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Effectiveness of breathing exercise among COPD Patients and Their quality of life.

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Introduction:

As a leading cause of disability and death in the world, COPD is becoming increasingly prevalent. Exacerbations of chronic dyspnea, cough, and sputum production can lead to frequent hospitalizations in patients with COPD. Patients with COPD who experience an exacerbation must often be admitted to the hospital, with hospitalisation rates as high as 60%.

Comorbidities of anxiety and depression in COPD patients are common and have a negative impact on quality of life. Having higher disability and lower functional status5 in general health, physical roles, emotional roles, social functioning, bodily pain, mental health function, and vitality has been linked to these disorders Anxiety and depression are still strongly linked to lower functional status, even after controlling for other health conditions, such as additional medical conditions, COPD severity, and dyspnea. Symptoms of COPD such as a high FVC, chest discomfort, and dyspnea have all been linked to anxiety.

Anxiety-induced hyperventilation exacerbates shortness of breath in COPD patients by causing bronchoconstriction and lung hyperinflation. Physiological excitement increases breathing frequency. Excessive inflation reduces the amount of reserve air that can be inhaled, making breathing more difficult.

Last but not least, high levels of anxiety are associated with a higher risk of COPD exacerbation-related hospitalizations, mortality, relapse, and readmission. Very few studies have looked at anti-anxiety treatments for people with COPD exacerbation. Anxiety during a hospital stay has been studied extensively by scientists. According to our knowledge, there has been no research on the effect that a breathing programme can have on anxiety.

Regulated breathing has been shown to be an effective treatment for a variety of pulmonary ailments in previous research. The researchers hypothesised that controlled deep breathing, like smoking cessation, would reduce negative affect levels.

Some examples of regulated breathing exercises include active expiration, long, deep breaths, pursed lips breathing, relaxation therapy, specific body positions, inspiratory muscle training, and diaphragmatic breathing. By reducing dynamic hyperinflation, improving gas exchange, increasing respiratory muscle strength and endurance, and optimising the thoraco-abdominal motion pattern, controlled breathing reduces dyspnea in COPD patients. Another factor that may contribute to the efficacy of controlled breathing is psychological. However, the current study does not address these effects.

Patients with COPD exacerbation were studied at Selected Hospitals in Uttar Pradesh to see if controlled breathing techniques were feasible and effective in improving dyspnea, sleep disturbance, anxiety, depression, and overall quality of life.

METHODOLOGY:

As This randomised pilot study was approved by the ethics boards of a number of hospitals in Uttar Pradesh, and all participants provided written consent before participating.

At Selected Hospitals in Uttar Pradesh, participants with COPD exacerbation underwent a 10-day controlled breathing programme to compare it to the standard care control intervention. In the standard care group, all participants received the same standard medical treatment. Primary and secondary outcomes were assessed at the time of admission and discharge from the hospital.

Defining the Size of a Sample

Sample size was calculated based on the results, which included anxiety and depression symptoms scores. As in previous studies, the control group was expected to experience an increase in anxiety and depression symptoms (2 3.3 points on the Hospital Anxiety and Depression questionnaire score), while the treatment group was expected to experience a small positive effect (5 points on the Hospital Anxiety and Depression questionnaire score). As a result, with a 2-sided =.05 and a hypothetical dropout rate of 20%, we needed 23 patients in each group to establish statistically significant differences in anxiety and depression between the two groups.

Randomization Methodology

An unbiased nurse used a computer-generated randomization list to divide the participants into treatment and control groups. The physiotherapist was informed of the participant's participation in the study after the participant had given their consent and been accepted.

Subjects Over the course of a six-month period, 46 patients admitted to the hospital's respiratory care unit and diagnosed with a non-infectious COPD exacerbation were surveyed. It was diagnosed using criteria from the American Thoracic Society (ATS). Exacerbation-free for at least 10 days (ranging from 10–12 days) is the norm for this study. Patients were excluded from the study if they had additional organ failure, malignancy, or were unable to comply. All patients received standard medical treatment, including systemic steroids (76%), inhaled bronchodilators (100%), and oxygen during the exacerbation.

