Research Article

A Study on Drug Related Admissions in Emergency and Medicine Units in Tertiary Care Teaching Hospital: A Prospective Observational Study

Kumaraswamy M., Kavya H.B*, Divya Tejaswini Pudota, Miliya Merry Gladson, Bipin Kumar Patel
Department of pharmacy practice, Sri Adichunchanagiri College of Pharmacy, B.G. Nagara, India.
***Corresponding author's E-mail:** kavyapharma158@gmail.com

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ABSTRACT

The present prospective and observational study conduct in emergency and medicine units. Patients were enrolled in the study by considering inclusion and exclusion criteria. Clinical pharmacist will routinely monitor patient therapy. Any type of drug related admission was documented with physician conformation. It shows that the main clinical problems was drug overdose (95.7 %) and followed by Adverse drug reaction (ADRs) (4.3%). The major classes of drug which cause this problem were non steroidal anti inflammatory drugs (NSAIDs) (52.2%). It has also been found that the most common drug associated with the drug related illness were Paracetamol (42%) followed by Alprazolam. In severity 65.2% of patients are associated with drug-related hospitalization 68.11% were moderate, 31.9% were mild and 2.9% under severe category. The most frequently implicated drug classes are NSAID's, central nervous system (CNS) drugs, Antibiotics, GI drugs, cardiovascular drugs(CVS) drugs and hormone & related drugs.

Keywords: Adverse drug reaction (ADRs), Non steroidal anti-inflammatory drugs (NSAIDS), central nervous system (CNS), gastrointestinal (GI), cardiovascular drugs (CVS).

INTRODUCTION

Use of medication is increasing world-wide nowadays[1]. While using these medications patient gets benefit along with it there are chances of some unwanted effects like adverse drug reactions, minor to major side effects etc. Unresolved or unknown DRPs may leads to drug related morbidity and mortality. This ultimately leads to hospital admissions if it is left untreated. It has been estimated that 5% to 25% are drug related hospital admissions[2]. Drugs are usually prescribed with the purpose of achieving an optimal therapeutic outcome. A DRPs has occurred when the outcome is not optimal. Studies conducted in developed countries showed that approximately 5% of all hospital admissions were drug related and 50% of those were avoidable[3].

DRPs are classified into five categories: Adverse drug reactions, intentional overdose or misuse of drugs, drug interactions, toxicity, and non-compliance. Drug-related problems were described as mild, moderate, or severe. A Australian shows that DRPs were mainly due to cardiovascular drugs (48.4%) followed by anticonvulsants (17.1%), antibiotics (12.6%), analgesics (8.9%) and respiratory agents (8.9%). The common manifestations caused by cardiovascular drugs include falls and postural hypotension (24.1%), heart failure (16.9%) and delirium (14.5%). The ratio of elderly emergency admissions that were drug-related hospital admissions (DRHA) ranging between 15 and 22%[5].

A study conducted in south India indicated that most frequently implicated drug classes are central nervous system drugs, cardiovascular drugs, antibiotics and NSAIDs. This problem can be solved by enhancing the collaborative efforts among patients, physicians, pharmacists and care givers within the community and the hospital[5]. Hospital admissions and morbidity mostly due to Adverse drug reactions (ADRs). These are mainly related with age, sex, poly pharmacy, genetic polymorphism and co-morbidity[6]. The World Health Organization (WHO) defines adverse drug reaction as any harmful, unintended reaction due to medicines that occur at doses usually used for prophylaxis or treatment. Incidence of ADRs found to be the 4th to 6th leading cause of death in United States[7].

Adverse drug reactions (ADRs) are consider as major including all drug-related problems (DRPs) and this results major public health concern. ADRs cause 3−7% of hospital admissions, and account for 5−9% of hospital in-patient costs. More than half of the ADRs are suppose to be preventable. In the elderly ADRs are common in various settings[8]. There were no such study conducted in this hospital previously. Hence this study is undertaken to identify the drug related admissions and to find epidemiological data.

