



## Common prescribing errors in Government general hospital

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### ABSTRACT

Medication errors are an unfortunate reality in most healthcare practices. Among those prescribing errors are common in hospital practice globally. The judicious use of drugs begins with a correct prescription; but according to the survey there are more than 50% of all treatments containing errors. Study objectives are to identify and quantify the most frequent prescription errors in inpatient's medical prescriptions, to minimize errors and to ensure the safe use of drugs. A Prospective Observational study was conducted in a government general hospital during 3 months (August 2012 to October 2012) period. Male patients are more during our study period. Majority of prescribing errors are in between 31 – 40 years of age. 131 prescribing errors were found, the majority of errors were due to drug interactions (33.58%) followed by dose not mentioned errors (32.01%). The most common causes of error were mistakes due to inadequate knowledge of the drug or the patient, lack of training or experience, fatigue, stress, high workload and inadequate communication between healthcare professionals. Systemic changes such as standardizing the work processes, promoting effective team functioning, automated error surveillance, tracking and performance improvement, decreasing the nurse patient ratio in the hospital can decrease the incidence of errors.

**Key words:** Prescribing errors, Prospective Observational study, Medication errors.

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## INTRODUCTION

Nowadays, medication errors are an unfortunate reality in most healthcare practices. Approximately 30% of problems occurring during hospitalization are related to medication errors, resulting in a great economic impact and serious morbidity and mortality rates. Prescribing errors are common in hospital practice globally. Errors occurred in 1.5% of medication orders prescribed during the hospital stay. More than seven thousand registered pharmaceutical products are commercialized in India and each year around 600 new products are introduced to the Indian market. This situation confronts Indian general practitioners at the primary care level, to a wide range of available medicines, conducting to a complex decision making process in therapeutics. Moreover, although the World Health

Organization (WHO) recommended since 1988 the inclusion of pharmacists on the health care teams, pharmacists have not yet been completely recognized and accepted by the Indian health system as the health care professionals responsible for promoting the correct use of medicines. There is still no drug use monitoring in all Indian health institutions, not enough drug information centers and there are very few pharmacists collaborating with other health care professionals in hospitals and in Drug and Therapeutics Committees. Thus, research on rational-drug-use in India, identification of the most frequent medication errors in public and private health care facilities and implementation of strategies for solving and preventing drug misadventures with full participation of pharmacists, are actions still far away to be routinely

carried out<sup>1</sup>. WHO recently stated, that the irrational use of drugs is increasing; one of the reasons is that medication use is worse in the private health sector of underdeveloped countries than in the public sector; in fact, the private sector has become more active than the public sector increasing its participation in health assistance around the world (World Health Organization, 2006)<sup>2</sup>. The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) defined a medication error 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 consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling, packaging, and nomenclature; compounding; dispensing; distribution; administration; education; monitoring; and use” (NCCMERP, 2007)<sup>3</sup>. The rational use of drugs begins with a correct prescription; yet, according to the consulted literature, this stage is where more than 50% of all treatments present errors. Some of the most important situations that should be considered as prescription errors are: a) errors during the decision making process (drug not indicated, contraindicated drug, drug to which the patient has a documented allergy or a significant risk of presenting adverse reactions, drug-disease interactions, drug-drug interactions, inappropriate drug for age or clinical condition, medication duplicity, unnecessary drugs, inappropriate dosage, dosage form, administration route, concentration or frequency of administration); and b) errors in prescription writing that may or may not affect the patient (illegible, unclear or potentially error causing written prescriptions, omissions, transcription errors). In primary health care facilities, most of these medication misadventures can only be classified as potential errors, because there is little information whether they actually reach the patient or not. There is a lack of publications about the type and frequency of occurrence of medication errors in primary care. Medication error research at this level is limited mostly because users of such services are not inpatients as occurs in hospitals, also due to the elevated assistential pressure (time, patient/physician, and consultation-time/ patient rates, among other reasons) and to the primary care practitioners who are misinformed on events considered as prescription errors<sup>4</sup>. Prescribing is the process whereby a doctor, nurse or other registered professional authorizes use of medications or treatments for a patient and provides instructions about how and when those treatments should be used. Although the term commonly refers to orders for medicines, the concept can equally encompass laboratory tests, medical imaging, psychological treatments, eye glasses, eating and exercise regimes or other instructions to help optimize health and wellbeing<sup>5</sup>. Prescriptions are handwritten or computerized documents containing the patient’s name and address, the date, the specific treatments prescribed and an authorizing signature. They are a way for prescribers to communicate with pharmacists or others who in turn fill the prescription. Prescribers include doctors of various types and, in some countries,

