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Assessment of anxiety and depression in COPD patients-A pilot study.

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Abstract

COPD is a chronic multisystem disorder with various co morbidities. Smoking is a major risk factor. It's etiology and multisystem effects may contribute to depression and anxiety. Interplay of various factors along with gender, socioeconomic, educational and marital status also do contribute to depression and anxiety in COPD. Unfortunately, Evaluation of anxiety and depression are often neglected in patients with COPD attending outpatient department (OPD) which may further effect their quality of life .This study was conducted to evaluate patients of COPD attending OPD for presence of depression and anxiety and various risk factors contributing .The study included 121 subjects (with smoking history) attending OPD of TB and Chest Diseases. Depression and anxiety were evaluated using Becks Depression Inventory (BDI) and Hamilton Anxiety Scale (HAS) respectively. Odds ratio was used to analyze the data. Depression was found in 69(57.02%) cases and anxiety in 44(36.37%) subjects . As per Hamilton Anxiety Scale (HAS) 4(9.09%), 12(27.27%) and 28(63.64%) were having mild, moderate and severe anxiety respectively (out of 44 anxiety cases). Similarly, in depressive subjects: 5(7.25%) were having minimal depression whereas 10(14.5%), 20(28.98%) and 34(14.50%) subjects suffered from mild, moderate and severe depression respectively. The probability of having depression was more in male gender (OR 1.325, CI:1.002-1.753), lower education class (OR 1.197,CI:0.734-1.951), higher social class (OR 1.153,CI:0.703-1.889), single marital status (OR 1.665,CI:0.754-3.677) and cases residing in urban locality(OR 1.346,CI:1.006-1.8). Probability of having anxiety was more in female gender (OR 1.667,CI: 1.023-2.714), rural locality (OR 1.260,CI:0.780-2.035), higher education (OR 1.034,CI:0.790-1.354), upper socioeconomic status (OR 1.670,CI:1.045-2.671) and marital status being single(OR 1.458,CI:0.687-3.097). Some factors play more important role in causing anxiety and depression than others and interplay of these factors in turn contribute to anxiety and depression in COPD cases. Thus proper identification and redressal of these factors will help in better management of COPD.

Keywords: COPD, depression, anxiety

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Introduction

COPD is a multisystem disorder with various co morbidities[1]. Smoking is a major risk factor[2]. Wiesbeck GA, et al demonstrated the association between smoking and depression in chronic diseases like COPD [3].Recently a study has demonstrated role of nicotine dependence in causing depression and anxiety in COPD [4]. COPD also have pscychological factors associated with it [5]. On the other hand, it has been observed that psychosocial, environmental, biological and behavioural factors effect mental and physical health [6]. Although mechanism is not clearly understood but various causative factors and existence of anxiety and depression have been reported in COPD patients[7,8,9,10]. Our opinion is that COPD patients are likely to be suffering from depression and anxiety and thus every patient attending OPD must be evaluated for their presence which in turn will be beneficial in overall management and prognosis.

Material and Methods

The present study included 121 COPD subjects(male and female) with smoking history (current/ex smokers) attending TB and Chest Diseases OPD, JNMC, AMU, Aligarh . Institutional Ethics Committee clearance was obtained.

Inclusion and Exclusion Criteria

Only COPD cases[diagnosed on the basis of GOLD classification(11)] having history of smoking and willingness to participate were included in the study. Subjects taking treatment for depression and anxiety were excluded. Subjects suffering from any chronic illness other than COPD were also excluded.

All the subjects included in the study were evaluated for presence and severity of depression and anxiety using Becks Depression Inventory(12) and Hamilton Anxiety Scale(13).

Statistical Analysis

Data obtained was analyzed using SPSS 17.0(statistical package for social sciences) for windows. Various risk factors for depression and anxiety were evaluated using Odds Ratio. Results were reported using Confidence Interval 95%. P value<0.05 was taken as statistically significant.

Results

In the present study 121 COPD patients [all smokers] were selected according to GOLD classification. The mean age was 43.15±13.04 years. Study included both male (80) and female(41) subjects. The mean BMI was 18.88±3.14 Kg/m^2. 43(35.54%) and 78(64.46%) subjects resided in rural and urban areas respectively .43(35.54%) subjects belonged to Upper high/upper middle class and 77(63.64%) subjects received Professional/graduate/intermediate/high school degrees. Similarly 22(18.18%) subjects were single and 99(81.82%) subjects were married [Table 1].Out of 121 COPD cases depression was found in 69(57.02%) cases, whereas 44(36.37%) subjects were having anxiety. As per Hamilton Anxiety Scale (HAS) 4(9.09%), 12(27.27%) and 28(63.64%) were having mild, moderate and severe anxiety respectively (out of 44 anxiety cases). Similarly in depressive subjects 5(7.25%) were having minimal depression whereas 10(14.5%), 20(28.98%) and 34(14.50%) subjects suffered from mild, moderate and severe depression respectively[table 2].

The probability of having depression was observed more in male gender (OR 1.325,CI:1.002-1.753). Similary depression probability was more in lower education class (OR 1.197,CI:0.734-1.951) and high social class (OR 1.153,CI:0.703-1.889). Odds of having depression were more in single(OR 1.665,CI:0.754-3.677) and cases residing in urban locality(OR 1.346,CI:1.006-1.8). Probability of having anxiety was more in female gender(OR 1.667,CI:1.023-2.714), rural locality(OR 1.260,CI:0.780-2.035), higher education(OR 1.034,CI:0.790-1.354), upper socioeconomic status(OR 1.670,CI:1.045-2.671) and marital status being single(OR 1.458,CI:0.687-3.097) [Table 3].

