

## Prevalence and Types of Pulmonary Disability in Patients with Gastroesophageal Reflux Disease (GERD)

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### ABSTRACT

GERD is found to be one of the risk factors for various pulmonary disorders, like Obstructive Airway Disease, Obstructive Sleep Apnea, Interstitial Lung Diseases either directly or as a confounding factor. Due to higher Prevalence of Obstructive Airway Disease in GERD patients, early diagnosis and Appropriate management can control disease progression and outcome of both conditions. GERD is found to be one of the risk factors for many pulmonary diseases, especially Obstructive Airway Disease, either directly or as a confounding factor and Data on the severity of OAD in symptomatically and endoscopically proven GERD patients are limited in the Indian population, This learning was undertaken to find out the pervasiveness of pulmonary diseases in patients with proven Gastro Esophageal Reflux Diseases (GERD) and to find out the correlation of Symptoms of GERD and Endoscopic finding findings of GERD with the severity of Obstructive Airway Disease using Spirometric Parameters. Asthma is a heterogeneous disease, typically categorized by persistent airway infection. It is described with the aid of the history of breathing symptoms together with wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, collectively with mutable expiratory airflow restriction. This study focuses on studying the occurrence and types of pulmonary disability in patients with GERD in a tertiary care hospital and on correlating the Symptoms and Endoscopic findings of GERD with the severity of Obstructive Airway Disease as assessed by Spirometric Parameters.



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### INTRODUCTION

In this segment represents the introduction of this research work. Gastroesophageal reflux disease (GERD) is a complaint in which the oesophagus develops reddened since of Reflux of acid from

the stomach that exceeds the normal limit causing symptoms with or without mucosal injury [1]. It affects approximately one-third of the adult population, causing symptoms at least once a month<sup>1</sup>. In adults, almost 10% of people experience symptoms of GERD every day, and 15 % of people experience symptoms intermittently. [2]

Obstructive Airway Disease (Figure 1 ) is the most common extraesophageal manifestation of GERD, followed by Chronic Cough and Chronic Bronchitis<sup>1</sup>. According to studies in literature, the Prevalence of GERD is 23.6% in India [3]. Prevalence of Pathological GERD is found to be 30-80% in Bronchial Asthma<sup>1</sup>. Prevalence of GERD related Cough is found to be 10-40%<sup>1</sup>. Prevalence of Bronchial Asthma in endoscopically proven esophagitis is found to be 30%. [4]

The physiological link between (Figure 2 )GERD with pulmonary disorders like bronchial asthma, chronic bronchitis (COPD), and the persistent cough has been extensively studied. The occurrence of Obstructive Airway Disease in GERD could be attributable to four main mechanisms [5], [6]

1. Stimulation of vagally mediated tracheobronchial response by acid reflux will increase the hyper bronchial reactivity to allergens
2. Micro Aspiration of refluxed contents irritates sensitive asthmatic airways
3. Heightened Bronchial hyper reactivity
4. Smoking causes lung destruction which leads to alteration of mechanisms causing Reflux induced bronchoconstriction secondary to chronic airflow obstruction

Other respiratory diseases which can occur due to GERD includes [7]

1. Aspiration pneumonitis
2. Lung abscess
3. Bronchiectasis
4. Idiopathic pulmonary fibrosis (IPF)
5. Obstructive sleep apnea (OSA)
6. Cystic Fibrosis and non-Cystic Fibrosis Bronchiectasis

GERD is found to be one of the risk factors for many pulmonary diseases, especially Obstructive Airway Disease, either directly or as a confounding factor and Data on the severity of OAD in symptomatically and endoscopically proven GERD patients are limited in the Indian population, This learning was undertaken to find out the pervasiveness of pulmonary diseases in patients with proven Gastro Esophageal Reflux Diseases (GERD) and to find out the correlation of Symptoms of GERD (Table 1 ) and Endoscopic finding findings of GERD with the severity of Obstructive Airway Disease using Spirometric Parameters [8] [9] [10].

Asthma is a heterogeneous disease, typically categorized by persistent airway infection. It is described with the aid of the history of breathing symptoms together with wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, collectively with mutable expiratory airflow restriction [11] [12].

In these articles represents sector 2 of these articles explains the feature on the related works. In section 3 presents the materials and methods adopted and section 4 presents the particulars of the experimentation and discussions. Finally, segment 5 accomplishes the articles by allocation our implications

and upcoming strategies.

