Depression in Patients with Chronic Obstructive Pulmonary Disease at Tertiary Care Hospital of Khyber Pakhtunkhwa

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The authors declare that there is no conflict of interest.

Abstract

Background: Chronic obstructive pulmonary disease (COPD), is linked to the development of depression. Depression is a prevalent mental health disorder that causes a lot of emotional distress as well as functional damage. The goal of this study was to find out how often depression is and how severe it is in patients with COPD.

Methodology: A descriptive cross-sectional research was carried at department of Pulmonology, Ayub Teaching Hospital (ATH) Abbottabad, Pakistan from July 2019 to June 2020. In this study, a total of 179 COPD patients who visited this unit for the purpose of diagnosis and treatment of COPD was enrolled in the study. Patients were asked to complete the Becks Depression Inventory-13 (BDI-13) questionnaire after a thorough medical history and physical examination. To obtain final score, all the answers were marked. All data was entered into a Microsoft Excel spreadsheet before being transferred to SPSS version 24 for analysis. For the purposes of analysis, a percentage and chi square test were used.

Results: Out of total 179 study cases, 59 (32.96%) were found to have depression. The majority of depressive patients (n=48) were mild/moderately depressed. The Chi square test was done to find out any possible significant association between age and gender with COPD. After analysis, it was observed that there was no significant association found between age and gender and level of depression among study COPD patients. Positive significant level was defined as a P-value of less than 0.05.

Conclusion: Psychiatric disorders are among the most common health problems in the world. Depression is one of the most common psychological problems that COPD patients confront. According to the findings, there was a high prevalence of depression among the study participants. This research also implies that a thorough assessment of the severity of depression and its related risk factors will take some time. Early diagnosis and meticulous evaluation may aid in the treatment of depression in COPD patients, and this must be included in and may be a component of their overall care.

Key words: COPD, Psychiatric Issues; Depression, Khyber Pakhtunkhwa; Pakistan

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Introduction

Diseases of various forms reflect different health systems around the world. Among these, Chronic obstructive pulmonary disease (COPD) is a major cause of high morbidity and mortality around the world, and it is expected to overtake heart disease as the third leading cause of death by the year 2020. Among COPD patients, depression is one of the psychiatric issues found

most frequently.[1-3]

Depression is a frequent mental health disorder that causes a lot of emotional distress as well as functional damage.[4] The two most common symptoms of severe depression are a depressed mood and a loss of interest or pleasure in daily activities. Fatigue or lack of energy, major changes in weight, appetite, or sleep, guilt/worthlessness, difficulty of focus, pessimism about the future, and suicidality are all additional signs of depression. If at least one of two primary symptoms and five symptoms in total are present for at least two weeks and produce clinically significant impairment in social, occupational, or other critical areas of functioning, a diagnosis of severe depression is made.[5,6]

The general population's depression prevalence is estimated to be 5.8%.[7] There is a dearth of precise data on depression rates among COPD patients, with estimates ranging as high as 71 percent.[3] In 2010, major depressive disorder was the second greatest direct cause of worldwide disease burden, accounting for 8.2% of years lived with disability.[8]

COPD is assessed by the following criteria: History of chronic cough with or without sputum, dyspnea and history of risk factors like exposure to smoke, air pollution or dust, bilateral wheeze and/or diminished breath sounds on auscultation of chest, and spirometry showing FEV1/FVC <70% predicted. The Beck Depression Inventory (BDI) questionnaire is used to diagnose depression. The BDI is a 21-item self-reported scale that spans from 0 to 63, with a score of 10 or above indicating mild to moderate depression. For assessing the severity of depression symptoms, a brief 13-item version is also employed. The BDI-13 is a 13-item questionnaire that uses a scale of 0 to 3 to assess the severity of depression symptoms. The total scores range from 0 to 39, with 0 to 10 indicating that you are not depressed, 12 to 18 indicating that you are depressed, and 20+ indicating that you are highly depressed.

While doing the literature search we found that although much work has been done on the prevalence of depression in COPD patients in western countries and also in our neighbouring countries, in our country there is very limited data regarding this problem. We realized the need to conduct a study about this problem at our region.[9,10] The goal of this study is to find out how often depression is present in individuals with COPD and level of its severity and any relation with age and gender.

Methodology:

A descriptive cross-sectional study was conducted at Department of Pulmonology at Ayub Teaching Hospital (ATH) Abbottabad, Pakistan from July 2019 to June 2020. A total of 179 patients were enrolled for study via consecutive non probability sampling.

