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Study of Prescription Writing Practices in A Tertiary Care Hospital in Vidharbha Region, Maharashtra, India: A Cross-Sectional, Observational Study

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ABSTRACT

Prescription is a written or printed order by a doctor to pharmacist or chemist. Faulty prescription practices results in an unsafe treatment, exacerbation of the disease, health hazards, economic burden on the patients and wastage of resources. The present study was undertaken to understand the current prescription writing practices and to detect common errors in them at a tertiary care hospital in vidharbha region, Maharashtra, India. A cross sectional study was conducted at a tertiary care hospital in vidharbha region, Maharashtra, India to understand and access the prescription writing practices by collecting prescriptions from the dispensary of the tertiary care hospital. A total of 300 prescriptions coming to dispensary were considered for data analysis during the study period. Important information regarding the patient, doctor, drug and the general description of the prescription were obtained. All the prescriptions were on the hospital pad. A significant number of the prescriptions (n = 128, 42.67%) were written in illegible handwriting and not easily readable. The name of patient was mentioned in all of the prescriptions. The age and sex of the patient were mentioned is majority of the prescriptions. The name, qualification and registration number of doctor was not mentioned in majority (n = 299, 99.67%) of prescriptions which was also statistically highly significant. The designation of the doctor were seen in only 31% of prescriptions. Brand name of the drugs was mentioned in 24% of prescriptions with 39% having the generic name and 37% having the mixed name (brand as well as generic name). The strength, frequency and route of administration of the drug were found on 77.33-86% and 29.33% prescriptions respectively. The dose was correct and calculated only in 73.33% of total prescriptions. Any advice for follow up was missing in 76.33% of prescriptions.

INTRODUCTION

Prescription is a written or printed order by a doctor to pharmacist or chemist to dispense the stated medicine(s) in the specified strength, dosage form and quantity for a particular patient[1]. Every country has its own laws and regulations to define which drugs require a prescription and who is entitled to write it. India has no time limit for the validity of prescription but one prescription is valid for one purchase for dispensing of one set of drugs prescribed for the patient. Once a prescription is signed by the doctor, it becomes a medicolegal document. This highlights the importance of writing a complete and legible prescription[2]. The report "To Err is Human" by the institute of medicine states that medical error cause at least an estimated 44,000 preventable deaths annually in the United States of America alone, of which 7,000 deaths are attributable to sloppy prescription writing[3]. A study of prescriptions dispensed to elderly patients at a primary health centre in Mexico found high potential prescription error (53% of total prescriptions)[4]. A survey from a Portuguese hospital had an estimated 3.3 errors per prescription order form[5]. Even in advanced nations like UK had reported 15% of the prescription to be containing one or more errors in critical care units[6]. Rational use of drugs is based on use of right drug, right dosage at right cost which is well reflected in the WHO definition "Rational use of drugs require that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time at the lowest cost to them and their community"[7]. Worldwide, it is estimated that over half of all medicines are prescribed, dispensed or sold inappropriately and that half of the patients fail to take their medicines correctly[8]. Nowadays, the irrational use of drugs is one of the most common problems faced by public healthcare providers and administrators in many countries[9]. Faulty prescription practices results in an unsafe treatment, exacerbation of the disease, health hazards, economic burden on the patients and wastage of resources[10]. So, it becomes of paramount importance to study the prescribing writing practices of the doctors.

MATERIALS AND METHODS

A cross sectional study was conducted at a tertiary care hospital in vidharbha region, Maharashtra, India to understand and access the prescription writing practices by collecting prescriptions from the dispensary of a tertiary care hospital. These prescriptions were selected randomly and analysed. The ethical approval was obtained from the Institutional Ethics Committee of the teaching hospital. Anonymity of the patients and doctors was strictly maintained.

The data was entered in a pretested proforma. The questionnaire in the proforma has four parts. Important information regarding the patient, doctor, drug and the general description of the prescription were obtained in these four sections separately. The data obtained from the prescriptions was assessed on several parameters like name, qualification, designation, mobile number, signature and registration number of the doctor, also by assessing the drug information like the name, strength, dose, quantity, route of administration, duration of the drug and average number of drugs per prescription. It was also assessed on other parameters like overall clarity, readability, date mentioned, instructions for patients and advise for follow up. The prescription was considered "unreadable", if investigator at the medical store appointed for data collection and the pharmacist could not read one or more drug name or dose.