Table 1. *Gender, residential status, Socioeconomic, Educational and Marital Status*

Parameter	**COPD Cases(n=121)**	
Age (years)	**43.15 ± 13.04**	
Gender	male	80
	female	41
Residential status	Rural	43(35.54%)
	Urban	78(64.46%)
Educational status	Professional/graduate/intermediate/high school	77(63.64%)
	Middle school/primary school/illiterate	44(36.36%)
Socioeconomic status	Upper high/upper middle	43(35.54%)
	Lower middle/poor	78(64.46%)
Marital Status	Single	22(18.18%)
	Married	99(81.82%)

Table 2. *Assessment of Depression and Anxiety*

Depression	**Number**	**%**	**Distribution as per grades of depression number and %**			
			minimal	**mild**	**moderate**	**severe**
	69	57.02%	5 (7.25%)	10 (14.50%)	20 (28.98%)	34 (14.50%)
Anxiety	44	36.37%	Distribution as per grades of anxiety number and %			
			mild		moderate	severe
			4(9.09%)		12(27.27%)	28(63.64%)

Table 3. *Level of significance of various factors resulting in Depression and Anxiety (*P<0.05)*

Parameter	odds ratio(confidence interval 95%)	P value
Level of significance of various factors resulting in Depression(p<0.05 significant)		
Gender(male)	1.325 (1.002-1.753)	0.037*
Residential Area (urban)	1.346 (1.006-1.8)	0.03*
Educational status(middle school/primary school/illiterate)	1.197 (0.734-1.951)	0.466
Socioeconomic status(upper high/upper middle)	1.153 (0.703-1.889)	0.57
Marital status(single)	1.665 (0.754-3.677)	0.198
Level of significance of various factors resulting in anxiety(*P<0.05 is significant)		
Gender(female)	1.667 (1.023-2.714)	0.042*
Residential Area (rural)	1.260 (0.780-2.035)	0.875
Educational status (professional/graduate/intermediate/high school)	1.034 (0.790-1.354)	0.809
Socioeconomic status(upper high/upper middle)	1.670 (1.045-2.671)	0.034*
Marital status(single)	1.458 (0.687-3.097)	0.327

Discussion

In the present study depression was found in 57.02% cases and 36.37% suffered from varying grades of anxiety. A study done by Yon Ju Ryu etal [14] found depression and anxiety in 55% and 26% patients of COPD respectively. Higher percentage in our study can be explained on the basis that COPD patients were not subdivided into stages of severity (although 88 subjects in our study were having moderate to very severe COPD) and thus depression and anxiety were assessed in all cases and not according to percentage in different stages. As the disease severity increases depression and anxiety occurrence is expected to increase. In stable COPD prevalence of depression and anxiety ranges between 10-42% and 10-19% respectively but with severe disease data for same is 37-71% and 50-75% respectively [15].

All the subjects included in present study were having the history of smoking which is a major risk factor in COPD[2] . Inflammation contributes to pathophysiology of COPD[16] and may also play role in depression[17] which often coexists with anxiety in COPD patients[18]. Although we have not analyzed inflammatory markers but results in our study could be attributed to effects of smoking. Role of smoking in depression have been reviewed [19].

In our study the risk of having depression and anxiety was more in subjects belonging to higher socioeconomic class and those who were single. It can be attributed to day to day and lifestyle stresses and also to behavioural responses of individuals in coping with them. In present study personal and family history was not taken into consideration which could have given better understanding. Living alone is a risk factor in both anxiety and depression and lower educational status has been identified as risk factor causing depression [20,21]. In our study depression risk was more with lower educational status. In various studies depression is identified more in female COPD subjects [20,22,23]. In our study we have found depression more in male gender than female gender. The results can be attributed to the fact that in present study male subjects were more in comparison to female subjects . Moreover female subjects are more likely to be anxious at the time of assessment using questionnaire and this probably explains why in present study risk of anxiety was more in female subjects in comparison to males. Gudmundsson G etal found that levels of anxiety was more in female subjects in COPD[24].All subjects in our study were smokers and anxiety can be attributed to greater effects of smoking in females[25] but then same should be expected for depression also. Another possible explanation for low levels of depression in females apart from small sample size could be lesser acceptability or lower reporting of extent/amount of smoking by them. Socio cultural differences are know to play role in gender based differences in COPD[26]. A study done by Chavannes NH etal found higher prevalence of depression in higher educational levels and females[27]. Anxiety and depression are known to occur in COPD [28] though their prevalence may vary. Possible explanation for greater risk of anxiety in females having higher educational status in our study could be that these subjects were also depressed but their levels of anxiety was more at the time of assessment.

In the present study 57.02% cases were depressed out of which 7.25% were having minimal and 14.50% were having severe depression. Similarly out of 36.37% anxious subjects 9.09% were of mild grade and 63.64% suffered from severe anxiety. As already stated above COPD patients were not subdivided into stages of severity (although 88 subjects in our study were having moderate to very severe COPD) thus higher percentages of severe grades of depression and anxiety is not surprising. As severity of COPD increases prevalence of depression and anxiety also increases[15].

Conclusion

On the basis of study it is concluded that depression and anxiety are associated with COPD ,some factors are more important in causing anxiety and depression than others and interplay of these factors in turn contribute to anxiety and depression in COPD. Thus proper evaluation of all COPD subjects attending OPD will help in identifying these two co morbidities which will lead to better management and improve quality of life in COPD.

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