MATERIALS AND METHODS

It is a prospective observational study was conducted at emergency and medicine unit in Sri Adichunchanagiri Hospital and Research Centre, B.G. Nagara which is a tertiary care 1050-bedded teaching hospital. For a period of six months from November 2014 to April 2015. And approved by Institutional Ethical Committee, AH&RC, B.G. Nagara. It includes all inpatients diagnosed to have drug related illness and admitted to emergency departments and medicine unit diagnosed with drug related problems or drug induced diseases. Exclude Cases which were treated from the In Patient in other departments.

Relevant information was obtained from Data collection form, patient case sheets, Prescriptions, past medication history, Laboratory reports of patients and from patient care givers etc. The collected data was analyzed at the department by using standard textbooks, Micromedex, and ADR Naranjo scale to categorize the type of ADRs. The study was analyzed by using statistical measures such as SPSS Version 17.0.

RESULTS AND DISCUSSION

A total of 69 inpatients admitted to emergency and medicine unit were reviewed over a period of 4 months from Jan 2015 to April 2015.

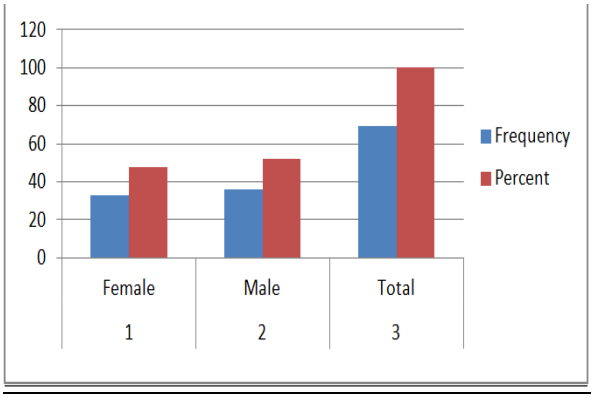

Figure 1: Shows that out of 69 patients were Male 36(52.2%) and female 33(47.8%).

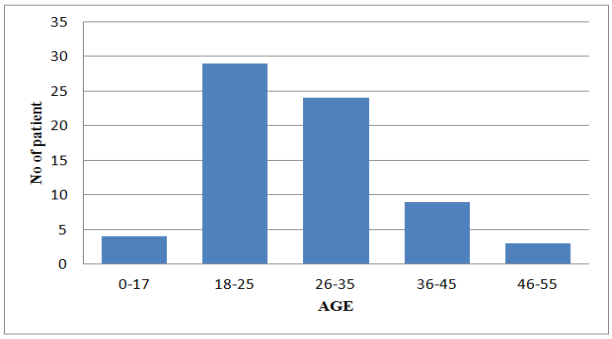

Figure 2: Shows Out of all 0 to 55 age group patients. 0-17 were 4(5.79%), 18-25 were 29(42.02%), 26-35 years were 24(34.78%), 36-45 year were 9(13.04%), and the least is 46-55 were 3(4.34%).

Table 1: Gender wise Distribution of Patients

S. No	Gender	Frequency	Percent
1	Female	33	47.8
2	Male	36	52.2
3	Total	69	100.0

Table 2: Age wise Distribution of Patients

S. No	Patient group	Number	Percentage
1	0-17	4	5.79
2	18-25	29	42.02
3	26-35	24	34.78
4	36-45	9	13.04
5	46-55	3	4.34

Table 3: List of Complaints with Drugs

S. No	Complaints	NSAIDS	Antibiotics	CNS drugs	CVS drugs	GI drugs	Hormones & Related	Ant abuse	Anti histamines
1	Seizure	0	0	3	0	0	0	0	0
2	Vomiting	19	4	0	2	5	0	1	3
3	Abdominal pain	8	3	0	1	3	0	0	1
4	Drowsiness	2	1	9	0	1	0	0	1
5	Unconsciousness	0	0	3	0	0	0	0	0
6	Rashes	0	0	1	0	0	1	0	0
7	Gastritis	0	0	0	0	0	1	0	0

