

## ORIGINAL ARTICLE

**Frequency of Gastroesophageal Reflux Disease in Chronic Obstructive Pulmonary Disease Patients**IFTIKHAR ALI KAKAR<sup>1</sup>, ABDUL BAQI<sup>2</sup>, NASIR AZIM<sup>3</sup>, WAQAS AHMAD<sup>4</sup>, ZEESHAN SHAUKAT<sup>5</sup>, KHALID SHAHAB<sup>6</sup><sup>1</sup>*Pulmonologist, Senior Lecturer, Director Department of Medical Education, Bolan Medical College Quetta*<sup>2</sup>*Assistant professor, Pulmonologist, Sheikh Khalifa Bin Zayed Al Nahyan Medical Complex*<sup>3</sup>*Assistant professor, Pulmonologist, Fatima Jinnah institute of chest Diseases Quetta*<sup>4</sup>*MBBS /MD University Osh state University, Kyrgyzstan*<sup>5</sup>*MBBS/MD University Osh state university, Kyrgyzstan*<sup>6</sup>*Assistant Professor Medical C Unit, Hayatabad Medical Complex, Peshawar*Corresponding author: Khalid Shahab, Email: [dr.khalidshahab@gmail.com](mailto:dr.khalidshahab@gmail.com)**ABSTRACT****Background:** About 20% to 30% of the general population, especially in individuals with old age, suffers from gastroesophageal reflux disease. Association between gastroesophageal reflux disease and chronic obstructive pulmonary disease has been reported in numerous studies.**Objective:** To find out the frequency of gastroesophageal reflux disease in chronic obstructive pulmonary disease patients**Methodology:** This cross-sectional study was carried out at the department of Pulmonology, Fatima Jinnah Institute of Chest Diseases and Sheikh Khalifa Bin Zayed Al Nahyan Medical Complex Quetta from December 2021 to May 2022. The inclusion criteria for our study were all the patients of either gender in age range 18 to 60 years diagnosed with COPD of any severity level. A proforma developed solely for this research was used to record all the data. All the collected data was analyzed by using SPSS version 23.**Results:** In our study, totally 180 patients were enrolled. There were 120 (66.67%) male participants and 60 (33.33%) female participants in our study. The overall frequency of gastro-esophageal reflux disease in COPD patients was 93 (51.67%). The frequency of gastro-esophageal reflux disease in mild, moderate severe and very severe COPD patients COPD patients was 4 (44.44%), 39 (48.15%), 38 (52.78%) and 12 (66.66%) respectively.**Conclusion:** Our study concludes that the frequency of gastroesophageal reflux disease is high in chronic obstructive pulmonary disease patients. Based on our results, every patient who presents with COPD should be screened for GERD.**Keywords:** Frequency, gastroesophageal reflux disease, chronic obstructive pulmonary disease**INTRODUCTION**

About 20% to 30% of the general population, especially in individuals with old age, suffers from gastroesophageal reflux disease (GERD) <sup>1</sup>. One of the leading causes of persistent cough is GERD, which may also increase the risk of COPD exacerbation <sup>2-4</sup>. The physiological condition known as gastro-esophageal reflux (GER) occurs when gastric content leak into the oesophagus. When the gastric juice volume going into the oesophagus surpasses the usual limit, then it results in GERD. In order to avoid gastroesophageal reflux disease (GERD), many antireflux techniques have been established <sup>5</sup>. The esophageal motility, anatomical configuration of gastro-esophageal junction and lower esophageal sphincter (LES) are the three main antireflux mechanisms in a healthy individual. When the LES relaxes inappropriately or owing to muscular weakness without a physiologic stimulation (peristalsis), GER results <sup>6</sup>. There are various ways that GERD might cause symptoms in COPD patients <sup>7</sup>. According to upper gastrointestinal endoscopy, reflux esophagitis is apparent in 50% of individuals with confirmed acid reflux based on GI Endoscopy. It is distinguished by one or more ulcers or erosions in the distal oesophagus. GERD, also known as Non-erosive Reflux Disease (NERD), affects up to 50% of patients, yet endoscopy in these individuals is often normal <sup>8</sup>. In the globe, chronic obstructive pulmonary disease (COPD), which is the fourth highest cause of death overall, is a significant contributor to morbidity and mortality <sup>9, 10</sup>. Approximately 25% of all hospitalizations are for respiratory issues, with COPD accounting for more than half of them <sup>11</sup>. A disease condition known as COPD is characterized by a limited airflow that is not entirely curable. The airflow restriction often worsens with time and is linked to aberrant lung inflammation brought on by gases or noxious particles <sup>12</sup>. The link between GERD and COPD is well-established. According to various research and ethnic groups, the prevalence of GERD in COPD patients was 28%, 32-37% and 53.6% in Korea, USA and Iran respectively <sup>13, 14</sup>. On the basis of literature, very limited data is available about this issue. Therefore this study was carried out to find out the frequency of gastroesophageal reflux disease in chronic obstructive pulmonary disease patients. If it is shown that COPD patients are more likely to have GERD, it will be

easier to decide whether to regularly test patients with COPD for the risk of GERD for effective management. Additionally, this research will serve as a foundation for future investigations into the causal association between GERD and COPD and its prognostic importance in individuals with COPD.

