International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 7, July 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.7.2024.57

ORIGINAL RESEARCH

Depression in COPD: A Socio-Demographic Perspective from an Indian Tertiary Care Center

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Received: 15/06/2024 **Accepted:** 19/07/2024

ABSTRACT

Background: Chronic Obstructive Pulmonary Disease (COPD) is a leading cause of morbidity and mortality worldwide, often accompanied by comorbid psychiatric conditions such as depression. **Objective:** This study aims to explore the prevalence of depression among COPD patients and its correlation with various socio-demographic factors in a tertiary care center in India. **Methods:** A cross-sectional study was conducted involving 160 COPD patients. Data were collected through structured interviews and validated questionnaires, including the Patient Health Questionnaire-9 (PHQ-9) for depression assessment. Socio-demographic factors were recorded, and statistical analyses were performed to determine correlations. **Results:** The prevalence of depression was 44.38%, with mild depression being the most common. Significant correlations were found between depression and factors such as gender ($p < 0.01$) and smoking history ($p = 0.04$). **Conclusion:** Depression is highly prevalent among COPD patients, with significant correlations observed with gender and smoking history. Addressing these socio-demographic factors is crucial for comprehensive COPD management.

Key words: COPD, depression, socio-demographic factors, PHQ-9

INTRODUCTION

Chronic Obstructive Pulmonary Disease (COPD) is a major cause of chronic morbidity and mortality globally, characterized by persistent respiratory symptoms and airflow limitation. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) estimates that COPD affects over 200 million people worldwide, with a significant burden in low- and middle-income countries (1). In addition to physical impairment, COPD is frequently associated with psychiatric comorbidities, particularly depression, which exacerbates the overall disease burden (2).

Depression in COPD patients leads to poorer health outcomes, increased hospitalizations, and reduced quality of life (3). Identifying the prevalence of depression and its socio-demographic correlates can facilitate targeted interventions to improve patient outcomes. Previous studies have shown that factors such as gender, age, smoking history, socio-economic status, and family structure may influence the risk of depression in COPD patients (4). This study aims to provide a detailed analysis of the prevalence of depression in COPD patients and its correlation with socio-demographic factors in an Indian tertiary care setting.

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AIMS & OBJECTIVES

1. Estimate the prevalence of depression in COPD patients.
2. Estimate the grading of depression based on PHQ-9 scale.
3. Estimate the correlation of socio-demographic with depression in COPD patients

METHODS

Study Design

This cross-sectional study was conducted at the Govt. Bundelkhand Medical College, Sagar, India. The study included 160 clinically stable COPD patients diagnosed according to the GOLD criteria.

Participants

Inclusion criteria were adults diagnosed with COPD, clinically stable for at least one month, and able to provide informed consent. Exclusion criteria included conditions that could interfere with the study, such as uncontrolled hypertension, ischemic cardiac disease, active tuberculosis, acutec or pulmonale, severe pulmonary hypertension, significant hepatic dysfunction, metastatic cancer, renal failure, severe cognitive deficit, and psychiatric disease that interfere with memory and compliance, and inability to complete the questionnaires were excluded from the study.

Data Collection

Data were collected using structured interviews and validated questionnaires. Socio-demographic data included age, gender, educational level, employment status, income, marital status, and smoking history. Clinical data included duration and severity of COPD, assessed through spirometry, and other relevant medical histories.

Depression Assessment

Depression was assessed using the Patient Health Questionnaire-9 (PHQ-9), a self-administered tool widely used for detecting depression severity. The PHQ-9 has been validated for use in various populations, including those with chronic illnesses such as COPD (5).

Statistical Analysis

Data were analyzed using SPSS software. Descriptive statistics were used to summarize the baseline characteristics of the study population. The prevalence of depression was calculated, and bivariate analyses were conducted to examine associations between depression and socio-demographic factors. Multivariate logistic regression analyses were performed to identify independent predictors of depression among COPD patients. A p-value of <0.05 was considered statistically significant.

RESULTS

Baseline Characteristics

The study population had a mean age of 60.71 years (SD ± 9.4), with a predominance of male patients (77.5%). Most participants were from a lower socioeconomic background, with 60% reporting an income below the poverty line. The majority of patients had a history of smoking, with an average smoking history of 25 pack-years.

Prevalence of Depression

The overall prevalence of depression in the study population was 44.38%, with mild depression being the most prevalent. (Table 1).

