

Prescription Writing: Are we Meeting the Standards?

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ABSTRACT

Introduction: The prescription is an important transaction between the doctor and the patient. Prescription audit is a quality improvement process that seeks to improve patient care.

Methods: This study was undertaken with objective of assessing the prescribing behavior of cardiothoracic surgeons and to compare it with the WHO Core prescribing indicators and also with Medical Council of India's (MCI) directives regarding Prescription Writing. Study was conducted in the Cardiothoracic surgery OPD at JN. Medical College, AMU, Aligarh. A total of 1000 prescription cards were randomly collected and subjected to analysis on thirteen parameters.

Results: Demographic data was mentioned in all prescriptions. Male patients were twice as common as females. Diagnosis was written in 82% and allergy status on 32% treatment cards. An average of 3.93 drugs were prescribed per prescription. Dosage and Dose was mentioned in 100% of the prescriptions. At least one drug was prescribed by the generic name in 11% of prescriptions. Antibiotic was prescribed in 41% of prescriptions. In 20.6 % patients Fixed Drug Combinations (FDC) were prescribed. Capital letters were used in only 18% prescriptions, while Non standard abbreviations were used in 35% prescriptions.

Conclusion: Prescriptions were largely fulfilling the WHO Core prescribing indicators. However, polypharmacy is a frequent

practice among our surgeons and so is the use of FDC's. The lack of trust of prescribers on Generic medicines is evident by seldom prescription of drugs by generic names. They have also largely ignored MCI guidelines regarding Prescription writing like use of capital letters and doctors initials on treatment card. There is a need of reassessment of Hospital drug policy and regular prescription auditing to improve quality of prescriptions.

Keywords: Prescription Auditing, Rational Use of Drugs, NLEM, Polypharmacy, Fixed Drug Combinations (FDC).


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INTRODUCTION

The prescription is an important transaction between the doctor and the patient.¹ The prescribing behavior of the doctor is governed by interaction and inputs by various sources like patients, drug literatures, colleagues, commercial benefits and government regulations. However, a lot of prescribing errors occur as a result of ineffective use of these inputs and are very common in clinical practice.²

According to the WHO, Rational use of medicines requires that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".³ In spite of extensive promotion of Rational Use of Drugs and the Essential Medicine List (EML) of the WHO by

various national and international health agencies the menace of irrational prescribing is still a headache for the public health providers and administrators.⁴ Consequences of irrational use of drugs include ineffective treatment, unnecessary prescription of injections, development of resistance to antibiotics, increased rates of adverse effects and economic burden on patients and the society.⁵

Worldwide, it is estimated that over half of all medicines are prescribed, dispensed or sold inappropriately, and that half of all patients fail to take their medicine correctly.⁶ Each year in the US, serious preventable medication errors occur in 3.8 million inpatient admissions and 3.3 million outpatient units and the total cost incurred due to medication error amounts to \$ 21 billion.^{7,8}

Claesson et al. found a high rate of Medication Errors (42%) in a study in Sweden. Most of these errors were prescriptions error, and others were due to an incorrect dose taken by the patient.⁹ In India, incidences of Medication Errors were as reported by the state government of Uttarakhand (26%) and Karnataka (14%).^{10,11} A Harvard study by estimated that 5.2 million medical errors are happening in India annually.¹²

In order to promote rational use of drugs and prevent irrational practice, standard policies on use of drugs must be set in practice and this can be done only after the current prescription practices have been audited.¹³ Medical Audits help to evaluate the present state and future trends of drug usage, to estimate crudely the disease prevalence, drug expenditure, appropriateness of prescriptions and adherence to evidence-based recommendations.¹⁴ Prescription auditing is a quality improvement process that seeks to improve patient care. It is based on documented evidences to support diagnosis, treatment and justified utilization of hospital facilities.¹⁵

The objective of this study is to assess the prescribing behavior of the surgeons running the Outpatient Department (OPD) of the Cardiothoracic & Vascular Surgery of the Jawaharlal Nehru Medical College, Aligarh Muslim University, Aligarh and to compare it with the WHO Core prescribing indicators and also with the MCI directives regarding Prescription Writing. We also intend to create our own database for future comparative study by similar auditing.

