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A RETROSPECTIVE STUDY ON PRESCRIBING PATTERN AMONG BRONCHIAL ASTHMATIC PATIENTS WITH EXACERBATION AT TERTIARY CARE HOSPITAL, MANDYA

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ABSTRACT

Prescribing pattern studies is a standard process defined by WHO which measures health care providers' performance related to appropriate use of drugs to promote rational drug use. Asthma exacerbation, characterized by a progressive increase in asthmatic symptoms and a progressive decrease in lung function, accounts for a large proportion of the asthma healthcare cost burden. According to WHO 2016, Asthma affects 235 million people worldwide, out of which 15–20 million people are from India. This retrospective study intends to evaluate the prescribing patterns for exacerbation of bronchial asthma at a tertiary care hospital of Mandya based on desired study criteria. Among 178 cases, a higher incidence of bronchial asthma exacerbation was in male patients 112 (63%) and in age group of 38-47 years (29.21%). Majority of drugs prescribed were parenterals (53.49%) via intravenous route of administration (53.49%). GERD were the most common comorbidity. Drugs prescribed constituted corticosteroids (23.05%), antibiotics (15.3%) and methylxanthines (14.77%). Fixed dose combination of nebulization (duolin and budecort) was also administered. Monteleukast were prescribed as an adjuvant therapy and oxygen inhalation as supportive treatment.

KEYWORDS: Prescribing pattern, Bronchial Asthma Exacerbation, GERD, Corticosteroids.

INTRODUCTION

Asthma exacerbation, characterized by a progressive increase in asthmatic symptoms and a progressive decrease in lung function, accounts for a large proportion of the asthma healthcare cost burden. Asthma as per the GINA definition, Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation with the history of respiratory symptoms together with variable expiratory airflow limitation.[1]

Asthma is considered 14th most important disorder epidemiologically in terms of extent and duration of disability. According to recent global asthma report, 334 million people worldwide suffer from asthma globally. According to World health organization (WHO) estimates worldwide 300 million people suffer from asthma. In India 15-20 million people are affected by bronchial asthma.[2] Asthma exacerbations can be classified as mild, moderate, severe or life threatening. The heterogeneity of asthma depends on numerous risk factors, determinants, degree of airflow obstruction, hyper-responsiveness, severity and type of airway inflammation.[3,4]

The definitive endpoint of asthma management is the achievement of the best possible quality of life. The goals of pharmacotherapy are the suppression of the inflammation of asthma and the reduction of bronchial hyper- reactivity and airway obstruction. Drug classes commonly used to treat asthma include short-acting and long acting beta agonists, anticholinergics, inhaled corticosteroids used for symptom prevention and disease control; and oral corticosteroids.[5]

As per WHO, more than half of all drugs are prescribed and dispensed inappropriately. Irrational use of medicines is a major problem observed worldwide and may cause widespread health treat. This study intends to evaluate the prescribing patterns for exacerbation of bronchial asthma at a tertiary care hospital of Mandya.

MATERIALS AND METHODS

This is a retrospective study of bronchial asthma exacerbation cases admitted to medicine department in a tertiary care hospital of Mandya city. Convenient sampling method was used to carry out the study were 178 cases was collected based on the inclusion criteria.

The present study was conducted after obtaining ethical clearance from the ethical committee of Mandya institute of Medical Sciences (MIMS) Mandya.

RESULTS AND DISCUSSION

Gender wise categorization

Out of 178 cases, 63% (112) were male whereas females were 37% (66). This indicates that there were higher incidences of exacerbation of bronchial asthma in males compared to females.

Table 1: Distribution of patients based on Gender.

