients existing health condition.

(2) Second Phase

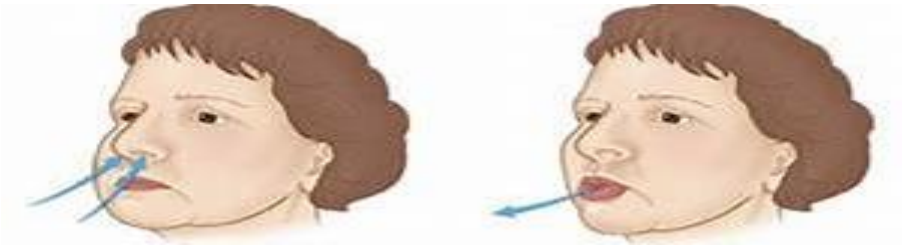
In this present study, the second phase was the post test of the both control group and experimental group. It was done on 5^{th} day. In order to consider ethical rights, the control group was also taught about selected pulmonary rehabilitation programme at the end of their post test. Both the groups are known about the importance of pulmonary rehabilitation at the end of the post test.

The patients were then instructed to do the following:

I. **RESPIRATORY MUSCLE EXERCISE**

1) Pursed lip breathing

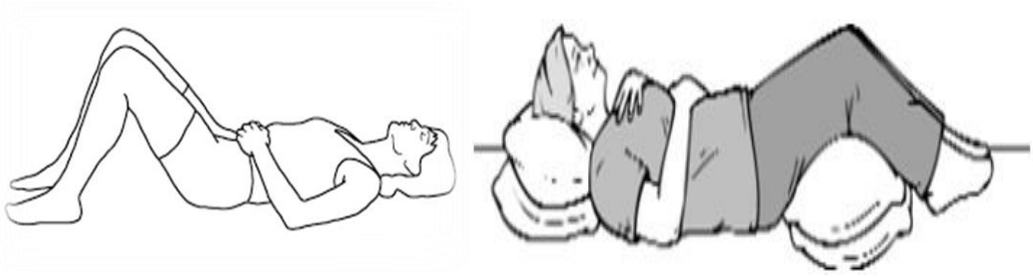
- ✓ Sit upright and relax the neck and shoulder muscles.
- ✓ Breathin normal for 2 seconds through the nose, keeping the mouth closed.
- ✓ Breatheout for 4 seconds through pursed lips as like whistling.



STEP-1 STEP-2

2) Diaphragmatic exercise

- ✓ Lie on your back on a flat surface with knees bent. Put pillows under your knees & head for support.
- ✓ Place one hand on your tummy. Place the other hand on your chest.
- ✓ Inhale deeply through the nose for a count of 3.
- ✓ Tighten the stomach muscles and exhale for a count of 6 through slightly pursed lips.
- ✓ Repeat it for 2 minutes.



STEP- 1 **STEP-2**

STEP- 3

STEP- 4

3) Deep breathing exercise

- ✓ Sharply inhale through nose & keep your mouth closed.
- ✓ Hold the breath for 2-3 seconds, slowly exhaling through your mouth.
- ✓ Repeat it for 2 minutes on each nostril.

STEP- 1

STEP- 2

II. MUSCLE STRENGTHENING EXERCISE:-

1) Front thigh stretch exercise

- ✓ Stand a little way from wall and place left hand on wall for support.
- ✓ Standing straight, grasp top of left foot with right hand.
- ✓ Pull heel toward buttock.
- ✓ Hold it 10 to 20 seconds.
- ✓ Repeat the same to next thigh for 2 minutes.

STEP- 1

STEP- 2

STEP- 3

2) Shoulder stretch exercise

- ✓ Sit or stand with your back straight and one hand placed on the outside of the elbow of the opposite arm.
- ✓ Pull the elbow gently across the chest.
- ✓ A stretch in the shoulder of the arm being pulled.
- ✓ Hold it for 30 to 60 seconds.
- ✓ Repeat 3 times on next arm for 2 minutes.

STEP- 1

STEP- 2

3) Palm down forearm stretch exercise

- ✓ Sit or stand with your back straight and one arm extended in front of you with the palm facing down.
- ✓ Gently push down the back of the extended hand.
- ✓ Feel a stretch in the forearm.
- ✓ Hold it for 30-60 seconds.
- ✓ Stretch the other palm.
- ✓ Repeat it on next hand for 2 minutes.

STEP – 1

STEP- 2

4) Palm up forearm stretch exercise

- ✓ Sit or stand with your back straight and one arm extended in front of you with the palm facing up.
- ✓ With the other hand push down on the fingers of the extended hand.
- ✓ Feel a stretch in the forearm.
- ✓ Hold it for 30-60 seconds.
- ✓ Stretch the next palm and repeat it for 2 minutes.

STEP-1

STEP-2

STEP-3

5) Neck stretch exercise

- ✓ Sit or stand with your back straight and your feet flat on the floor.
- ✓ Tilt your head to one side.
- ✓ Push head with one hand and you should feel a stretch in the side of the neck opposite the tilt.
- ✓ Hold it for 30-60 seconds.
- ✓ Stretch next side and repeat it for 2 times.

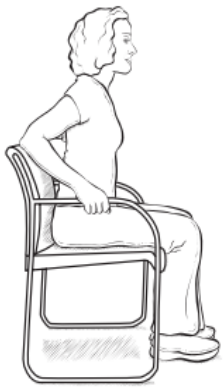
STEP- 1

STEP- 2 & 3

6) Leg extension exercise

- ✓ Sit straight.
- ✓ Your knees forming a 90 degree angle to the floor and your hands resting comfortably on your knees.
- ✓ Lean slightly forward and stand up from the chair to a straight position with your hands at the side of your body.
- ✓ Hold it 10-15 seconds.
- ✓ Return to the original position.
- ✓ Repeat it 4 times on each legs for 2 minutes.

STEP 1

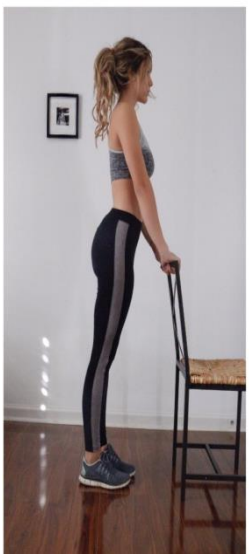


STEP- 2

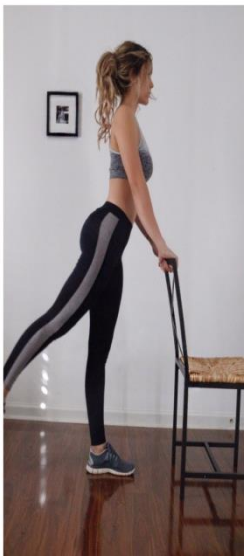
STEP- 3

7) Leg lift exercise

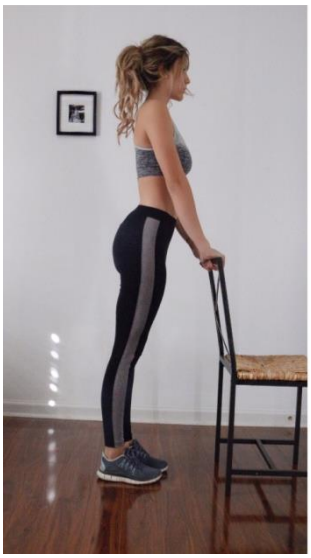
- ✓ Stand with your back straight resting your hands on a wall or on the back of a chair for balance.
- ✓ Give one leg a small slow kick backwards.
- ✓ Return the leg to its original position.
- ✓ Repeat it 4 times on each legs for 2 minutes.



STEP- 1



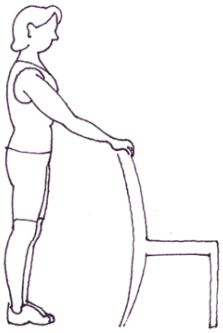
STEP- 2



STEP- 3

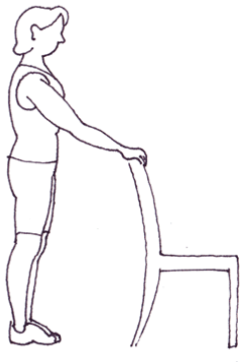
8) Knee lift exercise-

- ✓ Stand with your back straight and your hands by your sides, or stand with one hand on a wall or a chair for balance.
- ✓ Lift one leg so the knee forms a 90 degree angle.
- ✓ Return the leg to its original position.
- ✓ Repeat it 4 times on each legs for 2 minutes.



STEP- 1

STEP- 2



STEP-3

9) Knee bend exercise

- ✓ Stand with your back straight resting your hands on a wall or on the back of a chair for balance.
- ✓ Lift your foot out behind you so your lower leg is parallel with the floor.
- ✓ Return the foot to its original position.
- ✓ Repeat it 4 times on each legs for 2 minutes.

STEP- 1

STEP- 2

STEP- 3

10) Heel lift

- ✓ Sit with your back straight, your hands resting comfortably on your knees and your feet felt on the floor.
- ✓ Raise your heels.
- ✓ Return the foot to its original position.
- ✓ Repeat it 4 times on each legs for 2 minutes.

STEP 1

STEP 2

STEP 3

PLAN FOR DATA ANALYSIS

Data analysis helps the researcher to organize, summarize, evaluate, interpret and communicate the numerical facts. For the present study the collected data from the participants were grouped and analyzed using both descriptive and inferential statistical method. Statistical analysis was done by manually by using statistical formula.

Study plan to carry out the following analysis:

- Gathered all the information obtained from the study.
- Organization of data in master sheet/computer.
- Demographic variables analyzed in terms of frequency and percentage.
- Pre-test and post-test health well-being outcome analyzed by mean and standard deviation.
- The paired 't' test was used to find the difference in mean scores before and after selected pulmonary rehabilitation programme both within the control and experimental groups.
- The unpaired 't' test was used to find the difference in mean scores before and after selected pulmonary rehabilitation programme between the control and experimental groups.

ETHICAL CONSIDERATION

Beneficence

The right to freedom from harm

- Though this study is an experimental design, the interventions used were not of harm to the patients.

The right to protection from exploitation

- Patients information was kept confidential.

Respect for Human Dignity

The right to self- determination

- Research proposal was approved by specialty HOD and other senior professors.
- Ethical clearance was obtained from the ethical committee.
- Prior permission was sought from higher authorities of institution before commencing the study.
- Oral consent was formally obtained prior to collection of data from the participants and the confidentiality of their responses was assured.

The right to full disclosure

- Participants were advised of the voluntary nature of the study and given the option to withdraw from the study at any stage without being subjected to any penalty.
- Participants were not required to identify themselves by name and have not been identified during the analysis or during discussion of the results and conclusions.
- Full explanation of the purpose of the research was given and the researcher was available to provide information and support as needed,

Justice

The right to fair treatment

- Based on ethical consideration, intervention was also given to control group at the end of data collection procedure.

The right to privacy

- And they were informed data collected from questionnaire, then stored in computer discs for final analysis would be kept in a secure place and shredded after the study had been completed.

CHAPTER- IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the data analysis and interpretation of the present study involve completion, editing, coding, classification and presentation of the data for statistical calculation in order to draw inferences and conclusions. Using descriptive and inferential statistics, the study objectives were computed.

The data collected from the samples were organized, analyzed and tabulated and interpreted to evaluate the efficacy of selected pulmonary rehabilitation programme on health well-being are framed based on their objectives:

1. To assess the pre test and post test health wellbeing among patients with COPD in the control and experimental group.
2. To determine the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD by comparing the pre test and post test scores within and between the control and experimental group.
3. To associate the health wellbeing of the patients with COPD with their both demographic and clinical variables.

The findings were presented in the form of tables and diagrams under the following series:

Section A: Description of demographic and clinical variables among patients with COPD in the control and experimental group.

1. Frequency and percentage wise distribution of samples based on their demographic variables in the control and experimental group.

2. Frequency and percentage wise distribution of samples based on their clinical variables in the control and experimental group.

Section B: Description on health well-being outcome among patients with COPD in control and experimental group.

1. Comparison of pre test and post test mean score of health wellbeing outcome of patients with COPD in control group.
2. Comparison of pre test and post test mean score of health wellbeing outcome of patients with COPD in experimental group.
3. Paired 't' test showing the comparison of pre test and post test score of health wellbeing outcome among patients with COPD within the control group.
4. Paired 't' test showing the comparison of mean pre test and post test score of health wellbeing outcome among patients with COPD within the experimental group.
5. Unpaired 't' test showing the comparison of post test score of health wellbeing among patients with COPD between the control and experimental groups.

Section C: Data on Association in the pre test level of health wellbeing among patients with COPD.

1. Association between pre test health wellbeing and demographic as well as clinical variables among patients with COPD in the control group.
2. Association between pre test health wellbeing and demographic as well as clinical variables among patients with COPD in the experimental group.

FIG.4.1. Frequency and percentage wise distribution of samples based on their demographic variables in the control and experimental group.

FIG.4.1.1 DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR AGE IN YEARS.

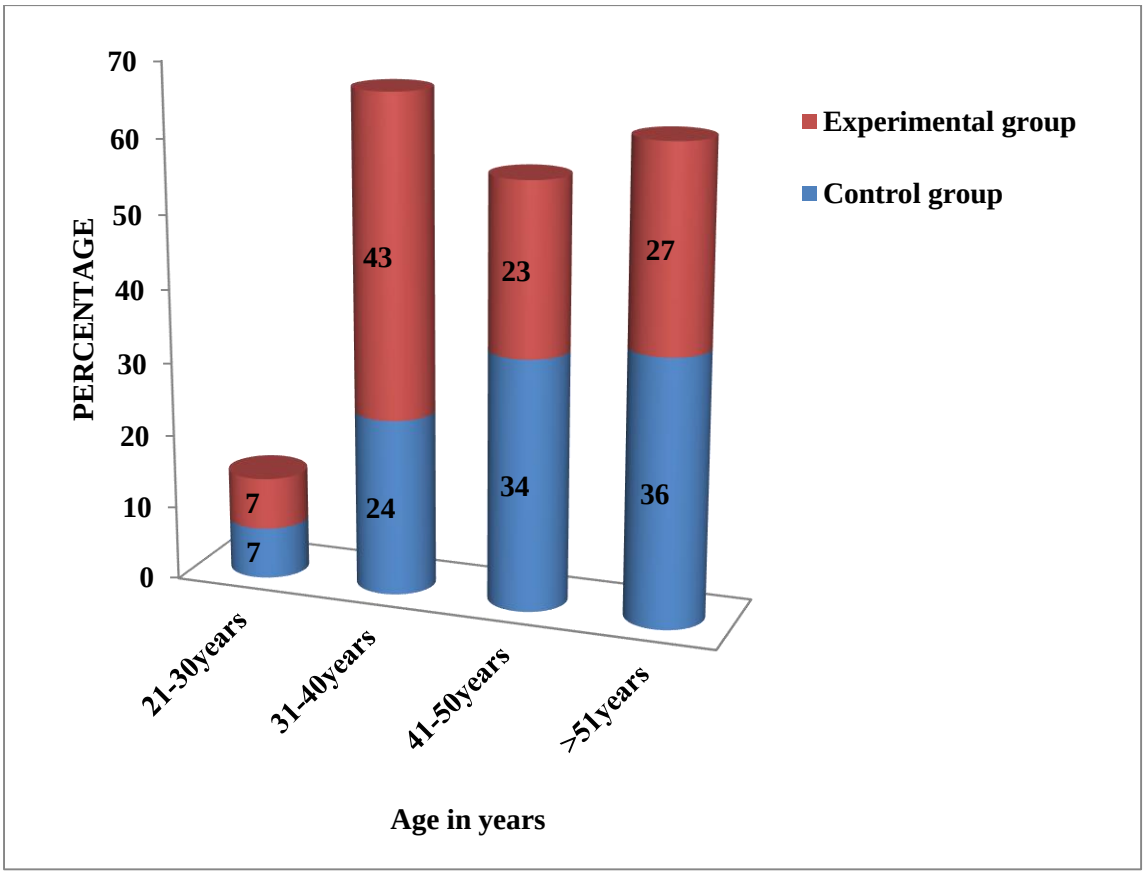


Fig.4.1.1. In regard to age in years, majority of the samples 11 (36%) were >51 years and 13(43%) were 31- 40 years in the control and experimental group.

