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Drug utilization evaluation and prescription monitoring in asthmatic patients

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ABSTRACT

The purpose of this study is to evaluate the drug utilization trends and to describe the prevalence and type of medication related prescribing errors in asthmatic patients. Drug Utilization Review can play a key role in helping the healthcare system to understand, interpret & improve the prescribing administration & use of medications. As the incidence of asthma is increasing, especially in children in western & many developing countries including India the aim of the present survey is to find out depth of awareness in society regarding the incidence, causes and treatment of asthma. This survey will also help the physician to find out possible drug-drug interaction, drug food interaction in asthmatic patients. In present study the number of antiasthmatic prescriptions were collected from Jalgaon district and analyzed for the variety of parameters such as age, sex, profession, social history and treatment approach including drug-drug interaction etc.

KEYWORDS: *Asthma, Drug utilization review, Prescription monitoring*

INTRODUCTION

Asthma is a disease of airway is characterised by hyper-responsiveness of trachea-bronchial smooth muscle of a variety of stimuli, resulting in narrowing of air tube/air passages which may be relieved spontaneously or by therapy. Several factors such as aeroallergens, drugs, chemicals, exercise, cold dry air, infections and emotions etc can aggravate the symptoms and precipitate the attacks[1, 2]. In India, an estimated that 57,000 deaths were attributed to Asthma in 2004[3] (WHO 2004) and it was seen as one of the leading cause of morbidity and mortality in rural India[4]. Drugs play an important role in improving human health and promoting well-being. However, to produce the desired effect, they have to be safe, efficacious and have to be used rationally. In Asthma like diseases where a lot of population is suffered from, it becomes very essential to spread a thorough awareness among the patients in relation to medication and disease itself. So the drug utilization evaluation among the asthmatic patients will provide a powerful tool in order to find out depth of awareness in patients and physician. The technique of drug utilization review (DUR) can provide a useful means of determining whether drug use is appropriate in the treatment of individual patients[5]. The World Health Organization (WHO) addressed drug utilization as the marketing, distribution, prescription and use of drugs in a society, considering its consequences, either medical, social, and economic[6]. Drug utilisation review is design to –

1. Review drug use &/or prescribing pattern.
2. To detect & help to prevent drugs interactions.
3. To determine & prevent adverse drugs reaction in sensitivity pattern.
4. To detect the potential drugs toxicity.
5. To develop criteria & standards which prescribe optimal drug use.
6. To promote appropriate drugs use through education & other intervention.
7. To provide feed-backs of results to clinicians & other relevant groups.

Drug utilization review (DUR) is also known as Drug use/ utilisation evaluation (DUE). Drug utilization review is increasingly used in the era of cost constraints and quality assurance[7]. The DUR has been adapted by pharmacists to assess appropriateness of usage of various medications. DUR can play a key role in helping the healthcare system to understand, interpret & improve the prescribing administration & use of medications. DUR information may assist healthcare systems & hospitals to design educational programs that may improve prescribing & drug use[8, 9]. They also

provide feed-back on physician's performance & prescribing pattern or treatment protocols. The DUR information may also useful in motivating physicians to change their prescribing habits in an effort to improve care.

MATERIAL AND METHOD

An observational study was planned to analyze the utilization patterns of antiasthmatic drugs in one hundred patients. The study was conducted by using a set of questionnaires targeting the asthmatic patients in Jamner, (Dist: Jalgaon, Maharashtra). The patients were randomly selected from OPD and monitored them according to WHO prescription monitoring proforma. The prescriptions of co-operative patients diagnosed with asthma were collected and were interviewed for different parameters.

Inclusion Criteria: The patients diagnosed with asthma and on anti-asthmatic prescription were included in the study

Exclusion Criteria: The asthmatic patients who suffered from other diseases such as hypertension and heart problems and other comorbidities such as bronchitis, chronic obstructive pulmonary disease (COPD), peptic ulcer, diabetes mellitus and migraine were excluded from the study.