GENDER	NO. OF PATIENTS	PERCENTAGE
MALE	112	63%
FEMALE	66	37%
TOTAL	178	

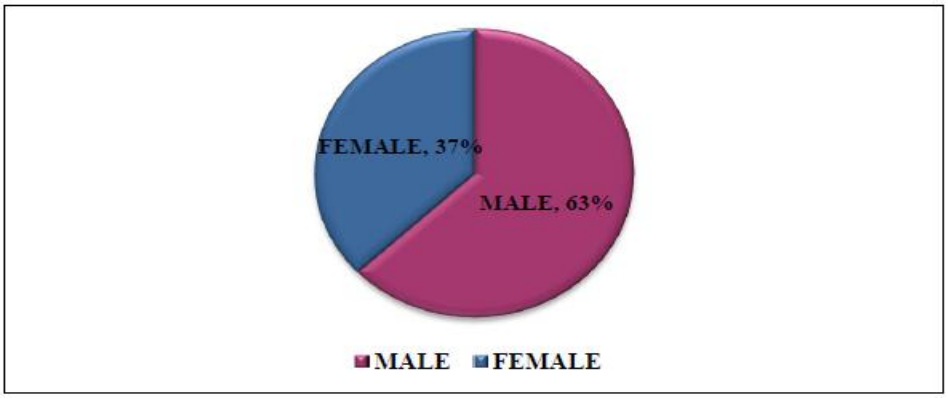

Figure 1: Distribution of patients based on Gender.

Age Wise Distribution

In this study the maximum number of cases were among the age group of 38-47 (29.21%) and 19.10% were between the age group of 48-57 years. This was followed by age group of 58 -57(15.16%) and >68(14.60%). Least number of cases were noted between the age group of 28 -37(5.05%), 18- 27 (7.30%) and <18(9.55%).

Table 2: Distribution of patients based on Age.

AGE (YEARS)	NO. OF PATIENTS	PERCENTAGE
< 18 years	17	9.55%
18-27 years	13	7.30%
28-37 years	09	5.05%
38-47 years	52	29.21%
48-57 years	34	19.10%
58-67 years	27	15.16%
>68 years	26	14.60%

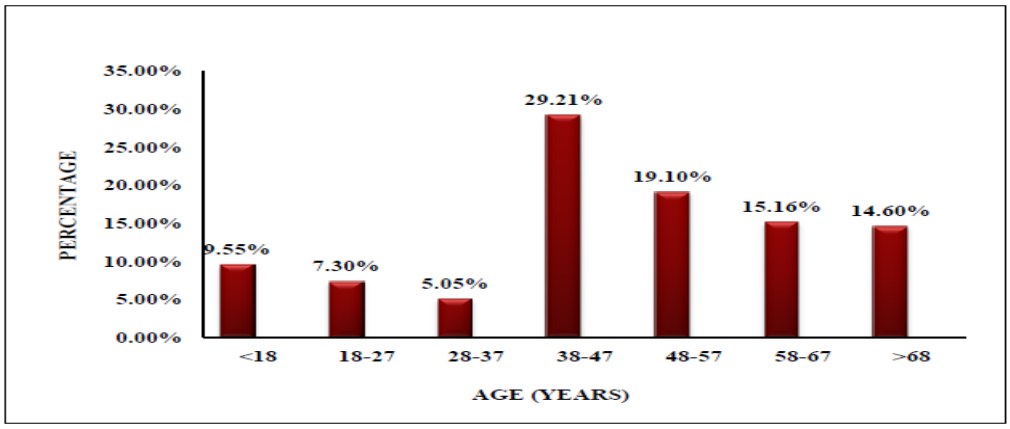

Figure 2: Distribution of patients based on Age.

Route of Administration of Prescribed Drugs

Out of 974 drugs prescribed, majority of prescribed drugs were administered intravenously (53.49%) followed by oral route (22.3%), inhalation (16.12%) and others (8%).

Table 3: Distribution based on drugs prescribed by various routes.

