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A Study On Comorbid Psychiatric Disorders In Patients With Chronic Obstructive Respiratory Disease.

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ABSTRACT

Patients suffering from chronic medical illnesses like COPD are reported to have psychiatric disorders like depression, anxiety and also many psycho social problems like isolation from family, increased alcohol consumption, increased smoking. The objectives are to know the psychiatric morbidity in patients hospitalized for COPD and relation between psychiatric morbidity, socio demographic variables and clinical variables. A total of 131 subjects hospitalized for chronic obstructive pulmonary disease are taken for the study by purposive sampling method. The tools used are socio demographic data, clinical variable data, Sodhi and Sharma scale for assessment of socio-economic status and the MINI - International Neuropsychiatric Interview Scale. Statistical test used is Chi-square test. This study showed 64.9% of psychiatric morbidity, majority is depressive disorder followed by anxiety disorders. There is statistical significance between depressive disorders and age, education, occupation, marital status, socio economic status, duration of illness, number of hospitalization, use of steroid drugs and FEV 1, and anxiety disorders and duration of illness, number of hospitalization, use of steroid drugs and FEV 1. This study results shows that there is higher prevalence of psychiatric disorders in COPD patients. Among these psychiatric disorders depressive disorders are common, followed by anxiety disorders. There is comorbidity of depressive and anxiety disorders in 64.1% of patients.

Keywords: COPD, psychiatric morbidity, socio demographic variable and clinical variables.

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INTRODUCTION

Psychiatric disorders occur very frequently in the medically ill patients. In hospitalized patients it occurs still more frequently. Mood disorders, anxiety disorders, delirium, dementia and substance abuse are the most common psychiatric disorders. These are seen more frequently in chronic medical illnesses like HIV, Cancer, Diabetes Mellitus and chronic lung diseases.[1] Consequently patients in general hospitals have the highest rate of psychiatric disorders compared with community residents. Hospitalized medically ill patients have major depression and anxiety 2-3 times more often and somatization disorder 10 times more often than medically ill patients treated as out-patients.[2] The reasons for the frequent occurrence of these disorders could be many. Some represent reactions to stresses of illness and treatment, while others are a direct physiological consequence of the illness or complications of treatments (steroid induced psychosis) Psychiatric disorders may be coincident with, but etiologically unrelated to a medical disorder. Still, each complicates the diagnosis and management of the other.[3] The course of the medical illness can alter because of comorbidity. Schizophrenia may make it very hard for a patient to follow a diabetic regimen, while the diabetic glucose intolerance and hyperlipidemia complicates the choice of neuroleptic.[4] It is often difficult to determine if the vegetative symptoms of depression or somatic symptoms of anxiety are evidence of the psychiatric disorder, symptoms of medical illness, and or both. Physical illness can mimic psychiatric disorders, and some psychopathology present as a resemblance of medical illness. (e.g., somatoform disorders) [5] There are also frequent psychophysiological (Psychosomatic) inter relationship between disorders. For example, Depression and coronary disease commonly occur. The higher concentration of patients with psychiatric disorders in medical settings provides a critical opportunity to intervene in patients, who might otherwise go undiagnosed and untreated. Failures to identify, evaluate, diagnose, treat and achieve good results, increases psychiatric and medical morbidity, mortality and higher health care utilization and costs. Yet failure to treat occurs all too frequently.[6] Chronic obstructive pulmonary disease (COPD) is a chronic illness that is increasing in prevalence and is a significant cause of morbidity and mortality. [7] Chronic obstructive pulmonary disease is characterized by airflow obstruction leading to slowly progressive symptoms of persistent cough, exertional dyspnoea, wheezing, and eventual functional impairment. COPD is often brought to attention when patients suffer from activity limitations as a result of their respiratory complaints.[8] Given that COPD is the fourth leading cause of death and the fifth leading cause of disability in the world identification of risk factors that contribute to functional and physical impairment, such as concomitant depressive symptoms, is paramount.[9] Despite the observations that depressive symptoms are associated with poor outcomes in persons with COPD, the prevalence of depressive symptoms in COPD remains uncertain.[10]

