

Study of Anxiety and Depression in Chronic Obstructive Pulmonary Disorder (COPD) Patients in North Karnataka PopulationAmol Patange¹, Md Munnawar S Hussain², Monica Karan³¹Professor and Head, Department of Psychiatry, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585102²Associate Professor, Department of Psychiatry, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585102³Senior Resident, Department of Psychiatry, Faculty of Medical Sciences Khaja Banda Nawaz University, Kalaburgi-585102

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Abstract:**Background:** Depression, anxiety, and COPD are bi-direction disorders in air pollution, smokers, due to a hurry and worry lifestyle. Hence, it is a challenge for psychiatrists to manage both depressive illnesses.**Method:** 65 adult patients aged between 40-70 years with COPD, anxiety, and depression was studied. They were subjected to a detailed clinical examination, and COPD was diagnosed as per GOLD guidelines with a post-bronchodilator $fEv1/FEV<70n$ MRC score. The spirometric study, psychological assessment was carried out by the HAM-D, and anxiety assessment was carried out by the MADRS method.**Results:** 32 (49.2%) had no depression, and 33 (50.7%) had depression. Respiratory and psychiatric parameters had a significant p value ($p<0.001$).**Conclusion:** The prevalence of depression and anxiety in COPD should be evaluated with respiratory parameters, and psychiatric counselling and early treatment will improve the quality of life.**Keywords:** COPD, GOLD guideline, HAM-D, MADRS Method.

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Introduction

COPD is a chronic inflammatory disorder that not only affects the lungs but also other systems of the body. The common co-morbidities associated with this are cardio-vascular diseases, lung cancer, osteoporosis, depression, and anxiety [1]. Depression and anxiety in COPD patients have serious effects. If it is untreated, it has serious effects on physical and social well-being [2]. It leads to an increased economic burden for the treatment and hospitalisation of patients. ASCOPD, depression, and anxiety have overlapping symptoms; hence, it is a challenge for clinicians to treat.

It is reported that COPD and depression anxiety vary from 13% to 46%, and untreated COPD with anxiety depression can lead to suicidal tendencies and an increased risk of hospitalisation [3]. It is also observed that COPD, anxiety, and depression are bi-directional. Depression can cause COPD as it leads to increased smoking, and COPD leads to depression.

Persistent depression leads to anxiety and suicidal ideation [4]. Hence, an attempt is made to evaluate

the anxiety and depression in COPD patients, and significant outcomes were noted.

Material and Method

65 (sixty-five) patients regularly visited the psychiatry department of the Faculty of Medical Sciences at Khaja Banda Nawaz University, Kalaburgi-585102 were studied.

Inclusive Criteria: COPD patients with no history of exacerbations in the last two months. The post-bronchodilator ratio was from forced expiratory volume in one second to forced vital capacity less than 0.70 ($FEV1/FEV<0.70$). The age group is between 40-70 years old. The patients who gave written consent for treatment were included in the study.

Exclusion Criteria: The patients suffer from acute exacerbations (admitted to the hospital for worsening of respiratory symptoms), have attended the emergency department, and have been on antibiotics and systemic corticosteroids for one month. Patients already on antidepressant or anti-anxiety treatment were excluded from the study.

Method:

A detailed history pertaining to the baseline data, smoking history, duration, and severity of COPD symptoms. A BMI was recorded, a chest x-ray was taken in every patient, and a CT scan was studied if necessary.

The CAT (COPD assessment test), which is an 8-item measure of impairment in the health status of COPD patients, was an unpacked 6-minute walk test performed to assess exercise tolerance and physical activity. A modified Medical Research Council scale was applied to obtain dyspnoea scores.

A history of moderate or severe exacerbations of symptoms was noted. BODE (body mass index, airflow obstruction, dyspnoea, and exercise capacity), a composite score that serves as a good predictor for the severity of disease and subsequent survival rate, was calculated. A spirometry assessment was done after the administration of a short-acting bronchodilator. COPD diagnosis was as per GOLD (Global Initiative for Chronic Obstructive Lung Disease) lines [5]. Anxiety was measured using the Hamilton anxiety scale (HAM-A), while depression was measured using the Montgomery-Asberg depression scale (MADRS) [6].

The duration of the study was from May 2023 to October 2023.

