



Research Article

EVALUATION OF MEDICATION ERRORS IN AN ACUTE MULTI CARE UNIT IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Purpose of the study : The aim of the study was to evaluate medication errors in the Acute Multi Care Unit in a tertiary care hospital. The study aims to promote safety in medication use and ensure quality in the healthcare service. The study objective was to detect and categorize medication errors, to ensure rational drug use in the hospital, to make recommendations for doctors, nurses, and patients to promote safe use of medications.

Design and Methodology : The study was conducted in 152 inpatients in the Acute Multi Care Unit in a tertiary care hospital located in Hyderabad. It is a prospective observational study carried over a period of 8 months. Data was collected using a data collection form which included patient details, drug details, and criteria for identifying errors, its categorization, and the details of drugs involved in errors. Complete details of patients and medications were recorded through a review of nursing charts, patient's admission chart, patient's history sheet and doctor's order sheet. Collected details were then evaluated to detect the prescribing, administration, omission error, dose error and poly pharmacy.

Results: The study was conducted in 152 patients, where total number of prescriptions with error is 28. The percentage distribution of prescriptions with error (18%) and without error (82%) was also calculated. Among which prescribing errors (50%) were the most frequently occurring types of errors, which was followed by omission errors (18%), administration error (18%) and dose error (14%). Error prescriptions belonging to male patients were (60.7%) while for females it was (39.3%). And a total of 26 Poly pharmacy prescriptions were also reported among which (69%) belongs to male and (31%) belongs to female.

Conclusion: The professionals involved in the practice should be focused, alert and determined. The nursing staff also needs to be slightly more knowledgeable and focused. Since this is an observational study and there is no scope of any intervention which can modify outcome.

Keywords: Medication error, Acute Multi Care Unit, Polypharmacy, Prescribing error, Administration error, Omission error and Dose error.

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INTRODUCTION

Errors are an integral part of human life. Many errors originate from the natural process of cognitive and behavioral adaptations which develop

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the correct behavioral skills.¹ Execution of medical orders is an important part of healing process and patient care. It is also the main component of nursing performance and has a prominent role in patient safety.² Medication errors can significantly affect patient safety and treatment costs and result in hazards for patients and their families.³ Giving medicine is probably one of the most critical duties of nurses since the resulting errors may have unintended, serious consequences for the patient.^{4,5} Medication errors can lead to adverse outcomes such

as increased mortality, increased duration of hospitalization, and increased medical expenses.^{6,7} Although medication errors can be caused by all members of health care team, nursing medication errors are the most common.⁸ The reason is that nurses execute the majority of medical orders and spend about 40% of their time in the hospital to administer medicines.⁹ The rates of nursing medication errors are high in both developed and developing countries.^{6,9} Studies have shown that almost one-third of medical complications are due to medication errors.³ According to previous research, thousands of Americans die due to these errors every year. The financial costs associated with these medical complications have been estimated as \$77 million annually.¹⁰ Studies have suggested medication errors to prolong hospital stay by 2 days and to increase costs by \$2000-2500 per patient. Inappropriate use of drugs can impose additional hospitalization costs due to adverse medicinal effects and not receiving the required medication.¹¹ It is difficult to obtain accurate statistics of medication errors since previous studies have indicated that despite the myriad benefits and the moral basis for detection and reporting of errors, nurses hesitate in reporting their errors in order to protect themselves from possible administrative penalties and reactions of patients.¹² In the third world and developing countries, it is almost impossible to find the accurate number of medication errors due to lack of proper archiving and reporting systems as well as the absence of a data registration system. However, according to the increased number of complaints from medical staff to courts and increased judiciary evidence, experts consider the rates of medication errors to be high in the mentioned countries.¹³ Determining error types is the first step to prevent errors. As we were also faced with this issue in our clinical observations, we decided to evaluate the viewpoints of nurses about the types and causes of medication errors.

METHODOLOGY

Study Design:

1. Prospective observational study carried over a period of 8 months in a tertiary care hospital at Hyderabad Metropolitan. The data were collected through Nursing charts, Patient's admission charts, Patient's history sheets and Doctor's orders sheet.

Inclusion Criteria:

1. All indoor patients admitted in Acute Multi Care Unit of a tertiary care hospital.
2. All age group patients.

Exclusion Criteria:

1. Patient's admitted in day care for chemotherapy only.
2. Palliative care patients.
3. OPD patients.
4. Terminally ill patient.
5. Day care surgery Patients.