METHODOLOGY

This Prospective observational study was carried out in the Outpatient Department of the Cardiothoracic and Vascular surgery of the Jawaharlal Nehru Medical College, Aligarh Muslim

University, Aligarh during March-June 2018. Complete confidentiality of patients was maintained throughout the research after taking informed written consent. One thousand prescription cards were randomly selected for the study & photographed by the authors. Both new patients and follow-up cases were included in the study. The prescription cards were analyzed according to the following thirteen parameters which also include WHO Core prescribing indicators, viz.

1. Demographic data (like Name, Age, Gender)
2. Diagnosis mentioned
3. Allergy status
4. Prescribing standards like i. Dose ii. Dosage form iii. Generic name iv. Brand name v. Duration of treatment vi. Time of administration
5. Total number of drugs prescribed per prescription.
6. Number of Antibiotics prescribed per prescription.
7. Number of Fixed Drug Combinations (FDCs) prescribed per prescription.
8. Number of Multivitamins prescribed per prescription.
9. Number of Banned formulations prescribed per prescription.
10. Number of drugs from Essential medicines list (NLEM) 2015
11. Use of Capital Letters
12. Use of Non-standard abbreviations
13. Doctors name and signature

The collected data was recorded and subjected to statistical analysis. Prior to the study, appropriate Ethical clearance was obtained from the Institutional Ethics Committee. The data obtained were summed up and presented as descriptive statistics using the Microsoft Excel. The data were analyzed using SPSS version 16 (SPSS for Windows, Version 16.0. Chicago, SPSS Inc.).