### Related works

In this segment represents focuses on the related works of this research work. Gastroesophageal reflux disease (GERD) is a disorder in which the oesophagus develops inflamed since of Reflux of acid from the stomach that exceeds the normal limit causing symptoms with or without mucosal injury [13] [14] [15]

Patients usually present with Heartburn, breathing difficulty which is exacerbated after taking food, Nocturnal time dry cough, Belching, Bloating of the abdomen, Regurgitation. [16] [17] [18]

Patients can also present with atypical symptoms of GERD like non-cardiac chest pain, ear throat and nose disorders in which case the diagnosis should not be missed. [19] [20]

Irritation of oesophagus can widely cause indications such as the discomfort of the chest, Indigestion, chronic cough and wheezing [21]

In the case of Reflux, when acid reaches the upper and lower respiratory tract, it causes bitter taste and Aspiration of gastric contents to Lungs causing Aspiration Pneumonitis. [22] [23] The Reflux of Acid can further cause hoarseness of voice, Post nasal drip, recurrent cough, chest congestion and hyper bronchial reactivity leading to Bronchial Asthma, Bronchitis. [9] [23] The possible Mechanism between GERD and Respiratory diseases were widely studied in chronic cough, BA and COPD. [24] [25]

This literature reveals and examines the possible pathophysiological Linkage of Pulmonary Manifestations in GERD. [26]

Asthma is a heterogeneous disease, frequently categorized by chronic airway irritation. It is distinct from the past of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with mutable expiratory airflow restriction. [27]

According to WHO, 150 million people were exaggerated with Asthma worldwide, subsequent in 1,80,000 demises occurring annually. Prevalence of Asthma in India is found to be 2.4% in a study conducted with 73,605 persons across four main centres in India.

There are many triggering factors and comorbidities that contribute to worsening of Bronchial Asthma. According to Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma, GERD was recognized to be one among the main comorbidity of bronchial Asthma and treatment of GERD