Patients were randomly recruited in the study. They were interviewed and necessary information regarding their therapy was collected as per proforma. The patients were categorized into three grades (group) I, II, III. People in administrations were included in Grade-I, while Employees, clerical staff in Grade-II and Gardeners, security guards, drivers, peon and others were included in Grade-III. The data collected through the interview was examined for the number of parameters such as age, sex, social history and drug therapy used for the treatment.

The data gathered were analyzed for different parameters like age, sex, profession, social history, and treatment therapy used.

RESULTS

During the study, 107 patients were monitored but only 100 prescriptions were included for data analysis as per inclusion & exclusion criteria. The various parameter were analyzed as per follows-

1. **Age:**
   The patients were divided into four classes as per the age-group. The most of the patients suffering from asthma were found in the age group of 21-40 yrs. (**As shown in Fig. 1**)
2. **Sex:**
   It has been found that, males (62%) are more susceptible to asthma as compared to females (38%). (**As shown in Fig. 2**)
3. **Grades :**
   As per the socioeconomic status, patients were divided into three grades as follows **Grade-I:-**People in administration, **Grade-II:-** Employees, clerical staff, **Grade-III:-**Gardeners, security guards, drivers, peon & others. (**As shown in Fig. 3**)
4. **Social History:**
   Among all the patients involved in this study 28% were found to be alcoholic, 32% were Smoker, 38% were nonvegetarians. (**As shown in Fig. 4**)
5. **Drugs used in asthma:**
   The 24% of all the patients were treated with a single anti-asthmatic drug (monotherapy) & 76% of the patients were treated with anti-asthmatic drug combinations. (**As shown in Fig. 5**)
   a) **Monotherapy used (%):**
      In monotherapy, only three classes of drugs were used: Methylxanthines, β-agonist, Corticosteroids. The overall utilization of Anti-asthmatic drugs are- Methylxanthines (48%), Corticosteroids (30%), & β2 agonists (22%) were used. (**As shown in Fig. 6**)
   b) **Combination therapy used:** In the Monotherapy Salbutamol is found to be mostly prescribed. In Combination therapy Theophylline-Etophylline combination (Deriphylline Retard) is found to be mostly prescribed. (**As shown in Fig. 7**)
6. **Different dosage forms used by asthmatic patient:**
   The 54% of patients were found to be prescribed with oral medicaments, 34% with inhalers and 12% with other such as parenteral. (**As shown in Fig. 8**)

