

# Acohort Observational Study on Acute Exacerbation of Chronic Obstructive Pulmonary Disorder in Smokers, Non Smokers and Ex-Smokers and It's Management

Harsha Temker

PharmD

**Abstract:** *Chronic obstructive pulmonary disease (COPD) is a leading cause of morbidity and mortality and the third leading cause of death in INDIA. Little is known about the management of COPD and impact of COPD on smokers, non smokers and ex-smokers. A retrospective case study of 30 patients with acute exacerbation of COPD has been made by collecting, analyzing and recording cases during ward rounds in Malla Reddy multispeciality hospital. Information on Past medication history and smoking habits were collected by approaching bedside patients. Results: Out of 30 patients 30% were females and 70% were males. Acute exacerbation of COPD was observed 40% in smokers, 33.3% non smokers and 26.6% ex-smokers, and the management follows ABC criteria that is antibiotics bronchodilators and corticosteroids and also oxygen inhalation and tnf inhibitors in few patients. And the other risk factors in non smoking individuals include lower socio economic status, pesticides and severe childhood respiratory infections. Acute exacerbation of copd is more in smokers followed by non smokers and ex-smokers respectively. And management includes inhaled bronchodilators, corticosteroids, antibiotics and oxygen inhalation.*

## 1. Introduction

COPD exacerbation is an important cause of morbidity and a leading driver of health-care costs. Recently published reviews about strategies to reduce exacerbations have focused primarily on pharmacologic therapies that reduce COPD exacerbations, including inhaled corticosteroids, long-acting beta-agonists and anticholinergics, but have commented little about the benefits of smoking cessation, perhaps because of a lack of published information. From a public health perspective, smoking cessation is the single most effective therapy for COPD and is associated with a decrease in symptoms, reduction in prevalent symptoms and improved health status. Smoking cessation is also the only therapy that has been clearly demonstrated to improve both the rate of lung loss and survival among patients with mild to moderate COPD. Unlike for all pharmacologic therapies for COPD, the cost-effectiveness of smoking cessation on a population basis has been rigorously evaluated and found to be cost-effective to cost-saving over time. We examined whether smoking status and the duration of abstinence from tobacco smoke were associated with a decreased risk of COPD exacerbations.

The overall goals of COPD management are to optimize pulmonary function, to prevent progression, to improve quality of life, and to prevent and reduce the frequency and severity of exacerbations. An exacerbation of COPD is defined as an event in the natural course of the disease characterized by a change in the patient's baseline dyspnea, cough, and/or sputum that is beyond normal day-to-day variations; is acute in onset; and may require a change in medication regimen. The most common etiologies of COPD exacerbations are bacterial and viral infections. Air pollutants, cigarette smoke, and noncompliance with medication can also result in exacerbations, although the

cause is never identified in about one-third of exacerbations. At present, exacerbations are diagnosed based upon the patient's clinical presentation. Pharmacological management of an acute exacerbation of COPD (AECOPD) includes rapid-acting bronchodilators; systemic corticosteroids; and, in select patients, antimicrobials. The goals of therapy are prevention of hospitalization or reduction in length of hospital stay, prevention of acute respiratory failure and mortality, resolution of exacerbation symptoms, and resumption of baseline clinical status and quality of life. Recommended strategies for preventing AECOPD include selection of and adherence to optimal pharmacological therapy, smoking cessation, pulmonary rehabilitation, and influenza and pneumococcal vaccination

## 2. Objective

- We sought to examine whether smoking status and the duration of abstinence from tobacco smoke is associated with a decreased risk of COPD exacerbations.
- To collect data on therapeutic pattern of management in patients with acute exacerbation of COPD

## 3. Methodology

### Subjects and data collection

60 cases with AECOPD were collected during ward rounds in tertiary care hospital. And complete information on co-variants, social habits and past medication history is taken through bed side patient counselling for 3 months. Treatment pattern for AECOPD is observed and analyzed

### Exposure and Outcome of Interest

As part from case collection, we asked patients to affirm whether they were either current, former or never smokers. Patients who were former smokers were requested to

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estimate the duration of tobacco cessation, categorized as less than 1 year, 1 to 5 years, 5 to 10 years, or 10 or more years. Patients who smoked were asked to acknowledge the intensity of tobacco smoke exposure in 10-cigarette increments up to 40 or more cigarettes/day

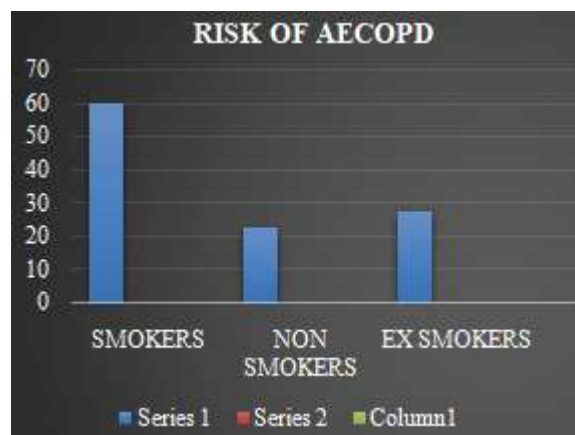
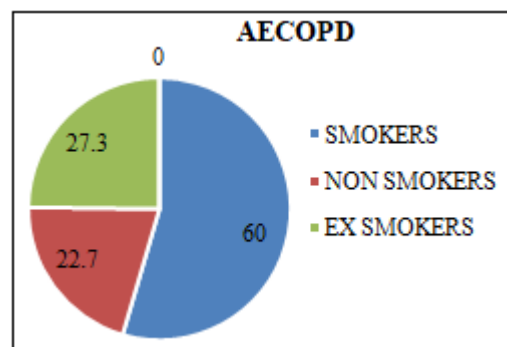
#### Covariates

Demographic and clinical covariates, including health behaviors, were obtained from case sheets and patient counselling. Demographic and health behavior characteristics included alcohol consumption, marital status, highest level of education and employment status.