Statistical analysis: A comparison of anxiety, depression, and non-depression was carried out using the t test formula, and significant results were noted. The statistical analysis was carried out in SPSS software. The ratio of males and females was 3:1.

Observation and Results

Table 1: Comparison of anxiety and depression in COPD patients 32 (49.2%) had no depression, and 33 (50.7%) had depression.

Table 1: Comparison of anxiety and depression patients

Details	No anxiety	Anxiety	Total
No depression	20	12	32
Depression	10	23	33
Total	35	35	65

No anxiety 30 (46.1%), Anxiety 35 (53.8%), Depression 33 (50.7%), 32 (46.1%) no depression

Table 2: Comparison of respired manifestations in depression and non-depression patients

- Body mass index: 18.3 (±2.2) in depression, 20.2 (± 2.84) in no depression, t test was 2.84 and p<0.001
- Smoking Index: 564 (± 3) in depression, 556 (±2) in non-depression t test was 12.6 and p<0.001
- FVI predicted: 46 (± 3) are depressed, 54 (± 4) are not depressed, t test 9.10 and p<0.001
- FV1 L : 1.103 (± 2.4) in depression, 1.196 (±1.2) in no depression, t test 0.18 and p<0.855
- CCQ score: 24 (±2) depression, 18 (± 3) in no depression patients, t test: 9.45 and p<0.001.
- HAM D score: 15 (± 3) in depression, 8 (± 2) in no depression patients; t test was 11.1 and p<0.001
- 6 MWD minute work distance): 414.72 (± 2.5) in depression, 433.6 (± 4.3) in no depression patients; t test is 21.5 and p<0.001

Table 3: Comparison of clinical manifestations in depression and non-depression patients

In depression patients

- HR: 84.3 (± 12.1) in pre-test, 94.2 (± 14.2) in post-test; t test: 3 and p<0.004
- RR: 19.4 (± 2.92) in pre-test, 27.6 (± 4.2) in post-test; t test was 9.06 and p<0.001
- SPO2 – 96.5 (± 1.17) in the pre-test and 95.9 (± 5.9) in the post-test; the t test was 0.5 and p<0.57 (insignificant).
- BORG score: 0.58 (± 1.35), 1.24 (± 1.35) leg fatigue; t test: 4.20 and p<0.001.
- Leg cramp: 4 (± 2.80) in the pre-test, 14 (± 6.4) in the post-test; the t test was 8.2, and p<0.001.
- Need to stop: 6 (± 2.6) in the pre-test, 9 (± 3.2) in the post-test; the t test was 4.15, and p<0.001.
- 6 MWD – 430 (± 52.2) in post-test, 42.8 (± 20.8) and t test was 0.202 and p>0.84