The data obtained was analysed in frequency and percentage format. Microsoft Excel was used for data analysis. Chi-square test was used as test of significance and a $p<0.05$ was taken as significant.

RESULT

A total of 300 prescriptions coming to dispensary were considered for data analysis during the study period. Important information regarding the patient, doctor, drug and the general description of the prescription were obtained. All the prescriptions were on the hospital pad. Date of consultation was eligibly written on all of the prescriptions. A significant number of the prescriptions (n = 128, 42.67%) were written in illegible handwriting and not easily readable. Prescribing department was found only in about half of the prescriptions.

The name of patient was mentioned in all of the prescriptions. The age and sex of the patient were mentioned is majority of the prescriptions (Table 1). The parameters like weight and height was not mentioned in 91.33% and 98.67% of the prescriptions respectively which was statistically highly significant. The name, qualification and registration number of doctor was not mentioned in majority (n = 299, 99.67%) of prescriptions which was also statistically highly significant. The designation of the doctor were seen in only 31% of prescriptions. The address and signature of the doctor was found missing in 26.67% and 39.33% of prescriptions respectively (table 1).

In our study, brand name of the drugs was mentioned in 24% of prescriptions with 39% having the generic name and 37% having the mixed name (brand as well as generic name). The strength, frequency and route of administration of the drug were found on 77.33%, 86% and 29.33% prescriptions respectively. The dose of drug was clearly written on only 67% prescriptions while it was correct and calculated only in 73.33% of total prescriptions. Any advice for follow up was missing in 76.33% of prescriptions (Table 2).

Table 1: Analysis of patient and prescriber/doctor information on the prescription

Patient	Mentioned	Not mentioned
Name	300 (100)	0 (0)
Age	298 (99.33)	2 (0.6)
Sex	211 (70.33)	89 (29.67)
Address	294 (98)	6 (2.0)
Weight	26 (8.67)	274 (91.33)
height	4 (1.33)	296 (98.67)
X^2=1379, df=5, p<0.0001		
Table 1b		
Prescriber/doctor		
Name	1 (0.33)	299 (99.67)
Qualification	1 (0.33)	299 (99.67)
Designation	93 (31)	207 (69)
Address	220 (73.33)	80 (26.67)
Signature	182 (60.67)	118 (39.33)
Registration number	1 (0.33)	299 (99.67)
X^2 = 816.5, df = 5, p<0.0001		
(Data in parenthesis indicates percentage)		

Table 2: Analysis of drug information and general information on the prescription

Drug	Mentioned	Not mentioned
Brand name	74 (24)	
Generic name	116 (39)	
Mixed name	110 (37)	
Strength	232 (77.33)	68 (22.67)
Dose		
Clearly mentioned	201 (67)	99 (33)
Correct and calculated	220 (73.33)	80 (26.67)
Frequency	258(86)	42 (14)
Route of administration	88 (29.33)	212 (70.67)
Duration	236 (78.67)	64 (21.33)
Instructions to patients	132 (44)	168 (56)
Advice for follow up	71 (23.67)	229 (76.33)
Clarity	178 (59.33)	122 (40.67)
Readability	172 (57.33)	128 (42.67)
Use of prescription pad	300 (100)	0 (0)
Date	300 (100)	0 (0)
X^2=899, df=11, p<0.0001		
(Data in the parenthesis indicates percentage)		

DISCUSSIONS

We found all the prescriptions to be on the prescription pad of the hospital. This was because of the fact that the dispensary of the hospital only accepts order for dispensing drugs on the prescriptions pad of the hospital. No drug is issued on plain paper even if it is signed by the doctor. The date of issuing the prescription was mentioned in all of the prescriptions which was better than of the findings of V.D. Phalke[2] in which the date was missing in 5.4% of the prescriptions. Doctors are known for their poor handwriting which leads to medication errors, dispensing wrong drugs, that may in turn lead to adverse reactions[11]. This problem was encountered in 57.33% of the prescriptions in our study which was comparatively higher as suggested by a study in AIIMS, Patna[12]. One of the common reasons for the poor handwriting by doctors is heavy workload[13]. Ilegible handwriting in the prescription may be source of fatal consequences[14] and a leading cause of medication error,[15].

