

# Prevalence of COPD and its Comorbidities in South Delhi Population of India: A Hospital-Based Study.

Himanshu Sharma<sup>1</sup>, Kiran Dubey<sup>1</sup>, Rajinder K. Jalali<sup>3</sup>, Prem Kapur<sup>2</sup>

<sup>1</sup>Department of Pharmacology, School of Pharmaceutical Education and Research, Jamia Hamdard, New Delhi-110062, India.

<sup>2</sup>Department of Medicine, Hamdard Institute of Medical Sciences and Research (HIMSR) and HAH-Centenary Hospital, Jamia Hamdard, New Delhi, India.

<sup>3</sup>Senior Consultant Physician, C-740-B, C-Block, Sushant Lok, Phase-I, Gurgaon - 122001, Haryana, India.

Received: November 2019

Accepted: November 2019

**Copyright:** © the author(s), publisher. It is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

## ABSTRACT

**Background:** This study evaluated the prevalence of comorbidities in patients with chronic obstructive pulmonary disease (COPD) admitted to the multispecialty tertiary care teaching hospital in South Delhi. **Methods:** The data of patients admitted to HAH Centenary Hospital during 2015 to 2017 was analyzed using descriptive statistics in SPSS, Version 20.0 (SPSS Inc, Chicago, IL, USA). **Results:** In 3 years, a total of 81164 patients were admitted in the hospital. Out of these, 1272 patients with COPD (Approx. 1.6%) were hospitalized for treatment of various conditions. Most of the patients belongs to male gender (n=882, 69.3%) and age-group more than 60 years of age (n=752, 59.1%). Out of total number of hospitalized patients with COPD, only 295 COPD patients (23%) have no comorbid condition whereas majority cases (n=977; 77%) have at least one comorbid condition. Key comorbidities were hypertension (n=174;13.7%), diabetes mellitus (n=164; 12.9%) and tuberculosis (n=116; 9.1%). **Conclusion:** Patients with COPD were associated with high comorbidities such as cardiovascular and metabolic disorders that should be taken into consideration during the therapeutic management of COPD patients.

**Keywords:** COPD, Comorbidities, Hypertension, Diabetes, Prevalence.

## INTRODUCTION

Noncommunicable diseases (NCDs) are the leading cause of death globally, and one of the major health challenges of the 21st century. In 2016, they were responsible for 71% (41 million) of the 57 million deaths which occurred globally. The major NCDs responsible for these deaths included cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes (WHO; 2018).

Chronic obstructive pulmonary disease (COPD) is one of the leading causes of morbidity and mortality and third leading cause of death worldwide (WHO, n.d.). The global prevalence of COPD suggests that approximately 10% of adults over 40 years of age are suffering from this progressively debilitating disease (Buist et al., 2007). Crude estimates suggest that there are 30 million COPD patients in India and such huge volumes of disease have the potential to overwhelm health systems and state economies (Koul 2013).

Non-respiratory diseases were reported as one of the leading causes of mortality in COPD patients and COPD may increase death risk from other comorbid conditions (Mannino et al 1997). It is well established that COPD is not limited to a respiratory disease, but it can also affect heart, blood vessels, musculature, brain, and the functions of kidney, liver, guts and other organs leading to one or more comorbid conditions of varying degree of severity (Eisner et al 2008). In a cohort study, comorbidities such as cardiovascular diseases, diabetes mellitus, depression, and musculoskeletal disorders were more prevalent in COPD patients than in age and gender-matched healthy individuals (Decramer and Janssens 2013).

The aim of the present study was to determine the prevalence of comorbidities in the COPD patients admitted to multispecialty tertiary care teaching hospital in South Delhi from 2015 to 2017.

## MATERIALS AND METHODS

The statement for Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) was followed in reporting observations for this study.

### Name & Address of Corresponding Author

Dr. Prem Kapur  
Associate Professor  
Department of Medicine,  
Hamdard Institute of Medical Sciences and Research  
(HIMSR) and HAH-Centenary Hospital,  
Jamia Hamdard, New Delhi.

The data of patients hospitalized to HAH Centenary Hospital during 2015 to 2017 was used in this study to analyze the comorbidities in COPD patients using descriptive statistics in SPSS, Version 20.0 (SPSS Inc, Chicago, IL, USA).