Inhalation and Exhalation Program

Two times a day, a researcher led the patients in controlled breathing exercises while they were in the hospital. Participants were allowed three-minute breaks during the 30-minute physiotherapy session. There were three types of breathing exercises in the programme: relaxation, pursed-lip breathing, and active expiration (exhaling fully).

Exercising to De-Stress

Using the findings that hyperinflation is a partially reversible airway blockage caused at least in part by increased inspiratory muscle activity during expiration, researchers have developed relaxation exercises. Dynamic hyperinflation can be exacerbated even after an acute episode of airway obstruction is resolved because of the persistently elevated activity. When you relax, your goal is to decrease your frequency of breathing while increasing your tidal volume.

Eating while clenching one's teeth

Expiration is aided by preventing airway collapse and necessitating active and prolonged expiration that is only possible when breathing through pursed lips. Expiration pressure is around 5 cm H2O, which is generated by the person's vigorous, pursed-lip exhalation. Breathing frequency and dyspnea are reduced when compared to spontaneous breathing, but tidal volume and oxygen saturation are increased. Tidal volume and breathing frequency decreased in patients who received treatment for symptoms.

In-progress expiration.

When the diaphragm contracts during active exhalation, the abdominal pressure increases, allowing it to operate at its optimal length. During resting breathing, there was no difference between COPD patients and healthy people in diaphragm displacement and its contribution to tidal volume. When the expiratory muscles relax after a vigorous expiration, they release gas pressure stored in the diaphragm and rib cage's elastic recoil, which aids subsequent inspiration.

Conclusion: As a result of increased respiratory demands, active expiration is a common response. Patients with chronic obstructive pulmonary disease (COPD) have a tendency to experience spontaneous abdominal muscle activity while they sleep. Although diaphragm function is improved by active expiration, its effect on dyspnea is not yet clear.

Measuring Success Through Outcome

It was decided to create the Hospital Anxiety and Depression Scale (HADS) in order to gauge how anxious and depressed hospital patients

There are 14 items on the Hospital Anxiety and Depression Scale (HADS) that are used to measure the level of psychological morbidity in patients who are ill. With scores ranging from 0 to 21, it measures depression and anxiety. More than 8 on either subscale indicates probable depression and anxiety, while more than 11 on either subscale indicates more than probable depression and anxiety.' An 8 is considered normal, a score of 8–10 indicates mild depression, a score of 11–14 indicates moderate depression, and a score of 15 indicates severe depression on the depression scale. The Hospital Anxiety and Depression Scale is a reliable indicator of depression and anxiety, with Cronbach alpha values of 0.83 for anxiety and 0.82 for depression.

St. George's Respiratory System Questionnaire.

As a standardised, self-administered questionnaire, the St George's Respiratory Questionnaire is used to evaluate the deteriorated health of patients with airway disease and their perceived quality of life. There are 50 elements in total, and they are organised into three main sections: symptoms, activities, and effects. Domains are scored individually, and a total score is calculated from the scores of all domains. A lower score indicates a better quality of life in terms of health.

Scale of Dyspnoea The Medical Research Council reworked it.

Dyspnea was assessed using a self-administered questionnaire developed by the Medical Research Council that includes six questions about breathlessness.

No dyspnoea is represented by category 0; mild dyspnoea is represented by category 1; moderate dyspnoea is represented by category 2; and moderately severe dyspnoea is represented by category 3. Breathless when leaving the house or getting dressed or taking off one's clothes

Quality of Life Questionnaire

Quality of Life (EQ-5D) questionnaire includes the visual analogue scale and the EQ-5D index. One point equals death/the worst possible health, ten points equals the best possible health, and one hundred points equal the worst possible health on the visual analogue scale. The questionnaire is divided into five sections: mobility, self-care, typical activity, pain/discomfort, and anxiety/depression. For each item, participants select one of three health states (from good to poor) and the number of people who select that condition is recorded.

Toughness of the Handgrip.

