

# Assessment of the Drug Use Evaluation for Bronchial Asthma in a Tertiary Care Hospital, Bangalore, India

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## Abstract

**Objective:** To assess the drug utilization evaluation for bronchial asthma in a tertiary care hospital, Bangalore. **Methodology:** This was a prospective observational study carried out for in-patients in the department of general medicine. Data collection form was prepared based on the requirements of the study which includes patient demographic details and patient medical and medication detail the specific types of data necessary for the study were recorded for each patient encountered and entered directly into the form. A total of 150 inpatients were enrolled in the study and their prescriptions were studied for the data collection. All data were entered into a computer into a computer spreadsheet: Microsoft Excel and double checked before the calculations were done. Computations of drug use pattern were carried out as earlier described. Following literature review, the drug use evaluation for bronchial asthma from this study were compared with those obtained in previous similar studies. **Result:** The present study was carried out for a period of six months in a tertiary care hospital Bangalore. A total of 150 patients were enrolled in the study for the evaluation of drug utilization. Out of 150 patients 61.33% (n=92), were males and 38.16% (n=58), were females. In the present study was also found that the patients were having different symptoms such as 50%, of patients having shortness of breathing, 33.3% were having wheezing, 23.33% of cough with sputum, 16.66% were having chest tightness, 10% were having dry cough, 6.66% were having headache, 16% of night awakening, 16.66 of the patients were having interference of normal activity. Majority of the asthma attack was found in the patients of age group between 30-41 age of years, that is 38%. 72.665 of total patients were in the severity grading of mild intermittent asthma. Majority of patients were having habits of tobacco smokers 30% and alcoholism 16.66% only 38.66% of total were non users of alcohol or tobacco smoke. The commonly prescribed anti asthmatics were SABA 86.66% corticosteroids 5.36%, antihistamines 31.33%, methylxanthines 6.66%, LT receptor antagonist 4.66%, and anticholinergics were Salbutamol with ipratropium 54% and salbutamol with beclomethasone 17.33%, budesonide with formoterol 9.335, and salbutamol + fluticasone. **Conclusion:** In the present study, majority of patients were in the severity grading of mild persistent group. The social history of the patients helps to find out the cause of asthma attack, which included the alcoholics and tobacco smokers. An alleviating the use of tobacco smoking helps to reduce the asthma attack. Tobacco smokes may adhere to the moist airways of the patients and it leads to the damage of cilia, which helps to sweep out the mucus and dust out of the airways. The commonly used anti asthmatics were beta2 agonist and corticosteroids followed by antihistamines and methylxanthines in the monotherapy. Fixed dose combinations used commonly are salbutamol with ipratropium bromide and salbutamol with beclomethasone.

**Keywords:** Drug Use Evaluation, Bronchial Asthma, Social Habits, anti-asthmatics

## INTRODUCTION

Asthma is a chronic disease of the airways characterized by exacerbation of significant bronchospasm and airways inflammation. Mostly children are affected by this disclose nearly five million and its prevalence with age, ethnicity, socioeconomic factors, and Chan lifestyle. The main motive of such studies is to get more exposed to use of anti-asthmatic, drug interaction, adverse drug reactions (ADR), if any, regarding compliance and proper counselling [1]. This chronic inflammatory disease of the airways, involves activation of mast cells, infiltration of eosinophils and T helper 2 (TH2), lymphocytes. Such kind chronic inflammation in this disease the pathway is not yet clear. Morbidity and mortality have been shown in many countries that is [2] for the asthma, which considered as high levels with such readings and analyzing data. Hence the symptoms vary in children widely from 1-6% in Indonesia, according to

National Prevalence of Asthma and in UK [3]. And a major problem is several European countries because of under treatment is (10-16%) and beyond 7,17-19. Other than under diagnosed and under treatment, the prescription related is big concern in the UK that is about 7% of all the National Health

