



Effect of Tele-Yoga on Exercise Capacity in Patients with COPD - A Single-Arm longitudinal Study

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ABSTRACT:

Background: Chronic obstructive pulmonary disease, also known as COPD, has been and will continue to be a significant issue affecting public health and a concern for doctors well into the 21st century. Because of its high prevalence, morbidity, and mortality, chronic obstructive pulmonary disease (COPD) has gained significant attention across the globe in recent years.

Aim: To evaluate the effect of the Yoga in patients of Chronic Obstructive Pulmonary Disease (COPD) Grade (B-D).

Setting: AIIMS Rishikesh

Subjects and Methods: Twenty-Six individuals who met the inclusion criteria were enrolled. Patients received 45-minute yoga sessions for up to three months. On an online platform, sessions were fully overseen. Patients received conventional treatment as per GOLD guidelines. Baseline and third-month outcome indicators were collected.

Results: Result shows significance improvement in Exercise Capacity.

Conclusion: This study shows the feasibility of Yoga in COPD patients with Grade (B-D).

1. Introduction

Chronic obstructive pulmonary disease, also known as COPD, has been and will continue to be a significant issue affecting public health and a concern for doctors well into the 21st century. Because of its high prevalence, morbidity, and mortality, chronic obstructive pulmonary disease (COPD) has gained significant attention across the globe in recent years. These factors present substantial difficulties for health-care systems. It is widely acknowledged that pulmonary rehabilitation is an essential part of the treatment plan for patients who suffer from chronic respiratory diseases. Since the American Thoracic Society (ATS) and European Respiratory Society (ERS) Statement on Pulmonary Rehabilitation was published in 2006, there has been a significant expansion in our knowledge of the effectiveness and breadth of pulmonary rehabilitation. [1] "Pulmonary rehabilitation is a comprehensive intervention that is based on a thorough patient assessment followed by patient tailored therapies that include, but are not limited

to, exercise training, education, and behaviour change. Its purpose is to improve the physical and psychological condition of people who suffer from chronic respiratory disease and to promote the long-term adherence to behaviours that are beneficial to one's health. [2] Chronic obstructive pulmonary disease (also known as COPD) is one of the conditions that can be helped by practising yoga. The three primary implements utilised in yogic practise are the body, the breath, and the mind. The practise of yoga is one example of a psychophysical activity. There is evidence that practising yoga can enhance breathing technique, chest expansion, lung function, body posture, and overall health-related quality of life, as well as reduce respiratory problems. [3] However, according to both national and international standards for the treatment of COPD, regular yoga practise is not recommended for patients. The purpose of the current investigation was to investigate the effects of yoga on individuals with chronic obstructive pulmonary disease who took part in a yoga intervention that lasted



for three months and who were classified as having a grade between B and D. Specifically, Outcomes were in assessing the patients' Exercise Capacity measured in terms of (6-minute walk distance), lung function test results, levels of dyspnea, and overall quality of life. Health-related quality of life as measured by the St. George Respiratory Questionnaire (SGRQ), Depression and Anxiety scores as measured by the Patient Health Questionnaire (PHQ-9) and the Generalized anxiety disorder (GAD-7) scale, COPD Assessment Test (CAT) Score, Modified Medical Research Council (mMRC Scale), Lung function test in terms of Forced expiratory volume in the first second (FEV1%), Saturation, and PR monitoring, Hospitalisation rate, and Exacerbation rate. [4-9]

2. Methods

Patient selection

All COPD patients who presented themselves to an outpatient clinic for pulmonary medicine at AIIMS Rishikesh were screened. Participants were to be between the ages of 40 and 75, of either gender, and Stable diagnosed case of chronic obstructive pulmonary disease (COPD), capability to do spirometry, group (B-D) COPD patients as defined by GOLD guidelines, and patient consent.

Study Design:

This was a Single arm Longitudinal analytical study that took place at the AIIMS Rishikesh between February 2021 and February 2022. The principles outlined in the Declaration of Helsinki were adhered to throughout the course of the research.