**MATERIALS AND METHODS**

This cross-sectional study was carried out at the department of Pulmonology, Fatima Jinnah Institute of Chest Diseases and Sheikh Khalifa Bin Zayed Al Nahyan Medical Complex Quetta. The study duration of the current study was six months from December 2021 to May 2022. The sample size based on WHO sample size calculator was 180 patients.

**Inclusion criteria:** The inclusion criteria for our study were all the patients of either gender in age range 18 to 60 years diagnosed with COPD of any severity level. Only patients want to participate in our study were included.

**Exclusion criteria:** The exclusion criteria for our study was all the patients with asthma and patients with other than COPD, patients with diabetes, kidney disease patients, liver disease patients, patients on steroids and NSAIDS and patients on treatment for lung cancer.

After receiving permission to perform the research from the ethical committee of the hospital, data was gathered from all the included patients diagnosed with COPD. For each enrolled patient a thorough clinical examination and history were conducted. Then, spirometry was applied to individuals who satisfied the inclusion and exclusion criteria. The same certified technician conducted all patients' spirometry, and the same consultant of pulmonology—a fellow of CPSP—interpreted the results and categorized each patient's spirometry according to GOLD standards into grades 1-4 based on post-bronchodilator FEV1. For all of the COPD patients included in the research, the frequency of GERD was determined. A proforma developed solely for this research was used to record all the data. All the collected data was analyzed by using SPSS version 23. For gender, severity of COPD, prevalence of GERD in COPD patents, frequency and percentage were determined whereas for age, mean standard deviation was calculated.

**RESULTS**

In our study, totally 180 patients were enrolled. There were 120 (66.67%) male participants and 60 (33.33%) female participants in our study. (Figure 1) The mean age (SD) was 58.21 (12.23) years. In this study, 5 (0.28%) patients were 18-30 years, 30 (16.67%) patients were 31-40 years old, 53 (29.44%) patients in age range of 41-50 years and 92 (51.11%) patients were 51-60 years old. (Figure 2) Based on severity of COPD, the mild moderate, severe and very severe COPD was observed in 9 (5%), 81 (45%), 72 (40%) and 18 (10%) respectively. (Figure 3) The overall frequency of gastro-esophageal reflux disease in COPD patients was 93 (51.67%). (Figure 4) The frequency of gastro-esophageal reflux disease in mild COPD patients was 4 (44.44%), in moderate COPD patients was 39 (48.15%), in severe COPD patients 38 (52.78%) and in very severe COPD patients it was observed in 12 (66.66%) cases. (Figure 5)

