

Psychiatric Comorbidities in Patients with Chronic Obstructive Pulmonary Disease - A Hospital Based Cross Sectional Study

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ABSTRACT

Introduction: COPD is associated with significant concomitant chronic diseases, which increase its morbidity and mortality. The coexistence of anxiety or depression in COPD patients are associated with increased hospital stay and decreased quality of life. The relation between COPD and its association with anxiety and depression appears to be multifactorial and bidirectional.

Objectives: To study the psychiatric comorbidities like anxiety and depression in chronic obstructive pulmonary disease based on its severity according to Global Initiative for Obstructive Lung Disease (GOLD).

Methods: Study was done in department of pulmonary medicine in coordination with department of psychiatry at Father Muller Medical College, located in Mangalore, Karnataka. A total of 100 patients, 50 patients diagnosed with COPD as cases and 50 patients from general population as controls. Evaluation of psychiatric comorbidities was done using Hospital Anxiety and Depression Scale.

Results: Psychiatric comorbidities are more prevalent in COPD patients (38%) compared to controls or healthy volunteers (4%).

Conclusions: All patients diagnosed with COPD need to be screened for psychiatric comorbidities using screening questionnaire as it increases the morbidity.

Keywords: COPD, Anxiety, Depression.

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of mortality and morbidity. The prevalence of COPD is expected to increase and is predicted to become the third most common cause of mortality and morbidity in coming decades and the fifth most common cause of disability in the world by 2020. ^[1]

According to GOLD (Global Initiative for Chronic Obstructive Lung Disease) guidelines Chronic Obstructive Pulmonary Disease (COPD) is defined as “a common and treatable disease that is characterized by persistent respiratory symptoms and airflow limitation that is due to airway and/or alveolar abnormalities usually caused by significant exposure to noxious particles or gases. The chronic airflow limitation that characterizes COPD is caused by a mixture of small airways disease (e.g., obstructive bronchiolitis) and parenchymal destruction (emphysema), the relative contributions of which vary from person to person. Chronic inflammation causes structural changes, small airways narrowing, and destruction of lung parenchyma. A loss of small airways may contribute to airflow limitation and mucociliary dysfunction, a characteristic feature of the disease”. ^[2]

The most common respiratory symptoms include dyspnea, cough with or without sputum production. COPD patients present with periods of acute worsening of respiratory symptoms like increased dyspnea, increased sputum volume and increased sputum purulence called as exacerbations of COPD. In most patients, COPD is associated with significant concomitant chronic diseases, which increase its morbidity and mortality.

Psychiatric comorbidities like anxiety and depression are reported in literature in patients with chronic obstructive pulmonary disease (COPD). The coexistence of anxiety or depression in COPD patients are associated with increased hospital stay and decreased quality of life. The relation between COPD and its association with anxiety and depression appears to be multifactorial and bidirectional. Smoking, inflammation and hypoxia have a significant role on the prevalence of depression in COPD but the strongest predictors of depression among COPD patients are their severity of symptoms. [3]

Psychiatric illness in COPD is often under diagnosed and there is no appropriate approach to screen the COPD patients. The criteria to diagnose depression or anxiety are listed in DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) and are achieved through interviews performed by a psychiatrist or clinical psychologist. Now several screening tools have been developed for use in COPD patients to know the coexistence of psychiatric comorbidity. Hospital Anxiety and Depression scale assess both anxiety and depression. It comprises seven questions for anxiety and seven questions for depression. Study done by Bjelland I [4] concluded Hospital Anxiety and Depression scale was found to perform well in assessing the caseness of anxiety and depression in somatic, psychiatric, primary care patients and in the general population.

METHODS

Patients who visited Father Muller Medical College Hospital OPD and diagnosed as COPD and were on treatment were included in the study after obtaining informed consent. This study was a cross sectional, hospital-based, observational study and a total of 50 patients were taken. 50 healthy volunteers were taken as controls. They were subjected to HAD scale assessment.