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Service (NHS) prescription of asthma. Drug utilization as the marketing, distribution, prescription and use of drug in a society by considering all its medical, social and economic factors, all was addressed by the world health organization (WHO) [4]. Certain countries like USA, local health programs. drug utilization research has been primarily developed at institutional level, which reveals the prescription habit of the prescribers. Studies on drug utilization evaluation helps in assisting the consequences of related to the prescribing, dispensing, administering of medicine and its associated adverse effects. That is why the interest of drug utilization review studies began on both sides of the Atlantic in the early 0691s and its still increasing and importance of such kind of studies increased due to the abundant demand in the marketing of newer drugs and concern about their advertisement effects, increase in volume of prescriptions, growing cancer regarding cost of drugs and the increased in variations in prescriptions by the health care providers [5]. Asthma is an incessant incendiary issue of the aviation routes described by bronchial hyper-responsiveness and wind stream constraint that may shift in seriousness and recurrence from individual to individual. The manifestations of asthma incorporate repetitive scenes of wheezing, windedness, chest snugness and hack [6]. The trademark pathophysiological changes in asthma include a few incendiary cells and arbiters that add to indications. In India, asthma is known to be one of the significant reasons for dismalness and mortality, including around 3–11% of grown-ups and 3–5% of Pediatrics populace. [7]. Asthma affects more than 25 million people in the United States [8]. Asthma treatment aims at (1) reducing inflammation with inhaled corticosteroids (ICS), (2) relaxing airway smooth muscle (ASM) with inhaled bronchodilators, (3) minimizing exposure to allergic triggers, (4) modifying the allergic response, (5) addressing confounding comorbidities, such as anxiety, rhinosinusitis, vocal cord dysfunction, obesity, and gastroesophageal reflux disease, as well as smoking, and (6) patient education. Despite these measures, around 5% to 10% of patients will have persistent symptoms [9]. Unfortunately, such patients will have substantial morbidity and mortality and increased health care use, as well as decreased quality of life [6]. According to the recent guidelines of European Respiratory Society and American Thoracic Society, severe asthma is defined as asthma that requires treatment with high-dose ICS as well as a second controller, including the possible use of systemic corticosteroids; symptoms can be either controlled or uncontrolled with such therapy. It is important to recognize that severe asthma represents a heterogeneous group of multiple phenotypes and, thus, treatment is tailored according to the underlying pathophysiologic mechanism(s) contributing to such illness [10]. Asthma is a perceived clinical issue on the planet, and the world wellbeing association positions it as one of the four significant unmanageable sicknesses. The principle neurotic premise of bronchial asthma is aviation route unfavorably susceptible aggravation, which is for the most part penetrated by pole cells, eosinophils and T lymphocytes. Other studies have shown that the immune disorders are one of the key factors in the

development of the disease [11]. The present study was done to assess the drug utilization evaluation for bronchial asthma in a tertiary care hospital, Bangalore.

## MATERIALS AND METHODS

This was a prospective observational study carried out for in-patients in the department of general medicine. An approval from the institutional ethical committee was obtained prior to the study. Data collection form was prepared based on the requirements of the study which includes patient demographic details and patient medical and medication detail the specific types of data necessary for the study were recorded for each patient encountered and entered directly into the form. A total of 150 inpatients were enrolled in the study and their prescriptions were studied for the data collection. All data were entered into a computer into a computer spreadsheet: Microsoft Excel and double checked before the calculations were done. Computations of drug use pattern were carried out as earlier described. Following literature review, the drug use evaluation for bronchial asthma from this study were compared with those obtained in previous similar studies. The study data were analyzed by using statistics such as average and percentages.

## RESULT AND DISCUSSION

Total 150 patients were enrolled in the study in a tertiary care hospital, Bangalore during period of six months. Out of 150 patients and 61.33% (n=92) were male patients and 38.66% (n=58) were females" patients. This is similar to the findings in comparison with the study conducted by Maqusood et al. [12] in south India and similar to the study carried out by Prasad et al in Easter India that is 66.10% of male and where as 33.99% were females. Out of 150 patients, 38% of patients were between the age groups of 30-41 of age and then followed by 18-29 age of year and 42-53 age of years that is 22%, adult onset asthma is caused due to the tobacco chewing, smoking cigarettes, or other environmental imitates After the middle age, changes in muscles or stiffening of chest wall may be the reasons for adult onset asthma. The study conducted by Michael et al [13] was having similar findings with the current study.