nurse practitioners, physicians, assistants, dentists, podiatrists, optometrists, clinical psychologists and clinical pharmacists also write prescriptions. Prescriptions can help people stay healthy or manage long-term conditions or emergency situations. However, as with other components of healthcare, prescriptions are also subject to error and can lead to unintended harm. Medication errors are one of the most common patient safety issues and prescribing errors are one of the most common types of medication errors<sup>6</sup>. A prescription error is ‘a failure in the prescription writing process that results in a wrong instruction about one or more of the normal features of a prescription’. The ‘normal features’ include the identity of the recipient, the identity of the drug, the formulation, dose, route, timing, frequency, and duration of administration<sup>7</sup>.

#### CLASSIFICATION OF PRESCRIPTION ERRORS<sup>8</sup>:

**Type A:** ‘Potentially serious to patient’- The prescription would be dangerous to the patient if dispensed.

**Type B:** ‘Major nuisance’- The pharmacist has to contact the prescriber in order to dispense the prescription. Patient, doctor and pharmacist are thus all inconvenienced.

**Type C:** ‘Minor nuisance’- The pharmacist has to make a professional decision before dispensing, although is able to do so without contacting the prescriber. This is annoying for pharmacists and can cause slight delays to patients.

**Type D:** ‘Trivial’ The prescription does not strictly conform to the guidelines in the British national formulary although the prescriber’s intentions are not in doubt.

#### TYPES OF PRESCRIBING ERRORS<sup>9</sup>:

##### Need for drug

01. Unintentional omission on admission
02. Omission from chart at rewrite
03. Unintentional omission from discharge prescription
04. Premature discontinuation
05. Not prescribed when indicated
06. Continuation for longer than necessary
07. No indication
08. Duplication of treatment

##### Selection of specific drug

09. Significant allergy
10. Clinical contra-indication
11. Continuing in event of adverse drug reaction
12. Contra-indicated due to drug interaction
13. Not drug intended

##### Select dosage regimen

14. Failure to specify maximum dose
15. Failure to take into account drug interaction
16. Dose/rate mismatch for infusion
17. Ignoring therapeutic drug monitoring level outside range
18. Daily dose incorrectly split into doses
19. Overdose
20. Sub therapeutic dose

##### Administration of drug

21. Wrong route

22. Wrong formulation
23. Administration times incorrect or not specified
24. IV instructions incorrect or not specified
25. Start date incorrect/missing

#### Provide drug product

26. Product or formulation not specified
27. Strength or dose not specified
28. Route unspecified
29. Medication order not signed.

## AIM AND OBJECTIVES

#### AIM:

To assess and identify the common prescribing errors in Government General Hospital.

#### OBJECTIVE:

1. To know the types and cause of prescribing errors.
2. To identify and quantify the most frequent prescription errors in inpatient's medical prescriptions.
3. To assess the prescription rationality.
4. To minimize errors and to ensure the safe use of drugs.

