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DRUG USE IN COPD, PRESCRIPTION PATTERNS, AND COST OF MEDICATIONS IN A MULTISPECIALITY TERTIARY CARE HOSPITAL IN INDIA

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ABSTRACT

Introduction: Chronic Obstructive Pulmonary Disease (COPD) is a preventable and treatable disease that makes it difficult to empty air out of the lungs. COPD is a term that is used to include chronic bronchitis, emphysema, or a combination of both conditions. **Aims:** The aim of the study was to identify the most prescribed drugs in COPD, their patterns, cost of medications, and laboratory investigations. **Settings and Design**: This study was a cross-sectional, descriptive study of COPD patients conducted at a multispeciality tertiary care hospital Dehradun, Uttarakhand. **Subjects and Methods**: A total of 50 prescriptions were retrieved from the medical records unit over a period of 6 weeks. Information on COPD prescriptions was retrieved. The average cost of medications and laboratory investigations was calculated. **Results:** The mean age of the patients was 58.44 ± 12.65 years. Of the 50 patients, 5 (10%) were on monotherapy and 45 (90%) were on combination therapy. The various classes of drugs prescribed were antibiotics 96%, short acting beta 2 agonist 91%,anticholinergic agents 89%,inhaled corticosteroids 83%,methyl xanthenes 72%,systemic corticosteroids 71%, Long acting beta 2 agonist 26% and mucolytics 24%. **Conclusions:** The prescribing trend that was observed at the hospital appears to be in concordance with the current guidelines for the management of COPD patients. However the cost of treatment is indeed more than other hospitals.

KEYWORDS: COPD drugs, prescription patterns, co-morbidities, bronchodilators, mucolytics.

INTRODUCTION

Chronic obstructive pulmonary disease (COPD) is a common chronic disease of the airways characterized by the gradual and progressive loss of lung function. The prevalence and mortality of COPD have increased substantially over the past two decades. Although national guidelines for COPD management have been available for nearly two decades, questions were raised concerning their quality and supporting evidence. To standardize the care of patients with COPD and present evidence-based recommendations, the National Heart, Lung, and Blood Institute and the World Health Organization launched the Global Initiative for Chronic Obstructive Lung Disease (GOLD) in 2001.[1] This report was updated most recently in 2006. The goals of the GOLD organization are to increase awareness of COPD and reduce morbidity and mortality associated with the disease. International guidelines have also been developed through a collaborative effort of the American Thoracic Society and the European Respiratory Society and are widely available.[2] These two guidelines are generally concordant in their recommendations. The airflow limitation is usually both progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases. Although COPD primarily affects the lungs, it also is associated with significant consequences. Finally, COPD is preventable and treatable. Currently, there is renewed interest in evaluating the value of treatments and prevention based on the availability of new therapeutic options for pharmacotherapy and guidelines based on evidence.[3] Support for renewed optimism is also reflected in the availability of research funding to improve understanding about this disease and its management. This includes National Heart, Lung, and Blood Institute funding of Specialized Centers of Clinically Oriented Research programs in COPD, whose objective is to promote multidisciplinary research on clinically rele- vant questions enabling basic science findings to be more rapidly applied to clinical problems.[4] Current guidelines have moved away from chronic bronchitis and emphysema as descriptive subsets of COPD. This is based on the observation that the majority of COPD is caused by a common risk factor (cigarette smoking), and most patients exhibit features of both chronic bronchitis and emphysema. Therefore, emphasis is currently placed on the pathophysiologic features of small airways disease and parenchymal destruction as contributors to chronic airflow limitation. The airways of the lung and the parenchyma are both susceptible to inflammation and the result is chronic airflow limitation that characterizes COPD. Although the mortality of COPD is significant, morbidity associated with the disease also has a significant impact on patients, their families, and the healthcare system. A survey by the American Lung Association revealed that among COPD patients, 51% reported that their

condition limits their ability to work, 70% were limited in normal physical activity, 56% were limited in performing household chores, and 50% reported that sleep was affected adversely.[11] By 2020, COPD will be the fifth most burdensome disease, as measured by disability-adjusted life years lost as a consequence of illness.

SUBJECTS AND METHODS

This study was a cross‑sectional, descriptive study of COPD patients conducted at a Mutispeciality hospital, a (tertiary) healthcare facility in Dehradun, Uttarakhand India. The study was carried out by reviewing prescriptions of COPD patients seen at the clinic. Approval was obtained from the Ethics Committee. Prescriptions forthe COPD inpatients were provided by the Medical Records Department of the hospital.

Inclusion criteria

- Prescriptions of COPD inpatients treated between February 2017 and April 2017.
- COPD inpatients, male and female, between 20 and 90 years of age.

Exclusion criteria

- Patients whose prescriptions recorded other major comorbidity with COPD.
- Patients whose prescriptions did not record laboratory investigations.