ROUTE	NO. OF DRUGS	PERCENTAGE
Intravenous	521	53.49%
Oral	218	22.3%
Inhalation	157	16.12%
Others	78	8%
TOTAL	974	

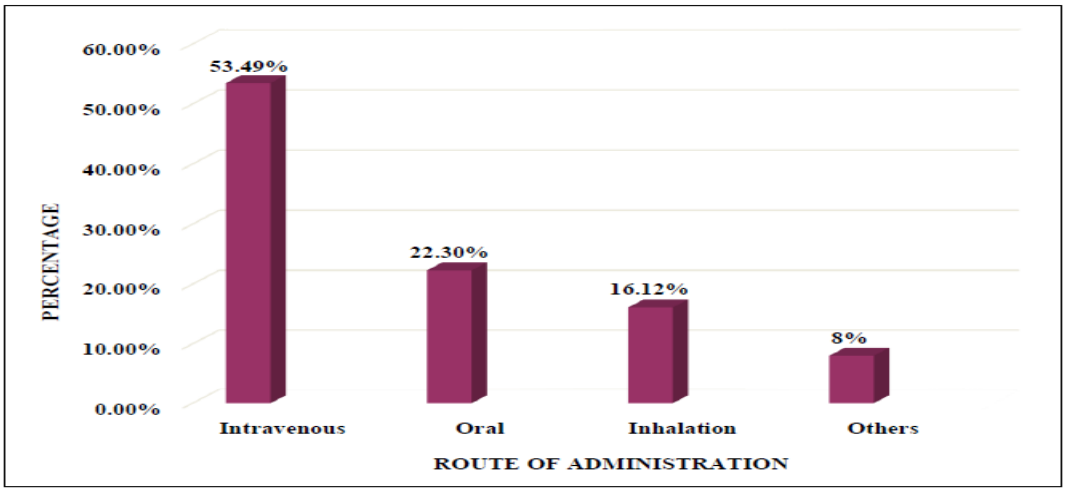

Figure 3: Distribution of drugs based on route of administration.

Distribution Of Drugs Prescribed By Generic Name/ Brand Name

Among the Total drugs prescribed in the study cases, majority were prescribed by generic name (51.94%) and the others were prescribed in brand name (48.05%).

Table 4: Distribution of drugs prescribed by generic name/ brand name.

DRUGS PRESCRIBED BY	NO. OF DRUGS	PERCENTAGE
GENERIC NAME	454	51.94%
BRAND NAME	420	48.05%

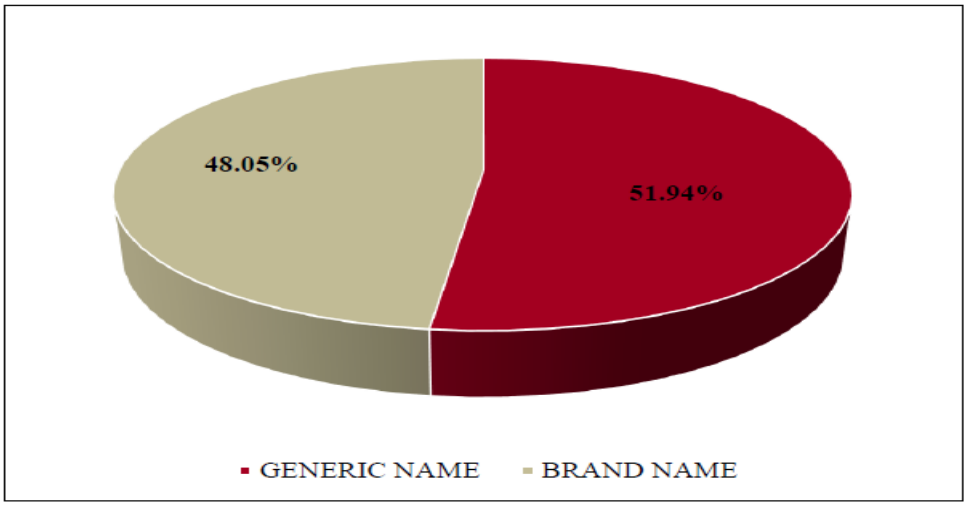

Figure 4: Distribution of drugs prescribed by generic name/brand name.

