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A PROSPECTIVE STUDY ON PRESCRIBING PRACTICES IN EMERGENCY DEPARTMENT OF A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Background: Clinicians often face challenges in selecting, initiating and individualizing appropriate drug therapy for patients admitted in the emergency medicine ward. **Objective:** To assess the prescribing patterns of drugs and to determine the rationality of prescriptions by using World Health Organization prescribing indicators**. Materials and Methods:** A prospective cross sectional study was carried out in emergency department for six months. About 520 case sheets were reviewed. Data were collected using structural data entry form and analyzed. Descriptive statistics were used to describe the data. **Results:** The data was collected prospectively and analyzed using WHO prescribing indicators. The average number of drugs prescribed was 6.40 per prescription. The drugs prescribed by generic name accounts for 20.9% and those prescribed from EDL include 83.88%. At least one antibiotic was prescribed for patients which is high (57.31%). Most of drugs were administered through injection for about 49.24%. Patients were mainly admitted for nausea and vomiting (16.92%). Anti-emetics were the mostly prescribed therapeutic class of drugs for patients (24.75%). Hemoglobin (98.65%) was the most common investigation performed in the study population. The commonly used fixed drug combination was piperacillin and tazobactum (3.75%). **Conclusion:** Analysis of case records for drug utilization pattern revealed that most of the drug classes were prescribed for appropriate indication. Prescription of multivitamins appears largely irrational. The results indicate a considerable scope for improving the prescribing pattern of drugs in the emergency department.

KEYWORDS: DUE, Casuality, Emergency Department, Prescribing patterns, WHO.

INTRODUCTION

Medicines play an important role in health care delivery and disease prevention. The availability and affordability of good quality drugs along with their rational use is needed for effective health care. However, irrational drug use is prevalent, especially in the developing countries due to irrational prescribing, dispensing and administration of medications.[1]

Drug utilization study, as defined by the WHO, is a structured process which is used to assess the quality of drug therapy by engaging in the evaluation of data on drug prescribing, dispensing and patient use in a given health care environment, against predetermined, agreed upon criteria and standards, with special emphasis on the resulting medical, social, and economic consequences.[2]

The emergency department represents an important platform for conducting drug utilization studies as patients present with a wide range of diseases in acute form and the drug use is quite extensive. 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 broader extent.[3]

Patients come 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 severe cases that need to be treated quickly with high quality. This creates a challenge for physicians to initiate and select appropriate drugs for the patient. Furthermore, the unique operating characteristics of ED make the ED vulnerable to medical errors including medication errors and adverse drug events.[4]

Instituting appropriate therapy is essential for a favourable outcome of the patient and to decrease mortality and morbidity. Clinicians often face challenges in selecting, initiating and individualizing appropriate drug therapy for patients admitted in the emergency medicine ward.[5]

In the emergency department, the meeting between patient and physician is often sporadic. In such cases, the patient's history may be lacking and antibiotic

prescribing for infectious diseases is empiric. This can result in the use of broad spectrum agents in order to cover all likely causative organisms and, subsequently, increased health care costs. Two Cochrane reviews were conducted on interventions to improve appropriate antibiotic use in ambulatory care and in the hospital, but neither addressed the unique setting of emergency medicine, most probably due to the scarcity of ED studies on prescribing practices, factors predicting antibiotic use/misuse, and interventions to improve judicious use of antibiotics.[6,7]

Most existing literature on emergency medicine has been brought forth from high income countries. In contrast, 70% of the population exists in low and middle income countries; hence, it is an urgent need of the hour to conduct scientifically sound well-designed study in emergency medicine with a focus on drug utilization in our country.[8] Keeping this in view, we conducted a drug utilization study in our tertiary care hospital with the objective of studying pattern of drug use and determining the rationality of prescriptions in emergency department.

MATERIALS AND METHODS

A prospective cross-sectional study was carried out in 520 in-patients for a period of 6 months from April 2016 to September 2016 in Navodaya Medical College Hospital and Research Center, Raichur.

Patients admitted as inpatients in emergency department and patients who stays minimum 6 hours in the emergency department were included in the study. Patients who came for minor injury, patients who needed immediate surgical management and patients who don't want medical consultation were excluded from the study. The study was approved by Institutional Ethics Committee (IEC) of the hospital.

