



The Prevalence and Impact of Gastroesophageal Reflux Disease in Chronic Obstructive Pulmonary Disease: A Review of Recent Findings

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ABSTRACT

Chronic Obstructive Pulmonary Disease (COPD) is a progressive respiratory illness characterized by persistent airflow obstruction and significant disability. Gastroesophageal Reflux Disease (GERD) is a common gastrointestinal disorder marked by the reflux of stomach contents into the esophagus. Recent studies indicate a high prevalence of GERD among COPD patients, ranging from 17% to 78%. This article reviews the prevalence and implications of GERD in COPD, examining its potential impact on the severity and management of COPD.

The review synthesizes findings from various studies, highlighting that GERD is a prevalent comorbidity in COPD, with an average prevalence of approximately 24%. GERD has been associated with increased rates of COPD exacerbations, worsened respiratory symptoms, and higher healthcare utilization. The possible mechanisms linking GERD and COPD include alterations in lower esophageal sphincter pressure, changes in esophageal motility, and respiratory drug effects. Despite the observed association, the precise causal relationship between GERD and COPD remains unclear.

The findings underscore the need for clinicians to be vigilant in screening and managing GERD in COPD patients. Addressing GERD may help mitigate COPD exacerbations and improve patient outcomes. Further research is needed to elucidate the mechanisms linking these conditions and to evaluate the effectiveness of integrated management strategies.

keywords: COPD, GERD, Prevalence.

ABBREVIATIONS:

GERD- Gastro Esophageal Reflux Disease, COPD- Chronic obstructive pulmonary disease, PFT-Pulmonary Function Test, FSSG-Frequency Scale for Symptoms of GERD, AECOPD- Acute Exacerbations of COPD, FEV-Forced Expiratory Volume, FVC-Forced Vital Capacity

INTRODUCTION:

Chronic obstructive pulmonary disease (COPD) and Gastroesophageal reflux disease (GERD) are two common and debilitating diseases that have a major influence on global health. Chronic obstructive pulmonary disease (COPD) is a progressive chronic respiratory illness (CRD) marked by persistent obstruction of airflow, ongoing systemic inflammation, respiratory symptoms such as wheezing, coughing, and dyspnea, and abnormal alterations in the airways³. The prevalence of COPD is steadily increasing, especially in people 65 years of age and older². A variety of comorbidities coexist with the clinical profile of COPD, potentially complicating the condition's clinical presentation and influencing morbidity and mortality².

The term "gastric reflux disease" (GERD) refers to the group of symptoms and mucosal disorders that are caused by improper reflux of stomach contents into the esophagus. Chest pain, coughing, dysphagia, regurgitation, heartburn, and other esophageal symptoms are among the clinical signs of GERD⁴. The impact of gastroesophageal reflux disease (GERD) is dependent on the frequency, duration, and destination of reflux episodes².

In recent years, an increasing number of observational studies have shown bidirectional links between COPD and GERD³. It has been observed that the incidence of GERD in patients with COPD ranges from 17% to 78%³. Furthermore, exacerbations of COPD have also been linked to GERD, and a systematic review showed that the frequency of mixed reflux in patients with GERD was



significantly greater in COPD patients than in non-COPD patients³. It is important to understand the relationship and potential effects of the two conditions co-occurring².

METHODS:

MEDLINE database (PUBMED) was searched to identify studies that were designed to investigate the prevalence of GERD in patients with COPD. The study published from 2010 to date is reviewed. Out of 121 results available in the form of abstracts and free full texts, using keywords of COPD, GERD, and prevalence, 12 studies were found accurate for this review. The article types included were Controlled trials and Systematic review.

RESULTS:

Numerous research have investigated the prevalence of GERD in people with COPD². The prevalence of GERD in patients with COPD ranges from 19% to 29%, with an average of 24.40%, according to the results of self-report questionnaires¹. Based on symptoms assessed using questionnaires, the average prevalence of GERD in control groups is 18.97%¹.

Using the UK general practice research database, Garcia Rodriguez et al identify two patient cohorts: one with a first diagnosis of GERD (n = 4391, control cohort without GERD diagnosis n = 5118) and the other with a first diagnosis of COPD (n = 1628, control cohort without COPD diagnosis n = 14 243). Both groups were compared to respective control cohorts in order to examine the incidence of a GERD diagnosis among COPD patients and of a COPD diagnosis among GERD patients. In patients with GERD, the relative risk of an incident COPD diagnosis during a 5-year follow-up was 1.17 (95% CI, 0.91-1.49), whereas in patients with COPD, the relative risk of an incident GERD diagnosis was 1.46 (95% CI, 1.19-1.78). The authors draw the conclusion that, in comparison to people without a COPD diagnosis, patients with a COPD diagnosis are considerably more likely to receive a GERD diagnosis⁵.

Babak Mokhlesi, et al., conducted a Prospective questionnaire-based, cross-sectional analytic survey to determine the prevalence of gastroesophageal reflux (GER) symptoms in patients with COPD and the association of GER symptoms with the severity of airways obstruction as assessed by pulmonary function tests (PFTs). They enrolled 100 eligible patients with a diagnosis of COPD and 51 control subjects. Both COPD patients and control subjects completed Modified Mayo Clinic GER questionnaire. The questionnaire demonstrated a higher prevalence of weekly GER symptoms in patients with COPD(26 %), as compared to control subjects⁶.