All patients of both genders having COPD with age ranging from 15 to 60 years, admitted in Pulmonology unit Ayub teaching hospital Abbottabad were included in the study.

Patients having concomitant asthma, patients with known other chronic comorbidities like diabetes, Chronic kidney disease or Chronic liver disease and patients with diagnosed bronchogenic carcinoma, pulmonary tuberculosis, pneumothorax and hemothorax were excluded.

Permission from hospital ethical committee was taken before start of the study. All new cases with COPD admitted in Department of Pulmonology ATH

Table 1. Distribution of study cases according to their age

Variable	Mean	Standard Deviation	Minimum	Maximum
Age	56.59	4.71	45.00	60.00

Table 2. Gender distribution of study participants

Gender	Frequency	Percent
Male	88	49.16
Female	91	50.84
Total	179	100.0

Table 3. Frequency of depression in study participants

Gender	Frequency	Percent
Yes	59	32.96
No	120	67.04
Total	179	100.0

Abbottabad were enrolled in study. The study's goal and advantages were described to the patients, and written informed consent was obtained. All of the patients underwent a thorough history and clinical examination, as well as appropriate investigations such as spirometry. Patients were assessed by the researcher by using the BDI-13 questionnaire. All observations were recorded under supervision of a consultant pulmonologist fellow of College of Physicians and Surgeons Pakistan (CPSP). A pre-designed proforma was used to record all of the above information, including name, age, gender, and address.

For analysis, the data was entered into SPSS version 24. The mean and standard deviation were used to explain quantitative variable such as age. Gender, depression presence or absence, and severity were categorical variables that were described as frequency and percentage. Data was stratified by age and gender. Post-stratification Chi square test at 5% significance level was used to know association between categorical values.

Results

Among 179 study cases, the mean ± SD age of study cases was 52.59±4.71 years with a range of 45-60 years as presented in table 1. There were 91 (50.84%) females while males were 88 (49.16%) in the study population (Table 2). Among total of 179 patients with COPD, 59 (32.96%) had depression, while in 120 (67.04 %) no depression was found (Table 3). A total of 48 (26.82%) patients had depression of mild-moderate severity and 11 (6.15%) had severe depression (Table 4). When depression was stratified by age and gender, no statistically significant association was noted (p > 0.05) (Tables 5 and 6).

Table 4. Severity of depression in study participants

Severity of Depression	Frequency	Percent
Not Depressed	120	67.04
Mild/Moderate depression	48	26.82
Severe Depression	11	6.15
Total	179	100.0

Table 5. Cross-tabulation of depression with the age of study participants

DepressionFound	Age of Patients		Total	P-value
	Upto 52 years	More than 52		
Yes	31	28	59	0.75
No	60	60	120	
Total	91	88	179	

Table 6. Cross-tabulation of depression with the gender of study participants

DepressionFound	Sex		Total	P-value
	Upto 52 years	More than 52		
	Male	Female		
Yes	25	34	59	0.203
No	63	57	120	
Total	88	91	179	

Discussion

COPD is a leading cause of morbidity and mortality worldwide, and it is anticipated to overtake heart disease as the third leading cause of death by 2020. Among COPD patients, depression is one of the psychiatric issues found most frequently. Depression is a frequent mental health disorder that causes a lot of emotional distress as well as functional damage. Patients with asthma and COPD are more likely to suffer from depression. Even in the early stages of COPD, patients with the disease have a higher frequency of depression than the general population.[7,8] Depression is six times more common in asthmatics than in the general population, according to estimates, but there are some disagreements. As

depression in COPD patients is one of the most important topic of interest but still there is limited study on this important problem from this Region. Due to this reason present study was conducted to know the rate of depression among all those COPD patients who were visited the Pulmonology unit for their disease diagnosis and treatment.

As depression level in general population is about 5.8 percent but this level increases much higher in patients with COPD as described by different researchers.[7] Similar findings also concluded from the present study which show high frequency of depression level as compared to the depression level of general population. Here in this study rate of depression was 32.96%. Among depressed patients, 48 (26.82%) cases faced mild/moderate depression whereas 11(6.15%) had severe level of depression. These data are insignificant when compared to a study conducted in India which determine the prevalence of depression among COPD patients during routine outpatient department visits, which revealed a rate of depression of 72 percent.[12] On the one hand, the rates of depression differ, but on the other hand, the age of the study participants in both groups is vastly different. The average age of the Indian study participants was 61.7±6.9 years, whereas it was 52.59±4.71 years in the current study. Various studies from throughout the world found that anxiety and depression vary by age group: clinically relevant levels of depression and anxiety were more common among individuals under the age of 60, regardless of COPD severity. This contradicts the findings of the current study, which show that respondents over the age of 60 are more likely to suffer from moderate to severe anxiety and depression than those under the age of 60. Another difference identified was the sample size, which was half that of the current study.

