Original Article

Frequency of depression in Chronic Obstructive Pulmonary Disease (COPD) patients

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ABSTRACT

Objective: To determine the frequency of depression in Chronic Obstructive Pulmonary Disease (COPD) patients.

Methodology: We conducted cross sectional study between June 2008 to April 2009 in Department of Chest Medicine, Jinnah Hospital Karachi. All adult patients presenting with sign and symptoms of COPD confirmed by Global Initiative for Chronic Obstructive Lung Disease (GOLD) criteria giving informed consent following inclusion and exclusion criteria were consecutively included. The primary outcome of the study was prevalence of depression measured through Hamilton Depression Rating Scale (HAM-D). The score was classified into 10-13= mild; 14-17= moderate and >17 = severe.

Results: The sample size was (n=63). The mean age of the sample was 60.87 ± 10.93 years. There were 50 (80%) males and 13 (20%) females. The severity of COPD in 6 (9.52%) patients was mild, 22 (35.02) moderate, 27 (42.90) severe and 8 (12.70%) were very severe. The mild to moderate depression was found in 10 (15%) of patients.

Conclusion: We found that ten (15%) of COPD patients were also suffering from depression. It is lower than what international studies have shown. We recommend that all COPD patients should also be screened for depression in order to reduce the morbidity associated with depression and COPD.

KEY WORDS: Chronic Obstructive, Depression, Pulmonary disease.

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INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of death and disability world-wide.¹ This trend is rising.² It is associated with poor quality of life ranging from disturbances in sleep, impairment in energy and depression.

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This co-association is complex including organic and psychosocial factors. The World Health Organization (WHO) has estimated that COPD is currently the 7th leading cause of death and disability worldwide and will rise to the 5th position by 2020.

Most medical illnesses are influenced by the psychological responses and coping mechanisms that patients use. Anxiety and depression both are associated with symptoms like dyspnoea, fatigue and altered sleep, also occur in COPD.³ Significant panic and depressive symptoms are reported in 16% to 74% of patients with COPD ⁴⁷ which are often unrecognized and untreated in primary and specialty care.^{8,9}

The prevalence of depression was high compared with general population figures in three of six non-controlled studies¹⁰ and a systematic review of the literature have found that the prevalence of depression in patients with moderate-to-severe COPD ranged 7–42%.¹⁰ Female patients had higher levels of anxiety and depression.¹¹

We found no study in our setting, after a robust literature search addressing the frequency of severe depression in COPD patients. The international studies on the topic and a high burden of both depressions & COPD in our population demands a small hospital based epidemiological study in the first instance, so that a large community based survey can be planned with the perspective of primary prevention and public health and health promotion.

The primary objective of our study was to determine the frequency of depression in COPD patients. Our secondary objective was to explore the demographic characteristics of these depressed COPD patients.

METHODOLOGY

Study design and setting: A prospective cross sectional observational study was conducted between June 2008 to April 2009 in Out Patient Department (OPD) or emergency department of medicine, Jinnah hospital Karachi. Jinnah hospital is government based tertiary care center. It has a catchment area that extends to the province of Baluchistan and interior Sindh.

Target Population: The target population of the study was all COPD patients presenting to tertiary care centers. The sample size of the study was (n=63). Ethics approval was obtained from Jinnah hospital ethical review board. All adult patients of any age and either gender presenting to OPD or emergency with sign and symptoms of COPD confirmed by GOLD criteria giving informed consent were included consecutively. All patients with diagnosis of carcinoma of bronchus, TB, haemothorax, pneumothorax, currently diagnosed with chronic debilitating diseases like HCV, DM, CLD etc and any psychiatric disorder were excluded. We also excluded patients taking corticosteroids and other drugs associated with depression. The justification of exclusion was that all the above factors are associated with depression. Thus including patients with these diagnosed factors can introduce bias and can misleadingly increase the frequency of our outcome. Also our final aim was to highlight the burden of depression associated with COPD. Thus excluding these patients would provide a correct measure of association between these two variables. Justification of sample size: The justification of sample size comes from the fact that previous studies conducted internationally on COPD have showed prevalence of depression to be 7-42%.¹⁰ Thus we assume that with prevalence of depression in COPD as 24.5% (P=24.5%), confidence interval (CI=95%) and margin of error (d=11%). The sample size required was 59. The sample size calculation was done using WHO sample size calculator.