Total prescriptions written by qualified medical graduate and post graduate doctors were collected randomly from the emergency department and examined to record information about prescribing indicators using a predesigned form. CIMS drug manual was used to decode the brand name of drugs to generic names for the purpose of analysis .Study ward was visited daily by the project team as per schedule. Direct interactions with patients were also done to comply the data needed.

The data collected from the prescriptions were properly noted in a separate data collection form. The following patterns among all age groups such as, age and gender segregation of prescriptions, total no of drugs prescribed, generic drug usage, average number of drugs per prescriptions, dates of administration, common complaints about the drugs, systemic diagnosis of their first line therapy, percentage of drugs binding essential drug list, average no of antibiotics per prescriptions, percentage of drugs per who prescribing indicators were assessed. Descriptive statistics were used to summarize the results. Frequency and proportions/percentages were used to describe variables.

RESULTS AND DISCUSSION

Out of 520 patients, 88 patients (16.92%) were admitted at the emergency department with the complaints of nausea and vomiting followed by fever (15.19%) as shown in Fig.1.

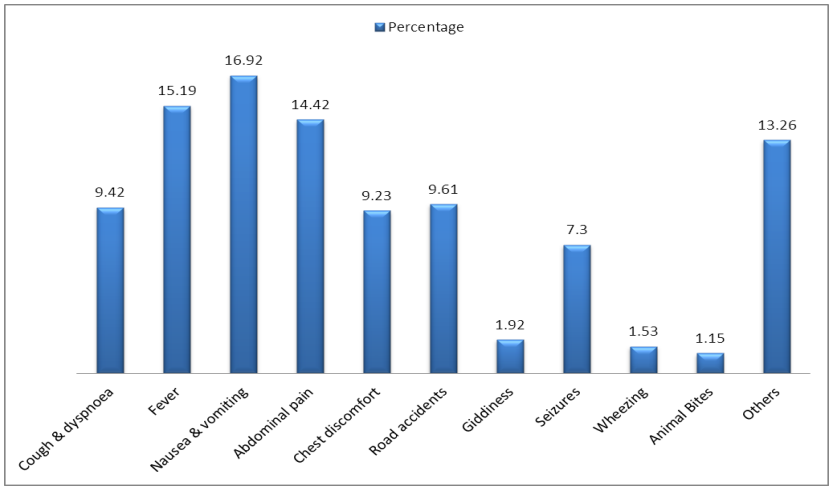

Fig 1: Reason for admission (N = 520)

Haemoglobin (98.65%), total leucocytes count (97.5%) and differential leucocytes count (97.5%) were the most common investigations performed in the study population which is depicted in Fig: 2.

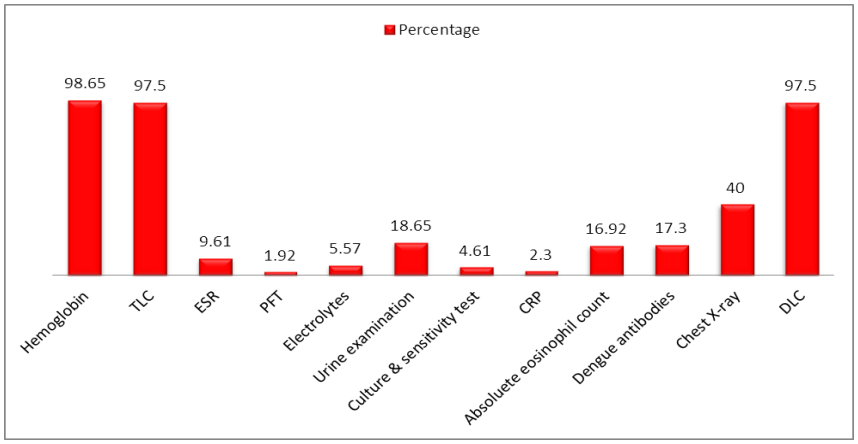

Fig 2: Major Investigations performed in study population (N=520)

As shown in fig.3, drugs were prescribed in five different dosage forms in the study population. Out of total 3332 drugs, majority of drugs were given through injection form (49.24%) followed by oral route (42.85%). Similar trend was observed in reports from Pandey K et al.[9]