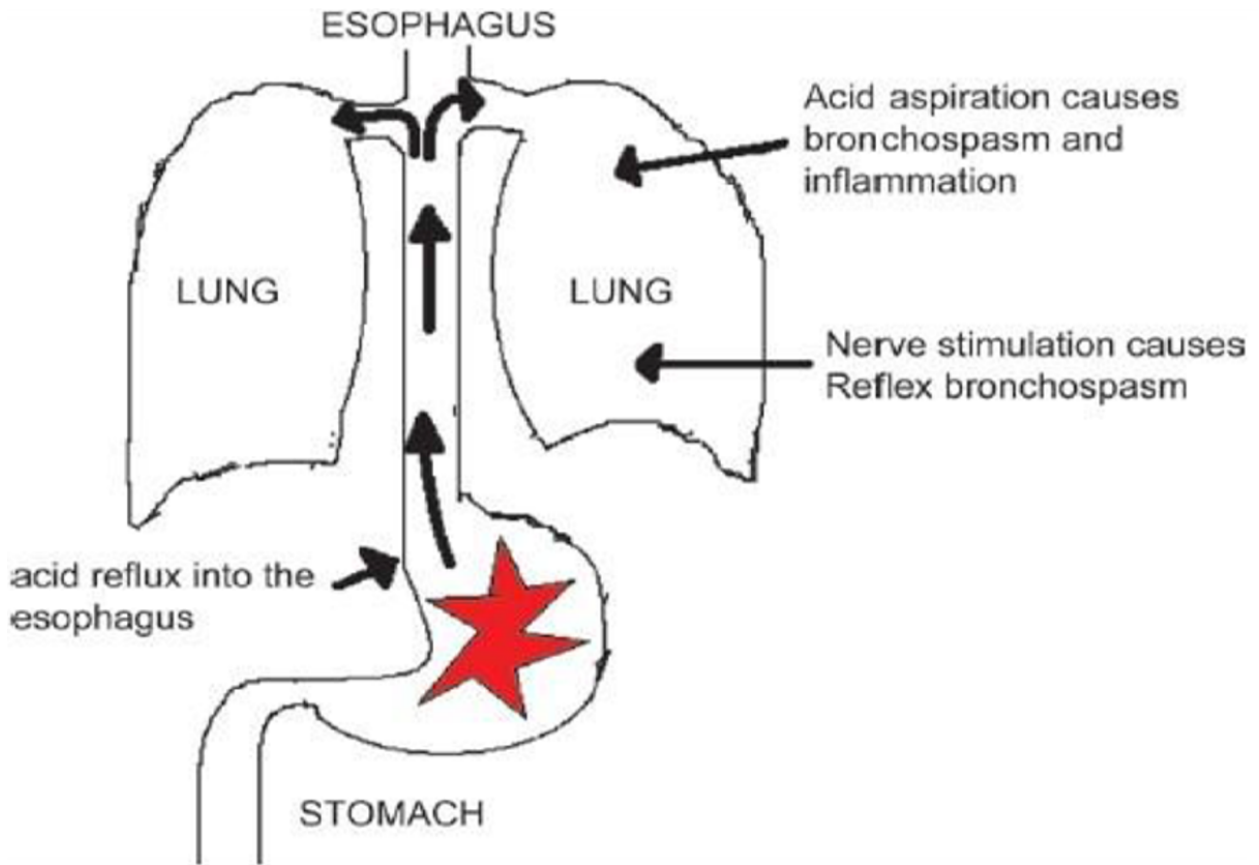


Figure 1: Reflux of Gastric Acid into Esophagus and Trachea A1

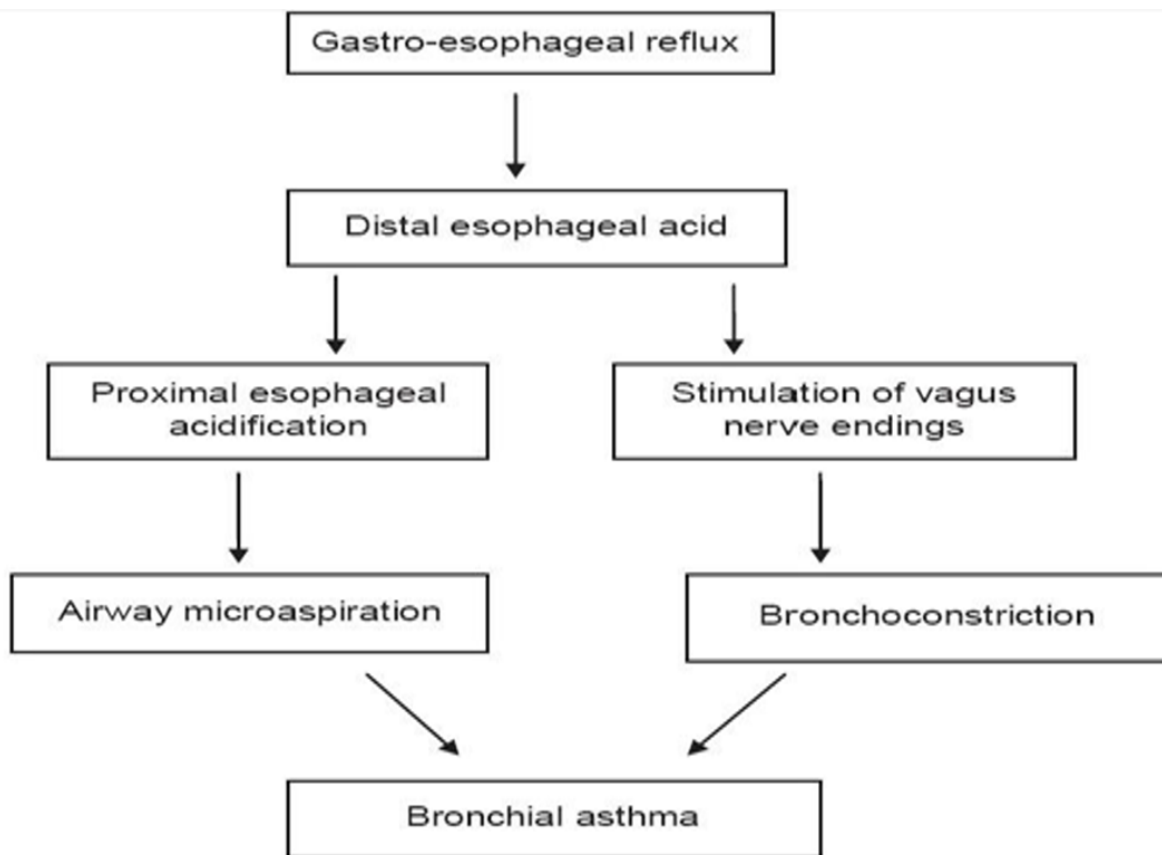


Figure 2: Mechanism of Linkage between Asthma and GERD

**Table 1: Age distribution**

Age in year	Number(N)
18-30	49
31-40	40
41-50	31
51-60	20
>60	10
Total	150

is recommended in symptomatic Patients to control Asthma. Diagnosis and Symptoms of GERD were found more among the group of Asthmatics when compared to the general population.

