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Assessing the frequency of Gastroesophageal Reflux Disease among Chronic Obstructive Pulmonary Disease Patients

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ABSTRACT

Background: A minimum of 170 million individuals worldwide are thought to have chronic obstructive pulmonary disease (COPD), a common lung illness marked by reversible airflow limitation and chronic inflammation of the airways. Recent research indicated that symptoms associated with gastroesophageal reflux disease (GERD) are more prevalent in individuals with COPD.

Objective: Objective of the present study was to find out the frequency of GERD in COPD patients.

Methodology: The study was conducted at a Rehman medical institute in Pakistan from January 2022 to June 2022, using a cross-sectional design. Data was collected from 160 COPD patients, who underwent a comprehensive clinical examination and history. All these patients were assessed for GERD through a frequency scale for the symptoms of GERD (F.S.S.G questionnaire) instead of endoscopy and PH assessment. Spirometry was performed on each patient, and the findings were analyzed by a fellow specialist. The study also determined the frequency of GERD in COPD patients. SPSS version 23 was used for data analysis.

Results: The current cross-sectional study includes a total of 160 participants including both males and females selected through a purposive sampling technique. Among them, 63.75% were males and 36.24% were female participants. The overall prevalence of GERD among the participants was 45%. GERD was found in 31.94%, 40.27% and 16. 66% among moderate, severe, and very severe cases of COPD.

Conclusion: The study findings indicate that GERD was found in 45% of individuals with COPD. This underscores the importance for healthcare providers to thoroughly assess COPD patients for GERD to prevent further complications and enhance their quality of life.

Keywords: COPD; Gastroesophageal Reflux; Asthma; Forced Expiratory Volume

Introduction

A minimum of 170 million individuals worldwide are thought to have COPD, a common lung illness marked by reversible airflow limitation and chronic inflammation of the airways impacted in research on population.[1] By 2020, COPD is predicted to be the third most prevalent cause of mortality globally.[2,3] Among the least prevalent gastrointestinal disorders in the world, GERD is characterized by the abnormal reflux of food from the stomach into the esophagus, which can cause damage to the epithelium of the esophagus or reflux symptoms. The two primary symptoms of GERD are regurgitation as well as heartburn.[4] Numerous research conducted in the last few years has raised the possibility that COPD patients may have a greater incidence of GERD. The data indicated that symptoms associated with GERD are more prevalent in individuals with severe COPD along with a greater number of GERD indications existing in COPD patients.[5] Between 20% and 30% of people in general, particularly those who are elderly, have GERD. GERD is one of the main reasons for a chronic cough, and it may raise the possibility of an exacerbation of COPD.[6] Heartburn as well as regurgitation is two highly noticeable GERD symptoms. When compared with endoscopy and 24-hour pH evaluation, the accuracy of these symptoms for GERD is 92%, but their specificity is only 19%. Gathering a medical history is the quickest and most straightforward method of diagnosing GERD. The Frequency Scale of GERD Symptoms (FSSG) provides an unbiased evaluation of the seriousness of GERD including how well one responds to therapy[7]. There has also been a suggestion that there may be a connection between GERD and an increase in COPD exacerbations. Those with COPD who also continue to experience GERD symptoms have a lower health-related quality of life than people with COPD alone. Among Japanese people with COPD, the prevalence of GERD was 26.7%, irrespective of the current stage of the disease.[8] According to upper gastrointestinal endoscopy, 50% of people with acid reflux that has been validated by GI endoscopy also have reflux esophagitis. One or more ulcers or erosions in the distal esophagus serve as a distinguishing feature. Up to 50% of patients have GERD, also known as Non-erosive Reflux Disease (NERD), although endoscopic results are frequently normal in these people.[9] Respiratory problems cause around 25% of hospital admissions overall, with COPD representing over half of those cases.[10] Restricted airflow is a characteristic of the disease known as COPD, which is not curable. The restriction of airflow frequently gets worse over time and is associated with abnormal lung inflammation caused by harmful particles or gases. It is commonly known that GERD and COPD are related. Different studies suggested different prevalence rate of GERD in COPD patients, which was 28%, 32-37%, and 53.6% in Korea, USA, and Iran, respectively.[11] As a result, a vicious cycle has developed connecting GERD and the signs and functioning of COPD patients. According to research, GERD may be a potential risk factor for COPD exacerbations in patients. This is supported by the finding that GERD is linked to a significantly greater rate of exacerbations, as well as a higher likelihood of ICU hospitalization and the need for mechanical ventilation in individuals with COPD.[12] This study aimed to determine the prevalence of gastroesophageal reflux in COPD patients, enabling routine testing for GERD risk and providing a basis for further research on the relationship between GERD and COPD and its prognosis.

Objective

Objective of the present study was to find out the frequency of gastroesophageal reflux disease in COPD patients.