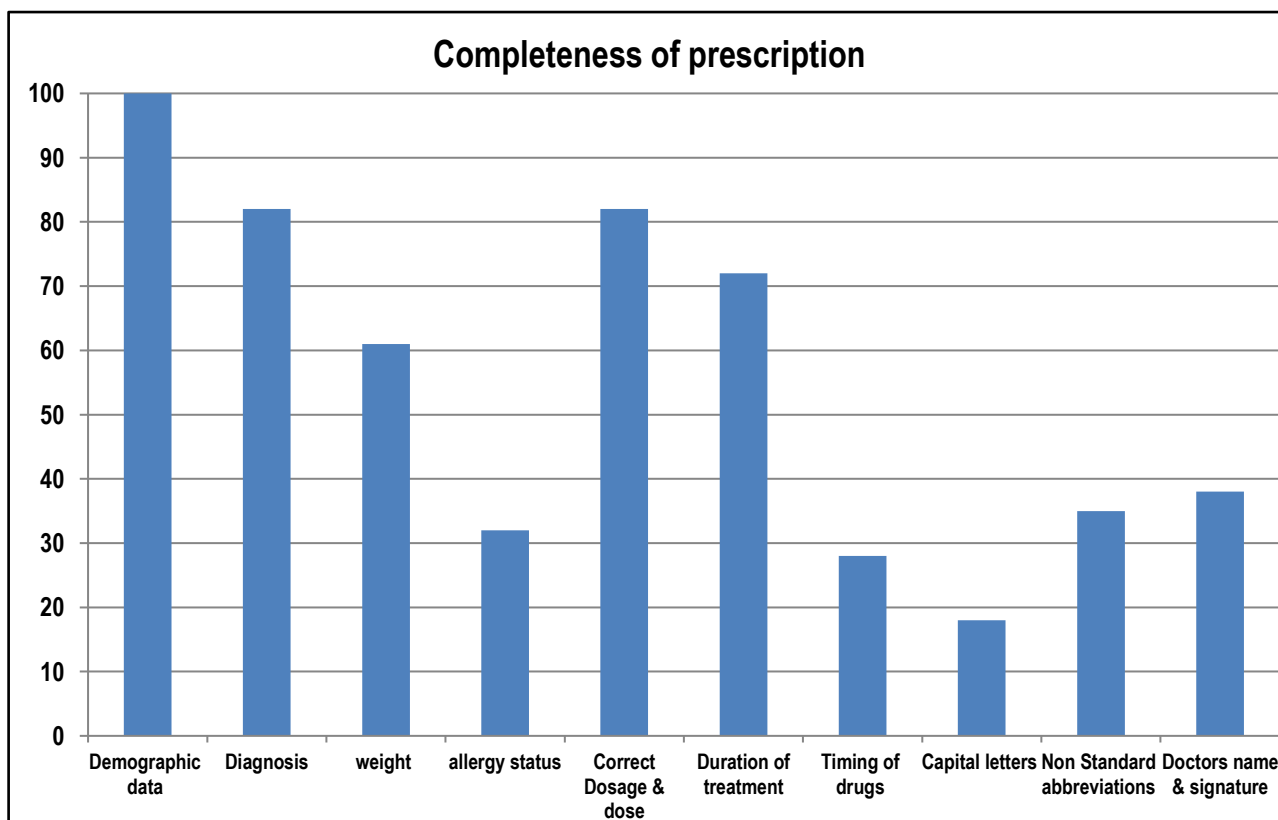


Figure 1: Parameters showing completeness of Prescription

Table 1: Data on WHO Prescription Indicators

Characteristic	Average per prescription/percentage
Drugs prescribed	3.93/prescription
Drugs prescribed by generic name	11 %
Antibiotics	41%
Drugs from NLEM 2015	1.5/prescription

Table 2: Comparison with selected Prescription Auditing studies.

Parameters	Present Study	Kumar (2018, Karnataka) ¹⁵	Ahsan (2016, Uttar Pradesh) ¹⁷	Bandyopadhyay (2014, West Bengal) ¹⁸
Demography	100	N.A.	100	97
Sex [M/F]	67/33	60/40	N.A.	55/43
Diagnosis	82	N.A.	56	96.2
Average No. of Drugs	3.93	1.91	4.02	4.4
% Dosage & Dose	100	95	85	70
% Generic Drugs	11	90	0	21
% Antibiotics	41	24	39	29

(N.A. indicates Data Not Available from the particular study.)

OBSERVATIONS AND RESULTS

Demographic data like name, age, gender was mentioned in 100% of the cards. Weight was mentioned in only 61 % of cards (Figure 1). There was male preponderance in our study, with 64% being males and 36% were females. The Mean age 42 ± 12.2 (range was 1 month – 85 years).

Proper Diagnosis was mentioned in only 82% of the prescriptions, while the rest were treated symptomatically. Allergy status was mentioned in only 32% of treatment cards. Dosage and Dose was mentioned in 100% of the prescriptions, however 18% prescriptions had wrong dosage. Duration of treatment was mentioned in 72% prescriptions, while timing was mentioned in 28% prescriptions only. An average number of 3.93 (Range 1-7) drugs were prescribed per prescription. At least one drug was prescribed by the generic name in 11% of the prescriptions (Mean=0.12; Range 0-2. No antibiotic was prescribed in 59% prescriptions while 1 antibiotic was prescribed in 37% and 2 antibiotics were prescribed in 4% prescriptions (Table 1). In 20.6 % patients FDCs were prescribed. No Vitamin supplements were prescribed in 52% prescriptions while One multivitamin was prescribed in 44% of the prescriptions. On an average, each prescription had 0.52 Vitamin supplements (Range 0-2). Each prescription included 1.5 (Mean) drugs from the NLEM 2015 (Range 0-4). No Banned formulation was prescribed to any patient. Usage of Capital letters in adherence with MCI directives were observed in only 18% of the prescriptions. Non standard abbreviations were used in 35% of the prescriptions. Doctors name and signature was mentioned in only 38% prescriptions.

DISCUSSION

Prescription is an important communication between patient and the physician, so it becomes moral and ethical responsibility of prescribing physician to learn to write prescription which is correct in all respects. Since our study was done in Department of cardiothoracic surgery, so patients enrolled were of cardiac, vascular and lung ailments needing surgical intervention.

