ANALYSIS OF PRESCRIBING PATTERN OF DRUGS IN OBSTRUCTIVE LUNG DISEASES

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ABSTRACT

Introduction: Obstructive Lung Diseases (OLD) such as Asthma and Chronic Obstructive Pulmonary Disease (COPD) are common cause of morbidity and mortality in India. The approach to study drug utilization can be used as a tool to identify whether drug use is as suitable in treatment of individual subject. **Objective**: This was a Prospective study with the aim to analyze the drug prescribing pattern in obstructive pulmonary disease. **Method:** The study has been conducted on male and female patients who were satisfying the inclusion criteria. A well designed case record form was used to record all the essential data from the medical records of patients. **Result:** A sum of 125 patients was analyzed in our study. Out of that 94 were males and 31 were females and 94 were COPD patients, 30 were asthma patients and 1 patient with Asthma-COPD over lap syndrome (ACOS). Majority of prescription contained more than 3 drugs i.e multidrug therapy. Antibiotics were mostly prescribed (19.2%), followed by anticholinergics (18.70%), Short acting beta-2 agonists (18.10%), inhaled corticosteroids(17.20%), Methylxanthines(15.50%), systemic corticosteroids(6.90%), Long acting beta-2 agonist(4.10%). **Conclusion:** Obstructive Lung Diseases such as Asthma and COPD are prominent causes of death in the world. The majority of patients have intermittent exacerbations of Asthma and COPD due to the inadequate pattern of drug use.

KEY WORDS: Asthma, COPD, Prescribing pattern.

INTRODUCTION

Obstructive lung disease (OLD) implies a reduced capacity to get air through the conducting airways and out of the lungs. The airflow reduction may be due to the shrinkage of the airways (bronchospasm), a loss of airway integrity (bronchomalacia), or a lowering of elastic recoil (emphysema) with a resulting decrease in driving pressure.[1]

The obstructive lung diseases (OLD) are common and are associated with substantial morbidity. Obstructive lung diseases such as asthma and COPD are characterized by airflow limitation and chronic airway inflammation. Hence these diseases require long-term treatment, which may lead to irrational use of drugs that might lead to certain sequela. Drug utilization evaluation can be considered as an integral branch of pharmaco-epidemiological studies by which understanding of drug use as per the guidelines can be assessed.[2]

A lot of population are suffering from these chronic respiratory diseases. Hence it became very essential to spread a thorough awareness among patients in relation to medication and disease itself. So evaluation of drug utilisation pattern in asthma and COPD will provide a powerful tool in order to find depth of awareness in patients and physician. It can be used for the elucidation

of drug use pattern; identification of unjustifiable drug use; therapeutic interventions to be made; quality control cycle; and aids in the continuous quality improvement.[3,4]

According to World Health Organization (WHO), drug utilisation can be defined as the marketing, distribution, prescription and use of drugs in a society emphasising its medical, social, and economic consequences.[5] Screening of prescriptions and evaluation of drug utilization can identify the issues regarding drug use and helps in contributing feedback to prescribers to create awareness about irrational use of drugs.[6]

Drug utilization studies provide useful insights into current prescribing practices an can thus help in reforming and updating practices in clinical medicine and pharmacotherapy.[7]

India is an extensive country with enormous geographical, environmental, economical, racial, religious and socio- political diversities. These variations affect the incidence, prevalence as well as the management of chronic diseases. Chronic Respiratory Diseases (CRD) which are the most common cause of disease burden, both globally and in India. About 100

million individuals are victims of Chronic Respiratory Diseases/ Obstructive lung diseases.[8, 9]

METHODOLOGY
This Prospective study was initiated after obtaining Ethical clearance from the Institutional Ethics Committee, Mandya Institute of Medical Sciences and Teaching Hospital, Mandya. The required data for the Prospective study on prescribing pattern of drugs used in Obstructive Lung Diseases were acquired from General Medicine/TB and Chest Disease Department of Mandya Institute of Medical Sciences and Teaching Hospital, Mandya.

Inclusion Criteria: The subjects included in this study were of either gender aged 20 years or above, who have been diagnosed as suffering from obstructive pulmonary disease with or without comorbidities and admitted in the General Medicine/ TB and Chest disease ward during the study period.

