

# Study of Psychiatric Morbidity among Patients with Chronic Obstructive Pulmonary Disease in a Tertiary Health Care Institute

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## Abstract

**Introduction:** Chronic Obstructive Pulmonary Disease (COPD) is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. COPD is a progressive airway disease associated with psychological distress. Screening the psychiatric disorders in COPD patients will be helpful in better management of the disease by assuring compliance as well as will help to improve quality of life of these patients leading to overall improvement in patients' health, by helping in starting early psychiatry management whenever necessary. **Methods:** A single-center, cross-sectional, observational study performed at a tertiary care hospital between August 2016 and June 2018 to study psychiatric morbidity among patients with chronic obstructive pulmonary disease in a tertiary health care institute. A total of 68 clinically stable patients with COPD were screened for psychiatric morbidity by using Mini International Neuropsychiatric Interview (MINI) version 6.0.0. The clinical diagnosis was confirmed using DSM-5 and by qualified psychiatrist of the Department of Psychiatry. **Result:** Generalized anxiety disorder, Major depressive disorder, major depressive disorder with Anxiety, Panic attack, Phobia and Substance Abuse Disorder was present in 8.8%, 13.2%, 5.9%, 7.4%, 1.5% and 7.4% of study population respectively. **Conclusions:** We found that patients with COPD had high prevalence of depressive and anxious symptoms. Therefore, screening and treatment of these psychiatric comorbidities in patients with COPD may lead to significant improvements in patients' quality of life.

**Keywords:** COPD, Major Depressive Disorder, Psychiatric Morbidity, Socio Demographic Factors

## 1. Introduction

Epidemiological, clinical and socio-economic impact of Chronic Obstructive Pulmonary Disease (COPD) is constantly increasing and COPD is projected to be the 3rd leading cause of death in the world by 2030, and the 7<sup>th</sup> as a burden of disease<sup>1,2</sup>. Various studies have shown that prevalence in India range from 2% to 22% in men 1.2% to 19% in women<sup>3</sup>.

The major risk factor for COPD includes smoking<sup>4</sup> air pollution, occupational dust and chemicals, genetics (lack of the protein  $\alpha_1$  antitrypsin), age >40 years.

COPD is a lung disease that interferes with normal breathing due to chronic lung airflow obstruction and is

not fully reversible. COPD is a progressive airway disease associated with extreme distress<sup>5</sup>. A large amount of information sustains the impact of psychological stress on the lung function, exercise capacity, and pulmonary-specific symptoms of COPD<sup>6,7</sup>. Therefore the way in which a subject manages this stress might become an important factor in the progression of the illness, as well as in its successful treatment.

The projection for 2020 indicates that COPD will be the third leading cause of death worldwide and the fifth leading cause of years lost through early mortality or handicap in terms of disability-adjusted life years<sup>3</sup>. Anxiety and depressive symptoms are common in

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patients affected by COPD, even when their disease is mild in terms of Forced Expiratory Volume (FEV<sub>1</sub>) and respiratory symptoms. The etiology between COPD and depression continues to be complex and likely bidirectional. As with schizophrenia, the higher rates of smoking seen in patients with depression could lead to the higher prevalence rate of COPD in depressed patients<sup>4</sup>. One hypothesis suggests that chronic hypoxemia may lead to disruptions of noradrenergic and dopaminergic synthesis, release, and replenishment that ultimately lead to depressive symptoms. Furthermore, chronic hypoxemia may also lead to poor oxygenation in the periventricular and subcortical regions of the brain, which are vulnerable regions to hypoperfusion and lead to similar brain MRI changes as seen in patients with depression<sup>5</sup>.

According to recent studies depression and anxiety are the most frequent psychiatric illness, rates as high as 70% of cases<sup>8,9</sup>. Dyspnoea, the most commonly reported symptom during acute events in COPD, is associated with anxiety and depression<sup>10</sup>. Anxiety can lead to tachypnea, leading to increase in exertional dyspnoea, and poor quality of life<sup>11</sup>. Depression is also associated with poorer exercise capacity and worse health status<sup>12</sup>. According to recent studies neuro-psychiatric disorders associated with COPD are, dementia and degenerative brain disorders<sup>13,14</sup>.