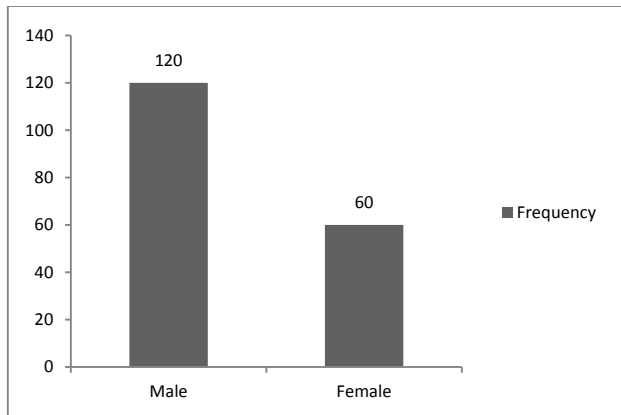


Figure 1: Frequency of male and female patients

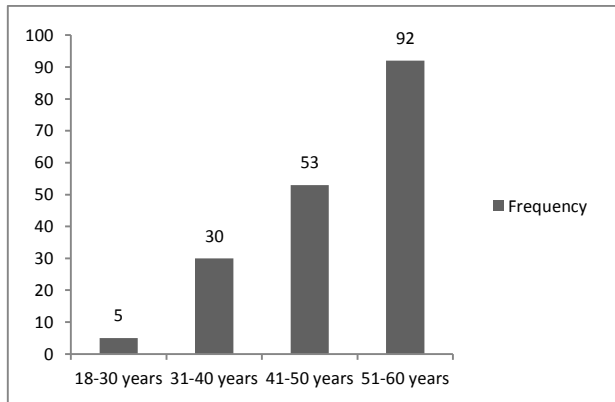


Figure 2: Frequency of patients based on age

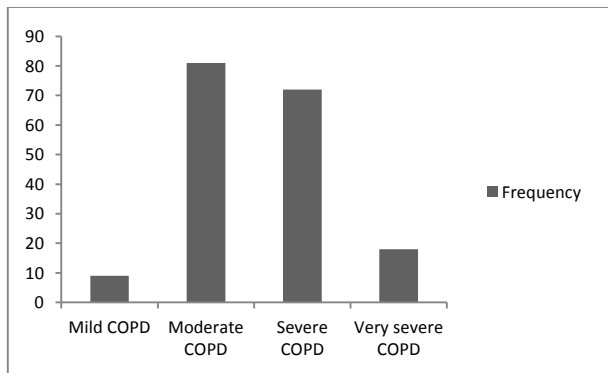


Figure 3: Frequency of patients based on COPD severity

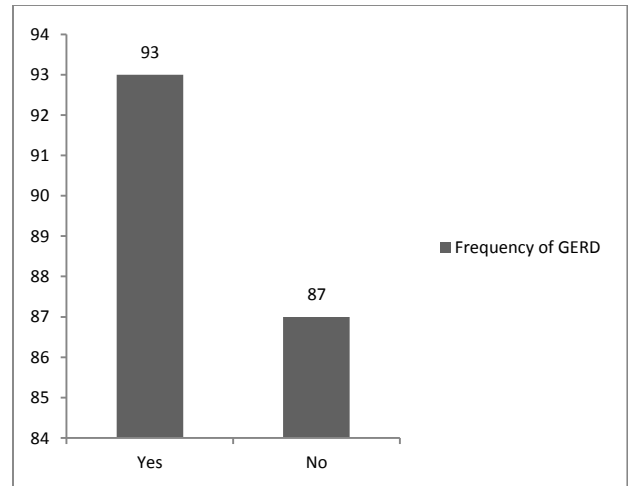


Figure 4: Overall frequency of GERD in COPD patients

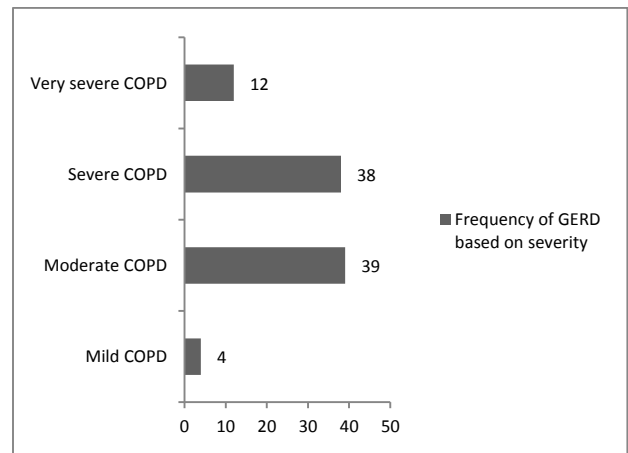


Figure 5: Frequency of GERD with respect to severity in COPD patients

**DISCUSSION**

A kind of obstructive lung illness called COPD is distinguished mainly by a reversible airflow restriction<sup>15</sup>. Chronic bronchitis and emphysema are two of the clinico-pathological forms of COPD. Each individual has a different equilibrium between these two independent components<sup>16</sup>. In the general population, GERD problem are fairly prevalent. To determine a connection between COPD and GERD problem, several minor investigations have been carried out<sup>17, 18</sup>ss. Patients with advanced COPD who are frequently asymptomatic and have a reasonably high frequency of isolated aberrant proximal reflux are more likely to have gastroesophageal reflux disease<sup>9, 19</sup>. In our study, totally 180 patients were enrolled. There were 66.67% male participants and 33.33% female participants in our study. In accordance with our study, similar male dominance was observed in a previous study<sup>20</sup>. Another study also reported high frequency of males as compared to females<sup>21</sup>. The mean age (SD) was 58.21 (12.23) years. In this study, 0.28% patients were 18-30 years, 16.67% patients were 31-40 years old, 29.44% patients in age range of 41-50 years and 51.11% patients were 51-60 years old. Based on severity of COPD, the mild moderate, severe and very severe COPD was observed in 5%, 45%, 40% and 10% respectively. Similar age distribution and COPD severity distribution of patients was observed by another study<sup>21</sup>. The overall frequency of gastro-esophageal reflux disease in COPD patients was 93 (51.67%). In accordance with our study, another study reported 53.5% prevalence of GERD in COPD patients<sup>21</sup>. A previous study carried out by Lee et al. reported 17-78% GERD

frequency in COPD patients<sup>22</sup>. These findings are also supported by another previous study carried out by Mohklessi et.al.<sup>23</sup> A study carried out by Casanova C et al. reported a little high frequency (63%) of GERD in COPD patients which is not in accordance with our finding<sup>24</sup>. The frequency of gastro-esophageal reflux disease in mild COPD patients was 44.44%, in moderate COPD patients was 48.15%, in severe COPD patients 52.78% and in very severe COPD patients it was observed in 66.66% cases. A study carried out by Adel Khatab et al. reported a significant association between GERD frequency and severity of COPD. They reported 53.3% prevalence of GERD in patients with moderate COPD and 73.3% prevalence of GERD in patients with severe COPD which is almost similar with our findings. Thus, it has also been proposed that GERD may be linked to an increase in the severity of COPD<sup>25</sup>.

## CONCLUSION

Our study concludes that the frequency of gastroesophageal reflux disease is high in chronic obstructive pulmonary disease patients. Based on our results, every patient who presents with COPD should be screened for GERD. To figure out the incidence of the issue, it is necessary for every setup to have its own surveillance.

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