

Evaluation of out-patient prescriptions in rural part of central Gujarat

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ABSTRACT

Background: The prescription error is a failure in the prescription writing process leading to wrong instructions about the identity of the recipient, the identity of the drug, the formulation, dose, route, timing, frequency, and duration of administration. This study is an effort directed to find errors in prescription writing and interventions to improve on such error-prone practices of prescription writing. **Methods:** This was a cross-sectional, observational study conducted to analyze the prescription writing errors in the outpatient department in the rural area of Anand district of Central Gujarat. Prescriptions were collected from two nearby rural areas of Anand city-Petlad and Ankav. The prescription copies so-obtained were analyzed as per the WHO guidelines for "Prescription Writing Errors." **Results:** Overall, 191 prescriptions were collected from both rural areas in the study. The highest number of prescriptions was collected from general practitioners, followed by surgeons and gynecologists. Name, qualification, and address of prescribers were mentioned in all the prescriptions while registration number was mentioned only in 14.10% of prescriptions. The esoteric symbol was mentioned in 63% of prescriptions. Prescribers signed their prescription only in 48% of prescriptions. A total of 420 drugs were prescribed to the patients in the study. All but one drug were prescribed by brand name. Dosage form and route of administration of drugs were mentioned in >60% of drugs. **Conclusion:** Most medical schools provide some training in prescribing to medical undergraduates; however, this training is perceived to be suboptimal by medical students and junior doctors. Such training programs are the need of the hour.

Keywords: Out-patients, prescriptions, rural population

Introduction

Prescribing medicines to patients is an inseparable part of medical care. It involves communication to the pharmacist in the form of a prescription for dispensing and finally, administration of medicines. It contains the name of the drug, its dose and its method of dispensing and advice overconsuming it.^[1] Every country has its own standards for the minimum information required for a prescription, and its own laws and regulations to define which drugs require a prescription and who is entitled to write it. The importance of the prescription is exaggerated by the fact that it becomes a medico-legal document once it is signed by the prescribing

authority, and thus should be written completely and legibly.^[2] A good quality prescription is an extremely important factor for minimizing errors in dispensing medication, and it should be adherent to guidelines for prescription writing for the benefit of the patient.^[3]

The prescription error is a failure in the prescription writing process leading to wrong instruction/s about the identity of the recipient, the identity of the drug, the formulation, dose, route, timing, frequency, and duration of administration.^[4] Not only do they cause a threat to patient's life but also the quality of medical care is also compromised. Prescription errors are very much rampant in today scenario. Approximately 30% of problems occurring during hospitalization are attributed to medication errors.^[5]

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Studies have demonstrated lacunae in legal or procedural requirements along with prescription errors such as duplication, wrong strength, wrong dosage form, wrong route, and drug–drug interactions which results in numerous drug-related problems such as overdosage, underdosage, drugs interactions, drug allergy, and noncompliance.^[1-6] It is essential to identify causes and attempts to minimize the risk of errors.

The present study was undertaken to understand the current prescription writing practices and to detect the common errors in outpatient prescriptions in one of the rural parts of central Gujarat.

Methods

This was a cross-sectional, observational study conducted to analyze the prescription writing errors in the outpatient department (OPD) in a rural area of Anand district of Central Gujarat. Convenience sampling method was adopted. Permission was taken from Institutional Ethical Committee before starting the study. Prescriptions were collected from two nearby rural areas of Anand city-Petlad and Ankav. Clinicians near the pharmacy stores were informed about the aims and objectives of the study, and their written informed consent was taken. The collection of prescriptions was started a month after the consent to minimize bias in prescription writing.

The available prescriptions were collected by author 2 (AJ) and studied. Available prescriptions were either photocopied or scan of the original document which the patients had presented at the pharmacy after consultation with the doctors. Allopathic private practitioners irrespective of their specialty were included in the study. Institutional prescriptions, corporate hospital prescriptions were excluded from the study.

The prescription copies so obtained were analyzed as per the WHO guidelines for “Prescription Writing Errors.” An error-scoring sheet was prepared and each prescription was analyzed by author 1 and 2 (NK, AJ) on various parameters as per the checklist given below:

- Patient details: Name, age, sex, weight, address, and date of prescription
- Clinician details: Qualification, address, registration number, and signature
- Drug details: Mention of generic or brand name, dosage form, route, dose, unit, frequency, duration of treatment, quantity, signa
- other information: Mention of allergy status, specific drug communication, mention of abnormality in liver/kidney/cardiac condition, refill mentioned or not, dispense as written, follow-up, history of intake of other medicines, and legibility status of the prescription. Data were kept in lock and key. Confidentiality was maintained at all levels.