Diagnosis of COPD: A study diagnosis of COPD was defined as airway obstruction as measured by FEV1/FVC <0.70 measured by trained technician. Severity of COPD was also diagnosed using Global Initiative for Chronic Obstructive Pulmonary Disease (GOLD) by a trained technician in front of co-researcher using spirometer 1 alpha vitalograph. The classification cutoffs were mild FEV1/FVC <0.70 (FEV1 ≥80% predicted), moderate FEV1/FVC <0.70 (50% ≤ FEV1 < 80% predicted), severe FEV1/FVC < 0.70 (30% ≤ FEV1 < 50% predicted) and very severe FEV1/FVC < 0.70 (FEV1 < 30% predicted or FEV1 < 50% predicted or FEV1 < 50% predicted plus chronic respiratory failure).

Primary outcome: The primary outcome of the study was prevalence of mild, moderate and severe depression measured through Hamilton Depression Rating Scale (HAM-D). It consist of seventeen symptoms each symptom is scored and then the total score is counted. The score (10-13= mild; 14-17= moderate; >17 = severe) was labeled mild, moderate and severe depression.

Data Collection: Two trained co-researchers (medicine trainees) conducted interviews with the selected patients. They explained the purpose and objectives of the study and asked for written informed consent from participants. The Proforma was designed to gather demographic information including age, sex, marital status and occupation. Presenting complains like cough, dyspnoea, chest tightness, sputum production, weight loss, generalized weakness, presence of diseases like chronic asthma and bronchitis, TB and infections, allergy, sinusitis, nasal polyp, respiratory infection, severity of COPD and HAM-D score level of depression (10-13= mild; 14-17= moderate; >17 = severe) was recorded.

Statistical Analysis: The collected data was entered and analyzed by SPSS version 15. Descriptive statistics was used to summarize the continuous outcomes variables like age, family income, and pack years (number of years since smoking) were reported as mean \pm SD. Categorical variables such as gender, marital status, occupation, presenting complaints, severity of COPD and HAMD score were presented in frequencies and percentages.

RESULTS

The mean age of the sample was 60.87±10.93 years (Range 31 and 85). There were 50 (80%) males and 13 (20%) females. The average monthly income was > 32000 PKR. Sixty patients were married (95.2%) and three (4.8%) were single.

The severity of COPD was 6 (9.52%) patients were suffering from mild COPD, 22 patients (35.02%) were suffering from moderate COPD, 27 patients (42.90%) were suffering from severe COPD and 8 patients (12.70%) were suffering from very severe COPD. There were 59 (93.65%) smokers the mean pack years were 27.22±12.618 years. The main presenting symptoms are shown in Table-II. The coexistence of other diseases in the sample is shown in Table-III. The frequency of mild and moderate depression in COPD was in 10 (15%) patients.

DISCUSSION

The prevalence of depression in our study was 10 (15%) low as compared to other international studies. This might be as we tried to control all the confounders and effect modifiers by excluding all the patients suffering from diseases that are associated with depression. The remaining cases found to have depression would predominantly be because of COPD association. Surprisingly no patient was diagnosed with severe depression, as most of the patients having severe depression were already diagnosed and were excluded. Further other severely depressed patients were non cooperative and hence were not included in our study.

Although feelings of anxiety and depression are common in patients with chronic obstructive pulmonary disease (COPD), estimates of their prevalence vary considerably. This may be due to variety of scales and measurements used for such symptoms. Both anxiety and depression either separate or single has an important impact on COPD patients.³

This may be due to COPD symptoms itself. Dyspnoea is likely to be a contributing factor to

Table-II: Presenting Compl	laints
of COPD Patients.	