RESULTS

Table-1: Number of Medication Error Types in Total Prescriptions

TYPE OF ERROR	NUMBER OF ERRORS	% DISTRIBUTION
Prescribing	14	50%
Omission	5	18%
Administration	4	14%
Dose	5	18%

Among 28 errors in prescriptions, prescribing error was found to be 14, Administration error was found to be 4, Omission error was found to be 5, Dose error was found to be 5. From the above analysis it was understood that medication error mostly occurred due to lack of monitoring by physicians and nursing staff.

Table 2: Number of Prescriptions With Error and Without Error

S. NO.	WITH ERROR	WITHOUT ERROR
1.	28(18%)	124(82%)

Among 152 prescriptions 28 prescriptions (18%) were showing medication errors. Hence 124 prescriptions (82%) didn't show any medication error.

Table 3: Number of Error Prescriptions Based on Gender

Types of errors	Male	Female
Prescribing	9	5
Omission	2	3
Administration	2	2
Dose	4	1

Among 28 errors prescription types of error are distributed among male and female population. In that male prescriptions consist of 9 prescribing errors, 2 administration errors, 2 omission errors, 4 dose errors. Whereas female prescriptions consist of

5 prescribing errors, 2 administration errors, 3 omission errors and 1 dose error.

Table 4: Percentage Distribution of Errors in Male and Female

Gender	Total number of subjects	% distribution
Male	17	60.7%
Female	11	39.3%
Total	28	100

Among 28 error prescriptions it was found that medication errors in 17 (60.7%) belonged to male & 11 (39.3%) belonged to female. Hence male patients are slightly predominant

Table 5: Drugs Involved in Omission Error

DRUG INVOLVED			
S. No.	Brand names	Generic Names	No. of Prescriptions
1	Salmeterol	Salmeterol	1
2	Annetol	Acetaminophen	1
3	Dolo	Paracetamol	1
4	Montek-LC	Levocitricine	1
5	Pan	+Montelukast Pantoprazole	1

Table 5.1: Total Number of Omission error in Male and Female

S. No.	Gender	Total number of subjects	Percentage
1	Male	2	40%
2	Female	3	60%
3	Total	5	100%

Among 5 prescription of omission error 2 belongs to male whereas 3 belong to female. In omission error prescription 6 dissimilar drugs were involved.

Table 6: Drugs Involved in Prescribing Error

DRUG INVOLVED			
S. No.	Brand names	Generic Names	No. of Prescriptions
1	Sporloac	Lactobacillus	1
2	Mannitol	Mannitol	1
3	Dolo	Paracetamol	1
4	Montek-LC	Levocitricine+ Montelukast	1
5	Zofer	Ondansetron	1
6	PCM	Paracetamol	1
7	Nitrocontin	Glyceryl trinitrate	1
8	Novamox	Amoxicillin	1
9	Pan	Pantoprazole	1
10	Inj.H.Mix	Insulin	1

Table 6.1: Total Number of Prescribing Error in Male and Female

S. No.	Gender	Total number of subjects	Percentage
1	Male	9	64%
2	Female	5	36%
3	Total	14	100%

Among 14 prescription of prescribing error 9 belongs to male and 5 belongs to female. In prescribing error prescription 10 individual drugs were involved.

Table 7: Drugs Involved in Administration Error

DRUG INVOLVED			
S. No.	Brand names	Generic Names	No. of Prescriptions
1	Magnex	Cefoperazone+ Sulbactam	1
2	Pan	Pantoprazole	1
3	PCM	Paracetamol	1
4	Zofer	Ondansetron	1

Table 7.1: Total Number of Administration Error in Male and Female

S. No.	Gender	Total number of subjects	Percentage
1	Male	2	50%
2	Female	2	50%
3	Total	4	100%

Among 4 prescription of administration error 2 belongs to male and 2 belong to female. In administration error 4 distinct drugs were found.