Results

Overall 191 prescriptions were collected from both rural areas in the study. The highest number of prescriptions were collected from general practitioners (60), followed by surgeons (40) and gynecologists (38). Physicians, ophthalmologists and orthopedicians contributed 27, 18, and 8 prescriptions, respectively.

Name, qualification, and address of prescribers were mentioned in all the prescriptions while registration number was mentioned only in 14.10% of prescriptions. Esoteric symbol [P_x] was mentioned in 63% of prescriptions. Prescribers signed their prescription only in 48% of prescriptions [Table 1].

Out of all prescriptions, OPD number was mentioned only in 11 prescriptions. Patients details such as age, sex, and address were mentioned in 77, 17, and 66 prescriptions, respectively. Weight and contact information were not mentioned in any of the prescriptions while the name of the patient and date of the prescription were mentioned in all prescriptions [Table 2].

A total of 420 drugs were prescribed to the patients in the study. All but one drug were prescribed by brand name. Dosage form and route of administration of drugs were mentioned in >60% of drugs. The frequency of administration, duration of treatment, and quantity of drugs were mentioned in >70% of drugs. Units of drugs were mentioned in <3% of drugs. Nearly half of the drugs were prescribed with signa [Table 3].

In none of the prescription, allergy, specific drug communication, drug status of the patient, follow-up of the patient, history

Table 1: Analysis of clinician details in prescriptions (n=191)

Clinician details	Mentioned (%)	Not mentioned (%)
Name	191 (100)	0
Qualification	191 (100)	0
Address	191 (100)	0
Registration	27 (14.10)	164 (85.90)
Esoteric symbol	121 (63)	70 (37)
Signature	92 (48.17)	99 (51.83)

Table 2: Analysis of patient details in prescriptions (n=191)

Variable	Mentioned (%)	Not mentioned (%)
OPD number	11 (5.80)	180 (94.24)
Name	191 (100)	0
Age	77 (40.30)	114 (59.68)
Sex	17 (8.9)	174 (91.1)
Weight	0	191 (100)
Address	66 (34.63)	125 (65.44)
Contact number	0	191 (100)
Date of prescription	191 (100)	0

OPD: Outpatient department

Table 3: Analysis of prescription writing errors of prescriptions - drug details

	Items prescribed=420	
	Mentioned (%)	Not mentioned (%)
Generic	1 (0.24)	419 (99.76)
Brand	419 (99.76)	1 (0.24)
Dosage form	293 (69.76)	127 (30.24)
Route	256 (60.95)	164 (39.05)
Dose mention	118 (28.09)	302 (71.90)
Unit	12 (2.86)	408 (97.14)
Frequency of administration	309 (73.57)	111 (26.43)
Duration of treatment	325 (77.38)	95 (22.62)
Quantity to be dispensed	300 (71.42)	120 (28.57)
Signature	208 (49.52)	212 (50.48)

of intake of other medicine, and instructions for refill of the prescription was mentioned. One hundred and twenty-five (65.45%) of the prescriptions were legible.

Discussion

Prescription errors form an important cause of patient morbidity and mortality and a number of studies confirm their existence worldwide. The prevalence of prescribing faults and prescription errors has been quantified in prospective and retrospective cohort studies.^[7,8] Prescription errors account for 70% of medication errors that could potentially result in adverse effects.^[7,8] A mean value of prescribing errors with the potential for adverse effects in patients of about four in 1000 prescriptions was recorded in a teaching hospital. Such errors are also frequent in ambulatory settings.^[7,8]

This study was conducted in a rural setting and hence, more participation was seen of general practitioners. Although a large number of studies^[1-5] have been published in the past analyzing data on prescriptions from urban and tertiary care centers, very few studies have been conducted in a rural setting and in general practitioners. Since a large fraction of our country, 69% lives in rural area,^[9] data collection from rural area makes the study more relevant for national point of view.

Name and qualification of doctor were mentioned in all the prescriptions in present study. These findings were similar to study by Di Paolo *et al.*^[10] which stated that prescriber's name and qualifications were mentioned in 99.5% of the prescriptions. The physicians' names were present in only 6.7% of a Sudanese study.^[11] Name of the prescriber is a very important criteria to hold the physician responsible for what he/she has prescribed. Without the name it does not carry any legal importance. In the present study, 48.17% and 100% prescription were prescribed with signature and date on the prescription, respectively, while only 33.3% and 43.9% of prescriptions from an Italian study had the signature of the prescribers and date of encounter.^[12] In the present study, registration number was mentioned only in 14.10% of prescription while study conducted in All India Institutes of Medical Sciences (AIIMS),^[13] none of the prescription was

mentioning it. The registration number is allotted to Indian or state medical council to allopathic practitioners before clinical practice. The registration number is a unique identifier which enables patients, employers and others to confirm prescriber registration details via the Medical Council of India (MCI's) website, in particular whether the prescriber are licensed to practise medicine in the India.^[14]

