Anxiety and depression among chronic obstructive pulmonary disease

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ABSTRACT

Objective. To evaluate anxiety and depression among chronic obstructive pulmonary disease
Material and methods. Descriptive cross-sectional study, from 1st October 2019 to 30th March 2020, at Department of Medicine Dow University Hospital Karachi. All diagnosed cases of COPD on the basis of GOLD criteria with no other co-morbidities were included. A questionnaire was designed for data collection, comprising of sociodemographic characteristic and hospital anxiety and depression scale (HADS).
Results. The total number of participants was 370, out of whom 80% (n = 296) were male. 97% (n = 359) were smoker and among all 55% (n = 204) were diagnosed COPD for more than 10 years. The frequency of depression in COPD was 10.8% (n = 40) while frequency of Anxiety was found to be 32.2% (n = 119).
Conclusions. Our study demonstrates a comparatively higher frequency of anxiety as compared to depression in the studied population .we also observed that depression and anxiety among COPD patients was more associated with high BMI and longer duration of COPD rather than other demographic factors. Therefore special emphasis should be paid towards early screening for anxiety and depression in COPD patient as timely intervention can dramatically improve the quality of life.

Keywords: chronic obstructive pulmonary disease (COPD), depression, anxiety, hospital anxiety and depression scale (HADS), Global Initiative for Chronic Obstructive Lung Disease (GOLD)

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a lung condition which is characterized by progressive obstruction of lung air flow that is usually continuous and irreversible [1]. Presently, it is the 12th major cause of disability and it is estimated that from 2020 it will be the 5th leading reason for disability [2,3]. Similarly mental health related issues are emerging causes of raised disability and impaired quality of life in old age people all over world [4,5]. Depression and anxiety are important mental health issues which are rising in COPD and it may affect various aspects of COPD and may have bidirectional cause and effect relationship [6]. The actual process of linking depression and anxiety is still not clear [7]. It is suggested that chronic low grade inflammation mediates the association of depression and lung function. Rising inflammatory mediators have been reported in both old age depression [8] and COPD [9].

Few studies from Pakistan have reported 15%, 72% and 57.2% frequency of depression in diagnosed COPD [3,10,11].

Literature review of multiple prognostic studies registered an increasing mortality risk in COPD with mental health problem and among all mental health issues depression is particularly strongest predictor of morbidity and mortality [12,13,14].

AIM

In this study, our aim is to identify depression and anxiety among COPD to intervene early and

plan proper treatment strategies to improve patient's quality of life and reduce health expenses.

MATERIAL AND METHODS

This descriptive cross sectional study was conducted at Department of Medicine, Dow University Hospital Karachi for a period of six months from 1st October 2019 to 30th March 2020 after taking approval from and in accordance with Institutional Review Board. Non probability convenient sampling method was used. Sample size calculated by Raosoft with 5% margin of error and 95% confidence interval with estimated population size of 20,000 and prevalence of 57.2%, was found to be 370. All COPD patients, regardless of age and gender who fulfilled GOLD criteria were included. The exclusion criteria include unwillingness to participate in the study, unemployed, patient having other co-morbidities which included known psychiatric disorders, uncontrolled diabetes, uncontrolled hypertension, chronic liver disease, malignancy, HIV/AIDS, chronic renal disease undergoing regular dialysis, those using walking-aids or severe arthritis. A questionnaire was designed for data collection, it comprised of two parts including sociodemographic characteristic and hospital anxiety and depression scale (HADS).

The HADS anxiety and depression has subscales, and each consists of seven related items. Each item is rated on a four-point scale from 0 to 3, yielding a maximum score of 21 for each subscale. A score between 0 and 7 does not indicate the presence of the symptoms of anxiety or depression; a score between 8 and 10 indicates the presence of the symptomology but to a moderate degree, a score greater than or equal to 11 indicates a significant number of symptoms of anxiety or depression corresponding to confirmed cases.

Computer software SPSS version 16.0 was used for data entry and analysis. Frequency and percentages were calculated for gender, BMI, Marital status, smoking status, Education, Duration of diagnosis of COPD, Monthly income, depression and anxiety.

RESULTS

The total number of participant were 370, 80% (n = 296) were male and 20% (n = 74) were female. The demographic characteristics are shown in Table 1. Among all, 60.3% (n = 223) were with BMI < 23, 97% (n = 359) were smoker and 55% (n = 204) were with diagnosis of COPD for more than 10 years.

Figure 1 showed the frequency of depression in COPD was 11% (n = 40) and 46% have no depression, while 43% fall in category of borderline. The

frequency of anxiety was found to be 32% (n = 119), 36% are normal having no symptoms of anxiety and 32% fall in category of borderline, as depicted in figure 2.

In relation to specific demographic characteristic, participants with BMI >23 displayed that frequency of depression in COPD was 18.5%. With respect to education status, our study found higher percentage of both depression and anxiety in schooled population i.e. 7% and 17.74% respectively (Table 2).
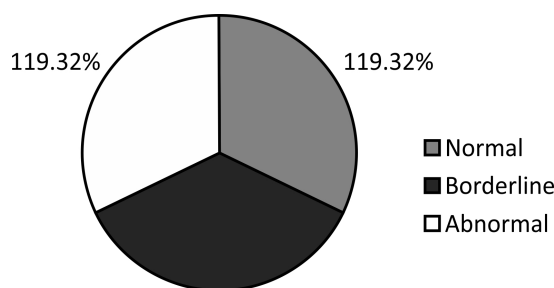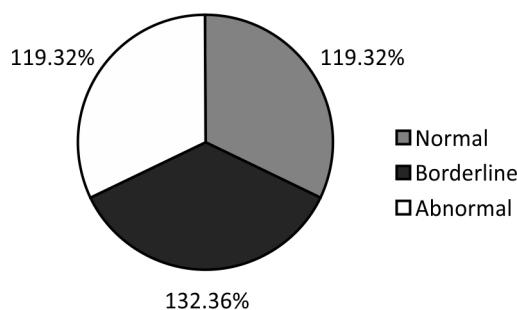

