

The study on effect of home based pulmonary rehabilitation in chronic obstructive pulmonary disease

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Article History:

Received on: 04 May 2020
Revised on: 15 Jun 2020
Accepted on: 28 Jun 2020
Published on: 07 Jul 2020

Volume: 10 Issue: 2

Keywords:

COPD,
pulmonary disease,
Pulmonary
Rehabilitation,
coronary artery disease,
patho-biological
Approaches

ABSTRACT

Chronic obstructive pulmonary disease (COPD) is a leading cause of mortality and morbidity globally (3 million deaths in 2012). COPD is common in older population and kills on average one person every 10 seconds. In 2002, COPD was the fifth leading cause of death. Total deaths from COPD are proposed to grow through more than 30% in the next 10 years. Estimations indicate that COPD in 2030 turns into the 0.33 main reason for the loss of life worldwide. The WHO estimate quotes a figure of almost 5,56,000 deaths attributable to COPD in the Southeast Asian region, which majorly comprises India. The challenge in both treatment and prevention of COPD remains the same. Despite major improvement in health care particularly in the treatment of COPD, the mortality due to COPD tends to be high and is expected to increase in the future according to WHO. Use intolerance is an individual and a disturbing appearance of the disease. Lack of physical activity in COPD patients contributes a major complication to the disease. Oral or inhaled medicine have incomplete role in cultivating the physical capacity of these patients. So the main aim of treatment is control of symptoms, decreasing exacerbation frequency and hospitalization rates, maximizing lung function, refining the quality of life and implementation capacity by means of pulmonary reintegration. Extensive search of literature has not revealed larger data on effect of pulmonary rehabilitation in management of COPD pertaining to South Indian population. Hence, the present study was undertaken to assess the effect of home based rehabilitation program in South Indian population.

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eISSN: 2277-2782

DOI: <https://doi.org/10.26452/ijntps.v10i2.1269>



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INTRODUCTION

In this segment represents introduction of this research work. In India, it ranks as the second largest cause of death after coronary artery disease

with the estimated prevalence of 31.4–57.1% over 60 years of age. Tobacco smoking is the biggest risk factor for COPD, accounting for 80 to 85% of all COPD cases in the developed world. The prevalence of smoking in Indian population is 28.5% in male and 2.1% in female. Not only tobacco smoking is an important factor but also non-smoking risk factors may be equally important. Globally experience to biomass fuel smoke became a significant risk factor recently. [1, 2] Because of burning bio mass fuel smoke, around 3 billion people are unprotected to high level of indoor air pollution when compared to 1.1 billion smokers worldwide. In India approximately 70% of homes are estimated to use bio mass fuel especially to serve the purposes of cooking or heating in kitchen where there is hardly any ventilation. [3, 4] Several patho-

biological Approaches engage in a complicated history of genetic determinants, lung boom, and environmental stimuli. As inhaled bronchodilators constitute the mainstay of remedy. Long-appearing 2 agonists and lengthy-appearing anti-cholinergic retailers are regularly used (the previous often with inhaled corticosteroids). [5, 6] Besides enhancing signs and symptoms, these remedies also are notions to result in some degree of modification inside the sickness. Future research needs to be directed toward the improvement of medicine that may substantially carry superb outcomes in the outcome of sickness. [7, 8]

In COPD, lung feature deteriorates increasingly over several years with increasing signs and symptoms. Acute exacerbation are not unusual especially in later tiers, and feature a widespread effect on patient's day by day sports and well-being.

In 2009, a new questionnaire CAT was proposed. Though several questionnaires have already been established in assessment of COPD including St George Respiratory questionnaire (SGRQ), CAT was found to be handier and practical in daily purposes. [9, 10] Initially, authors made comparison between CAT and various other indices assessing the health status of COPD Patients i.e. MRC (medical research council for dyspnea), FEV1 (Forced expiratory volume in one second), HAD score (Hospital anxiety and depression), six minute walk test(6MWT), incremental shuttle walking test(ISWT) etc. [11] Finally, all those above indices where compared with the changes of CAT score obtained before and after PR. The CAT score was well associated with those already established indices; this was successfully demonstrated by authors who proposed CAT. As CAT score index is much handier so it was indicated that CAT is advantageous and promising. [12]

