Original Research Article

Depression and quality of life in patients with severe chronic obstructive pulmonary disease - A cross sectional study

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Abstract

Background: We assessed the prevalence of depression and quality of life and their associations in patients with severe and very severe COPD.

Materials and methods: Sixty individuals who gave consent and who met the gold criteria for severe and very severe COPD were recruited for the study. The results of spirometry (FEV1%) which gives the severity of COPD were noted. The recruited individuals were screened for depression through a clinical interview and ICD-10 criterion was used to diagnose depression. The severity of depression of each individual participating in the study was estimated using Hamilton Depression Rating and the quality of life of each individual was estimated using the WHO Quality of Life Questionnaire –BREF Version.

Results: Mean age of the patients was 53±4.5 years. The duration of COPD was 8.68±4.3 years. 93.3% of the individuals recruited for the study had severe COPD. 68.3% had been mild to severe depression while 31.7% were normal. The mean HAM-D and quality of life total score of these patients were 17±9.09 and 52±15.1 respectively. HAM-D scores in patients suffering from very severe COPD were much higher when compared to that of patients suffering with severe COPD. Patients with severe depression have poor quality of life on all aspects in comparison with moderate and mildly depressed. Numbers of exacerbations and hospitalizations have a significant correlation with severity of depression and a significant negative correlation with all domains of quality of life.

Conclusion: The prevalence of depression in patients with severe to very severe COPD is as high as 68.3%. There was a positive correlation between the number of hospitalizations and exacerbations to the severity of depression. Quality of life in COPD patients with depression was found to be poor in all the four domains namely physical, psychological, social and environmental when compared to those having only COPD as an illness. The severity of COPD was positively correlated with severity of depression and showed a negative correlation with the quality of life.

Key words

Hamilton depression rating scale, Quality of life, Chronic obstructive pulmonary disease, Depression, Forced expiratory flow rate.

Introduction

Chronic obstructive pulmonary disease (COPD) continues to be an important cause of morbidity, mortality, and health-care costs worldwide. Exacerbations and co morbidities contribute to overall severity in individual patients [1]. Psychiatric disorders also complicate the clinical assessment of these patients. Depression is present in up to 60% of patients with severe forms of COPD [2]. These patients are highly symptomatic with complaints affecting many-body functions that broadly overlap with somatic symptoms found in healthy individuals with mood disorders. Nevertheless in mild to moderate COPD patients, its frequency is less [3]. Anxiety and depression both are associated with symptoms like dyspnoea, fatigue and altered sleep, also occur in COPD [4]. Studies have also shown that depression has been associated with low quality of life. In Chronic illness where depression is co morbidity, quality of life tends to be much lower [5]. Depression and anxiety are some of the most salient factors associated with poor quality-of-life outcomes [6]. Studies addressing the prevalence of depression among COPD in India are very few. To this purpose, we assessed the prevalence of depression, and its severity in patients suffering with COPD. Additionally, we also assessed the quality of life and its association with depression in COPD patients.

Material and methods

The sample of the study comprised of outpatients diagnosed with COPD, attending the Department of Pulmonology at Narayana Medical College, Nellore, in the age range of 20-60 years and meeting the GOLD criteria for severe and very severe COPD. Ethics committee approved the study protocol. Informed consent was obtained from study participants. Sixty patients who met the criteria were recruited in the study. Patients with carcinoma bronchus, TB, hemothorax, pneumothorax, currently diagnosed with chronic debilitating diseases like HCV, DM, CLD, etc. and any psychiatric disorders were excluded. We also excluded patients taking corticosteroids and other drugs associated with depression. All patients underwent assessments for pulmonary function, Hamilton Depression Rating Scale (HAM-D) and World Health Organisation Quality Of Life Questionnaire – BREF Version. Hamilton Rating score of 0-7 is considered to be normal. The score (10-13= mild; 14-17= moderate; >17 = severe) was labeled mild, moderate and depression. WHOQOL-BREF assesses four major domains such as physical, psychological, social relationships and environment. Severity of COPD was assessed using FEV1%, clinical interview and an ICD-10 criterion was used to diagnose depression; severity of depression was estimated using Hamilton Depression Rating, and the quality of life of everyone was estimated using the WHO Quality Of Life Questionnaire –BREF Version.