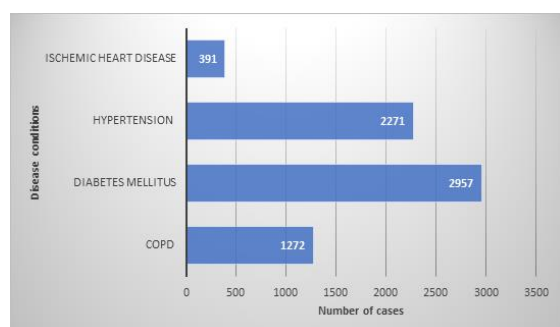
### RESULTS

A total of 81164 patients were admitted in the multispecialty tertiary care teaching hospital in South Delhi. Out of these, 1272 COPD patients (Approx. 1.6%) were hospitalized for treatment of various conditions. Year wise distribution of hospital admission for COPD and other conditions is presented in [Table 1].

**Table 1: Year wise distribution of Hospital Admission from 2015 to 2017 (3 years)**

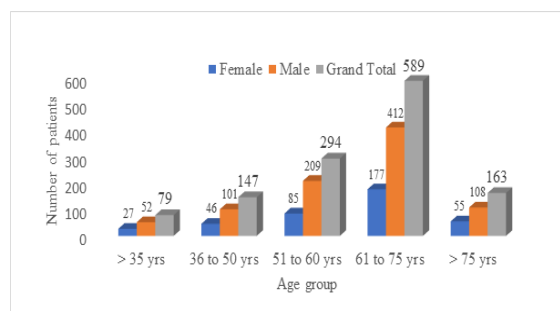
Year	Hospitalization due to all conditions (N)	Hospitalization due to COPD (n, %)
2015	20960	327 (1.56%)
2016	27824	444 (1.60%)
2017	32380	501 (1.55%)
Total	81164	1272 (1.57%)

Distribution of four key noncommunicable diseases responsible for hospitalization during 2015-2017 is presented in [Figure 1] below.



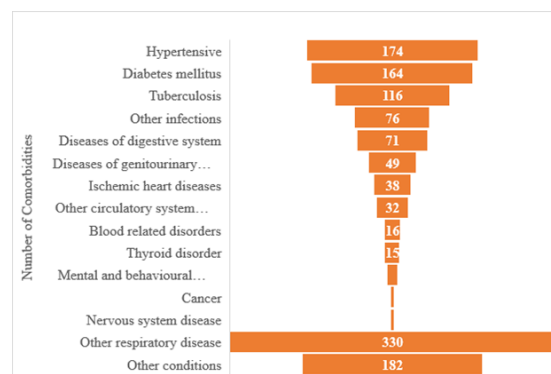
**Figure 1: Key Noncommunicable Diseases Responsible for Hospitalization during 2015-2017**

Age-wise and gender distribution of admitted COPD patients is presented in [Figure 2]. Most of the patients belongs to male gender (n=882, 69.3%) and age-group more than 60 years of age (n=752, 59.1%).



**Figure 2: Age and gender distribution of COPD patients**

Out of total 1272 hospitalized patients with COPD, only 295 COPD patients (23%) had no comorbid condition whereas majority cases (n=977; 77%) had at least one comorbid condition. The prevalence of comorbidities in COPD patients is presented in [Figure 3]. Hypertension (n=174;13.7%), diabetes mellitus (n=164; 12.9%) and tuberculosis (n=116; 9.1%) were the key comorbidities.



**Figure 3: Prevalence of comorbidities in COPD patients (N=1272)**

### DISCUSSION

A total of 1272, 2957, 2271 and 391 patients were hospitalized due to COPD, diabetes mellitus, hypertension and ischemic heart disease, respectively during the period of 3 years from 2015 to 2017. Noncommunicable diseases (NCDs) such as cardiovascular diseases, cancers, chronic respiratory diseases, and diabetes are the leading cause of death globally, and one of the major health challenges of the 21st century (WHO; 2018).

