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Research Article

**DRUG UTILIZATION STUDY IN EMERGENCY DEPARTMENT
IN A TERTIARY CARE HOSPITAL**Anjum Ahamadi¹, Asma fatima¹, Mariam Syed¹, Md Sajjad¹, Syed Jaffer^{2*}¹PharmD, Sultan-ul-Uloom college of Pharmacy, JNTUH, Telangana, India – 500075²Assistant Professor, Dept. of Pharmacy Practice, Sultan-ul-Uloom College of Pharmacy, JNTUH, Telangana, India – 500075**Article Received:** October 2022 **Accepted:** November 2022 **Published:** December 2022**Abstract:**

Drug Utilization Evaluation (DUE) studies are designed to evaluate the appropriateness of drug usage on an ongoing prescription.

***Objectives:** The objective of this study was to evaluate the management of patients presenting to the emergency department and the direct cost of therapy in the emergency medicine department of a tertiary care hospital in Hyderabad.*

***Materials and methods:** A cross-sectional study was for a period of 6 months. All the necessary data was collected prospectively in that period of time. The prescriptions were analysed and the cost was calculated.*

***Results:** The numbers of patients presented to ER were 200. All the 200 patients presenting to ER were above 18 years of age. Out of 200 patients 75 (37.5%) were female and 125 (62.5%) were male. Out of 200 Allergies were found in 4 (2%) patients. 4 (2%) were alcoholic, 2 (1%) were obese, and 2 (1%) smokers. Most of the patients presented with cardiovascular disease (58, 29%) and were treated accordingly. 111 (55.5%) patients have Hypertension as comorbidity 66 had DM (33%) and as follows. The maximum duration of the emergency department stay of a patient was 4 hours then the patients were either shifted to other respective departments based on condition. 3 (1.5%) deaths were seen. PPI'S was majorly administered to patients, followed by Antiemetic, Antibiotics, and IV fluids. Cost analysis was done most of the cost burden was seen on patients presenting with Cardiovascular disease. The rationality of prescriptions was evaluated using WHO Prescribing Indicators.*

***Conclusion:** From our current study, PPI, Antiemetic and Antibiotic use, injection prescribing, and the number of drugs prescribed per encounter showed considerable deviation from the standards recommended by the WHO. Most of the drug cost was driven by the prescription of PPI, Antiemetic, and broad-spectrum Antibiotics, therefore the hospital pharmacy should be encouraged to procure more cost-effective alternative PPI, Antiemetic, and Antibiotics.*

***Key words:** Emergency department, evaluate, Antibiotics, PPI, Antiemetic, Rational, Generic.*

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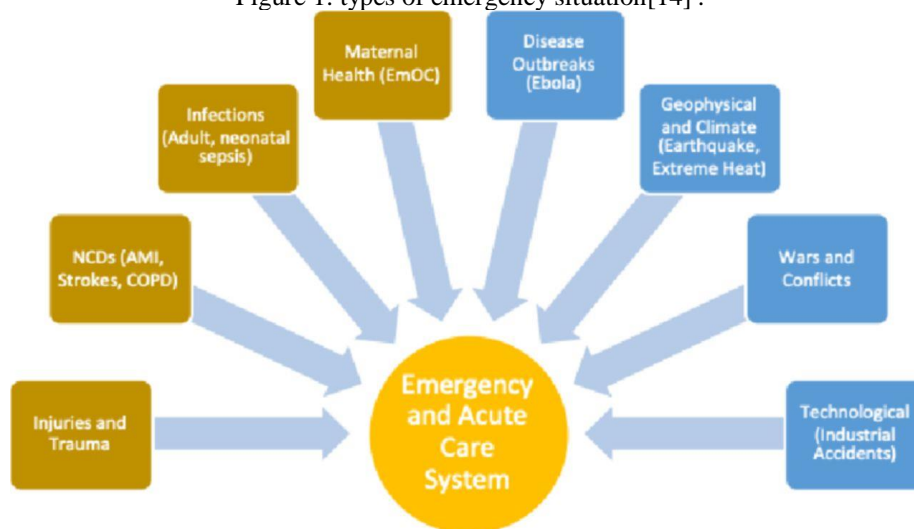
INTRODUCTION:

Medicines are an essential component of the health care system. They produce the desired effect on rational use. On the other hand, their irrational use causes prolongation of the illness, development of adverse effects, and unnecessary expenses. Irrational drug use refers to the use of drugs when they are not needed [1]. This pattern is very common and leads to medication errors and adverse events [2, 3]. Many risk factors that are involved in drug prescription errors may include polypharmacy, lack of sufficient pharmacological knowledge, errors in patients' charts or documentation by nurses, inadequate pharmacy service, being a female, age >65 years, renal excretion of drugs, drugs with narrow therapeutic index and the use of anticoagulants or diuretics [3]. Furthermore, several studies in the United States have consistently reported adverse drug events ranging from 3% to 12% [4]. Many countries are doing their best to overcome the irrational use of the drug by developing various guidelines and manuals example National Essential Medicine List, Standard treatment guidelines for hospitals, Drug and therapeutic committees, etc. [1]

Emergency medicine is the special care given to the care seeker, at the most vulnerable moments of their life. As it is a challenging job Urgency, unpredictability and the need to acquire skills in the entire spectrum of age, gender, and pathology are the hallmarks of the specialty [5, 6]. Because of this, physicians are struggling to select, initiate, and

individualize appropriate drug therapy for patients admitted to the emergency unit leading to medication errors [7]. For example, a study conducted in this department reported over 50% of medication errors [8]. In around 50 countries emergency medicine is considered as speciality including India since 2009 [5, 9,10]. Therefore the problems, challenges, and practices of emergency medicine are globally similar [11]. Patients come to the ED for evaluation of emergency conditions for after-hours medical care, or by reference from the primary physician. In the ED, the doctors face urgent and severe cases that need to be treated quickly with professional techniques. This is a challenge for physicians to select appropriate drugs and initiate therapy. Additionally, the distinctive operating structure of ED makes it vulnerable to errors including medication errors and adverse drug events. Many factors, either intrinsic or extrinsic, affect the quality of health care in the ED [4]. Attention should be paid to both the clinical and economic significance of any health system for its appropriateness [12]. Drug utilization research is an element of medical audit that plays a significantly important role in pharmacoepidemiologic AI and Pharmacoeconomics studies. This is because it represents the extent, quality, determinants, and outcome of drug exposure. In addition, it helps in evaluating rational use and cost analysis and control of various drugs used in the Emergency Department. Pharmaco-epidemiological studies evaluating prescribing patterns of physicians are very few from developing countries [13].

Figure 1: types of emergency situation[14].

**METHODOLOGY:**

Study site: This study was conducted at the Aster Prime Hospital. The ED is visited by approximately 100 patients monthly.

Study design and subjects: A prospective cross-sectional study was carried out for of 6 months in the emergency medicine department of our institute after obtaining approval from the Institutional Review

Board. Rationality was calculated using WHO prescribing indicators.

Study duration: 6 months (August 2021 – January 2022).

Sample size: In the emergency unit, the current investigation was carried out on 200 patients.

SELECTION CRITERIA:

Inclusion criteria:

Patients of both genders. Age >18 years admitted to ED.

Exclusion criteria:

Pregnant females. Patients who did not get any treatment in ED.

SOURCE OF DATA:

All essential data have been gathered from

- 1) Patient data collection form
- 2) Treatment chart

DATA COLLECTION:

The study began with the agreement of the Institutional Ethical Committee (IEC) of Aster primary hospital. Stationary case forms complying with the inclusion and exclusion criteria of the study were gathered. The information was obtained by employing a patient profile form to incorporate all the relevant data for investigation. The data was collected for six months. For cost assessment, we considered only those drugs which were prescribed within the emergency department for the presenting condition. We used WHO core drug prescribing indicators to evaluate the rationality of prescription.