FIG.4.1.2 DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR GENDER.

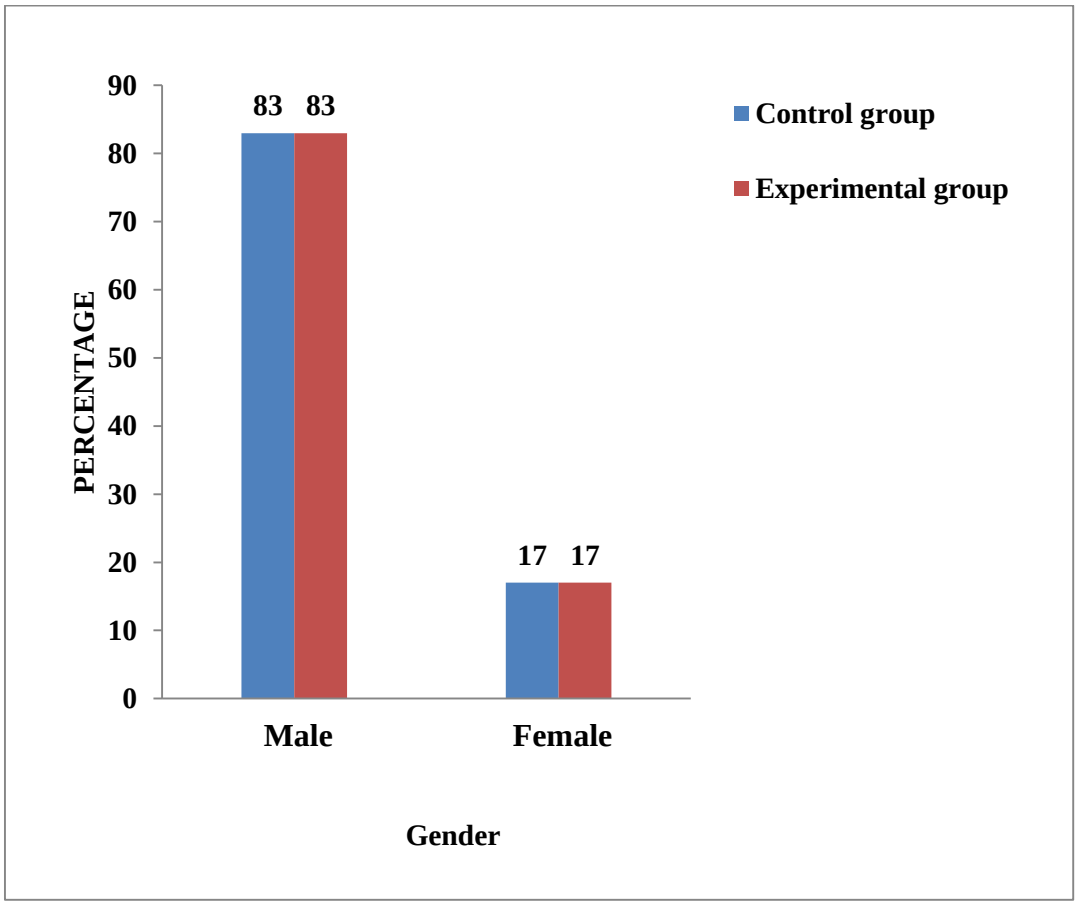


Fig.4.1.2. In regard to gender, majority of the samples 25(83%) and 25(83%) were males in the control and experimental group respectively.

FIG.4.1.3 DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR RELIGION.

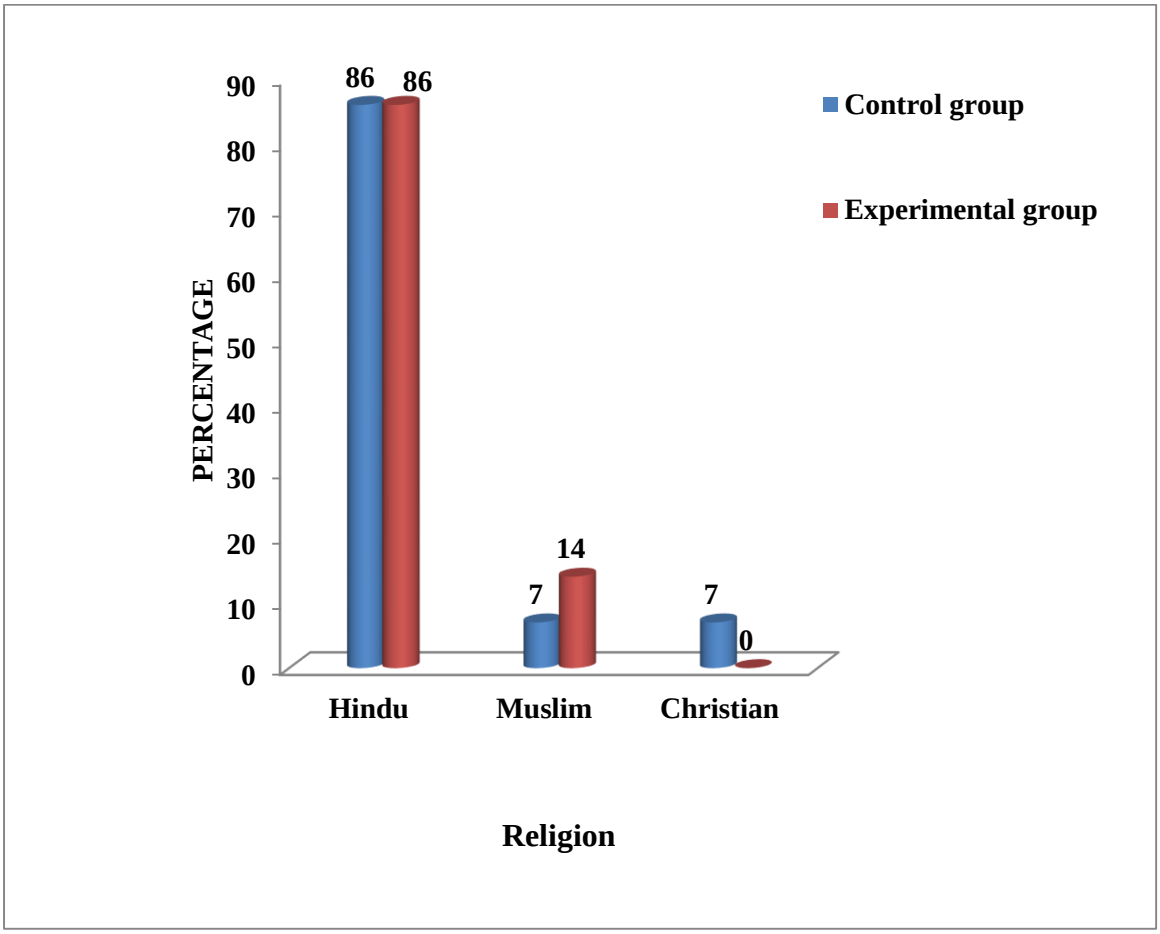


Fig.4.1.3. Regarding religion, among 60 samples majority of them 26(86%) and 26(86%) belongs to Hindu religion in the control and experimental group respectively.

FIG.4.1.4 DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR EDUCATIONAL STATUS.

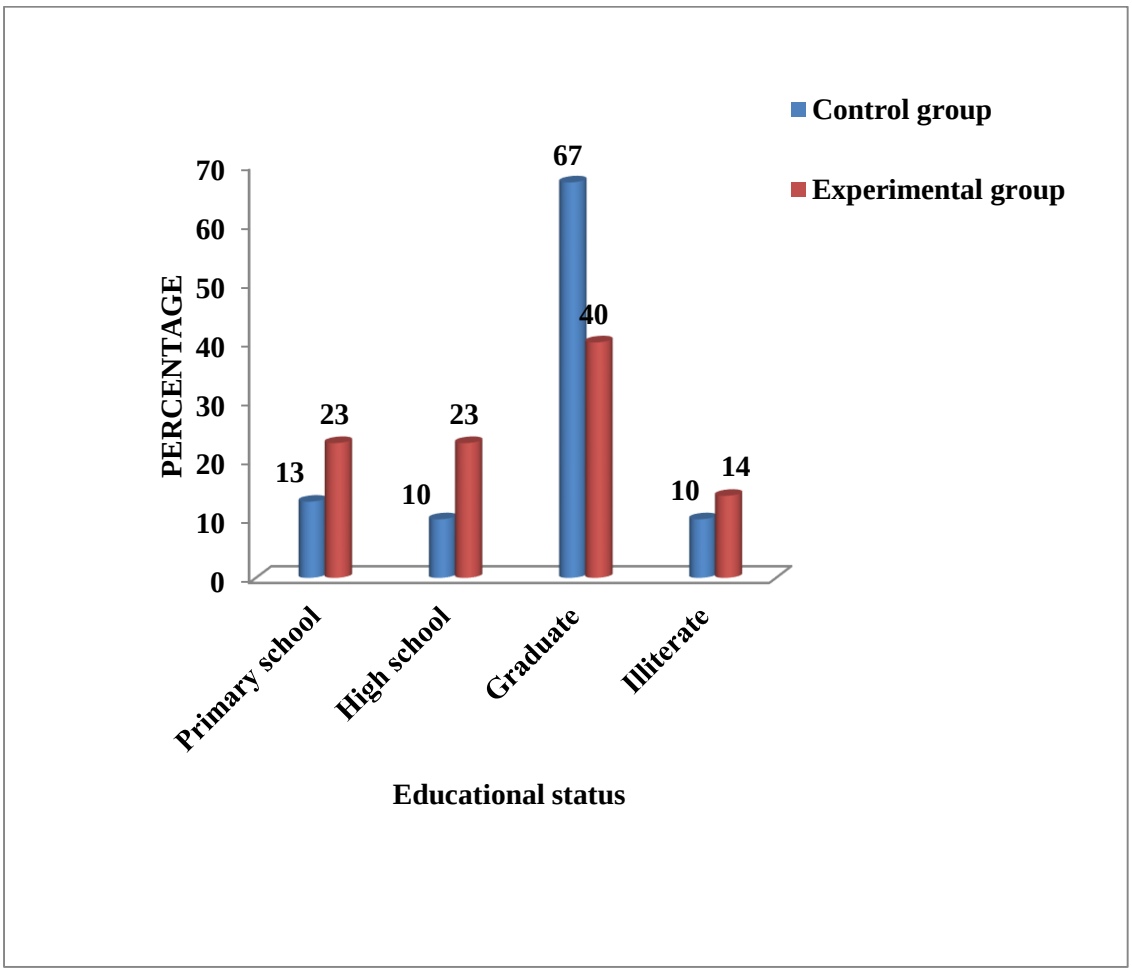


Fig.4.1.4. In regard to educational status, majority 20(67%) and 12(40%) of the samples were graduates in the control and experimental group respectively.

FIG.4.1.5 DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR OCCUPATION.

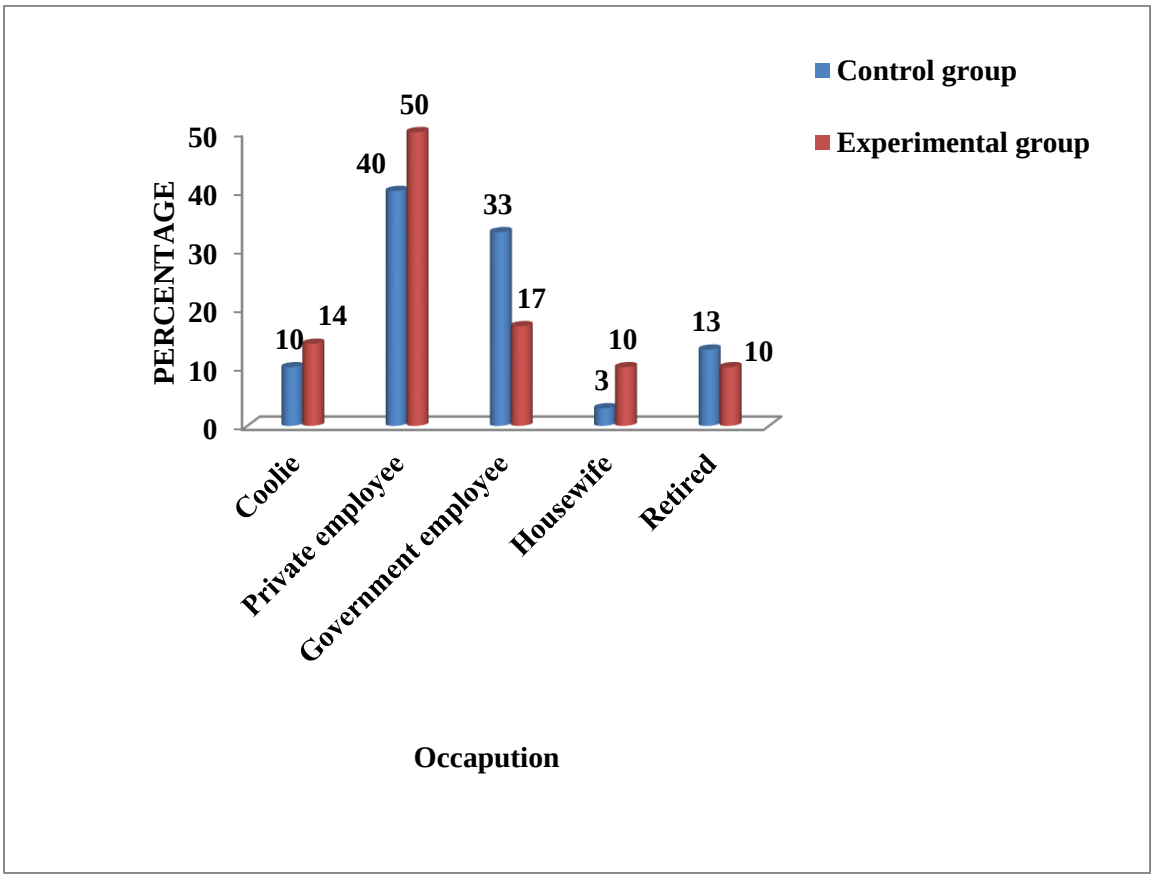


Fig.4.1.5. In regard to occupational status, majority 12(40%) and 15(50%) of the samples were private employees in the control and experimental group respectively.

FIG.4.1.6. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR INCOME.