Screening the psychiatric disorders in COPD patients will be helpful in better management of the disease in terms of improved adherence, drug compliance, exercise schedule, cessation of smoking, if any, as well as will help to improve quality of life of these patients leading to overall improvement in patients' health, by helping in starting early psychiatry management whenever necessary. Therefore, we conducted this study in order to evaluate the psychiatric morbidity & socio dynamic factor in patients with COPD.

## 2. Aims and Objectives

To study psychiatric morbidity in patients with chronic obstructive pulmonary disease.

To study socio-demographic factors in patients with chronic obstructive pulmonary disease.

## 3. Material and Methods

This descriptive study was conducted on 68 diagnosed COPD patients who came in Department of Psychiatry

and Chest and Tuberculosis in a tertiary care institute. Study was conducted from August 2016 to December 2018. Patients were enrolled in study after matching inclusion and exclusion criteria.

Sample Size: *minimum number of cases - 68*

$$n = N X P X (1-P) X Z^2$$

$D2 X (N-1) + P (1-P) X Z2P = 0.071$  Allowable error 0.06)

*Population size <3000*

where

*n = sample size*

*Z2 = Chi - square for the specified confidence level at*

*1 degree of freedom*

*N = Population size*

*P = population proportion*

*D2 = Desired margin of error*

**Eligibility Criteria:**

**Inclusion Criteria:**

Age between 18–65 years irrespective of gender.

Patients giving written informed consent.

Patients having COPD diagnosed as per qualified TB Chest Physician in last six months.

**Exclusion Criteria:**

Patients with documented evidence of past psychiatric illness. before onset of COPD, and

Mental incapacity to provide information (e.g. mental retardation and aphasia).

## 4. Methodology

COPD is a lung disease characterized by chronic obstruction of lung airflow that interferes with normal breathing and is not fully reversible. COPD is a progressive airway disease associated with psychological distress.

With the due permission of Department of chest and tuberculosis the present study was conducted in the CHEST -TB unit of a tertiary health care institute. A total numbers of 68 participants having chronic obstructive pulmonary disease in last six months diagnosed as per qualified TB chest physician was included after they satisfy the eligibility criteria Only those patients giving valid informed consent was included in the study.

Participants along with records of hospitalization and treatment who had undergone a general and systemic examination were evaluated for psychiatric morbidity.

A detailed history, complete general and systemic examination was noted on proforma.

All the study participants were screened for psychiatric morbidity by using MINI version 7.0.0 (Mini International Neuropsychiatric Interview)

The clinical diagnosis was confirmed using DSM -5 and by qualified psychiatrist of the Dept of Psychiatry and necessary advice was given to the patient.

The data was pooled, tabulated and subjected to statistical analysis.

#### 4.1 Statistical Analysis

All the collected data was entered in Microsoft Excel sheet and then transferred to SPSS software ver. 17 for analysis. Qualitative data was presented as frequency and percentages and analyzed using chi-square test. P-value < 0.05 was taken as level of significance.

### 5. Result

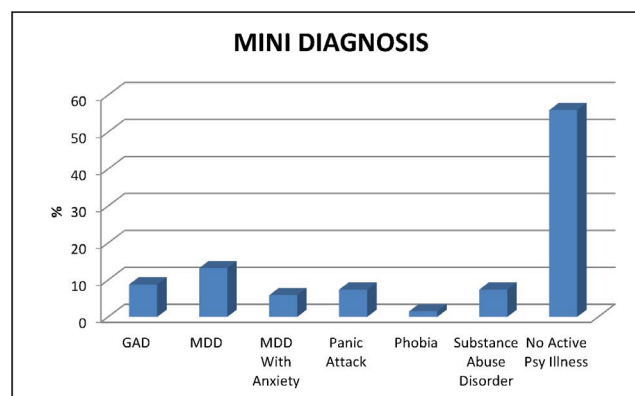
**Table 1.** Demographic variables of the study population, according to severity of chronic obstructive pulmonary disease classified as per recommendation of updated GOLD guidelines (n = 68)

Variables	Gold A	Gold B	Gold C	Gold D	P value
Gender					
Male (47)	6	9	8	24	0.58
Female (21)	4	6	3	8	
S.E Status					
II/III (25)	4	6	3	12	0.26
IV/V (43)	6	9	8	20	
Marital					
Married (58)	8	13	9	28	.76
UN/DIV/ Widow (10)	2	2	2	4	
Literate (49)	6	10	9	24	.31
Illiterate (19)	4	5	2	8	
Religion					
Hindu	12	14	10	24	.41
Muslim	2	0	2	4	

As seen in the Table 2, Clinical Diagnosis like GAD, MDD, MDD with Anxiety, Panic Attack, Phobia and Substance Abuse Disorder was present in 8.8%, 13.2%, 5.9%, 7.4%, 1.5% and 7.4% of study population respectively.

