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Original Research Article

## Evaluation of prescription errors and polypharmacy practices in rural area at community pharmacy

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### ABSTRACT

**Background:** Prescription refers to a written request from physician to patient for compounding and dispensing of medicines. The prescription comprises detail information of patient, physician, and drugs, absence of these prescription parameters may harm the patient's safety. Inappropriate practices like polypharmacy prescriptions must be avoided as this may lead to non-compliance.

**Methods:** A cross section observational study was conducted at a community pharmacy from September to November 2019. Permission was taken from the registered pharmacist. Prescriptions were collected from the subjects who visited the pharmacy in rural area. A checklist was prepared including all the parameters and the prescriptions were analyzed through Microsoft excel.

**Results:** Out of 2227 prescriptions collected, patient's name, age and weight were not written in 10.57%, 78.41%, and 12.33% of prescriptions respectively. Physician's name, designation and registration number were not mentioned in 18.50%, 21.14%, 29.51% prescriptions respectively. Date of issue was lacking in 12.33% prescriptions. It was found that 44.49% prescriptions were illegible. It was observed that 82.81% prescriptions possessed dosage form of drug and 32.15% dose in it. The study showed that 19.2% prescriptions were polypharmacy prescriptions.

**Conclusions:** Prescription is an authoritative document between doctor and pharmacist therefore it needs to be precise, fastidious, and scrupulous, monitoring to identify causes, analyze errors and blemishes in the prescription. One or other parameters were lacking in every prescription. 'Educate to medicate' this indicates that sound knowledge is requiring to prescribe therapeutically efficacious and accurate medicines in prescription.

**Keywords:** Prescription, Prescription parameters, Polypharmacy, Non-compliance, Prescription errors

### INTRODUCTION

Prescription refers to a written request from physician to patient for compounding and dispensing of medicines for treatment. It is an element that ties up relationship of physician and pharmacist. It is an art in which special care regarding the appropriateness, efficacy, safety, adverse effects, contraindications, and cost effectiveness must be taken while prescribing any medicine. Once a physician diagnoses a patient, he or she decides drug therapy and writes a prescription in three parts superscription, inscription, and subscription then patient runs to

pharmacist and he or she analyses prescription and dispenses it. This process is not very lenient, as it requires years of practice, sturdy knowledge and tons of hard work. The most carefully conceived prescription may become therapeutically useless, unless it communicates clearly with the pharmacist and adequately instructs the patient on how to take prescribed medication.<sup>1</sup>

The prescription comprises detailed information of the patient, physician, and drugs. As per World Health Organization practical manual on 'Guide to good prescribing', following are the parameters which must be

mentioned in the prescription: (a) Patient details: Name, age, sex, weight, address and date of prescription, (b) Physician details: Qualification, address, registration number and signature, (c) Drug details: generic or brand name, dosage form, route, dose, unit, frequency, duration of treatment, quantity, direction of use.<sup>2</sup>

Age is an important parameter on prescription as it signifies the category of the patient as pediatric, adolescent, adult and geriatric. Weight is another crucial parameter which is very important in calculating dose of drugs for patients with varying weight. Qualification and registration number of a physician helps us to identify physician's sound knowledge and is useful in case of any irrational practice. Dose and dosage form of a drug are the main core of prescription while mentioning duration of treatment is a backbone to avoid the use of drugs like narcotics, antibiotics for prolong period of time unnecessarily. Absence of these parameters may lead to prescription errors and these directly or indirectly are causes of medication errors. These may hamper patient's wellbeing.<sup>3</sup>

Another inappropriate prescription practices like polypharmacy that is the administration of many drugs at the same time or the administration of five or more than five drugs is significantly linked to the emergence of drug-drug interactions, drug- food interactions, adverse drug reactions, falls and even increased patient ailments.<sup>4-6</sup> Thus it creates problems of non-compliance, increase risk of inappropriate prescribing with debatable indications and adverse effects or insufficiency. Adverse drug reaction is pith in changing patient's mentality and reliability towards physician and pharmacist. All that need to do is to identify causes and attempts to minimize risk from these errors. This study is an endeavor conducted to determine errors in prescription writing and interventions to rectify upon such error inclined conventions of prescription writing.