Exclusion Criteria
➢ All patients who has undergone cardiovascular surgery.
➢ All pregnant women with Obstructive Lung diseases.

MODES OF OPERATION
• OLD cases (COPD and Asthma) from General Medicine/Tb and Chest Disease Ward of Mandya Institute of Medical Sciences and Teaching Hospital, Mandya were selected. Patients' detail was collected in a specially designed case record form (CRF) for the evaluation of drug prescribing pattern. Demographical details like name, age, gender and medical, medication, family and social histories were recorded. The other parameters noted were: Name of the drug, Dosage form, Route, Frequency and Duration of administration, Generic/Brand name and the number of drugs received by the individual patients during hospitalization. The medications prescribed for treating OLD were analyzed by using GOLD and GINA treatment guidelines. The gathered data were analyzed for different parameters statistically.

- **Data interpretation:** The mean age and standard deviation of the study population was calculated.
- All the cases were categorized based on gender and the percentage of each was presented.
- Social habits such as alcoholism and cigarette smoking history were recorded and their percentages were calculated.

• **Treatment pattern:** Treatment was given to the patient according their symptoms of disease were recorded. From this the most commonly used drugs and their preferred route of administration and the method of therapy (mono or combination therapy) were found out.

Analysis of data: Descriptive statistics was used for Data analysis. Graphs and tables were generated using Microsoft Word and Microsoft Excel. We have used simple percentage calculations to arrive at a conclusion of our study.

RESULTS AND DISCUSSION
A sum of 125 patients enrolled into this study. Out of which, 94 were COPD patients, 30 were asthma patients and 1 patient with Asthma-COPD over lap syndrome (ACOS).The patients were classified on the basis of Age, Gender, Social history, co-morbidities and drug use pattern. Among 94 COPD cases, there were 16 patients who were having only COPD and 78 patients with co-morbid conditions. And out of 30 Asthma patients, 10 were having only Asthma and 20 with co-morbid conditions. The mean age and standard deviation of the study population was calculated.

Table 1: Sociodemographic Parameters

	SOCIO-DEMOGRAPHIC PARAMETERS	
1	**GENDER**	
	Male	75.2%
	Female	24.8%
2	**MEAN AGE+ SD**	
	Total	63.6+12.24
	Male	65.87+10.71
	Female	64.09+11.58
3	**SMOKING HISTORY**	
	Smokers	52%
	Non smokers	44%
	Ex-smokers	3.2%
4	**ALCOHOLISM**	
	Alcoholic	16%
	Non alcoholic	83%
	Ex-alcoholic	0.8%
5	**DISEASE STATUS**	
	COPD	12.8%
	COPD Infective exacerbation	02.4%
	COPD + HTN	0.8%
	COPD + DM	1.6%
	COPD + DM + HTN	0.8%
	COPD + Corpulmonale	5.6%
	COPD +Corpulmonale + Type 2 Respiratory Failure	6.4%
	COPD + Old koch	4.8%
	COPD + CV Disease	4.8%
	COPD + GI Disease	5.6%
	COPD + Multiple Disease	22.4%
	COPD + HIV	1.6%
	COPD + Other Lung diseases	5.6%
	ASTHMA	08%
	Asthma + HTN	4.8%
	Asthma + DM	22.4%
	Asthma + Corpulmonale	0.8%
	Asthma + TB	0.8%
	Asthma + Multiple disease	6.4%
	Asthma + Seizure	0.8%

PATTERN OF DRUG USE IN ASTHMA AND COPD

Among 125 prescriptions, it has been seen that all the prescriptions contained more than 3 drugs which is in accordance with the previous study done by Aswathy Unni *et al.,* Drug utilization pattern in chronic obstructive pulmonary disease inpatients at a tertiary care hospital. The prescription of more than 3 drugs (multidrug therapy) for one patient may suggest the possibility of some patients presenting with acute and chronic exacerbation of COPD and Bronchial Asthma with or without co-morbid conditions, which requires antibiotic and corticosteroid treatment. This prescribing practice may be adopted to achieve the goals such as: to minimize symptoms, to prevent recurrent exacerbations, to reduce the need for hospitalizations and to maintain near normal pulmonary function.[7]

