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DRUGS USED IN THE EMERGENCY AND CASUALTY DEPARTMENT OF TERTIARY CARE TEACHING HOSPITAL, MANDYA: A RECORD BASED STUDY

Dr. Suresha B.S.*[1], Jayashree B.C.[2] and Keziah Jacob[3]

[*1]Professor and HOD, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India - 571422.

[2]Principal Investigator, Pharm D Student, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India - 571422.

[3]Pharm D Student, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India - 571422.

***Corresponding Author: Dr. Suresha B.S.**

Professor and HOD, Department of Pharmacy Practice, Bharathi College of Pharmacy, Bharathinagara, Mandya, Karnataka, India - 571422.

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ABSTRACT

The emergency department represents a crucial platform for conducting drug utilization studies as patients present with a wide spectrum of diseases in acute form. Emergencies such as poisoning cases, acute myocardial infarction (AMI) and cerebrovascular accident (CVA) are the most common causes of death and disability in India. Pantoprazole and ceftriaxone are the most commonly prescribed drugs during the admission in the emergency department. Instituting appropriate therapy is necessary for safety of the patients and to decrease mortality and morbidity. **Objective:** To describe the prescribing pattern of drugs and to determine the most commonly prescribed drugs in the emergency and casualty department of tertiary care teaching hospital, in Mandya. **Methodology:** A record-based study was carried out in the emergency department of Mandya Institute of Medical Science, Mandya for about 6 months, after getting the approval from Institutional Ethics Committee. Case records of all the patients who were admitted to emergency department in the duration of 3 months were collected. The patients case records was analysed for drug prescribing pattern in emergency department. **Result:** The collected data was analysed by using WHO prescribing indicator. A total of 200 patients who were admitted in this department were enrolled in this study based on study criteria. Out of this, the majority of patients admitted in the emergency department were of age group less than 20 years (19.5%), 31-40 years (17.5%),61-70 years (16%) etc. The most common diagnosis was found to be cardiovascular disease 36 (18%), respiratory disease 32 (16%), fever 30 (15%) & consumption of poison 23 (11.5%). **Conclusion:** The most commonly prescribed class of drugs was found to be cardiovascular drugs 18.1%, antibiotics 17%, gastrointestinal drugs 16.1%. Cephalosporins and pantoprazole are found to be the most commonly prescribed drugs.

KEYWORDS: Drugs, Emergency department, Casualty.

INTRODUCTION

Medicines plays a dominant role in health care delivery and disease anticipation. To maintain effective health care, availability and affordability of good quality drugs along with their rational use is necessary. However, irrational drug use is prevalent, especially in the developing countries due to irrational prescribing, dispensing, and administration of medications to the patients for the different disease conditions.[1]

The emergency department represents an crucial platform for performing drug utilization studies as patients present with a wide range of diseases in acute form and the drug use is quite substantial. Therefore, evaluating the drug prescribing behaviour and usage patterns in the emergency settings has the potential of determining the rationality of drug therapy being given in the particular region to a wide extent.[1]

The World Health Organization (WHO) defines drug utilization research as "the marketing, distribution, prescription and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences.[2]

Emergency medicine is the area that cares for the care seeker, at the most endangered moments of their life. It faces the challenge of evaluating the early phases of the biological behaviour in diseases. Instituting appropriate therapy is essential for a favourable outcome of the patient and to decrease mortality and morbidity. Physicians often face challenges in opting, initiating and

individualizing appropriate drug treatment for patients admitted in the Emergency medicine ward.[3]

Patients approach to the ED for evaluation of emergent or urgent conditions for after-hours medical care, or by referral from their primary physician. In the ED, doctors face urgent and sever cases that need to be treated quickly with high quality.[4]

METHODOLOGY

This was a record-based study conducted in Mandya Institute of Medical Sciences (MIMS) and Teaching Hospital, Mandya for a period of 6 months. The data was collected from patient case records of both male & female patients who were admitted in the emergency and casualty department. The sample size was 200. The study was approved by Institutional Ethics Committee, MIMS teaching hospital, Mandya. Case Records of all the patients who were admitted to the Emergency department of Mandya Institute of Medical Science, Mandya, was included. Incomplete and illegible data records are excluded in the study. A suitably designed data collection form was used to collect the necessary data including patient's name, age, sex, address, department, diagnosis and treatment. The collected information was documented and subjected for analysis using suitable statistical method.