Inclusion Criteria

1. Age above 15 years and,
2. Patients diagnosed as COPD (confirmed by spirometry by the presence of a post-bronchodilator FEV1/FVC < 0.70 as per the GOLD guidelines) and severity of COPD is assessed by COPD Assessment Test are taken as Cases.
3. Healthy volunteers with age above 15 years are taken as controls.

Exclusion Criteria

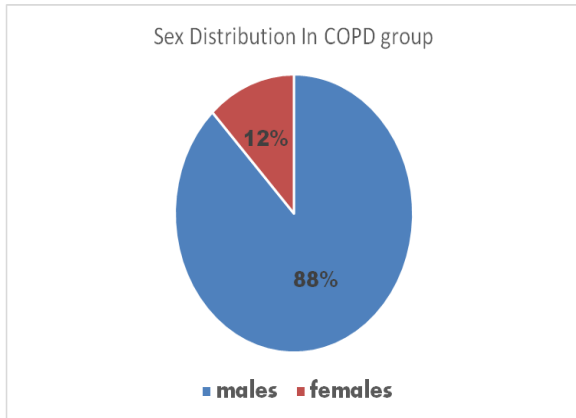
1. Patients not consenting for the study.
2. Patients with underlying diseases like any cancers, rheumatic diseases, acute and chronic liver disease, acute myocardial infarction; those who are taking oral steroids, those who were sputum positive pulmonary tuberculosis.

RESULTS

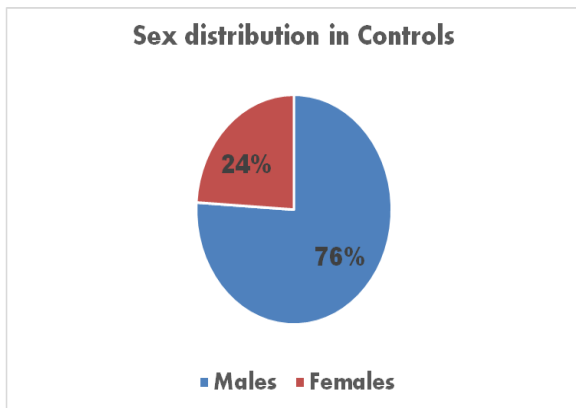
A total of 100 subjects were enrolled in this study. Of these, 50 were diagnosed COPD patients following in Pulmonology outpatient department and 50 healthy volunteers. The percentage of males was higher in both cases and controls.

	Groups		Total
	Cases	Controls	
Gender F	6 12.0%	12 24.0%	18 18.0%
M	44 88.0%	38 76.0%	82 82.0%
Total	50 100.0%	50 100.0%	100 100.0%

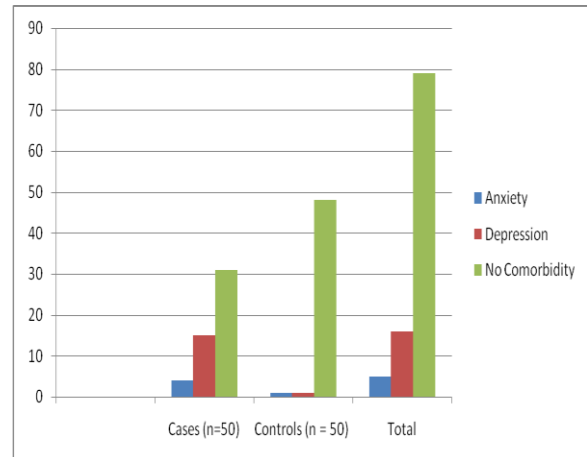
Sex Distribution in COPD Group	No. of patients (%)
Males	88%
Females	12%