Among COPD and Asthma, the class of drugs observed, antibiotics were mostly prescribed (19.2%), which was similar to the previous study done by Sharon Sunil *et al.,* Drug utilization evaluation in chronic obstructive pulmonary disease patients- a prospective study which revealed 42% use of antibiotics in COPD patients[4]. This may be an indicator for the existence of infections in patients with obstructive lung diseases. Ceftriaxone was commonly prescribed antibiotic [FIG 3]. Antibiotics was followed by anticholinergics(18.70%), Short acting beta-2 agonists (18.10%), inhaled corticosteroids(17.20%), Methylxanthines(15.50%), systemic corticosteroids(6.90%), Long acting beta-2 agonist(4.10%)and antitussives (0.30%) [FIG 1]

Deriphylline was the drug which was given for majority of patients (71.20%), followed by Budesonide (64.80%), Ceftriaxone (56%), Cefotaxim (34%), Hydrocortisone (24%), Dexamethasone (22.40%), CPM (13.60%), Salbutamol (12%), Aminophylline (9.60%), Levofloxacin (6%), and Azithromycin (4%) [FIG 2].
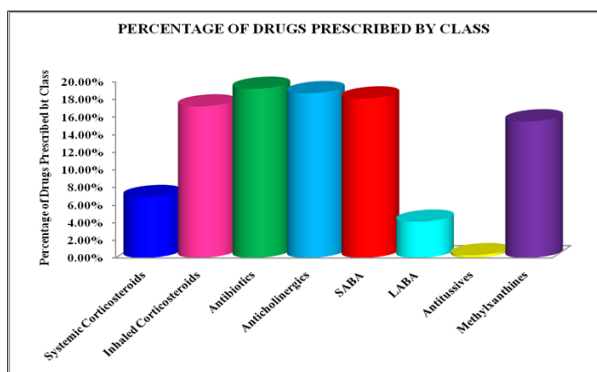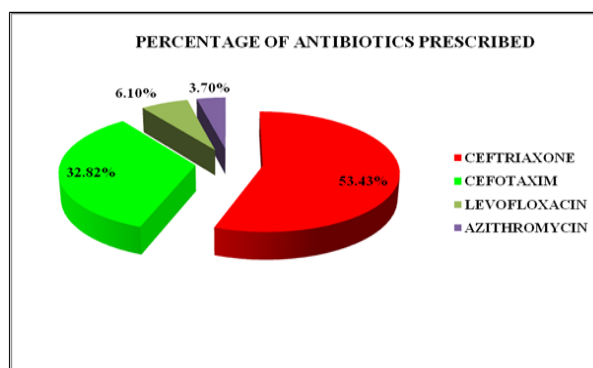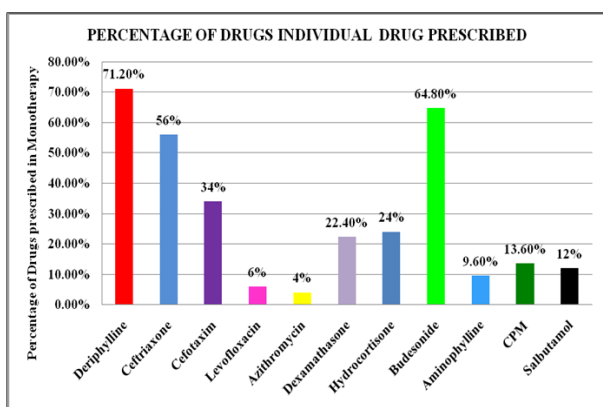
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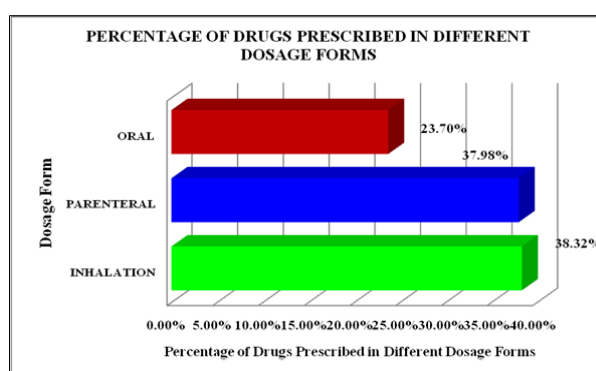