Several issue arised before it was fully introduced to clinical practice. Pulmonary rehabilitation is a multidisciplinary software of care for sufferers with chronic respiration impairment that is, in my opinion, tailor-made and calculated to enhance bodily and social presentation and independence. [13]

Pulmonary rehabilitation is a method that systematically makes use of scientific primarily based control and assessment alternatives to attain a premiere daily functioning and fitness-associated high-quality of life of man or woman sufferers anguish from deficiency and incapacity due to persistent breathing sickness, as measured clinically or physiologically applicable consequence procedures. [14] Rehabilitation is suitable for any patient with persistent lung sickness, who is disabled by means of

breathing signs. It has emerged as an element of control for sufferers with continual lung ailment based totally on a growing frame of clinical evidence. The consequences of rehabilitation complement the satisfactory therapy a good way to manage signs and symptoms and optimize practical ability. [15]

In assessment to medical institution placing, domiciliary rehabilitation has been favored given that it's far more handy for patients as they live at home and stay in contact with their households and smear schooling in their existence fashion. Domiciliary pulmonary rehabilitation has still not been evaluated in majority of the South Indian patients.

In this paper presents segment 2 of this articles clarifies the detail on the related works. In section 3 presents the materials and methods adopted and section 4 presents the particulars of the experimentations and discussions. Finally segment 5 accomplishes the articles by allocation our implications and upcoming strategies.

RELATED WORKS

This section presents focuses on the related works of this research work. In 2013 ATS/ERS and BTS came out with new guidelines, a new definition for Pulmonary rehabilitation becomes followed through the American Thoracic Society and European Respiratory Society. [16, 17] 'Pulmonary Rehabilitation in Patients with Chronic Obstructive Pulmonary Disease' with 40 sufferers and found that domiciliary pulmonary rehabilitation for 4 weeks outcomes in a large improvement in the fine of life and exercising tolerance, even without improvement in FEV1. [18, 19] 'Quality of existence in sufferers with Chronic Obstructive Pulmonary Disease improves after rehabilitation at home' with 45 patients and discovered that rehabilitation of COPD patients at home can also enhance exceptional of lifestyles, however, this development isn't always correlated with an improvement in lung feature and workout tolerance. 'The Effectiveness of outpatient pulmonary rehabilitation in chronic lung disorder: A randomized controlled trial' in 65 patients with COPD and observed that a six-week outpatient-primarily based application substantially improved the nice of lifestyles in sufferers with slight to intense COPD. [20, 21] 'Randomized controlled trial of pulmonary rehabilitation in severe continual obstructive pulmonary sickness patients, stratified with MRC dyspnoea scale' with one hundred and twenty-six patients and found that development in exercise performance and fitness in patients with persistent obstructive pulmonary (Table 1).

sickness after a workout regimen depends on pre-

Table 1: Comparison between Group A and Group B

Parameter	Group A			Group B			Mean Difference	P value
	Enroll	45 days	P value	Enroll	45 days	P value		
CAT Score	22.32	27.59	<0.0001	25.67	26.83	0.2334	0.72	0.6596
FEV 1	59.5	62.82	0.1111	60.77	64.81	0.0324	-1.68	0.6968
6min Walk Test	368.2	394.2	0.0023	359.5	389.8	0.0011	-0.65	0.9716
FEF 25-75%	35.54	37	0.3041	33.32	36.84	0.0070	0.16	0.9580

liminary diploma of dyspnoea.

Cheng ST et al [15] did a take a look at on 'Pulmonary rehabilitation stepped forward coronary heart rate variability at top exercise, exercise ability and health-related pleasant of lifestyles in Chronic Obstructive Pulmonary Disease' in 65 patients and determined that pulmonary rehabilitation effects in a sizeable development in health-related exceptional of lifestyles and exercise potential. [22]

MATERIALS AND METHODS

In this segment represents the methods and materials of this research work. This study was conducted at the Department of Pulmonary Medicine. It was a prospective, comparative, interventional, parallel group study. Patients of moderate to severe COPD, in line with GOLD guidelines (2014) were encompassed for the study in the period from June 2014 - August 2015.

