

## A STUDY OF TRENDS AND PRESCRIPTION AUDITING IN THE PATIENTS OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN RAJINDRA HOSPITAL PATIALA

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Article Received on  
28 Jan 2016,

Revised on 18 Feb 2016,  
Accepted on 10 March 2016

DOI: 10.20959/wjpr20164-5903

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### ABSTRACT

Chronic Obstructive pulmonary Disease is defined as a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. Studying the prescribing pattern is that part of the medical audit which seeks to monitor, evaluate and if necessary, suggest modifications in the prescribing practices of medical practitioners, so as to make the medical care rational and cost effective, so this study was conducted to determine the prescription pattern and to look for any deviation in treatment from the standard Global Initiative for Obstructive Lung Diseases Guidelines (GOLD) 2011. **Method:** This cross-sectional and observational study was conducted in the Department of Chest & Tuberculosis at Rajindra Hospital, associated with Government medical college Patiala. A total of 250

patients were included in the study from September 2013 to March 2015. The enrolled cases were the diagnosed cases of COPD by Department of Chest & Tuberculosis Rajindra Hospital, Patiala, so the treatment part of GOLD Guidelines was evaluated. The Data Pertaining to Prescription of each patient was collected and was used to match with the standard guidelines (GOLD Guidelines). **Results:** In present study Chronic Obstructive Pulmonary Disease was more prevalent in males as compared to females as out of 250 patients 172 were males and 78 were females with Male: Female ratio of 2.47:1. The most common age group of disease occurrence was 51-60 years. The disease was more common in smokers with Smoker: nonsmoker ratio of 2.12:1. 46% patients were given Monotherapy, 48.4% patients were given Combination therapy and 5.6% patients were referred for surgical

intervention. **Conclusion:** The percentage compliance for Patient's treatment of Chronic Obstructive Pulmonary Disease given in the department of Chest and Tuberculosis, Rajindra Hospital, Patiala with GOLD Guidelines was 75.0%.

**KEYWORDS:** COPD, SABA, GOLD.

## INTRODUCTION

Studying the prescribing pattern is that part of the medical audit which seeks to monitor, evaluate and if necessary, suggest modifications in the prescribing practices of medical practitioners, so as to make the medical care rational and cost effective.<sup>[1]</sup> There is ample international evidence that poor quality prescription writing increases the risk of serious medication errors.<sup>[2]</sup> Research has confirmed that didactic sessions and passive Pharmacology sections are not effective means of modifying the prescriber's behaviour. Conversely, a combination of prescription audits and feedback is known to be a successful technique which improves the quality of the prescribing.<sup>[3]</sup>

Chronic Obstructive pulmonary Disease is defined as a preventable and treatable disease state characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and is associated with an abnormal inflammatory response of the lungs to noxious particles or gases, primarily caused by cigarette smoking. Although COPD affects the lungs, it also produces significant systemic consequences.<sup>[4]</sup>

Chronic obstructive pulmonary disease (COPD) is responsible for early morbidity, high death rates and significant cost to health systems. The projection for 2020 indicates that COPD will be the third leading cause of death worldwide (from sixth in 1990) and fifth leading cause of years lost through early mortality or handicap (disability-adjusted life years) (12<sup>th</sup> in 1990). Active smoking remains the main risk factor, but other factors are becoming better known, such as occupational factors, infections and the role of air pollution. Prevalence of COPD varies according to country, age and sex.<sup>[5]</sup>

In the simplest terms COPD can be considered a smoker's disease that tends to cluster in families and worsens with age. COPD is the end result of a number of host and environmental risk factors. There is some evidence that women may be more susceptible to the harmful effects of tobacco smoke than men.<sup>[6]</sup> Inhalation of occupational dusts can also cause COPD. The clinical importance of coal dust exposure has been studied in British

miners.<sup>[7]</sup> Respiratory symptoms have been related to the use of several domestic cooking fuels, such as kerosene and other fuels in India.<sup>[8]</sup>

### TREATMENT OF COPD ACCORDING TO GOLD GUIDELINES 2011<sup>[9]</sup>

Clinical Stage	Gold Stage	Inhaled Therapy	Non Pharmacological Therapy
Intermittent symptoms	Mild Stage 1	Short Acting Bronchodilator	Smoking cessation, Patient Education, Avoidance of exposure, Vaccination (influenza, pneumococcal)
Persistent Symptoms	Moderate Stage 2	Tiotropium+Albuterol (Or) Formoterol/Salmeterol+Albuterol, Ipratropium or combination	Pulmonary Rehabilitation (exercise prescription)
Frequent Exacerbations	Severe Stage 3	Tiotropium+Formoterol/Salmeterol+Inhaled corticosteroids.	-
Respiratory Failure	Very severe Stage 4	-	Supplemental oxygen, Lung volume reduction surgery, Lung Transplantation

The study was conducted with following aims and objectives:

1. To evaluate number of bronchodilators per prescription, route of Administration in patients of chronic obstructive pulmonary disease.
2. To evaluate the deviation in the treatment from the standard guidelines.

