



Original Article

Age and Gender Distribution of Anxiety and Anxiety Severity in COPD Patients

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OPEN ACCESS

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Received: 04-05-2026

Accepted: 08-06-2026

Available online: 16-07-2026

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Medical and Pharmaceutical Research

ABSTRACT

Background: Chronic obstructive pulmonary disease is a progressive respiratory disorder associated with substantial psychological morbidity. Anxiety is commonly observed among COPD patients and may worsen breathlessness perception, functional limitation and disease-related distress. Evaluation of age and gender patterns of anxiety may help in identifying vulnerable patient groups.

Aim: To study the distribution of anxiety and anxiety severity among COPD patients according to age and gender.

Methodology: This cross-sectional study was conducted at Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Amritsar, from July 2024 to December 2025. A total of 313 diagnosed COPD patients attending outpatient and inpatient services of the Department of Tuberculosis and Respiratory Diseases were assessed. COPD was diagnosed on spirometry. Anxiety was assessed using ICD-10 diagnostic criteria and Hamilton Anxiety Rating Scale. Out of 313 COPD patients, 129 patients were found to have anxiety and were included in the present anxiety-focused analysis. Anxiety severity was categorized as mild, mild to moderate, moderate to severe, and severe to very severe according to HAM-A score.

Results: Out of 313 COPD patients assessed in the parent study, 129 were found to have anxiety. Among these 129 anxiety-positive patients, 69 (53.5%) were females and 60 (46.5%) were males. The highest frequency of anxiety was observed in the 51–60 years age group, comprising 36 (27.91%) patients, followed by 31–40 years in 33 (25.58%) and 41–50 years in 31 (24.03%) patients. Severe to very severe anxiety was present in 32 patients, including 21 females and 11 males. The maximum number of severe to very severe anxiety cases was observed in the 31–40 years age group, with 11 (34.38%) cases. No statistically significant association was observed between anxiety severity and age ($\chi^2=12.71$, $df=18$, $p=0.808$) or gender ($\chi^2=3.76$, $df=3$, $p=0.288$).

Conclusion: Anxiety was present in 129 out of 313 COPD patients. Although females and middle-aged patients showed higher frequency, anxiety severity was not significantly associated with age or gender.

Keywords: COPD, Anxiety, HAM-A, Age, Gender.

INTRODUCTION

Chronic obstructive pulmonary disease is a chronic, progressive and heterogeneous respiratory disorder characterized by persistent airflow limitation and respiratory symptoms such as dyspnoea, cough, sputum production and exercise intolerance. It remains one of the major causes of morbidity and imposes a significant clinical, functional and psychosocial burden on affected individuals. The Global Initiative for Chronic Obstructive Lung Disease describes COPD as a preventable and treatable disease in which airflow obstruction is usually progressive and associated with a chronic inflammatory response of the airways and lungs to noxious particles or gases [1,2]. Although COPD is primarily defined

by respiratory impairment, its impact extends beyond pulmonary physiology and significantly affects emotional well-being, daily functioning and quality of life. Patients with COPD commonly experience breathlessness, fatigue, sleep disturbance, reduced exercise tolerance, fear of acute exacerbation and progressive dependence on others. These factors may contribute to anxiety, which is one of the most frequent psychological comorbidities encountered in COPD patients [7,8]. Anxiety in COPD has important clinical relevance because respiratory symptoms and anxiety symptoms often interact with each other. Breathlessness may trigger fear, panic-like sensations and avoidance of activity, while anxiety may worsen the subjective perception of dyspnoea and reduce confidence in routine functioning. This bidirectional relationship can increase symptom burden and may adversely affect treatment adherence, rehabilitation participation and healthcare utilization [9–12]. In routine respiratory practice, clinical attention is often directed toward spirometric severity, exacerbation frequency and pharmacological management, while anxiety may remain under-recognized. Structured assessment of anxiety is therefore important in COPD patients, especially in tertiary care settings where patients often present with advanced symptoms and greater functional limitation. Age and gender are important demographic variables that may influence anxiety expression. Middle-aged patients may experience distress due to occupational limitation and social responsibilities, whereas older patients may be affected by dependency and chronic disease burden. Similarly, gender-related biological, social and behavioural factors may influence the occurrence and reporting of anxiety. The Hamilton Anxiety Rating Scale is a widely used clinician-administered tool for evaluating severity of anxiety symptoms and grading them into clinically meaningful categories [13]. The present article focuses only on anxiety among COPD patients. Although the parent study included 313 COPD patients, the current analysis includes the 129 COPD patients who were found to have anxiety. The purpose of this article is to assess age-wise and gender-wise distribution of anxiety and to determine the association of anxiety severity with age and gender.

