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EVALUATION OF MEDICATION ERRORS THROUGH MONITORING OF MEDICATION ORDERS

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ABSTRACT

Medication errors can occur during prescribing, transcribing, dispensing, administering and monitoring drugs. The present study was aimed to evaluate the various types of errors through monitoring of medication orders. This was a prospective observational study carried out at various hospitals and clinics through monitoring of 120 medications orders. All the informations collected from medication orders as well as from patients was screened for assessment of medication errors. Among 120 medication orders 45.8% belongs to male patients and 54.2% female patients. Medication errors occurred in 36 patient's prescriptions and female patients outnumber the male patients by having 20 (55.6%) errors. The age wise distribution of patients showed that most of the patients were in the age group > 61 years. Out of 36 numbers of patients with medication errors, a total of 48 numbers of medication errors was found. Omission error was the most frequently observed medication errors in 68.5%. Among 120 patients, Hypertension was found to be most commonly occurring condition reported in 22.2% patients with medication errors. Majority of errors identified in this study reached the patients but did not cause any harm. So as to minimize the medication errors, it will be necessary to conduct awareness and education programs for all health care providers especially nursing staff regarding detection and reporting of medication errors. Appropriate team work from all health care professionals can certainly reduce the incidence of medication errors.

K**eywords:** Medication errors, medication orders, patients, prescriptions.

INTRODUCTION

The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) has defined medication errors as '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 consumers.[1]

Medication errors constitute a substantial part of medical errors and defined in general as a dose administered differently than as observed in patient medical record. Medication errors can occur in all

stages of the medication process, i.e. prescribing, transcribing, dispensing, administering and monitoring drugs.[2, 3]

In hospitals, errors occur in every step of medication use process starting from procuring the drug to prescribing, transcribing, dispensing, administering and monitoring its effect. In India, the medication error and medication related problems are mainly due to irrational use of medication. Since 1992, FDA has received more than 20,000 medication error reports.[4]

Medication errors are common in general practice and in hospitals. Prescribing faults and prescription errors are major problems among medication errors; although they are rarely fatal they can affect patient's safety and quality of healthcare. Prescribing errors may lead to adverse drug events (ADEs), prolonged hospital admissions and even deaths in 1-2% of patients. Prescription errors encompass those related to the act of writing a prescription, whereas prescribing faults encompass irrational prescribing, inappropriate prescribing, under prescribing, over prescribing, and ineffective prescribing, arising from erroneous medical judgment or decisions concerning treatment or treatment monitoring.[5, 6]

In India, studies done in Uttarakhand and Karnataka have documented medication error rate to be as high as 25.7% and 15.34%, respectively, in hospitalized patients. Unfortunately, most of the medication errors remain undetected, if clinical significance or outcome does not adversely affect the patient. While some of the medication errors also result into serious morbidity or mortality and have a significant economic impact on the patient and health.[1, 7]

METHODOLOGY

This was a prospective observational study carried out for a period of three months in in-patient as well as out-patient department of various hospitals and clinics in Dehradun region through monitoring of medication orders. All the information's collected from medication orders as well as from patients was screened for assessment of medication errors.

RESULTS AND DISCUSSION

A total number of 120 medication orders of patients were collected during the study period. Out of 120 medication orders, 55 (45.8%) belongs to male patients and 65 (54.2%) female patients (Figure 1). 36 patient's prescriptions out of 120 were found to develop medication errors. Majority of medication errors were observed in females, perhaps due to the fact that, females are more in number among the study population. Female patients outnumber the male patients by having 20 (55.6%) errors. The gender wise distribution of medication errors are summarized in Table 1. The overall percentage of observed medication errors were 30% without causing any life threatening harm to patients. The age wise distribution of patients showed that most of the patients were in the age group > 61 years which

simultaneously reflected that the patients who aged > 61 years experienced more medication errors than other age group (Table 2).