Fig. 1: age wise distribution of patients

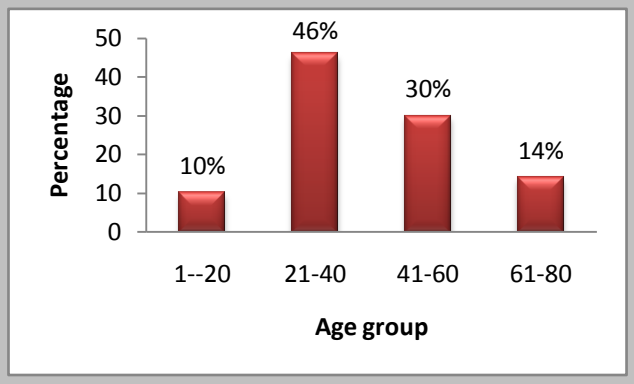


Fig. 2: sex wise distribution of patients

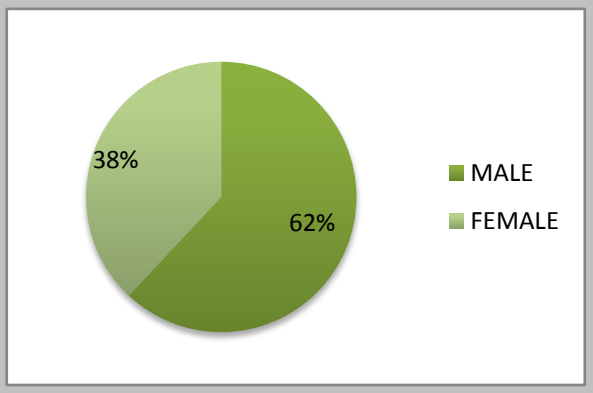


Fig. 3: grade- wise distribution of patients

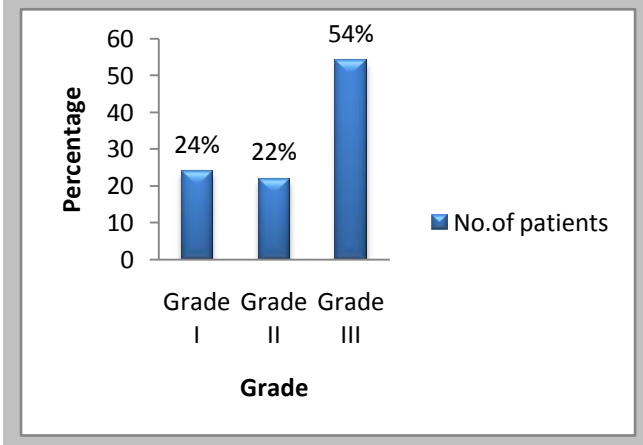


Fig. 4: social history vs asthma

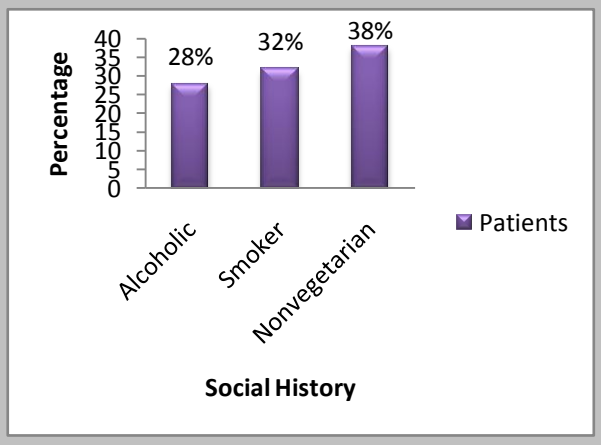


Fig. 5: anti-asthmatic drug therapy

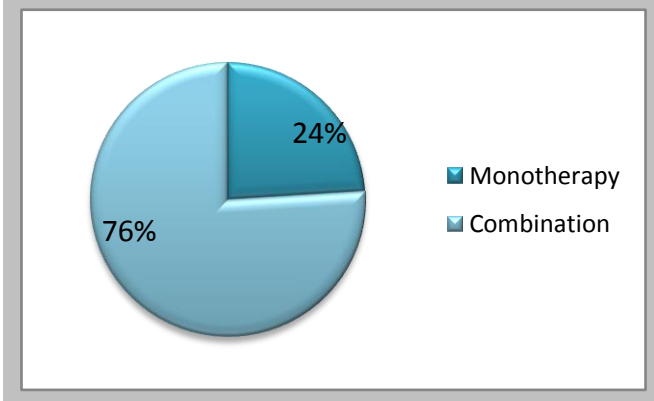


Fig. 6:- percent drug used (mono therapy)

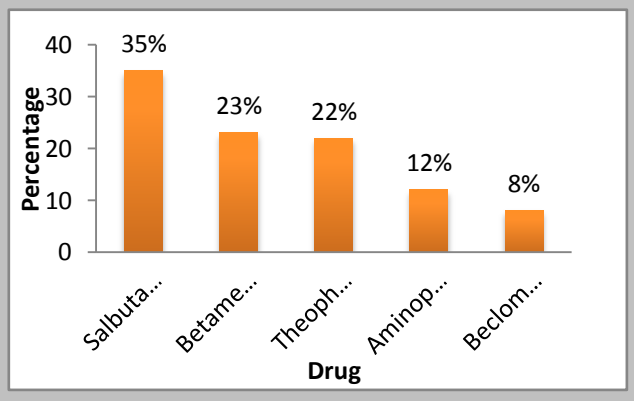


Fig. 7: percent drug used (combination therapy)