Statistical analysis

Socio-demographic data was analyzed using appropriate descriptive statistics such as mean, standard deviation, chip-square, percentages, etc. Non-Parametric tests like Kruskal-Wallis and Mann-Whitney tests were used to compare non-

normally distributed variables and t test, ANOVA for variables with normal distribution. The results were analyzed using Statistical Package for Social science's version (SPSS version 10.0).

Results

Mean age of the patients was 53±4.5 years. Among them, 73.3% were male while 26.7% female. Majority of (73.3%) of them was above 50 years, while 26.7% were below the age of 50 years. Majority of them were having less than five years of formal education, semi-skilled employees; 90% were married and only 43.3% who had extended families. The duration of COPD was 8.68±4.3 years. 93.3% of the individuals recruited for the study had severe COPD. 68.3% had been mild to severe depression while 31.7% were normal. The mean HAM-D and quality of life total score of these patients were 17±9.09 and 52±15.1 respectively (**Table - 1**). When we evaluated the effect of severity of COPD on severity of depression and quality of life (**Table - 2** and **Table - 3**), we found HAM-D scores in patients suffering from very severe COPD were much higher when compared to that of patients suffering with severe COPD. Quality of life in individuals suffering from very severe COPD was much lower in all domains when compared to that of individuals suffering from severe COPD. We found quality of life is significantly low in people suffering from depression. And patients with severe depression have poor quality of life on all aspects in comparison with moderate and mildly depressed. Numbers of exacerbations and hospitalizations have a significant correlation with severity of depression and a significant negative correlation with all domains of quality of life (**Table - 4**).

Table 1: Clinical and Demographic features of COPD patients

	N	Minimum	Maximum	Mean	SD
Age	60	42	60	52.97	4.59
COPD duration	60	1	20	8.68	4.39
COPD severity (fev1%)	60	27	49	44.15	5.16
No. of Exacerbations	60	0	4	1.65	1.10
No. of Hospitalizations	60	0	3	1.05	0.96
HAM-D	60	3	33	17.03	9.09
QOL_Physical	60	25	75	49.30	14.97
QOL_Psychological	60	31	81	55.07	15.67
QOL_Social	60	25	75	50.88	16.20
QOL_Environmental	60	31	81	52.65	15.20
QOL Total	60	28	78	51.95	15.10

COPD-Chronic Obstructive pulmonary disease, HAM-D- Hamilton depression rating scale score, QOL- quality of life

Discussion

Patients with chronic respiratory illness have high up mental health comorbidity. Depression has been considerably elevated when compared to the general population [7]. Prevalence of depression in patients suffering from COPD has been well documented and the rates varied from 20% to 60% [3]. From a global perspective, a pooled prevalence for COPD was observed at a rate of 9.8% among men and 5.6% among women [8, 9]. In a cross-sectional study conducted in India, found the cumulative prevalence of depression in patients with COPD to be 72% [10]. In the current study, prevalence rates of depression were as high as 68.3%. This could be explained by the fact that individuals with severe and very severe COPD were recruited in the study.

Table-2: Effect of severity of COPD on severity of depression and Quality of life.					
Variables	COPD severity	N	Mean	SD	P Value
HAM-D	Very Severe	4	2	0	p=0.01
	Severe	56	1.66	0.47	
QOL_PHY	Very Severe	4	31.25	5.31	p=0.004
	Severe	56	50.59	14.61	
QOL_PSY	Very Severe	4	37.75	5.31	p=0.007
	Severe	56	56.3	15.44	
QOL_SOC	Very Severe	4	29.5	3.0	p=0.004
	Severe	56	52.41	15.66	
QOL_ENV	Very Severe	4	50.88	16.20	p=0.112
	Severe	56	40.75	8.13	
QOL TOTAL	Very Severe	4	53.5	15.27	P<0.005
	Severe	56	34.81	5.26	

