



EVALUATION OF MEDICATION ERRORS IN DEPARTMENT OF GENERAL MEDICINE AT A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

A medication error is any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. The aim of the present study is to investigate the factors associated with the medication errors in tertiary care hospital. This is a prospective observational study conducted for a period of 6 months at department of general medicine in tertiary care hospital. Prescription data was collected from 300 patients during this period. We found half of the prescriptions with medication errors and observed dispensing errors (38.31%) as the major source of error, followed by administration errors (34.41%) and prescribing errors (27.27%). Further, we subcategorized each type of error and investigated the root cause.

Prescribing errors can be prevented by prescriber, by evaluating patient's total status and reviewing all existing drug therapy before prescribing to avoid medication errors and also prescriber should appropriately monitor clinical signs, symptoms and relevant laboratory data to avoid untreated conditions. Administration error can be prevented by nurse by checking the case sheet of the patient thoroughly and administer drug to the patient without failure and by notifying the physician if the prescribed drugs are out of stock. Patients who are not available at the time of administration of drugs should be remembered and drugs should be administered when they are available. Dispensing errors can be prevented by pharmacist by making themselves available to prescribers and nurses to provide information and advice about correct use and dose of medications and also pharmacist should make nurses to review

the therapy given to the patients to avoid omission errors. Strict inventory control is needed to avoid stock crisis situations. Inventory status information must be available with the prescribers to avoid omission errors.

KEYWORDS: medication errors, prescribing errors, administration errors, dispensing errors, prescriber, clinical pharmacist, nurse, tertiary care teaching hospital.

INTRODUCTION

Medication use in hospitals is a complex process and depends on successful interaction among health care professionals functioning at different areas. Medication errors are a common occurrence and continue to be a problem in the health care system.^[1]

The world Health Organization definition of patient safety establishes it as an unnecessary harm associated with health care and it should be reduced to an acceptable minimum.^[2] The National Coordinating Council for Medication Error and Prevention (NCCMERP) defines a medication error as “any preventable event that may cause or lead to an inappropriate medication use or patient harm, while the medication is under the control of the health care professional, patient or consumer. Such events may be related to professional practice, health care products, procedures and system including: prescribing order communication, product labelling, packaging and nomenclature, compounding, dispensing, distribution, administration, education, monitoring and use.^[3]

In global scenario, medication errors are undoubtedly harmful and put financial burden to patient, their families, and health care providers. They affect about 44,000 to 98000, lives per year. According to study conducted in Norway only 7% prescriptions are correctly filled, where 79% had errors of minor health risks and 14% had errors that can lead to serious harm.^[4] In US and UK not less than 1 to 2 percent of hospitals are thought to be affected by medication errors.^[5]

In Indian scenario, a proper reporting of medication errors in the hospital is not available. Developing countries are still lacking good health care systems and are falling short of adequate number of health care professionals. Therefore, there are high probabilities of occurrence of medication errors across the entire spectrum of prescribing, dispensing, and administration. National Pharmacovigilance Programme of India incepted with full operation but there is no proper reporting or controlling of medication errors in the health care system.

So it's the responsibility of developing countries to introduce educational programme to improve prescribing skills and knowledge of prescribers, to encourage nurses to improve their quality of drug administration, to increase awareness among the pharmacists to dispense the appropriate drug for patients, and to increase the awareness among the patients in taking their medicines.

The fast growing rates of errors all over the world decides the need for starting a routine prescription auditing in all multispecialty and tertiary health care hospitals in India.^[6]

Clinical pharmacist should play a critical role in identification and evaluation of the medication errors and reporting the same to the other health care professionals, such that medication related problems can be minimised and patient's quality of life can be improved.

Medication errors are often ignored or not treated as important. This leads to much health related problems leading to serious consequences and further increase in health care costs. So, now-a-days medication safety is an important issue to the public and an important opportunity for pharmacies to establish as clinical pharmacist.

CLASSIFICATION OF MEDICATION ERRORS^[3&7]

Medication errors can be classified as follows

1. Dispensing errors
 - 1.1.wrong medication
 - 1.2.Incorrect dose
 - 1.3.Fail to supply medication in time

2. Administration errors
 - 2.1.Wrong patient
 - 2.2.Wrong time
 - 2.3.Wrong route
 - 2.4.Wrong drug
 - 2.5.Wrong duration
 - 2.6.Failure to administer drug to the patient

3. Prescribing errors
 - 3.1.Direction not stated
 - 3.2.Wrong drug

- 3.3. Wrong dose
- 3.4. Wrong frequency
- 3.5. Failure to write prescription
- 3.6. Omission error
 - 3.6.a. Untreated indication
 - 3.6.b. Dose not mentioned

METHODOLOGY

Study Area: Tertiary care teaching hospital, Tirupati, Andhra Pradesh.