METHODOLOGY

It is a cross sectional study conducted during September 2019 to March 2020 Subjects for the study are selected from the in-patient and out-patient Department of Pulmonology and Department of Medicine, Sri Venkateshwaraa Medical College and Research Centre, Ariyur , Pondicherry.131 subjects who are diagnosed as having COPD are chosen by purposive sampling (judgemental sampling) method from the inpatient and outpatient of the study place .Initial contact is made in the General Medicine and Pulmonology departments of the hospital. They are diagnosed based on the spirometry report and clinical examination. Informed consent was obtained from those who are willing to participate in the study. Patients satisfying the inclusion and exclusion criteria are assessed for psychiatric disorders using MINI (Mini International Neuropsychiatric Interview). The socio demographic data of the patients are collected on a semi structured proforma. Data will be analysed to find the significant association between socio demographic factors and clinical factors with patients of chronic obstructive pulmonary disease, having psychiatric morbidity by chi-square test for contingency table.

Inclusion Criteria

- Patients with clinical diagnosis of COPD according to GOLD's criteria.
- Male and female patients.
- Age group between 30 to 60 years

Exclusion Criteria

- Patients with family history or past history of psychiatric illness not attributable to COPD.
- Patients with COPD having other medical disorders like DM, Hypertension, thyroid and other endocrine disorders, Renal failure and other chronic debilitating medical conditions known to cause cognitive impairment and psychiatric morbidity.
- Patients with substance dependence other than smoking.
- Patient with psychotic disorder.

RESULTS

This study sample consists of 131 patients suffering from chronic obstructive pulmonary disease. The patients included in the study are selected through purposive sampling; from the outpatient and inpatient department of Medicine, Chest and Tuberculosis wards.

Table 1: Age Group

Age group	Frequency	Percent
30-40	26	19.8
41-50	57	43.5
51-60	33	25.2
61-70	11	8.4
>70	4	3.1
Total	131	100.0

Table 1: There are 26 patients between the age group of 30 – 40 years, 57 patients between 41 - 50 years, 33 patients between 51 - 60 years, 11 patients between 61 - 70 years, 4 patients above 70 years.

Table 2: Duration Of Illness

Duration	Frequency	Percent
<5yrs	90	68.7
>5yr	41	31.3
Total	131	100.0

Table 2: Duration of illness was measured based on patients having illness less than 5 years and patients having illness more than 5 years. In which 90(63.7%) patients had illness <5 years and 41(31.3%) had illness > 5 years.

Table 3: Number Of Hospitalisation

Number of hospitalisation	Frequency	Percent
<2 times for > a week per year	99	75.6
>2 times for > a week per year	32	24.4
Total	131	100.0

Table 3: Among the 131 patients 99(75.6%) patients had less than 2 hospitalisations each lasting for more than a week of admission per year and 32(24.4%) patients had more than 2 hospitalisations each lasting for more than a week of admission.

Table 4: Use Of Steroids

STEROID USE	FREQUENCY	PERCENT
USING	44	33.6
NOT USING	87	66.4

Table 4: Among the 131 patients, 44(33.6%) patients are using steroid medication and 87(66.7%) patients are using only bronchodilators without steroids.

Table 5: Psychiatric Illness In Patients With Copd

ICD 10 DIAGNOSIS	FREQUENCY	PERCENTAGE
MILD DEPRESSION	13	9.9
MODERATE DEPRESSION	27	20.6
SEVERE DEPRESSION	18	13.7
SUICIDALITY	16	12.2
PANIC ATTACK	31	23.7
GAD	23	17.6
MANIA	1	0.8
COMORBIDITY	85	64.9

Table 5: Among the total 131 patients, 13(9.9%) patients had mild depression, 27(20.6%) patients had moderate depression, 18(13.7%) patients had severe depression, 16(12.2%) patients had suicidality, 31(23.7%) had panic attack, 23(17.6) had GAD and 1(0.8%) patient has mania.

