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Research Article

Psychiatric Co-Morbidities in Patients with Respiratory Diseases - A Hospital Based Cross Sectional Study

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Abstract: Aims and objectives: Psychiatric morbidities significantly contribute to the functional impairment in patients with chronic respiratory disease [CRD]. The burden of psychiatric morbidities seems to vary with geographical areas and other factors. This study was carried out with the aim to find out the psychiatric morbidities in stable chronic respiratory disease patients in our region, India so that a proper assessment of mental health and comprehensive management can be planned. **Methodology:** Cross sectional observational study design was used. 160 patients diagnosed with CRD attending respiratory OPD were included. Structured proforma containing socio-demographic details and text revision of fourth edition of diagnostic and statistical manual disorders (DSM IV TR) diagnostic criteria for diagnosis were used for psychiatric evaluation. Hamilton Depression Rating Scale [HAMD], Hamilton Anxiety Rating Scale [HAMA] and Brief Psychiatric Rating Scale [BPRS]were used to assess the severity of the respective conditions. **RESULTS:** Psychiatric evaluation of CRD patients revealed that 50% developed psychiatric morbidity. Majority were males, aged above 50 years, married and from rural background. 75 (46.88%) cases were COPD followed by asthma 34[21.25%] cases. 37.5% were tobacco users. 74 (46%) cases fulfilled criteria for major depression disorder and 6 (4%) had features of anxiety disorder. In 80 (50%) cases no psychiatric disturbance was found. **CONCLUSION:** Major depression disorder is the most common psychiatric morbidity followed by anxiety. Careful observation for psychiatric morbidities among chronic respiratory disease patients may help in early identification and better management.
Keywords: Pulmonary disease, tobacco, anxiety, depression, scale.

INTRODUCTION

Psychiatric morbidities significantly contribute to the functional impairment in patients with chronic respiratory disease[CRD] like COPD, and treatment of these serves to improve both the psychiatric and pulmonary status.[1] Anxiety and depression are the commonest psychiatric diagnoses among the COPD patients.[2] Both the problems are prevalent in South East Asia region and in India particularly, emphasizing the need to study in this region.[3]

The prevalence of mental and physical comorbidities though thought to be high, is not clearly known in India, as estimates of psychiatric illness among patients with non-communicable diseases have predominantly come from studies conducted in advanced countries.[4] The burden of psychiatric morbidities associated with CRDs vary with geographical areas, cultural background, habits like smoking, socio-economic conditions, availability of healthcare facilities, etc. Varying prevalence rates have been reported from different parts of the world.[5, 6]This study was undertaken to estimate the burden of mental health disorders [MHD]associated with CRD among stable patients in our region, India.

MATERIAL AND METHODS

Cross sectional hospital-based observational study design was used. The study was conducted after obtaining informed written consent and was approved by the institutional ethics committee. Sample size was calculated as 160 using Open Epi software version 2.3.1 at 95% confidence level, design effect of 1. Patients suffering from chronic respiratory diseases attending Respiratory Medicine OPD of a tertiary care medical college hospital over a period of six were included in the study. All confirmed COPD, asthma; chronic bronchitis and post tuberculosis adult patients were included. Patients with acute exacerbations of respiratory symptoms, patients with co-morbid medical conditions like congestive heart failure, coronary artery disease, uncontrolled diabetes mellitus, uncontrolled hypertension, HIV and active tuberculosis on treatment were excluded. Patients with previous psychiatric illness and those on psychiatric medicines as suggested by history, treatment history provided by the patient or the accompanying family member were also excluded.

Patients with COPD, asthma, chronic bronchitis and post tuberculosis sequelae were diagnosed by Pulmonologist. Structured proforma containing details of socio-demography, physical and mental status examination used for psychiatric evaluation. Psychiatric diagnosis was made according to DSM IV TR criteria and severity of illness assessed based on Hamilton Depression Rating Scale [HAM-D], Hamilton Anxiety Rating Scale [HAM-A] and Brief Psychiatric Rating Scale [BPRS]. Results were tabulated and analysed.

RESULTS:

160 subjects were included in the study with 91 [56.9%] males and 69 [43.1%] females. More than 50% were aged above 50 years of age. Majority belonged to Hindu religion [95%], married 140 [87.5%] and residents of rural areas [71.9%]. Most of the subjects were illiterate (38.75%). Around 13% were graduates, 24.38% educated up to primary standard, 20.63% up to high school level while 3.13% were educated up to primary standard. Farmers [41.9%] and unskilled workers [26.3%] formed the majority of the population. Being from rural background (71.88%), majority of the population lived in joint families [63.75%] with majority belonged to upper middle class. It was found that majority (41.9%) of the population had illness of duration less than 1 year.