OPD number was mentioned only in 5.8% of total prescription. It may be due to the fact that the study is conducted in rural area where medical centers are run by single physician and they do not need OPD number. On the contrary, in apex institute AIIMS^[13] OPD number was mentioned in 99.3% of prescriptions. It is easier to track the prescription with the patient OPD number whenever it is required in future; hence, it should be mentioned. In the present study, name of the patient is mentioned in all of the prescription, while age and sex of patients were mentioned in very few prescriptions. Weight was not written even in a single prescription. These parameters were in low proportion in study conducted in rural setting.^[2]

The number of drugs per prescription was found 2.2 in this study, which is quite low than the figure in other studies. Studies conducted in Delhi^[15] 3.03 drugs were prescribed per prescription while this number was found 4.51 in Pakistan study^[16] and 4.89 in Bangladesh study.^[5] The present study was conducted in rural setting while the other mentioned studies were done in tertiary care centers where critical ill patients are admitted more in number than the rural area and hence, they require more medicines because of obvious reason. The use of branded preparations was found to be much in vogue. Only one drug was prescribed by their generic names in this study. Similar findings were observed in Bangladesh study^[5] and AIIMS.^[13] However, prescribing by generic name was found significantly higher in few studies.^[1,17,18] In a study conducted in Bangladesh,^[18] generic drugs constitute 78% while in AFMC study^[1] it was >90%. It is important to note that drugs should be prescribed in their generic names to avoid confusion. Medicines should be prescribed only by generic names to maintain uniformity, clarity, ease of understanding, and reduce the cost of medical care. However, the brand names are usually catchy, suggestive, and easy to remember making their use common. Since a medicine may have >1 brand name, problem occurs when an uncommon medicine is prescribed by the brand name or a common medicine is prescribed by a not so popular or a newer brand name. This problem escalates when the patient migrate from one pharmacy store to other as the prescribed brand was not available at one pharmacy store. Neither pharmacist is aware of the constituent of the product, so the latter cannot dispense medicines even by other brand name. is not as much popular.^[1] Prescribing branded medicines by health professionals is thought to be one of the major causes of the high cost of treatment.^[19] The irony is that for same medicine, the difference in cost between branded and generic product varies from <2-fold to >100-fold.^[20]

It is surprising to see that dose and unit of the drug was not mentioned in majority of prescriptions. It is high degree of prescribing error that should not be overlooked. If the dose is not mentioned then patient cannot be expected to take the drug accurately.

Deficiency in factors related to patients can also result in errors, leading to adverse effects, since these are associated in most cases with identifiable clinical conditions, such as reduced renal and hepatic function or a history of allergy requiring atypical or unusual dosage and frequency.^[7,21] Polypharmacy and management of elderly patients or children are associated with inappropriate or potentially inappropriate prescribing and errors.^[22] Monitoring of drug action is necessarily part of the prescribing process, to allow optimization or adjustments of doses or treatments. In ambulatory care, prescribing faults are mostly related to the use of inappropriate doses and inadequate monitoring.^[22]

The use of computers for prescription writing also may reduce prescription errors. The computerized system can be integrated with patient details, including his/her physiological parameters, known allergies, real time information regarding availability of medicines, and the system can be tailor-made to offer best possible therapy. Before the prescription is finalized, such an integrated system can also provide medicine specific information, alerts regarding possible over dosage, interactions among medicines, etc. Besides technical inputs, these electronic prescriptions can expedite repeated monthly prescriptions for patients who are on long term treatment. Such prescription, once generated, can be sent electronically to the dispensary where dispensing packages can be prepared before the patient reaches the dispensary, thus reducing waiting time. However, evolving and applying such technology across a large number of hospital and training of workforce remain major impediments in such an endeavor. Once implemented, updating the database in light of emerging evidence, data protection, maintaining confidentiality, and routine trouble shooting will be major challenge in ensuring routine use of such a technology, especially in rural setting.^[23-25]

Conclusion

Occurrence of errors in prescription writing by clinicians is very common. Need of the hour is introduction of educational interventions and also encouraging the use of computer in clinical set as this can play a significant role in lowering of prescription writing errors. Most medical schools provide some training in prescribing to medical undergraduates; however, this training is perceived to be suboptimal by medical students and junior doctors. Such training programs are the need of the hour.

Limitations of the study

Like any other research study, our study too is not free from limitations. It was performed only in two rural centers, which

could reduce generalization of our findings to other clinical settings.

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Conflicts of interest

There are no conflicts of interest.

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