**METHODS**

A cross section observational study was conducted at a community pharmacy from September to November 2019 for period of three months. Permission to conduct this study was taken from registered pharmacist at the respective community pharmacy. Prescriptions were collected from the subjects who visited the pharmacy in a rural area. We collected in both the forms- handwritten as well as computerized printed prescriptions. After this we had prepared Microsoft excel sheet and filled the collected data from prescriptions into it. After this, sheet was analyzed and checked for all the parameters which are essential to be mentioned the prescriptions.

**RESULTS**

Total 2227 prescriptions were scrutinized. Each prescription was divided into three parts on the basis of three major parameters - patient details, physician details and drug details (Table 1, 2, 3). Out of 2227 prescriptions

collected, patient's name was not written in 10.57% prescriptions only 32.02% had the full name. Patient's age was not mentioned in 78.41% prescription and weight was mentioned only in 12.33% of all the prescriptions. Gender of the patient was mentioned in only 29.95% prescriptions. This study showed that 70.48% prescriptions bear physician's registration number. It was identified that signature of physician's was present in 67.40% prescriptions and physician's address was mentioned in 78.41% prescriptions. Date of issue of prescription was lacking in 12.33% prescriptions. Illegible prescriptions may sometimes lead to dispensing errors and it was found that 44.49% prescriptions were illegible (Figure 1).<sup>7</sup>

**Table 1: Details of patient mentioned in the prescriptions.**

Patient details	Written (%)	Not written (%)
Name	89.42	10.57
Age	21.58	78.42
Weight	12.33	87.66
Gender	29.95	70.04

**Table 2: Details of physician mentioned in the prescriptions.**

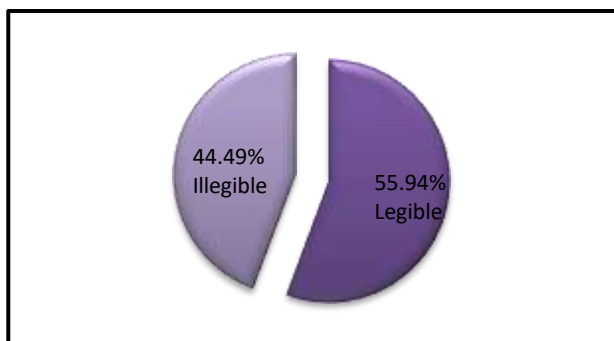
Physician details	Written (%)	Not written (%)
Name	81.49	18.50
Registration number	70.48	29.51
Designation	78.85	21.14
Signature	67.40	32.59
Stamp	11.45	88.54
Address	78.41	21.58
Date of issue	87.66	12.33

**Table 3: Details of drugs prescribed in prescriptions.**

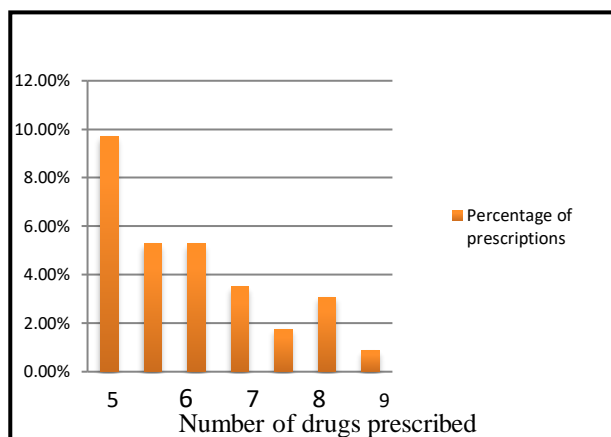
Drug details	Written (%)	Not written (%)
Brand name	99.11	0.88
Dosage form	82.81	17.18
Dosing instruction	92.51	7.48
Dose	49.77	50.22
Unit	32.15	67.84
Duration of treatment	54.62	53.30
Direction of use	77.53	22.02
Follow up	3.96	96.03

In this study, only 0.88% of prescriptions were prescribed with the generic name of drugs. It was observed that 82.81% prescriptions possess dosage form of drug in it and

dose was mentioned in 32.15% prescriptions. It was found that unit of dose was mentioned in 32.15% prescriptions. Frequency of administration and duration of treatment was mentioned in 45.37% and 53.30% respectively. It was observed that 77.53% prescriptions had direction of use mentioned in it and follow up instructions were mentioned in 3.96% prescriptions. The study showed that 19.2% prescriptions possessed five or more than five drugs prescribed to be administered at a time (Figure 2).



