Drug Utilization Evaluation Of Anti-Asthmatic Drugs In Tertiary Care Hospital, Salem

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Abstract

Introduction - Asthma, condition affecting children and adults, is a clinical syndrome with lungs become narrow due to inflammation and tightening of muscles around the airways. Asthma is often under-diagnosed and under-treated, especially in low- and middle-income countries. Study estimate indicates the national burden of asthma at 17.23 million with an overall prevalence of 2.05% and accounts for 27.9% of disability-adjusted life years of Indian population. Drug utilization studies (DUS), important tool to describe the patterns of drug use in specific populations to support establishing decisions, problem solving and assessment of the right action to be taken during treatment regimen prescription.

Methods - Prospective cross-sectional study was designed for the evaluation of the pattern drug utilization in bronchial asthma patients in the tertiary care hospital in Salem. The prescription data was recorded in a pre-designed case form and data was compiled using Microsoft excel and presented in a tabulated and graphical presentation; data were analysed based on the demographic details, generic name, indication, route, dosage, frequency and treatment regimen.

Results - In the study, 100 prescriptions were included for analysis as per the inclusion and exclusion criteria. Demographic analysis data revealed that there were 53% men and 47% women cases and patients belonged to age group between 18 – 40 years. Beta-agonists and Corticosteroids were the most common prescribed drug classes and also Salbutamol was observed to be still most preferable drug of choice for asthma management.

Conclusion - Prescription pattern studied supports the need to encourage the physician to use treatment guidelines while managing patients with asthma and also would benefit as a step in improving awareness on asthmatic condition and current treatment practice.

Keywords: Bronchial asthma, Drug utilization evaluation, Drug Prescription pattern, Antiasthmatic Drug Tertiary care hospital

INTRODUCTION

Drug Utilization Studies (DUS) are essential for determining the level of drug use, spotting variations between or within regions, and creating interventions to promote sensible drug use[1]. DUS are therefore seen as an important instrument for assessing the health-care systemright now [2]. DUS are more crucially needed in nations like ours with limited resources to ensure that the limited resources are used efficiently. Around 334 million people worldwide suffer from asthma, which affects all age groups, and between 17 and 30 million people in India [3].

In India, asthma is one of the leading causes of illness and mortality, affecting 3- 11% of adults and 3-5% of children [4]. The prevalence of asthma varies by region. According to the Global Initiative for Asthma recommendations, there are primarily two classes of medications used[5-8]These medications can be taken on their own or in combination with other antiasthmatic medications [9].

Indian statistics assess the pattern ofmedication use in bronchial asthma over the full spectrum and in varied degrees of severity. The rapid rise in health care expenditures has put a strain on the global health protection system as society and the economy have developed. The issue of ageing populations and a shifting illness landscape, as well as advancements and changes in medical technology, led to an increase in health care expenses. How to employ drug utilisation review (DUR) and pharmacoeconomic evaluation to enhance and optimise the configuration ofmedical and health resources is a serious issue for many nations.

In this work, the significance of drug utilisation reviews and pharmacoeconomic analyses are discussed, along with how they might be applied to the creation of new drugs, setting medication prices, and encouraging sensible drug use. Drug use reviews and pharmacoeconomic analyses must be of the highest calibre.. They should be used by government agencies, hospitals, pharmacies, and research organisations to tackle their issues[10].
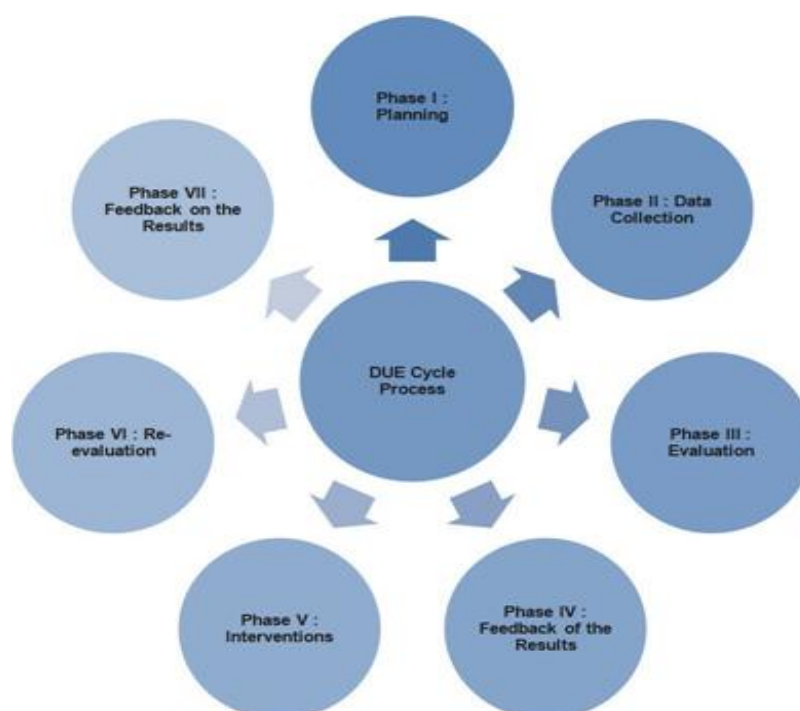
Figure 1. The key actions or phases included in the DUE cycle process