Table 1: Prevalence of Depression among COPD Patients

Depression	frequency	Percentage
No	89	55.625%
Yes	71	44.375%
Total	160	100

Table 2: Grade of Depression

Depression grade	PHQ-9 Score	Frequency	%age
none	(0-4)	89	55.625
mild	(5-9)	41	25.625
moderate	(10-14)	27	16.875
Moderately severe	(15-19)	3	1.875
Severe depression	(>20)	0	0
Total		160	100

The distribution of depression severity among the patients is shown in Table 2. Mild depression was the most prevalent.

Correlation with Socio-Demographic Factors

Significant correlations were found between depression and certain socio-demographic factors (Table 3)

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Table 3.Correlation with Socio-Demographic Factors

Variables	Depression Present	Depression Absent	Spearman's rho (ρ)	P value
Gender			ρ= -0.30	P <0.01
Male	63(50.81%)	61(49.19%)		
Female	8(22.22%)	28(77.78%)		
Age			ρ = -0.87	P=0.01
<50	19(65.52%)	10(34.48%)		
51-60	17(38.64%)	27(61.36%)		
61-70	22(32.35%)	46(67.65%)		
>70	13(68.42%)	6(31.58%)		
Marital Status			ρ =0.35	P<0.01
Unmarried	0(0%)	1(100%)		
Married	56(39.44%)	86(60.56%)		
Widower	14(87.5%)	2(12.5%)		
Divorced	1(100%)	0(%)		
Education			ρ=0.13	P=0.1
illiterate	30(37.98%)	49(62.02%)		
primary	15(41.67%)	21(58.33%)		
high	20(58.82%)	14(41.18%)		
intermediate	5(62.5%)	3(37.5%)		
graduate	1(33.33%)	2(66.67%)		
Area of Residence			ρ=0. 075	P=0.346
Rural	20(58.82%)	14(41.18%)		
Urban	48(39.02%)	75(60.98%)		
Migrate R-U	3(100%)	0(0%)		
Family type			ρ= -0.026	P=0.743
Nuclear	29(51.79%)	27(48.21%)		
Joint	7(36.84%)	12(63.16%)		
3-Generations	35(41.18%)	50(58.82%)		
Occupation			ρ= -0.134	P=0.09
Unemployed	7(50%)	7(50%)		
un-skilled	8(32%)	17(68%)		
semi-skilled	17(80.95%)	4(19.05%)		
Skilled	23(46.94%)	26(53.06%)		
self-employed	5(17.24%)	24(82.76%)		
Retired	6(50%)	6(50%)		
house-wife	3(37.5%)	5(62.5%)		
Others	2(100%)	0(0%)		
Family Income			ρ= -0.425	P=0.658
<5000	6(75%)	2(25%)		
5000-10000	9(28.12%)	23(71.88%)		
10000-15000	17(58.62%)	12(41.38%)		
15000-20000	16(42.10%)	22(57.9%)		
20000-25000	9(37.5%)	15(62.5%)		
25000-30000	9(45%)	11(55%)		
>30000	5(55.56%)	4(44.44%)		
Smoking history Index Pack Yrs			ρ= 0.197	P=0.012
0	15(31.91%)	32(68.09%)		
>10	2(40%)	3(60%)		
10-20	9(45%)	11(55%)		
20-30	14(58.33%)	10(41.67%)		
30-40	11(55%)	9(45%)		
>40	20(45.45%)	24(54.55%)		

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DISCUSSION

Prevalence of Depression in COPD Patients

The study found a high prevalence of depression (44.38%) among COPD patients, consistent with global findings (6,7). This significant rate highlights the substantial psychological burden faced by individuals with COPD. The high prevalence underscores the need for routine screening and management of depression in COPD patients to improve their overall health outcomes and quality of life.

Gender and Depression

A notable finding in this study is the higher prevalence of depression among male COPD patients (50.81%) compared to females (22.22%), which deviates from the general population trends where females typically have higher rates of depression (8). This gender disparity in COPD patients may be attributed to various factors, including cultural and social dynamics, differences in health-seeking behavior, and the psychological impact of COPD on males. In many societies, including India, men may experience higher societal pressure and stress, which could contribute to higher depression rates (9). Further, physiological differences and coping mechanisms may also play a role. This finding indicates that male COPD patients might benefit from more targeted mental health interventions.

Smoking and Depression

The study reveals a significant correlation between smoking history and depression ($p = 0.04$), with smokers exhibiting a higher prevalence of depression (49.56%) compared to non-smokers (31.92%) (10). This relationship suggests a bidirectional interaction where smoking exacerbates depressive symptoms, and depression can impede smoking cessation efforts. This underscores the importance of integrating smoking cessation programs with mental health support. Effective smoking cessation interventions that address underlying depressive symptoms could significantly reduce the burden of both smoking and depression in COPD patients.