**Table 2.** Mini diagnosis amongst study population

Clinical Diagnosis	Frequency	Percent
GAD	6	8.8
MDD	9	13.2
MDD With Anxiety	4	5.9
Panic Attack	5	7.4
Phobia	1	1.5
Substance Abuse Disorder	5	7.4
No Active Psychiatric Illness	38	55.9
<b>Total</b>	<b>68</b>	<b>100.0</b>



### 6. Discussion

#### 6.1 Gender

In the present study, there was male predominance (69.1%) amongst study population as compared to female (30.9%). This finding is in agreement with the study conducted by Mehta *et al.*<sup>15</sup>, in which majority of the study population were males (92%). This is consistent with studies showing that males are 25 times more likely to smoke than females in developing countries like India, and smoking is the most widely studied risk factor for the development of COPD<sup>16,17</sup>. Almost all reported Indian studies state that COPD is more prevalent among males with a median male-to-female ratio of 1.6:1<sup>18</sup>. These could be the probable reasons for gender difference.

#### 6.2 Religion

In the present study, there was Hindu religion predominance (88.2%) amongst study population. This finding is in agreement with the study conducted by Mehta *et al.*, in which majority of the study population were Hindu (84.7%)<sup>15</sup>.

### 6.3 Marital status

In the present study, most of the study population were Married (80.9%) followed by Divorced (13.2%), Unmarried (2.9%) and Widow (2.9%). This finding is in agreement with the study conducted by JR Mehta et al., in which majority of the study population were Married (79.6%)<sup>15</sup>.

### 6.4 Education

In the present study, most of the study population had education up to 12th standard (48.5%) followed by Illiterate (26.5%), Graduate (19.1%) and Postgraduate (5.9%). Similarly, in the study conducted by Majid Gania et al.<sup>19</sup>, 50% of the patients were illiterate, while as 35% educated up to the primary level. 10% studied up to higher secondary while as 5% were graduate.

### 6.5 Socioeconomic Status

In the present study, most of the study population had class IV socioeconomic status (51.5%) followed by class III (33.8%) and class V (10.3%). This finding is in agreement with the study conducted by Majid Gania et al.<sup>19</sup>, in which 50% of the patients had poor social and financial status, 30% had average and rest of 20% of patients had good social and financial status.

### 6.6 Psychiatric Co-Morbidity

In the present study, MINI Diagnosis like MDD and GAD, MDD, panic attack and Phobia was present in 5.9%, 10.3%, 13.2%, 5.9% and 1.5% of study population respectively. We found major depressive disorder to be the commonest psychiatric co-morbidity associated with COPD, affecting 32.2% of the patients with COPD. Prevalence of depression varied from 6% to 42% in various studies<sup>20,21</sup>. A hospital-based study in Denmark reported the frequency of depression as 47% (33% prevalence of major depressive disorder and 14% prevalence of mild depression)<sup>22,23</sup>. Prevalence of anxiety disorder varies from 2% to 50% in published studies<sup>20,22</sup>. Frequency of anxiety disorder was 18.6% in our study, similar to that in an earlier study<sup>24</sup>. In consistency with majority of studies, panic disorder was the commonest anxiety diagnosis<sup>25</sup>. Anxiety and dyspnoea are important for the health status of patients with COPD.

## 7. Conclusion

Major Depressive Disorder (MDD) and Generalized Anxiety Disorder (GAD) were the most common type of psychiatric co morbidities found in our study population. In our study, no significant association was found between various socio demographic factors and severity of COPD. Early diagnosis and proper treatment of the co morbidities is required in turn to improve the symptomatology of respiratory diseases and the quality of life. Future studies are required for objective assessment of improvement in respiratory symptoms after treatment of psychiatric co morbidities in patients of COPD.

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