The presence of name of the patient was found in all of the prescriptions which is better than that found to Y.M. Irshaid *et al.*[16] which is 94.6%. However, mention of age (99.33%) and sex (70.33%) of the patients in the prescription were much higher in our study while it was only 77.2% and 51.3% respectively in the above said study. Address of the patient was mentioned in 98% of the prescriptions. Patient's address is important in a way that it tells us about the region from where he/she comes. It is also important to decide when patient has to be called for follow up and whether he can be called from distance. Weight and height of the patient was mentioned only in 8.67% and 1.33% of the prescriptions respectively which indicates poor prescription writing trend. Weight of the patient assumes significance because of the fact that it determines the actual quantity of the drug per dose. The pharmacist may not dispense the drug in correct dose if the weight of the patient is missing.

There were huge number of lacunae in the information regarding the prescriber. Name and qualification of prescriber was not mentioned in 99.67% of the prescriptions. Address was mentioned in 73.33% of the prescriptions. Designation and signature were mentioned in only 31-60.67% of the prescriptions. The lacunae in dispensing these informations were a violation of WHO guidelines on prescription writing[17] . Doctor's complete address is important part of prescription especially for family, so that in case of emergency he/she can be contacted. Not having mentioned qualification, designation and signature of the prescriber raises question about his/her authority to prescribe medicine. The lack of the display of registration number is considered a serious negligence on the part of the doctor. Our study revealed a poor knowledge of this aspect of medical profession as 99.67% of prescriptions had no information about the registration number of the doctor. The study from Saudi Arabia revealed 16.7% of prescriptions deficient in the prescriber name and 18.1% deficient in the prescriber signature[16]. These findings were certainly lower than our results. Anderson and Beurling[18] from Copenhagen University Hospital reported that among the most frequent errors of omission in prescriptions was inadequate identification of the physician.

In our study, generic name was mentioned in only 39% of the prescriptions while 24% were by brand name. A study by Singh *et al.*[5] in a rural hospital of Delhi shows that majority of drugs (85.8%) were prescribed by their generic name. This was due to repeated circulars and regular monitoring by hospital authority. Most certainly, this practice of writing generic name gives an advantage to the pharmacist to dispense the cheapest drug or the one which is available. Dose of drug was missing in 33% of prescriptions. The dose was not correct and calculated in 26.67% of prescriptions. According to many studies incorrect dose and duration for drug administration were most common prescription errors worldwide[19,20].

This prescription error may lead to treatment failure, antibiotic resistance and adverse drug reactions.[22] The frequency and duration were mentioned in 86% and 78.67% of prescriptions respectively. Such lacunae may lead to inappropriate dispensing of the drug by pharmacists. Route of administration, instructions to patient and advice to follow-up were mentioned in only 29.33%, 44% and 23.67% respectively. A study by V.D. Phalke[2] revealed that strength of drug was lacking in more than 26.8% while only just more than one half of the prescriptions had instructions for the patient. Certainly these findings corresponds with our study.

Various studies have suggested a computer-based system for prescription writing[21,22]. Bizovi *et al.*[23] concluded from their study that computer-assisted prescriptions were more than three times less likely to contain errors and five times less likely to require pharmacist clarification than handwritten prescriptions. Educational intervention programs have also yielded significant positive changes in the prescription writing behaviour of the doctors[24-27]. Such programs should be conducted for senior faculties intermittently and also for MBBS students just before starting their internship. We also recommend the use of printed prescription formats where spaces for patient's weight, address, prescriber's phone number, qualification and designation are more emphasized.

CONCLUSION

There are widespread errors in prescription writing by the doctors. The lack of doctor's qualification and registration number, patient's weight, correct and calculated dose were the most critical areas in terms of prescription completeness. All were significantly absent in majority of prescriptions. Educational intervention programs and computer aided prescription entry can substantially contribute in the lowering of such errors. Since some of these errors lead to serious consequences, long term and effective remedy is needed. A short course on prescription writing before the medical student enters the clinical field may also help alleviate the problem. Strict monitoring by administrative authorities of prescription writing practices is necessary.

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