Methodology

The cross-sectional design was used to achieve the objectives of the study. The research project setting was Rehman Medical Institute, Peshawar, Pakistan from January 2022 to June 2022. The study subjects were collected by using a purposive sampling technique. The sample size was calculated through an online Open EPI application with a 95% Confidence interval and a 5% margin of error based on the prevalence of COPD. The estimated sample size is 160. Data was collected from all of the individuals who became involved in the study who had been diagnosed with COPD following the hospital's ethical board to participate. Participants aged from 25 to 65 years of age who were willing to participate in the study were included, moreover, those with asthma along with COPD and chronic diseases of the kidney, liver as well as cancer were excluded from the study. For each patient who was enrolled, a comprehensive clinical examination and history were performed, in addition, all these patients were assessed for GERD through a frequency scale for the symptoms of GERD (F.S.S.G questionnaire) instead of endoscopy and PH assessment. Those who met both the inclusion as well as exclusion criteria were then subjected to spirometry. Every patient had their spirometry performed by the same qualified technician, and the findings were analyzed by the equivalent CPSP fellow specialist in the department of pulmonary Based on post-bronchodilator FEV1, each individual's spirometry was graded 1-4 under GOLD guidelines. It was established how frequently each COPD patient included in the study had GERD. All of the information provided was recorded using a proforma created specifically for this study. The analysis of all the data was done with SPSS version 23. The study calculated mean, gender, COPD severity,

Table 1. Sociodemographic Characteristics of study cases

Charectrastic	Frequency	Percentage (%)
Gender		
Male	102	63.75
Female	58	36.25
Age		
25-35	08	5.0
36-45	22	13.75
46-55	68	42.50
56-65	62	38.75

GERD prevalence, frequency, and percentage of COPD patients, excluding age, and computed deviance.
Ethical approval was obtained from the ethical board of Rehman Medical Institute, Peshawar, in accordance with ethical standards.

Results

The current cross-sectional study includes a total of 160 participants including both males and females selected through a purposive sampling technique. 63.75 % of them were males and 36.24 % of them were female participants. The mean age of the participants was 46.24+2.46 years. 42.50 % and 38.75 % were from 46-55 and 56-65 years of age.
Selected individuals were distributed based on the severity of COPD. 42.50% of the participants have moderate and 30 % of them have severe COPD as shown in Table 2. Graph 1 highlights the overall prevalence of GERD among the participants, which was 45% and 55% of them were free from GERD.

Furthermore, table 3 represents the frequency of GERD based on the severity of COPD. GERD was found in 31.94%, 40.27 % and 16. 66 % among moderate, severe, and very severe cases of COPD.

Discussion

Gastroesophageal reflux disease (GERD) frequently accompanies chronic obstructive pulmonary disease (COPD) and presents with various clinical presenta-tions. Maintaining a vigilant approach and employing objective techniques are crucial for diagnosing the condition accurately. Identifying the most effective approach for detecting the inhalation of gastric contents into the lungs in COPD patients remains an unresolved issue. Prior investigations have explored the correlation between gastroesophageal reflux (GERD) and chronic obstructive pulmonary disease (COPD).[10] Studies condu-cted using a cross-sectional design and a small sample size have generally shown that symptoms linked to esophageal illness are more prevalent and more severe in patients with COPD

Table 2. Distribution of patients based on COPD severity

Severity of COPD	Number	Percentage (%)
Mild COPD	18	11.25
Moderate COPD	68	42.50
Severe COPD	48	30.0
Very severe COPD	26	16.25