**Figure 1: Percentage of prescriptions was legible and illegible.**



**Figure 2: Polypharmacy in percentage of prescriptions.**

## DISCUSSION

Out of 2227 prescriptions collected, patient's name was not written in 10.57% prescriptions only 32.02% had the full name and the study conducted by Vijaydeep Siddharth et al, in India showed that patient's name was absent in 0.7% prescriptions.<sup>7</sup> It is very essential to write full name as it depicts correct identity of patient and reduce medication errors. Patient's age was not mentioned in 78.41% prescription and weight was mentioned in 12.33% of all the prescriptions. These both parameter results are almost similar to the study conducted by Joshi et al, and were not mentioned in 18.50% prescriptions while in a study done by Irshaid et al, it was not mentioned in 17% prescriptions.<sup>8,9</sup> Weight and age the important part of superscription mostly in case of pediatric and geriatric patient for calculating an appropriate dose to deliver the

adequate amount of drug to improve the patient's condition prevent drug toxicity and non-adherence (Table 1). Absence of this information in prescription leads to errors in dispensing medication.

Another precept requirement is to notify the name of a physician as cash or a credit memo. The guidelines regarding medical registration number, physicians are required to mention their registration number on all Medical prescription so this study showed that 70.48% prescriptions bear physician's registration number but, in a study, done by Ansari et al, 99.06% prescriptions had it.<sup>10</sup> To know the proficiency and transparency of the physician, the prescription shall bear physician's primary qualification such as MBBS / BAMS followed by other higher designation. It was identified that signature of physician's was present in 67.40% prescriptions which was nearly similar in study done by Joshi et al, but it was completely opposite in study conducted by Ansari et al, where only 15.7% prescriptions bore it.<sup>8, 10</sup> Physician's signature, stamp of the physician possessing name, designation, and registration number are crucial requirement which comes from section 43 of Medical Practitioner Act.<sup>11</sup> It is very essential to mention date of issue of prescription as it depicts that physician had diagnosed the patient and prescribed particular medicine for ailment and it is easy to follow the treatment protocols. It was found that physician's address was mentioned in 78.41% prescriptions on the contrary study conducted by Irshaid et al, only 9.6% prescriptions had this parameter mentioned in it.<sup>9</sup> In this study date of issue of prescription was lacking in 12.33% prescriptions whereas in the study conducted by Joshi et al, it was not written in 9.83% prescriptions (Table 2).<sup>8</sup> Illegible prescriptions may sometimes lead to dispensing errors and it was found that 44.49% prescriptions were illegible while in study conducted by Siddharth et al, illegibility was reported in 6.3% prescriptions (Figure 1).<sup>7</sup>

In majority of the prescriptions brand name of drug was mentioned and not the generic name, this finding was seen because many of the patients had to take drugs daily for chronic diseases so the brand names of drugs are easy to remember. In this study, only 0.88% of prescriptions were prescribed with the generic name of drugs while in the study conducted by Joshi et al, 2.97% prescriptions had generic name of drugs and this result is nearly similar in the study done by Kumari et al.<sup>8,12</sup> It was observed that 82.81% prescriptions possess dosage form of drug in it and dose was mentioned in 32.15% prescriptions, while in the study conducted by Joshi et al, dosage form was written in 77.34% prescription and dose was written in 47.25% prescriptions.<sup>8</sup> Dosage form and dose of the drug are very vital parameters to be mentioned in the prescription especially when a drug is available in various dosage forms. In this study unit of dose was mentioned in 32.15% prescriptions. The study showed that frequency of administration and duration of treatment was mentioned in 45.37% and 53.30% respectively and in the study conducted by Phalke et al, these both parameters were

absent in 25% prescriptions.<sup>13</sup> The frequency of administration and duration of treatment are very crucial parameters to be mentioned in the prescription in order to avoid any misuse in the case of habit forming drugs. The direction of use is very essential to mention especially when a drug has to be taken at specific time in a day or after specific interval of time. It was observed that 77.53% prescriptions had direction of use mentioned in it while in the study conducted by Irshaid et al, stated that 90.7% prescriptions lacked in it and only 2.3% of the prescriptions had it.<sup>9</sup> It is necessary to be mention follow up instructions as it helps patient to visit the physician after recovery or tell about their condition and physician gets feedback about the therapy also if required can change the drugs. This was mentioned in 3.96% prescriptions while in the study conducted by Joshi et al, 7.65% prescriptions bore it (Table 3).<sup>8</sup>