Table 6: Depression Current

Depression current	Frequency	Percent
Depressed	58	44.3
Not depressed	73	55.7
Total	131	100.0

Among the 131 patients, 58(44.3%) patients had depressive disorder and 73(55.7%) patients did not have depression.

Table 7: Depression Based On Severity

Severity	Frequency	Percent
No	73	55.7
Mild	13	9.9
Moderate	27	20.6
Severe	18	13.7
Total	131	100.0

Among the 131 subjects, 13(9.9%) subjects had mild depression, 27(20.6%) subjects has moderate depression and 18(13.7%) subjects has severe depression.

Table 8: Depression Recurrent

Depression recurrent	Frequency	Percent
Yes	23	17.6
No	108	82.4
Total	131	100.0

Among the 131 patients, 23(17.6%) had recurrent depression and 108(82.4%) had no recurrent depression.

Table 9: Suicidality

Suicidality	Frequency	Percent
Present	16	12.2
Absent	115	87.8
Total	131	100.0

Among the 131 subjects, 16(12.2%) had suicidality and 115(87.8%) had no suicidality

Table 10: FEV1 And Depressive Disorder

FEV1		Severity				Total
		No	Mild	Moderate	Severe	
Severe	Count	6	0	3	11	20
	% within FEV1	30.0%	0.0%	15.0%	55.0%	100.0%
Moderate	Count	52	11	20	7	90
	% within FEV1	57.8%	12.2%	22.2%	7.8%	100.0%
Mild	Count	15	2	4	0	21
	% within FEV1	71.4%	9.5%	19.0%	0.0%	100.0%
Total	Count	73	13	27	18	131
	% within FEV1	55.7%	9.9%	20.6%	13.7%	100.0%

X = 36.27 and p = 0.000(highly significant)

Table 10: Among the 20 patients with severe COPD based on FEV1, 3(15%) has moderate depression and 11(55%) has severe depression. 90 patients with moderate COPD, 11(12.2%) has mild depression, 20(22.2%) has moderate depression and 7(7.8%) has severe depression, and 21 patients with mild COPD, 2(9.5%) has mild depression and 4(19.0%) has moderate depression. The p value of 0.000 in the overall group statistics is highly significant.

Table 11: Anxiety Disorder

Anxiety	GAD	PANIC DISORDER
Present	31	23
Absent	100	108
Total	131	131

Table 12: Generalised Anxiety Disorder

GAD	Frequency	Percent
Present	23	17.6
Absent	108	82.4
Total	131	100.0

Table 13: Panic Disorder

Panic disorder	Frequency	Percent
Present	31	23.7
Absent	100	76.3
Total	131	100.0

Table 13: Among 131 patients, 23(17.6%) has GAD and 31(23.7%) has panic disorder.