## METHODOLOGY

**Place of the study:** Government General Hospital.

**Type of study:** Prospective observational study

**Study period:** 3 months (August 2012 to October 2012)

**Study population:** 30 cases.

**Method of study:** This study was approved by institutional ethical committee no. SPSP – PP07. A prospective observational study was conducted in the in-patient ward of Department of general medicine in SVRRGG hospital. Patients of age range from 18 to 80 years were included. The patients were selected randomly and followed from the date of admission till the date of discharge. During the study, patients case records were reviewed and the following data were recorded in a patient pro forma sheet namely demography, admitting diagnosis, case history, physician medication order sheet, nurses medication administration record and any other special findings. The data for the present study was collected by "Chart review method" which is well suited to identify the prescribing medication errors. All the medication errors were analyzed using the following parameters: Sex-wise distribution, type wise distribution, and total prescription error-wise distribution of medication errors, cause of the medication errors, drug-drug interactions, drug-food interactions and drug-disease interactions<sup>10, 11</sup>.

## RESULTS AND DISCUSSION

#### Demographics of the study population:

A total of 30 cases were collected of which 20 (67%) were male and 10(33%) were female between the age group of 18 to 80 years.

Out of 20 male 4(20%) were found in the age group of below 30years, 6(30%) were in between 31 to 40 years, 5(25%) were in between 41 to 50 years, 5(25%) were above 50 years. Of 10 female 1(10%) were found in the age group of below 30years, 2(20%) were in between 31 to 40 years, 2(20%) were in between 41 to 50 years, 4(40%) were above 50 years (**Table-1**). Of the 30 case sheets analyzed, medication errors were found in 26 case sheets and 4 case sheets were found to be error free.

**TABLE 1: "Demographic status of the study population"**

Age group in years	No of cases(30)			
	Male	Female	Total	Percentage%
<30	4	1	5	16.66%
31-40	6	3	9	30%
41-50	5	2	7	23.33%
>50	5	4	9	30%
Total	20	10	30	100%

#### Error per case sheet:

Of 26 case sheets analyzed 10(38.46%) had one error each, and 8(30.76%) two errors each and 8(30.76%) with more than two errors each respectively. Most of the case sheets had at least one error (**Table-2**)

**TABLE 2: "Errors per case sheet"**

Errors per case sheet	No of case sheets (26)
With one error	10(38.46%)
With two errors	8(30.76%)
With more than two errors	8(30.76%)

#### Types of prescription errors:

Among 131 prescription errors, 42(32.06%) were found to be dose not mentioned, followed by frequency not mentioned 29(22.13%), route not mentioned 15 (11.45%), wrong dose 1(0.76%) and drug interactions 44(33.58%) respectively. Prescribing errors were commonly found (**Table-3**).

**TABLE 3: "Types of prescribing errors"**

Type of error	Total (131 ERRORS)
Dose not mentioned	42 (32.06%)
Frequency not mentioned	29(22.13%)
Route not mentioned	15(11.45%)
Wrong dose	1(0.76%)
Drug Interactions	44(33.58%)

#### Severity level assessment of all prescription errors:

ASHP guidelines Proposed Prescription Error Index was used to assess the severity level of prescription errors, **Type-A:** Circumstances or events that have the capacity to cause error were found to be –5 which is of 3.81%, **Type B:** the errors fund are 70 which is of 53.43%, **Type-C:** the errors fund are 29 which is of 22.13%, **Type-D:** the errors fund are 27 which is of 20.61% (**TABLE-4**)

**TABLE 4: "Severity level assessment of prescription errors"**

Level of severity	Number of medication errors
No error	4
Type A	5(3.81%)
Type B	70(53.43%)
Type C	29(22.13%)
Type D	27(20.61%)

**Outcome of the error:**

The outcome of 4 errors was no error, 56 errors were errors but no harm, 75 errors was error with harm. No error has caused death. (TABLE-5)

**TABLE 5: “Outcome of the error”**

Outcome	No. of errors (131)
No error	4
Error/no harm	56
Error/harm	75
Error/death	0

**Severity Level of Potential Drug-drug interactions:**

The 44 drug-drug interactions were found, among these 14 (31.81%) were found to be minor interaction, 25(56.81%) were found to be moderate interaction and 5(11.36%) were found to be major interactions (TABLE-6)

**TABLE 6: “Severity level of Potential Drug-drug interactions”**

Severity level	No of interactions (44)
Minor	14(31.81%)
Moderate	25(56.81%)
Major	5(11.36%)