AIM

To study the distribution of anxiety and anxiety severity among COPD patients according to age and gender.

METHODOLOGY

The present cross-sectional study was conducted at Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Amritsar, from July 2024 to December 2025. The parent study included 313 diagnosed COPD patients attending outpatient and inpatient services of the Department of Tuberculosis and Respiratory Diseases. New and old diagnosed cases of COPD aged 18 years and above were included. COPD diagnosis was based on spirometry findings. Spirometry was performed by trained personnel according to standard recommendations, and forced expiratory volume in one second, forced vital capacity and FEV1/FVC ratio were recorded. Severity of airflow obstruction was categorized according to post-bronchodilator FEV1 values using GOLD grading. Patients with chronic medical illnesses such as diabetes mellitus, systemic hypertension, thyroid disorders, cardiovascular disease, liver disease, kidney disease, central nervous system disease, blood disorders and malignancy were excluded. Patients with history of substance abuse, past history of any mental illness and pregnant women were also excluded. After obtaining written informed consent, all 313 COPD patients were assessed for anxiety using ICD-10 diagnostic criteria and Hamilton Anxiety Rating Scale. HAM-A is a clinician-administered scale consisting of fourteen items, each scored from 0 to 4, with total score ranging from 0 to 56. Scores less than 17 indicate mild anxiety, scores between 18 and 24 indicate mild to moderate anxiety, scores between 25 and 30 indicate moderate to severe anxiety, and scores above 30 indicate severe to very severe anxiety. Out of 313 COPD patients assessed in the parent study, 129 were found to have anxiety and were included in the present article for age-wise, gender-wise and severity-wise analysis. Patients without anxiety were not included in these specific result tables because the objective of this article was to study the distribution and severity pattern of anxiety among COPD patients with anxiety. Data were compiled and statistically analysed using descriptive and inferential statistics. Categorical variables were expressed as frequency and percentage. Association of anxiety severity with age and gender was assessed using Chi-square test, and a p-value of less than 0.05 was considered statistically significant.

RESULTS

Out of the total 313 COPD patients assessed in the parent study, 129 were found to have anxiety and were included in the present article. Among these 129 anxiety-positive COPD patients, 69 (53.5%) were females and 60 (46.5%) were males. The maximum number of anxiety cases was observed in the 51–60 years age group, comprising 36 (27.91%) patients, followed by 31–40 years with 33 (25.58%) patients and 41–50 years with 31 (24.03%) patients. Among females, anxiety was most frequent in the 51–60 years group, with 23 (33.33%) cases, followed by 31–40 years with 21 (30.43%) and 41–50 years with 17 (24.64%) cases. Among males, the highest frequency was seen in the 41–50 years age group with 14 (23.33%) cases, followed by 51–60 years with 13 (21.67%) and 31–40 years with 12 (20.00%) cases. Severe to very severe anxiety was present in 32 patients, including 21 females and 11 males. The highest number of severe to very severe anxiety cases was observed in the 31–40 years age group, with 11 (34.38%) cases. Anxiety severity was not significantly associated with age ($\chi^2=12.71$, $df=18$, $p=0.808$) or gender ($\chi^2=3.76$ $df=3$, $p=0.288$).