Polypharmacy was another important parameter which was analyzed in this study. The study showed that 19.2% prescriptions possessed five or more than five drugs prescribed to be administered at a time (Figure 2). By taking reference of the existing literature, we defined Polypharmacy as the concurrent use of  $\geq 5$  different prescribed drugs according to their Anatomical Therapeutic Code.<sup>14</sup> Practice of polypharmacy leads to major consequences and affects patient's safety and increase mortality.

## CONCLUSION

Prescription is an authoritative document between doctor and pharmacist therefore it needs to be precise, fastidious, and scrupulous, monitoring to identify causes, analyze errors and blemishes in the prescription. This study flashed out that one or other parameters were lacking in every prescription which were analysed. The term 'Educate to medicate', indicates that sound knowledge is requiring to prescribe therapeutically efficacious and accurate prescription. It is a request to the prescription writers to follow World Health Organization practical manual 'Guide to Good Prescribing'. There is an urgent need to rationalize the prescription writing practices and avoid duplication of drugs, assessing for drug-drug interaction, prescribing combination drugs and reviewing dosages. The another strategy involves redesigning equipment and tasks through the use of electronic tools such as e-prescribing, using computer designed applications.

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## REFERENCES

1. Benet LZ. Principles of prescription order writing and patient compliance instructions. The pharmacological basis of therapeutics. 1995;1697-706.
2. De Vries TP, Henning RH, Hogerzeil HV, Fresle DA, Policy M, World Health Organization. Guide to good prescribing: a practical manual. World Health Organization; 1994. Accessed on
3. Cousins DH, Gerrett D, Warner B. A review of medication incidents reported to the National Reporting and Learning System in England and Wales over 6 years (2005–2010). British journal of clinical pharmacology. 2012;74(4):597-604.
4. Patel V, Vaidya R, Naik D, Borker P. Irrational drug use in India: a prescription survey from Goa. Journal of postgraduate medicine. 2005;51(1):9.
5. Field TS, Gurwitz JH, Avorn J, McCormick D, Jain S, Eckler M, Benser M, Bates DW. Risk factors for adverse drug events among nursing home residents. Archives of internal medicine. 2001;161(13):1629-34.
6. Frazier SC. Health outcomes and polypharmacy in elderly individuals. Journal of gerontological nursing. 2005;31(9):4-9.
7. Siddarth V, Arya S, Gupat SK. A study of prescribing practices in outpatient department of an apex tertiary care institute of India. Int J Res Foundation Hosp Health Adm. 2014;2(1):31-5.
8. Joshi A, Buch J, Kothari N, Shah N. Evaluation of handwritten and computerized out-patient prescriptions in urban part of Central Gujarat. Journal of clinical and diagnostic research: JCDR. 2016;10(6):FC01.
9. Irshaid YM, Al Homrany M, Hamdi AA, Adjepon Yamoah KK, Mahfouz AA. Compliance with good practice in prescription writing at outpatient clinics in Saudi Arabia. EMHJ-Eastern Mediterranean Health Journal. 2005;11(5-6):922-28.
10. Ansari M, Neupane D. Study on determination of errors in prescription writing: A semi-electronic perspective. Kathmandu University Medical Journal. 2009;7(3):238-41.
11. Medical Ethics - Text of Medical council of India regulation. Available from: <http://www.medclia.com/India>. Accessed on
12. Kumari R, Idris MZ, Bhushan V, Khanna A, Agrawal M, Singh SK. Assessment of prescription pattern at the public health facilities of Lucknow district. Indian journal of pharmacology. 2008;40(6):243.
13. Phalke VD, Phalke DB, Syed MA, Mishra A, Sikchi S, Kalakoti P. Prescription writing practices in a rural tertiary care hospital in Western Maharashtra, India. The Australasian medical journal. 2011;4(1):4.
14. Masnoon N, Shakib S, Kalisch-Ellett L, Coughy GE. What is polypharmacy? A systematic review of definitions. BMC geriatrics. 2017;17(1):230.

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