Statistical analysis:

Data analysis was done by using Microsoft Excel and SPSS.

RESULTS:

1. Age distribution:

Table 1: represents the age distribution of 200 patients admitted in the Emergency Department. Out of 200 patients admitted this was the age distribution.

Table 1: Age distribution of patients

| Age Group | Frequency | Percentage (%) |
|--------------------|-----------|----------------|
| Less than 20 Years | 2 | 1% |
| 21-30 Years | 22 | 11% |
| 31 - 40 Years | 23 | 11.5% |
| 41 - 50 Years | 32 | 16% |
| 51 - 60 Years | 38 | 19% |
| 61 - 70 Years | 45 | 22.5% |
| 71 - 80 Years | 30 | 15% |
| 81 - 90 Years | 8 | 4% |
| Grand Total | 200 | 100 |

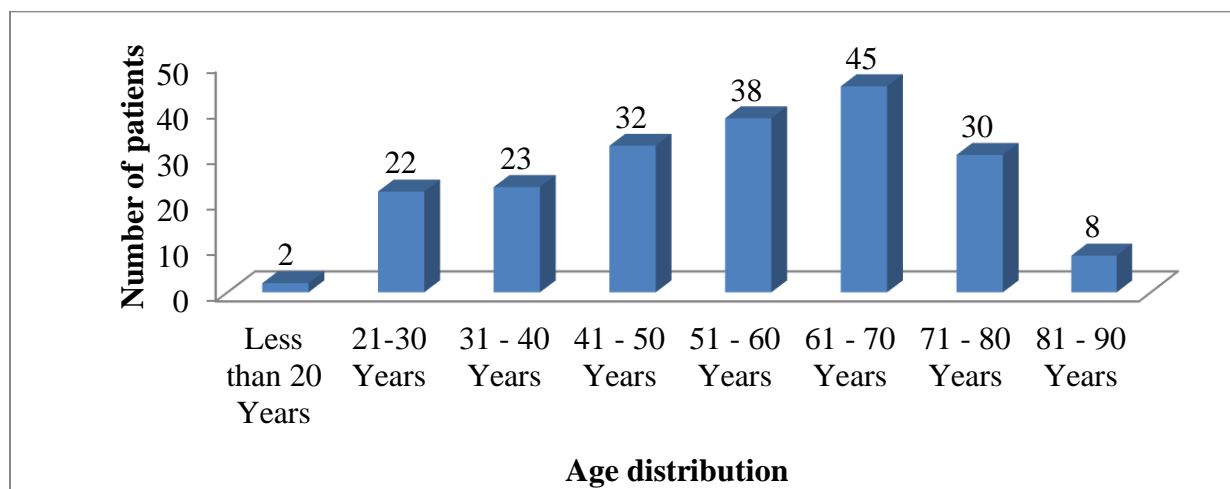


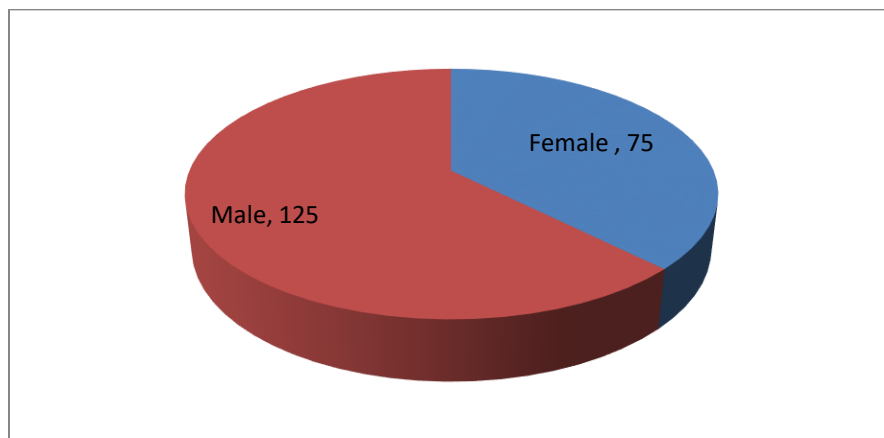
Figure 2: Age distribution of patients

Gender distributions:

It is observed from Table 2 that 62.5% patients admitted were male and 37.5% found to be female. Out of 200 patients 75 were female and 125 were male.

Table 2: Gender distribution of patients

| Gender | Frequency | Percentage (%) |
|-------------|-----------|----------------|
| Female | 75 | 37.5% |
| Male | 125 | 62.5% |
| Grand Total | 200 | 100 |

**Figure 3: Gender distribution of patients****Diagnosis of disease in patients:****Table 3: Department wise classification of diagnosis in patients admitted in Emergency**

| diagnosis in patients | Frequency | Percentage |
|---|-----------|------------|
| CARDIOLOGY - CAD, ASC, HF,MI | 58 | 29% |
| PULMONARY - RTI, DYSPNEA | 23 | 11.5% |
| NEPHROLOGY - AKI, CKD, CALCULUS, CYST | 20 | 10% |
| HYPERTENSION - ACCELERATED, URGENCY, EMERGENCY | 13 | 6.5% |
| LIVER DISEASE - CLD, LIVER ABSCESS | 5 | 2.5% |
| GASTRO INTESTINE - GE, GI INFECTIONS | 13 | 6.5% |
| NEUROLOGY - EPILEPSY, STROKE, AXONAL OR NEURONAL INJURY | 25 | 12.5% |
| FALL CASES - FALL AT HOME OR INJURIES | 7 | 3.5% |
| RTA | 5 | 2.5% |
| SEPSIS | 10 | 5% |
| ANAPHYLAXIS | 5 | 2.5% |
| ENDOCRINOLOGY - DKA, HYPERGLYCEMIA | 9 | 4.5% |
| SUICIDE/SELF HARM /POISONING | 5 | 2.5% |
| OTHERS | 16 | 8% |

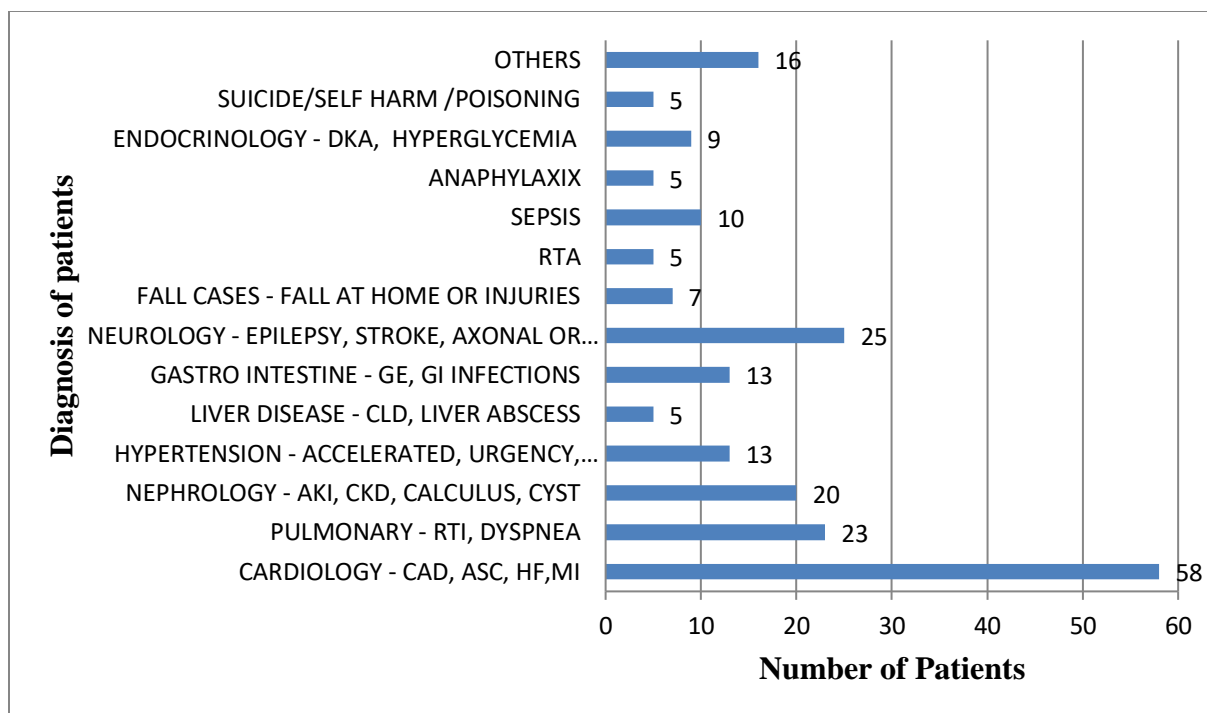


Figure 4: Classification of diagnosis in patients admitted in Emergency Department.