Figure 3

Figure 2

Figure 4

It was found that antibiotics were given to all the patinets enrolled into this study [FIG 3]. Our study also revealed that inhalation route (38.32%) was most preferred over parenteral (37.98%) and oral route (23.70%) [FIG 4]. Nebulization was given to 111 patients (88.88%) [FIG 5]. Oxygen inhalation was given to 43 patients with OLD out 125,i.e 34.4% of study population has received oxygen therapy.

Majority of the patients were prescribed with fixed dose combination therapy. Salbutamol sulphate+ Ipratropium Bromide (23.19%), Salbutamol sulphate+ IpratropiumBromide+Budesonide(42.23%),Budesonise+ Formeterol(5.90%),Etophylline+Theophylline(19.47%), Dextromethorphen+HBr+Phenylephrine+Cpm+Menthol (0.87%), Bromhexine+ Guaiphenesin+ Terbutaline+ Menthol (4.15%), Beclomethasone+ Levosalbutamol (0.21%), Ambroxol+Levosalbutamol (0.87%), Theophylline+ Ethylenediamine (2.61%) were the drugs prescribed in combination [FIG 5].

Antacids (76%), Multivitamins (8.1%) and NSAIDs (3.9%) were given to the patients as adjuvant therapy. Among the antacids Pantoprazole (40.3%), Ranitidine (33. 6%) and Omeprazole (2.1%) were prescribed. Paracetamol (80.2%) and Diclofenac (19.8%) were the NSAIDS given for pain management. 8.1% patients were prescribed with multivitamins.
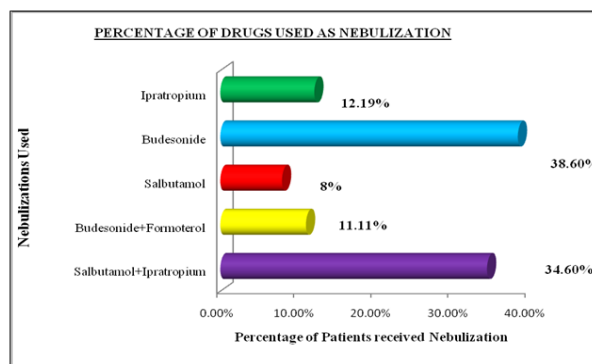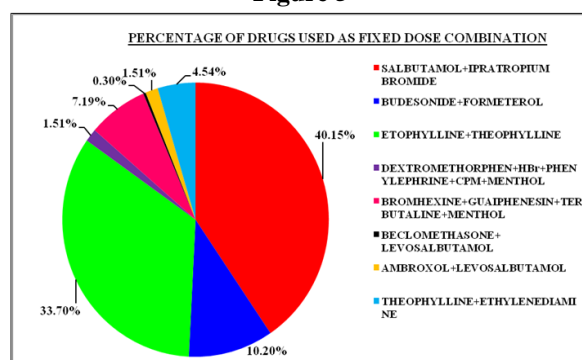

Figure 5

Figure 6

CONCLUSION
A Prospective study was conducted in Mandya Institute of Medical Sciences and Teaching Hospital, Mandya to study about the prescribing pattern of drugs in Obstructive lung diseases. In our study, we observed

that, the incidence of asthma was common in females and COPD was more common in males. The study population was treated with combination drugs and multidrug therapy out of which inhalation route was the most preferred one. According to Asthma treatment guidelines, inhalational therapy should be first choice. It was identified that the drug use is according to their availability and physician's preference. Majority of the patients had intermittent exacerbations of asthma and COPD which implies that the pattern of drug use is inadequate. In order to achieve total control of asthma and COPD, GOLD and GINA guidelines can be followed while prescribing the drugs.

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CONFLICT OF INTERESTS

No conflicts of interests exist.

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