Analysis: For the analysis of the results, simple percentage calculation was done. Microsoft Word and Microsoft Excel are used to generate graphs and tables wherever required.

RESULTS

The Record Based study was conducted in Emergency and Casualty Department of MIMS Teaching Hospital, Mandya. In this study, 200 patients case records were collected and analysed, who were admitted in Emergency Department. The Patient's details such as age, gender, complaints and treatment were collected from the patient's case records and documented in a suitably designed patient profile form.

PATIENT DISTRIBUTION BASED ON GENDER

In this study, out of 200 Patient's case records, 96 (48%) Patients were Male and 104 (52%) Patients were Female.

Table 1: Patient Distribution Based on Gender.

Gender	No. Of Patients	Percentage
MALE	96	48%
FEMALE	104	52%

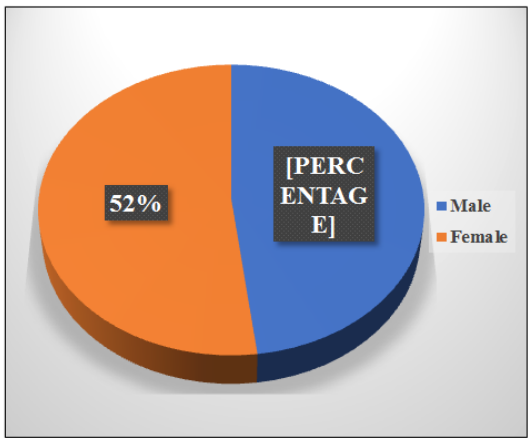

Figure 1: Patient Distribution Based on Gender.

PATIENT DISTRIBUTION BASED ON AGE

All patients admitted in emergency & casualty department were categorised based on their age as <20, 21-30, 31-40, 41-50, 51-60, 61-70, >70. Out of these, the majority of patients admitted were of age group < 20 years 19.5% (M=21 & F=18).

Table 2: Patient Distribution Based on Age (n=200).

AGE RANGE (IN YEARS)	TOTAL NO. OF PATIENTS	PERCENTAGE
< 20	39	19.5 %
21-30	23	11.5 %
31-40	35	17.5 %
41-50	22	11 %
51-60	24	12 %
61-70	32	16 %
>70	25	12.5 %

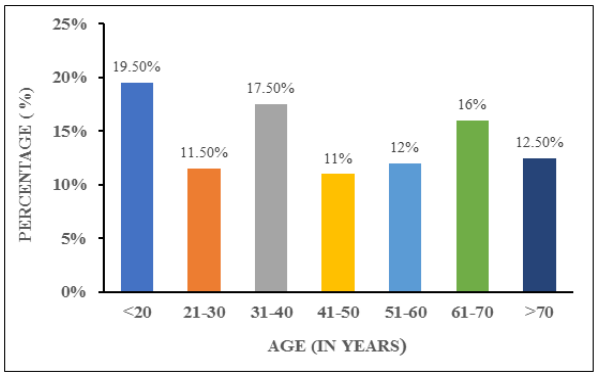

Figure 2: Patient Distribution Based on Age.

REASON FOR ADMISSION OF PATIENTS

As shown in Table 3, out of 200 patients, the majority of patients were admitted for the reason of Fever (15%), Easy fatigability (11.5%) and Breathlessness (10.5%).

Table 3: Reasons for Admission.

