

# Gastroesophageal Reflux Disease In Patients With Chronic Obstructive Pulmonary Disease

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## Author's Contribution

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## ABSTRACT

**Objective:** To determine the frequency of gastroesophageal reflux disease (GERD) in patients with chronic obstructive pulmonary disease in our population

**Methodology:** This cross-sectional study was conducted at medical out-patient Department, Services Hospital, Lahore; from September 2014 to March 2015. All the patients having chronic obstructive pulmonary disorder (COPD) were included. COPD was defined as the patients having a ratio of "forced expiratory volume in one second" (FEV1) to "forced vital capacity" (FVC) below 70% and having no improvement in FEV1 after bronchodilator. Severity GERD was categorized as per episodes of symptoms. Data was collected via study proforma. Data was analyzed using SPSS version 16.

**Results:** Overall 100 cases were studied; their mean age was 47.54±3.62 years. Out of all 90% were males and 10% were females. Frequency of GERD in patients with COPD reveals 33%. According to the severity, 03% study subjects had mild GERD, 7% had moderate, 11% had severe and 12% had very severe symptoms of GERD.

**Conclusion:** The frequency of gastroesophageal reflux disease (GERD) was found to be 33.0% among COPD subjects.

**Keywords:** Chronic obstructive pulmonary disease, gastro esophageal reflux disease

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## Introduction

Gastroesophageal reflux disease (GERD) is a common gastrointestinal (GI) disease worldwide that is defined as a condition in which stomach reflexes contents caused troublesome symptoms.<sup>1,2</sup> It is a chronic disease that is usually ignored by individuals until the appearance of its complications.<sup>3</sup> Regurgitation and heartburn are highly sensitive symptoms of GERD. The sensitivity of these symptoms is 92% for GERD compared with endoscopy / 24-hours pH monitoring, but the specificity of these symptoms is 19%. The fastest and easiest technique is to diagnose GERD by acquiring a history. The Frequency scale of GERD symptoms (FSSG) offers an objective assessment to evaluate the response towards therapy and severity of GERD.<sup>4</sup> Twenty four hour pH monitoring

could also be employed but it is not widely available.<sup>5</sup> GERD is the possible trigger of asthmatic disease and aggressive anti-reflux therapy may resolve asthmatic symptoms and pulmonary function among these patients. GERD causes aggravation of chronic obstructive pulmonary disorder (COPD), which has not been adequately studied.<sup>6</sup> GERD is correlated with a higher incidence of upper respiratory symptoms.<sup>7</sup> GERD is one of the comorbidities of COPD in addition to pneumonia, pulmonary embolism, bronchogenic carcinoma, and sleep dysfunction.<sup>8</sup> COPD's natural history is marked by exacerbations, which seems to speed up the decrease in the function of the lung, leading to poor quality of life, decreased physical activity, and elevated death risk.<sup>9</sup>

It was also proposed that GERD could be correlated with a rise in the rate of COPD exacerbations.<sup>3,10</sup> COPD cases and ongoing symptoms of GERD have decreased the quality of life associated with health compared to those having COPD alone.<sup>11</sup> The incidence of GERD in COPD patients was 26.7%, regardless of COPD stage, in the Japanese population.<sup>12</sup> A study done on the Australian population showed a prevalence of 10-20%.<sup>13</sup> GERD causes repeated exacerbation of COPD and causes a decline in lung function that causes reduced health related quality of life. By instituting anti reflux therapy, repeated exacerbations of COPD can be prevented; hence COPD patients' quality of life can be increased. Different populations have a different prevalence of GERD and no such study has been done in the Pakistani population, so assessing the Pakistani population will help in making local guidelines.

## Methodology

This cross-sectional study was conducted through medical out-patient Department, Services Hospital, Lahore, during two years from September 2014 to March 2016. All the patients having COPD, both genders, aged between 30 to 70 years and those having history of medication intake for GERD were included. Written informed consent was taken. Chronic obstructive pulmonary disease was defined as the patients having a ratio of forced expiratory volume in one second (FEV1) to forced vital capacity (FVC) less than 70% and having no improvement in FEV1 after bronchodilator. Severity of GERD was categorized as per episodes of symptoms as; occasionally occurred symptoms, which can be ignored and does not influenced during daily routine and sleeping was considered as mild when symptoms which cannot be ignored and occasionally influence during daily routine and sleeping was considered as moderate, symptoms occurred most of the day and regularly influences daily routine was considered as severe and symptoms occurred constantly and significantly influences daily routine was considered as very severe. All ethical issues were addressed by counseling patients and taking informed consent. Information regarding the frequency of GERD was collected via study proforma. Data was analyzed by using SPSS version 20. Quantitative variables include age and expressed in mean and standard deviation. Gender and presence or absence of GERD was qualitative variables and were presented as frequencies and percentage. Data was stratified for the severity of COPD to address the effect modifiers.