Majority of the patients were admitted with cardiovascular disease followed by neurological which involves seizures, then followed pulmonary, nephrology and as follows.

Table 4: Classification of other diagnosis in patients admitted in Emergency Department

| Detail of other diagnosis | Frequency | Percentage |
|----------------------------|-----------|------------|
| CELLULITIES | 2 | 1% |
| ABDOMINAL PAIN | 2 | 1% |
| ANEMIA | 2 | 1% |
| EPISTAXIS | 3 | 1.5% |
| MENINGITIS | 2 | 1% |
| ENCEPHALOPATHY | 3 | 1.5% |
| ANXIETY / HYPERVENTILATION | 2 | 1% |

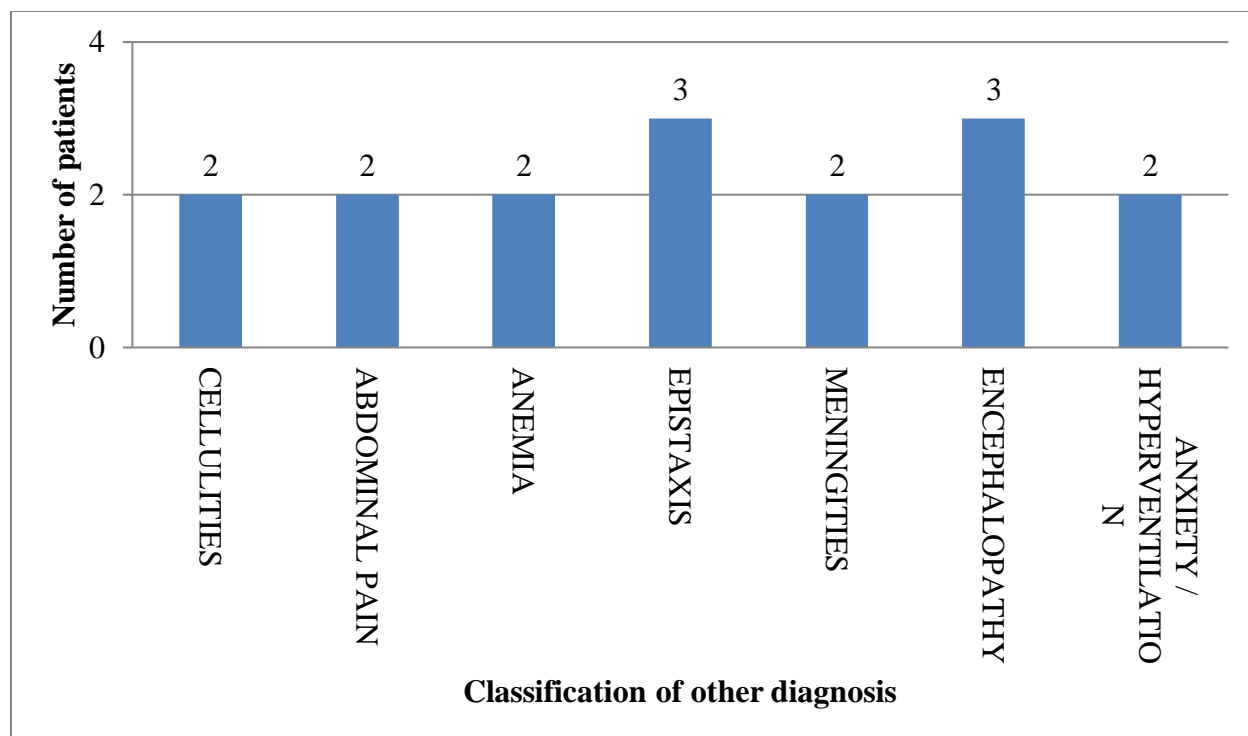


Figure 5: Classification of other diagnosis in patients admitted in Emergency Department

Co-morbidities or risk in patients:

Table 5: Classification of co-morbidities in patients admitted in Emergency Department

| Comorbidities | Frequency | Percent | Comorbidities | Frequency | Percent |
|--------------------------|-----------|---------|----------------------|-----------|---------|
| DM | 66 | 33% | RESPIRATORY FAILURE | 2 | 1% |
| HTN | 111 | 55.5% | MIGRAINE | 1 | 0.5% |
| HYPHTYROIDISM | 10 | 5% | CELLULITIS | 2 | 1% |
| DEPRESSION | 2 | 1% | INTESTINAL INFECTION | 2 | 1% |
| CAD | 28 | 14% | PAIN | 4 | 2% |
| MI | 5 | 2.5% | MENINGITIS | 1 | 0.5% |
| ANEMIA | 3 | 1.5% | CARCINOMAS | 7 | 3.5% |
| FRACTURES | 1 | 0.5% | CHOLESTECTOMY | 3 | 1.5% |
| RENAL CALCULI/RENAL CYST | 5 | 2.5% | OSA | 2 | 1% |
| CKD | 17 | 8.5% | HEAPTOPATHY | 3 | 1.5% |
| BROMCHIAL ASTHAMA | 6 | 3% | GASTRITIES | 1 | 0.5% |
| SEIZURES/EPILEPSYs | 6 | 3% | ASCITIES | 2 | 1% |
| CHF | 3 | 1.5% | FILARIASIS | 2 | 1% |
| STROKE/CVA | 4 | 2% | VARICOSE VEINS | 1 | 0.5% |
| PARKINSONS DISEASE | 5 | 2.5% | ARTHRITIES | 2 | 1% |
| DEMENTIA | 1 | 0.5% | PSORIASIS | 1 | 0.5% |
| BRONCHITIS | 2 | 1% | EMBOLISM | 1 | 0.5% |

Table 5 represents comorbidities in patients. Out of 200 patients admitted majority of them had comorbidity HTN, and DM at second position and as follows.