In Jawaharlal Nehru Medical college the process of registration and prescription is manual, hence the demographic data like name, age and gender was written by employees at registration counter in all patients. However, in 13% of prescriptions the writing was illegible. Studies auditing hand written prescriptions have found that patient details were usually incomplete in almost all prescriptions.¹⁶

Patient details are important for ensuring that the correct patient receives the medicines and also for medico-legal and record-keeping purposes.

Weight is an important variable for prescribing drugs in right dosage, however it was mentioned only in 31% of cards. Similar trend of low percentage of reporting of weight on prescription card is found in other studies also.¹⁷

On close analysis it was found that weight was mentioned only in prescriptions of pediatric patients and those receiving Anti tubercular Therapy (ATT).

Similar to other studies our study also had male preponderance (64%).¹⁵ This could be attributed to several factors like outdoor nature of males which leads to more chances of trauma and infectious disease in males. There could be other reasons like selective sex preference of cardiovascular diseases for males. The Mean age was 42 ± 12.2 , since cardiothoracic ailments involve all age groups the range of age of patients was from neonate to octogenarians.

Diagnosis was mentioned in good percentage of prescriptions (82%), which is a healthy practice (Table 2). Other studies have also reported similar findings with diagnosis being mentioned on 56-96% of prescriptions.^{17,18}

Similar to other studies Allergy status was mentioned in only a small percentage of patients (32%).¹⁷ Prescriptions incomplete with regards to allergy status of the patient open up a window for adverse drug reaction especially if drug to which the patient is allergic is prescribed. To investigate the drug use in health facilities, the WHO has recommended core prescribing

indicators.¹⁹ The cardiothoracic surgeons were particular in mentioning dosage and Dose in all prescriptions (100%), however 18% of prescriptions had wrong dosage. This could be attributed to prescription being written by surgery residents also, as it is a teaching hospital. Duration of treatment was clearly mentioned in only 72% prescriptions and timing in 28% prescriptions. Wrong dose, dose omission, and wrong time were the most common type of prescribing errors found in many studies worldwide.²⁰ Our findings were in line with other studies done in other parts of India but much higher rate of error was found in comparison to other global studies.²⁰

Polypharmacy was seen in most of the prescriptions and in some cases the patient was prescribed upto 7 drugs. This could be due to multiple comorbidities in patients attending cardiothoracic OPD. The average number of drugs per prescription was 3.93. Other studies have also reported similar findings of polypharmacy.¹⁷ However, the average number of drugs prescribed in our study was much higher than other studies done in secondary level hospitals²¹ and rural India.²²

Polypharmacy increases the health care costs and has important implications on the national health budget. Polypharmacy also increases the risk of drug-drug interactions and adverse drug events. Since the study was done in a teaching hospital, most of the prescribing doctors hold a master's degree. One Study has shown that doctors with a higher degree prescribe significantly greater number of drugs than those with a bachelor's degree.²³ This highlights an important area of intervention where training prescribers for rational prescribing can help improve the quality of prescriptions and in attaining the WHO recommendation of 2.0 drugs per encounter.¹⁹ Moreover, studies on predictors for prescribing errors concluded that the prescribing error risk increased by 14% for every additional drug prescribed.¹⁹ Thus the single most important predictor for error is the number of drugs in a prescription.¹⁶

In 20.6 % patients FDCs were prescribed, which is similar to other studies.²⁴ These FDC's were usually painkillers, antacid and painkillers combinations, two antiplatelet agents or combinations of antiplatelet agents and statins. To an extent these FDC's are justifiable in certain situations as it improved patient compliance, however they also lead to unnecessary drug food interactions and increase the incidence of side effects.

Of particular note is the reserved use of Antibiotics in our OPD. The percentage of antibiotics prescribed in our audit was 41% which is higher than the limits set by WHO (20-25.4%). Though these rates were significantly higher than other studies done in tertiary setup (17.48%), they were much lower than antibiotic use in private setup (53.6%) and rural sector (45%).^{21,22,25} Whether the high prevalence of antibiotic use was inappropriate cannot be concluded as most of the patients attending the out-patient department are from rural background and frequently suffer from bacterial infections.