TABLES

Table 1: Frequency Distribution of Patients with Anxiety According to Age and Gender

Age group (years)	Female n (%)	Male n (%)	Total n (%)
<20	0 (0.00)	1 (1.67)	1 (0.78)
20–30	5 (7.25)	9 (15.00)	14 (10.85)
31–40	21 (30.43)	12 (20.00)	33 (25.58)
41–50	17 (24.64)	14 (23.33)	31 (24.03)
51–60	23 (33.33)	13 (21.67)	36 (27.91)
61–70	2 (2.90)	8 (13.33)	10 (7.75)
>70	1 (1.45)	3 (5.00)	4 (3.10)
Total	69 (100.00)	60 (100.00)	129 (100.00)

Table 2: Frequency Distribution of Patients with Severe to Very Severe Anxiety According to Age and Gender

Age group (years)	Female n (%)	Male n (%)	Total n (%)
<20	0 (0.00)	0 (0.00)	0 (0.00)
20–30	3 (14.29)	3 (27.27)	6 (18.75)
31–40	7 (33.33)	4 (36.36)	11 (34.38)
41–50	4 (19.05)	3 (27.27)	7 (21.88)
51–60	5 (23.81)	1 (9.09)	6 (18.75)
61–70	1 (4.76)	0 (0.00)	1 (3.12)
>70	1 (4.76)	0 (0.00)	1 (3.12)
Total	21 (100.00)	11 (100.00)	32 (100.00)

Table 3: Association of Severity of Anxiety with Age

Age group (years)	Mild	Mild moderate to	Moderate severe to	Severe to very severe	Total
<20	0	1	0	0	1
20–30	0	4	4	6	14
31–40	0	13	9	11	33
41–50	0	10	14	7	31
51–60	0	17	13	6	36
61–70	0	6	3	1	10
>70	0	3	0	1	4
Total	0	54	43	32	129

$\chi^2 = 12.71$, $df = 18$, $p\text{-value} = 0.808$.

Table 4: Association of Severity of Anxiety with Gender

Gender	Mild	Mild moderate to	Moderate severe to	Severe to very severe	Total
Female	0	24	24	21	69
Male	0	30	19	11	60
Total	0	54	43	32	129

$\chi^2 = 3.76$, $df = 3$, $p\text{-value} = 0.288$.

DISCUSSION

The present article evaluated the age and gender distribution of anxiety and anxiety severity among COPD patients. The parent study included 313 diagnosed COPD patients; however, the present anxiety-focused analysis included only the 129 patients who were found to have anxiety on assessment. This analytical approach is appropriate because the objective of the article was not to determine the overall prevalence of anxiety in the complete COPD cohort, but to study the distribution and severity pattern of anxiety among COPD patients who had anxiety. In this study, females constituted 69 (53.5%) anxiety-positive cases, while males constituted 60 (46.5%) cases. The highest frequency of anxiety was observed in the 51–60 years age group, comprising 36 (27.91%) patients, followed by 31–40 years with 33 (25.58%) patients and 41–50 years with 31 (24.03%) patients. Thus, anxiety was predominantly distributed among patients between 31 and 60 years of age. This finding is clinically meaningful because COPD is a chronic disabling respiratory disorder in which persistent dyspnoea, activity limitation, recurrent symptoms, fear of exacerbation and uncertainty regarding disease progression may contribute to psychological distress. Light et al. observed that anxiety is an important psychological manifestation among COPD patients and may contribute to greater symptom-related distress. Kunik et al. also reported a substantial burden of anxiety among patients with chronic breathing disorders, suggesting a close relationship between respiratory limitation and psychological morbidity. Di Marco et al. further documented anxiety among COPD patients and observed its association

with poorer health status. Laurin et al. emphasized the clinical importance of anxiety in COPD by showing its relationship with adverse respiratory outcomes and exacerbation-related risk [7–10]. The findings are in agreement with these observations, as anxiety was identified across a wide age range and was most frequent among middle-aged and older adults.

Severe to very severe anxiety was present in 32 COPD patients. Among these patients, 21 were females and 11 were males. Age-wise, the highest number of severe to very severe anxiety cases was observed in the 31–40 years age group, with 11 (34.38%) cases, followed by 41–50 years with 7 (21.88%) cases. The 20–30 years and 51–60 years age groups each contributed 6 (18.75%) cases. This distribution indicates that severe anxiety was not confined to older COPD patients; rather, it was also prominent among younger and middle-aged patients. This may be explained by the fact that younger and middle-aged patients may experience greater distress due to occupational limitation, financial dependency, reduced social participation, family responsibilities and fear of long-term respiratory disability. Ellison et al. emphasized that mental health needs in COPD should be recognized as an integral component of chronic illness care. Panagioti et al. highlighted that anxiety in COPD is multifactorial and may be influenced by symptom burden, functional restriction, impaired quality of life and individual coping patterns. Thompson described the Hamilton Anxiety Rating Scale as a structured clinician-administered instrument for assessing anxiety severity. Biswas et al. reported anxiety among stable COPD patients and supported the need for routine psychological evaluation in respiratory practice [11–14]. The present study supports these observations, as severe to very severe anxiety was distributed across several age groups and was particularly frequent in the 31–40 years age group.