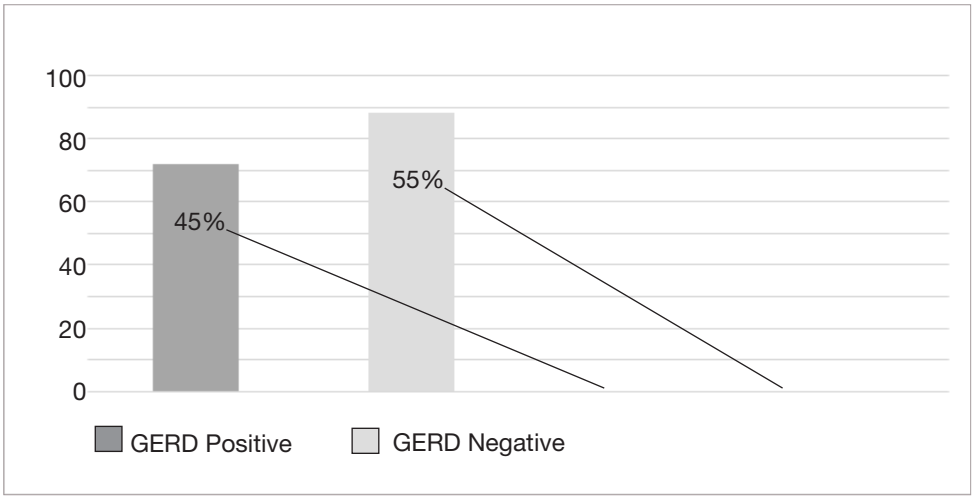

Figure 1. Overall prevalence of GERD

compared to patients in other areas of general care, with a few exceptions.[11,13] The reason for this significant correlation is still unclear. However, these findings indicate that not only is GERD more prevalent in individuals with COPD, but also that GERD may modify the presentation and progression of COPD by exacerbating its symptoms. The purpose of the present research was to investigate the prevalence of GERD in COPD patients and to raise awareness among healthcare professionals about the significant role of GERD as a risk factor for the severity of COPD. The findings of this study may contribute to establishing the importance of managing and preventing GERD in COPD patients, ultimately leading to a reduction in morbidity. With increased rates of prevalence as well as death rates, COPD is one of the leading causes of death worldwide.[13] GERD is among the suggested risk factors for exacerbations of GERD, or gastroesophageal reflux disorder, is one of the documented factors responsible for flare-ups of COPD. With a 14–20% frequency in the general population of adults, it is also one of the most commonly diagnosed illnesses in outpatient care healthcare settings.[14] Asthma, pulmonary idiopathic fibrosis, and cystic fibrosis are among the chronic lung conditions that are more common in GERD patients than in the general population.[15] Additionally, GERD patients frequently have the upper respiratory disorders.[16] In the current study. 63.75 % of them were males and 36.24% of them were female participants. The mean age of the participants was 46.24 ±2.46 years. 42.50% and 38.75% of them were from 46-55 and 56-65 years of age. 42.50% of the participants have moderate and 30 % of them have severe COPD. Another study found that 100 COPD patients, with 90% males and 10% females, and found that 33% had minor GERD symptoms, 7% moderate, 11% severe, and 12% severe symptoms.[17] Similarly, in the present study, the overall prevalence of GERD among the participants was 45%, and 55% of them were free from GERD. GERD was found in 31.94%, 40.27% and 16.66 % among moderate, severe, and very severe cases of COPD. A similar study was conducted by Kakar IA et al who were 120 (66.67%) male and 60 (33.33%) female participants in our study. Overall, 93 (51.67%) COPD patients had gastroesophageal reflux disease. The frequency of gastroesophageal reflux disease among individuals with mild, moderate, and severe COPD,

Table 3. Frequency of GERD based on severity of COPD

Severity of COPD	Frequency	Percentage (%)
Mild COPD	08	11.11
Moderate COPD	23	31.94
Severe COPD	29	40.27
Very severe COPD	12	16.66

respectively was 4 (44.44%), 39 (48.15%), 38 (52.78%), and 12 (66.66%).[18] According to the meta-analysis, there is a higher chance of COPD exacerbation in people with GERD (OR: 5.37; 95% CI). The number of exacerbations was higher in patients with COPD and GERD (WMD: 0.48; 95% CI).[19] Asthma prevalence of GERD is estimated to be between 30% to 90%, while the average for controls is 24%. GERD prevalence in COPD patients varies from 19% to 78%, while the average for controls is 18%. Although causation is unknown and GERD treatment produced erratic results, these findings show the greater incidence of GERD in people with asthma and COPD. Research demonstrates that GERD is a predictor of the "frequent-exacerbator" profile and an increased risk contributing factor to COPD exacerbations.[20]

Understanding the coexistence of GERD and COPD presents a complex clinical challenge. While the prevalence of GERD among COPD patients is evident, the optimal diagnostic methods and management strategies remain uncertain. The interplay between these two conditions underscores the importance of comprehensive assessment and tailored treatment approaches. Additionally, the association between GERD and exacerbations of COPD highlights the need for vigilant monitoring and proactive intervention in clinical practice. Further research efforts are crucial to unravel the underlying mechanisms and develop targeted interventions to address GERD in COPD patients effectively. By recognizing the significance of GERD in the context of COPD, healthcare professionals can enhance patient care and potentially alleviate disease burden.

Conclusion

The overall prevalence of GERD was 45% in the present study; therefore, healthcare professionals need individuals with COPD should be evaluated properly for GERD to prevent further complications so that the quality of life of the patients can be improved. The findings from this study, along with existing literature, underscore the substantial prevalence of GERD among individuals with COPD. The coexistence of these conditions complicates clinical management and highlights the importance of thorough evaluation and targeted intervention. The association between GERD and exacerbations of COPD suggests a potential role for GERD in influencing disease severity and progression. As such, healthcare professionals should maintain a high index of suspicion for GERD in COPD patients and implement appropriate diagnostic and therapeutic strategies. Further research is needed to elucidate the underlying mechanisms and optimize management approaches for this complex comorbidity, ultimately aiming to improve patient outcomes and quality of life.

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