

## FREQUENCY OF CO-MORBIDITIES IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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### ABSTRACT

**Background:** Chronic obstructive pulmonary disease (COPD) is one of the common respiratory conditions which involves the airways and is characterized by persistent airflow obstruction. About five percent of the adult population of the world is being affected by this disease. COPD is associated with several different comorbidities. These comorbidities increase the risk of hospital admission and affect health outcomes in COPD.

**Objective:** To study the frequency of comorbidities in patients with COPD.

**Methods:** The study was conducted at Department of Pulmonology of FPGMI, Shaikh Zayed Hospital. The duration of study was 6 months from 01-01-2019 to 30-06-2019. It was a cross sectional study, 115 were enrolled from OPD. The data were recorded in SPSS 20.0. Data were described by using frequencies and percentages and presented in tables, pi-charts, and bar charts.

**Results:** Total 115 male COPD patients who consented to participate in the study were registered in the study from OPD. The mean age of the patients was 61.09±10.8 years. The co-morbidities were present in 84.3% patients, and the most common disease was hypertension (65.2%) followed by ischemic heart disease (56.5%) osteoporosis (54.8%), cardiac failure (46.9%), diabetes (40.0%), anemia (36.5%), depression (27.8%), acid peptic disease (26.0%) and malignancy (11.3%). (Figure 2) Thirty-one (26.9%) patients had single comorbidity, while 39.1% of patients had two co-morbid conditions, and 18.3% had more than two co-morbidities.

**Conclusion:** The co-morbidities in COPD patients are common & most frequent comorbidities include hypertension, ischemic heart disease, diabetes, osteoporosis and depression.

**Keywords:** Pulmonary, COPD, Ischemic Heart Disease, Osteoporosis, Diabetes, Anemia, Depression, Malignancy

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### INTRODUCTION

COPD is one of the common respiratory conditions which involves the airways and is characterized by airflow limitation.<sup>1-2</sup> About five percent of the adult

population of the world is being affected by this disease.<sup>3</sup> Patients of COPD can have local effects of the disease as well as systemic effects. The exact mechanism of systemic effects due to COPD is not fully understood, but is believed to have relation with oxidative stress and enhanced systemic inflammation.<sup>4</sup> Smoking which is well known risk factor for COPD. It not only causes inflammation in the lungs but also systemic inflammation. It is presumed that the systemic effects of smoking lead to development of cardiovascular diseases, metabolic disorders and malignancy.<sup>5</sup>

Different comorbidities are associated with COPD. Comorbidity is defined as a disease present with the primary disease. In case of COPD coexisting diseases may be a consequence of COPD or may have causal link with COPD. According to different studies the common comorbidities in patients with COPD are diabetes, hypertension, ischemic heart disease, heart failure, osteoporosis, cancer, anemia and depression. The comorbidities associated with COPD should be considered at the time of estimation of the social and economic burden of COPD. These comorbidities clearly affect health outcomes in COPD.<sup>6</sup> Comorbid conditions are also associated with a higher risk of exacerbations, hospital admission and are also one of the main predictors of increased cost in COPD.<sup>7</sup>

The current study has been designed to study “Frequency of Co-Morbidities in Patients with COPD” in local population.

**METHODS**

It was a cross sectional study conducted at department of Pulmonology, Shaikh Zayed FPGMI, Lahore. The duration of study was 6 months from 01-01-2019 to 30-06-2019. After taking the informed consent a total 115 diagnosed cases of COPD were enrolled from outpatient department of Shaikh Zayed hospital Lahore. Patients with other respiratory diseases like interstitial lung disease, bronchiectasis, allergic broncho-pulmonary aspergillosis (ABPA), sarcoidosis, Occupational lung diseases were excluded. The data were recorded in SPSS 20.0. Data were described by using frequencies and percentages and presented in tables, pi-charts, and bar charts.