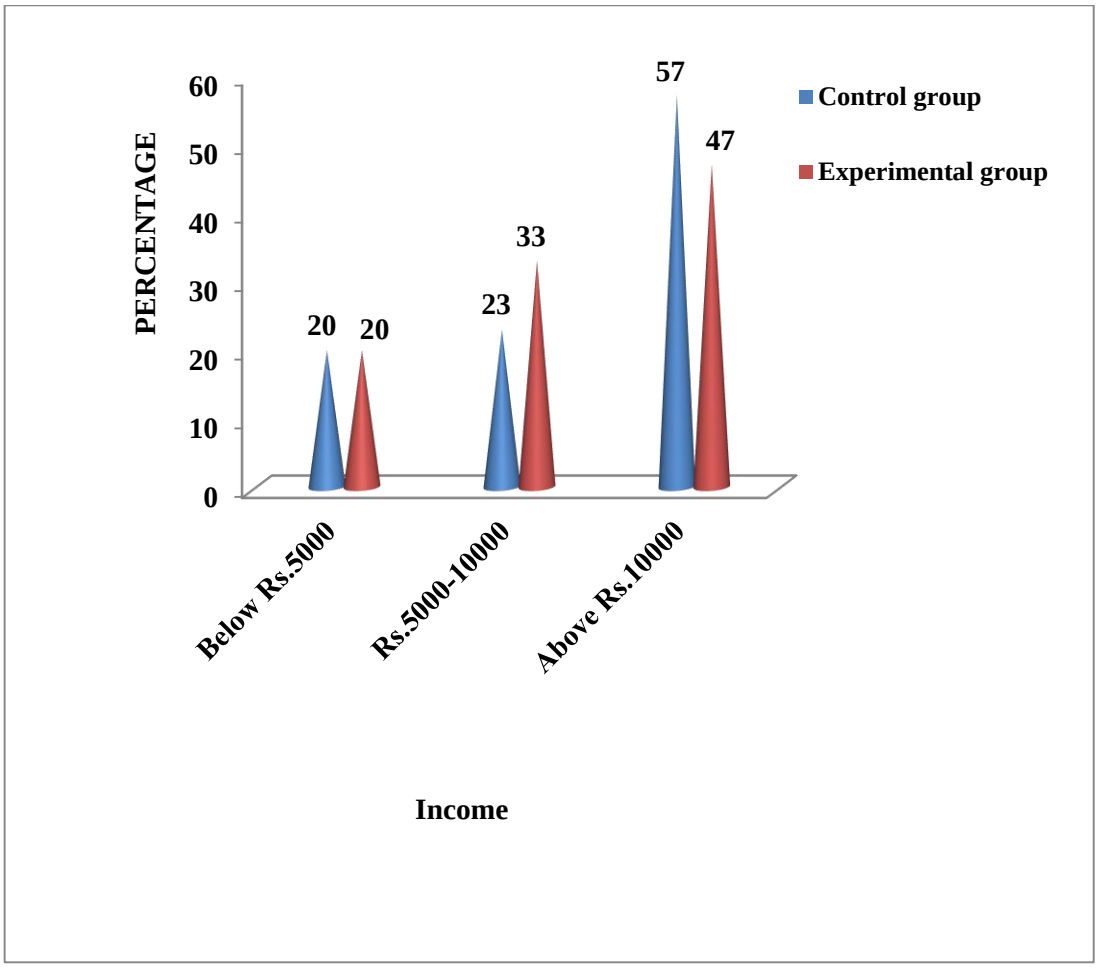


Fig.4.1.6. In regard to income, majority 17(57%) and 14(47%) of the samples were under above Rs.10000/- per month in the control and in the experimental group respectively.

FIG.4.1.7. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR TYPE OF FAMILY.

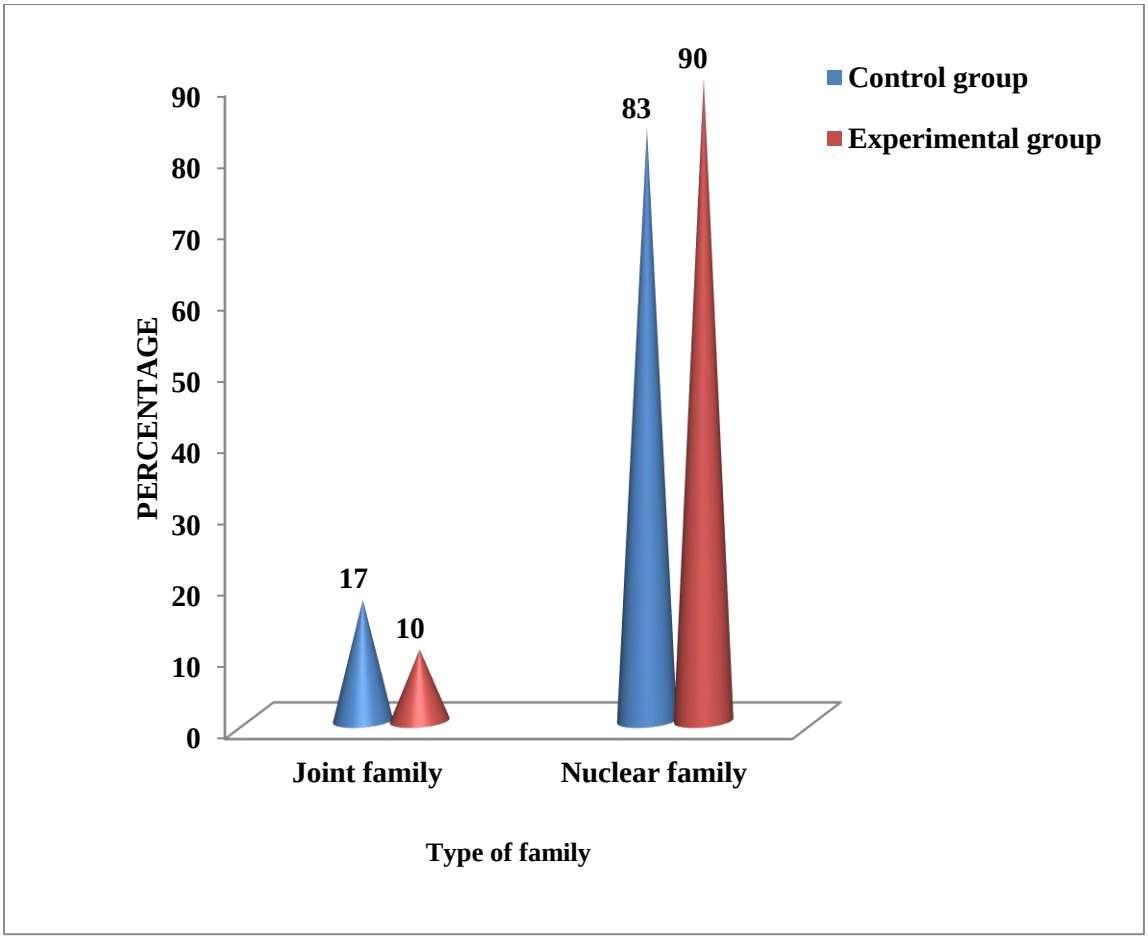


Fig.4.1.7. In regard to type of family, majority 25(83%) and 27(90%) of the samples were belongs to nuclear family in the control and experimental group respectively.

Figure 4.2. Frequency and percentage wise distribution of samples based on their clinical variables in the control and experimental group.

FIG.4.2.1. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR TYPE OF SMOKING HISTORY.

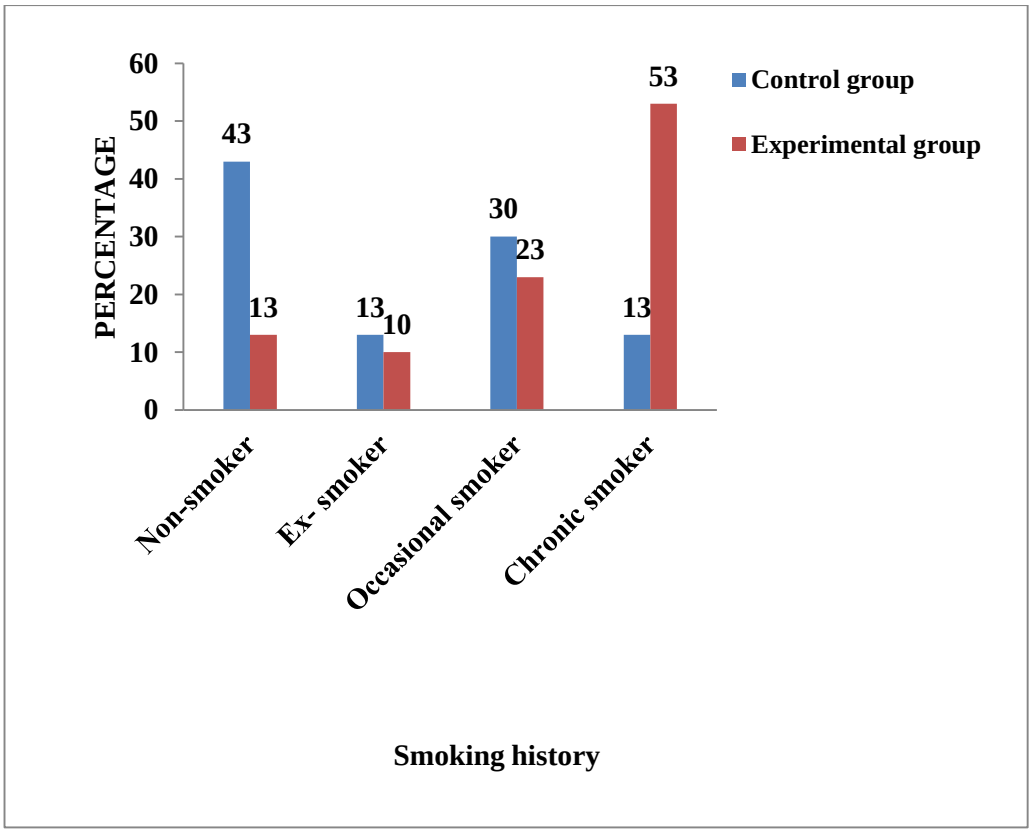


Fig.4.2.1. In regard to smoking history, majority 13(43%) of the samples were "non-smoker" in the control group where as majority 16(53%) of the samples were the "chronic smoker" in experimental group.

FIG.4.2.2. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR DURATION OF RESPIRATORY ILLNESS IN YEARS.

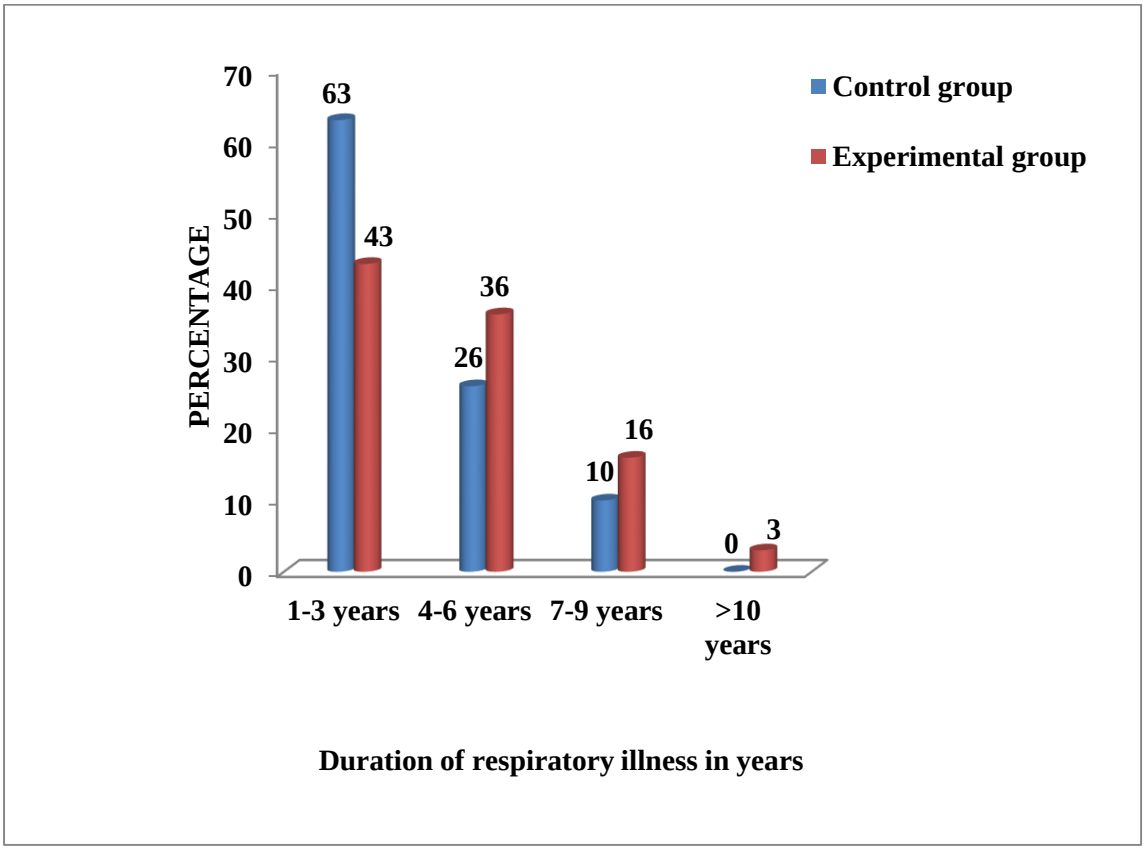


Fig.4.2.2.Regarding duration of illness, majority of the samples 19(63%) and 13(43%) were suffering between 1-3 years in the control and experimental group respectively.

FIG.4.2.3. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR NUMBER OF HOSPITALIZATION DUE TO ACUTE EXACERBATION

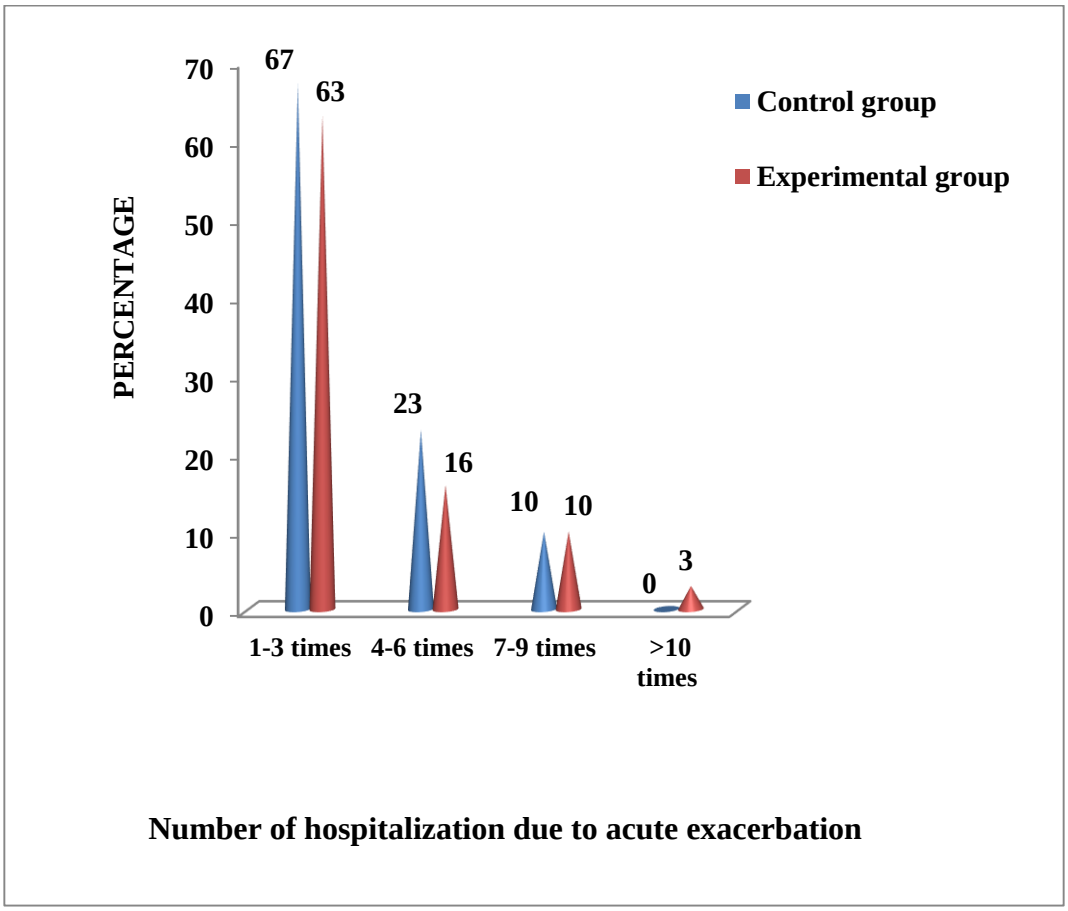


Fig.4.2.3. Regarding the number of hospitalization due to acute exacerbation, majority of the samples 20(67%) and 19(63%) were admitted with acute exacerbation for 1-3 times both in the control and experimental group respectively.