A total of 50 prescriptions (total number of prescriptions that met both criteria) were retrieved by simple random sampling technique from the medical records unit over a period of 6 weeks between February and March 2017. The record of the drugs prescribed and laboratory costs was derived from the medical record department. In each patient's folder, demographic and clinical information including age, gender, and pattern of prescribed drugs for COPD were retrieved. For each prescription, drug name, number of drugs, dosage form, class and combinations, frequency of administration, duration of treatment, and cost of drugs were retrieved. The cost of drugs was obtained from the price list in the hospital pharmacy. The monthly cost of drugs based on recommended daily dose was calculated.

The cost of laboratory investigations conducted was also obtained from the hospital laboratory and computed together with the drug costs. Continuous data were presented as mean ± standard deviation (SD) while categorical data were presented as percentages.

Table 1: Sociodemographic characteristics of the patients.

Variable	Frequency	Percentage
n=100		
Age		
< 40 years	0	0
40-50 years	13	26
50-60 years	9	18
60-70 years	18	36
> 70 years	10	20
Gender		
Male	39	78
Female	11	22
Addiction		
Smokers	15	30
Alcoholic	14	28
Both	16	32
No addiction	11	22
Residence		
Rural	38	76
Urban	12	24

RESULTS

A total of 50 prescriptions were included in the analysis (Table1). The mean age of the patients was 59.22 ± 13.67 years. Maximum number of patients were under the age group of 60-70.The male: female ratio was 3.5:1.About 60% of the patients had some or the other addiction.76% of the patients were from the rural area. Of the 50 prescriptions, (60%) patients had comorbidity which included hypertension.

Sputum production, continuous cough and dyspnea were observed in 72%, 78% and 25% patients, respectively.

An infectious agent was identified in 40 patients, with sputum culture. Pathogens most commonly found were: Pseudomonas aeruginosa (62%), Chlamydophila pneumoniae (25%), and Mycoplasma pneumoniae (12.5%). Mixed infections were diagnosed in 9 patients.

In the present study, majority of the patients were on multidrug therapy during both hospital stay and at the time of discharge (Table2)

As per GOLD guidelines, systemic corticosteroids and antibiotics canshorten recovery time, improve lung function and arterial hypoxemia, and reduce the risk of early relapse; treatment failure and length of hospital stay.[1]

Cough was the most common symptom observed in 48 patients. Sputum production, fever, dyspnea, chest pain, anorexia, weight loss, sleep disturbance and fatigue were also observed. The combination therapy is must to counter these symptoms.

Table 2: Pattern of COPD prescriptions.

Drug category	No of patients receiving	Percentage
Antibiotics	48	96
Amoxycillin trihydrate+ Clavulinic acid		
Azrithromycin, Levofloxacin		
Short acting beta 2agonist	45	91
Albuterol		
Anti-cholinergic agents		
Ipratropium bromide	44	89
Inhaled Corticosteroids		
(Budesonide)	41	83
Methyl xanthines	36	72
(Deriphyllin)		
Systemic Corticosteroids	35	71

The frequency of prescription drugs for COPD were Antibiotics 96%, Short acting beta 2 agonist (albuterol) 91%, Anticholinergic agents (Ipratropium) 89% Methyl xanthines (Deriphyllin) 72%, Systemic corticosteroids (Methyl prednisolone) 71%, Long acting beta 2 agonist (Salmeterol) 26% and Mucolytics (ambroxol) 24%.

This prescribing trend appears to be in the management of COPDbn patients1. concordance with the current guidelines for.

This prescribing trend appears to be in concordance with the current guidelines for the management of COPD patients.[1]

DISCUSSION

Chronic Obstructive Pulmonary Disease is a frequently encountered chronic medical condition and is one of the most significant risk factors for morbidity and mortality.[12] The mean age of the patients in this study was 59.22 ± 18.67 years. This is consistent with other studies that COPD is mostly a disease of elderly people.[13] The higher proportion of males in this study is in agreement with other studies.[14] This may be due to the addictions to smoking and tobacco consumption. Antibiotics were the most commonly prescribed drugs either alone or in combination in this study.[15] The use of drug combination therapy was in about 90.1%. The comorbidity found in this study included hypertension and in some cases

congestive heart failure. The rising prevalence of COPD and the continually increasing expense of its treatment influence the prescribing patterns among physicians and patients compliance.[16] The cost of prescriptions has always made treatment difficult. In this study, the mean monthly cost of COPD prescriptions was Rs 500 per month. However, this cost is lower than that estimated in other tertiary hospitals and govt hospital in Dehradun. The difference observed in the mean monthly costs could be attributed to the relatively lower cost of drugs at the other hospitals.

CONCLUSIONS

Periodic evaluation of drugs cost pattern needs to be done to enable suitable modifications in the prescription of drugs to increase the therapeutic benefits and decrease the adverse effects. The prescribing trend that was observed at the hospital appears to be in concordance with the current guidelines for the management of COPD patients. Drug prescribing pattern aims to provide feedback and to create awareness about medicine. The demographic results of patients revealed that males are more affected because of their addictions to cigarette and tobacco. COPD is most common in the age group above 60 years. The brands of drugs given to the patients for COPD were less economic as compared to the local brands available in the market, that are being used in government based hospitals.

Bronchodilators, corticosteroids and antibiotics and were among the most commonly prescribed drugs for the management of an acute exacerbation in COPD patients, that was consistent with current guidelines.

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