Depression in chronic obstructive pulmonary disease - a hospital based study

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Abstract

Background: Chronic obstructive lung disease continues to be common and cause significant morbidity and mortality. There is a complex interplay between psychiatric issues and pulmonary diseases. Many studies underscore psychiatric issues as compounding the level of impairment and economic burden in chronic lung disease. Depression is one of the factor that can influence the compliance with treatment and affect the well-being of patient.

Aim: To know the presence and severity of depressive symptoms in chronic obstructive respiratory disease.

Methodology: The institutional ethical committee clearance was obtained. All patients were first examined by consultant pulmonologist to confirm COPD. Investigator collected socio-demographic details using a structured proforma. Psychiatric co-morbidities were screened using mini plus and rating of depression was done using HAM-D. Results tabulated. The findings were statistically evaluated using chi-square test.

Results: In our study, depression was found in 33 (44%) of the study population, among them, 15 (20%) had mild depression, 8 (10.67%) had moderate depression, 5 each had severe and very severe depression.

Conclusion: The prevalence of depression is more common in patients with chronic pulmonary disease. The quality of life of a chronically ill patient may be particularly complicated by a concurrent depressive disorder. Better management of these psychiatric morbidities may improve treatment adherence and patient's quality of life. Hence a combined treatment strategy is required for the well being of the patient.

Keywords: Chronic lung disease, COPD, Depression, HAM-D.

Introduction

Chronic lung diseases and associated psychiatric co-morbidities continue to be common and cause significant morbidity and mortality. There is a complex interplay between psychiatric issues and pulmonary diseases. Many studies underscore psychiatric issues as compounding the level of impairment and economic burden in lung conditions.[1] It is becoming more and more important for clinicians to know about the presence and risk factors for depression in chronic respiratory diseases.[2] Depression is one of the factors that can influence the compliance with treatment and well-being of patient.[3] Depression is common in patients affected by respiratory disease, even when their disease is mild.[2]

Aim: To know the presence and severity of depressive symptoms in chronic obstructive pulmonary disease.

Materials and Methods

Study design: Case series study

Sample size and its calculation: Sample size calculation was done using Open Epi software version 2.3.1. At 95% confidence level, using the prevalence of depression (75%) in the study by De S,[4] with allowable error of 10%, sample size was calculated to be 73 which was approximated to 75.

Sample size $n = [DEFF*Np(1-p)]/ [(d^2/Z^2_{1-\alpha/2}*(N-1)+p*(1-p)]$

Inclusion criteria

1. All confirmed COPD patients attending respiratory medicine OPD from 1st November 2017 to 30th April 2018.
2. Age group 18 years to 60 years
3. Willing to give written informed consent.

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Exclusion criteria

1. Acute exacerbations of respiratory symptoms.
2. Patients with co-morbid medical conditions like congestive heart failure, coronary artery disease, uncontrolled diabetes mellitus, uncontrolled hypertension and HIV.
3. Past history of psychiatric illness except substance use.

The institutional ethical committee clearance was obtained. The design and nature of the clinical study was explained to the patients. Informed consent was obtained from each participant in the study.

All patients were first examined by consultant pulmonologist to confirm COPD. Investigator collected socio-demographic details like education, occupation, socio economic status, history of substance use, etc. using a semi-structured proforma. The patients were then examined by a consultant psychiatrist and the psychiatric morbidities were screened using Mini-Plus scale and depression was rated using HAM-D (Hamilton Depression Rating Scale). Results were tabulated. The findings were statistically evaluated using descriptive statistics and pearson's chi square test.

Tools for assessment

Proforma: Specially designed semi-structured proforma was used to document socio demographic details and other findings of the patients.

