

Pattern and Prevalence of Psychiatric Morbidities among Patients with Chronic Obstructive Pulmonary Disorders: A Cross-sectional Study from a Tertiary Care Hospital

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ABSTRACT

Chronic obstructive pulmonary disease (COPD) is a lung condition characterized by progressive, partially reversible, preventable, and treatable breathing difficulties that typically worsen over time. Acute exacerbations and frequent comorbidities further contribute to the overall severity of the disease, making everyday activities such as walking or dressing challenging. Psychiatric disorders are increasingly prevalent among individuals with chronic illnesses like COPD. However, despite this trend, psychiatric comorbidities among COPD patients have been less extensively studied compared with general medical conditions.

Aim: To study the pattern and prevalence of psychiatric comorbidities among patients with COPD.

Materials and methods: This was a cross-sectional, case-control study conducted in a tertiary care hospital after ethical committee approval. A total of 150 diagnosed COPD patients and matched controls were involved after taking their consent. Psychiatric comorbidities screening was done using MINI-7 tool and diagnosis was done using DSM-5. Data were entered in excel and tabulated in SPSS app.

Results: We found higher prevalence of psychiatric disorders between the patient group and the control group with a significant *p*-value (<0.01) and with an odds ratio of 4.1. Major depressive disorder (MDD) was present in 38% of study population.

Conclusion: Significant psychiatric comorbidities were present in COPD patients compared with controls. Timely intervention of psychiatric measures will improve the overall burden of COPD patients.

Keywords: Chronic obstructive pulmonary disease, Major depressive disorder, Psychiatric comorbidities.

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INTRODUCTION

Due to changes in environment and unhealthy lifestyles, we are witnessing increasing trends of chronic obstructive pulmonary disorders (COPD) and is estimated to be 3rd leading cause of death by 2030.^{1,2} Chronic obstructive pulmonary disorders is a lung condition that advances gradually, is partially reversible, and can be prevented and managed. It leads to persistent breathing difficulties over time, with key symptoms being shortness of breath and coughing accompanied by sputum production.³ Exacerbations of symptoms and the presence of additional health conditions further worsen the overall severity for affected individuals, eventually impeding routine tasks like walking or dressing.^{3,4}

Around 5% males and 3.2% females in India are affected with COPD and the majority are in their 35 years of age.⁵ Chronic obstructive pulmonary disorders is a progressive respiratory condition linked with significant distress. Considerable evidence highlights the influence of stress on pulmonary function, exercise capability, and specific pulmonary symptoms of the disease. Consequently, how individuals cope with this stress could play a vital role in advancement of the illness as well as in its management.⁶⁻⁸

Considering the frequent exacerbations and the chronic nature of COPD, it is associated with multiple psychiatric comorbidities and poor quality of life.⁹ The relationship between COPD and depression remains intricate and likely mutually influential. Similar to schizophrenia, the increased prevalence of smoking among individuals with depression could contribute to the higher occurrence of COPD in this population.¹⁰ Few studies support that chronic hypoxemia, a common feature of COPD, may disrupt the

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synthesis, release, and replenishment of neurotransmitters like noradrenaline and dopamine, ultimately resulting in depressive symptoms. Additionally, chronic hypoxemia could lead to inadequate oxygen supply in vulnerable brain regions such as the periventricular and subcortical areas and may exhibit similar MRI changes observed in patients with depression.⁶

Several studies reported the prevalence of anxiety and depression to be around 70% of COPD patients.¹¹ Timely psychiatric

Table 1: Age distribution of study group

Participants	Frequency (n)	Mean age ± SD in years
COPD patients	150	48.2 ± 7.3
Controls	150	51.1 ± 10.2

COPD, chronic obstructive pulmonary disease; SD, standard deviation

intervention for all COPD patients will help reduce the comorbidities associated with COPD. Due to lack of literature among the south Indian population, we took this study to investigate the pattern and prevalence of psychiatric comorbidities among patients with COPD from a tertiary care hospital.

MATERIALS AND METHODS

This was a cross-sectional, case-control study conducted in a tertiary care hospital, South India after taking ethical committee approval. A total of 150 consenting 18–65 years aged COPD diagnosed patients were included as cases and sex and age matched 110 normal people were randomly selected as controls. Diagnosis of COPD was done by a pulmonologist using radiological, blood, and pulmonary function tests. Previously diagnosed psychiatric patients, patients with multiple other medical comorbidities like hypertension, diabetics, and thyroid disorders were excluded from the study. Sociodemographic details were taken using semi structured proforma. Psychiatric comorbidities were screened using Mini International Neuropsychiatric Interview (MINI version 5). Clinical diagnosis was done using Diagnostic and Statistical Manual-5 by consultant psychiatrist in the medical college. Continuous data are expressed as means ± standard deviations, while categorical data are presented as frequencies (%). Statistical significance was determined using Student's *t*-test for continuous data, and either the Chi-squared test or Fisher's exact test for categorical data, with a *p*-value of < 0.05 indicating statistical significance. Data from each scale were gathered, and statistical analyses were performed using SPSS version 16.0. Data were entered in excel sheet and tabulated using SPSS version 20. The *p*-value < 0.01 was considered statistically significant.

RESULTS

The study sample comprised a total of 150 cases and corresponding matched controls.

Mean age of 150 cases was 48.2 ± 7.3 years and in the control group, it was 51.1 ± 10.2 years as shown in Table 1.