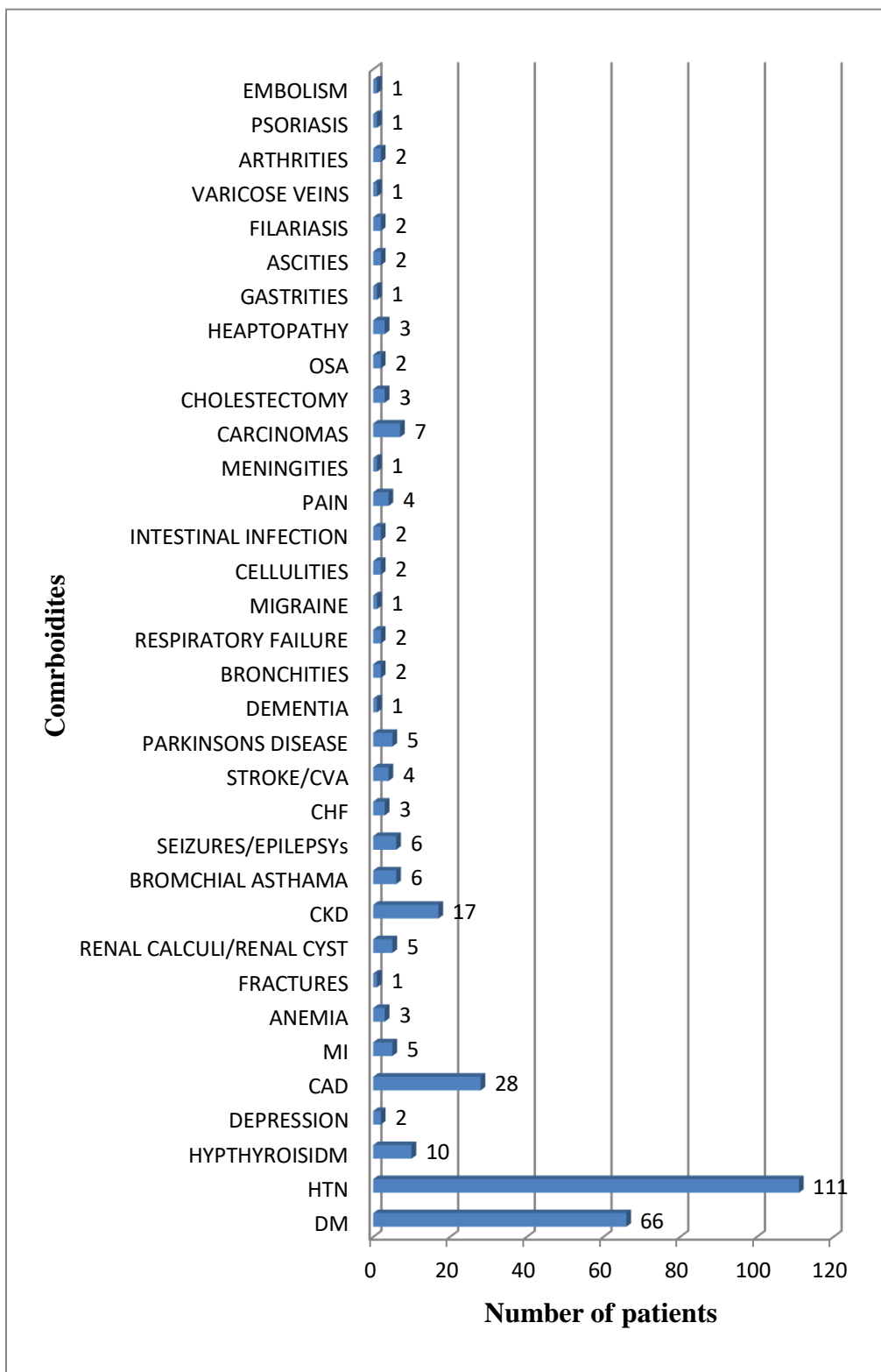
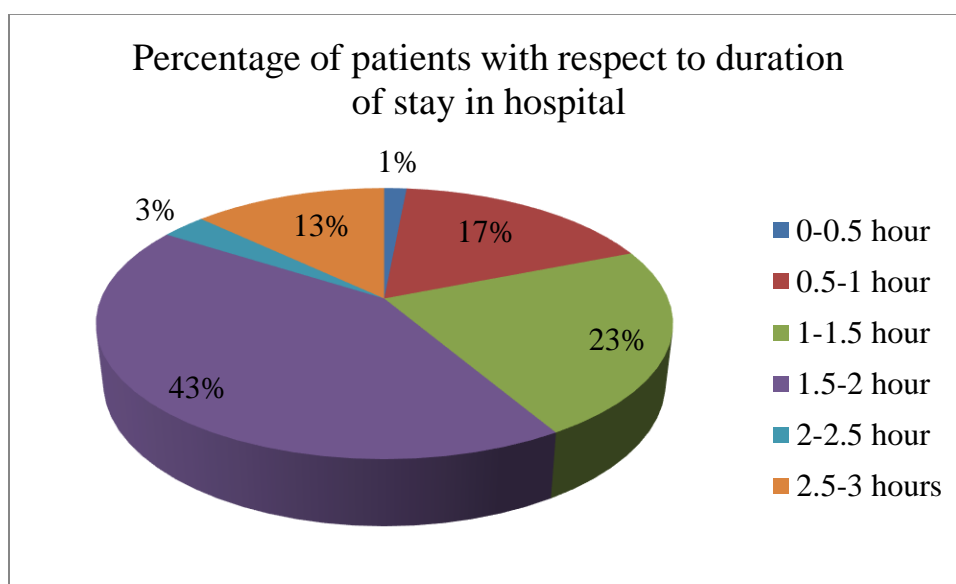


Figure 6: Comorbidities in patients admitted in emergency department.

Duration of stay in hospital by patients:**Table 6: Represents Duration of stay in hospital by patients.**

| Duration of stay in hospital by patients | Frequency | Percentage |
|--|-----------|------------|
| 0-0.5 hour | 3 | 1.5% |
| 0.5-1 hour | 35 | 17.5% |
| 1-1.5 hour | 45 | 22.5% |
| 1.5-2 hour | 85 | 42.5% |
| 2-2.5 hour | 6 | 3% |
| 2.5-3 hours | 26 | 13% |
| Total | 200 | 100 |

**Figure 7: Percentage of patients with respect to duration of stay in hospital****Outcome status of patients in hospital:****Table 7: Outcome status of patients in hospital.**

| Outcome status of patients in hospital | Frequency | Percentage |
|--|-----------|------------|
| Shifted to other department | 174 | 87% |
| Discharged | 23 | 11.5% |
| Death | 3 | 1.5% |
| Total | 200 | 100 |

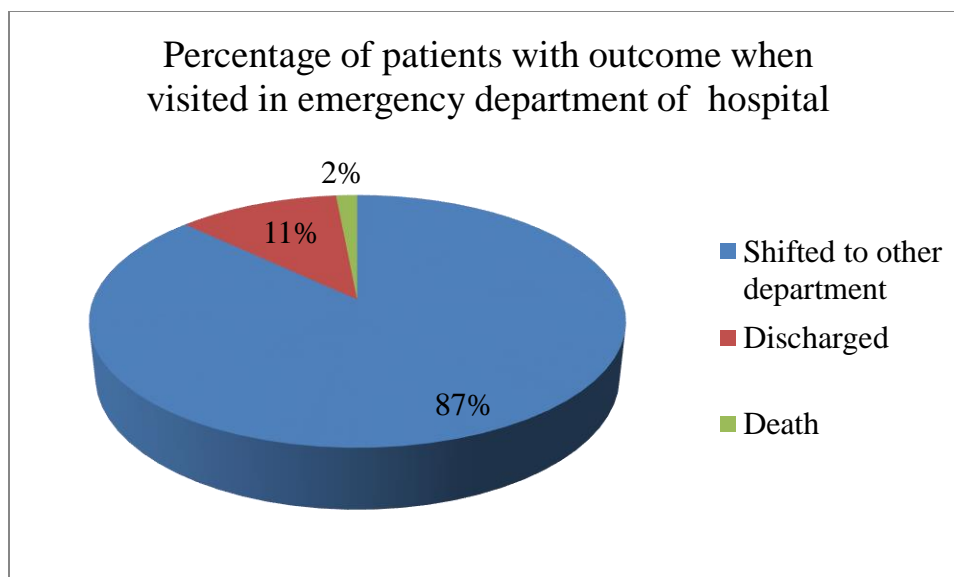


Figure 8: Percentage of patients with outcome when visited in emergency department of hospital.

Out of 200 patients 174 were shifted to other respective departments and 23 were discharged. 3 deaths were seen.

