

Study on determination of errors in prescription writing: A semi-electronic perspective

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Abstract

Background: Prescription writing is one of the most important and basic skills that a doctor needs. Prescribing errors may have various detrimental consequences. Hence, the components of a prescription should be clearly written, free of drug related omission (incomplete prescription), commission (incorrect information) and integration errors, without non-official abbreviations, and fulfil the legal requirements of a prescription. Since errors of prescribing are the commonest form of avoidable medication errors, it is the most important target for improvement.

Objectives: To estimate the types and prevalence of medication errors during transcription.

Materials and methods: A cross sectional descriptive retrospective study was conducted at Nobel Medical Teaching Hospital, Biratnagar, Nepal during a time period from 15th November 2008 to 14th February 2009. A random sample of 268 prescriptions of patients written during a period of one year (18/06/2007 to 17/06/2008) for ten different medical out patient departments of the Hospital were reviewed and the analysis was carried out for determining the different types of errors in writing a prescription.

Results: No error was found regarding the name, age, sex and address of the patients. The error in prescriptions regarding the prescriber's name, qualification, NMC registration number and signature were 85.4%, 99.6%, 99.6% and 15.7% respectively. Similarly, the symbol Rx was missing in 66.8%. Dosage form, quantity, dose, frequency and route of administration were not mentioned in 12%, 60%, 19%, 10% and 63% of the prescriptions respectively. Likewise, strength of the prescribed medicines was not stated in 40% of the cases.

Conclusion: There is a need to critically address the legibility of prescription, correct spelling of drugs, authorised abbreviations and all other informations of a prescription concerned with patient, prescriber and drugs to minimise the occurrence of medication errors.

Key words: Drugs, Errors, Prescription, Rational, Writing

Prescription is a written document that engages the medical and legal responsibility not only of the physician but of all those subsequently involved in its execution¹. Prescription writing is one of the most important and basic skills that a doctor needs, thus specific training and supervision in prescription should be emphasised during undergraduate and postgraduate teaching to minimise related errors².

Prescribing is a clinical skill that almost every physician practices regularly to transact the desired therapeutic goal³. Correct prescription writing has a great influence on the fate of medicine therapy and health of patients. Errors in prescribing may be classified into two main types: errors of omission (incomplete prescription) and errors of commission (incorrect information)⁴. Prescribing errors may have various detrimental consequences. Hence, the components of a prescription should be clearly written, free of drug related omission

(incomplete prescription), commission (incorrect information) and integration errors, without non-official abbreviations, and fulfil the legal requirements of a prescription³. Irrational prescription of drugs is a common occurrence in clinical practice⁵. Since errors of prescribing are the commonest form of avoidable medication errors, it is the most important target for improvement^{6,7}. According to theories of human error, a series of planned actions may fail to achieve their desired outcome because the plan itself was inadequate or because the actions did not go as planned⁸. Medication prescribing deficiencies are the most common cause of actual and potential adverse drug events^{6,7,9}.

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Difficulties can arise at any part of the prescription process from the moment the prescriber makes the choice of drug treatment to the time the patient receives that treatment^{6,10}. Incorrect prescribing, inadequate information given by the prescriber or the pharmacist and incorrect use of medicines by the patient can cause suffering to patients and expense to both patients and the community^{11,12,13,14,15,16,17}. The magnitude of the problem may not be appreciated until a major adverse event happens. Therefore, it is important to monitor the performance of the system by paying attention to any problem that may arise¹⁸. The periodic evaluation of prescriptions can be a good tool to evaluate the rational use of drugs in terms of prescribing and dispensing and to evaluate patient understanding regarding drug usage¹⁹.

Materials and methods

A cross sectional descriptive retrospective study was conducted at Nobel Medical Teaching Hospital, Biratnagar, Nepal during a time period from 15th November 2008 to 14th February 2009. A sample of 268 prescriptions from ten different medical Out Patient Departments (Medicine, Emergency, Surgery, Orthopedics, ENT, Dental, Pediatric, Obstetric & gynecology, Ophthalmology and Psychiatry) written during a period of one year (18/06/2007 to 17/06/2008) by doctors of graduate level (eg. MD/MS) of the Hospital were chosen by using stratified random sampling method.

Data on patient's informations (patient's name, age, sex, address and OPD number), prescriber's informations (name of prescriber, NMC registration number, date and signature) and drugs' informations (name of drug, strength, dosage form, quantity, dose, frequency and the route of administration) were collected on a form designed by the authors using standard norms of prescription. The data collected by author's themselves, were entered in SPSS version 13.0 computer software and the analysis was made. The variables reviewed from the patient prescription records were patient name, patient age, patient sex, patient address, doctor's

name, doctor's NMC registration number, doctor's signature and date of prescription, symbol Rx, drug's strength, dosage form, quantity, frequency and route of administration.

Results

Two hundred sixty eight prescriptions with a total of 795 drugs were reviewed and errors related to patient, prescriber and drug information were analysed.

