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Original Research Article

Analysis of drugs prescribed in emergency medicine department in a tertiary care teaching hospital in southern Rajasthan

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ABSTRACT

Background: Emergency medicine department of a tertiary care hospital is one of the busiest department and most challenging one for the attending physician. Patients here are in critical condition and treating doctors have to take fast decisions and actions so there are always chances of error in prescribing drugs. Therefore this study was planned with an intention to analyse drug utilization in patients admitted in emergency medicine department using WHO core prescribing indicators.
Methods: A prospective observational study on drugs prescribed in emergency medicine department in a tertiary care hospital was conducted for a period of three months. Data was extracted from 450 patients' case records in a preformed performa after taking approval from institutional ethics committee. Data was analysed by using Microsoft excel. 2010.
Results: 1080 drugs were prescribed in the 450 prescriptions analysed, average being 2.40 drugs per prescription. Analgesics, proton pump inhibitors and antibiotics were the highly prescribed drugs and commonest routes of administration used were intravenous and intramuscular. Approximately 93% drugs belonged to either or both the WHO and National essential drug lists.
Conclusions: The results of the study disclosed both rational and irrational drug utilization. No polypharmacy was observed but 80% drugs were prescribed by brand name. Utilization of drugs belonging to essential drug lists indicates judicious use of drugs by our clinicians. Smaller sample size and lack of estimation of cost of treatment are the limitations of this study. Hence more data must be generated for accurate analysis.

Keywords: Drug, Emergency medicine, Prescription, Polypharmacy, Routes of administration rationality

INTRODUCTION

Prescribing drugs is always a challenge for a clinician and especially when it is to be prescribed in emergency. Emergency medicine is the specialty that cares for the care seeker, at the most vulnerable moments of their life.[1,2] There are always chances of error in prescribing drugs in emergency care department as the patient is in critical condition and physicians has to take quick decisions. Also the clinicians come across various patients with varied unforeseen conditions in acute and unpredictable state. Irrational prescribing of drugs may tend to produce an unproductive and a risky treatment to an individual but a rational drug prescription would see to a least number of drugs used in correct dose and dosage form for appropriate indication and to obtain best possible therapeutic effect of drug in short time.[3]

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.[4,5] Drug utilization studies provide insight into pattern of drug utilization and rationality of prescriptions. They help in evidence based guidance for making policy decisions at various levels of health care. This is particularly important in poor and developing countries where there is a need of proper utilization of meagre resources.

Most of the previous studies on drug utilization have been conducted in various departments of medicine but on literature search only few studies of drug utilization in emergency care department were found and no such study has been conducted in our hospital, so we planned a

drug utilization study in emergency care department of our hospital.

METHODS

A prospective observational study was conducted in emergency medicine department in a tertiary care hospital over a period of three months. Approval was taken from institutional ethics committee before commencement. All patients irrespective of age, sex and diagnosis were recruited. Data was collected from patients' case records in a preformed performa. Data included demographic profile, patients' complaints, provisional diagnosis, and complete prescription comprising name of drugs, dosage forms, dose and route of administration etc.

Data was analysed by using Microsoft excel 2010 and expressed as percentage. WHO core prescribing indicators were used to analyse the prescriptions.[4]

RESULTS

Table 1: Frequency of drugs prescribed.

Drugs	No. of prescription (%) N = 450
Diclofenac	150 (33.33)
Ondansetron	104 (23.11)
Paracetamol	100 (22.22)
Antibiotics (Amoxicillin+ Potassium clavulinate Ofloxacin + Ornidazole)	84 (18.66)
Budesonide	67 (14.88)
Tetanus Toxoid	62 (13.77)
Salbutamol	60 (13.33)
Rabies Vaccine	34 (7.55)
Pantaprazole	30 (6.66)
Isosorbide dinitrate	30 (6.66)
Aspirin	30 (6.66)
Clopidogrel	30 (6.66)
Noradrenalin	30 (6.66)
Domperidone	24 (5.33)
Drotaverin	24 (5.33)
Lorazepam	24 (5.33)
Fos. Phenytoin	23 (5.11)
Topical Silver-sulfadiazine	20 (4.44)
Tramadol	20 (4.44)
Dopamine	20 (4.44)
Pheniramine maleate	20 (4.44)
Dexamethasone	20 (4.44)
Adrenaline	18 (4.00)
Atropine	10 (2.22)
Actrapid Insulin	4 (0.88)

In the current study total 450 prescriptions were analysed in which total number of drugs prescribed were 1080, the average being 2.40 drugs per prescription.

Table 2: Routes of administration of the drugs prescribed.

Routes of administration	Numbers of drugs (%) N=1080
Intravenous	452 (41.85)
Intramuscular	267 (24.72)
Oral	216 (20)
Inhalation	102 (9.44)
Sublingual	12 (1.11)
Subcutaneous	10 (0.92)
Topical	15 (1.38)
Nasal	6 (0.55)

Among the 450 patients, 270 were males and 180 females and male: female ratio was 1.5:1. Patients of paediatric age group were 9%. 19.99% patients were of the age group less than 40 years, 52.66% were of the age group between 40 to 60 years and patients of the age more than 60 years were 18.44%.