Table-3: Comparison of quality of life of depressed and non-depressed individuals suffering from COPD.					
QOL	**Depression**	n	Mean	SD	P value
QOL_PHY	Normal	19	69.32	4.67	P<0.001
	Total Depressed	41	40.02	6.51	
	Mild Depressed	7	49.14	5.39	
	Moderate Depressed	25	40.40	3.00	
	Severe Depressed	9	31.89	3.98	
QOL_PSY	Normal	19	75.63	5.96	P<0.001
	Total Depressed	41	45.54	7.23	
	Mild Depressed	7	55.29	4.42	
	Moderate Depressed	25	46.40	3.00	
	Severe Depressed	9	35.56	4.72	
QOL_SOC	Normal	19	71.84	3.07	P<0.001
	Total Depressed	41	41.17	8.81	
	Mild Depressed	7	50.00	4.89	
	Moderate Depressed	25	41.56	7.94	
	Severe Depressed	9	33.22	6.41	
QOL_ENV	Normal	19	72.16	6.12	P<0.001
	Total Depressed	41	43.61	7.72	
	Mild Depressed	7	53.57	6.10	
	Moderate Depressed	25	43.52	5.17	
	Severe Depressed	9	36.11	6.33	
QOL TOTAL	Normal	19	72.24	4.10	P<0.001
	Total Depressed	41	42.55	6.54	
	Mild Depressed	7	52.00	4.35	
	Moderate Depressed	25	42.92	2.91	
	Severe Depressed	9	34.19	4.12	

Table-4: Correlation between number of exacerbations and hospitalizations with severity of depression and quality of life.

	HAM-D	QOL PHY	QOL PSY	QOL SOC	QOL ENV	QOL TOTAL
Exacerbations	.88**	-.83**	-.83**	-.80**	-.73**	-.82**
Hospitalization	.88**	-.80**	-.81**	-.76**	-.76**	-.81**

** is significance at the 0.01 level (2-tailed)

Exacerbations and hospitalizations have always been associated with significant stress and contribute towards the depressive symptoms. The results of the current study suggest that the severity of depression was high in patients who had more number of hospital stays or had more number of exacerbations. These results are in congruence with the findings of the previous studies such as the one done by Quint, et al. [11]; Xu, et al. [4], were the first ones to empirically study the positive association between exacerbations and depression. Several possible mechanisms might explain the effect of depression on COPD exacerbation such as moody subjects may have changes in major immune cell classes, which may be responsible for the susceptibility to be environmental triggers of COPD exacerbation (e.g., virus/ bacteria infection and air pollutants); b) many patients with chronic diseases (e.g., COPD) are able to adapt to chronic symptoms (e.g., dyspnea). However, having comorbid depression may interfere with this adaptation process and is related to increased awareness and focuses on physical symptoms. Therefore, depressed patients with COPD may be more sensitive to or report more respiratory symptoms change. This could also lead to more frequent doctor visits and an increased opportunity for pharmacologic prescription; c) depressed patients may have lower self-confidence and a feeling of hopelessness. They may have suboptimal disease control due to poor self-care strategies and adherence to medications. These patients tend to be vulnerable when exposed to a trigger of COPD exacerbation. The results of the current study show that quality of life in patients with depression as co-morbidity is poor in all the four domains namely physical, psychological, social and environmental than those having only COPD as an illness. Cully, et al. [6] found that both depression and anxiety were significantly related to negative quality-of-life outcomes (anxiety with both mental and physical health quality of life outcomes, and depression primarily with mental health).

Severity of COPD (FEV1%<50) has been associated with an increased number of exacerbations and hospitalizations which in turn have been responsible for the increase in depressive symptoms and low quality of life. The results of the current study show that severity of COPD has been positively correlative with severity of depression and has a negative correlation with the quality of life. Depression in COPD has been associated with reduced functional capacity, increased hospitalizations and exacerbations leading to poor quality of life. Poor adherence to treatment protocols, which further worsens the condition and increases rates of mortality. Managing these depressive symptoms in a chronic medical illness would help in improving the quality of life, adherence to treatment and the functional outcome.

Limitations of the Study

The main limitation of the study was; the sample was selected from patients visiting tertiary care centres. Thus it can only represent the severe cases of the general population. Such an estimate may under-recognize the prevalence of depression in mild to moderate disease. Additionally, we studied fewer numbers of samples; functional capacity of the participants was not assessed. Individuals above the age of 60 were not included in the study. It is possible that

prevalence of COPD is much higher than the age of 60 years.

Conclusion

We observed that the prevalence of depression in patients with severe to very severe COPD is as high as 68.3%. There was a positive correlation between the number of hospitalizations and exacerbations to the severity of depression. Quality of life in COPD patients with depression was found to be poor in all the four domains namely physical, psychological, social and environmental when compared to those having only COPD as an illness. The severity of COPD was positively correlated with severity of depression and showed a negative correlation with the quality of life. Hence, a holistic approach by both the physician and psychiatrist, towards these depressive symptoms is required to improve the functional capacity, the quality of life and to reduce the burden of residual symptoms.

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