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ORIGINAL ARTICLE **OPEN ACCESS**

A Prospective Study on Drug Utilization in Patients with Acute Exacerbation of Bronchial Asthma in Adults at a Tertiary Care Hospital in Tamilnadu

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ABSTRACT
The Utilization of drug Review can help medical system learn how to use drugs more effectively, interpreting, and improving prescription authorizing, distributing, and use. Asthma prevalence is rising, particularly among children and adolescents in India. The current study sought to assess drug consumption in persons experiencing a severe aggravation of bronchospasm at a tertiary care teaching hospital. Methods: The investigation has been carried out utilizing the WHO-based prescription auditing software Performa. Data was collected from individuals who visit the hospital using a chance of random selection procedure in outpatient clinics (OPD). Results: One of the most commonly prescribed medicine among anti-asthmatics was Methylxanthines 141 (32.6% percent), followed by beta2-agonists 124 (28.9%), corticosteroids 26 (6.0 %), anti-histamines 61 (14.2 %), and anticholinergics 45 (10.4 %) was the shortest prescribed. In addition, 81.3 % of patients received combination therapy, according to our findings. When compared to motnotherapy122, to a considerable number of patients (28.4 %). The two-drug combination was the most commonly recommended in combination therapy307 (71.5 %). Furthermore, 194 (45.2 %) of anti-asthmatic medicines were administered orally, with 128 (29.2 percent) administered via inhalation and 107 administered via injection (24.9 %). Conclusion: Asthmatic symptoms were more common in Transporters and labourers were among the grade 3 workers. This has been found that perhaps an investigation might be more useful on to enhance a pharmacist's ordering and dispense procedures by implementing design is characterized in healthcare institutions.
Keywords: Drug Utilization Review, Prescription Monitoring, Asthma Patients, Anti-asthmatic drugs, Prospective Study

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INTRODUCTION

As per the WHO Prescribing Review, drug use research is characterized as "the advertising, administration, prescribing, and the use of medicines inside a community, with a special emphasis on the condition happen, sociological, and financial ramifications." Drug utilization evaluation (DUE) or drug utilization review (DUR) is a critical component of pharmaco epidemiologic studies since it gives a proper knowledge of therapeutic consumer preferences, pharmaceutical efficiency, and drug consequences. DUR could really play a significant role in aiding this same health service in explanation, translating, and working to improve writing prescriptions management and preserving the rational use of drugs that support the physician's prescribed by doctors mindset in accordance with the existing eligibility requirements by seeking input, as well as in developing, undertaking, and instilling academic activities for medical practitioners [1, 2].

Bronchitis is a prevalent chronic lung syndrome characterized by bronchial hyper responsiveness and airway restriction, its incidence and recurrence varying across people. Asthma attacks are known as systematic spells of wheeze, difficulty breathing, tightness of the chest, and choking. [3] Pathogentic' alterations in airways encompass a variety of pro inflammatory cytokines and messengers that promote to symptoms. Bronchitis is one of the primary causes of sickness and disease in India, impacting 3–11% of adults and 3–5% of children. [4] Medicines have an important part in maintaining public health and well-being. Therefore, in order to achieve desirable effects, drugs must really be secure, efficacious, and

reasonably used. Whenever the disorder such as Respiratory problems illnesses affects a large community, it is crucial to improve patient awareness of medication and the ailment itself. As more than just a conclusion, evaluating drug consumption amongst asthmatics will be a key factor in determining the level of consciousness in patients and clinicians. Drug utilization review (DUR) is a technique for determining how drug use will be appropriate in the administration of certain individuals [5]. The World Health Organization (WHO) defines drug usage as the advertising, distribution, prescribing, and use of medications in a population while accounting for the clinical, social, and financial consequences [6]. The goal of the drug consumption evaluation is to -

1. Examine your medication use and/or prescribing habits.
2. To recognize and assist in the prevention of medication problems.
3. To identify and avoid hazardous medication reactions in the therefore need.
4. For identify any probable toxic effects of a medicine.
5. To create guidelines and recommendations for prescribing appropriate therapeutic use.
6. Should encourage its use of prescription medication via teaching as well as other initiatives.
7. Deliver outcomes report to practitioners and some other clusters based.