### MATERIALS AND METHODS

In this segment represents the materials and methods of this research work. A prospective observational study showed in the Department of Respiratory Medicine and Departments of Medical and Surgical Gastro-Enterology. One hundred fifty endoscopically diagnosed GERD patients were recruited in this study which was accepted by the Institutional Human Ethical Committee. The selected patients were subjected to detailed clinical history, Spirometry, PEFR and chest x-ray. Data were analyzed using appropriate statistical methods.

### RESULTS AND DISCUSSIONS

In this segment focuses on the results and discussions of this research work. One hundred fifty subjects of endoscopically proven GERD patients were evaluated for the prevalence and types of Respiratory disability by detailed history, clinical examination, Chest x-ray, Peak Expiratory Flow Rate (PEFR) and Spirometry.

There was a male preponderance of 63% in our study. The majority (69.4%) of patients were under the age group of 18-30 years, and 48% of the subjects were overweight.

Predominant Respiratory Symptoms were Breathlessness 78%, Cough 69%, and Wheeze 65%. Nocturnal symptoms of GERD were reported in 59%, Predominant GERD Symptoms Epigastric Chest pain 81%, followed by Regurgitation 77%, Heartburn 76.67% and Belching 68%.

Endoscopic findings revealed 89% of Lax LES, Antral Gastritis was observed in 87% of the patients, 67% of subjects had Reflux Esophagitis, and 35% of patients were diagnosed to have Hiatus Hernia.

Out of 67% of subjects who had Reflux Esophagi-

tis, 29% had GRADE A reflux esophagitis followed by Grade B and C, which was 26% and 15% respectively.

48% of GERD patients were smokers, out of which 28.67% smokes more than ten pack-years, 19.33% smokes less than ten pack years.

On the correlation of symptoms of gastro-oesophageal Reflux Disease with the severity of Asthma and COPD, there exists no significant statistical correlation between any symptoms of GERD and severity of BA and COPD [28].

Bronchial Asthma and COPD in GERD were found to be 52.67% and 47.3% respectively. There was a co-existence of 14.6% of OSA and 6% of ILD in GERD patients with OAD respectively.

As regards the comparison of the severity of endoscopic findings of GERD with the seriousness of Bronchial Asthma, Majority (35.4%) had Grade B Reflux Esophagitis. Moderate Asthma was seen in all Grades A (65%), Grade B (78.5%) and Grade C (65%) of Reflux Esophagitis and correlation of severity of GERD and BA was shown to be statistically significant (p-value - <0.025)

11.39% of Bronchial Asthma patients had co-existing OSA in our study. Out of this, 66.6% had mild OSA, and 46.1% had severe OSA. Out of 6% Patients who had ILD 44.44% were found to be co-existing with Bronchial Asthma.

In our study of 47.33% COPD patients, 39% had Mild COPD, 7% had Moderate COPD, and 1.3% had severe COPD.

As regards the comparison of the severity of endoscopic findings of GERD with the severity of COPD, Majority (32.4%) had Grade A Reflux Esophagitis. Mild COPD was more predominant in Grade A and B Reflux Esophagitis with 86.9% and 63.3% respectively. The correlation of severity of GERD and severity of Bronchial Asthma was statistically significant (p <0.001)



## CONCLUSIONS

Finally, this work concludes that Bronchial Asthma and COPD were predominant Respiratory impairment in patients of GERD with the prevalence of 52.67% and 47.33% respectively in our study. There exist a significant correlation between Endoscopic Grading of GERD with Severity of BA and COPD. Since GERD is one of the potential risk factors for respiratory disorders, screening of all Patients of GERD is recommended for early diagnosis and optimum management.

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## Conflict of Interest

Authors declared no conflict of interest.

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