DISCUSSION

The present study shows psychiatric morbidity in COPD patients. It also shows the relationship between socio demographic variable like age, gender, marital status, domicile, education, religion, occupation, socio economic status and clinical variables like duration of illness, number of hospitalisation, use of steroid drugs associated with COPD and FEV₁. In the present study 84(63.4%) patients with COPD have psychiatric disorder as comorbidity. Total prevalence of depression is 44.9%. Among them depressive disorders are more (69%), followed by anxiety disorder (61.9%). In these 26 patients (31%) has only anxiety and 32 patients (38.1%) has only depression. One has mania (1.2%). There are 26 patients with both depression and anxiety among psychiatric disorder (31%). [11] In this study depressive disorders with different duration COPD are compared and it is very highly significant. The longer the COPD, the more pronounced is the severity of depressive disorder. Prolonged duration of illness could cause helplessness and can also lead to financial burden. Patients often have exacerbation and fear of an acute breathlessness which might lead to more depressive illness.[12] In this study number of hospitalisation with that of depressive disorder is studied. More the number of hospital admissions, more the prevalence of depression. Reason for more depressive illness is, patient perception about the disease, patient's knowledge about the seriousness of the disease, which can lead to helplessness and hopelessness. Somatic symptoms are also similar to symptoms of depression and hence there may be over inclusion of depressive disorder.[13] In this study, steroid drug use for COPD with depressive disorder is studied and it is found to be highly significant.[14] inhalational steroids were as significance was noted for systemic steroid use. Anxiety and depressive symptoms are common in patients affected by COPD, even when their disease is mild in terms of forced expiratory volume (FEV₁) 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 [15]. 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 [16].

CONCLUSIONS

The frequency of psychiatric comorbidities is significantly increased in COPD patients as compared to controls and the frequency increases with the severity and duration of symptoms of COPD. The gender-based differences in the frequency are significant for substance abuse disorder and anxiety disorders. As a primary care physician, it is important to recognize the presence of symptoms suggestive of psychiatric illness and to institute proper treatment for the same.

REFERENCES

- [1] Salvi S. COPD: The neglected epidemic. Textbook of Pulmonary and Critical Care Med Vol 2, Ed: Jindal SK, Jaypee Publications, 2011; 971-974.
- [2] The Global Burden of Disease, WHO 2008 Oct, www.who.int/healthinfo/global_burden_disease/projections/en/index.html. Accessed on 22nd Dec 2011.
- [3] Lopez A, Shibuya K, Rao C et.al. Chronic obstructive Pulmonary Disease: Current burden and future projections. Eur Respir J 2006; 27:397-412.
- [4] American Thoracic Society: Standards for the diagnosis and care of patients with chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1995; 152, S77-S121.
- [5] World Health Organization: The GOLD global strategy for the management and prevention of COPD. 2001 Available at: www.goldcopd.com. Accessed on March 16.
- [6] Siafakas, NM, Vermeire, P, Pride, NB, et al Optimal assessment and management of chronic obstructive pulmonary disease(COPD): the European Respiratory Society Task Force. Eur Respir J 1995; 8, 1398-1420
- [7] Murthy KJR, Sastry JG. Economic burden of chronic obstructive pulmonary disease: NCMH Background Papers- Burden of Disease in India 2005.
- [8] Anderson D, Ferris BG Jr. Role of tobacco smoking in the causation of chronic respiratory disease. N Engl J Med 1962; 267:787-94.
- [9] Singh S, Soumya M, Saini A, Mittal V, Singh UV, Singh V. Breath carbon monoxide levels in

- different forms of smoking. *Indian J Chest Dis Allied Sci* 2011; 53:25-28.
- [10] Salvi S, Barnes PJ. Is exposure to biomass smoke the biggest risk factor for COPD globally? *Chest* 2010; 138:3-6.
- [11] Salvi SS, Barnes P: Chronic obstructive pulmonary disease in nonsmokers. *Lancet* 2009; 374:733-743.
- [12] Liu W, Zhang J, Hashim JH, Jalaludin J, Hashim Z, Goldstein BD. Mosquito coil emissions and health implications. *Environ Health Perspect* 2003; 111:1454-1460.
- [13] Snider GL, Doctor L, Demas TA, Shaw AR. Obstructive airway disease in patients with treated pulmonary tuberculosis. *Am Rev Respir Dis* 1971; 103:625-640.
- [14] Limaye S, Salvi S. Risk factors for COPD: *Textbook of Pulmonary and Critical Care Med Vo 2*, Ed: Jindal SK, Jaypee Publications, 2011; 987-992.
- [15] *Health Status Maharashtra 2009: A report by the State Health Systems Resource Centre, 2010; 20-21.*