Comorbidities such as diabetes mellitus, hypertension and ischemic heart disease are frequent in COPD patients and significantly impact on patient's quality of life, exacerbation frequency, and survival. It has been well established from published literature that certain diseases occur in greater frequency amongst patients with COPD than in the general population, and that these comorbidities significantly impact on patient outcomes (Smith and Wrobel, 2014; Yin et al., 2017).

In this study, it was found that three out of every four COPD patients have at least one comorbid condition which is in line with the published literature that reported over 80% of COPD patients estimated to have at least one comorbid chronic condition (Putcha, et al., 2015).

In the present study, prevalence of comorbidities such as diabetes mellitus, hypertensive, diseases of digestive system and ischemic heart diseases was reported as 12.9%, 13.7%, 5.6% and 3%, respectively in COPD patients. In one of the review articles, the reported prevalence of comorbidities such as diabetes, hypertension, diseases of digestive system (GERD/peptic ulcer) and anxiety/depression

was 10%–25%, 32%–55%, 8%–62%, and 6%–80%, respectively in COPD patients (Smith and Wrobel, 2014). In another review article, the reported prevalence of comorbidities such as diabetes, cardiovascular and diseases of digestive system (GERD) was 10.1–23%, 29–70%, 37–78% respectively in COPD patients (Putcha, et al 2015).

## CONCLUSION

Patients with COPD were associated with high comorbidities such as cardiovascular and metabolic disorders that should be taken into consideration during the therapeutic management of COPD patients.

## REFERENCES

1. Noncommunicable diseases country profiles 2018. Geneva: World Health Organization; 2018. License: CC BY-NC-SA 3.0 IGO available at <http://apps.who.int/iris/bitstream/handle/10665/274512/9789241514620-eng.pdf?ua=1> [accessed on 13 October 2019].
2. World Health Organization. Burden of COPD. available at: <https://www.who.int/respiratory/copd/burden/en/> [accessed on 25 August 2019].
3. Buist AS, McBurnie MA, Vollmer WM, Gillespie S, Burney P, Mannino DM, et al. (2007). International variation in the prevalence of COPD (the BOLD Study): a population-based prevalence study. *Lancet*; 370:741–50.
4. Koul PA (2013). Chronic obstructive pulmonary disease: Indian guidelines and the road ahead. *Lung India.*; 30(3): 175–177. PMID: 24049249. doi: 10.4103/0970-2113.116233; 10.4103/0970-2113.116233.
5. Mannino DM, Brown C, Giovino GA (1997). Obstructive lung disease in the United States from 1979 to 1993: an analysis using multiple-cause mortality data. *Am J Respir Crit Care Med*;156:814–8.
6. Eisner MD, Blanc PD, Yelin EH, Sidney S, Katz PP, Ackerson L, et al. (2008). COPD as a systemic disease: impact on physical functional limitations. *Am J Med*;121:789–96.
7. Decramer, M. and Janssens, W (2013). Chronic obstructive pulmonary disease and comorbidities. *Lancet Respir Med.*;1(1):73-83. doi: 10.1016/S2213-2600(12)70060-7.
8. Smith and Wrobel (2014). Epidemiology and clinical impact of major comorbidities in patients with COPD. *Int J Chron Obstruct Pulmon Dis.*;9:871-88. doi: 10.2147/COPD.S49621. eCollection 2014.
9. Yin HL, Yin SQ, Lin QY, Xu Y, Xu HW, Liu T (2017). Prevalence of comorbidities in chronic obstructive pulmonary disease patients: A meta-analysis. *Medicine (Baltimore)*. 2017 May;96(19):e6836. doi: 10.1097/MD.0000000000006836.
10. Putcha N, Drummond MB, Wise RA, Hansel NN (2015). Comorbidities and Chronic Obstructive Pulmonary Disease: Prevalence, Influence on Outcomes, and Management. *Semin Respir Crit Care Med*. 2015 Aug;36(4):575-91. doi: 10.1055/s-0035-1556063.

**How to cite this article:** Sharma H, Dubey K, Jalali RK, Kapur P. Prevalence of COPD and it's Comorbidities in South Delhi Population of India: A Hospital-Based Study. *Ann. Int. Med. Den. Res.* 2020; 6(1):PC01-PC03.

**Source of Support:** Nil, **Conflict of Interest:** None declared