Number of drug prescribed to patients in hospital:

Table 8: Represents Number of drug prescribed to the patients in hospital.

| Number of drug prescribed to patients in hospital | Frequency | Percentage |
|---|------------|------------|
| 0 | 1 | 0.5% |
| 1 | 11 | 5.5% |
| 2 | 14 | 7% |
| 3 | 27 | 13.5% |
| 4 | 34 | 17% |
| 5 | 38 | 19% |
| 6 | 28 | 14% |
| 7 | 18 | 9% |
| 8 | 14 | 7% |
| 9 | 4 | 2% |
| 10 | 1 | 0.5% |
| 11 | 3 | 1.5% |
| 12 | 5 | 2.5% |
| Total | 200 | 100 |

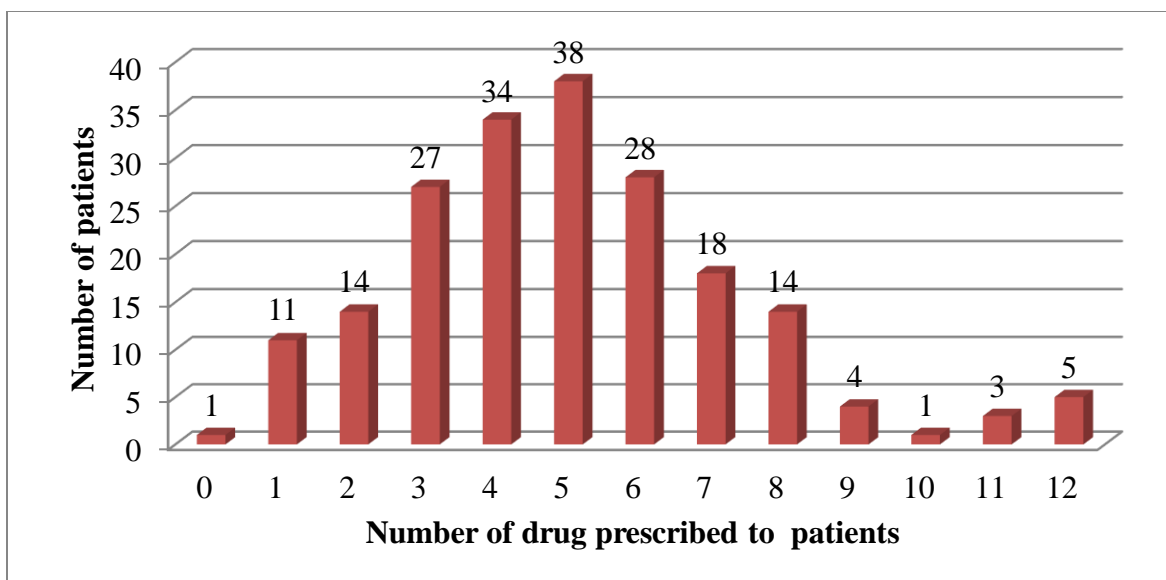


Figure 9: Number of drug prescribed to patients in hospital Vs. Number of patients

Out of 200 patients 1 drug was prescribed to 11 patients, 2 were prescribed to 14 patients, 3 for 27 patients, 4 for 34 patients, 5 for 38 patients, 6 for 28 patients, 7 for 18 patients, 8 for 14 patients, 9 for 4 patients, 10 for 1 patient, 11 for 3 patients and 12 drugs for 5 patients.

Number of generic drug prescribed to patients in hospital:

Table 9: Number of generic drug prescribed to patients in hospital

| Number of generic drug prescribed to patients in hospital | Frequency | Percentage |
|---|-----------|------------|
| 0 | 180 | 90% |
| 1 | 19 | 9.5% |
| 2 | 1 | 0.5% |
| Total | 200 | 100 |

Out of 200 patients 19 patients were prescribed with 1 generic drug and 1 patient was prescribed with 2 generic drugs.

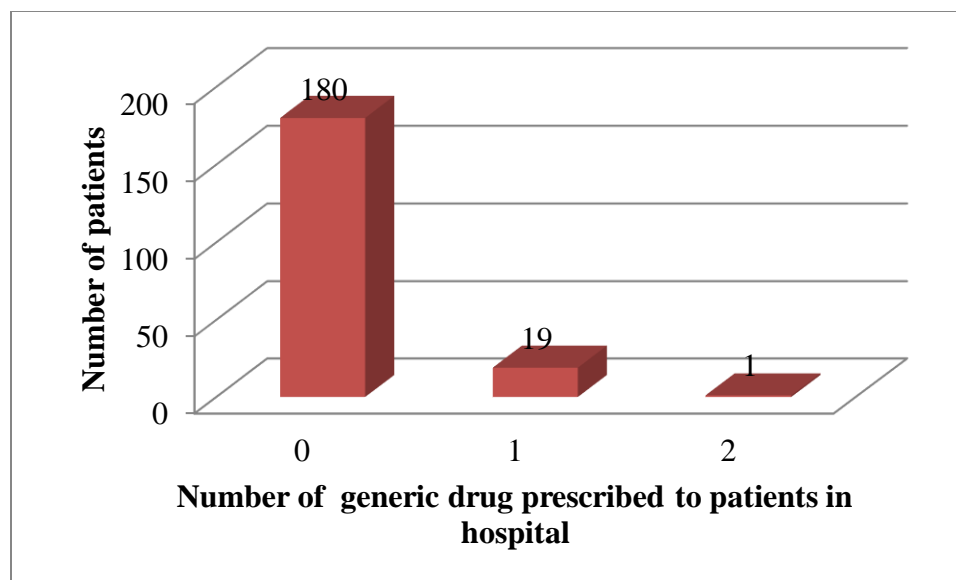


Figure 10: Number of generic drug prescribed to patients in hospital Vs. Number of patients.

Summarized frequency table for various type drugs prescribed to patients in hospital:

Table 10: Summarized frequency table for various type drug prescribed to patients in hospital

| Type of drug | Number of drug prescribed to patients in emergency department of hospital | | | Total number of drugs prescribed |
|---------------------|---|-----------|--------|----------------------------------|
| | 1 | 2 | 3 | |
| NO. OF ANTIBIOTICS | 54 (27%) | 10 (5%) | 2 (1%) | 80 |
| ANTIEMETICS | 119 (59.5%) | 2 (1%) | 0 | 123 |
| PPI | 132 (66%) | 0 | 0 | 132 |
| DIURETICS | 38 (19%) | 5 (2.5%) | 0 | 48 |
| CORTICOSTEROIDS | 30 (15%) | 7(3.5%) | 0 | 44 |
| IONOTROPES POSITIVE | 7 (3.5%) | 6 (3%) | 0 | 19 |
| IONOTROPES NEGATIVE | 9 (4.5%) | 0 | 0 | 9 |
| PARACETAMOL | 47 (23.5%) | 0 | 0 | 47 |
| NSAIDS | 12 (6%) | 0 | 0 | 12 |
| BRONCHIODILATOR | 23 (11.5%) | 2 (1%) | 0 | 27 |
| ANTI EPILEPTICS | 15 (7.5%) | 0 | 0 | 15 |
| ANTI HISTAMINE | 6 (3%) | 0 | 0 | 6 |
| ANTI HYPERTENSIVE | 15 (7.5%) | 0 | 0 | 15 |
| VITAMIN SUPPLIMENTS | 14 (7%) | 0 | 0 | 14 |
| ANTIPSYCHOTIC | 2 (1%) | 0 | 0 | 2 |
| ANXIOLYTICS | 17 (8.5%) | 0 | 0 | 17 |
| INSULIN | 34 (17%) | 0 | 0 | 34 |
| MUSLE RELAXANT | 15 (7.5%) | 3(1.5%) | 0 | 21 |
| ANTI CHOLINERGIC | 22 (11%) | 0 | 0 | 22 |
| ANTI COAGULANTS | 15 (7.5%) | 11 (5.5%) | 0 | 37 |
| COAGULANTS | 9 (4.5%) | 0 | 0 | 9 |
| VACCINES | 2 (1%) | 0 | 0 | 2 |
| ANESTHESIA | 5 (2.5%) | 0 | 0 | 5 |
| OTHERS | 49 (24.5%) | 6 (3%) | 2 (1%) | 65 |
| IV FLUIDS | 89 (44.5%) | 40 (20%) | 4 (2%) | 181 |