This study will assess the anti-asthmatic medication use patterns, prescribing patterns, usage quality, consumption determinants, and result in the adult asthmatic population for the evaluation of the drug utilization patterns, prescribing patterns, usage quality, usage determinants and outcome of drug usage of anti-asthmatic drugs in adult asthmatic population.

METHODS

Prospective observational study was performed with comprehensive review of patient's medication record data to understand the medication pattern and to assure the appropriate therapeutic decision making/outcomes on patients' quality of life. The study was conducted at the in-patient section, General medicine department of tertiary care hospital in Salem, for a period of 9 months and includes the patients admitted during the period of march 2022 to November 2022

Case details of 100 patients diagnosed and under medication, from in-patient sections of tertiary care hospitals, for asthmatic condition were included in the study after considering the inclusion and exclusion criteria and with the permission of the concerned hospital authorities. Case details of 100 patients under medication for asthmatic condition were included for the study and sample size of the study was calculated.

Patient case records collected included the necessary and relevant data were obtained from the medical records of patients which mainly included admission sheets, patient history notes, patient treatment charts, laboratory data reports, progress sheets, nurses, records, doctors orders and prescriptions. Hospital case records, both in electronic and paper formats, were used to gather information about the patient's demographics, medical history, medication brand, generic name, dosage, route, frequency, anti-asthmatics, and discharge.

RESULTS

The study focuses on the evaluation of the drug utilization pattern, usage determinants and outcome in the usage of anti-asthmatic drugs in adult asthmatic population. The assessment of the effect of bronchial asthma and its severity on the health related quality of life. The rationality of the prescription can be assessed and evaluated using a prescription- based study, one of the methods available for such purpose.
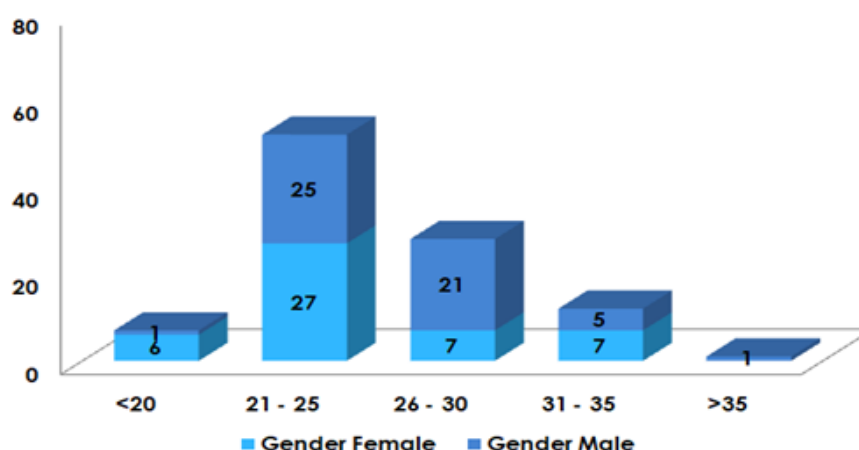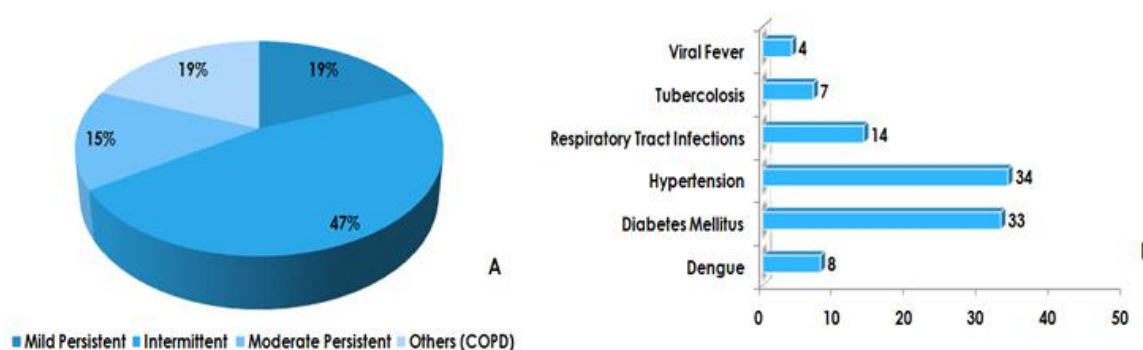