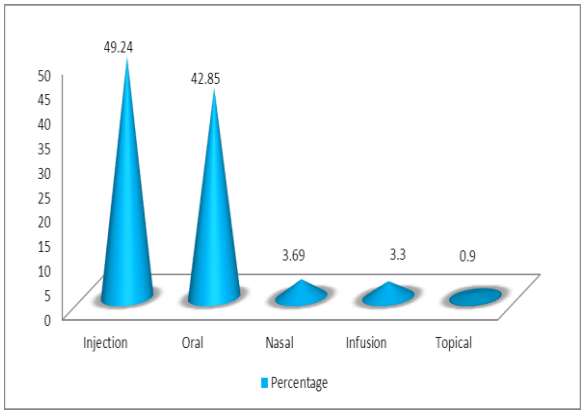

Fig 3: Route of Administration of drugs (N=3332)

Figure.4. showed that the main drugs prescribed were anti-emetics which constituted 24.75% of the total, followed by antibiotics (24.42%) and anti-ulcer agents (23.85%). Thus, the most commonly prescribed drug include anti-emetics (24.75%). Similar results were obtained by the study conducted by Pandey Ket al[9] and Barot et al.[8]

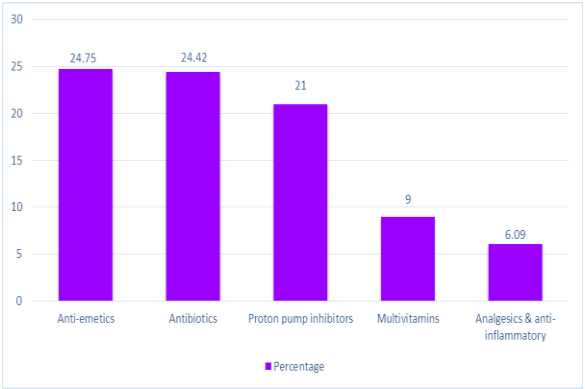

Fig 4: Most commonly prescribed drugs in study population (N=3332)

The number of encounters with antibiotics was 410(78.84%). A single antibiotic was prescribed in 235 (57.31%) and two antibiotics were found in 125 (30.48%) prescriptions as shown in fig.5. The main reason for such an empirical use of antibiotics within 24 hours of admission is either overestimation of the severity of illness. They are also under pressure from patients attendants, who believe that the prophylactic antibiotic use provides rapid relief of disease.[9,10]

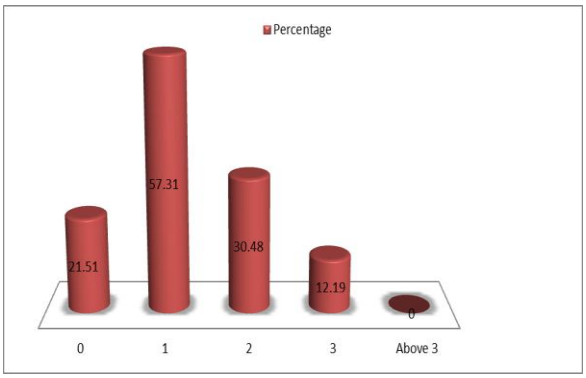

Fig 5: Number of antibiotics prescribed (N=520)

Out of 3332 drugs prescribed, 17.02% prescribed drugs were given as fixed dose combinations. The most commonly prescribed fixed dose combinations were piperacillin and tazobactum (3.75%) and rabeprazole and domperidone (3.09%) which is illustrated in fig.6.

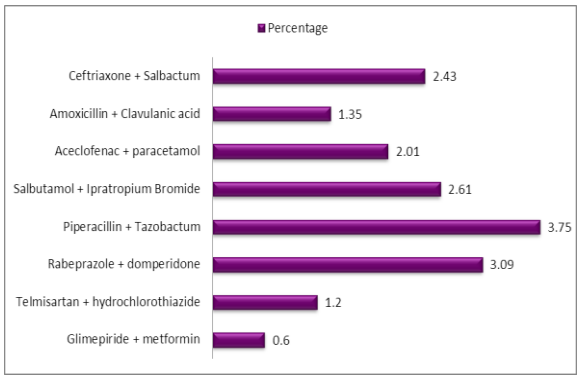

Fig 6: Commonly used fixed drug combinations in the study populations (N=3332)

Table 1: Diagnosis V/s First line drug therapy (N=520)