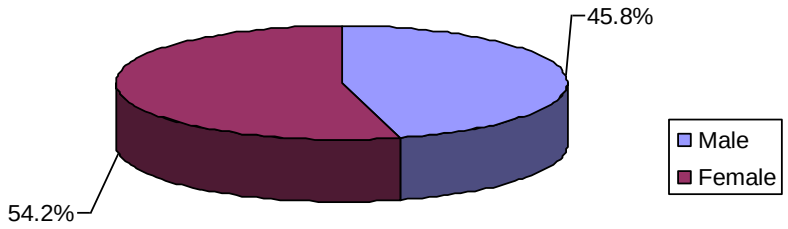

Figure 1: Gender wise distribution of patients

Table 1: Gender wise distribution of the patients with medication errors

Gender	Number of patients with medication errors (%) (n=36)
Male	16 (44.4%)
Female	20 (55.6%)

Table 2: Age wise distribution of the patients

Age group	Number of patients (%) (n=120)	Number of patients with medication errors (%) (n=36)
<10	02 (1.6%)	00 (0.0%)
11-18	03 (2.5%)	03 (8.3%)
19-30	21 (17.5%)	05 (13.8%)
31-45	29 (24.1%)	04 (11.1%)
46-60	31 (25.8%)	11 (30.5%)
>61	34 (28.3%)	13 (36.1%)

In this study, 87 patients were prescribed with 1-5 medications containing 77.78% patient's prescriptions with errors, 25 patients were prescribed with 6-10 medications containing 16.67% patient's prescriptions with errors while 8 patients were prescribed with more than 10 medications containing 5.55% patient's

prescriptions with errors as summarized in Table 3. Out of 36 numbers of patients with medication errors, a total sum of 48 numbers of medication errors was found. Omission error was the most frequently observed medication errors 33 (68.75%) and the other errors were summarized in Table 4.

Table 3: Number of medications per prescription

Number of medications per prescription	Number of patients (%) (n=120)	Number of patients with errors (%) (n=36)
1-5	87	28 (77.78%)
6-10	25	06 (16.67%)
>10	08	02 (5.55%)

Table 4: Types of medication error

S.No.	Types of Error	Number of errors (%) (n= 48)
1.	Omission error	33 (68.75%)
2.	Unauthorized drug	02 (4.17%)
3.	Wrong dosage form error	01 (2.08%)
4.	Wrong route error	03 (6.25%)
5.	Compliance error	08 (16.67%)

Clinical significance of medication errors are categorized into four types including: life-threatening, major nuisance, less harm and insignificant error as shown in Table 5. While assessing the level of harm caused by medication errors, it was observed that out of 48 medication errors, 52.1% belong to Type C, 39.6% belongs to Type D, 8.3% belongs to Type B while there were no case of life threatening error observed i.e. Type A as shown in Figure 2. Among 120 patients, 33.3% patients were diagnosed with hypertension, 14.2% with diabetes, 12.5% with urinary tract infections, 8.3% with gastrointestinal problem and 31.7% with other diseases were summarized in Table 6. Hypertension was found to be most commonly occurring condition reported in 22.2% patients with medication errors, while diabetes, urinary tract infections, gastrointestinal diseases and other diagnosed conditions were also reported alongside of medication errors.

Table 5: Clinical significance of medication errors

Types	Description
Type A	Error that are life threatening
Type B	Error with major nuisance
Type C	Error with less harm to patient
Type D	Insignificant error

Figure 2: Clinical significance of medication Error

Table 6: Diagnosed condition with medication errors

Diagnosis	Number of patients (%) (n=120)	Number of patient with error (%) (n=36)
Hypertension	40 (33.3%)	08 (22.2%)
Urinary tract infections	15 (12.5%)	04 (11.1%)
Diabetes	17 (14.2%)	08 (22.2%)
GI diseases	10 (8.3%)	03 (8.3%)
Others	38 (31.7%)	13 (36.1%)

CONCLUSION

Medication errors occur at all levels of patient care and drug therapy. Majority of errors identified in this study reached the patients but did not cause any harm. So as to minimize the medication errors, it will be necessary to conduct awareness and education programs for all health care providers especially nursing

staff regarding detection and reporting of medication errors. As polypharmacy is identified as one of the major risk factor for medication errors, it will also be necessary to establish a proper system for constant monitoring and reporting of medication error for all the patients receiving multiple drug therapy. Enhanced patients monitoring by multi-disciplinary team approach including involvement of clinical pharmacists and pharmacy students in the medical wards have a greater impact in minimizing medication errors. Appropriate team work from all health care professionals can certainly reduce the incidence of medication errors.

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