Comorbidities Associated With Bronchial Asthma

Among 178 cases of bronchial asthma exacerbation, 61 patients were presented with comorbid conditions. Majority of the patients were diagnosed with gastro-esophageal reflux disease (35) followed by hypertension (20) and diabetes mellitus (06) respectively.

Table 5: Associated comorbidities.

COMORBID CONDITIONS	NO. OF PATIENTS
GERD	35
HYPERTENSION	20
DIABETIC MELLITUS	06
TOTAL	61

Distribution Based on Class of Drugs Prescribed

Among the 178 patient case records, the maximum number of patients were prescribed with corticosteroids (23.05%), antibiotics (15.3%) and methylxanthines (14.77%).

Other classes of drugs prescribed includes anti-cholinergic (12.11%), antacids (10.44%), beta-agonists (10.99%), anti-hypertensives (4.53%), anti-emetics (2.27%), anti-histamine (2.16%), muco-active agents (1.5%), anti-diabetics (0.9%) and others (0.79%) respectively.

Table 6: Distribution based on class of drugs prescribed.

CLASS OF DRUGS	NO. OF DRUGS	PERCENTAGE
Corticosteroids	234	23.05%
Beta-Agonists	111	10.93%
Methylxanthines	150	14.77%
Leucotrienes	13	1.2%
Anti-histamine	22	2.16%
Anti-cholinergics	123	12.11%
Gastro-intestinal Agents	106	10.44%
Anti-emetics	23	2.27%
Antibiotics	155	15.3%
Muco-active agents	15	1.5%
Anti-hypertensives	46	4.53%
Anti-diabetic agents	09	0.9%
Others	08	0.79%

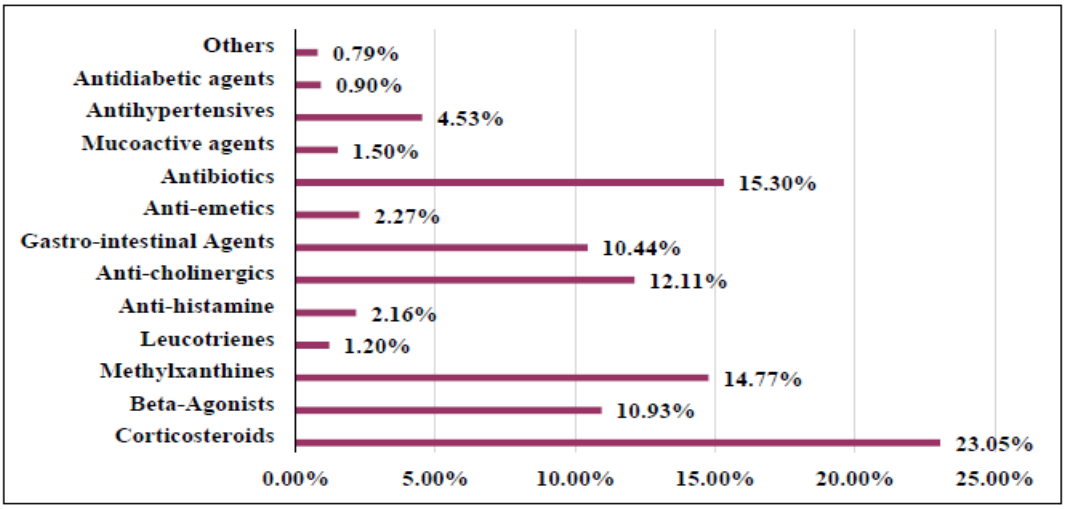

Figure 5: Distribution based on class of drugs prescribed.

Distribution Based On Drugs Prescribed For Bronchial AsthmaExacerbation

The most commonly prescribed class of drugs are corticosteroids (23.05%). The second most class ofdrugs prescribed were antibiotics (15.3%) which was followed by methylxanthines (14.7%) and anticholinergics (12.11%) respectively. Oxygen Inhalation (9.85%) were also provided as supportive therapy.

Table 7: Distribution based on drugs prescribed for Bronchial Asthma.