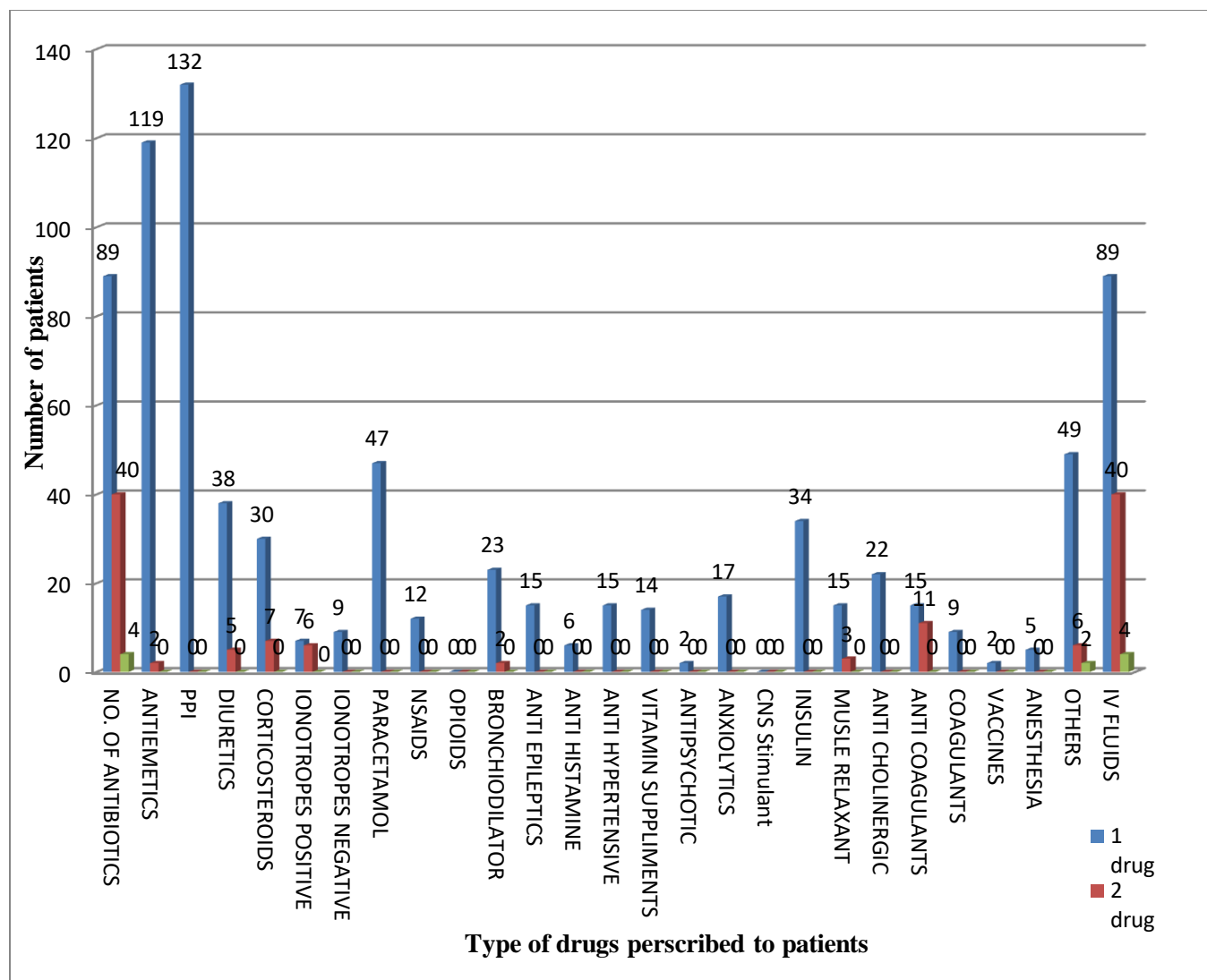


Figure 11: representing summary of drug used.

Total number of drug prescribed in Injection form to patients in hospital:

Table 11: Total number of drug prescribed in Injection form to patients in hospital

| Total number of drug prescribed in Injection form to patients in hospital | Frequency | Percentage |
|---|-----------|------------|
| 0 | 2 | 1% |
| 1 | 17 | 8.5% |
| 2 | 13 | 6.5% |
| 3 | 33 | 16.5% |
| 4 | 18 | 9% |
| 5 | 30 | 15% |
| 6 | 16 | 8% |
| 7 | 5 | 2.5% |

| | | |
|--------------|------------|------------|
| 8 | 10 | 5% |
| 9 | 20 | 10% |
| 10 | 16 | 8% |
| 11 | 6 | 3% |
| 12 | 1 | 0.5% |
| 13 | 1 | 0.5% |
| 14 | 1 | 0.5% |
| 19 | 2 | 1% |
| 24 | 1 | 0.5% |
| 26 | 4 | 2% |
| 27 | 2 | 1% |
| 47 | 2 | 1% |
| Total | 200 | 100 |

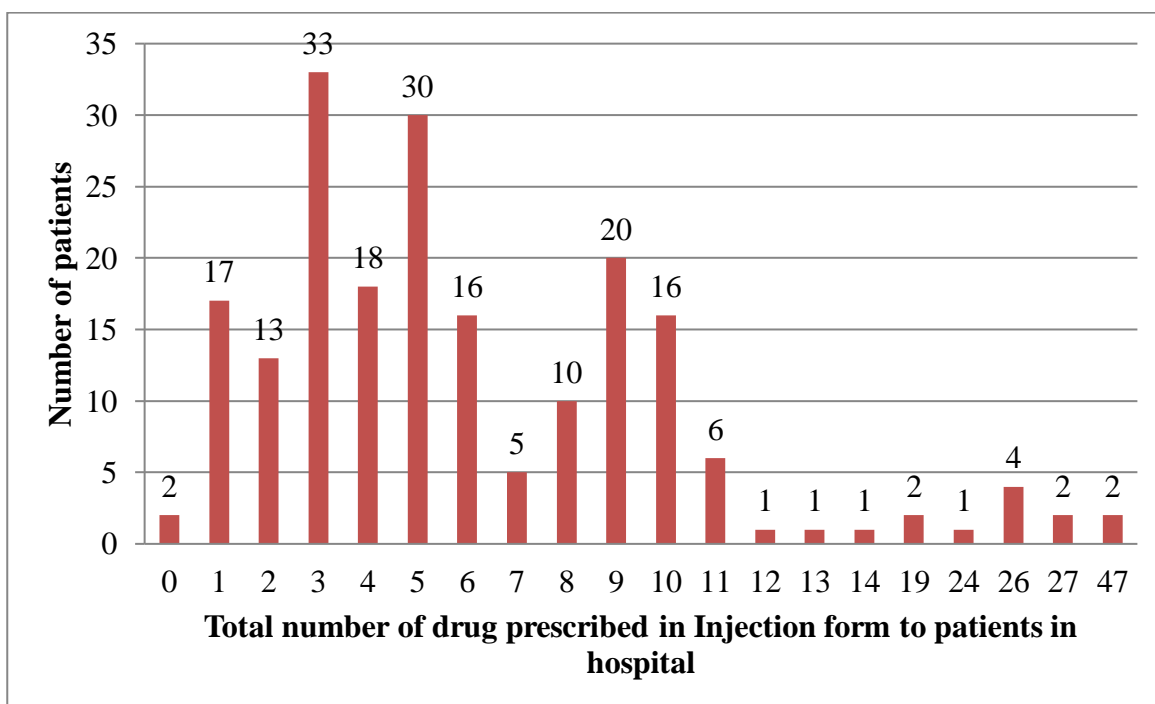


Figure 12: Total number of drug prescribed in Injection form to patients in hospital Vs. Number of patients