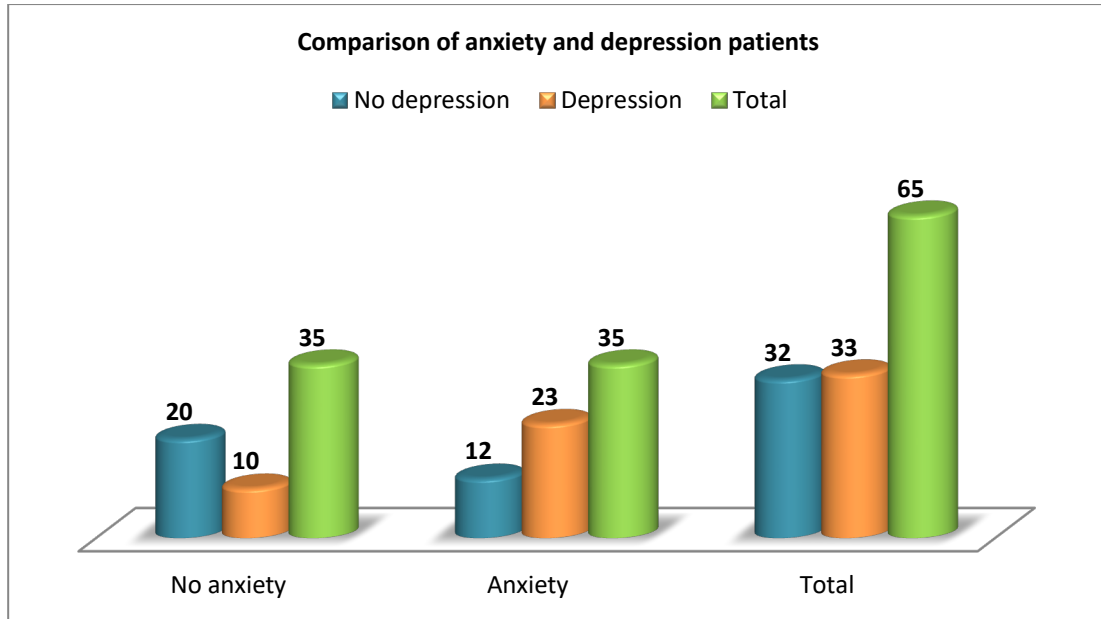


Figure 1: Comparison of anxiety and depression patients

Table 2: Comparison of respired manifestation in depression and no depression patients

Respiratory Manifestation	Depression (33)	No depression (32)	t test	p value
Body Mass Index	18.3 (± 2.2)	20.2 (± 3.1)	2.84	P<0.005
Smoking Index	564 (± 3)	556 (± 2)	12.6	P<0.001
FV1 % pred.	46 (± 3)	54 (± 4)	9.10	P<0.001
FV1 L	1.103 (±2.4)	1.196 (± 1.6)	0.18	P>0.855
CCQ score	24 (± 2)	18 (± 3)	9.45	P<0.001
HAM-D score	15 (± 3)	8 (± 2)	11.1	P<0.001
6 MWD (Minute walk distance)	414.72 (± 2.5)	433.6 (± 4.3)	21.5	P<0.001

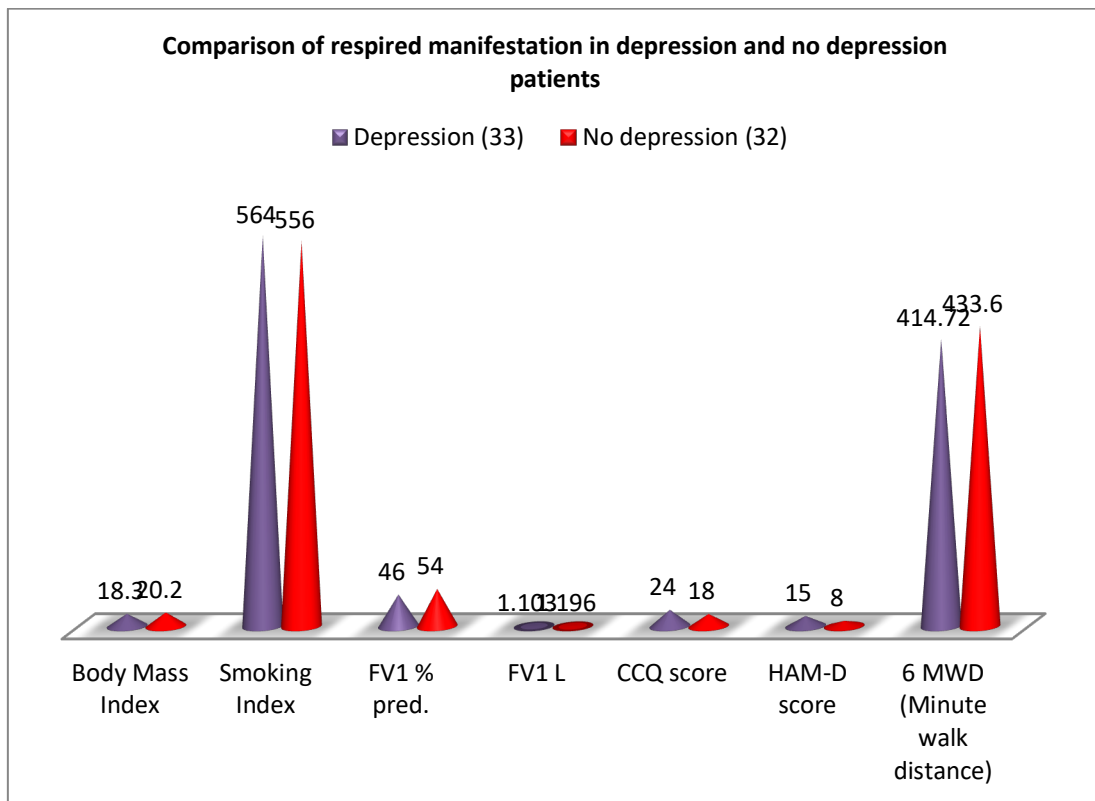


Figure 2: Comparison of respired manifestation in depression and no depression patients

