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Original Research Article

Prevalence of Generalized Anxiety Disorder in Chronic Obstructive Pulmonary Disease Patients and General Population

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Abstract: Emerging evidence suggests significant influence of comorbid anxiety on COPD. Several studies have reported a high prevalence of anxiety in COPD, but the rates vary widely. Review articles have reported the prevalence of GAD is 10% - 15.8% in COPD patients compared to 3.6% - 5.1% in the general public. We aim to study the prevalence of GAD in COPD patients and general population. Patients of COPD was diagnosed according to GOLD criteria and common people above 18 years of age were screened for prevalence of GDA by filling a brief questionnaire of 7-Item (GAD-7). Score of <5 were diagnosed as normal, mild anxiety 5 to 9, moderate **a**nxiety-10 to 14. Severe anxiety - 15 to 21 and data was analyzed. 300 common people and 278 COPD patients were studied. 66.0% common people and 80.2% COPD patients suffered from GAD (score of >5) which was extremely significant statistically (p=0.00012). In common people mild, moderate and sever GAD was observed in 29%, 18.6% and 18.4% respectively and 41.0%, 20.5% and 18.7% respectively in COPD patients and this difference was statistically significant for mild GAD and statistically insignificant for moderate and sever GAD. We conclude that prevalence of GAD is significantly high in COPD patients as compared to common people and further studies are needed to explore the causes, effects and prevalence of GAD in a larger population.
Keywords: COPD, Generalized Anxiety Disorder, Anxiety, General population

INTRODUCTION:

Chronic obstructive pulmonary disease (COPD) and asthma are a major public health problem, which seems to have close association with psychiatric disorders [1]. There is a growing focus on the role of comorbid psychological disease in patients with chronic illness and there has been little interest in the role of psychiatric problems in patients with respiratory disease, especially COPD. Recently data suggests that health, quality of life and health care utilization may be severely impacted by comorbid anxiety and depression in patients with COPD [2,3]. COPD is a common preventable and treatable disease, characterized by persistent airflow limitation that is usually progressive. Prevalence of COPD in India is about 5.0% in males and 3.2% in females in more than 35 years of age [4].

Generalized anxiety disorder (GAD) is a chronic disorder where most patients do not seek treatment for years and 7 to 8% of patients suffer from GAD in primary care settings [5]. Patients rarely report the symptom of GAD and have increased risks of other mental and physical health conditions (e.g., chronic pain syndromes, asthma or COPD and inflammatory bowel disease) [6]. Anxiety and depression have been identified as important psychiatric comorbidities in COPD associated with poor prognosis. Clinical guidelines suggest that COPD is both under diagnosed and under treated and both the conditions should be treated as usual [7,8]. In recent years there has been a rising interest in the role of anxiety disorders and the complex interactions between anxiety and respiratory

symptoms [9]. High prevalence of GAD in patients with COPD has been reported with variable rates of prevalence from 2%- 96%. This variation may be because of differences in methodologies and criteria used to diagnose anxiety [10-11]. Review articles have reported 10% - 15.8% prevalence of GAD in COPD patients compared to 3.6% - 5.1% in the general public (GP) [12]. Development of GAD can occur in any COPD patient independent of the reduction in pulmonary function. Patients with COPD and GAD have more somatic and psychological complaints than patients with only COPD, decreasing quality of life and may interfere with medical care. This study aims to study the prevalence of GAD in COPD patients and general population (GP).

MATERIAL AND METHODS:

This study was planned to evaluate prevalence of GAD in COPD patients and compare the results with presence of GAD in GP. Proposal was approved by institutional ethics committee and an informed consent was taken from each participant.

Inclusion criteria:

All patients of COPD were diagnosed according to GOLD [8] criteria that is age more that 40 years and post bronchodilator FEV1/FVC < 0.7 were included in this study. Subjects from GP above the age of 18 years who were normal healthy individuals without any disease or on medication were included as control group. GAD was diagnosed according to a brief validated 7-Item (GAD-7) questionnaire (Table 1). Total score was calculated and if total score was <5, subject was considered normal without any GAD, score of 5 to 9 suggested probably subclinical anxiety (mild GAD), score of 10 to 14 suggested possibly clinically significant anxiety (moderate GAD) and a score of 15-21 suggested probably clinically significant anxiety (severe GAD) [13].

Exclusion criteria:

Those patients who were not consenting for the study were excluded from the study. In COPD group, those who were < 40 years of age or with other concomitant respiratory disorders such as asthma, tuberculous destroyed-lung, bronchiectasis or interstitial lung disease, COPD exacerbation within the last month, lung resection surgery or lung volume reduction, lung cancer, known or suspected, uncontrolled cancer, history of radiation therapy to chest or breast, inability to use albuterol, pregnant females were excluded. Among the GP, those with history of any disease or taking any type of medication were not considered for the study.