Age and Depression

Although age did not show a statistically significant correlation with depression in this study ($p = 0.87$), the distribution of depression prevalence across different age groups provides valuable insights. Younger and older age groups showed higher depression prevalence compared to middle-aged groups. This variability suggests that age-specific factors, such as social support, coping mechanisms, and health status, might influence depression in COPD patients (11). Future studies should explore these age-related differences in more detail to develop age-appropriate interventions.

Socio-Economic and Family Factors

While socio-economic factors and family type did not show significant correlations with depression, trends observed in the data suggest potential areas for further exploration. Patients from nuclear families exhibited higher depression rates compared to those from joint or extended families, hinting at the importance of social support in mental health (12). Joint family systems might offer better emotional and social support, potentially reducing the risk of depression. Additionally, the socio-economic status, while not statistically significant, showed trends that could be explored in larger studies to understand its impact on depression among COPD patients.

Marital Status

Marital status showed a significant correlation with depression ($p < 0.01$), with widowed and divorced individuals exhibiting higher depression rates. This finding aligns with existing literature indicating that the loss of a spouse or the stress of divorce can significantly impact mental health (13). Interventions to support widowed or divorced COPD patients may be necessary to mitigate their higher risk of depression.

Limitations

The study's cross-sectional design limits the ability to establish causality between depression and socio-demographic factors. The use of self-reported questionnaires may introduce reporting biases. Future longitudinal studies are needed to further elucidate these relationships and assess the long-term impact of socio-demographic factors on depression in COPD patients.

CONCLUSION

Depression is highly prevalent among COPD patients, with significant correlations observed with gender and smoking history. Addressing these socio-demographic factors is crucial for comprehensivemanagement and intervention strategies in COPD patients. Enhancing mental health support, particularly for male patients and smokers, can improve overall patient outcomes. Integrating mental health services with routine COPD management can help address the high burden of depression and potentially improve the quality of life and clinical outcomes for these patients.

Conflict of interest: There is no conflict of interest

REFERENCES

1. Global Initiative for Chronic Obstructive Lung Disease (GOLD). Global Strategy for the Diagnosis, Management, and Prevention of Chronic Obstructive Pulmonary Disease. 2022.
2. Yohannes AM, Baldwin RC, Connolly MJ. Depression and anxiety in elderly patients with chronic obstructive pulmonary disease. Age Ageing. 2006;35(5):457-9.
3. Di Marco F, Verga M, Reggente M, Casanova FM, Santus P, Blasi F, et al. Anxiety and depression in

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COPD patients: The roles of gender and disease severity. Respir Med. 2006;100(10):1767-74.
4. van Manen JG, Bindels PJ, Dekker FW, IJzermans CJ, van der Zee JS, Schadé E. Risk of depression in patients with chronic obstructive pulmonary disease and its determinants. Thorax. 2002;57(5):412-6.
5. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. J Gen Intern Med. 2001;16(9):606-13.
6. Atlantis E, Fahey P, Cochrane B, Smith S. Bidirectional associations between depression and COPD symptom burden: A systematic review and meta-analysis. Chest. 2013;144(3):766-77.
7. Yohannes AM, Willgoss TG, Baldwin RC, Connolly MJ. Depression and anxiety in chronic heart failure and chronic obstructive pulmonary disease: Prevalence, relevance, clinical implications and management principles. Int J Geriatr Psychiatry. 2010;25(12):1209-21.
8. Birmaher B, Ryan ND, Williamson DE, Brent DA, Kaufman J. Childhood and adolescent depression: A review of the past 10 years. Part I. J Am Acad Child Adolesc Psychiatry. 1996;35(11):1427-39.
9. Parker G, Brotchie H. Gender differences in depression. Int Rev Psychiatry. 2010;22(5):429-36.
10. Wagena EJ, Arrindell WA, Wouters EF, Schayck CP. Are patients with COPD psychologically distressed? EurRespir J. 2005;26(2):242-8.
11. Schane RE, Woodruff PG, Dinno A, Covinsky KE, Walter LC. Prevalence and risk factors for depressive symptoms in persons with chronic obstructive pulmonary disease. J Gen Intern Med. 2008;23(11):1757-62.
12. Joshi U, Patel B, Saxena D. Depression and associated factors among elderly population: A community-based study. Int J Public Health. 2013;58(1):100-5.
13. Kessler RC, Walters EE. Epidemiology of DSM-III-R major depression and minor depression among adolescents and young adults in the National Comorbidity Survey. Depress Anxiety. 1998;7(1):3-14 3(4):337-342. doi: 10.1002/gps.1874