The association between anxiety severity and age was statistically non-significant, with $\chi^2=12.71$, $df=18$ and $p=0.808$. Among the 129 anxiety-positive COPD patients, 54 had mild to moderate anxiety, 43 had moderate to severe anxiety and 32 had severe to very severe anxiety. No patient was categorized as having mild anxiety alone. In the 51–60 years age group, which had the highest total number of anxiety-positive patients, 17 had mild to moderate anxiety, 13 had moderate to severe anxiety and 6 had severe to very severe anxiety. In the 31–40 years age group, 13 had mild to moderate anxiety, 9 had moderate to severe anxiety and 11 had severe to very severe anxiety. In the 41–50 years age group, 10 had mild to moderate anxiety, 14 had moderate to severe anxiety and 7 had severe to very severe anxiety. Although numerical variation was observed across age categories, these differences were not statistically significant. Therefore, the findings suggest that age alone may not be a reliable determinant of anxiety severity among COPD patients. Anxiety severity may be influenced by multiple factors such as dyspnoea perception, COPD severity, exacerbation history, duration of illness, functional impairment, sleep disturbance, social support and individual coping ability.

Gender-wise analysis showed that females had a higher overall frequency of anxiety, with 69 (53.5%) cases, compared with 60 (46.5%) cases among males. Among females, 24 had mild to moderate anxiety, 24 had moderate to severe anxiety and 21 had severe to very severe anxiety. Among males, 30 had mild to moderate anxiety, 19 had moderate to severe anxiety and 11 had severe to very severe anxiety. Although severe to very severe anxiety was numerically higher among females, the association between anxiety severity and gender was statistically non-significant, with $\chi^2=3.76$, $df=3$ and $p=0.288$. This indicates that while female patients showed a greater numerical burden of anxiety, gender did not emerge as a statistically significant determinant of anxiety severity. Anxiety in COPD should therefore not be considered a gender-restricted clinical problem. Both male and female COPD patients require systematic screening, especially because anxiety may remain clinically under-recognized when the primary focus is limited to respiratory symptoms and spirometric impairment. Overall, anxiety among COPD patients was distributed across different age groups and both genders. The maximum number of anxiety-positive patients belonged to the 51–60 years age group, while severe to very severe anxiety was most frequent in the 31–40 years age group. Females showed a higher overall frequency of anxiety and also a higher number of severe to very severe cases, but neither age nor gender showed a statistically significant association with anxiety severity. These findings indicate that anxiety severity in COPD is likely to be shaped by a combination of clinical, functional and psychosocial factors rather than by demographic variables alone. Therefore, anxiety screening should not be limited to any particular age group or gender. All COPD patients should be routinely assessed for anxiety, and patients found to have anxiety should be further categorized according to severity using a validated instrument such as the Hamilton Anxiety Rating Scale.

CONCLUSION

Out of 313 COPD patients, 129 had anxiety. Anxiety was most frequent in the 51–60 years age group and was more common among females. Severe to very severe anxiety was highest in the 31–40 years group. Anxiety severity was not significantly associated with age or gender.

LIMITATIONS

The study was cross-sectional and single-centre in design. The present article analysed only anxiety-positive COPD patients. Other factors such as COPD severity, duration of illness, exacerbation history, smoking status, treatment adherence and quality of life were not included in this focused analysis.

RECOMMENDATIONS

Routine anxiety screening should be incorporated into COPD care for all patients, irrespective of age and gender. Future studies should evaluate anxiety severity in relation to COPD stage, symptom burden, exacerbation frequency and functional limitation to develop integrated respiratory and psychological care models.

ETHICAL APPROVAL

The study was conducted after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all participants before enrolment.

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