Reasons	No. of Patients	Percentage
Fever	30	15%
Breathlessness	21	10.5%
Nausea and Vomiting	32	16%
Abdominal Pain	19	9.5%
Easy fatigability	23	11.5%
Chest discomfort	12	6%
Cough	17	8.5%
Diarrhoea	09	4.5%
Giddiness	14	7%
Headache	11	5.5%
Involuntary movements	05	2.5%
Others	07	3.5%

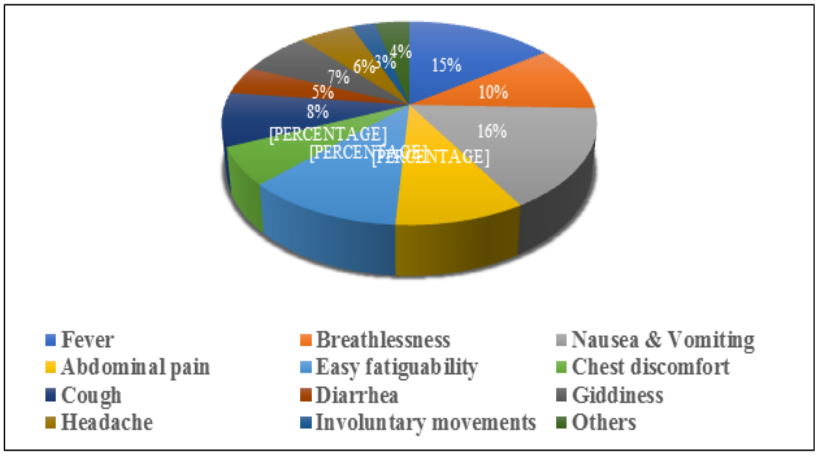

Figure 3: Reasons for Admission.

CATEGORISATION BASED ON DIAGNOSIS

As shown in the Table 4, out of 200 prescriptions, the most commonly found diagnosis was cardiovascular diseases (18%) followed by respiratory diseases (16%), fever (15%), consumption of poison accounts about (11.5%).

Table 4: Categorization Based on Diagnosis.

Diagnosis	No. of Cases	Percentage
Cardiovascular disease	36	18%
Gastrointestinal disease	13	6.5%
Neurological disease	15	7.5%
Respiratory disease	32	16%
Snake bites	3	1.5%
Renal disease	8	4%
Anaemia	11	5.5%
Hepatic disease	20	10%
Consumption of poison	23	11.5%
Fever	30	15%
Others	09	4.5%

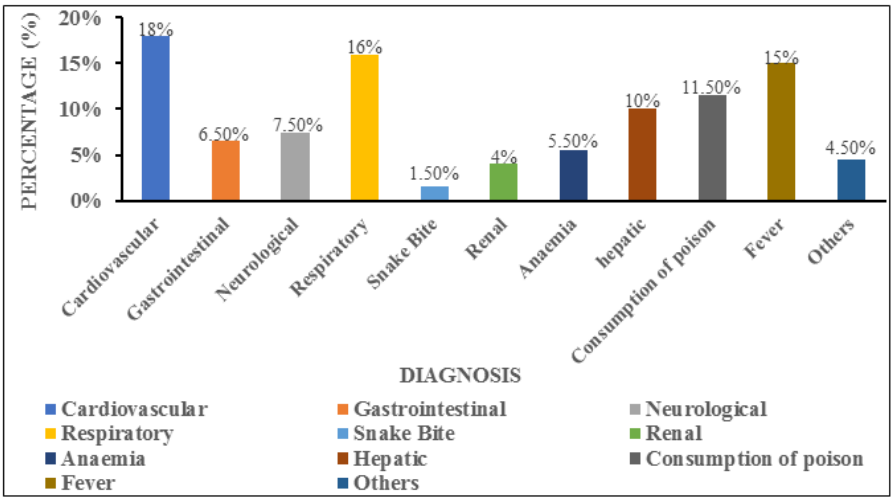

Figure 4: Patient Characteristics Based on Diagnosis.

ROUTE OF DRUG ADMINISTRATION.

As shown in figure 5, the drugs were given in 4 dosage forms in this study population. Out of total 1036 drugs the majority drugs are given through intravenous route followed by oral route.

Table 5: Route of Drug Administration.