FIG.4.2.4. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR REASON FOR ADMISSION.

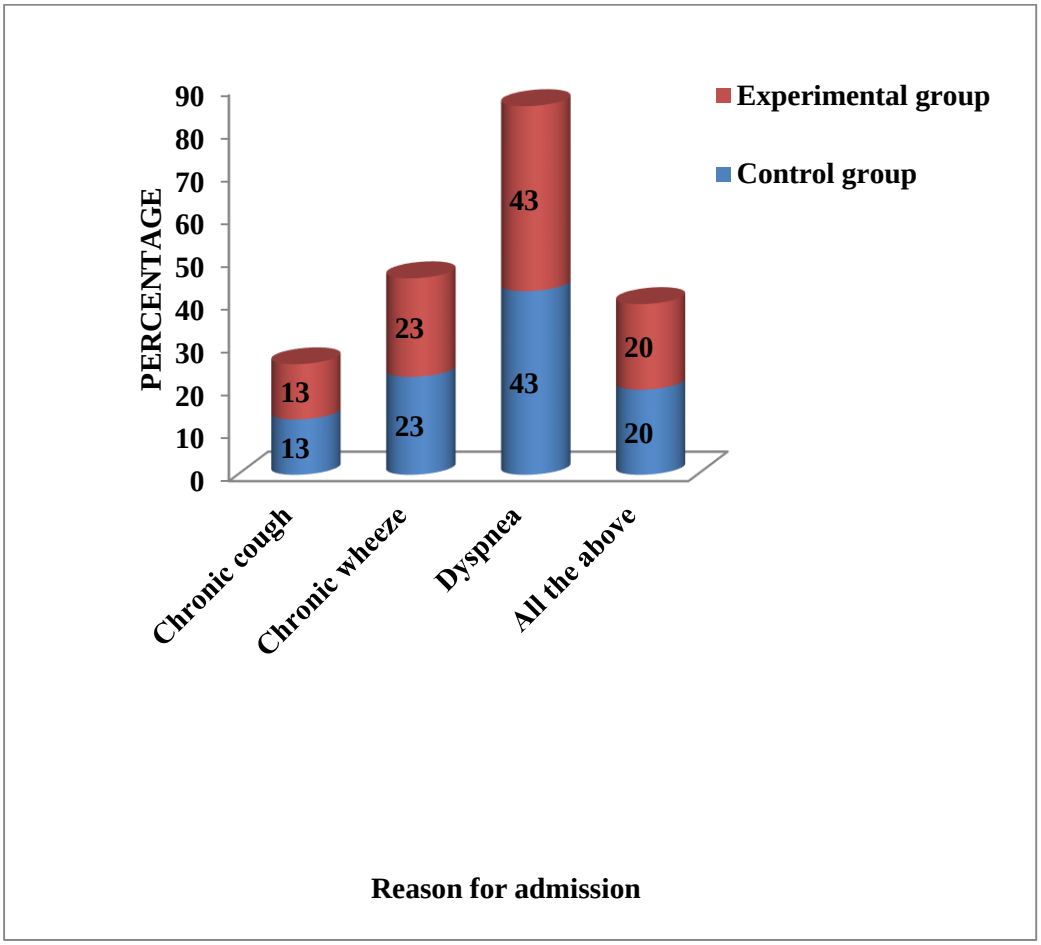


Fig.4.2.4. Regarding reason for admission, majority of the samples 13(43%) and 13(43%) were admitted with the complaints of dyspnea in the control and experimental group respectively.

FIG.4.2.5. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR SEASON OF EXACERBATION.

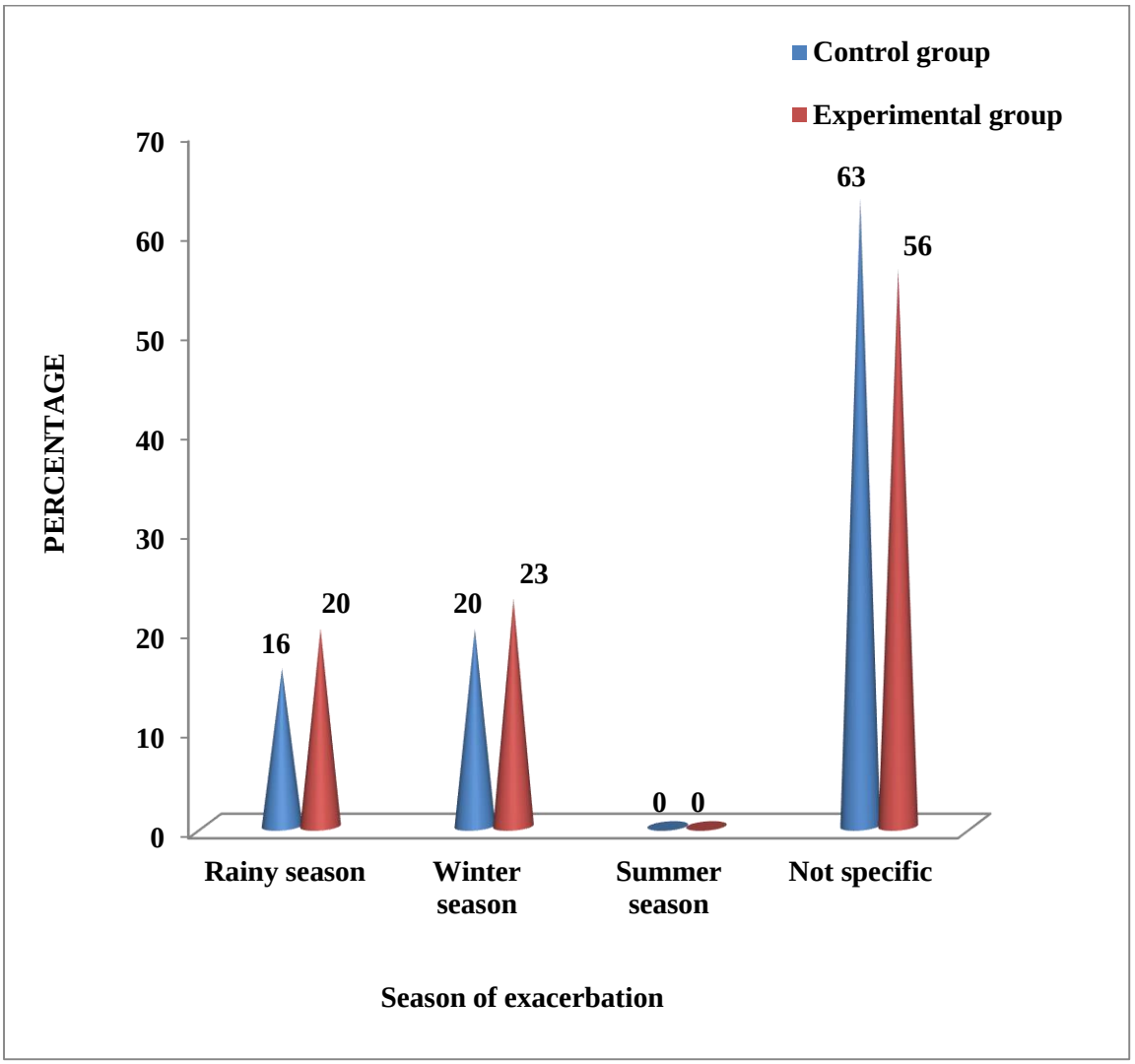


Fig.4.2.5. Regarding season of exacerbation, majority of the samples 19(63%) and 17(56%) were not having any specific reason for exacerbation both in the control and experimental group respectively.

FIG.4.2.6. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR TRIGGERS OF EXACERBATION.

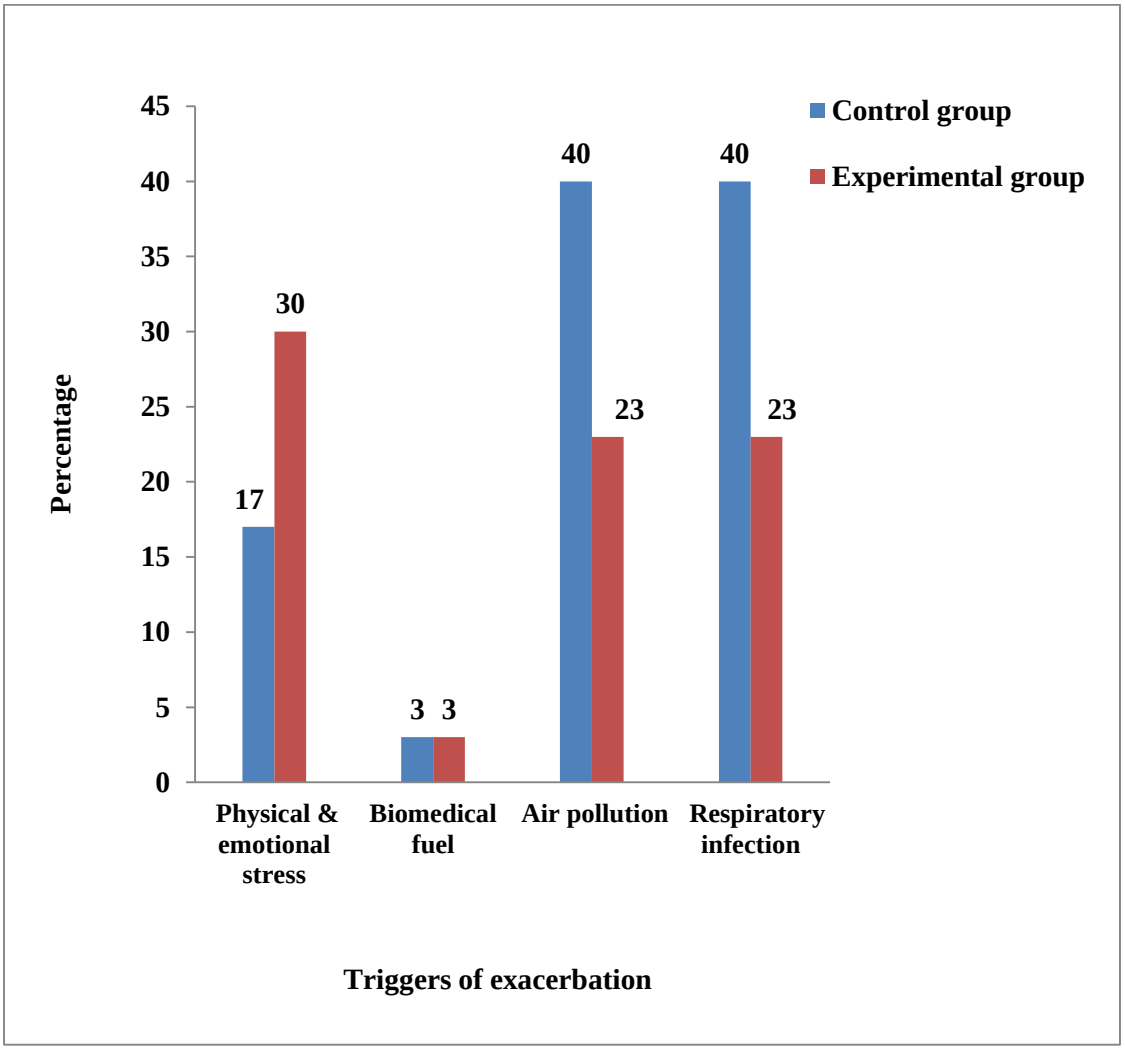


Fig.4.2.6. Regarding other triggers for exacerbation, majority 12(40%) of the samples have triggers for air pollution and respiratory infection in the control and where majority 11(37%) of the samples in the experimental group have triggers for physical and emotional stress.

FIG.4.2.7. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR SLEEP DISTURBANCE DUE TO.

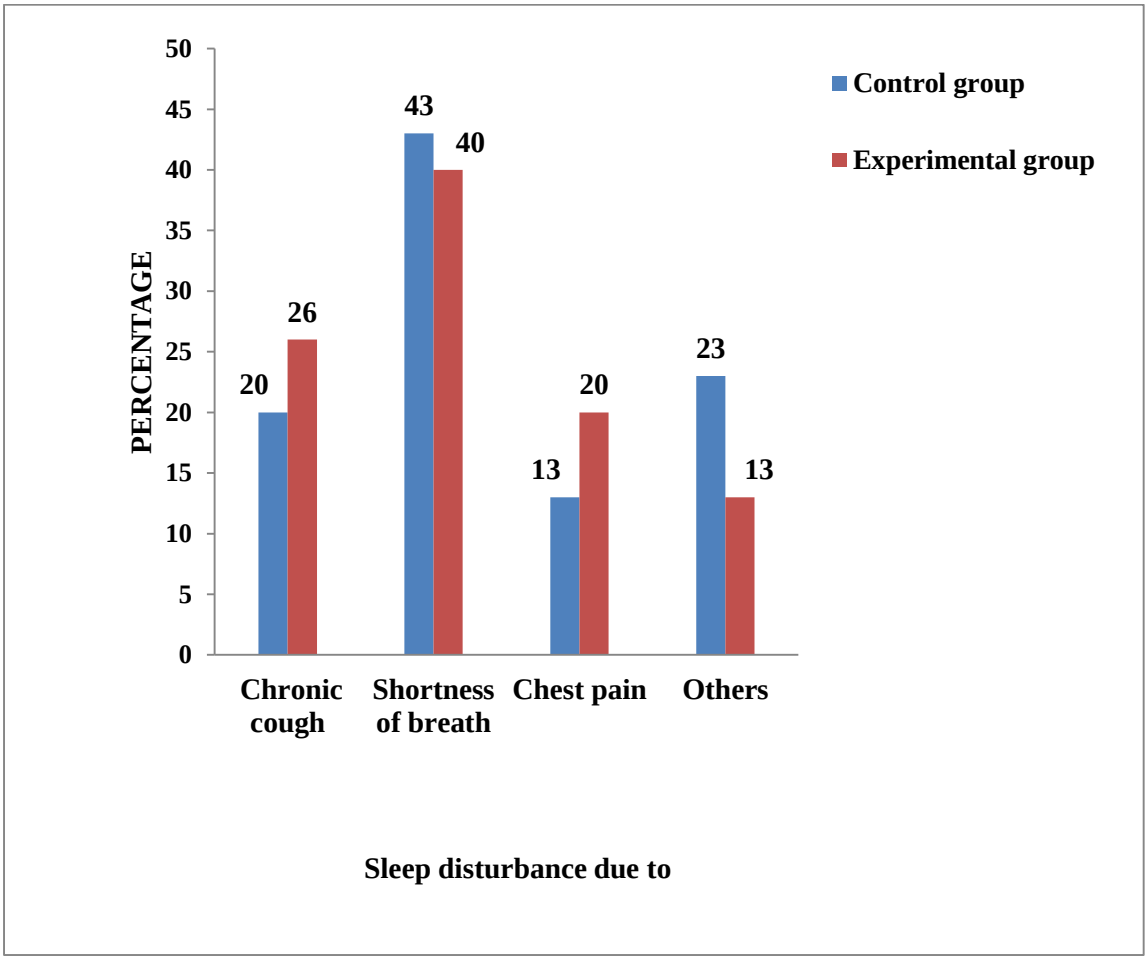


Fig.4.2.7. Regarding sleep disturbance, majority of the samples 13(43%) and 12(40%) had complaints of shortness of breath in the control and experimental group respectively.

FIG.4.2.8. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR COMORBIDITY.