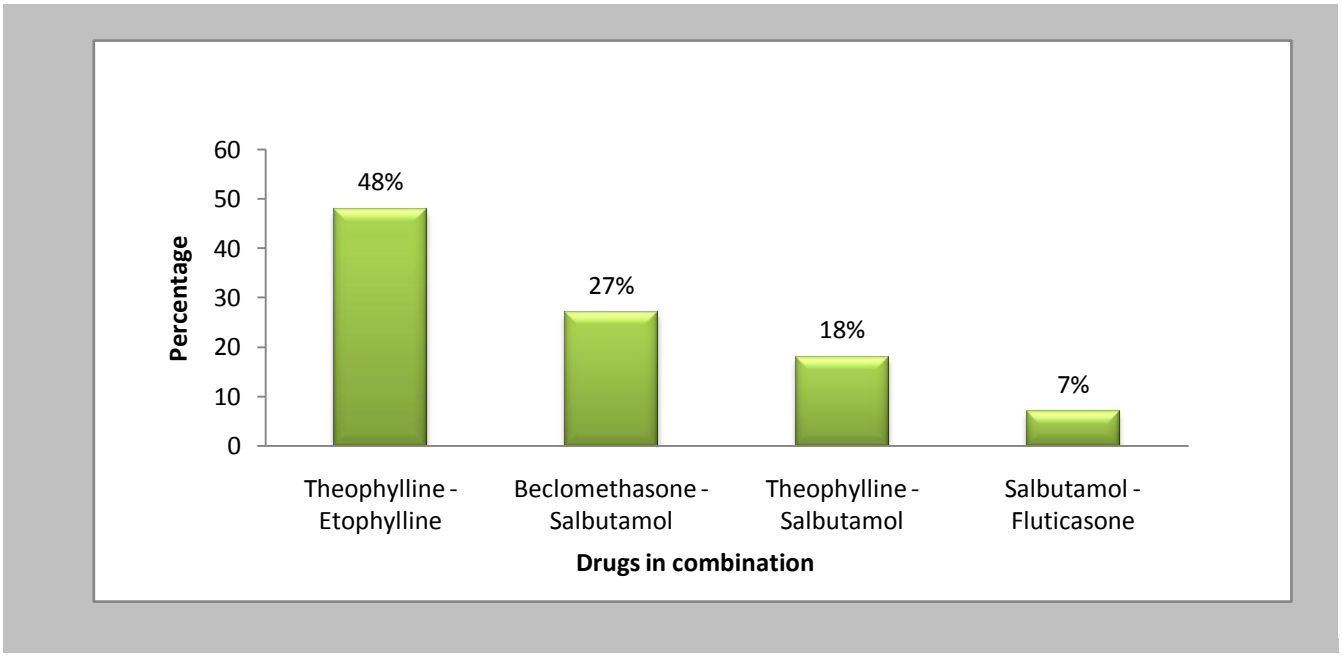
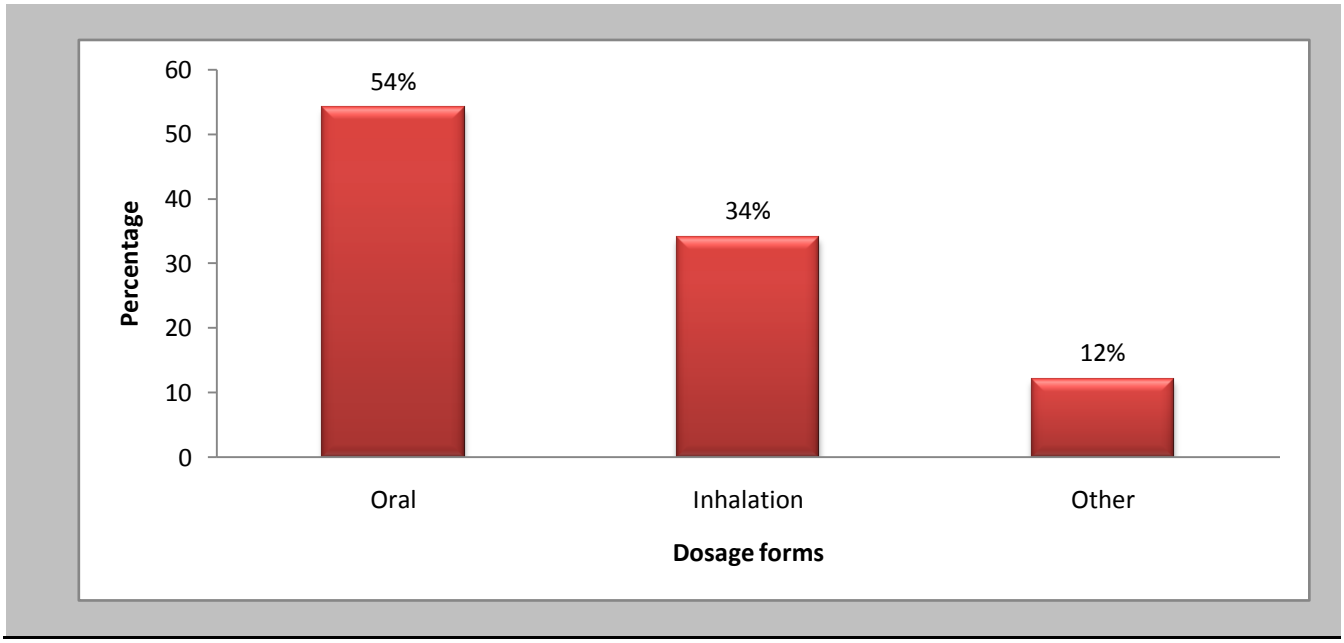


