

Correlation of Hospital Anxiety and Depression Scale (HADS) and Six Minute Walk Test (6MWT) Performance in Chronic Obstructive Pulmonary Disease (COPD) Patients

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Abstract

Purpose of study: Chronic obstructive pulmonary disease (COPD) is a severe pulmonary disease with varying impact on the patient's general physical condition, functioning and quality of life. Anxiety and Depression are common comorbidities in COPD patients which affects exercise capacity in COPD patients. There is lack of literature of assessment of depression and anxiety in COPD patients. Therefore, the current study was undertaken.

Aim and objective: To find out the correlation between Hospital Anxiety and Depression Scale (HADS) and Six Minute Walk Test (6MWT) Performance in Chronic Obstructive Pulmonary Disease (COPD) Patients.

Methodology: All the participants were selected according to sample of convenience and given a thorough explanation of the procedure in the language they understand. Each participant signed a written consent before participating in the study in the language they could comprehend. Subjects were screened on the basis of selection criteria and a total of 100 participants were selected. Their anthropometric and demographic data was recorded. The participants were given the HADS and then asked to perform the Six-minute walk test (6MWT) and the distance was calculated.

Result: In this abnormal depression group the $r = -0.3148$, $p = 0.0047$ which shows there is negative correlation, which is strongly significant. In this abnormal anxiety group the $r = -0.4115$, $p = 0.0001$ which shows there is fairly negative correlation which is found to be significant.

Conclusion: The study thus concluded that, as anxiety and depression increases Six-minute walk test (6MWT) distance decreases.

Keywords: COPD, Six minute walk test, anxiety, depression, HADS.

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1. Introduction

COPD is a major cause of disability & death worldwide. It is defined as a disease state characterized by airflow limitations that is not fully reversible. [1] It is a progressive airway disease marked by symptoms of dyspnoea, sputum production, wheezing, coughing, chest tightness and fatigue. The main cause of COPD is long term exposure to substances that irritate and damage the lungs. Moreover, the pulmonary and extra pulmonary manifestation of COPD seriously affects physical, social and emotional states. It is therefore not surprising to find a higher prevalence of depression in COPD patients than in either healthy controls or even patients with other chronic

illnesses such as Parkinson's disease, stroke, arthritis and tuberculosis. [2] Abebaw M, Yohannes in their study stated that during the past two decades there has been increasing recognition that patients with COPD with three or more comorbidities are more to be frequently hospitalized. [3]

Kurt B stage, Thomas Middlebone 2006 in their study stated COPD is a severe treatment-resistant pulmonary disease with varying impact on the patient's general physical conditions, functioning and quality of life. [4] Statistics reveals that India contributes to COPD mortality which is estimated to be highest in the world. The ICMR reports in 2012 stated the prevalence varied from 8% amongst Indian male and approximately 2.5% to 4.5%

among Indian females more than 64.7 estimated age standardized death rate per 100000 amongst both sexes.[5,6] Co-morbidities like anxiety and depression contributes to substantial burden of COPD- related morbidity, notably by impairing quality of life and reducing adherence to treatment. Untreated and under-recognized depression and anxiety symptoms in patients with COPD have deleterious effects on physical functioning and on social interaction, increasing fatigue and healthcare utilization. Depression and anxiety are challenging to identify and treat because their symptoms often overlap with those of COPD which in turn affect exercise capacity.[7]

2. Materials and Methods:

2.1 Study design: Experimental study

2.2 Setting (study location): Pulmonary outpatient department.

2.3 Duration of study: 12 months

2.4 Inclusion criteria: COPD patients with the age between 40-60 years old; COPD

patients (GOLD standard) with mild and moderate severity; Willing to participate.

2.5 Exclusion criteria: Any cardiovascular, neurological, musculoskeletal condition; Post-surgical patient; Acute exacerbation of COPD

2.6 Methodology

The selection of participants was done on the basis of sample of convenience and given a thorough explanation of the procedure in the language they understood. Participants were screened on the basis of selection criteria. Total of 100 participants were selected and their anthropometric and demographic data was recorded. After the selection of participants, they were given the Hospital Anxiety and Depression Scale (HADS) in the language best understood by them. Following this the patient was asked to perform Six Minute Walk Test (6MWT) using ACSM’s guidelines standard protocol and ATS guidelines. The distance they covered was then calculated.