DRUGS	NO. OF DRUGS	PERCENTAGE
METHYL XANTHINE DERIPHYLLINE	150	14.77%
CORTICOSTEROIDS HYDROCORTISONE DEXAMETHASONE BUDESONIDE	234 100 12 122	23.05%
ANTIBIOTICS CEFTRIAXONE CEFOTAXIME AMIKACIN METRONIDAZOLE AMOXICILLIN	155 85 53 8 5 4	15.3%
LEUCOTRIENES MONTELEUKAST	13	1.2%
ANTIHISTAMINE CHLORPHENERAMINE MALEATE	22	2.16%
ANTICHOLINERGIC IPRATROPIUM BROMIDE	123	12.11%
BETA-AGONISTS		
SALBUTAMOL	111	10.93%
MUCOACTIVE AGENTS MACKOFF	15	1.5%
SUPPORTIVE THERAPY OXYGEN INHALATION	100	9.85%

Corticosteroids Prescribed For Bronchial Asthma Exacerbation

Among the 234 corticosteroids prescribed budesonide (52%) was most commonly prescribed. Other corticosteroids prescribed were hydrocortisone (43%) and dexamethasone (5%).

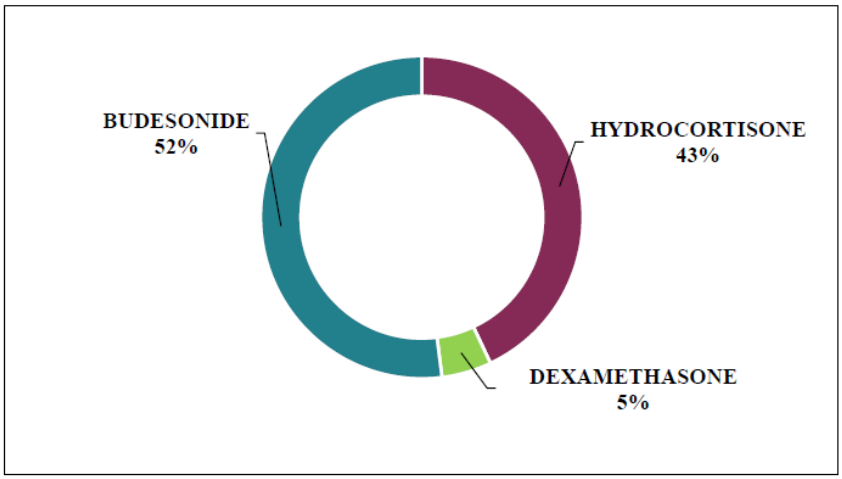

Figure 6: Corticosteroids prescribed for bronchial asthma.

Antibiotics Prescribed For Brochial Asthma Exacerbation

The second most class of drugs prescribed in maximum were antibiotics. Among the 155 antibiotics prescribed, ceftriaxone (55%) and cefotaxime (34%) were the drugs prescribed in maximum number.

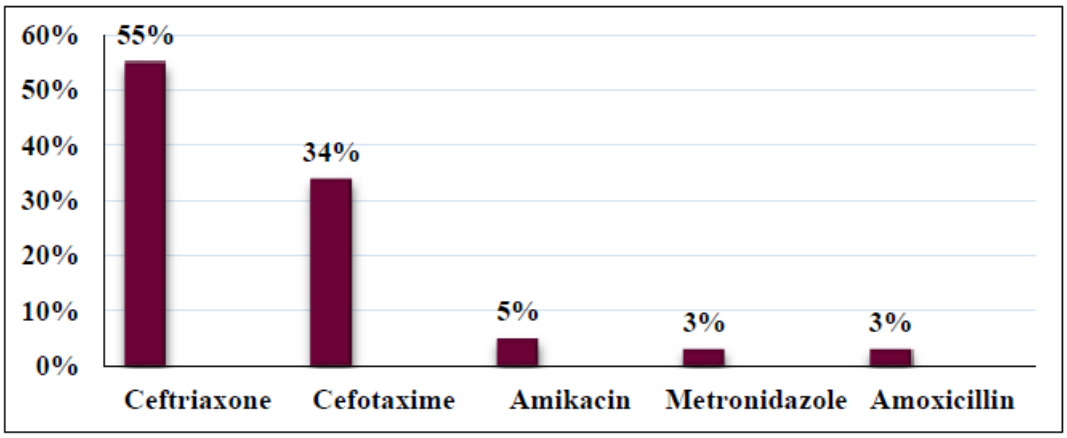

Figure 7: Antibiotics prescribed for bronchial asthma.