They have also practised caution in prescribing Multivitamins which again indicates their reservations against the disputed rampant prescription of the 'wonder pills'. In keeping with the government advisory, the surgeons did not prescribe any banned formulation.

Similar to other studies, our study revealed that drugs were seldom prescribed by Generic names (11%).^{17,18} Generic prescribing should be encouraged as it reduces the chances of

dispensing errors and curtails the cost incurred on medicines. Despite of repeated government advisories against the practice of writing Trade names, the practice is not stopping.²⁶ In a recent update MCI (April 2017) has even threatened doctors with suitable disciplinary action by the concerned state medical council or by the MCI if they are found not prescribing generic medicines. In spite of all advisories and threats by government and MCI the prescription of generic drugs is not appealing to doctors. It could be attributed to lack of availability of generic drugs at all hospitals and the physicians lack of trust in quality of generic drugs. However, the prescription of Generic drugs is variable as in hospitals with Generic drug stores the prescription of generic drugs is high.¹⁵

The cardiothoracic surgeons at our centre have notably ignored the MCI Directives of using Capital letters to write prescriptions, as capital letters were used in only 18% prescriptions. A running handwriting can become illegible at times. A large number of medication errors have been blamed on illegible writing of the prescriber. Illegible writing creates ambiguity and can potentially lead to dispensing errors.²⁷ To avoid such confusions, regulatory bodies in India advocate the use of capital letters while prescribing drugs.²⁸ Moreover, places where electronic prescriptions are used, the rate of such errors are negligible.²⁹ In healthcare setups using the electronic prescribing systems, the rates of errors such as missing strength/dose, formulation not specified or no start date and errors due to legibility issues can be minimized significantly but they do not overcome the errors arising due to transcription mistakes.¹⁶ Electronic prescribing systems are themselves associated with a new pattern of errors.²⁰

Another discouraging observation is that a significant number of prescriptions have mentioned non standard abbreviations. While it is assumed that their colleagues might be comfortable with this, however, such a practice is a deterrent to external researchers and doctors to comprehend the prescriptions in toto.

The surgeons have often prescribed drugs most of which are not in the NLEM 2015. With growing cardiovascular burden of our country, the NLEM 2015 needs to be updated and should adequately address the cardiovascular needs of the patient.

Doctors name and signature was mentioned in only 68% prescriptions. Other studies have also reported that a lot of prescriptions are without the name and signature of prescribing doctor.¹⁷ Prescriptions, in which the name of the prescribing doctor is not clear, invalidate the prescription and can cause inconvenience to the patient as some pharmacist won't dispense drugs on these incorrect prescriptions.

CONCLUSION

The inappropriate use of drugs is a global health problem, especially in developing countries like India. Irrational prescriptions have an ill effect on health as well as health-care expenditure. Prescription auditing is an important tool to improve the quality of prescriptions, which in turn improves the quality of health care provided. Since our study was conducted at a Teaching Hospital, the majority of prescriptions were written by Senior Residents and Trainee surgeons. The results of our study call for reassessment of the hospital policy because of prevalent polypharmacy and a by- and-large ignorance of MCI guidelines absolutely necessitating the retraining of prescribers. Studies have shown that if undergraduate students are given adequate training

in safe and rational prescribing, the incidence of prescribing errors is significantly reduced. General trust needs to be established among doctor fraternity so that prescription of generic drugs become universal. If real change is desired then Prescription auditing should be a continuous process rather than a one-time exercise.

LIMITATIONS

Only one department has been taken under study largely ignoring many other specialties of the hospital, inclusion of which could have helped to compare the pattern among different departments as well as different centers. The trend of polypharmacy and frequent prescription of FDCs reflects the need of studying the Health Economics, but this issue is left for future researchers to peruse.

The study was also a good opportunity to compare the prescribing behavior of Consultants vis a vis Residents, however because of the limited scope of the study, such a research question could not be entertained.

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ETHICAL APPROVAL

The study was approved by the Institutional Ethics Committee.

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