

ORIGINAL ARTICLE

Occurrence of anxiety and its scores in chronic obstructive pulmonary disease patients.

Khalid Khan¹, Bella Virk², Alvina Khan³, Binish Gull Arshad⁴, Muhammad Asad Khan⁵, Arsalan Mufti⁶

ABSTRACT... Objective: To find out the frequency and severity of anxiety in patients presented with chronic obstructive pulmonary disease. **Study Design:** Cross-sectional study. **Setting:** Accident and Emergency Medicine Department, Farooq Hospital, Islamabad. **Period:** March 2024 to September 2025. **Methods:** On chronic obstructive pulmonary disease patients was diagnosed with COPD using GOLD standard criteria with an age of 40 years and above were screened for anxiety by using Generalised Anxiety Disorder (GAD)-7 criteria. GAD-7 scores were distributed to classify anxiety severity into minimal (0-4), mild (5-9), moderate (10-14), and severe (15-21). **Results:** Of the 129 COPD patients, male patients were in the majority (82.2%, n=106), and female patients were in minority (17.8%, n=23). The mean age was 67.98±7.01 years. The overall mean GAD-7 score was 8.12±2.88. Anxiety severity was minimal in 3.1% (n=4), mild in 72.9% (n=94), moderate in 20.1% (n=26) and severe in 3.9% (n=5) COPD patients. Anxiety severity was significantly associated with gender (p-value<0.001) and age (p-value=0.006). **Conclusion:** The frequency of anxiety was high in patients presented with chronic obstructive pulmonary disease, with most of the patients suffering from mild anxiety, followed by moderate and severe anxiety.

Key words: Anxiety, Chronic Obstructive Pulmonary Disease, Disease Progression, Quality of Life.

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INTRODUCTION

One of the most prevalent medical conditions affecting people worldwide is chronic obstructive pulmonary disease (COPD). It is characterized by persistent respiratory symptoms with restricted airflow.^{1,2} Despite being a preventable and treatable condition, COPD is linked to poor outcomes since there aren't many disease-modifying medications that work for most patients.^{2,3}

COPD is a severe public health issue that has a significant financial and medical impact. Additionally, it is becoming a more significant cause of disease, disability, and fatalities worldwide.⁴ Globally, the prevalence of COPD is steadily rising. In 2020, the prevalence of COPD was 10.6%, accounting for 480 million cases throughout the world. The number of COPD cases is expected to increase to 592 million by 2050, which is a 23.3% increase over 2020.⁵ The World Health Organization reports that COPD ranks as the fourth most common cause of death worldwide.⁶ In Pakistan, 6.9 million people

suffer from COPD. The prevalence of undiagnosed COPD is roughly 31.1% in Pakistan's rural areas.⁷

It is becoming more widely acknowledged that COPD is strongly associated with severe psychological disorders, particularly anxiety. Despite being one of the most prevalent comorbidities in COPD, anxiety is frequently misdiagnosed. Anxiety is more common in COPD patients than in the general population. Among COPD inpatients, the prevalence of anxiety varies from 10% to 55%, whereas among outpatients, it ranges from 13% to 46%.^{8,9} Anxiety has been remarkably associated with increased probability of COPD exacerbations, more frequent admissions to hospital, prolonged stays in hospital, higher utilisation of healthcare resources, decreased adherence to medications, decreased quality of life and higher rates of mortality. Early screening and collaborative care, including psychosocial, behavioural, and non-pharmacological interventions, have been suggested to enhance COPD outcomes and quality of life. Therefore, it is

1. MBBS, FCPS (Medicine), Consultant Medicine/Senior Registrar, Qazi Hussain Ahmad Medical Complex, Nowshera.

2. MBBS, MD, Registrar Emergency Medicine, Farooq Hospital, Islamabad.

3. MBBS, MD, Registrar Emergency Medicine, Ziauddin University Hospital, Karachi.

4. MBBS, M.Phil, Ph.D, CHPE, Assistant Professor Biochemistry, Akhtar Saeed Medical and Dental College, Rawalpindi.

5. MBBS, MD, Registrar Emergency Medicine, Ziauddin University Hospital, Karachi.

6. MBBS, MD, Consultant Emergency Medicine (Physician), Shaafi International Hospital, Islamabad.

Correspondence Address:

Dr. Bella Virk
Department of Emergency Medicine, Farooq Hospital, Islamabad.
bellavirk999@gmail.com

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highly recommended that people with COPD should undergo early screening for anxiety disorders.⁸⁻¹⁰

Anxiety is highly prevalent in patients with COPD and associated with poorer health-related outcomes. The purpose of the study is the early recognition and management of anxiety in COPD, which may improve outcomes and potentially decrease health service utilisation.

METHODS

A cross-sectional study on chronic obstructive pulmonary disease patients was conducted in accident and emergency department of Farooq Hospital, Islamabad from March 2024 to September 2025. Patients were consecutively enrolled in the study from the accident and emergency medicine department. Open Epi software was used to determine the research sample size. A sample size of 129 was determined using the variables listed below: the expected frequency was 20.6%, with a 95% confidence interval and a 7% margin of error, based on a prior study by Sharma et al. that found 20.6% prevalence of anxiety in COPD patients.¹¹

The study consist of patients fulfilling the following criteria: (1) patients diagnosed with COPD using GOLD standard criteria, (2) age of 40 years and above, (3) either gender, and (4) patients who are interested to participate in the study. The study excludes the patients fulfilling the following criteria: (1) COPD patients with a history of acute exacerbation within the last four weeks, (2) patients with other diseases such as cancer, chronic heart, liver or kidney failure etc., (3) patients with previous history of chest trauma, pulmonary tuberculosis, or lung infections, (4) patients with anaphylactic reactions, and (5) patients not interested to participate in the study.

The study permission was obtained from the Institutional Review Board of Farooq Hospital, Islamabad (Akhtar Saeed Medical College Rawalpindi) via letter no: 0601 dated 21st March 2024. Patients were given information about the study prior to their enrolment in the study, and then their signed informed consent was acquired. Patients who fulfilled the study's criteria for inclusion were recruited and demographic (gender and age) and

medical details were obtained. Patients diagnosed with COPD using GOLD standard criteria were evaluated about the presence of anxiety by using Generalised Anxiety Disorder (GAD)-7 criteria. GAD-7 scores were distributed to classify anxiety severity into minimal (0-4), mild (5-9), moderate (10-14), and severe (15-21). The Statistical Package for Social Sciences (SPSS version 25) was a tool used for statistical analysis. Chi-square test and One way ANOVA were used for comparing anxiety severity with gender and age with p-value of ≤ 0.05 . Before analysis, data was cleaned for removing duplicate entries and missing values, making sure that the final analysed data was complete for statistical analysis.

RESULTS

Of the 129 COPD patients, male patients were in the majority (82.2%, n=106), and female patients were in minority (17.8%, n=23) [Figure-1]. The mean age was 67.98 ± 7.01 years, ranging from 53 to 85 years.

Among the 129 COPD patients, "Not being able to stop or control worrying" was the most commonly reported question with 65.1% (n=84) reporting it on several days and 13.2% (n=17) on nearly everyday. Similarly, "Being so restless that it is hard to sit still" was the second most commonly reported question with 63.6% (n=82) reporting it on several days and 14.7% (n=19) on more than half the days. In contrast, "Feeling nervous, anxious, or on edge" was the least commonly reported question with 40.3% (n=52) reporting it not at all [Table-I].

The overall mean GAD-7 score was 8.12 ± 2.88 . Anxiety severity was minimal in 3.1% (n=4), mild in 72.9% (n=94), moderate in 20.1% (n=26) and severe in 3.9% (n=5) COPD patients [Figure-2].

Anxiety severity was significantly associated with gender (p-value<0.001) [Table-II] and age (p-value=0.006) [Figure-3]. Male COPD patients were mostly suffering from anxiety as compared to female patients [Table-II]. Anxiety severity was also significantly increasing with increasing age. Mean age was 60.0 years in COPD patients diagnosed with minimal anxiety, which increased to 67.2 years in mild anxiety, 70.9 years in moderate anxiety and 73.0 years in severe anxiety [Figure-3].