Table 3: Comparison Clinical Manifestation in both depression and No depression patients

Manifestation	No depression				Depression			
	Pre-test	Post-test	t test	P value	Pre-test	Post-test	t test	P value
HR	84.3(±12.1)	94.2(±14.2)	3	P<0.004	93.2(± 11.6)	112 (±15.2)	5.61	P<0.001
RR	19.4(±2.92)	27.6 (±4.2)	9.06	P<0.001	21 (±2.84)	30.5 (±5.2)	9.24	P<0.001
SPO ₂	96.5(±1.17)	95.9 (±5.9)	0.5	P<0.57	96.2(±2.50)	94.2 (±5.6)	3.18	P<0.002
BORG score leg fatigue	0	0.58(±1.35)	0	0	0	1.24 (±1.70)	4.20	P<0.002
Leg cramp	4(±2.60)	0	0	0	0	14 (±8.2)	8.2	P<0.001
Need to stop	6(±2.6)	0	0	0	0	9(±3.2)	4.25	p>0.001
6 MWD	430(±52.2)	0	0	0	0	42.88(±20.8)	3.7	p>0.001

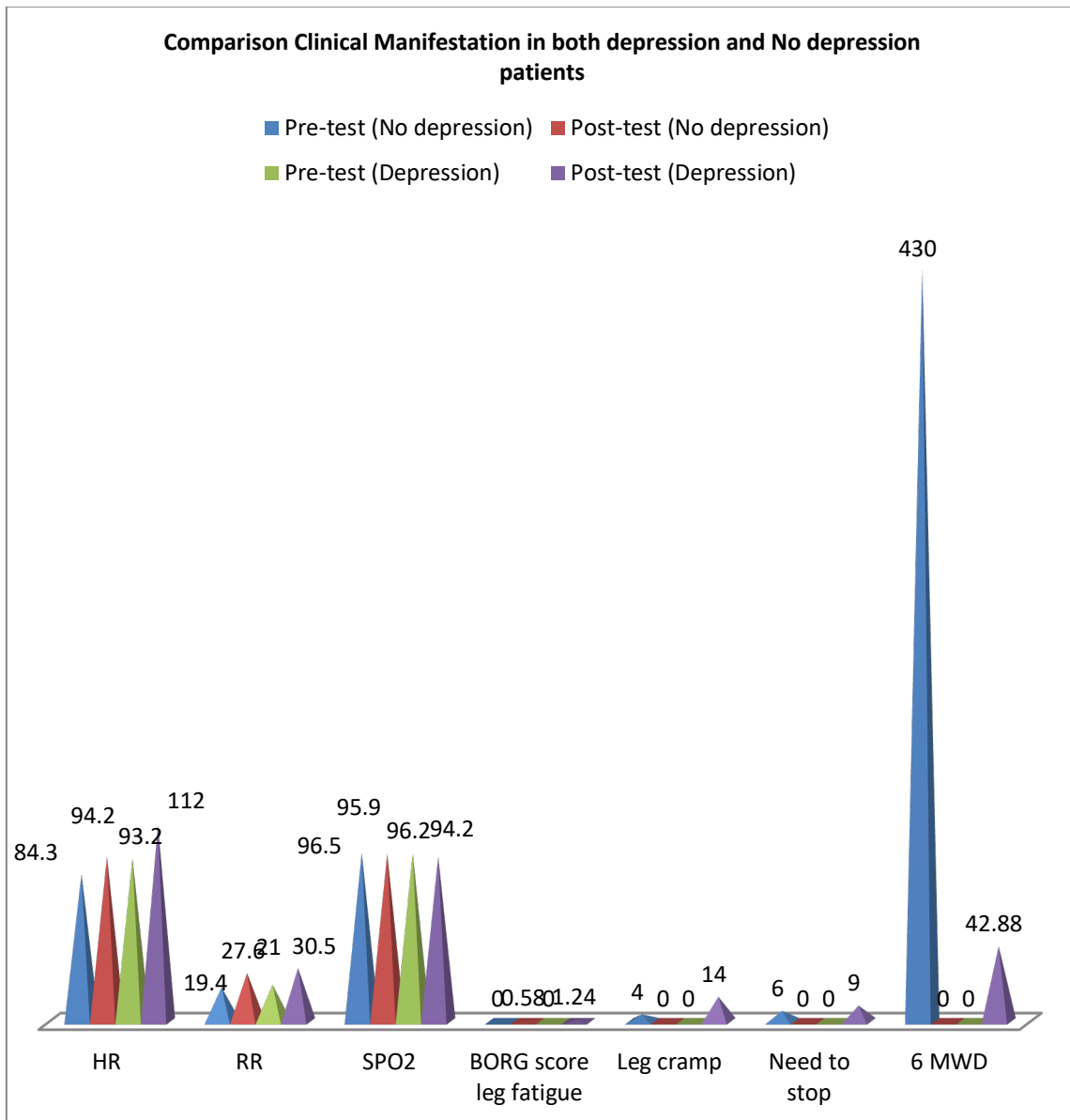


Figure 3: Comparison Clinical Manifestation in both depression and No depression patients

Discussion

Present study of anxiety and depression in COPD patients in the North Karnataka population. Out of 65 patients, 32 (46.1%) had no depression, and 33

(50.7%) had depression (Table 1). In the meantime, half of the COPD patients are suffering from depression and anxiety. comparison of respiratory manifestations in depression and no depression in COPD patients Body mass index (BMI), smoking

index, FV1 predicted, FV1L, CCQ score, HAM-D scale, and 6 MWD (minute walk distances) had significant *p* values ($p < 0.001$) (Table 2). In comparison of clinical manifestations in both depressive illness and non-depressive COPD patients, HR, RR, SPO₂, RROG score, and leg cramp had a significant *p* value ($p < 0.001$) (Table 3). These findings are more or less in agreement with previous studies [7,8,9].

Anxiety and depression are well known to be associated with COPD because such patients seek other ways to dissipate their psychological stress and resort to Anxiety and depression are well known to be associated with COPD because such patients seek other ways to dissipate their psychological stress and resort to "smoking." In such cases, smoking is detrimental to COPD, and the vicious cycle continues to worsen the prognosis. Treating the anxiety and depression in such patients includes the treatment of COPD as well. However, the association of this psychic COPD is a clinical challenge because the mechanism of depression and anxiety in COPD is still not completely understood, as the relationship is complex [10]. The biological mechanism between COPD and depression is still unknown. Interestingly, these two disorders are considered heritable. The estimated genetic heritability for COPD is 25–37%, and that for major depressive disorder (MDO) is 25–51%. Forced expiratory volume in one second (FEV₁) and forced vital capacity (FVC) are also heritable factors that have an estimation of 18–50% [11].