Table 1. Socio-demographic profile

VARIABLES		% (N=160)	PSYCHIATRIC MORBIDITY (%)
SEX	MALE	91	38.46%
	FEMALE	69	65.22%
AGE	15-20	2	50%
	21-25	6	33.33%
	26-30	7	57.14%
	31-35	11	45.45%
	36-40	10	80%
	41-45	18	66.66%
	46-50	18	55.55%
	51-55	43	44.19%
	56-60	45	42.22%
EDUCATION	Illiterate	62	56.45%
	Primary	39	43.59%
	Secondary	33	54.55%
	Intermediate	5	20%
	Graduation	21	42.86%
MARITAL STATUS	Single	7	71.43%
	Married	140	48.57%
	Separated	1	0
	Divorced	1	0
	Others	11	0
OCCUPATION	Skilled	118	52.54%
	Unskilled	42	42.86%
SOCIO ECONOMIC STATUS	Upper	54	44.44%
	Upper middle	66	62.5%
	Middle	14	50%
	Lower middle	8	42.42%
	Lower	18	59.26%
TYPE OF FAMILY	Nuclear	56	66.07%
	Extended	2	0
	Joint	102	42.16%
SUBSTANCE USE	Present	60	51.67%
	Absent	100	49%
RESIDENCE	Urban	28	57.14%
	Semi-urban	16	37.5%
	Rural	115	50.43%
RELIGION	Hindu	151	52.98%
	Muslim	9	0
	Christian	NIL	
DURATION OF RESPIRATORY ILLNESS IN YEARS	<1	67	44.78%
	1-3	34	55.88%
	3-5	32	53.13%
	5-10	16	62.5%
	10-15	3	33.33%
	>15	8	37.5%

Most common diagnosis found in our population was COPD [46.9%] followed by asthma [21.3%]. Substance [tobacco] use was found in 51.67% of the study sample.

Table 2. Respiratory profile

Variable	N=160	Psychiatric Morbidity Depressed	Anxiety
COPD	78	46.15%	6.41%
TB	29	75.86%	0
ASTHMA	34	35.29%	2.94%
BRONCHITIS	18	22.22%	0
PNEUMONIA	1	0%	0

Depression was found in 75.86% cases of post-tuberculosis followed by 46.15% of patients of COPD and 35.29% in patients of Asthma. Whereas anxiety was most commonly associated with COPD in 6.41% cases followed by asthma in 2.94% cases.

Table 3. Association between variables and level of depression

Variables		Level of Depression						
		Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Very Severe (%)	Chi square	p
SEX	MALE	58 (67.4)	15 (43.8)	10 (43.5)	0	8 (66.7)	16.986	0.005*
	FEMALE	28 (32.6)	18 (56.3)	13 (56.5)	6 (100)	4 (33.3)		
AGE	15-20	1 (1.2)	0	1 (4.3)	0	0	38.181	0.552
	21-25	5 (5.8)	1 (3.1)	0	0	0		
	26-30	3 (3.5)	3 (9.4)	0	0	1(8.3)		
	31-35	6 (7)	3 (9.4)	2(8.7)	0	0		
	36-40	2 (2.3)	1 (3.1)	4(17.4)	0	3(25)		
	41-45	7 (8.1)	7 (21.9)	3(13)	0	1(8.3)		
	46-50	9 (10.5)	3 (9.4)	4(17.4)	1(16.7)	1(8.3)		
	51-55	26 (30.2)	7 (21.9)	3(13)	3(50)	4(33.3)		
	56-60	27 (31.4)	8 (21.9)	6(26.1)	2(33.3)	2(16.7)		
EDUCATION	Illiterate	61 (39.6)	28(32.6)	13(37.5)	11(47.8)	7(58.3)	13.848	0.838
	Primary	39 (25.3)	22(25.6)	8(25)	5(21.7)	2(16.7)		
	Secondary	30 (19.5)	18(20.9)	9 (28.1)	3(13)	2 (16.7)		
	Intermediate	5 (3.2)	4 (4.7)	0	0	1 (8.3)		
	Graduation	19 (12.3)	14 (16.3)	3 (9.4)	4(17.4)	0		
MARITAL STATUS	Single	3 (3.5)	1 (3.1)	2 (8.7)	0	1 (8.3)	9.484	0.977
	Married	77 (89.5)	31 (93.8)	18 (78.3)	5 (83.3)	9 (75)		
	Separated	1 (1.2)	0	0	0	0		
	Divorced	1 (1.2)	0	0	0	0		
	Others	4 (4.7)	1 (3.1)	3 (13)	1 (16.7)	2 (16.7)		
OCCUPATION	Skilled	61 (70.9)	25 (75)	18(78.3)	4(66.7)	10(83.3)		
	Unskilled	25 (29.1)	8 (25)	5 (21.7)	2 (33.3)	2 (16.7)		
SOCIO ECONOMIC STATUS	Upper	22(25.6)	12(37.5)	12(52.2)	4 (66.7)	4(33.3)	30.561	0.061
	Upper middle	39(45.3)	16(50)	6 (26.1)	2 (33.3)	3(25)		
	Middle	9 (10.5)	3(9.4)	2 (8.7)	0	0		