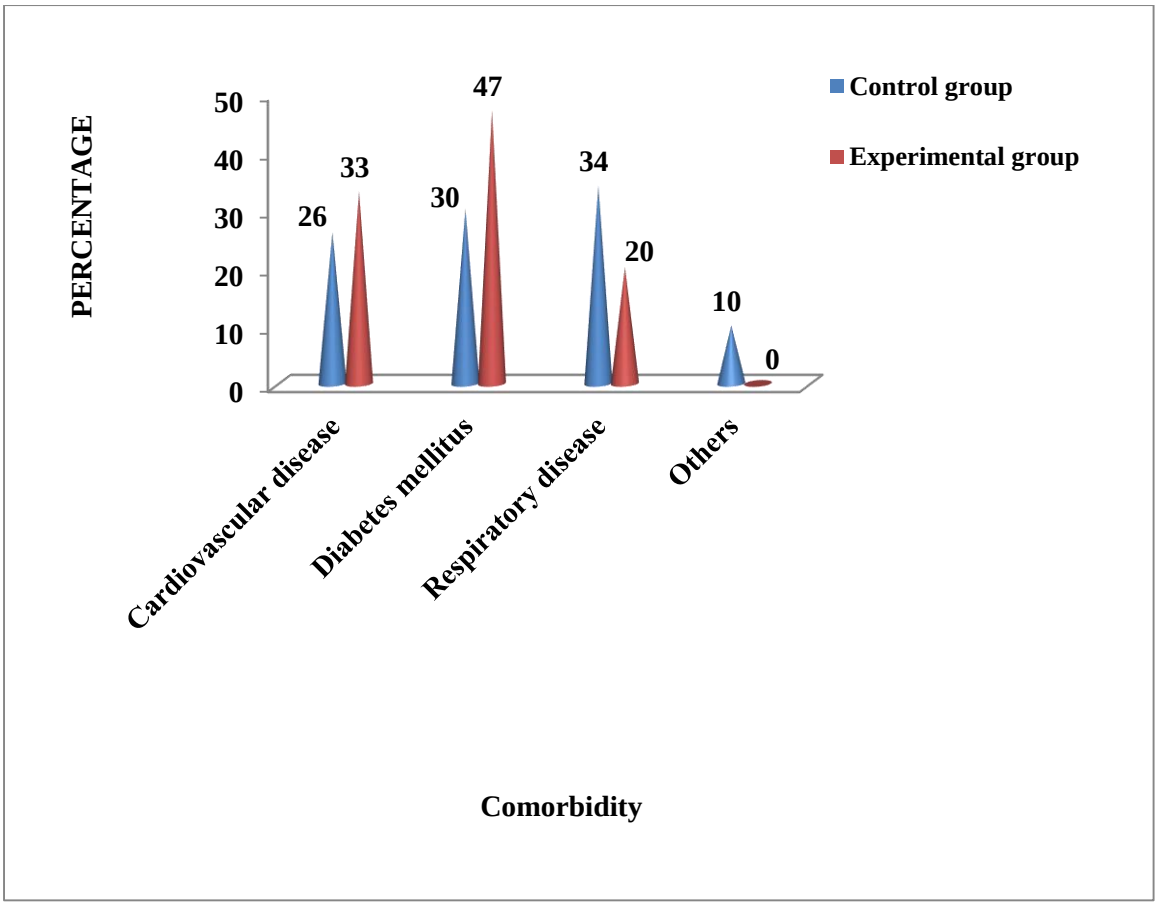


Fig.4.2.8. In regard to comorbidity, majority 9(34%) of the samples were known case of “Respiratory disease” in control group, where as majority 14(47%) of the samples in the experimental group were known case of “Diabetes mellitus”.

FIG.4.2.9. DISTRIBUTION OF PATIENTS WITH COPD ACCORDING TO THEIR TREATMENT MODALITIES.

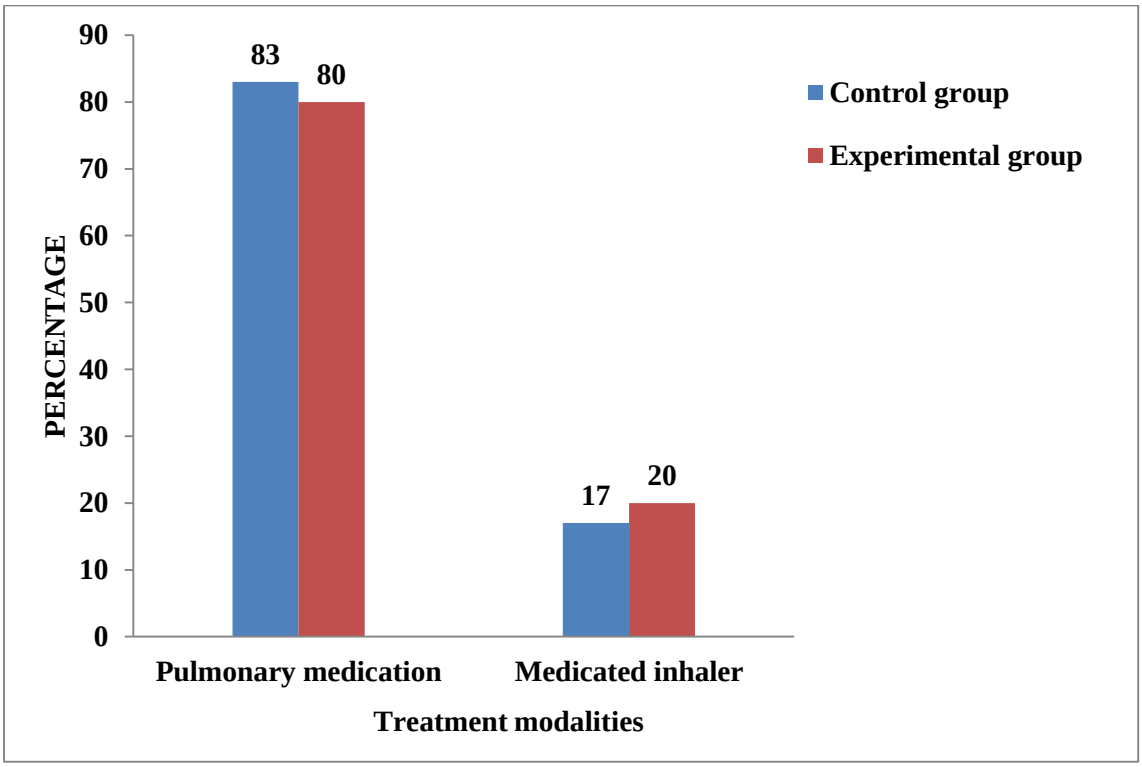


Fig.4.2.9. Regarding treatment modalities, majority of the samples 25(83%) and 24(80%) were on pulmonary medications rather than medicated inhaler in the control and experimental group respectively.

Table 4.1: Frequency and percentage wise distribution of the sample based on the health wellbeing within the control group.

(n = 30)

Control group	Distress		Moderate wellbeing		Positive wellbeing	
	f	**%**	**f**	**%**	**f**	**%**
Pre test	4	13	26	87	0	0
Post test	4	13	26	87	0	0

Table 4.1: In regard to frequency and percentage wise distribution of pre- test and post- test score of health wellbeing in the control group. The samples were distributed under the category of " Moderate wellbeing" during the pre test 26(87%) as well as in the post test 26 (87%), which indicates that there was no changes in the wellbeing level in the control group.

Table 4.2: Frequency and percentage wise distribution of the samples based on the health wellbeing within the experimental group.

(n = 30)

Experimental group	Distress		Moderate wellbeing		Positive wellbeing	
	f	%	f	%	f	%
Pre test	2	7	28	93	0	0
Post test	0	0	5	17	25	83

Table 4.2: In regard to frequency and percentage wise distribution of pre- test and post- test score of health wellbeing in the experimental group, the samples were distributed under the category of " Moderate wellbeing" during the pre test 28(93%) , whereas "Positive wellbeing" during the post test 25(83%), which indicates that there was a marked improvement in the wellbeing level in the experimental group.

SECTION: B

Table 4.3. Mean score difference of pre test and post test on health wellbeing among patients with COPD in the control group.

(n=30)

Health wellbeing					
Control group	**Max Score**	**Mean**	**SD**	**Mean%**	**Mean Difference**
Pre-test	75	44.8	8.87	59.7	
Post-test	75	44.9	8.89	59.8	0.1

Table 4.3 displays the mean score difference between pre and post test health wellbeing in the control group. The findings show that the pre test mean score was (44.8 ± 8.87) and post test mean score was (44.9 ± 8.89) with the mean score difference of 0.1.

This shows that there was a no significant difference between the health wellbeing scores of pre test and post test in the control group.

Table 4.4. Mean score difference of pre test and post test on health wellbeing among COPD patients in the experimental group.

(n=30)

Health wellbeing					
Experimental group	**Max Score**	**Mean**	**SD**	**Mean%**	**Mean Difference**
Pre-test	**75**	49.5	9.47	66	20.1
Post-test	**75**	69.6	3.76	92.8	

Table 4.4 displays the mean score difference between pre and post test health wellbeing in the experimental group. The results show that the pre-test mean score was (49.5 ± 9.47) and post-test mean score was (69.6 ± 3.76) with the mean score difference of 20.1, infers that there was a significant difference in the experimental group.

Thus, the findings were interpreted as pulmonary rehabilitation programme has a marked beneficiary effect on health wellbeing.

Table 4.5. Mean score difference in health wellbeing among patients with COPD between the control and experimental groups.

(N=60)

Health wellbeing				
Group	**Mean**	**SD**	**Mean**	**Mean Difference %**
Control group	44.9	8.89	59.8	24.7
Experimental group	69.6	3.76	92.8	

Table 4.5 presents the comparison of the mean score difference between the control group and experimental group. In the experimental group, mean score has increased (69.6 ± 3.76) than the control group mean score of (44.9 ± 8.89) with the mean score difference of 24.7 %.

This result signifies that there was a significant difference between the mean score of health wellbeing in the control group and the mean score of health wellbeing in the experimental group, which means that the pulmonary rehabilitation program is highly effective.

Table 4.6. Paired 't' test on health wellbeing score among patients with COPD within the control group.

(n=30)

Control group	**Level**	**Mean**	**SD**	**'t' value**	**'p' value**
Pre-test	Health well being	44.8	8.87	0.03	0.97
Post-test	Health well being	44.9	8.89		

*p<0.05 significant **p<0.01 & ***p<0.001 highly significant**.**

Table 4.6 reveals that the paired 't' test score on health wellbeing within the control group is 0.03 and P= 0.97 at p>0.05, this indicates that there was a no statistical significant difference between the pre test and post tests within the control group.

Table 4.7. Paired 't' test on health wellbeing score among patients with COPD within the experimental group.

(n=30)

Control group	Level	Mean	SD	't' value	'p' value
Pre test	Health well being	49.5	9.47	0.52	0.60
Post test	Health well being	69.6	3.76		

*p<0.05 significant **p<0.01 & ***p<0.001 highly significant**.**

Table 4.7 The above mentioned, displayed that the overall 't' value 0.52 and p>0.05, indicates that there is was a statistically significant difference between the pre test and post test within the experimental group.

Table 4.8. Unpaired 't' test for comparison of health wellbeing score between control group and experimental group.

(N=60)

Group	Level	Mean	SD	't' value	'p' value
Control group	Health well being	44.9	8.87	15.07	0.001***
Experimental group	Health well being	69.6	3.76		

*p<0.05 significant **p<0.01 & ***p<0.001 highly significant**.**

Table 4.8. elucidate the unpaired 't' test score on health wellbeing between control and experimental group. The overall 't' value 15.07 and p=0.001 at p<0.05 which indicates that there was a marked statistical significant difference between the the control and the experimental group.

SECTION: C

Table 4.9 Association between pre test health wellbeing and demographic as well as clinical variables among patients with COPD in control group.

(n=30)

S.No	Socio demographic variables	Distress		Moderate health wellbeing		Positive health wellbeing		$\chi 2$ (df)	P- value (N/NS)
		f	%	f	%	f	%		
1.	**Age in years**								
	a) 21-30	0	0	2	7	0	0	1.78 (df=6)	0.93 NS
	b) 31-40	2	7	5	17	0	0		
	c) 41-50	2	7	8	27	0	0		
	d) >51	0	0	11	36	0	0		
2.	**Gender**								
	a) Male	4	13	21	70	0	0	0.06 (df=2)	0.97 NS
	b) Female	0	0	5	17	0	0		
3.	**Religion**								
	a) Hindu	4	13	22	73	0	0	0.06 (df=4)	0.99 NS
	b) Muslim	0	0	2	7	0	0		
	c) Christian	0	0	2	7	0	0		
4.	**Educational status**								
	a) Primary school	0	0	4	13	0	0		
	b) High school	1	3	2	7	0	0	2.42 (df=6)	0.87 NS
	c) Graduate	3	10	17	57	0	0		
	d) Illiterate	0	0	3	10	0	0		
5.	**Occupation**								
	a) Coolie	0	0	3	10	0	0		
	b) Private employee	4	13	8	27	0	0		
	c) Government employee	0	0	10	33	0	0	2.38 (df=8)	0.96 NS
	d) Housewife	0	0	1	3	0	0		
	e) Retired	0	0	4	13	0	0		
6.	**Income**								
	a) Below Rs.5000	0	0	6	20	0	0	0.12 (df=4)	0.99 NS
	b) Rs.5000-10000	1	3	6	20	0	0		
	c) Above Rs.10000	3	10	14	47	0	0		

7.	**Type of family**								
	a) Joint family	0	0	5	17	0	0	0.06	0.97
	b) Nuclear family	4	13	21	70	0	0	(df=2)	NS
8.	**Smoking history**								
	a) Non-smoker	4	13	9	30	0	0		
	b) Ex- smoker	0	0	4	13	0	0	1.81	0.93
	c) Occasional smoker	0	0	9	30	0	0	(df=6)	NS
	d) Chronic smoker	0	0	4	13	0	0		
9.	**Duration of respiratory illness in years**								
	a) 1-3 years	3	10	16	53	0	0	0.05	1.00
	b) 4-6 years	1	3	7	23	0	0	(df=6)	NS
	c) 7-9 years	0	0	3	10	0	0		
	d) >10 years	0	0	0	0	0	0		
10.	**Number of hospitalization due to acute exacerbation**								
	a) 1-3 times	2	7	18	60	0	0	5.90	0.43
	b) 4-6 times	1	3	6	20	0	0	(df=6)	NS
	c) 7-9 times	0	0	2	7	0	0		
	d) >10 times	1	3	0	0	0	0		
11.	**Reason for admission**								
	a) Chronic cough	1	3	3	10	0	0		
	b) Chronic wheeze	0	0	7	23	0	0	1.36	0.96
	c) Dyspnea	3	10	10	33	0	0	(df=6)	NS
	d) All the above	0	0	6	20	0	0		
12.	**Season of exacerbation**								
	a) Rainy season	1	3	4	13	0	0		
	b) Winter season	3	10	3	10	0	0	8.01	0.23
	c) Summer season	0	0	0	0	0	0	(df=6)	NS
	d) Not specific	0	0	19	63	0	0		

13.	**Triggers for exacerbation**								
	a) Physical and emotional stress	0	0	5	17	0	0	0.94 (df=6)	0.98 NS
	b) Biomedical fuel	0	0	1	3	0	0		
	c) Air pollution	3	10	9	30	0	0		
	d) Respiratory infection	1	3	11	37	0	0		
14.	**Sleep disturbance**								
	a) Chronic cough	0	0	6	20	0	0	5.26 (df=6)	0.51 NS
	b) Shortness of breath	1	3	12	40	0	0		
	c) Chest pain	0	0	4	13	0	0		
	d) Others	3	10	4	13	0	0		
15.	**Comorbidity**								
	a) Cardiovascular disease	1	3	7	23	0	0	0.30 (df=6)	0.99 NS
	b) Diabetes mellitus	1	3	8	27	0	0		
	c) Respiratory disease	2	7	8	27	0	0		
	d) Others	0	0	3	10	0	0		
16.	**Treatment modalities**								
	a) Pulmonary medication	4	13	21	70	0	0	0.06 (df=2)	0.97 NS
	b) Medicated inhaler	0	0	5	17	0	0		

S - Significant, NS – Not significant

Table 4.9.revealed that there was an insignificant association exist between demographic as well as clinical variables, with chi- square value 0.06 ($p>0.05$).

