

# Examine the Prevalence of Gastroesophageal Reflux Disease among Patients with Chronic Obstructive Pulmonary Disease

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## ABSTRACT

**Aim:** To determine the prevalence of gastroesophageal reflux disease in patients presented with chronic obstructive pulmonary disease.

**Study Design:** Cross-sectional/observational

**Place & Duration:** Study was carried out at Chest department of Govt Naseerullah Khan Babar Memorial Hospital Kohat Road Peshawar for the duration of six months from September, 2019 to March, 2020

**Materials & Methods:** One hundred and thirty four patients of both genders having ages 20 to 65 years presented with chronic obstructive pulmonary disease were included. Patient's detailed demographics including age, sex, duration of COPD and severity were recorded after taking written consent. Gastroesophageal reflux disease was examined by GERD-Q Questionnaire. Data was analyzed by SPSS 24.0.

**Results:** There were 82 (61.19%) male and 52 (38.81%) females with mean age 52.65±10.44 years. Mean duration of COPD was 10.42±4.36 years. Gastroesophageal reflux disease was found in 65 (48.51%) patients while 69 (51.49%) patients had no GERD.

**Conclusion:** It is concluded that gastroesophageal reflux disease was highly associated with chronic obstructive pulmonary disease.

**Keywords:** Chronic Obstructive Pulmonary Disease, Gastroesophageal reflux Disease

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## INTRODUCTION

Chronic obstructing pulmonary disease (COPD) is a chronic inflammatory disease and not just a lung disease. The decline in pulmonary function, deterioration in the quality of life, major social economic burden and, finally, increased mortality, are related to the exacerbations of COPD<sup>1,2</sup>. Preventing exacerbation remains a key management priority but is challenging since it is largely unclear why COPD is aggravated<sup>1</sup>.

Gastroesophageal reflux has been reported more commonly in patients with COPD than those without COPD<sup>3</sup>. Gastroesophageal reflux is one of the most common reasons for chronic cough<sup>3</sup>. The risk factor for COPD exacerbations was suggested for GER<sup>5</sup>. Micro aspiration attributable to GER contributed to an obliterative bronchiolitis reaction in an animal model. An independent factor correlated with reflux esophagitis (RE)<sup>6</sup> was noted in a study in Taiwan. Oesophagogastroduodenoscopy (EGD) and the 24-hour oesophageal pH monitoring<sup>7</sup> are gold standards for the diagnosis of gastroesophageal reflux disease (GERD). EGD allows for the direct visualisation, direct proof of RE, of an oesophageal mucosal split. However, given that symptomatics are easy and easily implemented in clinical practice, the prevalence of GER in COPD patients with questionnaires has been investigated in most of the studies<sup>8</sup>. Some have been tracking pH 24 hours.

Pulmonary disease seriousness can be affected by GERD. In addition, GERD was found to be a significant predictor of acute COPD exacerbations<sup>9</sup>. Therefore, it is critical that GERD is detected and treated early in COPD

patients. GERD diagnosis uses a pre-tested, validated questionnaire called the Q-questionnaire to provide an accurate clinical assessment and subjective evaluation<sup>10</sup>. On the basis of a mixture of diagnostic and clinical approaches, the prevalence of GERD in COPD ranges from 17% to 78%. In another study, the frequency of GERD in COPD patient was observed to be 62%<sup>11</sup>. We conducted present study to examine the frequency of gastroesophageal reflux disease in patients with chronic obstructive pulmonary disease.

## MATERIALS AND METHODS

This cross-sectional study was conducted at Chest department of Govt Naseerullah Khan Babar Memorial Hospital Kohat Road Peshawar for the duration of six months from September, 2019 to March, 2020. Total 134 patients of both genders having ages 20 to 65 years presented with chronic obstructive pulmonary disease were included. Patient's detailed demographics including age, sex, duration of COPD and severity were recorded after taking written consent. Patients with other pulmonary diseases such as asthma, and interstitial lung disease, patients with renal failure, patients with peptic ulcer and those on medication of GERD were excluded from this study.

GERD Q- questionnaire was done to examine the frequency of gastroesophageal reflux disease. Score 8 and above considered the presence of GERD. All the data was analyzed by SPSS 24.0. Frequencies and percentages were recorded in tabulation form. Chi-square test was done

to examine the association between GERD and severity of COPD, P-value <0.05 was taken as significant.

**RESULTS**

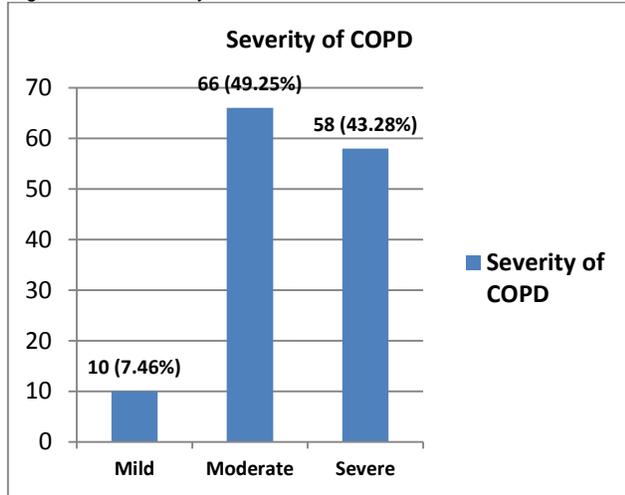
Out of 134 patients, 82 (61.19%) were male and 52 (38.81%) were females with mean age 52.65±10.44 years. Mean duration of COPD was 10.42±4.36 years. (Table 1)

