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# Assessment of prescribing patterns of drugs used in adult asthma patients at a tertiary care hospital.

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### Abstract

**Introduction:** The present study assessed the prescribing pattern of drugs usage inadult asthma patients at a tertiary care hospital. Also, patient's knowledge regarding drug schedule and various drug delivery devices was also assessed. **Methodology:** The patients were interviewed on the predesigned questionnaire. The details needed for this study were noted down. The questionnaires were analyzed to obtain the drug utilization pattern after the completion of the study. **Results:** A total of 81 prescriptions of adults attending the Department of Respiratory Medicine were analyzed. Maximum patients were of the age group between 16 – 30 yr (42%). Of total 81 patients, Asthma was diagnosed as Mild persistent (26%) and Moderate Persistent (74%). Total 235 drugs were prescribed in 81 prescriptions. Average number of drugs per prescription was 2.9. The overall utilization of anti-asthmatic drugs among adults were found to be Beta-2 Agonists (89%), Inhaled Corticosteroids (74%), Methylxanthines (58%), Leukotriene Modifiers (23.4%) and Anticholinergics (17.3%). Out of total 235 drugs, 66% of drugs were prescribed by oral route and rest 34% by inhalational route. Encounter with antibiotics was found to be 67%. All the drugs prescribed were by their brand names.

**Conclusion:** The overall utilization of anti-asthmatic drugs among adults was found in to be: Beta-2 Agonists (89%), Inhaled Corticosteroids (74%), Methylxanthines (58%), Leukotriene Modifiers (23.4%) and Anticholinergics (17.3%).Knowledge regarding spacers, meter dose inhalers and asthma control action plan was also found to be satisfactory.

Keywords: Asthma, Spacers, Meter dose inhalers, Asthma control action plan

# Introduction

Asthma, affecting more than 300 million individuals all over the world is a serious health and socioeconomic issue. It is considered to be an inflammatory airway disease, which leads to airway hyperresponsiveness, obstruction, hyperproduction of mucus and remodeling of airway walls [1].Bronchial asthma is a recurrent but reversible obstruction of the airways. Studies have shown that the prevalence of asthma is in the range of 1% to 20% of the population in any country [2]. Over the last 25 years, the increase in asthma prevalence is likely due to changes in our environment or lifestyle because modifications in our genetic makeup to occur, it would take more than several generations [3].Worldwide, asthma cases are increasing at a rate of 50 per cent every decade, and according to the World Health Organization, by the year 2020, asthma, along with chronic obstructive pulmonary disease (COPD) will become the third leading cause of death. An estimated 300 million people in the world currently have asthma and there may be an additional 100 million persons with asthma by 2025[4].Long-term treatment is generally required for an effective management, which has an effect on the cost of the therapy and patient's compliance [5].

Drug utilization research facilitates the rational use of drugs in populations. The prescription of a well-documented drug at an optimal dose, along with the correct information and at an affordable price altogether counts as the rational use of the drug. It is difficult to initiate a discussion on rational drug use or to suggest measures to improve prescribing habits without knowledge of how drugs are being prescribed and used.

The present study evaluated the pattern of drugs usage in adult asthma patients at a tertiary care hospital. Also, patient's knowledge regarding drug schedule and various drug delivery devices was also assessed.

# **Materials and Methods**

### **Study Design:**

The study was a Prospective, Open Labeled and Descriptive Survey conducted using a specifically designed questionnaire. Necessary approval from the Institutional Ethics Committee was obtained before initiating the study.

It was conducted in the Department of Respiratory Medicine, MGM Hospital, Kamothe, Navi Mumbai, India between the periods of April 2012 to March 2013.

### **Sample Size:**

The study included 81 patients who confirmed to the following predetermined inclusion and exclusion criteria.

## **Inclusion Criteria**

1) Patients of either sex.

2) With the age range above 16 years but below 75 years.

3) Patients with bronchial symptoms or diagnosed asthma.

4) Willing to be enrolled in the study with consent.

## **Exclusion Criteria**

1) Patients who were below 16 years

2) Patients who were suffering from other systemic disorders (Heart disease, Cancer, Tuberculosis)

### Questionnaire

A brief questionnaire was designed specifically for the study. It included the OPD number, demographical details, patient's name, age, sex, chief complaints, environmental determinants, history of asthma, severity and the current status of asthma. The details of the drugs prescribed (dose, route, frequency, duration) and knowledge regarding drug usage, schedules were noted in the questionnaire.

### Method

Once the consultation with the General Physician / Resident was over, the prescriptions were collected and necessary details were noted on the questionnaire. The patients were also interviewed on the predesigned questionnaire. The details of the drugs prescribed were noted down. The prescriptions were returned back to the patients after noting down the required parameters.

After the completion of the study, the questionnaires were analyzed to obtain the drug utilization pattern and the knowledge regarding the disease and drug devices and schedules was also assessed.

exclusion criteria. The study was conducted between April 2012 to March 2013 at MGM Medical College and Hospital, Kamothe/

The various parameters analyzed are as follows:

### 1. Age and gender:

The patients were divided into four classes as per the age-group. Most of the adult patients suffering from asthma were found in the age group of 16-30 yrs. 47 (58 %) of the patients were men and 34 (42 %) were women. The data are converted into their respective percentages and are shown in **Table 1** below.

### Results

During the study, 81 asthma prescriptions were included for data analysis as per inclusion &

Age	Male	Female	Total	Total (%)
16-30	20	14	34	42
31-45	11	9	20	24.7
46-60	9	7	16	19.7
61-75	7	4	11	13.6
Total	47	34	81	
Total (%)	58	42		100

### Table1: Age and Gender Distribution in Adult Patients

# 2. Grading of asthma severity (% of patients):

Among total 81 adult asthma patients, 21 (26%) were of Mild Persistent type and 60 (74%) were

suffering from moderate persistent asthma. There were no severe asthma cases detected in the study groups. The same is shown in (Table 2) below.