Intervention

Patients participated in supervised yoga sessions led by an experienced yoga instructor every morning for up to three months, each session lasting for forty-five minutes and taking place online. The compliance rate is five out of seven days a week. [10]

Outcomes:

The most important result was Exercise Capacity measured in terms of (6-minute walk distance). Secondary outcomes included Health-related quality of life as measured by the St. George Respiratory Questionnaire (SGRQ), Depression and Anxiety scores

as measured by the Patient Health Questionnaire (PHQ-9) and the Generalized anxiety disorder (GAD-7) scale, COPD Assessment Test (CAT) Score, Modified Medical Research Council (mMRC Scale), Lung function test in terms of Forced expiratory volume in the first second (FEV1 %), Saturation, and PR monitoring, Hospitalisation rate, and Exacerbation rate.

We gathered some baseline information, such as ages, genders, rural/urban status, smoking histories, pack-years, occupations, ETS scores, and incomes. Patients were monitored for three months, during which outcome parameters were collected.

Statistical Analysis

Data were expressed as mean (Standard deviation) as well as Median [Interquartile range] for quantitative variables. The difference between values at baseline and 3rd month was calculated for all the quantitative variables. Analysis of data showed normal and non-normal distribution for all the investigated parameters in our study population. A comparison of normally distributed numerical data was performed using Paired t-test. A comparison of non-normally distributed numerical data between the groups was performed using Wilcoxon signed rank test. A p-value of <0.05 was considered statistically significant. Statistical Analysis was performed using IBM SPSS software version 23.0.

3. Results

Exercise Capacity

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (378.9 ± 139.7) was significantly improved using paired t-test. ($p = 0.009$). [Table: 1]

SGRQ scores

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (26.8 ± 13.3) was significantly improved using paired t-test. ($p = <0.001$). [Table: 1]



PHQ-9 scores

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (4.8 ± 4.3) was significantly improved ($p = <0.001$). [Table: 1]

GAD-7 scores

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (4.3 ± 3.0) was significantly improved using paired t-test. ($p = <0.001$). [Table: 1]

CAT Score:

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (7.3 ± 2.9) was significantly improved using paired t-test. ($p = 0.003$). [Table: 1]

mMRC Scale:

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD [2 (0/3)] was significantly improved using Wilcoxon signed rank test ($p = 0.002$). [Table: 1]

FEV1%:

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (38.3 ± 13.5) was not significantly improved using the paired t-test. ($p = 0.13$). [Table: 1]

Saturation:

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (96.0 ± 2.0) was not significantly improved using paired t- test ($p = 0.89$). [Table: 1]

PR monitoring:

The absolute value of median differences in baseline and 3rd month Exercise Capacity in terms of 6 MWD (82.4

± 1.0) was not significantly improved using the paired t-test. ($p = 0.955$). [Table: 1]

Hospitalization rate:

Data showed a greater fall in Hospitalization rate from 42.1 to 0.0

Exacerbation rate:

Data showed a greater fall in Exacerbation rate from 84.2 to 5.3.

4. Discussion

This study was proposed as a single arm longitudinal analytical pilot study to see the effect of Yoga among COPD patients with Grade (B-D). India has only conducted a few studies on Yoga and COPD. In these times of covid 19, our tele - yoga practice is more feasible than ever. In places with little medical resources, chronic obstructive pulmonary disease (COPD) is a major contributor to morbidity and mortality. The effects of this illness and its treatment of it are significantly more severe for persons whose income falls into the lower middle class or higher middle class. At the moment, pharmaceutical therapy, which can be either inhaled or taken orally, is a component of the strategy for disease management. Initially, this therapy is effective in the management of the condition; however, later on, there is an increase in the cost burden, morbidity (more and more patients requiring oxygen therapy or respiratory support therapy), and death associated with the disease. Even though yoga is effective for COPD, there are not enough well-designed trials available in India. The All-India Institute of Medical Sciences (AIIMS) Rishikesh is a tertiary care hospital that serves the population of the entire state of Uttarakhand as well as the surrounding territories of Uttar Pradesh, Himachal Pradesh, and Punjab. Patients that are sent to this institution typically originate from low- or middle-income families, and as a result, it is anticipated that these patients will benefit from the findings of this study. Rishikesh is often referred to as the "capital of the yoga world." Consequently, the significance of beginning work on this project at the AIIMS campus in Rishikesh, located in the state of Uttarakhand, cannot be overstated. This study may help in the development of adjuvant therapy for the



management of COPD and analyse its efficacy as a home-based intervention in comparison to an intervention in a hospital setting. [11-19]

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