K Terada, et al., conducted a Prospective survey to determine the impact of gastro-esophageal reflux disease symptoms on COPD exacerbation. This study involved the enrollment of 40 age-matched controls and 82 COPD patients. Using the Frequency Scale for the Symptoms of GERD (FSSG), a questionnaire was used to assess symptoms. For six months, a prospective survey of COPD patients was conducted, and utilizing a diary and modified Anthonisen's criteria, exacerbation episodes were recorded. The pH of exhaled breath condensate (EBC) was assessed in both groups, and the COPD patients' induced sputum was assessed. The results demonstrated that 22 COPD patients (26.8%) and five (12.5%) controls reported having positive GERD symptoms. They came to the conclusion that GERD symptoms have been found to be a significant risk factor for COPD exacerbation⁷.

Evaluations of the relationship between COPD exacerbations and gastroesophageal reflux disease (GERD) have never been done. Ivan E. Rascon-Aguilar, et al., conducted another questionnaire-based, cross-sectional analytic survey to determine the prevalence of gastroesophageal reflux (GER) symptoms in COPD patients and the effect of GER on the rate of exacerbations of COPD per year. A structured questionnaire was given to patients having a confirmed diagnosis of COPD by PFTs. In total, 37% of patients complained of GER symptoms. The results demonstrated that patients with GER symptoms had twice the rate of COPD exacerbations as those without GER symptoms⁸.

Kazuto Takada, et al., used to know the relationship between acute exacerbations of COPD (AECOPD) and gastroesophageal reflux disease (GERD). The study comprised 221 stable COPD patients who were assessed over a one-year period using the Frequency Scale for Symptoms of GERD (FSSG) and a prospective survey of AECOPD. The results of the study demonstrated that GERD was present in 26.7% of people, according to the FSSG. Hospitalization due to AECOPD and the frequency of AECOPD were substantially linked with the severity of GERD symptoms as determined by the FSSG score. According to this prospective cohort study, having severe GERD symptoms may be linked to more frequent episodes of AECOPD. GERD also seems to be a prognostic factor for hospitalization due to AECOPD⁹.

In a recent study, 29% of 4483 COPD patients most of whom were female reported having GERD. Those with GERD were more likely to experience symptoms of chronic bronchitis, as well as more severe dyspnea and lower quality of life scores. At baseline, there was a significant correlation seen between GERD and frequent exacerbations (≥ 2 exacerbations annually at inclusion odds ratio: 1.40, $P = .006$)¹⁰.



Mehran Rogha et al., conducted a retrospective study to determine the effect of GERD symptoms on COPD exacerbations and subsequent hospitalization and drug usage. Using the Mayo GERD questionnaire, patients were divided into GERD positive and GERD negative groups. Hospitalization, drug use, and COPD exacerbation were compared between the two groups. The results showed that compared to GERD-negative individuals, GERD-positive patients had noticeably more acute exacerbations of COPD. Individuals with GERD symptoms are more likely to experience COPD exacerbations, which lead to medication use and hospital stays¹¹.

In patients with chronic obstructive pulmonary disease (COPD), the prevalence and clinical implications of gastro-oesophageal reflux disease (GERD) remain poorly defined. C. Casanova et al., done a prospective study with 42 male COPD patients and 16 healthy volunteers of similar age without respiratory or gastro-oesophageal symptoms. GERD was diagnosed and verified by oesophageal 24-hour pH monitoring. The current study group's pulmonary function, bronchodilator responsiveness, health status, and reflux symptoms were assessed using the Vigneri score, the modified Medical Research Council questionnaire, and the St. George's Respiratory Questionnaire. Three volunteers (19%) and 26 out of 42 patients (62%) had pathological reflux documented. The authors draw the conclusion that, COPD is associated with an abnormally high prevalence of oesophageal acid reflux when compared to volunteers of similar age¹².

A correlation has been observed between chronic obstructive pulmonary disease (COPD) and gastroesophageal reflux disease (GERD). Hamid Nisar Khan et al., conducted a descriptive, cross-sectional study to determine the frequency of GERD in COPD patients. The study included patients, regardless of gender, who were over 40 years old and had been diagnosed with COPD, as evidenced by spirometry, with symptoms such as coughing and dyspnea lasting longer than six months. The trial comprised 118 consecutive patients in total. Included were patients with spirometry with FEV1 <70% expected and FEV1/FVC ratio <70%. According to the survey, there were 24.4% female and 75.6% male participants. Worldwide research indicates that men are more likely than women to suffer from COPD. This is because men are more likely than women to smoke globally, and smoking causes COPD. Research indicates that individuals with COPD have a larger percentage of symptoms related to gastro-oesophageal reflux disease (GERD), and that GERD is more common in people with severe COPD¹³.

Furthermore, a number of smaller studies with an overall incidence ranging from 30% to 78% revealed a higher frequency of GERD in COPD patients compared to non-COPD patients¹⁴⁻¹⁷.

CONCLUSION:

The interplay between Chronic Obstructive Pulmonary Disease (COPD) and Gastroesophageal Reflux Disease (GERD) underscores a complex and significant relationship impacting patient health outcomes. This review highlights a notable prevalence of GERD among COPD patients, ranging from 17% to 78%, with an average prevalence of approximately 24%. This substantial variation indicates the need for standardized diagnostic approaches to better understand and manage GERD in COPD patients. The evidence suggests that GERD not only coexists with COPD but may also exacerbate the severity of COPD symptoms and increase the frequency of acute exacerbations. Studies demonstrate that COPD patients with GERD are more prone to severe respiratory symptoms, frequent exacerbations, and increased hospitalizations compared to those without GERD. This association implies that GERD could potentially influence the progression and management of COPD, although the exact mechanisms remain to be fully elucidated. Given these findings, it is crucial for clinicians to consider GERD as a potential comorbidity in COPD patients. Enhanced screening and management strategies for GERD could improve overall patient outcomes by potentially reducing exacerbations and optimizing treatment. Future research should aim to clarify the causal pathways between GERD and COPD, explore the efficacy of GERD management on COPD progression, and develop targeted interventions to address this dual burden on patients.

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