3. Results

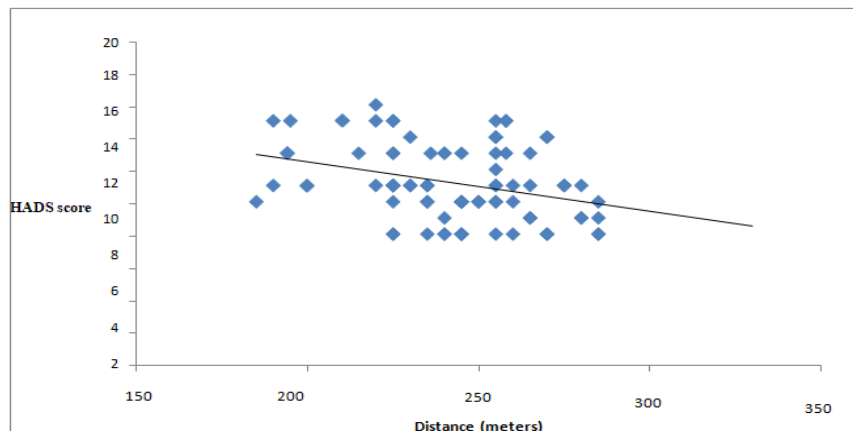


Figure 1: Correlation between 6MWT distance & HADS Abnormal Depression scores

Figure 1 Shows there is weak correlation between the abnormal depression group and 6MWT distance. And the p value came 0.0047 which shows that there was negative correlation which is strongly significant. This means that if depression increases the 6MWT distance decreases.

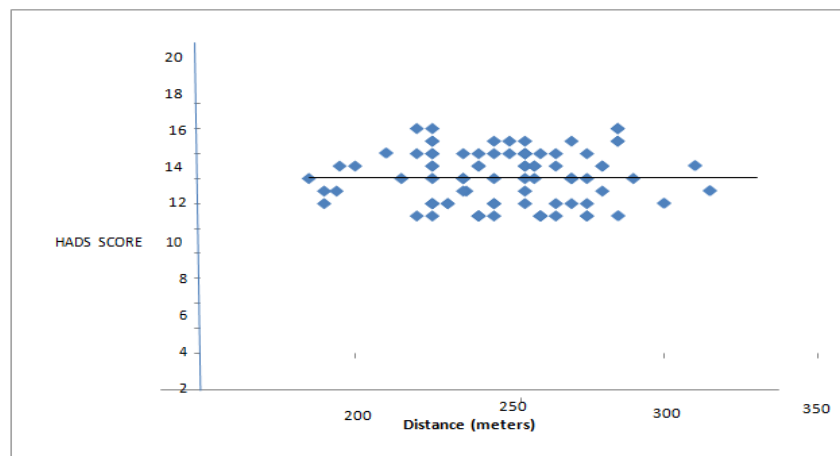


Figure 2: 6MWT distance & HADS Abnormal Anxiety scores

Figure 2 shows that there is fair negative correlation between the abnormal anxiety group and 6MWT distance. And the p value came 0.0001 which shows that the correlation is significant. That means that if anxiety increases the 6MWT distance decreases.

4. Discussion

The purpose of this study was to find correlation of depression, anxiety with 6MWT performance in Chronic Obstructive Pulmonary Disease patients. Participants in this study showed that if anxiety and depression increase the 6MWT distance decreases.

The participants were categorized according to their HADS score. HADS normal depression (score 0-7), HADS borderline abnormal depression (score 8-10), HADS abnormal depression (score 11-21). HADS normal anxiety (score 0-7), HADS borderline abnormal anxiety (score 8-10), HADS abnormal anxiety (score 11-21).

Participants in the HADS abnormal depression group showed that there was weak negative, highly significant correlation ($r = -0.3148$ $p = 0.00047$) i.e. when the participant is depressed he will walk a lesser distance which was in line with the study conducted by Di Marco *et al* [8] which found that depressed subjects displayed a physical activity impairment consisting of reduced distance in the 6-min walk test, concluding that depressed COPD patients have a reduced daily and maximum exercise capacity compared to non-depressed patients.

The HADS abnormal anxiety group had $r = -0.4115$ and $p = 0.0001$ which showed that as anxiety increases the 6MWT distance decreases. Similar results were also obtained by Eisner *et al* [9] in his study which suggested that anxiety was related to poorer health outcomes including submaximal exercise testing like 6MWT which showed decrease in the distance walked.

Findings from our study did not show significant correlation of HADS borderline abnormal depression group and 6MWT distance ($r = -0.3258$ and $p = 0.1743$) which showed that there was very weak negative correlation which is not significant. We have also found that in correlation of HADS borderline abnormal anxiety group and 6MWT distance ($r = -0.1532$ $p = 0.6848$) showing a very weak negative correlation which was insignificant. In both these groups there was no correlation seen between the 6MWT distance and the level of anxiety and depression.

5. Conclusion

The present study concluded that severe depression and anxiety level both affects the 6MWT distance. As anxiety and depression increases the 6MWT distance decreases.

Conflicts of interest: There are no conflicts of interest.

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