Study Population: Patients admitted to general medicine ward.

Study Design: Prospective observational study.

Study period: Six months

Sample size: 300

Sampling Method: Random selection method

Study criteria:

Inclusion criteria: Patients admitted to general medicine ward and willing to participate in the study.

Exclusion criteria: Patients who are not willing to participate in the study.

Study materials

- ✓ Medication charts
- ✓ Case sheet of the study subjects
- ✓ Nursing charts
- ✓ Pro-formas and consent forms
- ✓ General medicine prescribing guidelines

Study plan

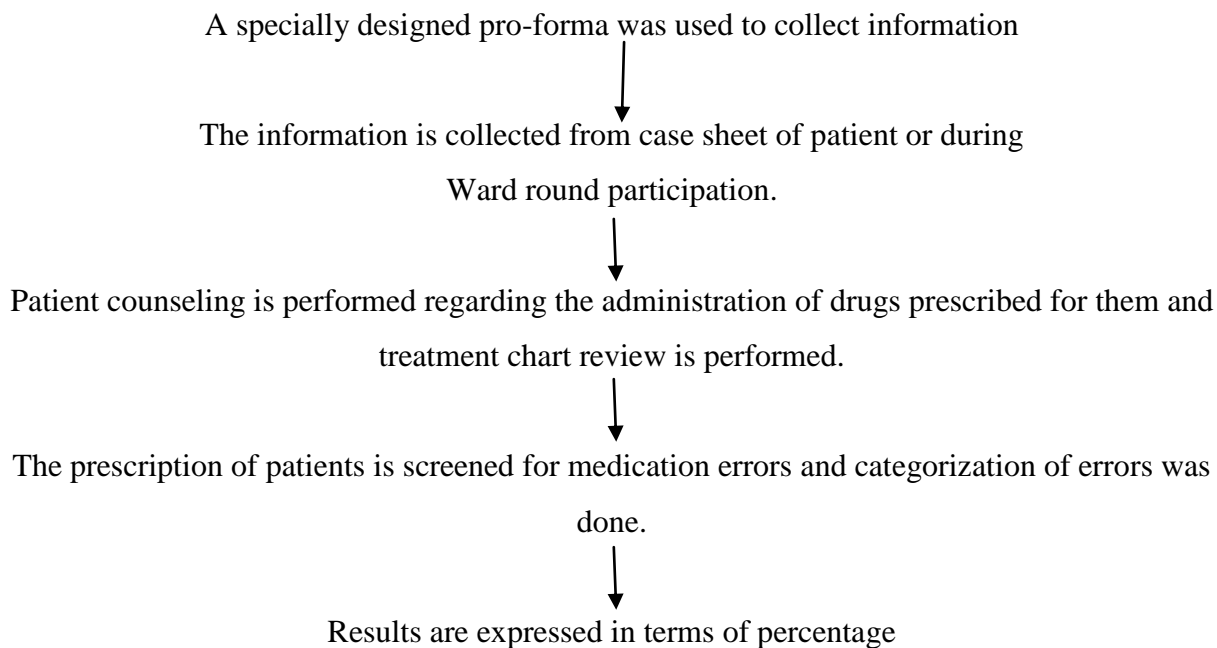
All patients admitted in general medicine inpatient ward are taken as criteria for this study. Details of plan are as follows.

Data Collection

Data will be collected as part of ward round participation and medication chart review on daily basis. Check list prepared to identify medication errors employed on every prescription in order to categorize types of errors and number of errors per prescription and severity of

errors. Questionnaire was prepared in a way to assess the incidence of the error, frequency of the error.

Processing of data:



RESULTS AND DISCUSSION

Out of 300 prescriptions, prescriptions with medication errors are 154 and prescriptions without medication errors are 146. The percentages are found to be 51.33% and 48.66% respectively as shown in the table 1. These medication errors were broadly observed as prescribing, dispensing, and administration errors. Among these categories dispensing errors contributed to highest number i.e. 38.31% (59), followed by administration errors 34.41% (53) and prescribing errors 27.27% (42) as shown in table 2.