FIGURE-1

Gender of COPD Patients

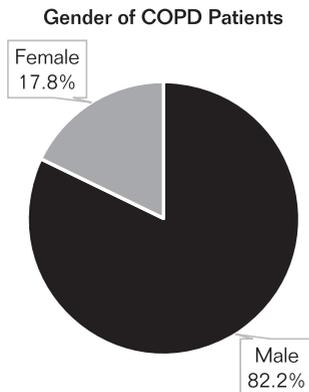


FIGURE-3

Anxiety in COPD patients

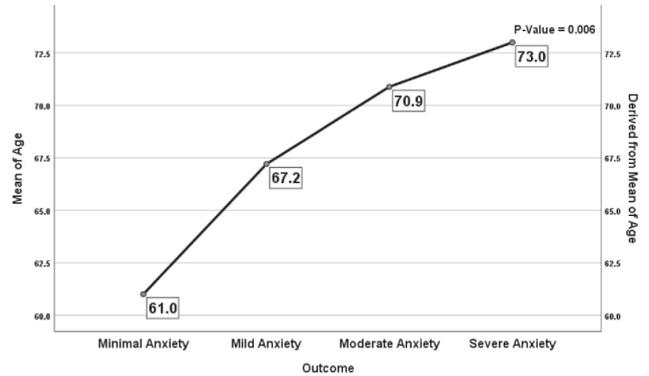
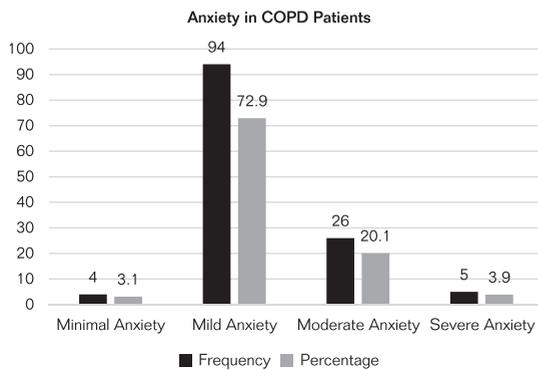


FIGURE-2

Anxiety in COPD patients



DISCUSSION

This study was conducted to find out the frequency and severity of anxiety in patients presented with chronic obstructive pulmonary disease at tertiary care hospital of Islamabad. In this study, 129 COPD patients were selected; most of them were male (82.2%, n=106), whereas females were few (17.8%, n=23). The mean age was 67.98±7.01 years, ranging from 53 to 85 years. These findings are similar with previous studies where Liu et al. reports the male prevalence of 88.5% and female prevalence of 11.5% with a mean age of 67.5 ± 7.3 years⁹,

TABLE-I

GAD-7 Questions & Answers

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at All	Several Days	More than Half the Days	Nearly Every Day
Q. 1 Feeling nervous, anxious, or on edge	52 (40.3%)	60 (46.5%)	13 (10.1%)	4 (3.1%)
Q. 2 Not being able to stop or control worrying	13 (10.1%)	84 (65.1%)	15 (11.6%)	17 (13.2%)
Q. 3 Worrying too much about different things	14 (10.9%)	63 (48.8%)	31 (24.0%)	21 (16.3%)
Q. 4 Trouble relaxing	30 (23.3%)	75 (58.1%)	21 (16.3%)	3 (2.3%)
Q. 5 Being so restless that it is hard to sit still	23 (17.8%)	82 (63.6%)	19 (14.7%)	5 (3.9%)
Q. 6 Becoming easily annoyed or irritable	51 (39.5%)	32 (24.8%)	36 (27.9%)	10 (7.8%)
Q. 7 Feeling afraid as if something awful might happen	14 (10.9%)	52 (40.3%)	41 (31.8%)	22 (17.1%)