Figure 2. *Distribution of patient data based on gender cum age group-wise among study population*

Study cases were classified according to their gender, into 53% patients and 47% patients of were male and female and the patients with different age groups were categorized out of which most of the patients were in the age group of 21-25 followed by 26-30 and 31-35 years. The number of

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patients present in each age group was 52%, 28% and 12% respectively as shown in Figure 2.

Distribution of asthma patients by severity based on the level of symptoms, airflow limitation, and lung function variability such as mild, moderate persistent, and intermittent respectively. In intermittent asthma, symptoms were <2 times/ week, for mild persistent, symptoms >2 times/week and daily symptoms for moderate persistent with the percentages of patients in each group are 47%, 19% and 15%, respectively (Figure 3a). Observations also showed that disease conditions like respiratory tract infections, diabetes mellitus and hypertension were the most common co-morbid conditions among the study populations with prevalence of 14%, 33% and 34%, respectively and with 19% of the cases had conditions like tuberculosis, dengue and Viral fever (Figure 3b).

Figure 3. *Distribution of the patient data based on the (A) Severity of the asthmatic condition and (B) Co-morbid conditions among the population*

The route of administration wise distribution was made for patients with different route of administration such as inhalation, oral, and parenteral respectively. The percentage of each group was 25%, 35% and 40% respectively.

The treatment duration based distribution study of the patient treated with different drug category such as antihistaminic, beta-2 adrenergic agonist, corticosteroids and xanthine derived bronchodilator showed percentages of 11%, 35%, 31% and 22%, respectively in each groups. Majority of the patients received combination therapy of beta 2 agonist and corticosteroids.(Figure4a) The therapy regimen based distribution was made for patients with different drug category such as single drug therapy and combination drug therapy with percentage of each group were ranging between 4% - 38%, respectively.(Figure4b) The results of this study showed that most of the patients received combination therapy when compared with individual therapy. The number of patient and their percentage were shown
in the figure 4.
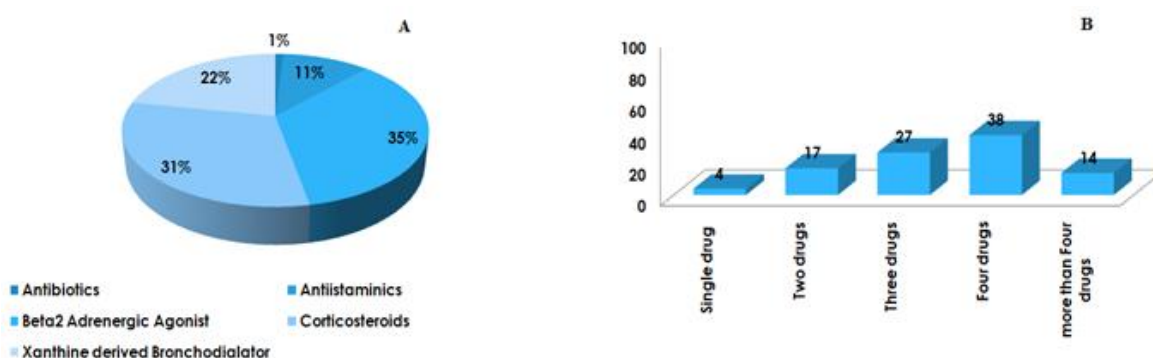
Figure 4. *Distribution of the patient data based on the (A) Medication prescribed for the asthmatic management and (B) Medication therapy regimen among the population*

The data distribution among the study population was made based on the different Drug treatments within the different therapy regimens followed, single and combination drug therapy, with percentage of each group were ranging between 4% - 38%, respectively. The Beta agonist, Corticosteroid and bronchodilator class of compounds were the most commonly administered drugs various therapy regimens followed.