Sex Distribution	No. of patients (%)
Males	76%
Females	24%

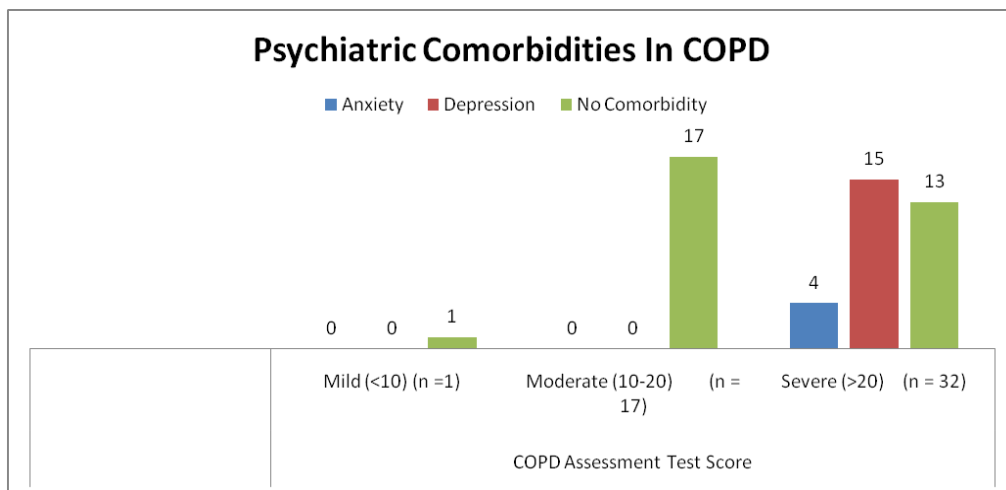


The mean pack years of smoking were significantly higher in cases (53.92%). Psychiatric comorbidities are more prevalent in COPD patients (38%) compared to controls or healthy volunteers (4%).



The prevalence of psychiatric comorbidities increased with severity of COPD.

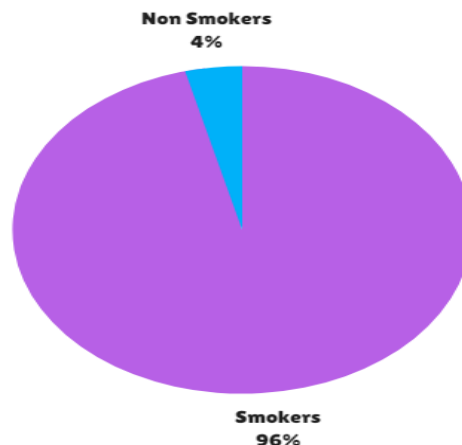
COPD Assessment	Cases	
	Count	Column N %
Mild	1	2.0%
Moderate	17	34.0%
Severe	32	64.0%
Total	50	100.0%



	Groups	Chisquare test p value				
		Cases		Controls		
		Count	Column N %	Count	Column N %	
Grading of anxiety	Normal	32	64.0%	47	94.0%	.001, HS
	Borderline	14	28.0%	2	4.0%	
	Caseness	4	8.0%	1	2.0%	
	Total	50	100.0%	50	100.0%	
Grading of Depression	Normal	17	34.0%	49	98.0%	.000, HS
	Borderline	18	36.0%	0	.0%	
	Caseness	15	30.0%	1	2.0%	
	Total	50	100.0%	50	100.0%	

DISCUSSION

This study was done at Father Muller's Medical College and Hospital, Mangalore, Karnataka after the approval from the ethics committee of the institution. COPD patients compared to healthy volunteers had increased prevalence of psychiatric comorbidities. There was significant association between the severity of COPD and psychiatric comorbidities. In our study 38 % of patients with COPD had psychiatric comorbidities compared to 4% of control group. Prevalence of COPD among cases with positive history of smoking was 94%. Study done in Sweden by Lindberg et al., the prevalence of COPD among men who were either current or ex-smokers was 89%.⁽⁵⁾ Cigarette smokers have a higher prevalence of respiratory symptoms and lung abnormalities, a greater annual rate of decline in FEV1 and a greater COPD mortality than non smokers.⁽⁶⁾ Our study had significant number of COPD patients were Smokers or reformed smokers.



Wood, animal dung, crop residues and coal typically burnt in open fires or poorly functioning stoves may lead to very high levels of indoor air pollution. There is growing evidence that indoor pollution from biomass cooking and heating in poorly ventilated dwellings is an important risk factor for COPD.⁽⁷⁾ History of cooking using wood burning stoves was found in 4% of patients with COPD in our study.