	Lower middle Lower	 6 (7) 10 (11.6)	 0 2 (3.1)	 0 3 (13)	 0 0	 2(16.7) 3(25)		
TYPE OF FAMILY	Nuclear Extended Joint	24(27.9) 2(2.3) 60 (69.8)	12(37.5) 0 21(62.5)	12(52.2) 0 11(47.8)	2 (33.3) 0 4(66.7)	6(50) 0 6(50)	8.060	0.623
SUBSTANCE USE	Present Absent	31 (36) 55 (64)	12 (34.4) 21 (65.6)	8 (34.8) 15 (65.2)	3 (50) 3 (50)	6 (50) 6 (50)	3.150	0.677
RESIDENCE	Urban Semi-urban Rural	15 (17.4) 10 (11.6) 60 (69.8)	6 (18.8) 3 (9.4) 24 (71.9)	5 (21.7) 1 (4.3) 17 (73.9)	1 (16.7) 0 5 (83.3)	1 (8.3) 2 (16.7) 9 (75)	4.390	0.996
RELIGION	Hindu Muslim	78 (90.7) 8 (9.3)	33 (100) 0	23 (100) 0	6 (100) 0	12 (100) 0	23.319	0.000*
Family history of psychiatric illness	Present Absent	1 (1.2) 85 (98.8)	1 (3.1) 32 (96.9)	1 (4.3) 22 (95.7)	0 6 (100)	0 12	1.636	0.897
DURATION OF RESPIRATORY ILLNESS IN YEARS	<1 1-3 3-5 5-10 10-15 >15	38 (44.2) 17(19.8) 16 (18.6) 8 (9.3) 2 (2.3) 5 (5.8)	13 (37.5) 10(31.3) 7 (21.9) 2 (6.3) 1 (3.1) 0	7 (30.4) 4 (17.4) 6 (26.1) 4 (17.4) 0 2 (8.7)	2 (33.3) 1 (16.7) 1 (16.7) 1 (16.7) 0 1 (16.7)	7 (58.3) 2 (16.7) 2 (16.7) 1 (8.3) 0 0	13.596	0.968

Gender and level of depression with mild to severe depression seen more among females whereas very severe depression seen among male population, also more common among population following Hindu rituals may be majority of population sample were Hindus.

Table 4. Association between variables and level of anxiety

Variables		Level of Anxiety					
		0 (%)	Mild (%)	Mild to moderate (%)	Moderate to severe (%)	Chi square	p
SEX	MALE FEMALE	89 (57.8) 65 (42.2)	0(0) 3(100)	1(50) 1(50)	1(100) 0(0)	4.806	0.187
AGE	15-20 21-25 26-30 31-35 36-40 41-45 46-50 51-55 56-60	2 (1.3) 5 (3.2) 7 (4.5) 11 (7.1) 10 (6.5) 17 (11) 17 (11) 41 (26.6) 44 (28.6)	0 1 (33.3) 0 0 0 1(33.3) 0 1(33.3) 0	0 0 0 0 0 0 1 (50) 0 1 (50)	0 0 0 0 0 0 0 1 (100) 0	17.210	0.840
EDUCATION	Illiterate Primary	61 (39.6) 39 (25.3)	0 0	0 0	1 (100) 0	12.083	0.439