Both the COPD and GP group were subjected to fill a brief validated 7-Item (GAD-7) questionnaire for diagnosis and severity of GAD. Results were tabulated and analyzed by student's t-test and p value was calculated.

Table 1: Generalized Anxiety Disorder 7-Item Questionnaire.

Over the past 2 weeks, how often have you Been bothered by the following problems? (*Use "✓" to indicate your answer*)	Not at All	Several Days	More Than Half Days	Nearly Every Day
1. Feeling nervous, anxious, or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Having trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7.Feeling afraid, as if something awful might happen	0	1	2	3
Total Score.				
Normal: <5 normal, Mild: probably subclinical Anxiety- 5 to 9, Moderate: possibly clinically significant Anxiety-10 to 14. Severe: probably clinically significant anxiety - 15 to 21				

RESULTS:

300 subjects from general population and 278 COPD patients were studied. 66.0% GP and 80.2% COPD patients suffered from GAD (score of >5) which was extremely significant statistically (p=0.00012). In GP mild, moderate and sever GAD was observed in 29%, 18.6% and 18.4% respectively and 41.0%, 20.5% and 18.7% respectively in COPD patients and this difference was statistically significant for mild GAD

and statistically insignificant for moderate and sever GAD. Results are shown in table 2.

Table 2: Prevalence of Generalized Anxiety Disorder in COPD Patients and General Population. % (n)

Variables	Normal: Score < 5	GAD Score 5 to 21	Mild Anxiety: Score 5 to 9	Moderate Anxiety: Score 10 to 14	Severe Anxiety: Score 15 to 21
COPD % (n-278)	19.8 (55)	80.2(223)	41.0(114)	20.5 (57)	18.7 (52)
General Population % (n-300)	34.0(102)	66.0(198)	29.0(87)	18.6 (56)	18.4(55)
P Value	0.0001800 (s)	0.00012 (s)	0.003271 (s)	0.6517 (ns)	0.9938 (ns)

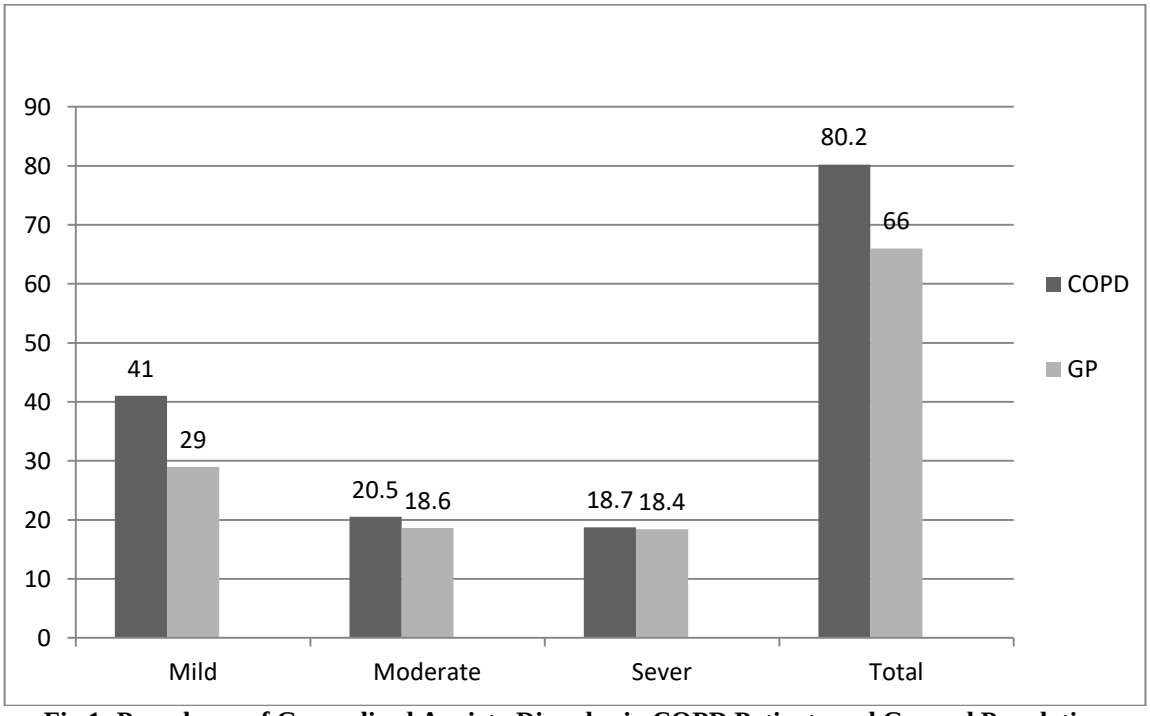

Fig 1: Prevalence of Generalized Anxiety Disorder in COPD Patients and General Population