Out of 150 patients, 50% (n=75), of patients showed symptoms of a shortness of breath 33.33% of patients had wheezing, 23.33% (n=35), had cough with sputum, 16.66% (n=25), of patients had chest tightness and 10% (n=15), had dry cough and similar (n=10) were having headache. The study findings of Awanish et al [3], shows similar asthma symptoms and the symptoms of the asthma helps to determine the Severity of asthma, which helps to classify severity grading. The parameters help to know the current impairment of the patients and also can prevent the future risk. The severity grading is done by assessment of the symptoms by the patient. The symptoms are night time awakening, interference with normal activity SABA use for symptoms control, normal FEV<sub>1</sub> should be greater than 80% of the predicted. Only 2% (n=3), of patients was in sever persistent

condition 7.33% (n=11), in moderate persistent, 18% (n=27), mild persistent and 72.66% (n=109), was in mild intermittent grade. The study conducted by Binu et al [14], finding similar in comparison to the findings of the present study. Table 1, 2

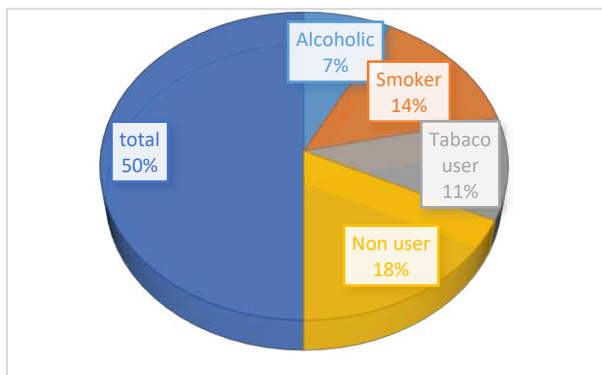
**Table No 1: Asthma Symptoms**

Asthma symptoms	Number	Parentage (%)
Shortness of breath	75	31.9
Wheezing	50	21.3
Cough with sputum	35	14.9
Chest tightness	25	10.6
Dry cough	15	6.4
Headache	10	4.3
Night awakenings	25	10.6
Total	235	100.0

**Table No 2: Severity Grading of Asthma**

Severity grading	Parentage (%)
Severe persistent	2.0%
Moderate pain	7.3%
Mild persistent	18.0%
Mild intermittent	72.7%
Total	100.0%

The social history consists of the habits of patients such as alcoholic, smokers, tobacco users. This is a vital parameter because irritating substances like tobacco smoke or chewing can settle in the lining of the airways which is moist, this may lead to an attack in a person who has asthma. Tobacco can damage the cilia, a hair like structure in the airways which helps to sweep the mucus and dust out of the airways. The present study shows that 30% (n=45), of the patients were having the habit of smoking and. 16,66% (n=25), were alcoholics while 23.33% (n=35), were tobacco users were 38.66 (n=58%). But the present study findings were less in comparison to the study findings of Srivastava et al, which was 69% of total patients were alcoholics and tobacco smoke habits. **Figure 1**



**Figure 1: Social History of the Patients**

Out of one hundred fifty (150) patients, 86.66% (n=130), of total patients were prescribed with SABA and 30% (n=54), were administered with corticosteroids 31.33% (n=47), were having antihistamines, 6.66% (n=10), were used methylxanthines, 4.66% (n=7), LT receptor antagonist and 2.66% (n=4), of anticholinergics. This is similar to the study findings of Ademola et al, where the patients were prescribed with beta2 agonist, followed by corticosteroid but the study conducted by Ademola et al. [15], found that 75.9% of total patients were prescribed with methylxanthines. The present study persistent grade severity of asthma and SABA is the drug of choice which adhere the national guidelines of asthma. Table 3