On the other hand, a study from a city in Pakistan found depression in 15% of patients with COPD.[13] In that study with a small sample size of 63 patients, the mean age of the sample was 60.87±10.93 years with 80% male patients. The severity of COPD was mild in 9.52%, moderate in 35.02%, severe in 42.90% and very severe in 12.70% of the patients. Mild to moderate depression was found in 15% of patients. No patients were found to have severe depression in their study.

The present study was inline with a study from India reported that depression was diagnosed in 28.4% of patients with COPD.[14] A total of 74 COPD patients were involved in the study, and they were compared to 74 controls. Spirometry was used to determine the diagnosis and severity of COPD. The Mini International Neuropsychiatric Interview was used to assess psychiatric comorbidities. Another study also shown the same results and this study was also from India and was found that depression was more in patients with Global Initiative for Chronic Obstructive Lung Disease (GOLD) III category. In that study, 50 diagnosed COPD patients as per GOLD guidelines were enrolled. Each patient was screened for depression using 17- point Hamilton depression scale. Depression was diagnosed in 38% patients.[15] A systematic review and a meta-analysis of controlled studies reported that the prevalence of depression in COPD patients was 27% [25.9-28.3] and 10% in controls which is in agreement with our study.[11] Another study has demonstrated 72 percent cumulative prevalence of depression in Indian COPD patients.[9]

Among COPD patients, 59.4% had either anxiety or depression as a co-morbidity, and 32.2% had both psychiatric symptoms, according to a study that looked into the risk factors for depression in COPD patients. Anxiety affected 51.9 percent of the patients, while depression affected 39.7%. Hospitalization, duration of disease, number of hospitalizations in the previous year, hypertension, Modified Medical Research Council (MMRC) grade, body mass index (BMI), oxygen saturation, six minute walk distance, FEV1, FVC, and Body-mass index, airflow Obstruction, Dyspnea, and Exercise (BODE) index score were all linked to anxiety and depression in COPD patients.[16]

In the present study data were also analyzed to find out any possible association between gender and age to that of presence of depression among the study cases. Findings of the present study revealed that there was no significant link between age and gender and depression in COPD patients. In a recent study from India, the frequency of psychiatric comorbidities in COPD patients (28.4%) was substantially greater ($P<0.05$) than in controls (2.7%).[14]

It was also found by different researchers that rate of depression is directly linked with of severity of disease. This means that the frequency of psychiatric comorbidities in COPD patients increased significantly as the duration of symptoms increased, with 67 percent of patients with symptoms lasting more than 10 years and only 23% of patients with symptoms lasting less than 5 years having psychiatric comorbidities.[14] But in the present study we missed this important point and we did not stratify depression to the severity and duration of COPD. The number of hospital admissions in the previous year was the most significant predictor related with both anxiety ($p=0.008$) and depression ($p=0.020$) according to

linear regression analysis.[16] COPD has a prevalence of 6.6 to 7.7% in India, and it has a major impact on mortality and Disability Adjusted Life Years (DALYs).

Pooler A reported in a study that the first step in treating depression is to have a proper diagnosis. Identi-fication of individuals who have more permanent and sustained anxiety and depression, as well as creating screening tools and executing effective management strategies to reduce the effects of the co-morbidities, are all critical steps in improving the patient's health.[17] COPD with psychiatric issues affects family and community as well as the individual patient, according to this and other studies. As a result, it should be addressed as such. In the treatment of COPD, medical and psychological management are vital, as is counselling to the patient and family on quitting smoking, suitable clothing, immunisation, regular follow-up, and medication use. There is limited evidence that routine screening (which requires a lot of resources) can help COPD patients with treatment depression. As a result, healthcare practitioners should play an active part in ensuring adequate therapy and monitoring its efficacy, at least for people diagnosed with clinical depression.

The present study was limited in that participants in our study may not be true representative of the overall population; they were patients who visited a tertiary care hospital and may have different characteristics and severity levels than the general population. In addition, additional research is needed to determine the prevalence of depression in COPD patients as well as the factors that contribute to it in our culture.

Conclusion

Depression is a common complication associated with COPD and psychiatric evaluation of every patient with COPD should be done and management of associated depression should be part of a titrated treatment plan for each patient with COPD. By treating depression at its earliest stage will help in considerable prevention of exacerbation of COPD and in this way we will endeavor to reduce the burden of COPD.

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