According to the severity of COPD, 10 (7.46%) patients had mild, 66 (49.25%) had moderate and 58 (43.28%) had severe COPD. (Figure 1)

Table 1: Baseline details of all the patients

| Characteristics          | Frequency No. | %age  |
|--------------------------|---------------|-------|
| Mean age (Years)         | 52.65±10.44   | -     |
| Gender                   |               |       |
| Male                     | 82            | 61.19 |
| Female                   | 52            | 38.81 |
| Mean Duration of Disease | 10.42±4.36    | -     |

Figure No 1: Severity of COPD



According to the GERD Q- questionnaire, Gastroesophageal reflux disease was found in 65 (48.51%) patients while 69 (51.49%) patients had no GERD. (Table 2)

Table No 2: Frequency of Gastroesophageal Reflux Disease

| Variable | Frequency No. | %age   |
|----------|---------------|--------|
| GERD     |               |        |
| Yes      | 65            | 48.51% |
| No       | 69            | 51.49% |

When we stratified GERD with severity of COPD, we found that increase in severity of COPD resulted increase in GERD, the difference was statistically significant with p-value <0.05. (Table 3)

Table No 3: Association between severity of COPD and GERD

| Variables | Mild COPD (n=10) | Moderate COPD (n=66) | Severe COPD (n=58) | P-value |
|-----------|------------------|----------------------|--------------------|---------|
| GERD      |                  |                      |                    | 0.016   |
| Yes       | 0 (0)            | 28 (42.42)           | 37 (63.79)         |         |
| No        | 10 (100)         | 38 (57.58)           | 21 (36.21)         |         |

**DISCUSSION**

Chronic obstructive pulmonary disease ( COPD) is a widespread, chronic inflammation and reversible obstruction of airflow characterised by a widespread pulmonary disorder with a total estimated population of at least 170 million people in the world<sup>12</sup>. By 2020, COPD is predicted to be the world's third largest cause of death [13]. The irregular gastric reflux into the oesophagus leading to esophageal mucoal injury and/or reflux symptoms that show two most frequent heartburn and regurgitation symptoms<sup>6</sup> is one of the most common gastrointestinal conditions worldwide. A number of studies have shown in recent years that GERD in COPD patients is more prevalent<sup>13</sup>. We conducted present study with aimed to examine the prevalence of Gastroesophageal reflux disease in patients with COPD. In this regard 134 patients were included and among all the patients majority 61.19% were males and majority 75% patients were ages above 45 years. These results showed similarity to many of previous studies in which male patients population was high 55% to 65% and average age of patients was 55 years<sup>14-15</sup>.

In present study we found that 10 (7.46%) patients had mild, 66 (49.25%) had moderate and 58 (43.28%) had severe COPD according to the spirometry. A study conducted by Wahab A et al [16] regarding frequency of GERD in patients with COPD reported that 7.4% patients had mild, 45.2% patients had moderate, 41.5% had severe and 6% patients had very severe COPD.

In our study, gastroesophageal reflux disease was found in 65 (48.51%) patients with score >8 while 69 (51.49%) patients had score <8. A study conducted by Kim SW et al<sup>17</sup> reported that reflux esophagitis was found in 30% patients among 253 patients of COPD. Another study conducted by Iliaz S et al<sup>18</sup> reported that just 5 (20.8%) of COPD patients had usual GER symptoms according to the GERD questionnaire. The mean DeMeester (DMD) value in the COPD group was 38.1 ± 34.6, and in the control group 13.3 ± 16.8 (p = 0.01) according to a 24-h pH-impedance analysis. In COPD patients, the acid reflux rate (DMS > 14.7) was higher than in controls (73.9% vs 26.3% p=0.01).

Usman U et al [19] had reported that out of 95 cases of COPD, frequency of GERD in COPD patients was recorded in 43.16 % (n=41). Our findings also refer to another study carried out by Khalil A et al [20] in Karachi, where the prevalence of chronic obstructive pulmonary disorder (COPD) gastro-esophageal reflux is 39.7%.

In present study when we stratified GERD with severity of COPD, we found that increase in severity of COPD resulted increase in GERD, the difference was statistically significant with p-value <0.05. These results were comparable to many of previous studies in which frequency of GERD was high in patients with severe and very severe COPD as compared to mild or moderate COPD<sup>21-22</sup>.

**CONCLUSION**

Chronic obstructive pulmonary disease is commonly found disorder with high rate of morbidity and mortality. Gastroesophageal reflux disease is highly associated with COPD. We concluded that the prevalence of gastroesophageal reflux disease was 48.5% in patients

with COPD. Severity of COPD resulted increase rate of gastroesophageal reflux disease.

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