Route of Drug Administration	Total	Percentage
Injectables	657	63.3%
Oral	340	32.8%
Inhalation	39	3.7%

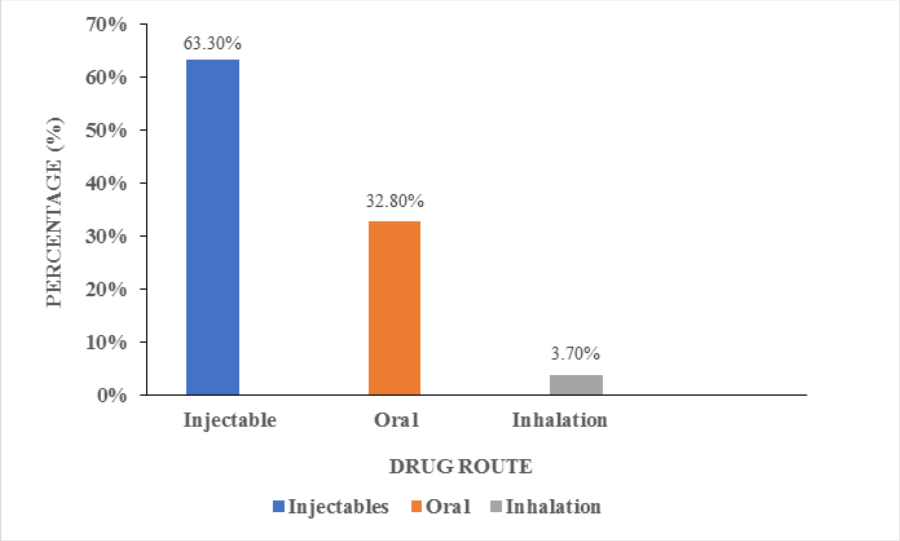

Figure 5: Route of Drug Administration.

MOST COMMONLY PRESCRIBED DRUGS

As shown in the figure 6, the most commonly prescribed drugs were found to be pantoprazole (87.50%), Cephalosporins (85%), Furosemide (72%) etc.

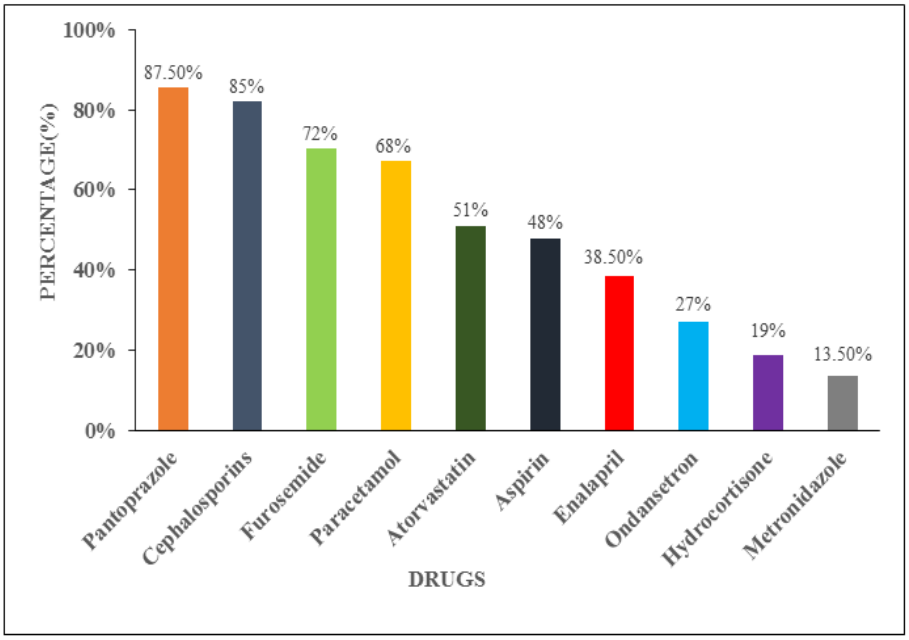

Figure 6: Most Commonly Prescribed Drugs.

DIAGNOSIS V/S FIRST LINE DRUG THERAPY

As shown in Table 7, the most commonly prescribed drug class in the emergency department was found to be Antibiotics (17.8%), GIT drugs (16.9%), CVS Drugs (16.6%) etc.