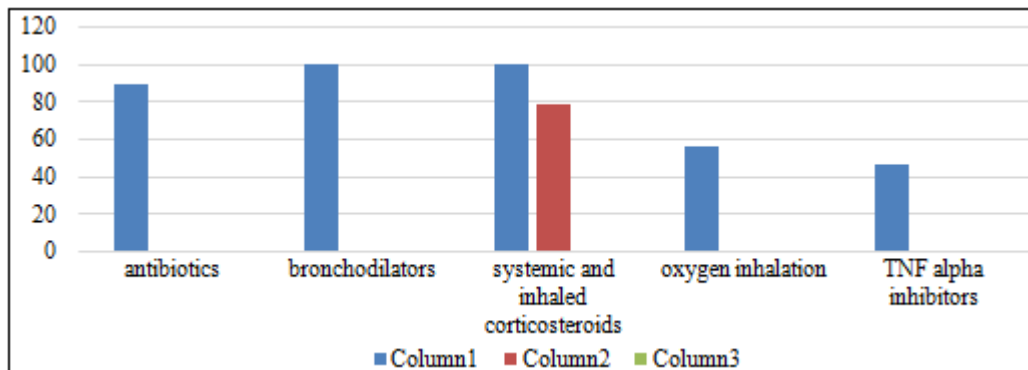
## 4. Results

Out of 60 patients 30% were females and 70% were males. Current smoking is strongly associated with risk of COPD exacerbations when compared with duration of smoking cessation, That is risk of COPD exacerbation was 60% in smokers, followed by 27.3% in ex-smokers and 22.6% in non-smokers.

Treatment pattern followed ABC rule which is antibiotics, bronchodilators and inhaled and systemic corticosteroids respectively. Other methods of management included pulmonary rehabilitation with oxygen inhalation and TNF alpha inhibitors like montelukast



Treatment included antibiotics in 90% patients, inhaled bronchodilators and corticosteroids in 100% patients systemic corticosteroids in 79% subjects, oxygen inhalation in 56% and TNF alpha inhibitors in 46%



#### Risk factors for AECOPD

- Frequent exacerbation phenotype (this group of patients is susceptible to exacerbations, irrespective of disease severity)
- Older age
- Poor health status
- Past history of hospitalized exacerbation
- Severe airflow limitation
- More severe depression and poorer cognition
- Greater inflammation
- Bacterial colonization of lower airways
- Presence of system disease/comorbidities
- Radiological evidence of emphysema
- Increased pulmonary artery diameter

## 5. Discussion

Our results have a potential basis in the known biology of tobacco smoke and COPD exacerbation risk. Tobacco smoke is a potent stimulant of the inflammatory response, and chronic inflammation has been suggested to contribute to COPD pathogenesis. The inflammatory response to tobacco smoke appears to be greater among people who are susceptible to developing COPD. Inflammation has been suggested as an important factor that may predispose individuals to increased risk of exacerbations. Recent data suggest that higher CRP concentrations, a general marker of inflammation, were associated with an increased risk of COPD exacerbations and mortality. In addition, similar studies have observed that markers of the host response to tobacco smoke may be important predictors of COPD exacerbations and symptoms. Inhaled corticosteroids that

modify these markers of inflammation have been demonstrated to reduce the risk of COPD exacerbation. Interestingly, among patients with severe COPD, inflammation has been demonstrated to persist years after smoking cessation. And there are few data about whether modification in the rate of airflow obstruction is similar to those individuals with mild to moderate disease. COPD exacerbations are an important cause of morbidity among patients with COPD. Recent strategies have focused on ways to decrease the rate of COPD exacerbations, primarily through pharmacological therapy or interventions. From a public health perspective, smoking cessation is an effective and cost-saving strategy, yet there are many payers of health care who do not pay for or only pay for very limited smoking cessation programs. Access to smoking cessation programs is relatively easy, with a number of quit lines and other telephone-based smoking cessation programs that do not necessarily require clinician referrals. Our data suggest that smoking cessation reduces the risk of COPD exacerbations. Greater efforts are needed to promote and facilitate access to smoking cessation programs and to understand the biologic changes that occur after successful smoking cessation.

## 6. Conclusion

It was observed that an increased risk of exacerbation associated with individuals who had reported stopping smoking for up to 5 years. This observation fits with previous studies and may be consistent with the hypothesis of improved ciliary function leading to increased sputum production, clearance and symptoms. However, there is also the possibility of an indication bias leading to this finding in that individuals who have smoked for long periods of time often have some factors predisposing to future exacerbations, such as increasing dyspnea or prior exacerbations. Acute exacerbations of COPD are associated with substantial negative impact on pulmonary function, morbidity, mortality, and increased health care costs. Rapid-acting bronchodilators, systemic corticosteroids, and antibiotics along with oxygen supplements and TNF alpha inhibitors are considered cornerstones of therapy for managing COPD exacerbations. Prevention of COPD exacerbations should be a key component of management. Recent guidelines emphasize several preventive pharmacological and non-pharmacological strategies to reduce or prevent exacerbations of COPD.

## References

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