Another name for drug use/utilization evaluation is drug utilizing review (DUR) Medicine use evaluation has become increasingly widespread in an era of fiscal constraints and performance measurement. [7] The DUR has been modified by pharmacists to judge the sustainability of medication use. DUR has the potential to help the medical system comprehend, interpret, and improve pharmaceuticals ordering, dispensation, including using. DUR data can be used to support clinical individuals and organizations in designing learning activities to improve dosing and medication use. [8, 9] They often provide comments on a doctor's competence, prescribing habits, and therapeutic interventions. The DUR statistics The DUR data may also be beneficial in encouraging clinicians to adjust their prescribing patterns in order to enhance treatment.

MATERIAL AND METHODS

The Prospective observational study was carried out over a period of 9 months from November-2018-April 2019, in the respiratory department of a tertiary care hospital. It was planned to analyze the utilization patterns of anti-asthmatic drugs in 429 patients after obtaining the Institutional ethics committee approval. The study was conducted by using a set of questionnaires targeting the asthmatic patients in Tamilnadu, The patients aged between 17-70years were randomly selected from among patients diagnosed with asthma 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.

Criteria for Inclusion:

The study comprised participants who had been diagnosed with asthma and were taking anti-asthmatic medication.

Criteria for Exclusion:

The paper distinguishes asthmatic patients with some other disorders such as hypertension and cardiac difficulties, as well as co morbidities such as bronchial asthma, chronic obstructive pulmonary disorders (COPD), gastrointestinal disorders, diabetes, and severe headache.

The medical data was acquired from the recruited participants, so all necessary important information, including such treatments histories and clinical findings summaries, were gathered from them and uploaded into the pre configured spreadsheets. The victims were divided into three groups: I, II, and III. Employers, clerks, and landscapers, security officers, transporters, peons, and many others were considered part Grade-I, whereas workers, clerks, and others were included in Grade-II. The information gathered during the conversation was scrutinized for a variety of factors, including age, sex, social history, and the pharmacological therapy administered for rehabilitation. Specific factors such as age, sex, career, cultural history, and therapeutic technique employed were studied in the data acquired.

RESULTS

Throughout this analysis, 149 (64.8 %) of the 429 patients were male respondents and 70 (35.1 %) were females. Males are more predisposed to asthmatic than females, accordingly **(As shown in Table -1)**

Table 1 Patient population depending on gender and age wise

Gender	No of the Patients	% of the Patients (n=429)
Male	278	64.8
Female	151	35.1
Total	429	100%

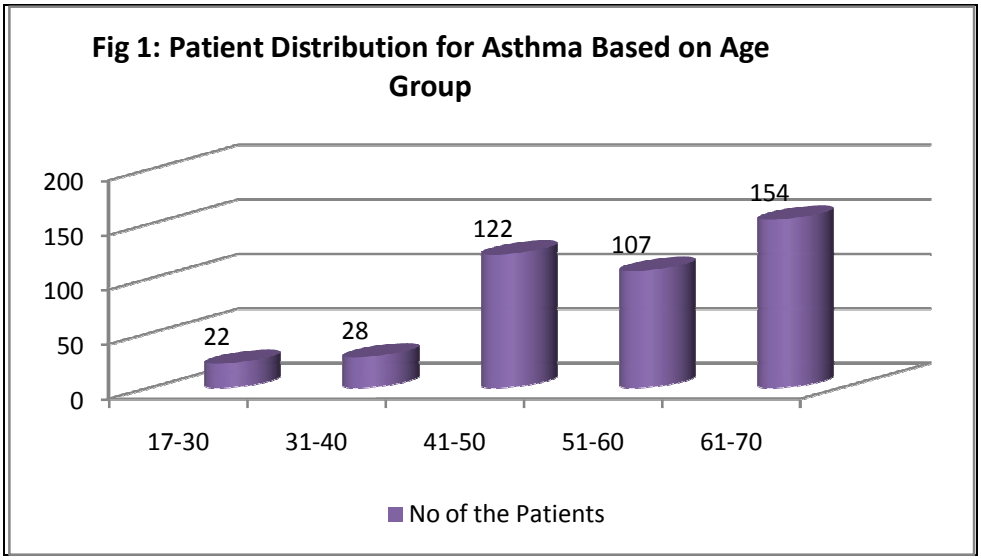
The World Health Organization's key drug prescription indicators (n=429)