**RESULTS**

Total 115 male COPD patients who consented to participate in the study were registered in the study from OPD. The mean age of the patients was 61.09±10.8 years. Majority of the patients were ex-smoker, 72 (62.6%) patients had history of cigarette smoking, 11 (9.6%) patients were hukka smoker while 27.8% patients were both hukka & cigarette smoker. Twenty one (18.3%) study participants had mild COPD, 45 (39.1%) had moderate, 39 (33.9%) had severe while 10 (8.7%) had very severe COPD. (Table 1)

Fifty three percent patients had history of more than 30 pack years of smoking while 29 % had smoking history between 20 and 30 pack years and 8.7% had smoking history of less than 20 pack years. (Figure 1)

The co-morbidities were present in 84.3% patients, and the most common disease was hypertension

(65.2%) followed by ischemic heart disease (56.5%) osteoporosis (54.8%), cardiac failure (46.9%), diabetes (DM) (40.0%), anemia (36.5%), depression (27.8%), acid peptic disease (26.0%) and lung cancer (8.7%). (Figure 2) Thirty-one (26.9%) patients had single comorbidity, while 39.1% of patients had two comorbid conditions, and 18.3% had more than two comorbidities. (Table 2)

Table.1. various characteristics of patients

Characteristics	N	%
<b>Age</b>		
Less than 50 years	10	8.7
51 to 70 years	82	71.3
More than 70 years	23	20.0
<b>Type of Smoking</b>		
Cigarette	72	62.6
Hukka	11	9.6
Cigarette & Hukka	32	27.8
<b>FEV<sub>1</sub></b>		
More than 80% of predicted	21	18.3
Between 50 to 80 % of predicted	45	39.1
Between 30 to 50 % of predicted	39	33.9
Less than 30% of predicted	10	8.7

Table.2. Number of co-morbidities in COPD patients

Co-morbidities	N	%
Single	31	26.9
Two co-morbidities	45	39.1
More than two co-morbidities	21	18.3
No co-morbidity	18	15.6