Fig. 8: number of patients with dosage forms



DISCUSSION

In our study we found that asthma was reported more in male patients as compare to females. It has been found that more male (62%) suffered from asthma than did females (38%). Overall drug utilization study showed that Methyl xanthines were the drug of choice for asthmatic patients, probably due to their lower cost[10]. Overall 24% of the patients were treated with a single anti-asthmatic drug whereas 76% patients were treated with anti-asthmatic drug combination. This study found that 54%, 34% and 12% of anti-asthmatic drugs were prescribed orally, via inhalation and other by injection. The inhalation

route causes a high local concentration in the lungs with a low systemic delivery, significantly improves the therapeutic effectiveness and minimizes systemic side effects[11, 12]. We also found that Grade III employees (Gardeners, drivers, laborers, and peons), smokers and Nonvegetarians showed a greater incidence of asthma but were unaware about the prescribed anti-asthmatic drugs. During the study it has been found that the wide range of patients suffering from asthma was in the age group of 21-40 yrs old. No drug-drug interaction was noticed among the prescriptions collected from the patients indicates the awareness among the prescribers. It was also noticed that pharmacists usually distributed medicines without giving any written or detailed oral instructions. Thus our study highlights the prescription trends which may promote proper and rational use of anti-asthmatic drug. Then very few numbers of patients were having the appropriate information about the antiasthmatic drugs and asthma. The pharmacist is required to put certain steps in order to improve the awareness among the patients as he is a person in close contact with patients. In future, informative leaflets should be prepared and distributed among the patients based upon their awareness. Based upon this study we also tried to prepare certain guidelines for the patients in English (**Annexure I**) as well as Marathi (**Annexure II**).