No error was found in writing the name, age, sex and address of patients in the prescriptions. These variables were written in almost all prescriptions.

The study found that 15 % of the prescribers had written their name on the prescription where as only 0.4 % had written their qualification and NMC registration number on the prescriptions. The error in these two variables was found almost 100%. However, more than 84 % of the prescribers had signed the prescription. The error related to this variable was only 15.7 percent and about 67 % error was found in writing the symbol Rx. About 9 % of the prescriptions contained alternative symbols like Adv, T/T or DM for Rx.

According to Table 2, dosage form, quantity, dose, frequency and route of administration were not mentioned in 12%, 60%, 19%, 10% and 63% of the drugs respectively. Strength of the prescribed medications was not stated in 40% of the drugs and furthermore, strength was missing in about 2% of the drugs which were available in two or more strengths. Among the 60% of the drugs for which strength was mentioned, two percents were such drugs for which the stated strength did not exist. Two different brands each containing at least one same active component or two different drugs from the same class or category were prescribed in 2% of drugs. Unauthorised abbreviations like T or Tb for tablets, C or C/P for capsules, Adv or T/T or DM for Rx and O/D (looks like QID) for once daily dosing were detected in 14%, 1.5%, 9%, 2% of drugs respectively.

Table 1: Prescribing errors related to Transcriber's information (N=268)

Type of Error	Number of errors	Percentage of errors
Name of prescriber	229	85.4
Qualification	267	99.6
NMC registration number	267	99.6
Signature	42	15.7
Rx	179	66.8

Table 2: Prescribing errors related to Drugs' information (N=795)

Type of Error	Number of errors	Percentage of errors
Dosage form not mentioned	96	12.1
Quantity/Duration not mentioned	476	59.9
Dose not mentioned	150	18.9
Frequency not mentioned	83	10.4
Route not mentioned	497	62.6
Wrong spelling of drug (eg. Norfloxacin for fluoroquinolone norfloxacin) was found	04	0.5
Unit of strength missing	59	7.42
Strength not mentioned	322	40.5
Not mentioned but available in two or more strengths	14	1.76
Strength not available but mentioned	16	02
Unauthorised abbreviations like mgm for milligram Tb or T for tablets C or C/P for capsules Adv or T/T or DM for Rx O/D (looks like QID) for once daily dosing P/O for oral PCM or PCT for Paracetamol	02 109 12 72 17 03 02	0.25 13.71 1.5 09 2.14 0.4 0.25
Two same drugs or of same category, eg. Tramadol & Pentazocin, Pacimol (Paracetamol 500mg) & Flexon (Ibuprofen 400mg + Pracetamol 500mg), Diclofenac & Flexon (Ibuprofen 400mg + Pracetamol 500mg) prescribed in the same prescription.	04	0.5
Nebulisation only, but the name of drug was mentioned.	01	0.126
Hand writing unable to read	05	0.63

Discussion

The study has demonstrated a wide range of different types of error associated with prescription writing. This study showed that each prescription had at least one or more errors. The result is similar to the study carried out by V Mugoyela, S Mung'ong'o, S Mwita in Tanzania in 2008⁴. The 0% of error found in our study on writing variables like patient's name, age, sex and address is the result of use of computer software (MiDas). Regarding the error on writing name and signature of prescriber, higher percentage of error was reported in our study i.e 85.4% and 15.7% respectively as compared to the study conducted by Irshaid YM, Al Homrany M, Hamdi AA et al²⁰ in Saudi Arabia in 2005 which is 16.7 % and 18.1 percent respectively. It is common to prescribe medicines without writing NMC registration number in our setting (99.6%). Similar pattern was found in a study conducted by Meyer TA²¹ in USA in 2000 (i.e. 89%). Though the practice of writing registration number is less in our setting, it was found that the errors in writing dose (18.9 %), duration (59.9 %), dosage form (12.1 %), route (62.6%) and illegible writing (0.63%) are less

as compared to other studies. The studies conducted by Irshaid YM, Al Homrany M, Hamdi AA. et al. in Saudi Arabia²⁰ and V Mugoyela, S Mung'ong'o, S Mwita in Tanzania⁴ found 44.4% and 5.4% error in writing dose respectively and 94% and 14.1% error in writing the duration of therapy respectively. This study has also found that about 83% drugs were prescribed by brand names and further more, some prescribed brands contained two same or similar drugs.

The findings clearly indicate that though there are some good practices on prescribing medicines, some measures seem intervention to address the issues of errors.

Further prospective studies regarding the harmful consequences associated with errors in prescribing is suggested.

Conclusion

It is found that each prescription had at least one or more errors. Therefore, there is a need to emphasise

the legibility of prescription, correct spelling of drugs, authorised abbreviations and all other information of a prescription concerned with patient, prescriber and drugs to minimise occurrence of medication errors. An especial attention is required regarding the composition of combination drug preparations mainly when prescribed by brand names.

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