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Original Article

Identification and quantification of prescription errors



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ABSTRACT

Background: Prescription errors are commonly encountered in health care settings. They can lead to inefficient delivery of health care thus jeopardizing patient care. Knowing the quantum and the possible causes of such errors is the first step in trying to prevent them. We conducted a random audit of prescriptions received in service dispensary of a tertiary care hospital and analyzed them for prescription errors.

Methods: A total of 1000 prescriptions were randomly selected. These prescriptions were analyzed with the help of three qualified pharmacists and were stratified as per the errors encountered.

Results: Out of the total of 1000 prescriptions, 650 prescriptions (65%) were found to have a total of 1012 errors. Type B errors were found in 22.4% prescriptions, type C errors in 9.7% prescriptions and type D in 69.1% prescriptions.

Conclusion: Prescription errors require proactive, continuous and meticulous monitoring so as to minimize them. It requires identification of preventable causes, increasing awareness and sensitizing the prescriber towards this important aspect of health care delivery.

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Introduction

Prescribing medicines to patients is an integral part of medical care. It involves decision-making about the choice of medicines, its communication to pharmacist in the form of prescriptions for dispensing and finally, administration of medicines. The whole process requires seamless communication at various stages. However, a decremental knowledge gap exists at each step, with patient being least informed and almost totally unaware of the benefits and risks of medicines. Like any other process involving multiple individuals, this process too is prone

to errors with the potential of jeopardizing patient care. Ensuring flawless delivery of correct medication to the patients is drawing long deserved attention from health care professionals. It has become an important part of overall efforts for judiciously using medicines and minimizing their adverse effects.

An error can occur at any stage of the prescription process viz:

Choosing a medicine:

- There may be selection of irrational, inappropriate or ineffective (a medicine that is not effective for the indication in general or for a specific patient) medication.

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- Under-prescribing (failure to prescribe a medicine that is indicated and appropriate, or use of too low a dose of an appropriate medicine).
- Over-prescribing (prescribing a medicine too much, too often or for too long).

Prescription writing: Omission/mistake in – superscription, dosage form, strength of preparation, improper route and/or illegible handwriting lead to such errors.

Formulation used: Such errors occur due to wrong strength, contaminants, wrong or misleading packaging of formulations involved.

Dispensing of medication: Dispensing wrong medicine or wrong formulation to the patient or dispensing medicines with wrong labeling can result in such errors.

Administering/taking the medicine: Despite correct selection of medicines, meticulous prescription writing and careful dispensing, the patient may still take or be administered medicines in wrong amount, by wrong route, in wrong frequency or for wrong duration.

Monitoring therapy: Medicines need to be prescribed for a defined time period. Even long-term treatments require monitoring and modifications from time to time depending on various factors such as disease progression and changes in patient's physiological parameters. Failing to alter therapy when required or erroneous alteration also account for errors.¹

An error occurring at any of these stages is defined as medication error. It may result in failure of the therapy or may cause harm to the patient. Medication errors are recognized to be an important impediment in providing optimum medical care to the patients. A number of studies have been done to assess their magnitude in diverse settings. In one study, inpatient medication errors occurred at the rate of 1.5–5.3 per 100 orders.² In another study 16% of the patients reported a medication error with two third of them in outpatient department (OPD) patients.³ These errors have a negative impact on patients' health and therefore should be minimized.^{4–6} Medication errors can give rise to adverse events too. In one study, 11% of adverse events were due to medication errors.⁷

The frequency of medication errors differs from one set up to another depending on a number of factors such as type of patients, training, patient load, medical audit procedures and sensitization of the health care workers. Therefore, prescriptions (for both admitted and OPD patients) need to be proactively screened for such errors and steps be taken to minimize them.

Prescription errors are an important form of medication errors. Studies have shown that 15–21% prescriptions contain at least one prescribing error.^{8,9} In India, there are a few published studies pertaining to medication errors and prescription errors. Most of the published studies have addressed the issue of medication errors in indoor admitted patients.^{10–12} All these studies have been conducted on 300–500 subjects. Patel et al conducted a survey of 999 OPD prescriptions in which they focused mainly on the issue of irrational drug use.¹³ This study was planned to initiate the process of identification and subsequent minimization of medication errors. As an initial step, this observational study was planned to look only for errors in prescription writing for OPD patients.

Material and methods

A total of 1000 prescriptions were randomly selected, out of all the prescriptions received in one month at central hospital dispensary from various OPDs. Prescription errors were stratified according to nuisance they may cause by hampering the dispensing work, a method suggested by Neville et al.¹⁴ According to this method, prescription errors can be classified as follows:

Type A: Errors which are potentially serious to patient. Such prescription would be dangerous to the patient if dispensed. For e.g. (i) if the dose of a cardiac drug viz. Digoxin is increased by a factor of 10 OR (ii) if the pharmacist is not able to differentiate between 'Daonil' (Brand name for glibenclamide, a hypoglycemic medicine) and 'Digene' (Brand name of a mixture of antacids and methyl polysiloxane).

Type B: Errors causing major nuisance by making a pharmacist to contact the prescriber in order to dispense the medicine. For e.g. If type of formulation prescribed (e.g. whether conventional tablet or slow release tablet of indapamide is to be dispensed) or strength of formulation (e.g. whether aspirin tablets of 75 mg or 150 mg or 325 mg or Atorvastatin tablets of 10 or 20 mg are to be dispensed) is not mentioned or use of brand name about which the dispensing pharmacist is not aware.

Type C: Errors causing minor nuisance which can be managed by involving other pharmacist to take a professional decision at dispensary level before dispensing. Though such prescription can be correctly dispensed without contacting the prescriber, however such an error causes hindrance in the functioning of the dispensary and delays dispensing of medication to the patient. For e.g. (i) omission of dosing schedules of commonly prescribed medicines like paracetamol, diclofenac (ii) using brand names of commonly used medicines such as 'NatriliX' for indapamide, 'Tixylix' for promethazine (iii) using abbreviations such as 'NTP' for nortriptyline, 'UDCA' for ursodeoxycholic acid.

Type D: Trivial errors consisting of spelling errors or omissions such as date, age and/or gender of the patient etc. Such errors do not hamper the execution of prescriptions.

Three pharmacists, who have been working in the hospital dispensary, were asked to screen these randomly selected prescriptions under the supervision of the authors. The prescription errors were identified and were listed as per the type described by Nivelle et al. If the prescription had more than one error, both the type of errors were identified and included in the analysis.

Analysis protocol

The selected prescriptions were screened for the following prescription writing errors by authors at the first instance:

1. Strength of preparation not mentioned.

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