Diagnosis	First line therapy	No of prescriptions
GIT Associated	Pantoprazole Ondansetron	117
Respiratory tract associated	Salbutamol Ipratropium bromide Budesonide Levofloxacin	79
Fever	B-Lactam antibiotics Paracetamol	86
Road accidents	Tetanus toxoid Diclofenac Ibuprofen	50
CVS system	Telmisartan Dobutamine Furosemide	50
CNS system	Phenytoin Lorazepam Chlordiazepoxide	58
Animal Bite	Rabies vaccine Antibiotics Acetaminophen	6
Burns	Silver sulphadiazine Tramadol	2
Others	Other drugs	72

From the analysis of 520 prescriptions, the commonly associated diagnosis was found to be GIT associated disorders (117) followed by fever (86). In GIT associated diagnosis, the first line therapy used include pantoprazole and ondansetron as shown in table.no.1. This was similar to that of studies conducted by Sulaiman S et al[11], Barot et al[8] & Pandey K et al.[9] Patanwala et al[10] suggested that based on the comparative safety and efficacy of ondansetron with droperidol, promethazine, prochlorperazine, metoclopramide, ondansetron may be used as a first-line agent for relief of nausea or vomiting for most patient populations in the emergency department. The frequent explanation given is gastrointestinal prophylaxis in order to inhibit gastric acid secretion. The most frequently mentioned explanation for prescribing PPI without an indication was "GI prophylaxis." Jung and MacLaren[12] suggested that PPIs are safe and efficacious for elevating intra-gastric pH in critically ill-patients for prevention of bleeding from stress-related mucosal damage.

Table 2: WHO prescribing indicators (N=520)

Sl.no	Parameters	Obtained Value	WHO Value
1.	Average number of drugs per prescription	6.40	<2
2.	Percentage of drugs prescribed by generic name	20.9%	100%
3.	Percentage of prescription with antibiotics prescribed	78.84%	<30%
4.	Percentage of prescription with injection prescribed	87.88%	<10%
5.	Percentage of drug prescribed from EDL	83.88%	100%

The table.2 shows analysis using WHO prescribing indicators. Only 109 drugs (20.9%) were prescribed by generic name. This value is less compared to the reports of other studies (Atif M et al[12]). However study by Pandey K et al[9] reported compatible figures of 18.86%. Moreover, generic drugs are more cost effective than the branded ones and generic drug prescribing eliminates duplication of drug product.[13] Out of total number of drugs, i.e. 3332, 87.88% of drugs are administered through injectable route. We conducted this study in the emergency department where the excessive use of injectables may be attributed to the patients' condition such as emergency and unconscious cases where the oral route for drug administration is often not possible. Appropriate use of antibiotics is necessary to prevent emergence of drug resistant bacteria. Our figure of 78.84% prescriptions having an antibiotic is higher than those specified in WHO[14]. Over three quarters (83.88%) of drugs were prescribed from the EDL. Rational prescribing includes the optimal use of drugs selected from the EDL which are issued by the WHO. These agents are older, time tested and available at lower cost than the originator branded drugs.[3,5,9] In this study, the average number of drugs per encounter was found to be 6.40 which is higher than the recommended limit of two.[10] Out of 520 prescriptions, the major percentage (44.03%) of prescriptions are prescribed with more than 5 drugs. Most of the patients received five (32.5%) and

more than five drugs per encounter (44.03%). The reason for polypharmacy could be empirical therapy as the diagnosis may not be confirmed at the time of initial drug therapy. However, this cannot be considered irrational polypharmacy practice as there is need of empirical therapy till definitive diagnosis becomes clear and secondly for management of acute life threatening conditions most of the patients would usually require more than two drugs.

CONCLUSION

Analysis of case records for drug utilization pattern in emergency department revealed that most of the drug classes were prescribed for appropriate indication. However, prescription of multivitamins appears largely irrational as they are not indicated for the management of emergency conditions. Rationality of its use needs to be systematically evaluated. Polypharmacy was prevalent. Further studies are required to confirm the results in a larger population and to study the impact of clinical pharmacist in the emergency care setting for optimizing patient drug therapy. Our study results also showed abnormal values of WHO prescribing indicators, stating the irrational treatment in emergency department of study hospital.

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CONFLICT OF INTEREST

Authors declares no conflict of interests.

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