Table 4.10. Association between pre test health well-being and demographic as well as clinical variables among patients with COPD in the experimental group.

(n=30)

S.No	Socio demographic variables	Distress		Moderate health wellbeing		Positive health wellbeing		χ2 (df)	P-value (N/NS)
		f	%	f	%	f	%		
1.	**Age in years**								
	a) 21-30	0	0	0	0	2	7		
	b) 31-40	0	0	3	10	10	33	0.38	0.99
	c) 41-50	0	0	0	0	7	23	(df=6)	NS
	d) >51	0	0	2	7	6	20		
2.	**Gender**								
	a) Male	0	0	5	17	20	67	0.08	0.96
	b) Female	0	0	0	0	5	17	(df=2)	NS
3.	**Religion**								
	a) Hindu	0	0	3	10	23	77	1.01	0.90
	b) Muslim	0	0	2	7	2	7	(df=4)	NS
	c) Christian	0	0	0	0	0	0		
6.	**Income**								
	a) Below Rs.5000	0	0	1	3	5	17	0.95	0.91
	b) Rs.5000-10000	0	0	3	10	7	23	(df=4)	NS
	c) Above Rs.10000	0	0	1	3	13	43		
7.	**Type of family**								
	a) Joint family	0	0	2	7	1	3	9.47	0.008
	b) Nuclear family	0	0	3	10	24	80	(df=2)	S
8.	**Smoking history**								
	a) Non-smoker	0	0	0	0	4	13	1.1	0.98
	b) Ex- smoker	0	0	1	3	2	7	(df=6)	NS
	c) Occasional smoker	0	0	1	3	6	20		
	d) Chronic smoker	0	0	3	10	13	43		

9.	**Duration of respiratory illness in years**								
	a) 1-3 years	0	0	3	10	10	33		
	b) 4-6 years	0	0	1	3	10	33	0.43	0.99
	c) 7-9 years	0	0	1	3	4	13	(df=6)	NS
	d) >10 years	0	0	0	0	1	3		
10.	**Number of hospitalization due to acute exacerbation**								
	a) 1-3 times	0	0	3	10	16	53		
	b) 4-6 times	0	0	1	3	4	13	3.02	0.80
	c) 7-9 times	0	0	1	3	2	7	(df=6)	NS
	d) >10 times	0	0	0	0	1	3		
11.	**Reason for admission**								
	a) Chronic cough	0	0	0	0	4	13		
	b) Chronic wheeze	0	0	1	3	6	20	0.19	0.99
	c) Dyspnea	0	0	3	10	10	33	(df=6)	NS
	d) All the above	0	0	1	3	5	17		
12.	**Season of exacerbation**								
	a) Rainy season	0	0	1	3	5	17		
	b) Winter season	0	0	3	10	4	13	3.12	0.79
	c) Summer season	0	0	0	0	0	0	(df=6)	NS
	d) Not specific	0	0	1	3	16	53		
13.	**Triggers for exacerbation**								
	a) Physical and emotional stress	0	0	3	10	8	20		
	b) Biomedical fuel	0	0	0	0	1	3	4.9	0.55
	c) Air pollution	0	0	1	3	8	20	(df=6)	NS
	d) Respiratory infection	0	0	1	3	8	20		
14.	**Sleep disturbance**								
	a) Chronic cough	0	0	1	3	7	23		
	b) Shortness of breath	0	0	2	7	10	33	0.45	0.99
	c) Chest pain	0	0	1	3	5	17	(df=6)	NS
	d) Others	0	0	1	3	3	10		

15.	**Comorbidity**								
	a) Cardiovascular disease	0	0	1	3	9	30		
	b) Diabetes mellitus	0	0	2	7	12	40	1.48 (df=6)	0.96 NS
	c) Respiratory disease	0	0	2	7	4	13		
	d) Others	0	0	0	0	0	0		
16.	**Treatment modalities**								
	a) Pulmonary medication	0	0	3	10	21	70	1.5 (df=2)	0.47 NS
	b) Medicated inhaler	0	0	2	7	4	13		

S - Significant, NS – Not significant

Table 4.10. presents that there was an statically insignificant association exist between the demographic as well as clinical variable except type of family, with chi-square value 9.47 ($p<0.05$).

CHAPTER- V

DISCUSSION

The present study was conducted to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing level among patients with COPD at Vadamalayan Hospital in Madurai. After the analysis and interpretation of the data obtained from the samples, the researcher found, there was a significant increase on health wellbeing among patients with COPD.

The discussion was fully based on the objectives and hypotheses specified in this present study.

The discussion is based on the objectives and Hypothesis specified in this study.

Objectives of the study were

1. To assess the pre test and post test health wellbeing among patients with COPD in the control and experimental group.
2. To determine the efficacy of pulmonary rehabilitation programme on health wellbeing among patients with COPD by comparing the pre test and post test scores within and between the control and experimental group.
3. To associate the health wellbeing of the patients with COPD with their demographic and clinical variables.

Hypothesis of the study were to

H_1- There is a significant difference in the pre test and post test scores of health wellbeing among patients with COPD in the control and experimental group.

H_2- The mean post test score of health wellbeing is significantly higher in the patients with COPD who were exposed to selected pulmonary rehabilitation

programme than the patients those who were not exposed to selected pulmonary rehabilitation programme.

H_3- There is a statistical significant association between health wellbeing with their demographic and clinical variables in the both control and experimental group.

The first objective of this study was to assess the pre test and post test health wellbeing among patients with COPD in the control and experimental group.

The above objective of the study was to identify the level of health well-being regarding selected pulmonary rehabilitation programme among patients with COPD before and after implementation of the live demonstration and flash card programme.

Regarding pre test level of health well-being in the control group revealed most of the patients had distressed 4(13%) in both pre test and post test. 26(87%) patients had moderate wellbeing in both pre test and post test. It was noted that no one had positive wellbeing in both pre test and post test.

In the experimental group, 2(7%) had distress and 28(93%) had moderate well-being in the pre test, whereas in the post test majority 25(83%) had positive wellbeing and 5(17%) had moderate wellbeing. Hence, it is clearly judged that the health wellbeing has improved to in the experimental group after implementing pulmonary rehabilitation programme among patients with COPD.

The present study was supported by Puhan MA et al., (2016), middle east countries on pulmonary rehabilitation following exacerbations of COPD patients. The finding shows that high-quality evidence suggests that pulmonary rehabilitation after an exacerbation improves health-related quality of life. St George's Respiratory Questionnaire (SGRQ) reported a statistically significant effect on SCRQ total score, which was above the minimal important difference (MID) of four points (mean

difference (MD) -7.80, 95% CL-12.212 to -3.47: I^2 = 64%. Investigators also noted statistically significant and important effects (greater than MID) for the impact and activities domain of the SGRQ. High- quality evidence shows that six-minute walk distance improved, on average, by 62 meters (95% CI 38 to 86: I^2 = 87%). Hence, the findings shows that high- quality evidence suggests that pulmonary rehabilitation after an exacerbation improves health-related quality of life.

Thus, the study reveals that there was a statistical significant association between the health wellbeing scores in both control and experimental group. Hence the research hypothesis (H_1) was accepted.

The second objective of the study was to determine the efficacy of pulmonary rehabilitation programme on health wellbeing among patients with COPD by comparing the pre test and post test scores within and between the control and experimental group.

In the control group, the mean pre test wellbeing score was (44.8 ± 8.87) and the mean post test wellbeing score was (44.9 ± 8.89), with a mean difference of 0.1.

In the experimental group, the mean pre test wellbeing score was (49.5 ± 9.47) and the mean post test wellbeing score was (69.6 ± 3.76), with a mean difference of 20.1.

The mean post test well-being score (69.6 ± 3.76) in the experimental group was found to be significantly higher than the post test wellbeing score (44.9 ± 8.89) in the control group, with the mean difference of 24.7. It shows that the pulmonary rehabilitation programme among COPD patients was effective in the experimental group.

Regarding health wellbeing obtained from ‘t’ test value on the control group and experimental group after the pulmonary rehabilitation programme on health wellbeing among COPD patients was 15.07 ($p>0.001$). It indicates that the wellbeing of COPD patients was improved after the implementation on the pulmonary rehabilitation programme in experimental group.

Regarding health well-being, obtained paired ‘t’ test value of experimental group was 0.52 at $p>0.05$ level, which indicates this difference is considered to be highly significant and paired ‘t’ test value of the control group was 0.03 at $p<0.001$, which shows no significance.

The study was supported by Garrod R et al., (2004) in United Kingdom a retrospective study to assess the effectiveness of pulmonary rehabilitation among COPD patients. Baseline measures consisted of activity of daily living, mood state, spirometry, exercise tolerance using the Incremental Shuttle Walk Test (ISWT) and health status using the St George Hospital Respiratory Questionnarie (SGRQ). Responder analysis showed that 37%of patients achieved benefits for both the SGRQ and the ISWT. 28% of patients were non-responders for both; 17% benefited for the SGRQ only and 14% improved their exercise tolerance. The paired ‘t’ test score on health well-being outcome within the experimental group. The paired ‘t’ test value was 0.52, that was greater than P value ($P<0.05$), which shows that there is a significant difference between the pre test and post test score which shows there is a significant difference in the pre test and post test score in experimental group.

The unpaired ‘t’ test score on health well-being outcome between control and experimental group. The findings show that the overall pre-test score was 15.07, the corresponding P value was 0.001. The P value was less than ‘t’ value, which shows

there is significant difference between the pre test scores in control and experimental group mean scores.

Thus, the study results shows that there is a statistical significant difference between the pre test and post test scores both in the control and experimental group. Hence the research hypothesis (H_2) was accepted.

The third objective was to associate the health wellbeing of the patients with COPD by their demographic and clinical variables in the both control and experimental group.

The findings of the study revealed that there was an statically insignificant association exist between the demographic as well as clinical variable except type of family, with chi- square value 9.47 ($p<0.05$).

This study was supported by Renata Claudia Zanchet et.al, (2005)., in middle east countries, Conducted a study on efficacy of pulmonary rehabilitation exercise capacity, respiratory muscle strength and quality of life in patients with chronic obstructive pulmonary disease. Results shows that Mean age was 65 ± 5 years, mean body mass index was 25 ± 4 kg/m^2, mean forced expiratory volume in one second was 55 ± 25% of predicted, mean ratio between forced expiratory volume in one second and forced vital capacity was 50 ± 12%, and mean arterial oxygen tension was 70 ± 7 mmHg. Comparison of pre- and post-pulmonary rehabilitation values revealed improvement in the distance walked in the 6-minute walk test (513 ± 99 m vs. 570 ± 104 m), maximum upper limb load (2 ± 1 kg vs. 3 ± 1 kg) and maximal inspiratory pressure (-89 ± 23 cmH_2O vs. -102 ± 23 cmH_2O), as well as in the activity domain, impact domain and total score on the Saint George's Respiratory Questionnaire. Hence the research hypothesis (H_3) was not accepted.

CHAPTER - VI

SUMMARY AND RECOMMENDATIONS

A study is to be incomplete, if its results are not communicated effectively to its users and consumers. This chapter deals with the summary and conclusion drawn. It focus on the implications and gives recommendation for Nursing education, Nursing practice, Nursing administration and Nursing research.

SUMMARY OF THE STUDY

The main focus of the present study was to evaluate the efficacy of pulmonary rehabilitation programme on health wellbeing among patients with COPD at selected hospitals in Madurai.

The design adopted for the study was “Quasi experimental pre-test post-test control group” in nature and the conceptual framework was based on Modified J.W Kenny’s open system model, 1999. The study tool contains the demographical, clinical variable data of the samples and modified health well-being scale.

The main study was conducted at Vadamalayan Hospital in Madurai and a sample of 60 patients were selected based on the inclusion criteria, in which 30 patients were allotted to the experimental group and the remaining 30 patients were in the control group. The sampling technique used was non-probability convenient sampling technique and the data were collected after get consent from the patients. The data collection procedure took a period of 6 weeks.

Analysis was done using descriptive and inferential statistics, the obtained results were presented using tables and figures.

The objectives of the study findings were as follows

1. To assess the pre test and post test health wellbeing among patients with COPD in the control and experimental group.
2. To determine the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD by comparing the pre test and post test scores within and between the control and experimental group.
3. To associate the health wellbeing of the patients with COPD by their demographic and clinical variables.

The research Hypothesis stated were,

H_1- There is a significant difference in the pre test and post test scores of health wellbeing among patients with COPD in the control and experimental group.

H_2- The mean post test score of health wellbeing is significantly higher in the patients with COPD who were exposed to selected pulmonary rehabilitation programme than the patients those who were not exposed to selected pulmonary rehabilitation programme.

H_3- There is a statistical significant association between health wellbeing with the demographic and clinical variables in the both control and experimental group.

MAJOR FINDINGS OF THE STUDY

- The efficacy of selected pulmonary rehabilitation programme in the experimental group was significantly higher after the intervention.
- Level of health wellbeing score is improved after selected pulmonary rehabilitation programme.
- Paired overall “t” value in experimental group 0.52 and p value 0.60 was highly significant.

- Unpaired overall “t” value in pre test between control and experimental group 15.07 and p value 0.001 was highly significant.
- There was a no significant association between the pre test on selected pulmonary rehabilitation programme among patients with COPD in control group with their selected demographical.
- There was a no significant association between the pre test on selected pulmonary rehabilitation programme among patients with COPD in experimental group with their selected demographical.

LIMITATIONS

1. This study is limited to assess only health wellbeing among patients with COPD.
2. The samples size was only 60.
3. Data collection procedure was done for 6 weeks only.

NURSING IMPLICATIONS

The results obtained from the present study proclaimed that, use of selected pulmonary rehabilitation programme will reduce complaints and improve health wellbeing status in adult patients. The study also recommended the following implications in the nursing professional areas such as,

- Nursing practice
- Nursing education
- Nursing administration
- Nursing research

Nursing Practice

1. These findings will help the nurses in clinical sector to implement the use of selected pulmonary rehabilitation programme on COPD patient in medical ward.
2. The method of using selected pulmonary rehabilitation programme will be helpful in reducing the complaints and improve the health wellbeing of the patient.
3. This method of selected pulmonary rehabilitation programme will enhance comfort to the patient.
4. This method will improve the health seeking behavior of patients in future.
5. It helps to improve the standard of providing nursing care by implementing evidence based practice.

Nursing Education

1. This study finding pushes the nursing curriculum to provide opportunities for students to learn more pulmonary rehabilitation programme.
2. This study promotes nursing specialization in pulmonary rehabilitation programme.
3. This study gives an opportunity for nursing professionals to educate the patients with COPD.

Nursing Administration

1. The study findings help the nurse administrator in formulating revised protocols and policies on pulmonary rehabilitation programme.

2. The findings of the study provides opportunity for the nurse administrators to conduct in service education regarding evidence based nursing practice on rehabilitation programme.
3. Nursing administrators should give opportunity for nursing staff to create interest and enhanced ability in educating the patients with COPD regarding pulmonary rehabilitation programme.
4. Nursing administrators should take part in health policy making, developing protocols and standing order related to rehabilitation programme.