Presenting Complains	N (%)
Cough	57 (90.47%)
Dyspnoea	13 (20.63%)
Chest tightness	4 (6.35%)
Generalized weakness	1 (1.58%)
Sputum production	40 (64%)
Weight loss	2 (3.17%)

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Table-I: Occupation of Patients.

Occupation	N (%)
Government servant	7 (11.11%)
Factory worker	5 (7.93%)
House wife	12 (19.04%)
Labourer	8 (12.69%)
Others	23 (36.50%)
Sanitary worker	3 (4.76%)
Sweeper	3 (4.76%)
Un employed	2 (3.17%)

depression and anxiety. Feelings of depression may be precipitated by the loss and grief associated with the disability of COPD. Smoking predominant in COPD patients along with nicotine addiction, and the factors that contribute to smoking may also predispose to anxiety and depressive disorders.³ Studies have shown frequency of depression in COPD according to ICD 10 was 47%.^{10,12} The lower prevalence of our study was due to strict inclusion and exclusion criteria.

In an another study patients with severe COPD (FEV₁ <50% predicted), the prevalence of depression was 25.0% compared with 17.5% in controls and 19.6% in patients with mild to moderate COPD.¹³ Fabiano Di Marco found the prevalence's of anxiety and depression were high (28.2% and 18.8%) in COPD patients even when it was of mild degree, compared to the control group, in which the prevalence of anxiety and depression were 6.1% and 3.5%, respectively. Female patients had higher levels of anxiety and depression and worse symptom-related QoL.¹¹ Furthermore, our study sample has only 13(20%) females, mainly due to predominance of COPD and reported depression in males in our society.

A study conducted by Mei Lin in Canada found people with COPD had twice the prevalence of depression compared to those without COPD.¹⁴ Another study in Japan found prevalence of depression in COPD was 51.7%, while that in

Table-III: Co morbid diseases in COPD patients.

Other Co existed diseases	N (%)
Allergy	39 (61.90%)
Chronic asthma	45 (71.4%)
Chronic bronchitis	33 (5.38%)
Infection and TB	11 (17.46%)
Nasal Polyp	1 (1.58%)
Other Respiratory disease	18 (28.57%)
Pneumonia	11 (17.46%)
Sinusitis	16 (25.39%)

control was 25.0%.¹⁵ In COPD patients. Study by Tze-Pin Ng found among 376 patients, 167 (44.4%) were found to be depressed.¹⁶ All these studies have high frequency as compared to our findings. All because of our strict sample selection.

Irritability and hopelessness are frequent complaints in patients with COPD.^{17,18} In a systematic review of the literature, the prevalence of depression in patients with moderate-to-severe COPD ranged 7–42%.¹⁰ similar to prevalence's supported by subsequent studies^{19,20} and also in our study. High rates of depression (25–30%) were noted after hospitalization for COPD exacerbation not included in our sample as being non-cooperative.^{10,21}

Limitation: The main limitation of the study was, the sample was selected from patients visiting tertiary care centers. Thus it can only represent the severe cases of the general population. Second the study design selected was unable to comment the biologic plausibility and temporal relationship between COPD and depression. However the strict selection criteria used along with target population comprising all those patients who visited these tertiary care centers overcome most of the limitations of our study. The other main limitations of the study are absence of control group and reliability issues related to the questionnaire as the data collectors conducted interviews based on Urdu translation of the questionnaires.

CONCLUSION

The prevalence of mild to moderate depression in COPD patients was 15%. It is lower than what international studies have found. Possibly due to our strict and more appropriate selection criteria which measures the correct association between these two variables. We recommend that all COPD patients should also be screened for depression in order to improve patient's quality of life. An understanding of the psychological history and coping mechanisms of patients and the role of anxiety and depressive reactions to illness may enable clinicians to reduce these symptoms and improve quality of life among patients with chronic obstructive pulmonary disease.

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