DISCUSSION:

Data suggests that psychiatric comorbidities are more prevalent among COPD patients than among healthy subjects. GAD is a prevalent and disabling disorder characterized by persistent worrying, anxiety symptoms and tension. It is the most frequent anxiety disorder in primary care, being present in 7-8 % of primary care patients but in our study the prevalence of GAD in GP was 66% (198/300) which was quite high. In our study mild anxiety (score of 5-9) was observed in 29% (87/300) of GP, moderate anxiety (score of 10-14) was noted in 18.6% (56/300) and sever anxiety (score of 15-21) was present in 18.4% (55/300) of GP. Emerging evidence suggests that GAD may increase frequency of acute flares which put patients at immediate risk for mortality and usually cause deterioration in lung function. In a study, the frequency of anxiety disorders was 9.5% in COPD patients as compared to 1.4% in controls [14]. The study by Kahraman *et al.;* found that the prevalence of anxiety in COPD patients was 30.7% as compared to 16.4% in controls [15] In another study by Sharma *et al.;* the prevalence of anxiety disorders was 20.6% [16]. And the prevalence rates of anxiety in patients with COPD ranges between 10% and 19% in patients with stable disease [17].

In our study the prevalence of GAD in COPD patients was 80.2% (223/278) (score of >5) which was quite high as compared to the prevalence of GAD reported in other studies and was statistically significant (p=0.00012) as compared to prevalence of GAD in GP

which was 66%(198/300). 41.0% (114/278) COPD patients suffered from mild GAD (score 5-9), 20.5% (57/278) has moderate GAD (score 10-15) and 18.7% (52/278) had sever GAD (score 16-21) where as prevalence of mild, moderate and sever GAD was 29% (87/300), 18.6% (56/300) and 18.4% (55/300) respectively in GP. This difference was statistically significant for mild GAD and statistically insignificant for moderate and severs GAD (figure 1).

Review articles have reported prevalence of GAD to be 10% - 15.8% in COPD patients compared to 3.6% - 5.1% in general public. Five studies reviewed reported the prevalence of GAD ranging from 6–33% (median 16%) [11]. It is not clear why there is an elevated prevalence of anxiety in patients with COPD, but association between COPD and anxiety appears to be multifactorial and bidirectional. Researchers have hypothesized possible common pathophysiology between COPD and anxiety, including the hyperventilation model, carbon dioxide hypersensitivity model and cognitive behavioral model [18].

Psychiatric comorbidities in COPD patients are often under diagnosed and contribute to the morbidity in these patients. Increased awareness is, therefore, essential to diagnose and treat psychiatric comorbidities in COPD patients. The efficacy of treating COPD patients with comorbid anxiety using antidepressant drug therapy is nonclusive [18]. It is also suggested that psychotherapy, including cognitive behavioral therapy, may reduce symptoms of anxiety, panic attacks and the number of hospital admissions [19] but recent clinical guidelines have concluded that the evidence base suggested that both the conditions should be treated as usual is inconclusive in this area [7, 8].

After review the data and our results we suggest that future research is needed incorporating robust clinical diagnosis alongside self-report measures as outcome measures, so that the efficacy of interventions on specific anxiety disorders can be explored in more detail. Further studies are needed to examine the factors contributing to increased prevalence of anxiety disorders in patients with COPD. Studies suggest that COPD and anxiety have an unusual linkage, that COPD contributes to the pathogenesis of GAD, or that the symptom profile in COPD leads to misdiagnosis of GAD.

Limitations of our study are that our study was conducted in a single center, the numbers of subjects enrolled were small and samples varied in terms of their demographics. So further studies are needed on a larger scale for the exact estimation of prevalence of GAD in COPD patients. More over our study did not take in to consideration other causes of GAD and its co relation with severity of COPD.

CONCLUSION:

We conclude that prevalence of GAD is significantly high in COPD patients (80.2%) as compared to GP (66%). Prevalence of mild, moderate and severe GAD was 41.0%, 20.5% and 18.7% respectively in COPD patients and 29%, 18.6% and 18.4% respectively in GP. Mild GAD showed statistically significant difference among COPD patients and GP where as moderate and sever GAD did not show any statistically significant difference among COPD patients and GP. Since there were some limitations of our study, we suggest further studies to explore the causes, effects and prevalence of GAD in a larger population and its relation to pulmonary functions and severity of COPD.

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