	Secondary	30 (19.5)	2 (66.7)	1 (50)	0		
	Intermediate	5 (3.2)	0	0	0		
	Graduation	19 (12.3)	1 (33.3)	1(50)	0		
MARITAL STATUS	Single	6 (3.9)	1 (33.3)	0	0	6.672	0.879
	Married	135 (87.7)	2 (66.7)	2 (100)	1 (100)		
	Separated	1 (0.6)	0	0	0		
	Divorced	1 (0.6)	0	0	0		
	Others	11 (7.1)	0	0	0		
OCCUPATION	Skilled	113 (73.3)	2 (66.7)	2 (100)	1 (100)	15.521	0.214
	Unskilled	41 (26.7)	1 (33.3)	0(0)	0(0)		
SOCIO ECONOMIC STATUS	Upper	54 (35.1)	0	0	0	28.303	0.005*
	Upper middle	63 (40.9)	2 (66.7)	1 (50)	0		
	Middle	12 (7.8)	1 (33.3)	1 (50)	0		
	Lower middle	7 (4.5)	0	0	1 (100)		
	Lower	18 (11.7)	0	0	0		
TYPE OF FAMILY	Nuclear	51 (33.1)	3(100)	1(50)	1(100)	7.882	0.247
	Extended	2 (1.3)	0	0	0		
	Joint	101 (65.6)	0	1(50)	0		
SUBSTANCE USE	Present	58 (37.7)	0	1 (50)	1 (100)	3.602	0.308
	Absent	96 (62.3)	3 (100)	1 (50)	0		
RESIDENCE	Urban	25 (16.2)	2 (66.7)	1 (50)	0	7.208	0.615
	Semi-urban	16 (10.4)	0	0	0		
	Rural	112 (72.7)	1 (33.3)	1 (50)	1 (100)		
RELIGION	Hindu	145 (94.2)	3 (100)	2 (100)	1 (100)	0.372	0.946
	Muslim Christian	9 (5.8)	0	0	0		
Family history of psychiatric illness	Present	3 (1.9)	0	0	0	0.119	0.989
	Absent	151 (94.38)	3 (100)	2 (100)	1 (100)		
DURATION OF RESPIRATORY ILLNESS IN YEARS	<1	66 (42.9)	1 (33.3)	0	0	12.100	0.671
	1-3	32 (20.8)	1 (33.3)	0	1 (100)		
	3-5	31 (20.1)	0	1 (50)	0		
	5-10	14 (9.1)	1(33.3)	1 (50)	0		
	10-15	3 (1.9)	0	0	0		
	>15	8 (5.2)	0	0	0		

Significant correlation seen with socio economic status and level of anxiety with mild anxiety levels seen more among upper middle class population.

Table 5. Distribution of psychiatric morbidity

Psychiatric morbidity	N= 160 (%)	Severity, no. of cases, (scores)*
Major depressive disorder	74 (46%)	Mild, 33, (8-13) Moderate, 23, (14-18) Severe, 6, (19-22) Very severe, 12, (>23)
Anxiety disorder	6 (4%)	Mild, 3, (<18) Moderate, 2, (18-24) Severe, 1, (>25)
No psychiatric morbidity	80 (50%)	

*Score: Hamilton Rating Scale (HRSD) for major depressive disorder, the Hamilton Anxiety Rating Scale (HARS) for anxiety disorder

Among 74 (46%) patients who suffered from major depressive disorder, thirty three (20.63%) had mild depression, twenty three (14.38%) had moderate depression, six (3.75%) had severe depression, and twelve (7.5%) had very severe depression. In anxiety disorder group, out of six (four percent) cases, three (1.88%) cases had mild anxiety, two (1.25%) cases had moderate anxiety, and one (0.63%) had severe anxiety.

Discussion:

Study conducted by Dodd JW et al reported prevalence of anxiety disorders varying from 2% to > 50%, while that of depression varying from 6% to 42%. Higher frequency of anxiety disorders and depression is correlated with severity of chronic respiratory diseases. [7] In low and middle-income countries, resources and access to health care for chronic mental diseases remains limited. As a result, patients with physical and psychiatric comorbidities are less likely to be identified, diagnosed and treated. [1] In our study 46% had major depressive disorder and 4% had anxiety disorder.

