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PRESCRIPTION ERRORS: PREVENTABLE MEDICATION ERRORS

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ABTRACT

Prescription errors can cause failure in treating the patients but are preventable. These can occur when the prescription either lacks any of the important information regarding the patient or the drug and also when incorrect information is present on the prescription. A four months study was conducted in which out of 680 prescriptions, 312 were selected having altogether 846 errors. The errors were categorized as errors of omission and errors of commission and also were analyzed and calculated. The lacking in the prescription writing process which should be overcome. For this the pharmacist and the physician should work together to eliminate the errors. The causes of prescription errors should be reduced and the prescriptions should be monitored and the preventive steps should be taken to minimize them.

Key Words: prescription errors, errors of omission, errors of commission, causes, preventive measures.

INTRODUCTION

Prescription (R_x) is a medication order issued by the registered and licensed practitioner to the pharmacist for the patient. The major requirement of the prescription is that it should be clearly written, free form errors and fulfills all the legal requirements [1,2]. Failure in any of these will directly cause resistance in achieving the therapeutic goal.

A prescription must bear the name, medical record number, age, sex and wt of the patient, name and signature of the physician who has written the prescription, correct dosage form, dose, strength, direction for use and refill time of the medication. The prescription should also have printed on it the name, address and contact number of the hospital/ clinic.

Errors may occur anywhere between prescribing to administration of drug. Therefore, medication safety is considered as the top priority for the patient's healthcare. Of all the medication errors, prescription errors are more common although preventable [3]. These can be life-threatening and costly too. Above all it gives negative impact to the patient [4].

The prescriptions not written clearly or which can be misunderstood, inappropriate and irrational prescriptions, also over- and under-prescriptions all will lead to prescription error (PE) [5]. Prescription errors can cause hindrance in the treatment of the patient. Therefore identifying, solving and preventing such errors are supposed as the main functions of the pharmaceutical care [6].

Prescription errors have been classified as error of omission and error of commission. The error of omission means the prescription is incompletely filled, like missing of patient's information (which is essential to be present on the prescription), incomplete dosage, dosage form, refill time and illegible prescriptions (the prescriptions which are difficult to read because of bad handwriting). The error of commission includes wrong information regarding the drug or patient like wrong drug, route, dosage form or strength, drug-drug interaction and it may also include if the name of patient's name is incorrect as it may cause dispensing the medication to the wrong patient [7]. The error of omission will waste the time of the pharmacist to contact the physician to complete the prescription because of certain requirements missing from the prescription while the error of commission can lead to harmful situations as the prescription may be having some legal requirements missing causing problem for the patient and also for the pharmacist if he/she doesn't call the physician for its correction [8].

Studies have also been conducted to determine the reasons behind prescription errors [1,9-13]. Every step related to prescribing is error-producing. A prescription error may occur by mistake or ignorance, which may happen during calculation, writing, judgment or speech by a physician while consulting the patient [14]. Error in selecting the correct drug, dose, frequency and dosage form contributes to the prescription errors. Polypharmacy and inappropriate dose calculation in elderly and children has also been observed [15]. Other causes may include the physician not in good physical or mental condition, inadequate training or lack of knowledge [1,8]. We also cannot neglect the poor legibility of handwriting and similarities in the brand and generic names of the medications [16]. These errors occur

commonly in hospitals and clinics both in out-patient [17-23] and in-patient prescriptions [7,8,24,18,25-30] including pediatrics [31,32].

Prescription errors are the major medication errors however they can be avoided. The pharmacist should play his/her role in minimizing these errors. The pharmacist can be given the responsibility of the error if he/she fails to detect it and if detected than unable to resolve it by contacting the physician. However this study comprises the prescription errors related to the physician.

Experimental

A four months study was conducted in which 680 out-patient prescriptions were analyzed from surgery, medicine, ENT, dental, obstetrics, and gynecology, pediatrics and dermatology departments all from the pharmacy of a tertiary care hospital located in the city. The in-patient prescriptions were excluded from the study. Out of all the prescriptions 312 prescriptions were selected. The selected prescriptions were reviewed for the prescription errors. The prescription errors like the errors of omission related to the physician (missing information regarding the patient's name, age, wt., sex, medical record number, physician's name and signature, name of the clinic, diagnosis and illegible handwriting), errors of omission related to the drug (missing information regarding the drug, dose, dosage form, strength, route and refill time of the medications) and the errors of commission (wrong drug, wrong dose, wrong dosage form, wrong strength and drug-drug interactions) were detected. The percentage of all the errors were calculated and then evaluated.

RESULT

From 312 prescriptions altogether 846 prescription errors were observed which means 2.71 errors per prescription. Out of all the prescription errors 89 (10.52%) were the error of commission while 755 (89.24%) were the error of omission (Table 1).