Among 59 Dispensing errors 5 were dispensing incorrect dose, 54 were failure to supply drug in time and percentages were found to be 8.47% and 91.53% respectively as shown in table 3. Majority of dispensing errors are due to lack of stock, unavailability of patient at the time of dispensing (patient might have been taken for certain lab investigations), improper dispensing by nurses (not fulfilling the prescription). These dispensing errors can be prevented by pharmacist by making themselves available to prescribers and nurses to provide information and advice about correct use and dose of medications and also pharmacist should make nurses to review the therapy given to the patients to avoid omission errors. Strict inventory control is needed to avoid stock crisis situations. Inventory status information must be

available with the prescribers to avoid omission errors. Dispensing errors has an association of 38.31% in overall medication errors.

Among sub categories of administration errors only failure to administer drug was observed i.e. 53 and percentage was found to be 100%. No other types of errors were identified as shown in table 4. This type of error may occur due to work load on nurse, lack of stock, unavailability of patient at the time of administration of drug, not accepting due to pain. This type of administration error can be prevented by nurse by checking the case sheet of the patient thoroughly and administer drug to the patient without failure and by notifying the physician if the prescribed drugs are out of stock. Patients who are not available at the time of administration of drugs should be remembered and drugs should be administered when they are available. An administration error has association of 34.41% in overall medication errors.

In prescription errors, we observed omission errors which occurred in 40 prescriptions, direction not stated in 1 prescription and wrong route in 1 prescription with percentages of 95.23%, 2.3% and 2.3% respectively as shown in table 5. Omission error is further subcategorized into untreated indication and dose not mentioned. Among 40 omission errors 23 belong to untreated indication and 17 belong to dose not mentioned with percentages as 57.5% and 42.5% respectively. We observed that both physician and patient or care takers were involved in occurrence of medication errors due to improper history collection (including laboratory investigations), improper monitoring of patient, and lack of guardian or patient knowledge to inform about the clinical condition of the patient to the physician, lack of time or busy schedule. These prescribing errors can be prevented by prescriber, by evaluating patient's total status and reviewing all existing drug therapy before prescribing to avoid medication errors and also prescriber should appropriately monitor clinical signs and symptoms and relevant laboratory data to avoid untreated conditions. Prescribing errors has an association of 27.27% in overall medication errors.

Medication error is any preventable mistake which occur during the medication use process. To build safer health care system, first step is to detect errors and perform root cause analysis. Medication errors are common causes of iatrogenic adverse events and causes serious problems in health care which can lead to severe morbidity, prolonged hospital stay, unnecessary diagnostic tests, unnecessary treatment and finally death. So, medication error is an important variable in determining patient safety.

Table1: Summary of Prescriptions With And Without Medication Errors.

S.no.	Observation	Total no. of prescriptions	Percentages
1.	Prescriptions with medication errors	154	51.33%
2.	Prescriptions without medication errors	146	48.66%

Table 2: Summary of Types of Medication Errors.

S.No.	Types of Medication Error	Total No. of Medication Errors	Percentage
1.	Prescribing error	42	27.27%
2.	Administration error	53	34.41%
3.	Dispensing error	59	38.31%

Table 3: Summary of Sub Types of Dispensing Errors.

S.No	Sub Types In Dispensing Errors	Number Of Errors	Percentages
1.	Dispensing wrong drug	0	0%
2.	Dispensing incorrect dose	5	8.47%
3.	Failure to supply drug in time	54	91.53%

Table 4: Summary of Sub Types of Administration Errors.

S.No	Sub Types of Administration Errors	Number of Errors	Percentages
1.	Wrong patient	0	0%
2.	Wrong drug	0	0%
3.	Wrong dose	0	0%
4.	Wrong route	0	0%
5.	Wrong duration	0	0%
6.	Failure to administer drug	53	100%

Table 5: Summary of Sub Types of Prescribing Errors.

S.No	Sub Types Of Prescribing Errors	Number Of Error	Percentage
1.	Wrong drug	0	0%
2.	Wrong dose	0	0%
3.	Wrong frequency	0	0%
4.	Failure to write prescription	0	0%
5.	Direction not stated	1	2.3%
6.	Wrong route	1	2.3%
7.	Omission error	40	95.23%

Table 6: Summary of Sub Sub Types of Prescribing Errors

S.No.	Sub Sub Types Of Omission Errors	Number of Errors	Percentages
1.	Untreated indication	23	57.5%
2.	Dose not mentioned	17	42.5%

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