**DISCUSSION**

Errors associated with medications are believed to be the most common type of medical error and are a significant cause of preventable adverse events. Experts agree that prescribing errors have the potential to cause harm to the patient population. For this study we selected the chart review method. Kaushal *et al* for their study also adopted the chart review method which is a real time random safety auditing method. Interviewing the care takers gave us the additional information that cannot be obtained through chart review. In this prospective chart review, 131(86.6%) prescribing errors were identified among 30 case sheets. It is indicating that the medical care is very poor in the hospital. The demographic reports of prospective study conducted by Miriam Zavaleta-Bustos' *et al* (2008) in the Prescription errors in a primary care cited a predominance of females (60%) over males which is contrast with the present study reporting males (87%) than females (13%). majority of prescribing errors were identified the age group between 31-40 years(30%). From the finding of the present study it is clear that in 30 study population, 26 case sheets were having at least one prescribing errors where 4 case sheets were found to with no prescribing error. These findings are similar to the J H Simpson *et al* (2005) study. This indicates the majority of the prescribing errors were due to the heavy physician work load. In the present study, among 131 prescribing errors, the majority of errors were due to drug interactions (33.58%) followed by dose not mentioned errors (32.01%). These findings are similar to Naddem. H. Shah *et al* study on prescribing errors in general practice. Combined prescription of drugs with potential hazardous drug-drug interactions reported in literature, should be taken with caution and appropriate monitoring, as well as with enough information for the patient. The latter is particularly important in general

government hospitals, because there are no pharmacists advising patients at clinical and community pharmacies. Patients could then “copy” the prescription habits of their physicians in their self-medication practices, expanding irrational use of drugs. This leads to increase in self-medication and affects public health. Based on the ASHP guidelines Proposed Prescription Error Index, type B errors (53.43%) (The pharmacist has to contact the prescriber in order to dispense the prescription) were found to be more than other type of errors. The involvement of the health care team is important for avoiding this type of errors. From the findings of the severity level of potential drug-drug interactions, the majority of interactions were moderate (56.81%) followed by minor interactions (31.81%). Metronidazole, Paracetamol, Amoxicillin and Ceftriaxone were the drugs most frequently prescribed in combinations of drugs that could lead to drug-drug interactions. Potential risk to the patient could not be assessed and no appropriate action could be taken because of the lack of patient’s response, lack of interaction with the physicians and also lack of clinical pharmacist involvement in drug chart review. The important data about the patient’s clinical history and actual health condition, like the concomitant drug use and toxic habits of the patients, was missing in the analyzed medical records. This was a limitation for assessing prescriptions but also for detecting unexpected risks of the prescribed pharmacotherapy, since we could not monitor patients neither knows if errors on indication or potential interactions reached them. We thus recommended to the primary care clinic the optimization of the medical records. The pg medicos are used to prescribe the drugs in the prescription and duty physicians are not reviewing the drug charts leads to human errors. Prescription errors detected in the present study lead us once again to determine the critical role of pharmacists monitoring medication orders and documenting their interventions toward reducing medication errors. Pharmacists among primary health care providers, to develop best practices in medication safety and increase physicians’ awareness about medication errors and how to prevent them. Most people taking medication will benefit from it, but there is always the potential for errors which may cause harm. Prescribing errors are the largest source of medication errors. The most common causes of error were mistakes due to inadequate knowledge of the drug or the patient, memory lapses, lack of training or experience, fatigue, stress, high workload and inadequate communication between healthcare professionals. As prescribing errors make up a significant proportion of all errors in healthcare, further involvement and work in this field has the potential to significantly improve patient safety.

**CONCLUSION**

Prescribing errors are still commonly identified in Indian government general hospitals. All persons involving in health care team must be educated to decrease the errors. Hence a pharmacist can play a vital role in the chart review to avoid medication mishaps and significantly improve

medication safety. Systemic changes such as standardizing the work processes, promoting effective team functioning, automated error surveillance, tracking and performance improvement, decreasing the nurse patient ratio in the hospital can decrease the incidence of errors.

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