A dynamometer (TEC-60, Technical Products, Clifton, New Jersey) was used to measure the strength of the subject's hand-grip, which had been specifically calibrated to match the size of the hand. The maximum force was measured three times on each hand. Patients with COPD have had their muscle strength measured using this procedure.

Respiratory System Muscle Strength.

The maximum inspiratory and expiratory rates of each subject were measured four times in 2-minute intervals by the researchers, who then compared the results to expected values. When the client was seated, cardiopulmonary physiotherapists conducted all breathing tests on him.

Statistics-based Analyses

Analysis of Variance Comparisons of baseline characteristics were made using continuous and categorical data using the U and chi-square tests. It is possible to see the results as a number and a percentage or as a mean standard deviation. Comparing differences between and within groups was done using the 2-way repeated-measures analysis of variance (ANOVA). We also used the paired-sample Student t test for comparing within-group differences between the groups. Patients who were unable to complete the programme were assumed to have progressed at the same rate as those who completed the programme. A two-tailed P-value of.05 was deemed statistically important. Statistical software was used to perform all of the statistical analyses (SPSS 20.0, SPSS, Chicago, Illinois).

Results

All of the subjects were male, according to the results. Both the intervention and control groups had a mean age of 74.436.7 years, respectively. Subjects who smoked or drank were not statistically different from each other. Hospitalizations occurred twice a year for both groups. It was found that there were significant differences in the activity domain and total score between groups using St George's Respiratory Questionnaire subscales, with higher scores in the control group denoting a lower quality of life.

Neither of the baseline values differed significantly. The dyspnea scores of the intervention group improved significantly (P =.004), whereas the dyspnea scores of the control group increased from baseline to discharge. The Hospital Anxiety and Depression Scale's anxiety and depression subscales were both reduced when patients used the regulated breathing technique. The mean change in the depression score was greater (10.56 0.465). At discharge, the mobility and anxiety/depression subscales of the European Quality of Life subscales improved more in the intervention group than in the control group.

Discussion

In this study, the researchers wanted to find out how patients with COPD exacerbation felt as a result of a controlled breathing programme. Acute COPD has not been studied in relation to the physical and psychological effects of hospitalisation, despite the fact that numerous studies have identified these effects.

COPD sufferers have a lower quality of life, higher levels of anxiety and depression than those with other illnesses, according to previous studies. Those with COPD also reported that their dyspnea was directly linked to their feelings of anxiety. Patients with COPD who have a low health-related quality of life have an increased risk of re-hospitalization if they suffer from anxiety or depression.

There have been a number of studies assessing the effectiveness of therapy for anxiety, depression, quality of life, and function in patients with COPD exacerbation. Research on St. George's Respiratory Questionnaire scores and the Barthel score found that using a gutter frame rather than a rollator improved the scores on both questionnaires by an average. There were no significant differences in the daily weight, eating, sleeping, and exercise scores between the incentive spirometry group and the control group. No previous studies have evaluated the efficacy of a therapy programme in patients with COPD exacerbation, taking into account the characteristics included in the current investigation, to our knowledge.' Many studies have shown that the health-related quality of life, lung function, and survival of people with COPD are all negatively impacted when the disease worsens.

The current study showed a significant improvement in functional and psychological measures in the intervention group and a significant decline in the control group as a result of the hospitalisation effect. COPD exacerbations can be exacerbated by patients' inactivity while in the hospital, according to this study.

Pulmonary rehabilitation programmes can help alleviate COPD patients' anxiety. Emery and his colleagues found that a combination of exercise training and stress management education reduced anxiety significantly. Stress management sessions that did not include fitness training had no effect on anxiety, which is surprising. This is in line with our findings, which show that exercise can improve psychological status in COPD patients in a variety of modalities (breathing or global training, for example).

The current research has two major flaws. To begin with, the sample size was small, and only males were included in the study. Second, after patients were discharged, we received no further data.

Conclusion

Few studies have examined the benefits of breathing strategies during the early post-exacerbation period, which we believe is an important rehabilitation option for people with COPD..

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List all the material used from various sources for making this project proposal

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