The asthmatic population reported in this study had the following socioeconomic status: There were 119 (27.7%) grading I workers, 89 (20.7%) grade II workers, and 221 (51.5%) grade III workers. The proportions of patients who got monotherapy or combination therapy, i.e., two, three, four, or five medication regimens, revealed that 18.7 % of all individuals was managed with a single anti-asthmatic medication and 81.2 % were handled with anti-asthmatic combination therapies **[Table 2].**

And according to findings in Table 2, the majority of studied population are in between ages of 61 and 70 (35.8 %), followed by patients between the ages of 41 and 50 (28.4 %). And 51-60 years is (24.9 %), 31-40 years is (6.5 percent), and the youngest is 17-30 years old (4.19 percent) According to the sex ratio of study subjects in this data as shown in Table 2, males (64.8 %) are more likely to have symptoms than females (35.1 %). as illustrated in **Table-2 and Fig-1**

Table: 2 Asthma Patient distribution based on Age Group

Age of years	No of the Patients	% of the Patients (n=429)
17-30 years	18	4.19
31-40 years	28	6.5
41-50 years	122	28.4
51-60 years	107	24.9
61-70 years	154	35.8
Total	429	100



Social History:

Among all the patients involved in this study 35.6%% were found to be Non vegetarian and 34.2% is found to be alcoholic and 30.0% were Smoker,. (**As shown in table. 3**)

Table 3: Social History of Patients

Social history	No of Patients	% of patients (n=429)
Alcoholic	147	34.2
Smoker	129	30.0
Non-vegetarians	153	35.6
Total	429	100

Oral anti-asthmatics were administered to 194 of the 429 research participants. Generally often, five types of medications are found to be administered on a regular basis. Salbutamol, methyxanthines (deriphylline and doxofylline), bromohexine, ambroxol, montelukast, and prednisolone were among them. Methyxanthines (deriphylline and doxophylline) are the most extensively used of these five medicines (194 subjects).

The asthmatic demographic covered inside this analysis had the following socioeconomic status: There have been 119 (27.7%) grade I employees, 89 (20.7%) grade II employees, and 221 (51.5%) grade III employees. The proportion of people who underwent whether monotherapy or combination therapy, i.e.,

two, three, four, or five drug regimens, revealed that 317 (73.8 %) of all patients could be handled with only a solitary anti-asthmatic drug as well as 112 (26.1 %) were dealt with anti-asthmatic combination therapies.

Anti-asthmatic medications most widely prescribed: [Table 4]

Utilization of monotherapy and combination therapy (percentage):

The authors of the study drug prescription sequence for treating asthma revealed that Methylxanthaine is the most widely recommended class of medication (32.6 %), accompanied by short acting 2-agonist (SABA) (28.9 %), corticosteroids (6.0 %), antihistamines (14.2 %), leukotriene modifiers (7.4 %), but instead anticholinergics (10.4%), as seen in **Table 4**.

Table: 4 Anti-asthmatic drugs prescribed in Monotherapy

Anti-asthmatic drugs	No of prescriptions	% of patients (n=429)
Methylxanthaine	141	32.6
Short acting β2 agonist	124	28.9
Anti-histamines	61	14.2
Corticosteriods	26	6.0
Leukotriene antagonist	32	7.4
Anticholinergics	45	10.4
Total	429	100

Antiasthmatic drug used in Combination therapy

Theophylline-etophylline combo (Deriphylline Retard) is significantly more commonly recommended in combination treatment (42.6 %). (**As illustrated in Table 5**) preceded by beclomethasone-salbutamol (39.3%), theophylline-salbutamol (8.1%), and sabutamol-fluticasone (7.4%).