Table 8: Drugs involved in Dose error

DRUG INVOLVED			
S. No.	Brand names	Generic Names	No. of Prescriptions
1	Ecosporin	Aspirin	1
2	Zerodol P	Paracetamol+ Aceclofenac	1
3	Snepdol	Levofloxacin	1
4	Nitrocontin	Glyceryl Trinitrate	1
5	Novamix	Cefoperazone+sulbatam	1

Table 8.1: Total number of Dose error in Male and Female

S. No.	Gender	Total number of subjects	Percentage
1	Male	4	80%
2	Female	1	20%
3	Total	5	100%

Among 5 prescription of dose error 4 belongs to male and 1 belongs to female. In dose error 5 individual drugs were involved.

Table 9.: Number of Prescription Involved Under Polypharmacy

S. No.	No. of Drugs per Prescription	No. of Prescriptions
1	6 -10	9
2	10-15	14
3	15-20	3

In 152 prescriptions, it was found that 26 prescriptions were having six or more drugs. According to WHO guidelines 26 prescriptions were found under poly-pharmacy category. The prescription containing 6 to 10 drugs are found to be 9, whereas 10 to 15 drugs were found to be 14 and 15 to 20 drugs were found 3. So monitoring drug Therapy is required.

Table 9.1: Total number of Polpharmacy Prescriptions in Male and Female

S. No.	Gender	Total number of subjects	% Distribution
1	Male	18	69%
2	Female	8	31%
3	Total	26	100%

Among 26 polypharmacy prescriptions 18 belongs to male and 8 belongs to female.

DISCUSSION

The aim of this study was to review the incidence and types of Medication errors in an Acute Multi Care Unit in a tertiary care hospital. Medication errors are an important variable in determining patient safety.

In prescribing errors many differences were found with regard to how the studies obtained and reported data. Most of the studies in Middle Eastern countries evaluated medication errors during the prescribing stage.

In this study non error prescriptions were found to be 82% while error prescriptions were found to be 18%.

The reported incidence of prescribing errors in this study was 50 % (As shown in Table No. 1) of medication orders. In a previous systematic review conducted in the UK to identify the prevalence, incidence and nature of prescribing errors in hospital inpatients, prescribing errors were found to be a common occurrence and this is consistent with our findings.¹⁴⁻¹⁷

The prescribing errors were recorded on the basis of incorrect dosing in prescriptions, double medication, missing frequency. A previous study by Rixt et al also reported prescription errors based on dosing errors, dosage form errors, contra-indications, drug–drug interactions and double-medication.¹⁸

This study revealed that the magnitude of medication administration error was found to be 14 % (As shown in table No. 1); this result is lesser than those of studies conducted in the Netherland (21.2 %), Paris teaching hospital (27.6 %), Paris Pediatric unit (31.3 %) and Morocco ICU (15.5 %).^{19,20}

The study shows 18% of omitted error, being the second most occurring error along with dose error. The findings are in line with previous studies, indicated that omitted doses, wrong time were among the also frequent errors.²¹

The study also involves 28 prescriptions showing poly pharmacy. Among these 28 poly pharmacy prescriptions 18 belongs to male whereas rest 10 prescriptions belongs to females. The findings of this study are in consistent with the previous survey

reported by Slabaugh et al.,²² on poly pharmacy in male.

Educational programs for drug prescribers and nurses concerning drug therapy are urgently needed to avoid drug errors and to improve patient safety by clinical pharmacists and clinical pharmacologists. Different studies have found that clinical pharmacists play a significant role in delivering training and competency assessment.

Although most medication errors can be minor and may not harm the patients, they need more supervision and planning. Reporting medication errors is an ethical duty to maximize the benefits of patient care. It can thus improve patient safety and health.

CONCLUSION

In this study, data were collected over a period of 8 months after going through patients file, nursing records and medicine card.

Total 152 prescriptions were collected for observation out of them 18% had shown some form of errors, while 82% of the total prescriptions did not show any error. Error prescriptions belonging to males patients were more (60.7%) in this study when compare to female patients (39.3%).

Prescribing (50%) was most commonly observed; other errors such as Omission error (18%), Dose error (18%) and Administration error (14%) were also observed. Among 152 total prescriptions, 26 poly pharmacy prescriptions were also recorded of which 69% belongs to male and 31% belongs to female.

Hence to summaries the incidence of medication errors and polypharmacy were found to be more in male patients admitted in Acute Multi Care Unit. But error forms are within 20% hence, we can conclude that the professionals involved in the practice should be focused, alert and determined. The nursing staff also needs to be slightly more knowledgeable and focused. Since this is an observational study and there is no scope of any intervention which can modify outcome.

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