COPD is one of the commonest CRD and are predisposed to common psychiatric morbidities.[8]It is also noted especially the risk factors for the development of cognitive impairment in COPD may be associated with chronic hypoxia–hypercapnia.[9] In a literature review by L.M. FABBRI et al it was noted that patients with COPD are susceptible to psychiatric disorders such as depression and anxiety.[8] Primary care physicians tend to fail to diagnose depression in more than half of depressed patients, which indicates a critical need to improve both the recognition and treatment of psychological distress among COPD patients.[5]

There are several risk factors attributed for the development of depression and anxiety leading to poor psychosocial adaptation to having COPD. Important ones being, the chronic and progressive nature of COPD, characterized by frequent episodes of acute exacerbations necessitating hospital admissions, may cause anxiety, hopelessness, helplessness, and depressed mood. Finally, the fact that COPD is typically diagnosed later in life, when patients are more likely to experience age-related losses [retirement, death of loved ones, diminishing social networks], may increase feelings of loneliness and may also trigger symptoms of depression and anxiety.[11]

This study was carried out with the aim to find out how many chronic respiratory disease patients without previous history of psychiatric disturbance develop psychiatric morbidity. Absence of past history of psychiatric illness ruled out one possible vulnerability to develop psychiatric disturbance in chronic respiratory diseases.

In our study, majority of males [56.9%] were of age range above 50 years and around 55% education up to secondary standard. A recent study conducted by Chinwong D et al noted that males are up to 15 – 20 times more likely to smoke than females in developing countries like India, and smoking is the most widely studied risk factor for the development of COPD.[12] A study conducted by Mehta J.R. et al noted that COPD is more prevalent among males with a median male-to-female ratio of 1.6:1.[13]

Majority of study subjects were aged above 50 years of age and it is well known fact that CRD are more common among the elderly population. Educational level among the study subjects was low, as nearly 87% were either illiterate or studies up to secondary standard level and most of them belonged to upper middle class income group. These can be some of the reasons for poor awareness about their conditions and difficulties in affordability and compliance to consistent long term therapies. As nearly half of the subjects had respiratory illnesses of few years duration and many had psychiatric comorbidities, it suggests that patients with chronic respiratory illnesses are prone to develop psychiatric comorbidities quite early in the course and emphasize the need to start screening for them early.

In this study population, COPD [46.9%] was the commonest respiratory condition, followed by asthma [21.3%]. Substance [tobacco] use was common [37.5%] among the subjects. Cigarette smoking has long been recognized as the primary cause of COPD in developed countries, [14] and individuals with psychiatric co-morbidities are twice as likely to be cigarette smokers relative to those without psychiatric co morbidities, suggesting that psychiatric morbidity could precede the development of COPD. [5]

Anxiety and depression were commonest psychiatric co-morbidities in this study. Depression was found 46.15% of patients of COPD and 35.29% in patients of Asthma. Whereas anxiety was most commonly associated with COPD in 6.41% of cases followed by Asthma. The exact causes of depression and anxiety in patients with COPD were not clearly known. However, they are likely to be due to a complex interaction between physiological, behavioral, and psychosocial factors. [15]

Available evidence suggests that worse outcomes in COPD patients with psychiatric comorbidity may be related to poorer health behaviours and worse disease self-management. Depression and anxiety are associated with feelings of helplessness, withdrawal, hopelessness, and fear, which tend to lower patients' ability to self-manage their disease. COPD patients with depression have been shown to have worse adherence to medical treatment and are more likely to be persistent smokers. [5, 16]

Among the several treatment options available for COPD patients suffering from anxiety and/or depression, psychotherapy, pharmacotherapy, and exercise within the context of a comprehensive pulmonary rehabilitation program are considered important. Although mixed, the literature indicates that CBT is likely to be useful in reducing anxiety and depression among COPD patients. [5] Exercise treatment as part of a comprehensive pulmonary rehabilitation program [individualized exercise and education] has also demonstrated reductions in levels of depressive and anxiety symptoms among COPD patients when compared with usual care. [17]

CONCLUSION

The present study, a cross sectional design revealed that considerable numbers were suffering from COPD and majority were males without family history of psychiatric illness. Smoking and low educational level could be factors influencing the disease status and its management in this population. Depression is the commonest psychiatric morbidity followed by anxiety. It appears that psychiatric morbidities develop in this population early in the course. These findings suggest that routine screening for psychiatric morbidities among CRD patients helps in early identification. Treatment of such psychiatric morbidity among chronic respiratory diseases is imperative for health and wellbeing.

Limitations

This was a single hospital-based cross sectional study. Hence, prevalence rates reported are therefore likely to underestimate true prevalence in the community. Alsobeing a cross-sectional study, cause-effect relationship could not be established and it is recommended to conduct further population-based, multicentre cohort studies for establishing the same.

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Declaration of interest: None

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