Table: 5 Antiasthmatic drug used in Combination therapy

Anti-asthmatic drugs in combination therapy	No of Prescriptions	%of Patients (n=429)
Theophylline+Etophylline	183	42.6
Beclomethasone+Salbutamol	169	39.3
Theophylline+Salbutamol	35	8.1
Salbutamol+Fluticasone	32	7.4
Total	429	100

Out the of 429 individuals, 56 (13.0 %) underwent multiple drug therapy (>4 medicines), trailed by 4 drugs 52 (12.3%), 3 drugs 105 (24.4%), and 2 drugs 216. (50.3 %) **(As demonstrated in Table:6 and Fig. 2).**

Table:6 Asthma drug therapy classification

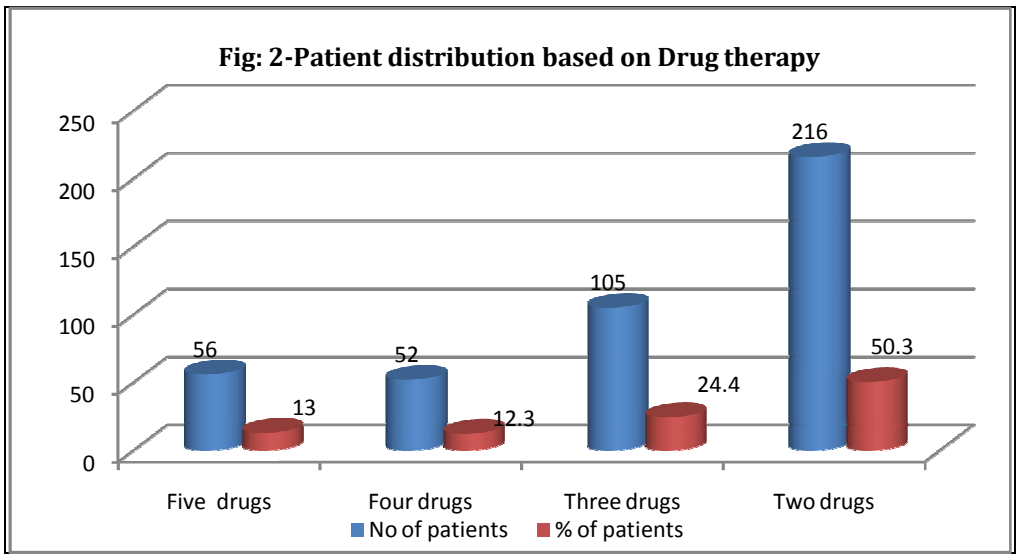
Drug Therapy	No of Patients	% of Patients(n=429)
5 drugs	56	13.0
4 drugs	52	12.3
3 drugs	105	24.4
2 drugs	216	50.3
Total	429	100

Routes of Drugs Prescribed (Asthma Medications):

From out 429 patient populations, 194 asthmatic drugs were allowed to prescribe, with roughly (45.2 %) of attendees using the oral route, 128 (29.2 %) using the inhalation route, and 107 (24.9 %) using injections. The inhalational pathway needs to deliver so many drugs indigenously in the respiratory tract with fewer complications **as depicted in table -7.**

Routes of asthma drug prescribed as shown in table-7

Route	Frequency	5 of patients(n=429)
Oral	194	45.2
Inhalations	128	29.2
Injections	107	24.9
Total	429	100



DISCUSSION

The intention of this research is to examine drug use and medication monitoring in asthmatic patients. Throughout this experiment, we noticed that even more men (64.8 %) than women (64.8 %) developed breathing problems, i.e. (35.1 %). Conversely, as per a previous study done at multiple hospitals in Dehradun by Arumugam V et al, males (64 %) struggle with asthma more than females (36 %). As just a result, there is a greater disparity in the number of female's vs males. [10] Consequently, methyl xanthines were the mainstay of therapy for asthmatic patient groups, most probably due to the relatively low price findings, that were congruent with Kumar et al. [11] In my investigation, 26.1 % of patients gotten a single anti-asthmatic medication. meanwhile 73.8 % were given a combination of anti-asthmatic medications. Shimpi et al discovered in a comparable study that the majority of individuals experiencing mono medicine therapy were marginally greater than those in our research, in which it was 24 %, with the additional 76 % getting multiple drug treatment. [12] According with findings of the research, 45.2 %, 29.2 %, and 24.9 % of anti-asthmatic drugs was provided orally, with inhalation, or by injectable, respectfully. The inhalation pathway delivers a high concentration in the respiratory system with a minimal systemic dissemination, promoting therapeutic potential and reducing systemic toxicity. [13-14] We also showed the Grade 3 employees (landscapers, transporters, laborers', and peons), people who smoke, and non vegetarians had a greater prevalence for asthmatic yet was unaware of the anti-asthmatic drugs handed to them. It was revealed even during examination that perhaps the predominance of patients with asthma was seen between demographics of 61 and 70years aged. There are still no drug-drug interactions found in consumer prescriptions, showing the prescribers were knowledgeable. Additionally, this one was determined that pharmacists frequently provided drugs before presenting any recorded or explicit oral directions. This research focused on prescription trends that could encourage appropriate or prudent anti-asthmatic drug management. Then, only a tiny group of adults had access to reliable anti asthmatic medication information.