Table 7: Diagnosis V/S First Line Drug Therapy.

Diagnosis	First line drug therapy	No. Of prescriptions	Percentage
Pain and Inflammation	Paracetamol Hydrocortisone	42	4.0%
GIT related	Pantoprazole Omeprazole Ranitidine Ondansetron	176	16.9%
CVS related	Digoxin Amlodipine Enalapril Furosemide Spironolactone Dopamine Atorvastatin Aspirin & Streptokinase	172	16.6%
CNS related	Haloperidol Risperidone Fluoxetine Diazepam Lorazepam Phenytoin Sodium Valproate	65	6.2%
Respiratory Tract related	Salbutamol Ipratropium Bromide Budesonide Oxygen inhalation	93	8.9%
Poison consumption	Atropine & Stomach wash	38	3.7%
Infections	Ceftriaxone Cefotaxime Nitrofurantoin Metronidazole Azithromycin	185	17.8%

	Doxycycline Amoxicillin + clavulanic acid Amikacin		
Cold	Chlorpheniramine maleate Cetirizine hydrochloride	25	2.4%
Diabetes mellitus	Metformin & Human Actrapid	79	7.6%
Thyroid Disease	Thyronorm	26	2.5%
Anaemia	Ferrous Sulphate+Folic Acid Vitcofol	40	3.8%

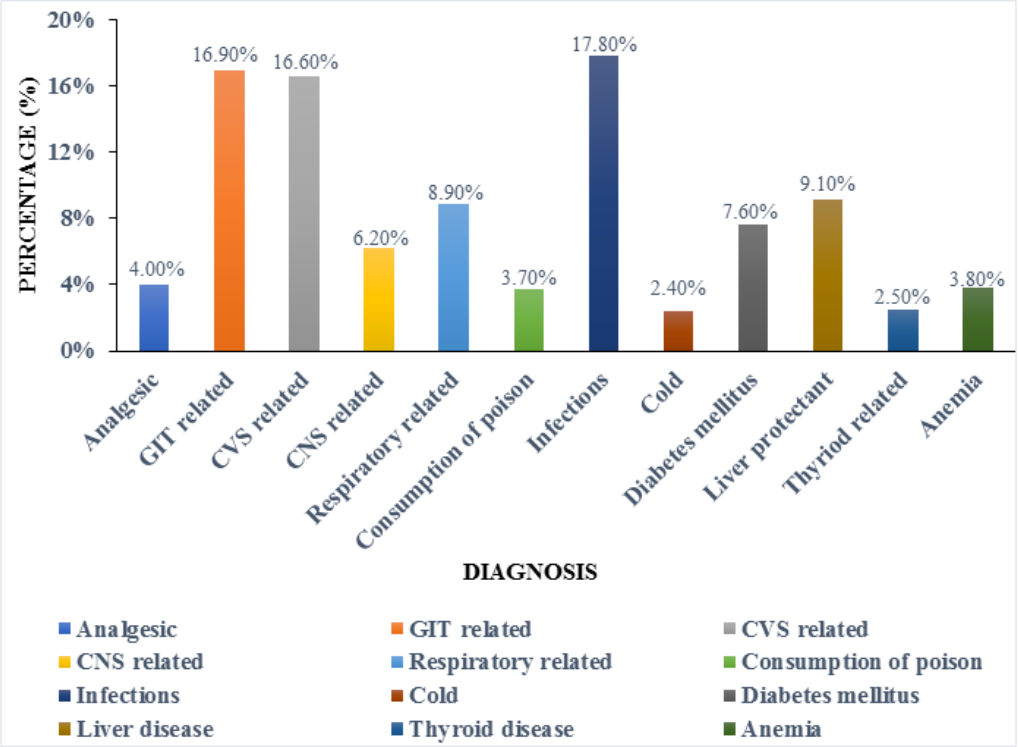

Figure 7: Diagnosis V/S First Line Drug Therapy.

WHO PRESCRIBING INDICATORS.

Table 8: WHO Prescribing Indicators.