### MATERIAL AND METHODS

The Prospective, observational, open, cross sectional study was conducted from September 2013 to march 2015 after obtaining the approval from institutional ethics and research review board. A total of 250 patients of chronic obstructive pulmonary disease diagnosed by the Department of Chest and Tuberculosis, Government medical college, Patiala were enrolled. The patients fulfilling the inclusion criteria and having none of the exclusion criteria were enrolled in the study after obtaining written informed consent. Descriptive statistics was applied for the analysis of data. Data was expressed in proportion and percentages.

#### Patient Inclusion Criteria

- A diagnosed case of COPD by Department of Chest and Tuberculosis, Government medical college & Hospital Patiala.
- Patient more than 40 years of age.

- Exacerbations of COPD.

### Patient Exclusion Criteria

- Diabetic patients.
- Suspected or confirmed tuberculosis patient.
- Cardiac, gastrointestinal or hepatic insufficiency.
- Asthmatic patient.
- Age < 40 years.
- Immunocompromised.
- Pregnant and lactating females.

### RESULTS

In present study Chronic Obstructive Pulmonary Disease was more prevalent in males as compared to females as out of 250 patients 172 were males and 78 were females with Male: Female of 2.47:1. The most common age group of disease occurrence was 51-60 years as 92 patients were in this age group (36.8%) followed by 61-70 years age group 70 patients (28%) were in this age group, followed by 41-50 years age group 66 patients (26.4%) were in this age group and 50 out of 66 patients (76%) in this group were females suggesting early onset of COPD in females, followed by 22 patients (8.8%) in the 71-75 years age group.

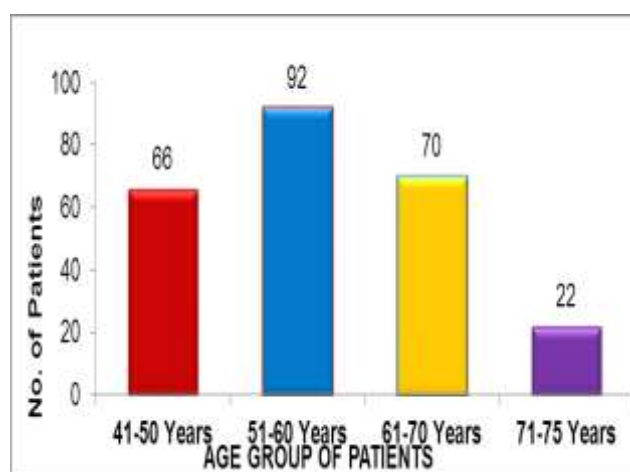


Fig. 1.

In this study out of 250 diagnosed cases of COPD, 170 were smokers and out of these 170 patients 165 were males and 5 were female patients and 80 patients were non smokers with Smoker: Nonsmoker of 2.12:1.

**TABLE-1: DISTRIBUTION OF PATIENTS ACCORDING TO SMOKING STATUS.**

Smoking Status	Male	Female	Percentage
Smoker	165	05	68.0%
Non smoker	13	67	32.0%
<b>Total</b>	<b>178</b>	<b>72</b>	<b>100.0%</b>

In the study 41.0% were admitted patients (i.e 103 patients out of 250 patients) and 59.0% were OPD patients (i.e 147 patients out of 250 patients). 115(46%) patients were graded as Mild COPD and were given SABA alone (monotherapy), 72(28.8%) as Moderate COPD and were given SABA+ Inhaled Corticosteroids, 49(19.6%) patients as Severe COPD and were given Inhaled Anticholinergic + LABA +Inhaled Corticosteroids combination +oral corticosteroids+ Oxygen Inhalation + Iv Antibiotics (combination therapy), 14(5.6%) patients as very severe Disease/ Respiratory failure, and were referred for surgical intervention. The most commonly Prescribed drugs were SABA in 187 Patients (74.8%)-MDI Salbutamol or MDI Terbutaline ,followed by Inhalational Corticosteroids prescribed in 121 patients (48.4%)- Budesonide or Fluticasone, followed by Antibiotics- Ceftriaxone/Tazobactam, Oral Corticosteroids- Deflazacort or Prednisolone and LABA MDI Salmeterol or MDI Formoterol in 49 Patients (19.6%) each.