CONCLUSION

Drug use assessment is essential for encouraging sustainable treatment use. Numerous international asthma associations' proposals would serve to strengthen clinician prescribing activities and make universal principles attainable. These prospective longitudinal studies were conducted out in such a tertiary care center in Tamil Nadu to examine drug consumption and prescription monitoring in asthmatic patients in order to discover drug interactions and medication adverse effects. We noticed that men had a higher prevalence of asthma than women in our sample. The participants were mostly between the ages of 41 and 50. The vast majority of people received a variety of pharmacological regimens, only with oral route being the most commonly used. Nevermind the fact of Methyl xanthine may be the most broadly adopted medication. Methyl xanthine would be the most common drug type of medicine in this analysis; people might be shunned due to the detrimental effects and supplanted with security of the system anti-asthmatics that are accessible rather than xanthaine.

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REFERENCES

1. Shimpi, R. D., Salunkhe, P. S., Bavaskar, S. R., Laddha, G. P., Kalam, A. A., Patel, K., & Jain, S. S. (2012). Drug utilization evaluation and prescription monitoring in asthmatic patients. *International Journal of Pharma and Bio Sciences*, *2*(1), 117-122.
2. Varkey, S., & Sen, S. (2012). Prescribing patterns of corticosteroids in pulmonology department. *International Journal of Pharmacy Teaching and Practices*, *3*(3), 334-337.
3. J.Prendergast (Ed.), Asthma, Current Medical Diagnosis and Treatment, 49th ed., Mc Graw-Hill Publishers & Distributors,New York, 2010, pp. 216–240.
4. Patel Pinal, D., Patel, R. K., & Patel, N. J. (2012). Analysis of prescription pattern and drug utilization in asthma therapy. *Int Res J Pharm*, *3*(7), 257-60.
5. Carruthers, A. A., & Krska, J. (1997). Thrombolytics—a drug utilization review in a district general hospital. *Journal of clinical pharmacy and therapeutics*, *22*(5), 335-338.
6. WHO Expert Committee. The Selection of Essential Drugs, technical Report Series no.615. Geneva: World Health Organization, 1977.
7. American Society of Hospital Pharmacists. (1988). ASHP guidelines on the pharmacist's role in drug-use evaluation. *Am J Hosp Pharm*, *45*, 385-386.
8. Yinnon, A. M., Skorohod, Y., Schlesinger, Y., & Greenberg, A. (2000). Cefuroxime utilization evaluation: impact of physician education on prescribing patterns. *IMAJ*, *2*:187–191.
9. Hammerman, A., Greenberg, A., & Yinnon, A. M. (1997). Drug use evaluation of ciprofloxacin: impact of educational efforts on appropriateness of use. *Journal of clinical pharmacy and therapeutics*, *22*(5-6), 415-420.
10. Arumugam, V., Preeti, K., & Vijay, J. (2008). Drug utilization assessment in asthma therapy through prescription monitoring at Dehradun hospitals. *Indian J Allergy Asthma Immunol*, *22*(1), 15-18.
11. Kumar, A., Tiwari, H. K., & Kulkarni, S. K. (2004). Drug utilization assessment in asthma therapy through prescription monitoring. *IJHP*, *41*, 70-2.
12. Shimpi, R. D., Salunkhe, P. S., Bavaskar, S. R., Laddha, G. P., Kalam, A. A., Patel, K., & Jain, S. S. (2012). Drug utilization evaluation and prescription monitoring in asthmatic patients. *International Journal of Pharma and Bio Sciences*, *2*(1), 117-122.
13. Johnson, C. E. (1987). Aerosol corticosteroids for the treatment of asthma. *Drug intelligence & clinical pharmacy*, *21*(10), 784-790.
14. Taburet, A. M., & Schmit, B. (1994). Pharmacokinetic optimisation of asthma treatment. *Clinical pharmacokinetics*, *26*(5), 396-418.

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