**Table No.3: Commonly Prescribed Anti-Asthmatic Drugs**

Anti-asthmatic drugs	Number	Parentage (%)
Short acting beta agonist	130	51.59
Corticosteroids	54	21.43
Antihistamines	47	18.65
Methyl Xanthines	10	3.97
LT receptor antagonist	7	2.78
Anticholinergics	4	1.59
Total	252	100.00

Out of one hundred and fifty (150) prescriptions, four (4) fixed dose combinations were given for the patients that is Salbutamol plus Fluticasone for 8% of patients(n=12), 54% (n=81), were prescribed with Salbutamol and Ipratropium bromide 9.33% and where as 17.33% with Salbutamol and beclomethasone. This was same to the study findings of Awanish Pandey et al [14] that is 120 patients were given with combinations. Table 4

**Table No. 4: Fixed Dose Combination**

Fixed dose combination	Number	Parentage (%)
Salmeterol + fluticasone	12	9.02
Budesonide + formoterol	14	10.53
Salbutamol+ beclomethasone	26	19.55
Salbutamol + ipratropium bromide	81	60.90
Total	133	100.00

**CONCLUSION**

The present study was carried out for a period of six months in a tertiary care hospital Bangalore. A total of 150 patients were enrolled in the study for the evaluation of drug utilization. Out of 150 patients 61.33% (n=92), were males and 38.16% (n=58), were females. In the present study was also found that the patients were having different symptoms such as 50%, of patients having shortness of breathing. 33.3% were having wheezing, 23.33% of cough with sputum,

16.66% were having chest tightness, 10% were having dry cough, 6.66% were having headache, 16% of night awakening, 16.66 of the patients were having interference of normal activity. Majority of the asthma attack was found in the patients of age group between 30-41 age of years, that is 38%. 72.665 of total patients were in the severity grading of mild intermittent asthma. Majority of patients were having habits of tobacco smokers 30% and alcoholism 16.66% only 38.66% of total were non users of alcohol or tobacco smoke. The commonly prescribed anti asthmatics were SABA 86.66% corticosteroids 5.36%, antihistamines 31.33%, methylxanthines 6.66%, LT receptor antagonist 4.66%, and anticholinergics were Salbutamol with ipratropium 54% and salbutamol with beclomethasone 17.33%, budesonide with formoterol 9.335, and salbutamol + fluticasone. The study was conducted in a tertiary care hospital over a period of six of months and one hundred fifty patients were analyzed. Majority of the patients were male than females, the maximum number of patients for asthma attack was in the age group between was 30-41 of years, adult onset asthma can be occurred due to environmental irritants or tobacco smoke. Changes in muscles or stiffening of chest wall also can be of asthma attack. Symptoms of wheezing, shortness of breath, cough with sputum. Chest tightness, dry cough, headache, night time awakening, interference with normal activity, all these helps to recognize the severity grading of asthma. It helps to recognize the future risk and initial treatment of asthma. In the present study, majority of patients were in the severity grading of mild persistent group. The social history of the patients helps to find out the cause of asthma attack, which included the alcoholics and tobacco smokers. An alleviating the use of tobacco smoking helps to reduce the asthma attack. Tobacco smokes may adhere to the moist airways of the patients and it leads to the damage of cilia, which helps to sweep out the mucus and dust out of the airways. The surface containing preservatives are present in wines alcohols which leads to asthma attacks. Those who were working in textiles or Industries were also having risk of asthma attack or in other words we can say those are always very prone to have asthma attacks including some of the severe lung infections which may result in breathlessness, wheezing or chest tightness. The commonly used anti asthmatics were beta2 agonist and corticosteroids followed by antihistamines and methylxanthines in the monotherapy. Fixed dose combinations used commonly are salbutamol with ipratropium bromide and salbutamol with beclomethasone.

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