## Results

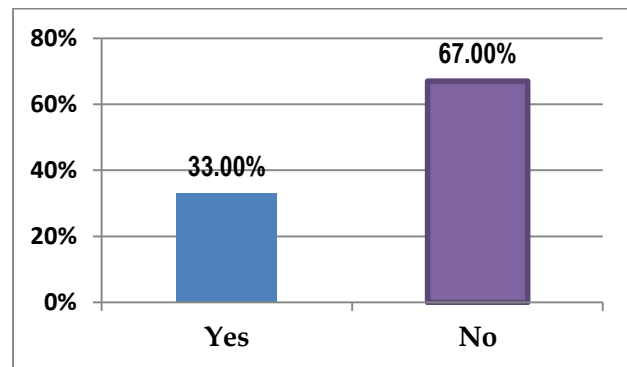
Overall 100 cases were studied; their mean age was  $47.54 \pm 3.62$  years. Out of all 90% of cases were males while the remaining 10% of cases were females. Table No. 1

**Table I: Age and Gender Distribution of the patients (n=100)**

	Frequency	%
<b>Age (in years)</b>	30-40	2
	41-50	38
	51-60	34
	61-70	26
<b>Gender</b>	Male	90
	Female	10

**Mean age  $47.54 \pm 3.62$**

The frequency of GERD in patients with COPD reveals 33% while 67% had no findings of the morbidity. Figure 1:



**Figure No. 1: Frequency of GERD in patients with COPD**

According to the severity of GERD, out of all study subjects 03% had mild GERD, 7% had moderate, 11% had severe and 12% had very severe symptoms of GERD, while 67% had no nay symptoms of GERD. Table No. 2:

**Table II: GERD with regards to its severity (n=33)**

Severity of GERD	No. of patients	%
Mild	3	9.09
Moderate	7	21.22
Severe	11	33.33
Very severe	12	36.36
<b>Total</b>	<b>33</b>	<b>100</b>

## Discussion

Chronic obstructive pulmonary disorder (COPD) is among the major factors of death globally with higher rates of incidence and mortality.<sup>13,14</sup> Gastro-esophageal

reflux disease (GERD) is among the suggested risk factors for exacerbations of COPD. It is also among the most frequently diagnosed disorders in outpatient medical facilities<sup>15</sup> with an approximately 14-20 percent incidence in the general adult population.<sup>16,17</sup> Several chronic lung disorders like cystic fibrosis, pulmonary idiopathic fibrosis, and asthma have a big incidence among GERD patients in contrast to the normal population.<sup>18-20</sup> In addition, upper respiratory conditions are common among GERD patients.<sup>21</sup> The current study was conducted with the intention to GERD frequency among COPD subjects in the Pakistani population, as different populations have a different prevalence of GERD and no such study has been done in the Pakistani population. So studying in Pakistani population is helpful to making local guidelines. In this study, the majority of the patients i.e. 38% between 41-50 years of age and mean age was  $47.54 \pm 3.62$  years. On other hand in the study of Khan Nh et al<sup>22</sup> reported mean age 65.25 years. In this study, GERD in patients with COPD reveals 33%. The current findings regarding frequency of GERD in COPD are in agreement with Zasshi NKJ, who recorded this prevalence as 26.7%, independent of COPD stage in Japanese population,<sup>12</sup> On the other hand the findings are in contrast with national study who recorded this frequency as 29.75% of the cases.<sup>22</sup> In another recent review article stated the estimated prevalence of GERD in COPD patients 19-78%.<sup>23</sup> There are few reports on the impact of symptoms of GERD on exacerbations and severity of COPD. Prospective research discovered a greater incidence of weekly GERD symptoms, dysphagia, and chronic cough (as per survey) among COPD patients (32%, 19%, and 17%) than the controls (16%, 0%, and 4%).<sup>24</sup> The researchers also discovered a trend towards the greater incidence of GERD symptoms among subjects with further severe COPD: 23% among patients with  $FEV1 \leq 50\%$  versus 9% among patients with  $FEV1 > 50\%$  of expected symptoms. In our research, in GERD positive subjects, COPD was more severe contrasted to in mild GERD. Also, we discovered a significant association between COPD severity and GERD symptom rate. GERD symptoms were contrasted among 100 individuals with COPD and 150 controls in a prospective case-control research that used Mayo GERD survey. Similarly, there was a greater incidence of GERD symptoms among patients with COPD (25%) than the controls (9%),<sup>25</sup> there was a significant link in GERD symptoms and reduced FEV1. In both reports,<sup>22,23</sup> Respiratory symptoms correlated with reflux symptoms were noted by patients however not by

the controls. Unsurprisingly, a large UK research discovered that subjects with a COPD diagnosis are at a considerably higher risk of getting a fresh GERD diagnosis than those without a COPD diagnosis and proposed that COPD generally leads subjects to GERD instead of vice versa.<sup>26</sup> The study had some limitation as small sample size and single center study and we did not include a control group which could further clarify the significance of the morbidity in COPD as compared to the control cases. However, in further trials, this limitation may be avoided.

## Conclusion

It was concluded that the GERD was highly prevalent 33% among COPD subjects. It is therefore suggested that every subject presenting with COPD must be treated for GERD. Thus, each setup must necessarily be monitored to understand the rate of the issue.

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