Table 3: WHO core drug prescribing indicators.

WHO Core prescribing indicators	Results
Average number of drugs per encounter	2.40
Percentage of drugs prescribed by generic name	20
Percentage of encounters with an antibiotic prescribed	23.11
Percentage of encounters with an injection prescribed	67.49
Percentage of drugs prescribed from essential drug list	92.60

Commonest complain was fever (18%) and those due to road traffic accidents (14%) followed by gastrointestinal (13%), cardiovascular ailments (11%), complains related to respiratory (10%) and other organs systems (34%).

Diclofenac was the maximally prescribed drug, prescribed in 150 (33.33%) prescriptions. Next in order were antimicrobial agents and ondansetron, each being prescribed in 104 (23.11%) patients and paracetamol in 100 (22.22%) prescriptions. Least prescribed drugs were atropine in 10 (2.22%) and insulin in 4 (0.88%) prescriptions. (Table 1)

Most common route of administration of drug was intravenous being 452 (41.85%) in number followed by intramuscular being 267 (24.72%). Least preferred routes were nasal and topical being 6 (0.55%) and 15 (1.38%) in number. (Table 2)

Out of the total 27 drugs used, 66.67% were included in WHO Model list of Essential Medicine, while 86.89% drugs were from National list of Essential Medicine, India. 62.96% belonged to both WHO and National essential drug lists while 7.40 % belonged to none of the

essential drug lists. 20 % drugs were prescribed by generic name and 19 % were in fixed dose combination form. (Table 3)

Other WHO core prescribing indicators are shown in Table 3.

DISCUSSION

According to the International Federation for Emergency Medicine it is a field of practice based on the knowledge and skills required for the prevention, diagnosis and management of acute and urgent aspects of illness and injury affecting patients.[6] Emergency department is one of the busiest but neglected departments as far as drug utilization studies are concerned. Present study was intended to focus on drug use pattern in emergency department.

In our study the average number of drugs prescribed per prescription was 2.40 which is slightly more than the WHO recommended 2.0 drugs per prescription, suggestive of no polypharmacy.[7] In other studies done by Sait SJ et al., Al Balushi et al. and Barot et al. have reported the average number of drugs prescribed per prescription 2.60, 3.2 and 9.99 respectively.[1,3,8] Reason for this difference could be due to difference in duration of stay of patient in emergency medicine department. Data in first study was collected for approximately 6 hours and in second study for 48 hours. In our study this value is more close to WHO recommended value because in our setup patients are referred to respective departments after initial management as soon as possible for the appropriate definitive treatment.

Commonest complains and drugs prescribed in our study also differs from previous studies, probably because of its location our hospital caters to mainly lower socio economic sector of our population in whom infectious diseases are more common.

Maximally prescribed drug was diclofenac which has been delisted from WHO essential drug list because of its cardiac adverse effects.[3,9] Moreover prescribing it for fever can be judged as irrational prescribing. But prescribing it for pain and inflammation cannot be considered totally irrational as it is still included in National Essential drug list.

Second in order of prescribing drugs were ondansetron and antibiotics. Use of ondansetron in conditions other than vomiting induced by chemotherapy or radiotherapy and post-operative vomiting is it's off label use.[10] But according to Patawala et al. ondansetron can be used as first line agent for nausea and vomiting in emergency department.[1,11]

In our setup antibiotics were used to a lesser extent as compared to previous studies. Antibiotics should be used as a definitive treatment, if feasible; after performing culture and sensitivity test. The lower incidence of antibiotic use can be due shorter duration of stay of patient in emergency department.

Most frequent route of administration in this study was intravenous followed by intramuscular which is required in emergency settings for the need of faster action, good bioavailability and predictable concentration of drugs.[12]

Approximately 93% of the prescribed drugs were enlisted in either or both WHO and national essential drug list.[13] which reflects awareness of physicians for judicious use of drugs.

Number of drugs prescribed by generic name was low (20%). Generic medicines are more affordable versions of branded medicines sold by companies. In its directive dated 21st January 2013 to the principals of medical colleges, director of hospitals and presidents of all state medical councils, the MCI has said that every physician should, as far as possible, prescribe drugs with generic names.[14] Nowadays a growing concern is there regarding physician's charm for prescribing newer and expensive drugs as they are lured by pharmaceuticals and sometimes also necessary for patient's satisfaction.

CONCLUSION

Both rational as well as irrational use of drugs was found in our study as illustrated above; although most of the drug utilization was justified. Polypharmacy was not observed but most of drugs were prescribed by brand names. It is a good practice in our hospital to shift the patients at the earliest to concern departments for better treatment but because of this practice the pattern of drug use and common complains differ from other studies. Smaller sample size as compared to number of patients attending the department is an important limitation of our study. Another important parameter lacking is estimation of cost of treatment. Hence future studies should be planned for accurate analysis.

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