Nursing Research

1. Nursing theories must be formulated regarding selected pulmonary rehabilitation programme based on the new evolving research.
2. This study helps the nurse researcher to develop insight about the teaching module and materials for patients with COPD towards promotion on pulmonary rehabilitation programme and improving their health wellbeing.
3. This study can published in journals to disseminate knowledge regarding benefits on pulmonary rehabilitation programme to improve health wellbeing level among patients with COPD.

CONCLUSION

The main conclusion of this study, shows that there was a significant improvement health wellbeing among patients with COPD after selected pulmonary rehabilitation programme. It can be concluded that selected pulmonary rehabilitation programme is an effective and economical method for improving the physical activity capacity and health wellbeing of patients with COPD. The investigator assures that

every patient who has been taking part in this study will have improved health wellbeing level.

RECOMMENDATION

On the basis of the findings of this study, the following recommendation has been made for further studies.

- A similar study can be undertaken with larger number of samples.
- A similar study can be conducted in other settings.
- A longer period of intervention can be studied for more effectiveness.
- A similar study needs to be conducted in other private and government hospitals in order to draw a generalization.

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APPENDIX – A

LETTER FOR SEEKING EXPERTS OPINION FOR CONTENT VALIDITY

From

E. Prasanna Kumar,
II M. Sc Nursing Student,
C. S. I. Jeyaraj Annapackiam College of Nursing,
Madurai- 625004.

To

Respected Sir/ Madam,

Sub: Requisition for opinion and suggestion of experts for establishing content validity of research tool-reg.

With due regards, I kindly bring to your notice that I am a post graduate student of the C. S. I Jeyaraj Annapackiam College of Nursing, Madurai. I selected the below mentioned topic for dissertation to be submitted to the Tamil Nadu Dr. M. G. R. Medical University, Chennai, as a part of partial fulfillment for the Master of Science in Nursing.

"A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD at selected hospitals in Madurai".

I am in need of your valuable opinions and suggestions regarding the tool which I have prepared. So I humbly request you to spare a little of your precious time to validate the tool, for which I will remain ever grateful to you.

Thanking you in anticipation,

Place: Madurai. Yours sincerely,

Date: **(E.PRASANNA KUMAR)**

APPENDIX-B

LETTER SEEKING PERMISSION TO CONDUCT PILOT STUDY

From

E. Prasanna Kumar,

II M. Sc Nursing Student,

C. S. I. Jeyaraj Annapackiam College of Nursing,

Madurai- 625004.

To

Forwarded through,

The Principal,

Prof .Dr. C. Jothi Sophia, M.Sc. (N).Ph.D. (N) ,

C.S.I. Jeyaraj Annapackiam College of Nursing,

Pasumalai,

Madurai-4.

Respected Sir/Madam,

Sub: seeking permission to conduct the pilot study.

With due regards, I kindly bring you to your notice that, I am doing my post-graduation in nursing at C.S.I. Jeyaraj Annapackiam College of Nursing, Pasumalai, Madurai. I have selected the below mentioned topic for dissertation to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as a partial fulfillment of Master of Science in Nursing.

"A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD at selected hospitals in Madurai".

I have planned to do my pilot study in your esteemed institution. So I humbly request you to give me permission to conduct the study for which I remain grateful.

Thanking you

Place: Madurai. Yours sincerely,

Date: **(E.PRASANNA KUMAR)**

APPENDIX-C

LETTER SEEKING PERMISSION TO CONDUCT RESEARCH STUDY

From

E. Prasanna Kumar,

II M. Sc Nursing Student,

C. S. I. Jeyaraj Annapackiam College of Nursing,

Madurai- 625004.

To

Forwarded through,

The Principal,

Prof .Dr. C. Jothi Sophia, M.Sc. (N).Ph.D. (N),

C.S.I. Jeyaraj Annapackiam College of Nursing,

Pasumalai,

Madurai-4.

Respected Sir/Madam,

Sub: seeking permission to conduct the pilot study.

With due regards, I kindly bring you to your notice that, I am doing my post-graduation in nursing at C.S.I. Jeyaraj Annapackiam College of Nursing, Pasumalai, Madurai. I have selected the below mentioned topic for dissertation to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai as a partial fulfillment of Master of Science in Nursing.

"A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD at Vadamalayan Hospital in Madurai".

I have planned to do my research study in your esteemed institution. So I humbly request you to give me permission to conduct the study for which I remain grateful.

Thanking you

Place: Madurai. Yours sincerely,

Date: **(E.PRASANNA KUMAR)**

APPENDIX-D

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **Mr. E**. **Prasanna Kumar** final year M. Sc Nursing student of C. S. I. Jeyaraj Annapackiam College Of Nursing, Madurai (affiliated to the Tamil Nadu Dr. M. G. R. Medical University) is validated by the undersigned and he can proceed with this tool and conduct the main study for dissertation entitled **"A study to evaluate the efficacy of selected pulmonary rehabilitation programme on health wellbeing among patients with COPD at selected hospitals in Madurai".**

Place:

Signature

Date:

Name:

Designation:

Address:

APPENDIX-E

LIST OF EXPERTS

1. Dr. A. Charles Stephen Rajasing, M.S., M.C.H.,

   Medical Director,

   Christian Mission Hospital,

   Madurai-1.

2. Dr. A. Sivaraj, M.B.B.S., D.M.R.T., F.C.I.P.,

   Medical Director,

   Kavitha Hospital,

   Vellore.

3. Prof. Dr. Jaya Thanga Selvi, M. Sc (N) , Ph.D.,

   HOD of Medical - Surgical Nursing Dept,

   C.S.I Jeyaraj Annapackiam College of Nursing,

   Madurai.

4. Prof. Dr. Priscilla, M.Sc (N), Ph.D.,

   Professor, Medical - Surgical Nursing Dept,

   C.S.I Jeyaraj Annapackiam College of Nursing,

   Madurai.

5. Mrs. Anbu Roseline, M.Sc (N),

   Associate Professor, Medical – Surgical Nursing Dept,

   Sivakasi Medical Hospital School of Nursing,

   Sivakasi.

6. Mrs. Jeyajothi, M. Sc (N),

   Associate Professor, Medical – Surgical Nursing Dept,

   C.S.I Jeyaraj Annapackiam College of Nursing,

   Madurai.

7. Mrs. Sasikala, M. Sc (N),

   Lecture, Medical – Surgical Nursing Dept,

   C.S.I Jeyaraj Annapackiam College of Nursing,

   Madurai.

8. Mr. Geopaul Rufus, M. Sc (N),

   Lecture, Medical – Surgical Nursing Dept,

   Bishop College of Nursing,

   Pudukottai.

9. Mr. Albert Blesson, M. Sc (N),

   Lecture, Medical – Surgical Nursing Dept,

   Mount Zion College of Nursing,

   Pudukottai.

10. Mr. Mani, M.Sc (N)., M. Phil.,

    Bio- Statistician,

    Meenakshi Mission hospital,

    Madurai.

APPENDIX – F

PART- I

SECTION- A

DEMOGRAPHIC VARIABLES

INSTRUCTIONS:

Please put a tick (✓) mark in the following options. I assure that your answers and responses will be kept confidentially.

1) **Age in years.**
   a) 21- 30 years.
   b) 31-40 years.
   c) 41- 50 years.
   d) > 50 years.
2) **Gender.**
   a) Male.
   b) Female.
3) **Religion.**
   a) Hindu.
   b) Muslim.
   c) Christian.
4) **Educational status.**
   a) Primary school.
   b) High school.
   c) Graduate.
   d) Illiterate.

5) **Occupation.**

   a) Coolie.

   b) Private employee.

   c) Government employee.

   d) Housewife.

   e) Retired.

6) **Income.**

   a) Below 5000/ Month

   b) 5000- 10000/ Month

   c) Above 10000/ Month

7) **Type of family.**

   a) Joint family.

   b) Nuclear family.

SECTION- B

CLINICAL VARIABLES

1) Smoking history.

a) Nonsmokers.

b) Ex- smokers.

c) Occasional smokers.

d) Chronic smokers.

2) Duration of respiratory illness in years.

a) 1- 3 years.

b) 4-6 years.

c) 7-9 years.

d) >10 years.

3) Number of previous hospitalization due to acute exacerbation of COPD.

a) 1-3 times.

b) 4-6 times.

c) 7-9 times.

d) >10 times.

4) Reason for admission.

a) Chronic cough.

b) Chronic wheeze.

c) Dyspnea.

d) All the above.

5) Season of exacerbation.

a) Rainy season.

b) Winter season.

c) Summer season.

d) Not specific.

6) Other triggers for exacerbation.

a) Physical and emotional stress.

b) Biomedical fuel.

c) Air pollution.

d) Respiratory infection.

7) Sleep disturbance due to.

a) Chronic cough.

b) Shortness of breath.

c) Chest pain.

d) Others.

8) Comorbidity.

a) Cardiovascular diseases.

b) Diabetes mellitus.

c) Respiratory diseases.

d) Others.

9) Treatment modalities.

a) Pulmonary medication.

b) Medicated inhaler.

PART- 2

MODIFIED HEALTH WELLBEING SCALE.

INSTRUCTION:

Put a tick (✓) mark on the appropriate answer for the following modified wellbeing statements.

PHYSIOLOGICAL WELLBEING

1- Not at all, 2- Some times, 3- All the time

PHYSICAL, EMOTIONAL, SOCIAL & SPRITUAL WELLBEING

1- Much difficulty, 2- Some difficulty, 3- No difficulty

S.NO.	CRITERIA	1	2	3
I)	**PHYSIOLOGICAL WELLBEING**	**Not at all**	**Some times**	**All the time**
1.	Cough crisis during the day/ all the time.			
2.	Having phlegm in the chest.			
3.	Feeling of chest tightness.			
4.	Unable to sleep soundly.			
5.	Shortness of breath due to any reason.			
6.	Wheezing.			
7.	Acute exacerbation due to any reason.			
8.	Feeling of exhaustion.			
9.	Difficult in waking up in the morning.			
10.	Feeling of fatigue.			

II)	PHYSICAL WELLBEING	1 Much difficulty	2 Some difficulty	3 No difficulty
11.	Unable to do daily activity of life.			
12.	Problems with doing hobbies.			
13.	Feeling of unhealthy.			
14.	Able to sleep soundly.			
15.	Poor appetite.			
III)	**EMOTIONAL WELLBEING**			
16.	Feel dependent upon others.			
17.	Difficult to relax.			
18.	Not felt worthwhile.			
19.	Felt sad and depressed.			
IV)	**SOCIAL WELLBEING:**			
20.	Poor support from the family.			
21.	Financial difficulties.			
22.	Difficult to look after the family.			
23.	Feeling of low self-esteem.			
V)	**SPRITUAL WELLBEING:**			
24.	Religious events are not important to life.			
25.	Unable to concentrate on religious activities.			

பகுதி 1

பிரிவு - அ

மக்கள்தொகை மாறிகள்

அறிமுகம்:-

தயவு செய்து பின்வரும் சரியான விருப்பங்களில் (✓) குறி வைக்கவும். உங்கள் பதில்கள் மற்றும் மறுமொழிகள் இரகசியமாக வைக்கப்படும் என்று நான் உறுதியளிக்கிறேன்.

1) வயது

அ) 21-30

ஆ) 31-40

இ) 41-50

ஈ) >50

2) பாலினம்

அ) ஆண்

ஆ) பெண்

3) மதம்

அ) இந்து

ஆ) இஸ்லாமியர்

இ) கிறித்துவர்

4) கல்விதகுதி

அ) ஆராம்புகல்வி

ஆ) உயர்கல்வி

இ) பட்டதாரி

ஈ) படிக்காதவர்

5) பணி

அ) கூலி

ஆ) தனியார்ஊழியர்

இ) அரசுஊழியர்

ஈ) இல்லத்தரசி

உ) பணிநிறைவுபோற்றவர்

6) வருமானம்

அ) 5000 க்குகீழ்

ஆ) 5000-10000

இ) 10000க்குமேல்

7) குடும்பசூழல்

அ) கூட்டுகுடும்பம்

ஆ)தனிகுடும்பம்

பிரிவு - ஆ

மருத்துவமாறிகள்

1 புகைபிடிக்கும் பழக்கம்

அ) புகை பிடிக்கமாட்டேன்

ஆ) முன்பு புகைபிடித்தேன்

இ) எப்பொழுதவது புகைபிடிபேன்

ஈ) தொடர்ந்து புகைபிடிபேன்

2 ஒருநாளைக்கு எத்தனை பீடி/ சீகிரெட் பிடிப்பீர்கள்

அ) 1-9

ஆ) 10-19

இ) 20 க்குமேல்

3 நோயின் கால அளவு

அ) 1-3 வருடம்

ஆ) 4-6 வருடம்

இ) 7-9 வருடம்

ஈ) >10 வருடம்

4 முன்பு எத்தனை முறைகள் இந்த நாட்பட்ட இறுக்கமான நுரையீரல் நோய் உள்ளது

அ) 1-3 முறை

ஆ) 4-6 முறை

இ) 7-9 முறை

ஈ) >10 முறை

5 மருத்துவமனையில் அனுமதிக்க அறிகுறிகள்

அ) தொடர் இருமல்

ஆ) தொடர் இளப்பு

இ) மூச்சு திணறல்

ஈ) மேல் கூறிய அனைத்தும்

6 கால அதிகரித்தல்

அ) மழை காலம்

ஆ) பனி காலம்

இ) கோடை காலம்

ஈ) குறிப்பிட்டுயில்லை

7 நோய் அதிகரிக்க பிற தூண்டுதல்கள்

அ) உடல் மற்றும் மனஅழுத்தம்

ஆ) உயிரி எரிபொருள்

இ) காற்று மாசுபாடு

ஈ) சுவாச தொற்று

8 தூக்கமின்மை காரணம்

அ) நாள்பட்ட இருமல்

ஆ) மூச்சு திணறல்

இ) நெஞ்சு வலி

ஈ) மற்ற காரணம்

9 உடன் நோய்கள்

அ) இருதய நோய்

ஆ) நீரிழிவு நோய்

இ) சுவாச நோய்

10 சிகிச்சை முறைகள்

அ) நுரையீரல் மருந்துகள்

ஆ) சுவாசமருந்துகள்.

பகுதி - 2

அறிமுகம்:-

கீழ்க்காணும் நிபந்தனைகளுக்கு ஏற்றவாறு பொருத்தமான பதிலில் டிக் குறிவைக்கவும்.

<u>உளவியல் நன்கு இருப்பது:-</u>

1- எப்போதும் இல்லை, 2- எப்பொழுதாவது இருக்கும், 3- எல்லா நேரங்களிலும் இருக்கும்.

<u>உடல்நலம், உணர்ச்சி, சமூகமற்றும்ஆன்மீகம் நன்குஇருப்பது:-</u>

1- கடினம் இல்லை, 2- சில நேரங்களில் கடினம், 3 - மிகவும் கடினம்.