The Mini International Neuropsychiatric Interview (MINI) Scale: The Mini International Neuropsychiatric Interview (MINI) is a short structured diagnostic interview which enables researchers to diagnoses of the major psychiatric disorders according to DSM 5 or ICD 10 in less time than other diagnostic interviews such as the structured Clinical Interview for DSM 5 disorders (SCID), the Composite International Diagnostic Interview (CIDI) or the Schedules for Clinical Assessment in Neuropsychiatry (SCAN) tend to take. MINI is a relatively brief instrument that is divided into modules corresponding diagnostic categories such as major depressive episode, dysthymia, mania/hypomania panic disorders, social phobia, post-traumatic stress disorder, alcohol and other psychoactive substance, psychotic disorders, anorexia nervosa and generalized anxiety disorder. The administration time of interview is approximately 15 minutes and was designed for epidemiological studies and multicenter clinical trials.[5]

Hamilton Depression Rating Scale (HAM-D): Hamilton depression rating scale was developed by Max Hamilton in late 1950s and was published in 1960. Though there are 21 items only 17 items are scored. Four additional items are used for diagnostic purpose. The HAM-D is an observer rated scale consisting of 17 to 21 items. The 17-item scale is used for non-psychotics and the 21-item scale in cases with psychotic disorders. Ratings are made on the basis of clinical interview along with any additional available information such as nursing or family members report. Although there are 21 items, in the current study scores have been calculated only for 17 items. Scoring is calculated in two ways from 0-2 for some items and from 0 to 4 for other items depending on the severity. The minimum possible score is 0 and the maximum possible score is 50. Scoring system: 7 and below considered as normal; 8 – 13 is mild depression; 14 – 18 is moderate depression; 19 – 22 is severe depression and 23 and above is very severe depression.[6]

Collection of samples

Patients suffering from chronic obstructive pulmonary diseases attending OPD of The Department of Respiratory Medicine of B.V.V. Sangha's - S. Nijalingappa Medical College and HSK Hospital, Navanagar, Bagalkot over a period of 6 months were included in the study, after obtaining written informed consent.

Results

A total of 75 subjects were taken into study among which 49 (65.33%) were males and 26 (34.67%) were females. Most of the study population composed of people from Hindu religion (97.33%). Majority were married 69 (92%).50 (66.67%) of the study population were from the rural background. Educational status of the population revealed that most were illiterate 27 (36.00%). Farmers 25 (33.33%) and unskilled workers 20 (26.66%) formed the majority of the population. Being from rural background, majority of the population lived in joint families (65.33%). In our study population, majority belonged to the elderly age group that is above 50 years. In our study, depression was found in 33 (44%) of the study population, among them, 15 (20%) had mild depression, 8 (10.67%) had moderate depression, 5 each had severe and very severe depression (Table 1). In our study, it was found that depression was found to be more in the female population compared to males and was statistically significant (p=<0.05) (Table 2). This could be because of the other socio-cultural factors that predispose women to depression.

Table 1: Distribution of study population according to HAM-D score severity.

Severity	Number	Percentage
Normal	42	56
Mild Depression	15	20
Moderate	8	10.67
Severe Depression	5	6.67
Very Severe Depression	5	6.66
Total	75	100

Table 2. Gender differences in the presence of depressive symptoms among the study population

Gender	Depression Present	Depression Absent	Total
Male	16	33	49
Female	17	9	26
P<0.00	df=1	x^2= 7.386	

DISCUSSION

In a study on Psychiatric morbidity in chronic respiratory disorders in an Indian service using GMHAT/PC (Global Mental Health Assessment Tool, Primary Care Version) done by Bharat Bhushan Sharma et al., of 391 patients with respiratory illness, 44.8% had a mental illness identified by GMHAT/PC interview compared with 24.3% of 177 attendants (controls). Anxiety (20.6%), depression (13.2%) and obsessive compulsive disorders (4.6%) were the most frequently identified mental disorders in the respiratory disease group. Chronic obstructive pulmonary disease and bronchial asthma when combined with rhinitis had a significantly higher prevalence of comorbid mental illness than those illnesses alone.[7]