PARAMETERS	WHO VALUE	OBTAINED VALUE
Average no. of drugs per prescription	1.6-1.8	5.18
% of drugs prescribed by generic name	100%	43.4%
% of encounters with antibiotics	20-26.8%	92.5%
% of encounters with injections	13.4-24.1%	94.5%
% of drugs prescribed from EDL	100%	73.5%

DISCUSSION

Drug utilization studies are conducted to monitor and evaluate prescribing pattern. They also suggest modification and improvement in prescribing practices and promote rational prescribing practices. Study of prescription patterns is an important tool to determine and improvise rational drug therapy. Rational prescribing optimizes benefits and safety, and maximizes utilization of resources.

A total of 200 patients were included in the study, out of them 96 (48%) were male and 104 (52%) were female patients. Average number of drugs per prescription was 5.18 (Polypharmacy was relevant) which was more than double the average number (Ideal 1.6 - 1.8) recommended by WHO. It is always preferable to keep the mean number of drugs per prescription as low as possible to minimize the adverse effects, drug interactions.

The percentage of drugs prescribed by generic name in this study was 43.4 %. This finding was lower than the standard derived to serve as ideal (100%). Prescribing the drugs by the generic name also reduce the confusion among the pharmacists while dispensing, eliminates the chance of duplication of drug products and reduces the cost of therapy.

Antibiotics are important category of drugs and its improper use can result in antibiotic resistance which may contribute in enhanced cost, patient morbidity and mortality. Therefore, monitoring and evaluation of prescribing patterns of antimicrobial agents and recommendations to improve and modify the prescribing pattern are one of the recommended strategies to control resistance and also to improve the prescribing practices. Percentage of encounters with Antibiotics was found to be 92.5%. Cephalosporins such as Ceftriaxone (41%) and Cefotaxime (18%) were the most commonly prescribed Antibiotics during the study.

Number of encounters with injectables was on the higher end (94.5%), which again seems justifiable on account of need of immediate drug action in emergency and as the patients will be intolerant to oral medications. Total number of drugs administered through injectables was found to be 63.3%. Intravenous pantoprazole added to the higher propensity of injectables as it was seen in >54% prescriptions, followed by ceftriaxone (41%) and Cefotaxime (18%). Pantoprazole was administered as GI prophylaxis in patients not taking oral feeds or those receiving non-steroidal anti-inflammatory drugs, aspirin and corticosteroid who were at a higher risk of developing gastric mucosal damage. Other than PPI's, H_2 receptor antagonist such as Ranitidine (6.5%) was prescribed.

Drugs prescribed from the WHO essential medicine list comprised about 73.5% of drugs. This proportion should have been higher since this list of drugs is prepared with regard to public health relevance, evidence on efficacy and safety of the drugs, and comparative cost effectiveness.

The distribution of the drugs among patients included in the study was as follows: 28% (56) patients received 6 drugs, 21.5% (43) patients received 7 drugs, 13% (26) patients received 8 drugs, 19.5% (39) patients received 9 drugs, 18% (36) patients received 11 drugs. Hence, Polypharmacy was seen predominantly.

Cardiovascular disease was found to be the major disease condition for the hospital admission, followed by Respiratory disease (18% and 16 % respectively).

Acute Coronary syndrome was found more in the patients of age group 51-60 years, followed by stroke and hypertension. COPD and asthma were found more in patients of age group 61-70 years and patients belonging to rural areas rather than from urban areas. The association of aging and respiratory problems is a result of cumulative effects of smoking and environmental exposure in susceptible individuals. Our study also found that patients from rural areas were chronic smokers; this might be the reason behind the higher number of patients of COPD and asthma.

CONCLUSION

Our study gives an insight into the current practice pattern of emergency medication in department of emergency and casualty in a tertiary care hospital. Also enhance the knowledge regarding the medication use in the emergency and casualty department which helps in future management of patients. In this study we found that, the most commonly prescribed class of drugs was found to be cardiovascular drugs 18.1%, antibiotics 17%, gastrointestinal drugs 16.1%. Cephalosporins and pantoprazole are found to be the most commonly prescribed drugs.

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CONFLICT OF INTEREST

The authors declared no conflict of interest.

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