TABLE-II

Anxiety and gender

Gender	Outcome				P-Value
	Minimal Anxiety	Mild Anxiety	Moderate Anxiety	Severe Anxiety	
Male	3 (75.0%)	85 (90.4%)	16 (61.5%)	2 (40.0%)	<0.001
Female	1 (25.0%)	9 (9.6%)	10 (38.5%)	3 (60.0%)	
Total	4 (100.0%)	94 (100.0%)	26 (100.0%)	5 (100.0%)	

Ayub et al. reports the male prevalence of 76.8% and female prevalence of 23.2% with a mean age of 64.1 ± 7.01 years¹², and Siddiqui et al. reports the male prevalence of 80% and female prevalence of 20% with a mean age of 64.1 ± 7.01 years.¹³ The majority of studies show a higher prevalence of COPD in male patients and people over the age of 60, due to increased smoking rates and occupational exposures. The prevalence of COPD in older patients can be explained by the fact that it is a progressive disease with symptoms that usually appears decades after exposure. Additionally, biological differences, healthcare-seeking behaviour, and diagnostic variations all explain male predominance in many ethnicities.

In this study, overall mean GAD-7 score was 8.12 ± 2.88 . Most of the COPD patients were presented with mild anxiety (72.9%, n=94), followed by moderate anxiety (20.1%, n=26), severe anxiety (3.9%, n=5) and minimal anxiety (3.1%, n=4). In this study male COPD patients were mostly suffering from mild anxiety as compared to female patients who were suffering from severe anxiety. Anxiety severity was also significantly increasing with increasing age. Mean age was 60.0 years in COPD patients diagnosed with minimal anxiety, which increased to 67.2 years in mild anxiety, 70.9 years in moderate anxiety and 73.0 years in severe anxiety. Our study findings shows that patients with minimal anxiety experienced fewer symptoms, indicating that anxiety was unlikely to interrupt daily activities. Patients with mild anxiety were those who worried sometimes or moderately, while those with moderate and severe anxiety showed more regular and clinically significant symptoms that might affect day-to-day functioning and the treatment of COPD. Our study findings also shows that mild anxiety predominates in COPD patients.

These findings are similar with previous studies conducted in Pakistan, where Ayub et al. reports the anxiety in 70.4% of COPD patients¹², Siddiqui et al. reports the anxiety in 32.2% of COPD patients¹³, and Khanum et al. reports the anxiety in 38% of COPD patients.¹⁴ International studies also reports the higher burden of anxiety in COPD patients such as, Semeer et al. reports the anxiety in 68.4% of COPD patients and 35.7% of COPD having anxiety

and depression¹⁵, and Gupta et al. reports that the most of the COPD patients were presented with mild anxiety (41%), followed by moderate anxiety (20.5%), minimal anxiety (19.5%), and severe anxiety (3.9%, n=5) and minimal anxiety (18.7%).¹⁶ Overall, these findings indicate that mild anxiety is common among COPD patients, while moderate to severe anxiety affects a lower proportion, suggesting the importance of early detection of anxiety and targeted therapies.

The study has several limitations. First, it focused exclusively on anxiety and did not assess comorbid depression or other mental disorders, which are also common in COPD patients and may influence outcomes. Second, the sample size of 129 patients may limit the generalizability of the findings and reduce statistical power for subgroup analyses. Third, as a single-center study, the results may not fully represent the broader COPD population across different regions. Finally, self-report bias, lack of COPD staging, and the cross-sectional design prevents evaluation of causal relationships or changes in anxiety symptoms over time.

CONCLUSION

The frequency of anxiety was high in patients presented with chronic obstructive pulmonary disease, with most of the patients suffering from mild anxiety, followed by moderate and severe anxiety. Early screening by using GAD-7 criteria and early intervention (cognitive-behavioral therapy) for anxiety should be added into the management of COPD patients.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

1	Khalid Khan: Data analysis.
2	Bella Virk: Study concept.
3	Alvina Khan: Data analysis.
4	Binish Gull Arshad: Data collection.
5	Muhammad Asad Khan: Data entry.
6	Arsalan Mufti: Data analysis.