Number of drug prescribed from essential drug list to patients in hospital:

Table 12: Number of drug prescribed from essential drug list to patients in hospital

| Number of drug prescribed from essential drug list to patients in hospital | Frequency | Percentage |
|--|-----------|------------|
| 0 | 2 | 1% |
| 1 | 14 | 7% |
| 2 | 17 | 8.5% |
| 3 | 29 | 14.5% |
| 4 | 31 | 15.5% |

| | | |
|--------------|------------|------------|
| 5 | 44 | 22% |
| 6 | 21 | 10.5% |
| 7 | 17 | 8.5% |
| 8 | 12 | 6% |
| 9 | 4 | 2% |
| 10 | 5 | 2.5% |
| 11 | 4 | 2% |
| 12 | 2 | 1% |
| Total | 200 | 100 |

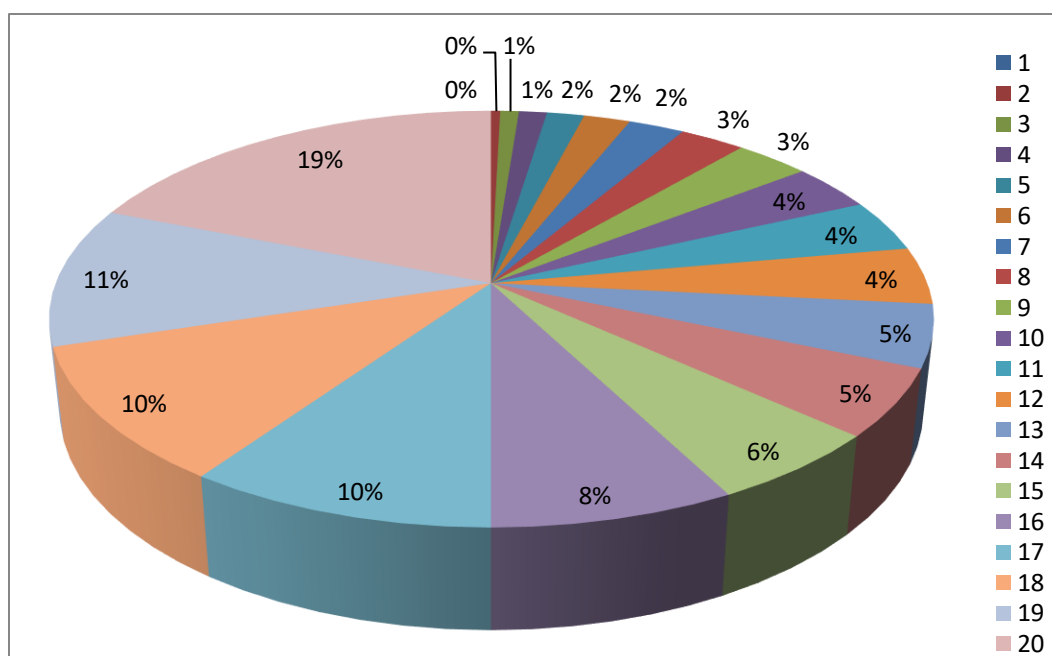


Figure 13: Number of drug prescribed from essential drug list to patients in hospital vs. number of patients

Who prescribing indicators:

Table 13: Representing WHO prescribing indicators.

| SL.NO | INDICATOR | VALUE |
|-------|---|-------|
| 1. | Total number of Drugs Prescribed | 5.085 |
| 2. | Total number of encounter sample percentage of encounters with an Antibiotic Prescribed | 40% |
| 3. | Percentage encounters with an Injection Prescribed | 99% |

| | | |
|----|---|-------|
| 4. | Percentage of drugs Prescribed from Essential Drug List | 93.8% |
| 5. | Percentage of drug Prescribed by Generic name | 2.06% |

DISCUSSION:

The emergency department of a tertiary care unit of a developing country faces the problem of a heavy patient load. Studying drug utilization pattern in the ED provides a means of evaluating drug prescribing trends, patterns, the efficiency of treatment, and cost-effectiveness of hospital formularies. In this study, the drug utilization patterns of the emergency department of a tertiary care hospital, Aster Prime Hospital, was evaluated by focusing on WHO prescribing indicators. Essential drugs were compared with those of National List of Emergency Medicine. Drug utilization review: All the patients were above 18 years of age. Out of 200 patients 75 (37.5%) were female and 125 (62.5%) were male. The social history of patients shows that of 200 patients 4 patients have a history of alcohol consumption, 2 are smokers and 2 are obese. Out of 200 patients 4 patients have shown allergies out of which 2 of them had penicillin and sulpha drug allergy, 1 had only sulpha drug allergy and 1 had prawns allergy. The Maximum duration of the emergency department stay of a patient was 4 hours then the patients were either shifted to other respective departments based on conditions. Out of 200 174 patients were shifted, 23 were discharged and 3 deaths were seen. Out of 200 patients, 1 drug was prescribed to 11 patients, 2 were prescribed to 14 patients, 3 for 27 patients, 4 for 34 patients, 5 for 38 patients, 6 for 28 patients, 7 for 18 patients, 8 for 14 patients, 9 for 4 patients, 10 for 1 patient, 11 for 3 patients and 12 drugs for 5 patients. Polypharmacy was seen, but this was based on the condition of the patient. The Majority of patients who presented to ER had Hypertension as comorbidity, followed by Diabetes Mellitus, CAD, CKD, Hypothyroidism, Respiratory Failure, Arthritis, Carcinomas, Bronchial Asthma, Seizures, Parkinson's disease, MI, Dementia, Cellulitis, Renal Calculus, OSA, Ascites, Gastritis, Hepatopathy, Cholecystectomy, and Migraine. The Majority of the patients were admitted with cardiovascular disease (58) followed by neurological (25) which involved majorly seizures, then followed with pulmonary (23), nephrology (20), Gastrointestinal diseases (13), Hypertension (13), out of 200 patients 10 sepsis cases were seen, 9 cases of

DKA and Hyperglycaemia, 7 Fall cases were seen, 5 patients presented with Road Accident, 5 cases of Anaphylaxis, 5 cases of liver disease, 5 cases of self-harm/suicide were seen. Apart from this other diagnosis includes 2 cases of Cellulitis out of 16, 2 of Abdominal Pain, 2 Anaemia, 3 Epistaxis, 2 cases of meningitis, 3 cases of Encephalopathy, and 2 Anxiety cases were presented to ER out of 200. Suicide cases were seen in the age group between 18 to 27 years. Road transport accidents were seen in the age group between 19 to 30 years. Fall cases were seen mostly in the geriatric population. Patients developed MI and HF even without having any comorbidity. The average number of drugs prescribed per encountered was 5.085, which was greater than the value indicated in the WHO guideline (1.6–1.8). The total number of drugs used was 1017. 80 Antibiotics were prescribed out of which 1 Antibiotic was given to 54 patients (27%), 10 patients were given 2 Antibiotics, and 2 were given 1. Ceftriaxone was mostly used followed by Metronidazole, the Cefoperazone+Sulbactam, then amoxicillin+clavulonic acid followed by piperacillin+sulbactam and Amikacin, linezolid, levofloxacin being least used. A total 123 Antiemetic's were used out of which 119 (59.5%) patients received monotherapy of Antiemetic, followed by 2(1%) patients receiving 2 antiemetics. Ondansetron was majorly used followed by Metoclopramide. 132 (66%) PPI's were used of which Pantoprazole was the only PPI used. In 38 (19%) patients single Diuretics were prescribed whereas 5 (2.5%) patients were given 2 Diuretics. Torsemide was majorly used followed by Furosemide. Single Corticosteroids were used in 30 (15%) patients, whereas 7 (3.5) were given 2 Corticosteroids. Hydrocortisone was majorly used for the IV route whereas the other hand methylprednisolone was least used for IV, Budesonide was used for Nebulization. 7 (3.5%) Patients were given 1 positive Inotropic drug, whereas 6 (3%) were given 2 drugs. Adrenaline was the most commonly used positive Inotrope followed by Noradrenaline, Dopamine, and Dobutamine. Negative Inotrope was given to 9 (4.5%) patients and Amidrone was majorly used. Inotropes were used for patients presenting with Cardiac arrest for CPR. Of