The error of omission related to the physician was 546 and those related to the drug were 209, making 1.71 and 0.65 errors per prescription and 72.31% and 27.68% of the total errors of omission respectively. The major errors of omission related to the drug were found to be due to the failure to mention the age of the patient (24.72%), date when the prescription was written (20.14) and the Name of physician (9.70%) (Table 2)., while among the error of omission related to the physician it was found that highest rate of errors were due to not

mentioning of the refill time (46.68%), strength (16.74%) and dosage form 13.39% of the drug (Table 3).

Errors of commission were found to be 0.27 errors per prescription. Prescribing wrong strength (28.08%), dose (17.97%) and drug-drug interactions (25.84%) were found to be the leading errors among the Error of commission (Table 4).

Table 1: Prescription errors

Type of errors	Number of errors	Errors per prescription	Percentage of errors
Error of omission	755	2.36	89.24
Related to the physician	546	1.71	
Related to the drug	209	0.65	
Error of commission	89	0.27	10.52

Table 2: Errors of omission (related to the physician)

Type of errors	Number of errors n= 546	Percentage of errors
Patient's name not mentioned	39	7.12
Patient's age not mentioned	135	24.72
Patient's M.R. # not mentioned	46	8.42
Patient's wt. not mentioned	38	6.95
date not mentioned	110	20.14
Physician's name not mentioned	53	9.70
Physician's signature not mentioned	18	3.29
Clinic not mentioned	29	5.31
Diagnosis not mentioned	38	6.95
Illegible	40	7.32

Table 3: Error of omission (related to the drug)

Errors	Number of errors n= 209	Percentage of errors
Route not mentioned	23	11.00
Dose not mentioned	16	7.65
Dosage form not mentioned	28	13.39
Frequency not mentioned	9	4.30
Strength not mentioned	35	16.74
Refill time not mentioned	98	46.68

Table 4: Error of commission

Errors	Number of errors n= 89	Percentage of errors
Wrong drug	7	7.86
Wrong dose	16	17.97
Wrong dosage form	13	14.60
Wrong route	5	5.61
Wrong strength	25	28.08
Drug-drug interaction	23	25.84

DISCUSSION

Errors of commission are a serious threat to the patients health as compared to the errors of omission which though looks to be harmless but can create a problem for the patient and which occurs 3 to 4 folds more than the errors of commission [17,18,32,33]. Failure to mention the patient's important information like name, age, M.R number and weight can create problem. If the patient age or weight is not mentioned than it can be problematic while dispensing medicines like cardiac or those related to CNS. The name of physician must be mentioned on the prescription along with his/her signature as in case of any query the pharmacist can easily contact him/her. And above all the prescription should be written clearly which can be read easily as bad handwriting can lead to dispensing of wrong medication. Absences of information related to the drug like dose, route, dosage form, strength and the refill time too should not be taken lightly as they can hinder in dispensing the correct and required dose of medication to the patient. Errors of commission are more severe than the errors of omission as the information is supplied but is incorrect. The wrong dose, strength or frequency may be dangerous for the patient, as the dose more than required can be toxic and below the therapeutic level will have provide effect.

Few important steps should be taken in order to avoid the prescription errors like the introduction of automation, continuous educating the prescribers by improving their knowledge through some on-line aids and monitoring of such errors [34].

Research has been done to find the preventive measures which can be taken to avoid them [5,19,35-39]. In order to avoid the prescription errors the causes behind should be controlled. For this not only the physician but also the pharmacist has to take certain measures. There should be a system in the hospital to verify and view of the original prescription before it is

dispensed (emergency situations should be of coarse excluded from it). Every hospital should have a proper documentation and error reporting system which should be confidential and must be analyzed by the experts. The physicians should be made aware of their errors. The implementation of such reporting system has helped in minimizing the prescription errors [40,41]

All the sources of error (e.g. workload,) within the environment should be reduced. Verbal prescription orders should be prohibited. If the physician forgets or want to add a medication on the prescription he/she should ask for the prescription to enter that drug. Polypharmacy should be discouraged. Drug-drug interactions should be evaluated carefully. Drugs having too many adverse effects and those with narrow therapeutiv ranges should be avoided. Drug information sources should be available and the computerized pharmacy system should be developed. Stamp should be used by the physician who has illegible handwriting and signature [32-45]. The physician should be well-aware of the medication ordering system.

Certain polices should be formulated by the PTC (Pharmacy and therapeutic committee) members in accordance to the formulary system principles regarding the selection, evaluation and therapeutic use of medications. Also the list of standard approved abbreviations should be developed by the committee. A DUE (drug use evaluation) program should be developed and conducted with respect to the safe use of medications [46].

The role of pharmacist is crucial in minimizing the prescription errors. After the prescription is handed over to pharmacist, it is his/her duty to review it thoroughly. The pharmacist dispensing the medication should have assess to the patient's medication profile (for checking allergies and other aspects) receiving services from the hospital [47].

CONCLUSION

Prescription errors occur commonly and in rare cases they can be life-threatening but are preventable. Both the physician and the pharmacist have to play their role in minimizing such errors. Prescriptions should be reviewed frequently and immediately so as to catch the error before it gets too late. The implementation of certain policies within the hospital is also required to overcome the occurrence of such faults.

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