In a study on Prevalence of Depression in Stable Chronic Obstructive Pulmonary Disease by Sajal De et al., the cumulative prevalence of depression in the study population was 72%.[4]

In a systematic review on prevalence of depression in patients with chronic obstructive pulmonary disease, the depression prevalence among the COPD patients in 6 studies was within the range of 6-42%.[8]

In an another study done by Kunik ME et al, surprisingly high prevalence of anxiety and depression was found in chronic breathing disorder patients showing 80% of patients positive for depression and anxiety or both among 1334 patients screened, which also showed that among subsample of COPD patients the 65% received a anxiety and/or depressive disorder diagnosis.[9]

Most recent estimates of depression among COPD patients include a prevalence range of 37% to 71% from a 2006 systematic review of 64 articles and textbooks focusing on patients with severe disease.[10]

A study using the Zung Self-Rating Depression Scale found the prevalence of depression to be 18.8% for patients with COPD, compared with 3.5% for healthy control.[11]

In a study on prevalence and associated factors of anxiety and depression among patients with chronic respiratory diseases in eight general hospitals in Jiangsu Province of China showed that the patients with chronic respiratory diseases experiencing depression and anxiety accounted for 46.00% and 25.34%, respectively among 1713 patients with chronic respiratory diseases from 8 general hospitals in Jiangsu Province of China.[12]

In our study, depression was found to be present in 33 (44.00%) of the patients suffering with COPD. Among them about 15 (20%) had mild depression and 8 (10.67%) had moderate depression, and 6.67% of the study population had severe depression and very severe depression each. Previous studies have shown that prevalence of depression is more common in patients with chronic obstructive pulmonary disease (COPD) compared to other chronic illnesses.[13] Estimates of depression in patients with chronic obstructive pulmonary disease (COPD) range from16% to 74% as per studies done by Kunik ME et al; and Tze-pin N et al.[9]

The quality of life of a chronically ill COPD patient may be particularly complicated by a concurrent depressive disorder, which may bring the patient into a vicious cycle: the depressed mood lowers the force needed to cope with the chronic disease, the physical symptoms become less tolerable, and the disease may be enforced by the depressed mood.[14]

Chronic obstructive pulmonary disease (COPD), a common preventable and treatable disease, is characterized by persistent airflow limitation that is usually progressive15 Exacerbations and comorbidities contribute to the overall severity in individual patients. Its prevalence is 5.0% among Indian males and approximately 3.2% among Indian females over 35 years of age. 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 16.

Intrinsic pulmonary causative mechanisms might be the debilitating sequelae of chronic dyspnoea and diminished exercise tolerance[2]. Chronic obstructive pulmonary disease (COPD) is a term for a group of

chronic lung disorders, especially chronic obstructive bronchitis and emphysema, mostly characterised by a slowly progressive irreversible bronchial obstruction and a fluctuating symptom complex of recurrent productive cough and dyspnoea.[2]

The frequency of depression is high in patients with chronic respiratory disorders. Increased dyspnoea and panic associated with them may lead to anxiety, while feelings of grief and loss of function may cause depression.[17]

Conclusion: Respiratory disorders, like many other physical illnesses, have complex interaction with psychiatric morbidity. This points to the fact that chronic respiratory illnesses affect the person's mental health and vice versa. Better management of these psychiatric morbidities may improve treatment adherence and patients quality of life. Hence a combined treatment strategy is required for the well being of the patient. Screening for symptoms of depression in patients with COPD by simple and quick validated questionnaires during their out-patient visits will be helpful in early diagnosis and appropriate treatment or referral. Further studies are required to clarify the complex nature of interaction of both the illnesses and emerge with new treatment guidelines.

Limitations: This was a hospital based study, hence the results cannot be generalised to the general population.

Recommendations:

1. This study can be undertaken at a community level and other confounding factors like family background, substance use could be assessed.

2. Patients found with depression could be treated and followed up and the outcome of the illness and the quality of life could be analysed.

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