Table 4: Class of Drugs causing Drug Related Illness

S. No	Drug class	Number of patients	Percentage
1	NASIDS	36	52.2
2	Antibiotics	16	23.2
3	CNS drugs	23	33.3
4	CVS drugs	7	10.1
5	GI drugs	13	18.8
6	Hormone & related	7	10.1
7	Antabuse	1	1.4
8	Antihistamine	3	4.3

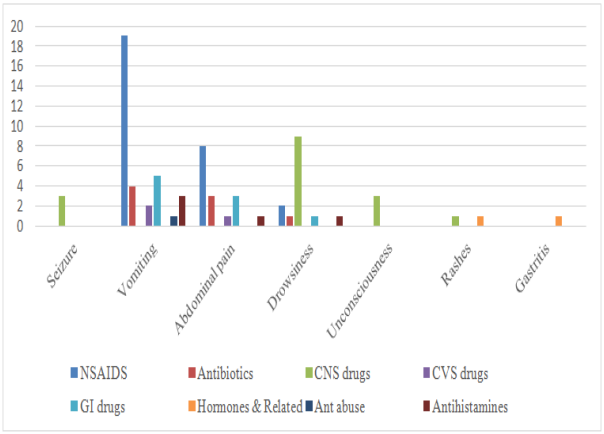

Figure 3: Shows Major complaints observed was vomiting (49.27%), abdominal pain (23.18%), then followed by drowsiness (20.28%).

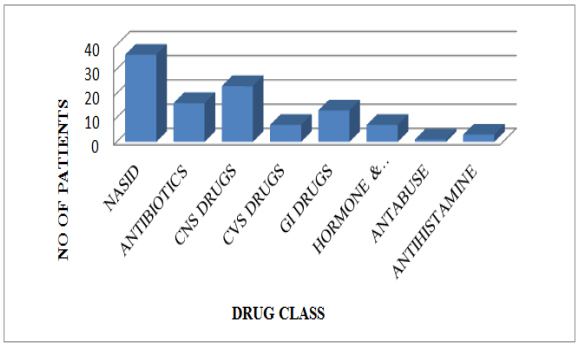

Figure 4: Shows Major drug related problem was drug overdose and were mainly caused by NSAIDs (52.2%), CNS drugs (33.3%), Antibiotics (23.2%), GI drugs (18.8%), CVS drugs and hormone related drugs (10.1%), anti-histamines (4.3%) and antabuse (1.4%).

Table 5: Details of Drugs causing Overdose

S. No	Drugs	Overdose	Percentage
1	Paracetmamol	29	42.02
2	Alprazolam	13	18.84
3	Diclofenac	5	7.24
4	Metformin	3	4.34
5	Cetrizine	6	8.69
6	Carbamazepine	2	2.89
7	Amlodipine	1	1.44
8	Pantoprazole	2	2.89

Table 6: Details of Patients with ADRS

ADR	No of patients	Percentage
YES	3	4.35
NO	66	95.65

Table 7: Type of Drug Related Illness

S. No	Type of Drug Related Illness	Percent
1	ADR	4.3
2	OVERDOSE	95.7

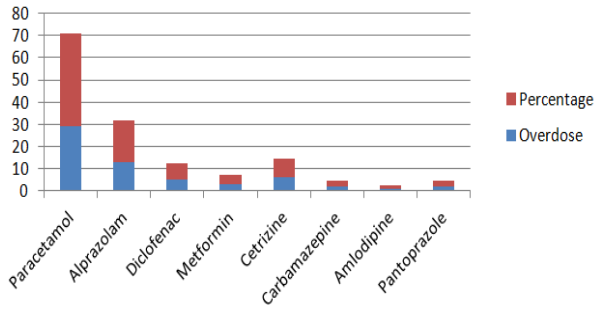

Figure 5: Shows Major drugs causing overdose were Paracetamol (42.02%), followed by Alprazolam (18.84%), Cetirizine (8.69%), Diclofenac (7.24%), Metformin (4.34%), Pantoprazole (2.89%), Carbamazepine (2.89%) and the least was Amlodipine (1.44%).