### Table 2: Asthma severity distribution in the study

Severity	Total	Percentage (%)
Mild Persistent	21	26
Moderate Persistent	60	74
Severe Persistent	0	0
Total	81	100

### **3. Prescribing indices**:

Average drugs per patient were found to be 2.9. A total of 7.4 %, of all the patients were treated with a single anti-asthmatic drug (monotherapy) excluding other concomitant medications used together. Rest 92.6 % adult asthmatic patients were treated with anti- asthmatic drug

combinations (Fig. 1). The results of this study showed that most of the patients received multiple drug therapy as compared to a single drug therapy. Three drug combinations (67.9%) were more common than other combination (Table 3). All the drugs were prescribed by their brand names. Antibiotics were prescribed in 66.67 % asthmatic patients.



### Fig.1: Anti-asthmatic monotherapy and combinations prescribed

Parameters	Details		
Total no. of prescriptions	81		
Total no. of drugs prescribed	235		
Average drugs per prescriptions	2.9		
No of Drugs prescribed (Only Antiasthmatics, excluding other concomitant drugs used together)	Single antiasthmatic drug	6 (7.4)	
	Drug Combinations	75 (92.6%)	
No. of drugs including concomitant	2 Drugs	17	(20.99%)
drugs also	3 Drugs	55	(67.9%)
	4 Drugs	9	(11.11%)
	5 Drugs	0	
Encounter with Brand Names	81	(100%)	
Encounter with Antibiotics	54	(66.67%)	
Concomitant Medications Beside Antiasthmatics		Azithromycin, Ambroxol, Levocetrizine, Bromhexine	

### Table 3: Prescribing indices among adult asthmatic patients

#### 1. Drugs used in asthma

The overall utilization of anti-asthmatic drugs among adults were found to be Beta-2 Agonists (89%), Inhaled Corticosteroids (74%), Methylxanthines (58%), Leukotriene Modifiers (23.4%) and Anticholinergics (17.3%).

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	Asthma patients		
	Total	Percentage (%)	
Beta-2 Agonists (Total)	72	89	
Inhalational Steroids (ICS)	60	74	
Mast Cell Stabilizers	0	0	
Leukotriene Modifiers	19	23.4	
Anticholinergics	14	17.28	
Methylxanthines	47	58.02	

#### Table 4: Pattern of Drugs used in Asthma

### 2. Route of Drug

Out of 235 drugs prescribed,155 (66%) were prescribed with oral dosage forms and rest 80 (34%) via inhalational route (Fig. 2).





# 3. Knowledge regarding usage of Drugs/devices:

The level of knowledge in patients regarding drug schedule, spacer and asthma control plan is depicted in Fig. 3.



Fig. 3: Knowledge regarding usage of Drugs/devices among asthma patients

### Discussion

The objective of the current study was to evaluate the pattern of drugs usage in adult asthma patients at a tertiary care hospital. Beside this we also aimed to assess the patient's knowledge regarding drug schedule and various drug delivery devices. After prescription analysis, it was found that asthma was reported More in male patients (58%) as compared to females (42%). Majority of the prescriptions analyzed were in the age group 16-30 years (42%). Of total 81 patients, asthma was diagnosed as Mild persistent (26%) and Moderate Persistent (74%). There were no cases of severe persistent asthma encountered in the study.

Average drugs per patient were found to be 2.9. A total of 7.4 %, of all the patients were treated with a single anti-asthmatic drug (monotherapy) excluding other concomitant medications used together. Rest 92.6% asthmatic patients were treated with anti- asthmatic drug combinations.

Our study is also supported by the study by Arumugam V et al, where the investigators reported that 84% asthmatic patients were on multiple drug therapy and only 16% patients were on single drug therapy [6]. Further, in the study by Shimpi et al, it was found that the percentage of single drug therapy was little higher than our study where it was 24% and the rest 76% were treated with multiple drug therapy.[7]

Pattern of drug prescription in adult asthmatics showed the highest usage of Beta-2 Agonists (89%), Inhalational Corticosteroids (74%), Methylxanthines (58%) and Anticholinergics (17.3%). These findings were in agreement with the study by Patel et al. conducted in the urban and rural area of Gujrat, India [8]. They also reported that the Beta-2 agonists were the highest used drugs followed by Corticosteroids and Methylxanthines. Our result is in contrary to study done by Arumugam V et al.where Methyxanthine class of antiasthmatic drugs (80%) was found to be among the maximum used category [6].

This study found that 66% patients were prescribed with oral dosage forms and 34% via inhalational route. The study by Shimpi et al is also in same line which reported that 54% antiasthmatic drugs were prescribed orally, 34% by inhalation and 12% by other parenteral routes[7].

Also 79% of the patients were aware of the drug schedules. Knowledge about spacers, meter dose inhalers and asthma control action plan was also found to be satisfactory.

# Conclusion

The overall utilization of anti-asthmatic drugs among adults was found in to be: Beta-2 Agonists (89%), Inhaled Corticosteroids (74%), Methylxanthines (58%), Leukotriene Modifiers (23.4%)and Anticholinergics (17.3%). Knowledge regarding spacers, meter dose inhalers and asthma control action plan was also found to be satisfactory. Still necessary steps need to be taken towards proper education and awareness regarding the disease and its management.

Prescribing with brand names and high use of antibiotics are the matters to be concerned about.

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