வ.எண்	அடிப்படை	1	2	3
I)	உளவியல் நன்கு இருப்பது	எப்போதும் இல்லை	எப்பொழுதாவது இருக்கும்	எல்லாநேரங்களிலும் இருக்கும்
1	பகல்/ எல்லா நேரத்திலும் இருமல் நெருக்கடி'			
2	நெஞ்சில் கபம் இருக்கிறது			
3	நெஞ்சில் இருக்கமாக இருப்பது தூங்க முடியவில்லை			
4	ஆழ்ந்து உறங்க முடியவில்லை			
5	ஏதோ ஒரு காரணத்தினால் மூச்சுதிணறல்			
6	இளப்பு			

7	கடுமையாக அதிகரித்தல் (ஏதோ ஒரு காரணத்தினால் கடுமையாக அதிகரித்தல்)			
8	சோர்வாக உணர்தல்			
9	காலையில் எழுந்திருப்பது கடினம்			
10	தொயிவாக உணர்தல்			

II)	உடலியல் நன்கு இருப்பது	1 கடினம் இல்லை	2 சில நேரங்களில் கடினம்	3 மிகவும் கடினம்
11.	வாழ்வின் அன்றாட வேலைகளை செய்ய முடியவில்லை			
12.	பொழுதுபோக்கு நிகழ்விகள் செய்வதில் பிரச்சனை			
13.	ஆரோக்கிய மற்றது போல் உணர்தல்			
14.	ஆழ்ந்து உறங்கமுடிகிறது			
15.	பசியின்மை			
III)	உணர்ச்சி நன்கு இருப்பது			
16.	பிறறை சார்ந்து இருப்பது போல் உணர்தல்			
17.	ஓய்வெடுக்க கடினமாக உள்ளது			
18.	பயன் அற்று இருப்பது போல் உணர்தல்			

19.	சோகமாகவும் மற்றும் மனசோர்வாகவும் உணர்தல்			
IV)	சமூக நன்கு இருப்பது			
20.	குடும்பத்தில் இருந்து மோசமான ஆதரவு			
21.	நிதி சிக்கல்கள்			
22.	குடும்பத்தை கவனிப்பது கடினம்			
23.	குறைந்த சுயமரியாதையை உணர்கிறேன்			
V)	ஆன்மீகம் நன்கு இருப்பது			
24.	மதநிகழ்வுகள் வாழ்க்கைக்கு முக்கியம் இல்லை			
25.	மதநடவடிக்கைகளில் கவனம் செலுத்த முடியவில்லை			

நுரையீரல் சீரமைப்பு மற்றும் பயிற்சிகள்

பொது வழிமுறைகள்:-

- மனதை ஒரு நிலைப்படுத்த வேண்டும்.
- சவுகரிமான ஆடை அணிய வேண்டும்.
- பயிற்சியின் போது கடுமையாக உணர்ந்தால் பயிற்சியை நிறுத்தி கொள்ளவும்.
- பயிற்சிக்கு முன் நீர் அருந்தி கொள்ளவும்.

I) சுவாச தசை பயிற்சி:-

1) உதடு சுவாச பயிற்சி –

➢ படி 1– நிமிர்ந்து உட்கார்ந்து கழுத்து மற்றும் தோள்பட்டை தசைகளை தளர்த்த வேண்டும்.

➢ படி 2 – வாய்யை மூடி கொண்டு மூக்கின் வழியாக, 2 வினாடிகளுக்கு சாதாரணமாக சுவாசிக்கவும்.

- படி 3- உதடுகளை மூடி கொண்டு 4 வினாடிகளுக்கு மூச்சை வெளியிடவும்.

- படி 4- ஒரு நிமிடம் படி 1-3 மீண்டும் செய்யவும்.

2) உதரவிதன தசை பயிற்சி:-

- **படி 1-நேராக படுத்துக்கொண்டு உங்கள் முழங்கால் மற்றும் தலையின் கீழ் தலையணைகள் வைத்து கொள்ளவும்.**

- **படி 2- உங்கள் தொப்பையின் மீது ஒரு கை வைக்கவும், உங்கள் நெஞ்சு பகுதியில் மற்றோரு கை வைக்கவும்.**

- படி 3– 3 விநாடிகள் மூக்கு வழியாக ஆழமாக உள்ளிழுக்கவும்.

- படி 4– வயிற்று தசைகளை இருக்கி கொண்டு, காற்றை உதடு வழியாக மெதுவாக வெளிவிடவும்.

- படி 5– இந்த பயிற்சியை 5 முதல் 10 செய்யவும்.

3)ஆழ்ந்த சுவாச பயிற்சி:-

- படி 1- உங்கள் வாயை மூடி வைத்து கொண்டு கூர்மையாக மூக்கின் வழியாக காற்றை உள்ளிழுக்கவும்.

- படி 2 -மெதுவாக உங்கள் வாய் வழியாக காற்றை வெளிவிடும், 2-3 விநாடிகள்.

- படி 3- ஒரு நிமிடத்திற்கு படி 1-2யை திரும்ப செய்யவும்.

II) தசை வலுப்படுத்தும் உடற்பயிற்சி:-

- ✓ **<u>வளைந்து கொடுக்கும் உடற்பயிற்சி.</u>**

1) தொடையின் முன் பகுதியை நீட்டிக்க:

- படி 1-சுவரில் இருந்து சற்று தள்ளி நின்று கொண்டு, உங்கள் இடது கையை சுவற்றின் மீது வைக்கவும்.

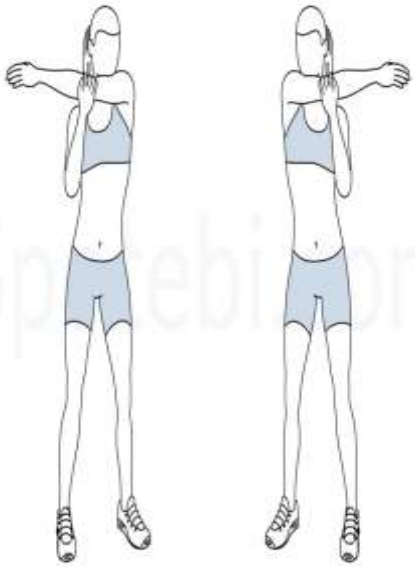
- படி 2- நேராக நின்று கொண்டு, வலது கையை கொண்டு, இடது கால் பிடித்துக்கொள்ளவும்.

- படி 3- உங்கள் குதிகால் பகுதியை பின் நோக்கி இழுக்கவும்.

- படி 4- 10 முதல் 20 விநாடிகள் வைத்திருங்கள்.
- படி 5- மறுபடியும் மறுபக்கம் செய்யவும்.

2) தோள்பட்டையை நீட்டிக்கும் பயிற்சி:-

- படி 1- நின்று அல்லது அமர்ந்து கொண்டு உங்கள் முதுகு பகுதி நேராக வைத்துக்கொள்ளவும், வலது கையை தோள்பட்டையின் எதிராக நீட்டி இடது கையை பிடிக்கவும்.



- படி 2- உங்கள் முழங்கையை நெஞ்சுக்கு பக்கவாட்டில் இழுக்கவும்.
- படி 3- ஒரு நிமிடம் வரை பிடிக்கவும்.

- **படி 4- ஒவ்வொரு கையில் 3 தடவை மீண்டும் செய்யவும்.**
- **படி 5- மற்றொரு உள்ளங்கையை நீட்டி மறுபடியும் 3 முறை மற்றொரு கைக்கு செய்யவும்.**

3) முழங்கை மற்றும் கீழ் உள்ளங்கை நீட்டிப்பு:-

- **படி 1- அமர்ந்து அல்லது நேராக நின்று கொண்டு ஒரு கையை உங்களுக்கு முன்பாக நீட்டி உங்கள் உள்ளங்கையை கீழ் நோக்கியபடி வைக்கவும்.**

- படி 2- உள்ளங்கையின் பின் பகுதியை உங்களுக்கு நேராக மடக்கவும்.
- படி 3- முழங்கையில் நீட்டிபை உணருதல்.
- படி 4- ஒரு நிமிடத்துக்கு அப்படியே வைத்து கொள்ளவும்.
- படி 5- மற்றொரு உள்ளங்கையை நீட்டி மறுபடியும் 3 முறை மற்றொரு கைக்கு செய்யவும்.

4) உள்ளங்கை மேநோக்கிய முழங்கை நீட்டிப்பு:-

© Can Stock Photo

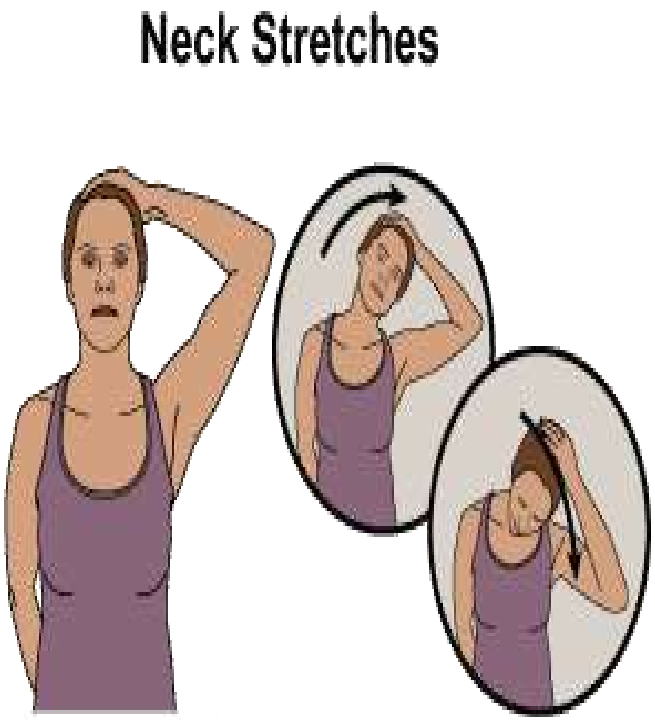
- **படி 1 : அமர்ந்து அல்லது நேராக நின்று கொண்டு ஒரு கையை உங்களுக்கு முன்பாக நீட்டி உங்கள் உள்ளங்கை மேல் நோக்கி இருக்கும் படி வைக்கவும்.**

- படி2: நீட்டிய கையின் விரல்களை மற்றொரு கையின் உதவியோடு விரலை கீழ்நோக்கி மடக்கவும்.
- படி 3 : முழங்கையில் நீட்டிப்பை உணருத்தல்.
- படி 4 : 1 நிமிடாத்துக்கு அப்படியே வைத்து கொள்ளவும்.
- படி 5 :மற்றொரு உள்ளங்கையை நீட்டி மறுபடியும் 3 முறை மற்றொரு கைக்கு செய்யவும்.

5) கழுத்து தசைகளை வலுப்படுத்தும் பயிற்சி:-

- படி 1 : நேராக நின்று (அ) அமர்ந்து கொண்டு பாதத்தை தரையில் படும்படி வைக்கவும்.

- படி 2 : உங்கள் தலையை ஒருபக்கமாக சாய்க்கவும்.



- படி 3 : மற்றொரு கைக்கு எதிராக தலையை சாய்க்கவும்.
- படி 4 :சாய்ந்த கழுத்தின் எதிர்பகுதியில் வலுப்படுத்தலை உணருதல்.
- படி 5 : இந்த செய்முறையை ஒரு முறை நிறுத்தவும்

III) வலுப்படுத்தும் பயிற்சி:-

1) கால் நீட்டிப்பு பயிற்சி:

- படி 1 : நேராக அமரவும்.
- படி 2 : சவுகாரிகமாக கைகளை முழங்காலுக்கு மேல் வைத்து கொள்ளவும்.

- படி 3 : உங்கள் பக்கவாட்டின் இருக்கும் கைகளின் உதவியோடு நாற்காலியின் இருந்து எழும்ப வேண்டும்.
- படி 4 : இதே நிலையில் 10 வினாடிகள் வைக்கவும்.
- படி 5 : பழைய நிலைக்க கொண்டு வரவும்.
- படி 6 : நான்கு முறை மறுகாலுக்கு செய்யவும்.

2) காலை உயர்ந்துதல் உடற்பயிற்சி :-

- படி 1 : உங்கள் நாற்காலியின் உதவி கொண்டு நேராக நிற்கவும்.

- படி 2 : ஒரு காலை பின்நோக்கி உதைக்கவேண்டும்.

- படி 3 : பழைய நிலைக்கு கால்களை கொண்டு வரவும்.
- படி 4 : நான்கு இரண்டு கால்களுக்கு செய்யவும்.

3) முழங்கால் உயர்ந்துதல் உடற்பயிற்சி :–

- படி 1 : நேராக நின்று கொண்டு, உங்கள் கைகளை பக்கவாட்டில் வைக்கவும்.

- படி 2 : ஒரு முழங்காலை உயர்த்தவும்.

- படி 3 : பழைய நிலைக்கு காலை கொண்டுவரவும்.
- படி 4 : மறுபடியும் நான்கு முறை இரு கால்களுக்கு செய்யவும்.

4) முழங்கால் வளைவு உடற்பயிற்சி:-

- படி 1- நேராக உங்கள் கைகளை ஒரு சுவரில் அல்லது ஒரு நாற்காலியின் பின்புறத்தில் வைக்கவும்.

- படி 2- ஒரு கால் உயர்த்தி, பின்னால் இருந்து, உங்கள் கால் தரையில் இணையாக வைக்கவும்.

- படி 3– கால் திரும்ப அதன் முந்தைய நிலையில் வைக்கவும்.

- படி 4– ஒவ்வொரு காலிலும் 4 முறை திரும்ப செய்யவும்.

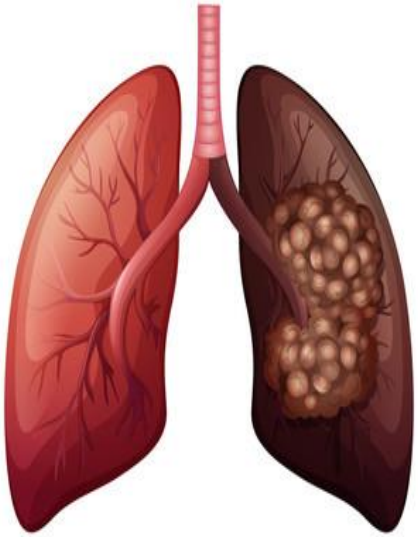
5) குதிகால் உயர்த்துதல் உடற்பயிற்சி :-

- படி 1 : நேராக அமர்ந்து முழங்கால் மற்றும் பாதம் தரையில் படும்படி சவுகரியமாக உட்காரவும்.

- படி 2 : குதிகாலை உயர்த்தவும்.

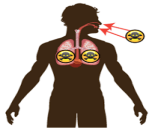
- படி 3 : பழைய நிலைக்கு காலை கொண்டு வரவும்.
- படி 4 : நான்கு முறை இரண்டு கால்களுக்கு செய்யவும்.

APPENDIX - G



Lung reconstruction and rehabilitation programs

1) Hazardous of smoking

-  Effects of tobacco are strokes, heart attacks, lung cancer.
-  Toxicity in the lungs.
-  Blood pressure can cause chest pain.

<u>Stop smoking 10 commands:-</u>

-  Tobacco and tobacco products should be kept hidden.
-  When the tobacco memory is remembered, you should go to a different place.
-  To drink water often.

 Use chocolate, carrot, snacks instead of tobacco.

-  Frequent breathing should be done.
-  Exercise should reduce tobacco effect.
-  You should remember your future when you use tobacco.
-  Tobacco should be abandoned on the first day of planning, indicating a date for stopping tobacco habits.
-  To be confident that God can stop him.
-  Tobacco stop friends are good friends.

2) Note about foods:

-  Take 3 high-yielding foods.
-  Avoid fatty foods.
- Take oranges and lettuce.
-  Avoid eating sweets.
-  Reduce the amount of salt in the diet.
- Do not eat more food at the same time.
-  Drink 6-8 glass of water.
-  Avoid potato and hazelnuts

 Take the protein rich foods.(eg) milk, eggs, fish, beans

3) Effects of abandonment of medication:

- Very severe chest pain.
- Breathing problems will be caused if you continue to get a breath taking.
-  If continue skipping medicines it will leads to respiratory arrest.

4) Methods to prevent frequent lung problem:

- Avoid traveling to tobacco.
-  Infection vaccine reduces mortality rate.
-  Take the given pills.

-  Wash hands well (before food and medicine).
-  Keep the living room clean.
-  Chemical products do not use at home. (Air cleansers, perfume products).
- Avoid heavy smells.
-  Avoid traveling to places where crowded.
- Ask how to get rid of the lung infection shaft.
-  Ate the right food at the right time.