		COPD Assessment						Chi square/Fishers exact test
		Mild		Moderate		Severe		
		Count	Column N %	Count	Column N %	Count	Column N %	
Grading of anxiety	Normal	0	.0%	15	88.2%	17	53.1%	.062 NS
	Borderline	1	100.0%	2	11.8%	11	34.4%	
	Caseness	0	.0%	0	.0%	4	12.5%	
	Total	1	100.0%	17	100.0%	32	100.0%	
Grading of Depression	Normal	0	.0%	12	70.6%	5	15.6%	.000 HS
	Borderline	1	100.0%	5	29.4%	12	37.5%	
	Caseness	0	.0%	0	.0%	15	46.9%	
	Total	1	100.0%	17	100.0%	32	100.0%	

Patients with chronic respiratory illness have high mental health comorbidity. In our study the COPD patients with score > 20 on CAT had increased prevalence of psychiatric comorbidities around 46% as compared to 4% in controls.

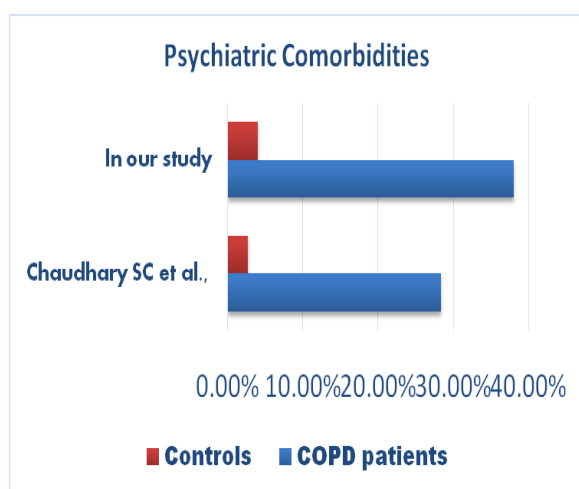
Study by Sharma et al.,⁽⁸⁾ the prevalence of psychiatric comorbidity was estimated to be around 44.8% as compared to 24.3% in controls. The lower frequency of psychiatric comorbidities in our study could be explained by the fact that we have used a different tool for the diagnosis of psychiatric comorbidities (Hospital Anxiety and Depression Scale), compared to the use

of Global Mental Health Assessment Tool-Primary Care version by the study conducted by Sharma et al.

Study by Kahraman et al.⁽⁹⁾ found that the prevalence of depression in COPD patients was 43.5%, in controls was 35.8%. In our study, the prevalence of depression was 30% as compare to 2% in controls. The difference of psychiatric comorbidities between the cases and controls was significant in our study as compared to study by Kahraman et al., may be because of use of completed the self-administered 240-item temperament and character inventory (TCI) by the mentioned study.

Study done by Chaudhary SC et al., (10) have concluded that the frequency of psychiatric comorbidities was significantly higher ($P < 0.05$) in COPD patients (28.4%) as compared to controls (2.7%). In our study 38 % of patients with COPD had psychiatric comorbidities compared to 4% of control group. In our study, the frequency of psychiatric comorbidities increased with the severity of COPD and similar findings were seen in Chaudhary et al study.

Psychiatric comorbidities	Chaudhary SC et al.,	In our study
COPD patients	28.40%	38%
Controls	2.70%	4%



Norwood (11) has summarized that depression is more prevalent in patients with chronic obstructive pulmonary disease. Depression was present in up to 60% of patients with COPD. Improved management of depression in COPD patients may improve the quality of life and may decrease the disease burden.

Strengths of our study:

In our study we used COPD Assessment Test to assess the severity of COPD and then further analyzed the psychiatric comorbidities using Hospital Anxiety and Depression Scale.

Limitations of our study:

Study was conducted in single center and limited sample size. We included anxiety and depression as majority subjects had these 2 comorbidities. Hence there is a need

for larger study for estimation of psychiatric comorbidities in COPD patients.

CONCLUSION

The frequency of psychiatric comorbidities like anxiety and depression is significantly increased in COPD patients as compared to controls and the frequency increases with the severity and duration of symptoms of COPD. All patients diagnosed with COPD have to be screened for psychiatric comorbidities using screening questionnaire as it increases the morbidity.

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