all the patients of CPR 3 deaths were seen. Paracetamol was used in 47 (23.5%) patients out of 200; the indication for use was Pain in RTA patients and fever. NSAIDs were used in 12 (6%) patients. Bronchodilators were used for patients presenting to ER with shortness of breath due to Asthma or Bronchitis or Pulmonary oedema due to Heart failure. 23 (11.5%) patients were administered single a Bronchodilator and 2 (1%) were administered 2 Bronchodilators. Levosalbutamol+ipratropium bromide was majorly used followed by Salbutamol used through Nebulizer. Levetiracetam was the only Antiepileptic used for all the patients presenting with old and new onset of seizures, 15 (7.5%) out of 200 patients presented with epilepsy. 6 (3%) patients were administered Antihistamine presenting with Anaphylaxis. Pheniramine maleate was majorly used Antihistamine was given IV. 15 (7.5%) patients were administered Antihypertensive medication Labetalol for Hypertensive crisis and Accelerated Hypertension. Vitamin supplements were given to 14 (7%) patients of whom Vitamin B complex was majorly prescribed. Antipsychotics were administered to 2 (1%) patients. Haloperidol was the Antipsychotic used. Anxiolytics were used in 17 (8.5%) patients. Midazolam was used not only for managing Anxiety but also during Intubation. 34 (17%) patients were administered Insulin. Insulin mostly short-acting insulin was administered for patients presenting with Hyperglycaemia and Diabetic Ketoacidosis. 15 (7.5%) patients were given a single Muscle relaxant whereas 3 (1.5%) patients were given 2 types of Muscle relaxants. Vecuronium was majorly used. Atropine and Anticholinergic was used among 22 (11%) patients. 15 (7.5%) patients were prescribed single an Anticoagulant, whereas 11 (5.5%) patients were given 2 Anticoagulants. Aspirin and ticagrelor were mostly used. 9 (4.5%) patients were given Coagulants presenting with bleeding, trauma, or Epistaxis. Tranexamic acid was majorly used followed by Vitamin K. 2 (1%) patients among 200 patients presenting with RTA and a laceration was administered with TT. 49 (24.5%) patients were given a single other class of drug, 6 (3%) were given 2 drugs whereas 2 (1%) were given 3 drugs. The other class includes unspecified or broadly classified drugs like Calcium gluconate, Sodium Bicarbonate, Nitroglycerine, etc. 181 IV fluids were used among

200 patients. 89 (44.5%) were administered single IVF, 40 (20%) were given 2 whereas 4 (2%) were given 3 IV Fluids. Among all Normal Saline was majorly used followed by Dextrose. We considered only the direct drug costs of the drugs that were prescribed for the patients presenting to the emergency department. Analysis shows that most of the cost burden was because by irrelevant use of PPI, antiemetic and Normal Saline use. The average cost per prescription for cardiology was 28956₹ which were the highest, followed with Liver disease at 4373₹, sepsis at 3142₹, RTA being 1232₹ as follows as shown in results 11₹ being the minimum cost for toremide given to a Renal Failure patient. The average cost for females was 315.10 ₹± 329.62₹, and males were 823.8 ₹ ± 2636.78₹. The average number of drugs prescribed per encountered was 5.085, which was greater than the value indicated in the WHO guideline (1.6–1.8) (Isah AO; WHO, 1993). Though the value we got is different from the standard recommended but the use of more than two or more drugs at a time could be justifiable in this setting, as there is a need for empirical therapy until a final diagnosis is made and the patients may require more than two drugs for management of acute life-threatening conditions and this cannot be considered as irrational polypharmacy as management of life-threatening conditions may require more than 2 drugs. Conversely, it is also always desirable to keep the number of drugs per prescription as low as possible to minimize adverse effects and drug interactions and to reduce the cost of therapy. For example, a study conducted shows 2.36 drugs prescribed per encounter. ^[1] The total number of encounter sample percentage of encounters with an Antibiotic Prescribed was 40%. Percentage encounters with an Injection. Prescribed were 99% many factors might have contributed to injection use like critical condition of the patient, physician's opinion, fast onset of action, etc. in a study conducted 87.7% was injection prescribed ^[1]. The percentage of drugs Prescribed from Essential Drug List was 93.8%. The percentage of drug Prescribed by Generic name was 2.06% this shows the use of more Branded Drugs. In our current study, 1017 drugs were prescribed out of which PPI's such as Pantoprazole was the most common used, followed by Antiemetics such as Ondansetron and then Antibiotics.

List of Abbreviations:

| | |
|--------|---------------------------------------|
| ACS | Acute Coronary Syndrome |
| ADR | Adverse Drug Reaction |
| AKI | Acute Kidney Injury |
| CAD | Coronary Artery Disease |
| CBA | Cost Benefit Analysis |
| CEA | Cost Effective Analysis |
| CLD | Chronic Liver Disease |
| CMA | Cost Minimizing Analysis |
| CNS | Central Nervous system Stimulant |
| CUA | Cost Utility Analysis |
| CKD | Chronic Kidney Disease |
| DKA | Diabetic Keto – Acidosis |
| DM | Diabetes Mellitus |
| DUE | Drug Utilization Evaluation |
| DUR | Drug Utilization Review |
| DVT | Deep Vein Thrombosis |
| ER/ED | Emergency Department |
| GE | Gastro Enteritis |
| HCP | Health Care Professional |
| HF | Heart Failure |
| HTN | Hypertension |
| IV | Intra Venous |
| LVD | Left Ventricular Dysfunction |
| MI | Myocardial Infraction |
| MUE | Medication Use Evaluation |
| NSAIDs | Non-Steroidal Anti Inflammatory Drugs |
| OSA | Obstructive Sleep Apnoea |
| PPI | Proton Pump Inhibitor |
| RTA | Road Transport Accident |
| RTI | Respiratory Tract Infection |
| UTI | Urinary Tract Infection |
| WHO | World Health Organization |

CONCLUSION:

From our current study, PPI, Antiemetic and Antibiotic use, injection prescribing, and the number of drugs prescribed per encounter showed considerable deviation from the standards recommended by the WHO. Hence, the hospital needs to design and implement a system to encourage proper Drug prescribing and rational injection medication administration and rational prescribing.

Therefore, the clinical pharmacist should be considered here to be an important and integral part of this department. They should be included and involved in case data collection and presentation of prescribing data as a part of clinical audit and their role should even exceed for the patient and patient attender counselling. Special focus in the case of Pharmaceutical Care is to be done on the geriatric population when compared to other groups; precise

drug management should be done. The Cost was not a problem as most of the drugs were not much expensive. Therefore the study highlights the need for increasing the prescription of drugs with Generic names and rationalizing drug therapy in ER to manage broad arrays of conditions. Also, there is a need to prevent inappropriate overuse of PPI and antiemetic where its use was not justifiable. Since the drug cost is mostly driven by the prescription of PPI, Antiemetic, and broad-spectrum Antibiotics, therefore the hospital pharmacy should be encouraged to procure more cost-effective alternative PPI, Antiemetic, and Antibiotics. There is further scope for study in the Emergency department against medication use, patient compliance, evaluation of rationality of drug therapy and cost effective medication therapy management

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