As shown in Table 2, predominant 112 (74.6%) were males in both the groups and 125 (83.3%) were married among cases and 130 (86.6%) among controls were married. A total of 96 (64.0%) among cases and 108 (72.0%) among controls were residing in urban areas. Majority of 36.6% of COPD patients were smokers whereas in controls it was 13.6% of them were smokers. Presence of family history of psychiatric illness was present in 6.8% of cases and in 13.3% in the control group.

In our analysis (Table 3), we identified a notably elevated prevalence of psychiatric disorders within the patient group in comparison to the control group, demonstrating statistical significance with a *p*-value of <0.01. The odds ratio calculated was 4.1, indicating a substantially higher likelihood of psychiatric disorders among COPD patients compared with the control group.

Approximately 38.6% of COPD patients had major depressive disorder (MDD) whereas only 12% of controls had the same. Among the diagnosed COPD cases, 4.6% had bipolar disorder, 6.6% had

Table 2: Sociodemographic data of the study population

Variable	Frequency (%) cases	Frequency (%) controls	Chi-square (p-value)
Gender			
Male	112 (74.6)	112 (74.6)	0.0 (1)
female	38 (25.3)	38 (25.3)	
Marital status			
Unmarried	07 (4.6)	05 (3)	0.64 (0.60)
Married	125 (83.3)	130 (86.6)	
Separated/widowed	18 (12)	15 (100)	
Urban	96 (64.0)	108 (72.0)	2.2 (0.14)
Rural	54 (36.0)	42 (28.0)	
Non-smokers	95 (63.3)	130 (86.6)	5.7 (0.06)
Smokers	55 (36.6)	30 (13.6)	
Family H/o psychiatric illness			
Present	22 (6.8)	20 (13.3)	4.5 (0.32)
Absent	128 (85.3)	130 (86.6)	

Table 3: Number of psychiatric disorders

Psychiatric disorders	COPD patients	Control group	Chi-square (p-value)
Present	85 (56.6)	35 (23.3)	40.3 (<0.01)
Absent	65 (43.4)	115 (76.7)	

COPD, chronic obstructive pulmonary disease

Table 4: Psychiatric disorders from the study group

Psychiatric disorder	Frequency (%) cases	Frequency (%) controls
Major depressive disorder	58 (38.6)	18 (12)
Bipolar disorder	07 (4.6)	3 (2.0)
Panic disorder	10 (6.6)	6 (4)
Anxiety disorder	06 (4.0)	3 (2.0)
Substance use disorder (SUD)	56 (37.3)	30 (13.6)
Stress-related disorder	0 (0)	1 (0.7)

panic disorder and 4% had anxiety disorder, whereas only 2% of controls had anxiety disorder and bipolar disorders, respectively. Substance use disorder (SUD) was present in 37.3% of cases where the majority were tobacco users followed by alcohol, however, 13.6% of controls were also using substances as shown in Table 4.

DISCUSSION

We found psychiatric comorbidities to be significantly higher among COPD patients (56.6%) when compared with controls (23.3%). Similar results were shown in a study conducted from north India where 28.4% of COPD patients had one or the other psychiatric disorder compared with 2.7% in controls.¹² In a separate investigation conducted in southern India, it was discovered that a high proportion of patients suffering from COPD and even healthy individuals exhibited signs of psychopathology as indicated by scores on the Comprehensive Psychopathological Rating Scale (CPRS). Specifically, 96% of COPD patients, and approximately 47% of healthy controls demonstrated such symptoms.¹³ Another recent study examining anxiety and depression in a large cohort

of patients with chronic respiratory conditions, including COPD, revealed that 65% of COPD patients exhibited notable levels of anxiety and depression during telephone screenings. Surprisingly, only 31% of these individuals were receiving treatment for these psychological issues.¹⁴ Furthermore, Sharma et al.'s study highlighted the prevalence of psychiatric comorbidities in stable chronic respiratory disorders, reporting a rate of 44.8% compared with 24.3% in control subjects.¹⁵

Major depressive disorder was observed to be 38% in our COPD group whereas only 12.7% in the control group in our study. Similar results were found by Negi et al. that reported a depression prevalence of 33.3% among their study cases.¹⁶ Similarly, Mikkelsen et al. observed depression incidences ranging from 6 to 57% in their research.¹⁷ In a review of several studies, Solano et al. noted depression prevalence rates between 37 and 71% among COPD patients, aligning closely with the findings of our study.¹⁸ Individuals with COPD face a heightened risk of depression compared with those who are healthy. The prevalence of unnoticed subclinical depression among COPD patients is a significant worry, as it can escalate to major depression and potentially exacerbate the challenges of physical disability.¹⁹

We observed 3.4% of COPD patients to be suffering from generalized anxiety disorder (GAD) compared with 2% of controls. Panic disorder was found to be in 6% of COPD patients and in 3.4% of controls in our study group. Moore and Zebb discovered an even greater prevalence of panic disorder (32%) among their COPD patients.²⁰ Similarly, Porzelius et al. observed that 37% of their study group had a panic attack within the last three weeks.²¹ It is noteworthy that anxiety is markedly prevalent among individuals with COPD, and vice versa. Additionally, the chance of respiratory disease is elevated among individuals diagnosed with panic disorder (47%) compared with those with other psychiatric conditions.²²

Limitations

Smaller sample size and single-centered hospital study was one of the important limitations of this study and hence impact generalizability of the results.

CONCLUSION

This study was aimed to assess the prevalence and pattern of psychiatric morbidity among patients with COPD and we found significantly higher psychiatric comorbidities among these patients. Due to the increased psychiatric challenges associated with COPD, there is a substantial opportunity to offer psychiatric services to these patients.

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