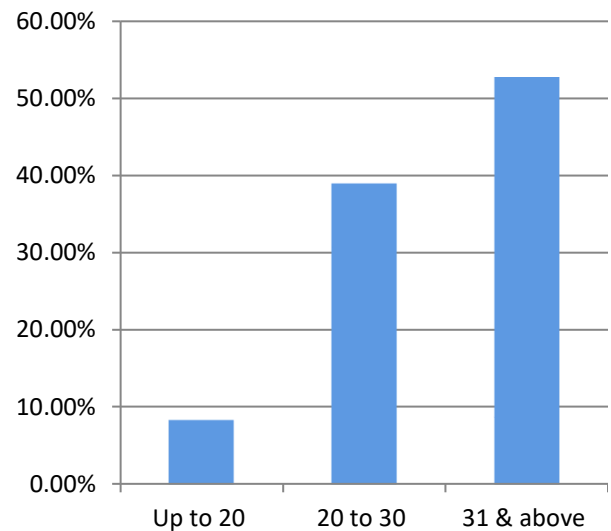


Figure.1. Pack years of smoking

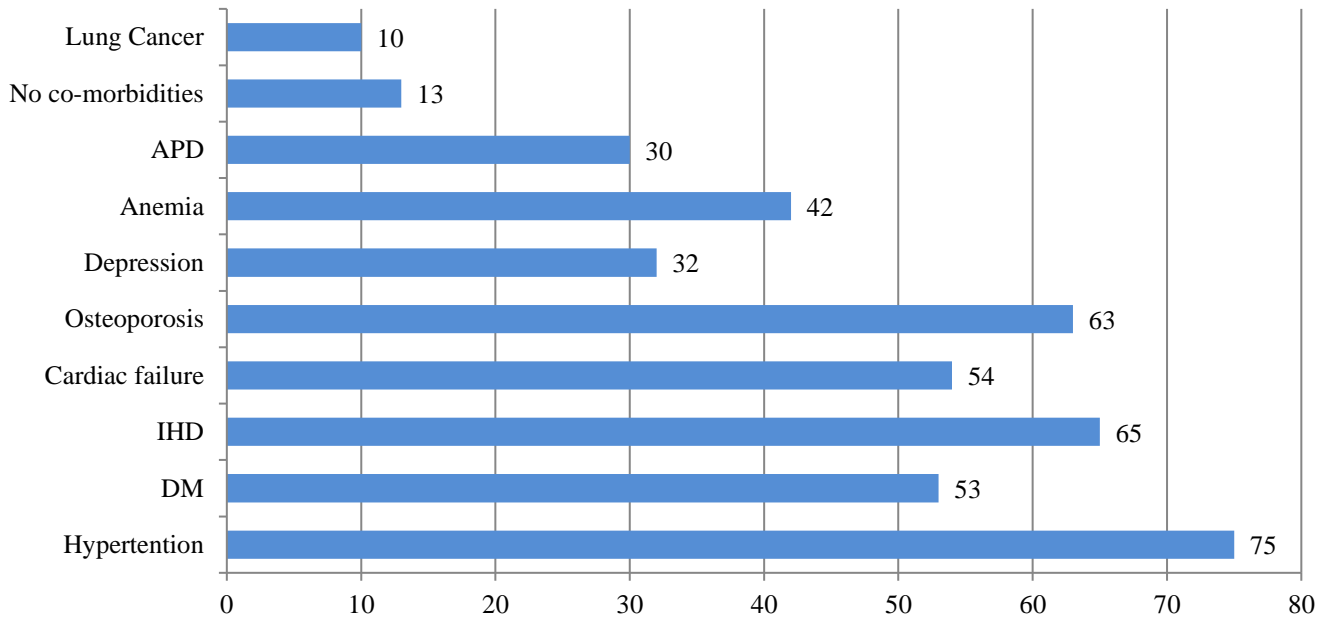


Figure.2. Co-morbidities in patients with COPD

## DISCUSSION

COPD is one of the leading causes of mortality and morbidity worldwide. It causes considerable economic and social burden. Pakistan has fourth highest mortality rate in the world due to COPD with 71 deaths per 100,000.<sup>8</sup> One of the factors which are responsible for higher mortality rate in COPD is presence of comorbidities. Some comorbid conditions may influence COPD progression and frequency of exacerbations which leads to higher costs of management<sup>9</sup> along with higher mortality.<sup>10</sup> Some diseases affect certain subgroups of COPD. Moreover, some chronic illnesses can influence management decision-making in COPD patients.<sup>11</sup>

The present study found that of 84.4% COPD patients had one or more co-morbidities, a study conducted by Ferrer M.et al<sup>12</sup> in Spain also revealed that 84% of study patients have at least single co-morbid condition. In our study 26.9% patients had only one co-morbidity, 39.1% patient had two co-morbidities and 18.3% patients had more than two co-morbid conditions. In analysis of patients with COPD from three studies it was found that 36% patients had one co-morbidity and 30% patients had more than one co-morbidity.<sup>13</sup>

The Ischemic heart disease, hypertension, cardiac failure, diabetes, osteoporosis, depression and malignancy are most common comorbid conditions seen in our study. Similar pattern of co-morbidities was seen in a study done by Yin HL et al.<sup>13</sup>

A study conducted in Beijing, China the prevalence of cardiovascular disease in COPD patients was 51.7%<sup>14</sup> current study also reported high prevalence of

cardiovascular diseases as ischemic heart disease was reported in 56.5% patients and 46.9% patients had cardiac failure. According to different studies depression may affect 20 to 60% of COPD patients.<sup>15,16</sup> In our study depression was seen in 26.7% patients. About fifty five percent patients in our study had osteoporosis, whereas according to another study COPD associated with osteoporosis in 70% patients.<sup>17</sup> Some studies has found that DM is more common in patients with COPD and in a series of studies it has been noted that DM is associated with reduced lung function.<sup>18</sup> In current study DM was seen in 40% of study population. Smoking is major risk factor for lung cancer but COPD is also an independent risk factor for lung cancer.<sup>5</sup> In this study ten patients had bronchogenic carcinoma along with COPD. In COPD patients, comorbidities are associated with poor quality of life<sup>13</sup> and treating the associated comorbid conditions may improve the outcomes in COPD by reducing symptoms & exacerbations.<sup>19</sup>

Some limitation of our study includes, firstly the study enrolled only male patients due to higher smoking rates and prevalence of COPD in males, secondly it was cross sectional study and there should be longitudinal studies to see the impact of comorbidities in COPD patients.

## CONCLUSION

The co-morbidities in COPD patients are common & most frequent comorbidities include hypertension, ischemic heart disease, diabetes, osteoporosis and depression. Management of comorbidities should be integral part of COPD control programs.

**CONFLICT OF INTEREST**

No conflict of interest to disclose

**ETHICAL APPROVAL**

The study was approved from Institutional Review Board of Federal Postgraduate Medical Institute, Lahore, Pakistan.

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**AUTHOR'S CONTRIBUTIONS**

**MS:** Concept and Design, Manuscript writing

**TM:** Supervision, Critical Review

**ASK:** Data analysis, Manuscript writing

**QAS:** Data Collection

**ARM:** Statistical Analysis

**MAS:** Critical Review

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