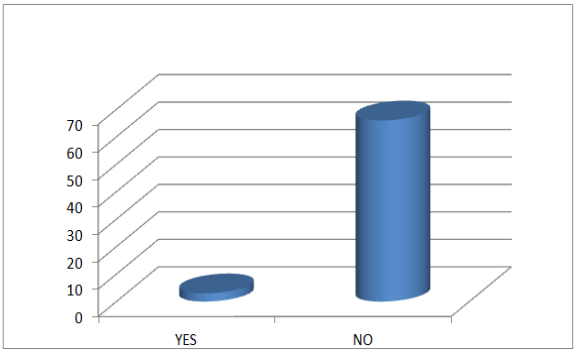

Figure 6: Shows Out of 69 patients 3 cases were due to ADR. The major drugs causing ADRs were Dexamethasone (2.89%) and Phenytoin (1.44%).

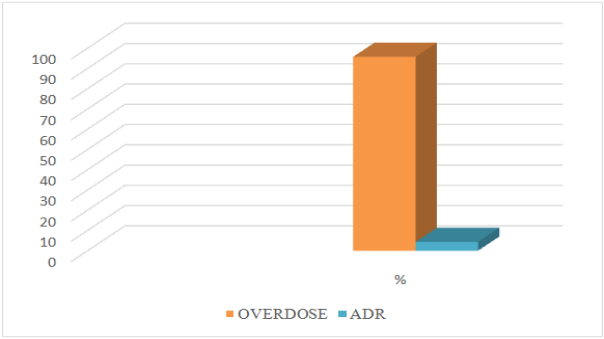

Figure 7: It is clearly shown in the figure that there were more cases related to overdose (95.7%) than ADR (4.3%).

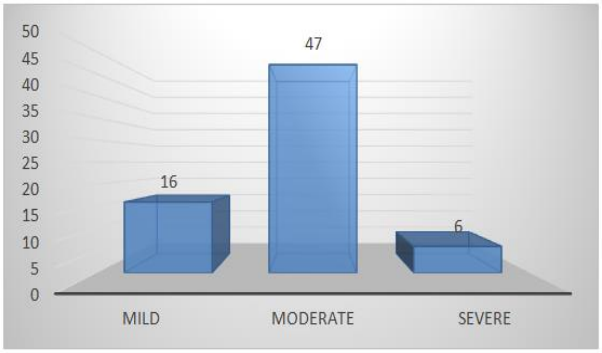

Figure 8: Shows that out of 69 patients, 47(68.11%) patients were having moderate followed by 16(23.18%) patients were having mild and 6(8.69%) patients were severely ill.

Table 8: Severity of Drug Related Illness

S. No	No of Days of Hospital Stay	Severity of drug related illness	Frequency	Percentage
1	1-2	MILD	16	23.18
2	3-5	MODERATE	47	68.11
3	>5	SEVERE	6	8.69

CONCLUSION

A broad and comprehensive definition of drug related admissions indicates that these are significant problems within the health system. The most frequently implicated drug classes are NSAID's, CNS drugs, Antibiotics, GI drugs, CVS drugs and hormone& related drugs.

The primary objective of the studies was to estimate patient group, drug class, categories of drug related illness, type and severity of the reaction. This study highlights the need for a greater awareness for drug related admissions.

Drug-related hospitalization is a significant problem. It can be prevented through rational drug use. Increased awareness and enhanced collaborative efforts among patients, physicians, pharmacists, and care taker within the community and hospital have the potential to minimize the impact of this problem. Recognition of patient, prescriber, drug, and system factors, as well as appropriate therapeutic modifications, should be pursued. This can be enhanced by a research focus on current studies that identify preventable events accurately, to explore how they happen and how to prevent them.

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Ethical Matter: The study protocol as approved by the institutional review board and also written informed consent was obtained from all participants before enrolling them in the study.

Abbreviations

ADRs: Adverse drug reaction

DRPs: Drug related problems

DRHA: Drug related hospital admission

WHO: World Health Organization

NSAIDS: Non steroidal anti inflammatory drugs

CNS: central nervous system

GI: Gastrointestinal

CVS: Cardiovascular drugs

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