All 59 patients comprised in the study, analyzed with COPD are divided into two groups, study group (Group A) and control group (Group B). Both groups are assessed prior to the study using COPD assessment test (CAT score), FEV1, FEF 25-75%, and 6MWT. The study group (Group A) patients are advised smoking cessation, nutritional modification, breathing exercise and lower limb exercise along with conventional As per GOLD Guidelines. The control group (Group B) patients are advised conventional As per GOLD Guidelines. An assessment of CAT score, FEV1, FEF 25-75% and 6MWT were done again in both the group and evaluated after 45 days.

The diagnosis of COPD was based on the following as per GOLD (2014) guidelines

1. The clinical history
2. Physical Examination
3. Smoking status (pack per year)
4. Radiological picture

5. Pulmonary function test

The patients will be taught pursed lip breathing while they perform actions of daily living. Expiration and Inspiration will also be taught to be programed so as to minimize the work of breathing. [23, 24]

RESULTS AND DISCUSSIONS

In this segment focuses the results and discussions of this research work.

Total number of patients in the study were 59 out of whom 28 patients were in Study Group (Group A) who had completed 45 days of HBPR with periodic follow up, and 31 patients were in control group (Group B) who were followed up regularly. In study group (Group A): There was a mean increase in CAT score at 45 days compared to baseline with statistical significance ($p < 0.0001$, C.I: -6.301 to -4.514). [25]. The FEV1 shows an increase in mean value from 59.50 to 62.82 but the increase does not reach statistical significance ($p = 0.1111$). In FEF 25-75% there is an increase in mean value from 34.54 to 37.00, but doesn't show any statistical significance ($p = 0.3041$). In 6MWT there was an increase in mean value from 368.2 to 394.2 and it was statistically significant ($p = 0.0023$, C.I: -41.77 to -10.16). In control group (Group B): There was no statistically significant difference p value = 0.2334 (-2.593 to 0.6573) in CAT scores between day 0 and day 45. Meanwhile, a statistically significant increase p value = 0.0324 (-7.702 to -0.3629) in FEV1 value was seen in day 45 compared to day 0 as well as a highly significant increase, p value = 0.0074 (-5.994 to -1.038) in FEF 25-75% value was seen in day 45 compared to day 0. In 6MWT significant increase p value = 0.0011 (-47.43 to -13.15), was seen in 6 MWT at day 45 compared to day zero in group B patients, however the significance is less than that of study group (Group A). [26, 27]

CAT SCORE Group A Vs Group B

- t value is 0.442685

- Degree of freedom is 56.36341144413614
- p value is 0.659688
- Result is not significant for 5% level
- The 95% confidence interval is from -2.533162 to 3.981438

FEV1 Group A Vs Group B

- t value is -0.391483
- Degree of freedom is 58.35220803347482
- p value is 0.696867
- Result is not significant for 5% level
- The 95% confidence interval is from -10.312618 to 6.937618.

CONCLUSION

Finally this work concludes that Home Based Pulmonary rehabilitation when added to conventional treatment protocols for COPD presented a significant development in CAT Score and six minute walk test when compared to spirometric values like FEV1, FEF 25-75% and 6MWT. Since our study did not show a significant improvement in CAT score and other parameters between the two groups a longer period of follow up is recommended to assess improvement in the above parameters. CAT score is relatively superior to other tools in evaluation of effectiveness of home based pulmonary Rehabilitation. Hence supervised home based pulmonary rehabilitation should be recommended to all patients with COPD unrelatedly of the severity of the disease.

ACKNOWLEDGEMENT

The authors are thankful to all who have extended their constant support for the completion of the work.

FUNDING SUPPORT

The authors declare that they have no funding support for this study.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

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Cite this article: M Kalaichandar, K Kirubakaran, V Baskaran, K Kokila, M Jeevitha, Ravichandran S. **The study on effect of home based pulmonary rehabilitation in chronic obstructive pulmonary disease.** Int. J Nov. Tren. Pharm. Sci. 2020; 10(2): 52-56.

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