FIGURE 1. Depression in COPD

FIGURE 2. Anxiety in COPD

DISCUSSION

Among COPD patients, anxiety and depression contribute majorly in impairment of quality of life and reduce compliance to treatment (15). Our study shows frequency of depression in COPD is 10.8%, while frequency of anxiety is 32.2%. Scanty data from Pakistan is available and it's only for depression, nothing for anxiety, and one study shows frequency of depression in COPD was 15% and the other reports 57.2% (3,11). This disparity is probably because of difference in study tool, sample size, inclusion and exclusion criteria.

Studies conducted using the same scale of HAD showed prevalence of 9.6-49% for anxiety, which was comparable to our study and 22.8-52% for depression in contrast to our observed frequency of depression (18,19), despite using the same scale but recruited only COPD patients .

Another study done in China by using same study tool showed a prevalence of 13.1% for depression, which was similar to our result but there was

TABLE 1. Sociodemographic characteristics of participants

Variables	Groups	n	Percentage%
BMI	< 23	223	60.3
	>23	147	39.7
Marital Status	Married	166	45
	Single	204	55
Smoking status	Smoker	359	97
	Non-smoker	11	3
Education status	Unschooled	111	30
	Schooled	259	70
Sex	Male	296	80
	Female	74	20
Monthly income	<15,000	204	55.2
	15,000-50,000	111	30
	>50,000	55	14.9
Duration of diagnosis of COPD	<5 yrs.	74	20
	5-10 yrs.	92	24.8
	>10 yrs.	204	55
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	5-10 yrs.	92	24.8
	>10 yrs.	204	55

TABLE 2. Characteristics of participants with reference to anxiety and depression

Variables	Groups	Depression		Anxiety	
		n	Percentage%	n	Percentage%
BMI	<23	10	4.48	30	13.7
	>23	9	6.3	27	18.54
Marital status	Married	9	5.2	16	9.6
	Single	11	5.6	46	22.5
Smoking status	Smoker	38	10.8	53	14.8
	Non-smoker	0	0	2	17.4
Education status	Unschooled	4	3.8	16	14.5
	Schooled	18	7	46	17.74
Sex	Male	19	6.4	38	12.84
	Female	3	4.4	14	19.4
Monthly income	<15,000	9	4.4	19	9.3
	15,000-50,000	3	2.6	8	7.6
	>50,000	2	3.8	8	15.3
Duration of diagnosis of COPD	<5 yrs.	2	3.3	8	11.4
	5-10 yrs.	3	3.6	10	10.8
	>10 yrs.	83	40.8	4	10.04

a discrepancy with prevalence of anxiety reported as 7.6% in contrast to our study. This may be the reason of difference in region (16). While Thapa et al. demonstrated results of anxiety comparable to our results that is 39.8%, but difference in depression frequency was noted i.e. 35.5%. However, their study tool was not identical to ours (17).

Few studies from India with respect to depression demonstrate that genders are not the antecedent of depression in COPD (20,21). However, these statistics were contradicted by another study carried out in Nepal in year 2015-2016 (17), which showed relatively higher percentages of depression and anxiety in females with COPD, similar to Di Marco et al. (22). In contrast, present study revealed higher percentage of anxiety in females as compare to males. This may be because of the fact that females appeared to be more exposed to psychological constraints. We also notice slight male prepon-

derance with respect to depression, which can be attributed to social stressors.

Our study shows higher percentages of both depression and anxiety with elevated BMI, while a study conducted in Karachi in year 2010-2011 reported no significant relation with BMI (11). In contrast, Yohannes et al. reported a much greater percentage of anxiety with low BMI (23), similar to Chavannes et al., as they found less depressive symptoms in patients with raised BMI (24).

With relation to literacy status, a study was found that lower education background in COPD patients is associated with depression as compared to anxiety. This might be attributed to the overall low education level of the study population (25). However, in our study it was observed that depression was much more prevalent in the schooled population, which is in contradiction to the mentioned study.

We found a higher percentage of depression among low income group because financial difficulties work as a stressor that provokes depression, similar to a study conducted in China (26).

Our study invites the need of future studies for the exploration of risk factor associated with anxiety and depression among COPD patients so that early identification and timely intervention for management can be carried out to avail best possible outcome.

Limitations

The casual relation between COPD and depression could not be clearly established due to limitation of selected cross-sectional study design. Another limitation encountered in the study was the selection of OPD based patient comprising of mild to moderate disease category as hospitalized severe COPD patients could not generalized to all native COPD population. In addition to that, the opting of a particular questionnaire as an investigation tool is also questionable as no standard questionnaire currently exists to incorporate all the entities with unanimity.

CONCLUSIONS

Our study demonstrates a comparatively higher frequency of anxiety as compared to depression in the studied population. We also observed that depression and anxiety among COPD patients was more associated with high BMI and longer duration of COPD rather than other demographic factors. Therefore, special emphasis should be paid towards early screening for anxiety and depression in COPD patient as timely intervention can dramatically improve the quality of life.

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