The therapy regimen based distribution was made for patients with different drug category such as single drug therapy and combination drug therapy with percentage of each group were ranging between 4% - 38%, respectively. The results of this study showed that most of the patients received combination therapy when compared with individual therapy. The therapy prescribing pattern based distribution of the study population was made with different anti-asthmatic drug treatments available in the market. The study results showed that salbutamol Adrenergic Agonist, budesonide (corticosteroid) and ipratropium bromide with levosalbutamol (bronchodilator with anticholinergic drug,) were the frequently preferred choice of medication with 24%, 11% and 10%, respectively among the prescription pattern as shown in the Figure 5.
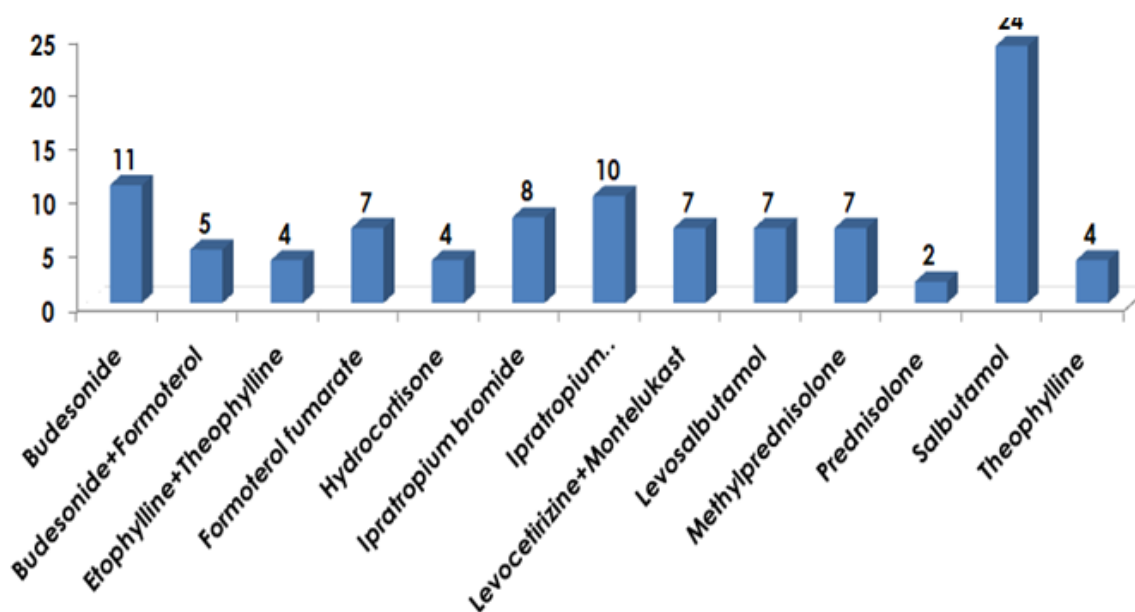
Figure 5. *Distribution of the patient data based on the Medication prescribing pattern and the frequency of individual drug prescribing pattern among the study population*

DISCUSSION

The study focused on the evaluation of drug utilization patterns, prescribing patterns, usage quality, usage determinants and outcome of drug usage of anti-asthmatic drugs in adult asthmatic population. The assessment of the effect of bronchial asthma and its severity on the health related quality of life. Drug utilization evaluation has an important role as tool in assessing the therapeutic practices helping in the modification and rationalization of disease management in easing out the social healthcare burden. Our investigation on the prescription pattern showed during the study period that more number of patients, 44% and 39% were prescribed with parenteral and inhalation based medications of beta-agonists (35%) and corticosteroid (31%) categories were most preferred choice for the asthma management.

Data study also shows that the medications of inhalation based Beta-agonists were prescribed and Corticosteroid prescribed mostly was of parenteral categories. Salbutamol (short acting beta agonist) was observed to still considered as most preferable, in 24% cases, choice for asthma

management. Antiistaminics (11%) and Methylxanthines (22%) were prescribed to lesser cases due to their limited role in the management of asthma; they are much useful in treatment of COPD patients though there is some benefit when they are used in combination with beta agonists. Also the study showed that the drug therapy regimen prescribed were either with combinations of three drugs (27%) or four drugs (38%) in the effective management of the asthmatic condition.

Prescription pattern studied during the case study showed that they were in accordance with standard guidelines in the management of asthma with the polypharmacy being within the acceptable limits (of 5 or more drugs). Patients belonging to lower to lower middle socioeconomic class, were the most visiting cases in the study setup, are dependent on their medication needs on the hospital dispensary. Thus, utilization evaluation observed during the study cannot be generalized to all other health sectors offering care to patients from higher socioeconomic levels. The knowledge obtained from the present study can further help to plan interventions needed to improve the effective management of bronchial asthma.

CONCLUSION
In conclusion, the inhalational route were much preferred with most kind of the medication categories prescribed improving patient compliance, and thereby supporting the increased medication bioavailability. With the improved drug delivery technology marketed for inhalational medications in bronchial asthma, this is feasible.

CONFLICTS OF INTEREST
The authors declare no conflict of interest

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