**TABLE-2: DISTRIBUTION OF PATIENTS ACCORDING TO TREATMENT GIVEN.**

Grading	Treatment Given	No. of Patients	Percentage
Mild	SABA	115	46.0%
Moderate	SABA +Inhaled Corticosteroids	72	28.8%
Severe	Inhaled Anticholinergic + LABA/ Inhaled Corticosteroids + Oral Corticosteroids + O <sub>2</sub> inhalation+ Iv antibiotics	49	19.6%
Very Severe	Referred for Surgical Intervention	14	5.6%
	<b>Total</b>	<b>250</b>	<b>100%</b>

Percentage Compliance with GOLD Guidelines for COPD with respect to Patient grading into Mild, Moderate, Severe and Very Severe Disease was 100% and with Bronchodilator therapy was 100% in Mild, Severe and Very Severe Disease Category of Disease, while it was 0% in Moderate Severity of Disease as guidelines recommend use of SABA+LABA in moderate severity, while in our study only SABA were used.

**TABLE-3: PERCENTAGE OF COMPLIANCE WITH GOLD GUIDELINES WITH RESPECT TO BRONCHODILATOR THERAPY.**

Disease Severity	Bronchodilator (Present Study)	Guidelines	Percentage Compliance
Mild	SABA	SABA	100%
Moderate	SABA	SABA+LABA	0%
Severe	Anticholinergic+ LABA	Anticholinergic+ LABA	100%
Very Severe	Surgical treatment (Referred)	Surgical Treatment	100%

**DISCUSSION**

Overall highest incidence of COPD was seen in 51-60 years age group, 46% patients (115 out of 250) were given Monotherapy in the form of SABA alone, 48.4% patients (121 out of 250) were given combination therapy and 5.6% patients (14 out of 250) were not given any medical therapy as they were referred for surgical intervention. The difference lies in Moderate category of Disease as Guidelines mention use of SABA + LABA and in this study only SABA + corticosteroids were used. Therefore in this study, overall percentage compliance of the treatment of Chronic Obstructive Pulmonary Disease given in the department of Chest and Tuberculosis, Rajindra Hospital, Patiala with GOLD Guidelines is 75.0%. Masoompour et al also reported overall adherence to GOLD guidelines of 74% in a 360-bed teaching hospital in Shiraz, Iran in January 2011 to April 2012, reported a level of adherence to GOLD recommendations of 74%.<sup>[10]</sup> Sharif et al reported Among 450 subjects who met study criteria, 54.7% received GOLD guidelines-concordant treatment.<sup>[11]</sup>

**TABLE-4: COMPARISON OF COMPLIANCE TO GOLD GUIDELINES WITH RESPECT TO THERAPY IN VARIOUS STUDIES.**

Authors with year of Study	Overall Compliance
Present Study	75.0%
Masoompour et al. <sup>[10]</sup> (2012)	74.0%
Sharif et al. <sup>[11]</sup> (2013)	54.7%

**CONCLUSION**

Overall compliance with the GOLD guidelines 2011 with respect to treatment given in Department of Chest and Tuberculosis, Rajindra Hospital Patiala is 75.0%. The treatment given to the patients was as per GOLD Guidelines 2011 for Mild, Severe and Very Severe Disease, so the compliance was 100% in these patients, but the Moderate disease category patients were given SABA + Corticosteroids but as per Guidelines use of SABA + LABA is

warranted. Therefore the overall compliance becomes 75.0%. The reasons for 25% non adherence can be due to patients perception of the disease symptoms or physician's discretion to categorise the patient into a particular category of disease. Patients with COPD are generally older and require medication for other medical conditions. Polypharmacy is another common and important contributor to poor adherence. Adherence is also influenced by a patient's perception of the disease. Therefore further studies involving large number of prescriptions of Chronic Obstructive Pulmonary Disease are required to find the compliance of treatment with guidelines in order to avoid Drug resistance. There are clearly some areas where there could be improvement which would both be of benefit to patients and to the cost of providing their care in hospital.

## ABBREVIATIONS

**COPD-** CHRONIC OBSTRUCTIVE PULMONARY DISEASE.

**GOLD-** GLOBAL INITIATIVE FOR OBSTRUCTIVE LUNG DISEASES.

**LABA-** LONG ACTING BETA-2 AGONISTS.

**MDI-** METERED DOSE INHALER.

**SABA-** SHORT ACTING BETA-2 AGONISTS.

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