Drugs Prescribed For Associated Comorbidities

GERD were found to be the most common comorbidity associated with bronchial asthma and GI agents (106) like ranitidine and pantoprazole was prescribed in maximum.

Table 8: Drugs prescribed for associated comorbidities.

COMORBIDITIES			
	GERD	**HYPERTENSION**	**DIABETES MELLITUS**
	Antacids Ranitidine **Proton pump inhibitors** Pantoprazole	**Diuretics** Furosemide Spirinolactone Mannitol Torsemide **ACE Inhibitor** Enalapril **Angiotensin receptor Blocker** Losartan **Beta Blocker**Atenolol **Calcium channel blocker** Amlodipine	**Insulin** Human Mixtard Human Actrapid **OHA** Metformin
TOTAL	**106**	**46**	**09**

DISCUSSION

The retrospective study carried out on prescribing pattern among 178 bronchial asthmatic patients with exacerbation consisting patient details were collected

from inpatient case records at tertiary care hospital, Mandya. The present study showed higher predominance of bronchial asthma exacerbation in male patients (63%) compared to females (37%). This was similar to the study conducted by ***Ameya Puranik et al.***

Categorization based on age group denoted that the maximum number of cases were among the age group of 38-47 (29.21%) whereas in the study conducted by ***Saba Ramzani Kharazi et al.,*** majority of the asthma attack was found in the patients of age group between 30-41 ages of years (38%).

In contrast to the study conducted by ***Anju Prasad et al.,*** with majority of dosage forms of drugs prescribed were parenteral (53.49%) via intravenous route of administration (53.49%). Maximum number of drugs were prescribed in its generic name (51.94%) than brand name (48.05%). GERD were found to be the most common comorbidity associated with bronchial asthma and GI agents (106) like ranitidine and pantoprazole was prescribed in maximum.

Among the 178 patient case records, the maximum number of patients were prescribed with corticosteroids (23.05%). ***Saba Ramzani Kharazi et al.,*** conducted a study on asthma exacerbation also had the similar result of majority of corticosteroids prescription. The result of usage of different classes of drugs has also revealed that maximum patients received antibiotics (15.3% included maximum of ceftriaxone (55%) and methylxanthines (14.77%) along with corticosteroids. The most commonly prescribed class of drugs are corticosteroids (23.05%) includes budesonide (52%) followed by hydrocortisone (43%) and dexamethasone (5%).

Fixed dose combination of nebulization (duolin and budecort) was also administered to the asthmatic patients. Monteleukast was prescribed as an adjuvant therapy in the present study and this was also noted in the study conducted by ***Basavaraju Thejur et al.,*** The present study showed that the about 100 patients with bronchial asthmatic exacerbation were administered with oxygen inhalation as supportive treatment.

CONCLUSION

This study concluded that the majority of subjects were suffering from bronchial asthma are from middle aged male patients. The tobacco smoking and acute exposure to dust have found to be the reason for bronchial asthma. Corticosteroids and beta agonist combinations are the most commonly prescribed drugs for asthma followed by methylxanthines. The most commonly prescribed asthmatic medication in combination therapy was inhaled salbutamol with ipratropium followed by intravenous hydrocortisone and oral Monteleukast. Hence, this study revealed that exacerbation of the Asthmatic patient's required therapeutic management based on the severity as well as adjuvant non-pharmacological therapy, especially pediatric and geriatric patients may be required hospitalization.

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Conflict of Interest: The authors declared no conflict of interest.

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