Annexure I

PREVENTION OF ASTHMA

1. Bedroom should be kept clean and free from dust, wet mopping should be done.
2. Caressing of animal pets should be discouraged as the child may be sensitive to their fur.
3. Avoid drugs like aspirin, NSAIDS and beta blockers.
4. Avoid cold drinks, nuts, shell fish, eggs etc if they have been associated with allergic response.
5. Avoid all kinds of smoke at home including tobacco smoke, wood burning and kerosene stove.
6. Avoid contact with allergens that may worsen the attack of asthma.
7. "ALLERGY SKIN TEST" must be performed if you don't know the particular allergens.
8. Do not use too cold water for drinking.
9. Avoid contact with cold air, cold-drinks and cold environment.
10. Always keep your medication along with you while travelling.
11. Always keep your identity card in your pocket with emergency contact phone number.
12. In case of emergency nebulizer, rotahalers can be used.
13. If emergency asthmatic attack occurs, remove the buttons of the shirt and avoid crowd.
14. Get contact with your physician as early as possible in case of emergency.
15. Self medication should be avoided.

KEY MASSAGE

- Asthma is a common disorder.
- It can happen to anybody.
- It is not caused by supernatural forces.
- Asthma is not contagious.
- It produces recurrent attacks of cough with or without wheeze.
- Between attacks people with asthma lead normal lives as anyone else.
- In most cases there is some history of allergy in the family.
- Asthma can be effectively controlled, although it cannot be cured.

Annexure II

dmaa ek navaIna dRYTIkaoNa

- dmaa ek saamaanya Aajaar Aaho.
- dmaa kaoNaalaahI haovaU Saktao.
- jar AaPaNaasa SvaasaaocCvaasa ~asa haoNao #aaoklaa yaoNao jaIva GaabarNao Gaama sauTNao yaaPaOkI kuzlaohI laxaNao Asalyaasa AapNaasa dmaa AsaU Saktao.
- dmaa kuzlyaahI dOvaI Sa>I Aqavaa dOvaI p`kaopamauLo haot naahI.
- dmaaga`st raogaI ho [tr saamaanya manauYyaap`maaNao jaIvana jagaU Saktat.
- sahsaa dmaa kuTUMbaamaQyao AnauvaaMiSakta AsaU Saktao.
- dmaa puNa-t: bara haovaU Sakt nasalaa trI tao AaOYaQaaMvdaro va yaaogya tI kaLjaI GaovaUna inayaM~Naat zovata yaovaU Saktao.

dmyaasaazI p`itbMaQaa%mak]payayaaojanaa

1. AaplaI baoD$ma svacC QaUr ivarhIt AaiNa QauLivarhIt zovaa.
2. GarI paLIva p`aNaI baaLgaNao Sa@yataovar TaLavao.
3. jar AapNaasa qaMD poya qaMD hvaa qaMD vaatavarNaa pasaUna QaUL QaUr pasaUna A^lajaI- Asalyaasa to TaLavao.
4. P`avaasa krt AsataMnaa Sa@yataovar taoMDavar $maala baaMQaavaa.
5. tMbaaKU , isagaaroT, ra^kolacaa sTaovh, yaa pasaUna dur rhavao.
6. AapNaasa kuzlyaa p`karcaI A^lajaI- Aaho ho tpasaNyaasaazI "A^lajaI- iskna TosT" k$na Gyaaval.

7. ipNyaasaazI Saa@yataovar kaomaT paNaI vaapravao.
8. Aaplyaa AaOYaQaI naohmaI saaobat AsaU dyaa.
9. Aaplao AaoLKp~ va GarcyaaMcaa durQvanaI k`maaMk naohmaI saaobat zovaa.
10. Aapa%kalaIna prIsqaItIt pMp naobaUlaayaJar vaapravaa.
11. emaja-nsaI AT^k Aalyaasa $gNaasa maaokLyaa hvaocyaa saainaQyaat naoNao.
12. Aapa%kalaIna prIsqaItI]d,Bavalyaasa Aaplyaa Da^@TraMSaI %varIt saMpk- saaQaavaa.
13. t&aMcyaa sallyaaivanaa kuzlyaahI AaOYaQaI GaovaU nayao.

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