One possible suspected mechanism relating to depression and COPD is the "over pill theory, where it is suspected that inflammatory markers spill over into the general circulation, causing systemic inflammation. In this light, markers such as STNFR-1 (soluble tumour necrosis factor alpha receptor-1) have shown a strong association with depression rates in patients with COPD [12]. This factor indicates COPD could be a risk factor for depression. The other proposed mechanism is smoking and hypoxemia, which also affect the mental health of COPD patients. Anxiety and panic attack symptoms are also seen in patients with COPD. COPD patients with persistent hypercarbia are at increased risk of such dyspnoeic spells and become more susceptible to anxiety attacks. The depressive symptoms of COPD are associated with an increased risk of mortality in both hospitalised and outpatient patients [13]. The impact of non-adherence to COPD therapies leads to higher hospitalisation rates and costs, as well as increased emergency department visits.

The pharmacological options for treating depression and anxiety in COPD patients are tricyclic anti-depressants (TCA's) and selective serotonin reuptake inhibitors (SSRI's).

Summary and Conclusion

In the present study of anxiety and depression in COPD patients, these patients carry a higher risk of mortality than COPD patients without these co-morbidities. COPD patients with anxiety or depression benefit from pulmonary rehabilitation. CBT and cautious use of anti-depressants, active investigation, and research are necessary for adequate and effective screening and management of anxiety and depression in COPD patients to decrease their negative impact on quality of life and to reduce readmission and mortality rates because the exact pathogenesis of COPD is still unclear.

Limitation of study: Owing to the tertiary location of the research centre, the small number of patients, and the lack of the latest techniques, we have limited findings and results.

This research work has been approved by the ethical committee of the Faculty of Medical Sciences at Khaja Banda Nawaz University, Kalaburgi (585102).

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