

An observational study of the prescribing pattern as per World Health Organization guidelines in various outpatient departments of a tertiary care teaching Hospital in Jharkhand

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Abstract

Background: Prescription pattern monitoring studies are part of drug utilization studies which primarily deals with rational use of medicines. Prescribing indicators approved by the World Health Organization (WHO) are parameters for assessing the degree of polypharmacy, use of generic medicines, appropriate use of antibiotics, proper use of parenteral medications and adherence to the essential drugs list.

Material and methods: The prospective study was carried out over a period of 12 months in various outpatient departments of RIMS, Ranchi. Collected prescriptions were analyzed for legibility, structure of the prescription and WHO prescription indicators like average number of drugs per prescription, percentage of drugs prescribed by generic names, percentage of drugs prescribed from essential medicine list, percentage of fixed dose combinations and percentage of antibiotics and Injectable used.

Results: In our present study 5.20% prescriptions were found illegible. In about 38% prescriptions 5 or more

than 5 drugs were used. Among prescribed medicines 11.4% were parenteral, 54% drugs were written in generic names, 13.19% were fixed dose combinations, 23% were antibiotics and 88% drugs were from the National List of Essential Medicines.

Conclusion: For rationale use of medicines periodic prescription auditing is the need of time. Clinicians should be aware and compatible with national treatment guidelines. Regular CMEs and workshops along with proper administrative approach may improve the rationality of prescriptions in future.

Keywords: Prescription, Auditing, Rationale, Polypharmacy, Essential drugs.

Introduction

Prescription is the written order of the physician which is directly conveyed to the patient. It contains information pertaining to dose of the drug, route of administration, frequency of administration. Physician can affect patient’s well-being by prescribing appropriate drugs in right doses. Essential drugs are those drugs that satisfy the healthcare needs of majority of population, they

should therefore be available at all times in adequate amounts and in appropriate dose form at a price the community can afford. These drugs are required for the management of majority of commonly occurring medical conditions. These must meet quality, safety, and efficacy at a low cost.¹ A right decision of the prescriber will eventually enable the patient to take medication and comply to the prescription.² Bad prescribing practice may result in serious morbidity and mortality as well as additional economic burden and lead to reduction in the quality of drug. This may result in wastage of resources, increased treatment cost, increased risk for adverse drug reaction and emergence of resistance.³ The World Health Organization (WHO) has reported that more than half of all medicines are prescribed, dispensed, or sold inappropriately.⁴ Prescription pattern monitoring studies are tools for assessing the prescribing, dispensing, and distribution of medicines prevailing in a particular place which ultimately promote rational use of medicines.⁵ The drug use indicators have been developed by the WHO in coordination with international network as an attempt to measure the extent of rational prescribing.⁶ It has been observed that the prescription monitoring studies are prime to bridge the areas such as rational use of drugs, pharmacovigilance, pharmaco-economics, pharmacogenetics, and evidence based medicine. Thus, this study would throw light on deficiencies which require appropriate and sustained interventions to avoid being carried onto the next generation.⁷

Aim

To study prescription patterns in a tertiary care teaching hospital of Jharkhand.

Objectives

1. To analyze the prescriptions using WHO prescribing indicators.

2. To evaluate the rationality of prescriptions.
3. To give suggestions to promote rational use of drugs.

Materials and methods

The prospective study was carried out over a period of 12 months in Rajendra Institute of Medical Sciences, Ranchi after getting approval from Institutional Ethics Committee. Prescriptions were collected randomly from July 2019 to June 2020. Patients of either sex and age seeking care in various outpatient departments of RIMS, Ranchi were included in the study. Patients requiring admission in hospital for various reasons were excluded from the study. 2000 OPD prescriptions were collected from various outpatient departments of RIMS, Ranchi.

Prescriptions of patients attending medical OPD and treated on outpatient basis for their ailments were included irrespective of the comorbidities. Based on data obtained in these prescriptions, analysis was done as per following WHO indicators -

1. Legibility of prescription: It was assessed mainly by observing whether all parts of prescription were clear (in capital letters) for reading with or without effort.

2. Structures of the prescription:

- a) Superscription including date, name, age, address, gender, weight and diagnosis mentioned.
- b) Inscription including name and strength of drugs.
- c) Subscription, which means instruction to the pharmacist.
- d) Transcription: direction to the patients regarding the methods of administration.
- e) Signature and identification.

3. Prescribing indicators

- a. Average number of drugs per prescription - to measure polypharmacy. Average was calculated by dividing the total number of different drug products prescribed, by the number of prescription surveyed.

b. Percentage of drugs prescribed by generic names- to evaluate generic drug prescribing habits. Percentage was calculated by dividing the number of drugs prescribed by generic name, by the total number of drugs prescribed and expressed as a percentage.

c. Percentage of drugs prescribed from essential medicine list - to see whether drugs prescribed according to national drug policy or not. Percentage was calculated by dividing the number of drugs prescribed which were on the essential drugs list or local formulary, by the total number of drugs prescribed and multiplied by 100.

d. Percentage of fixed dose combinations.

e. Percentage of antibiotics used.

f. Percentage of Injectable used.

Results

In this current study, 5.20% prescriptions were found illegible and discarded from analysis. 27.95% prescriptions were legible with effort and were included with rest 66.85% legible prescriptions for calculation. Figure number 1 summarizes legibility.

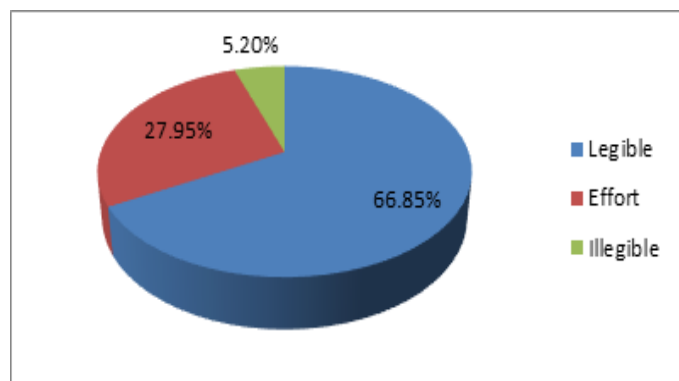


Figure 1: Legibility of prescription

In table number 1, we can notice that, in around 38% prescriptions 5 or more than 5 drugs were prescribed which signifies Polypharmacy.

Number of drugs per prescription	Percentage
One drug	62(3.27%)
Two drugs	189(9.97%)

Three drugs	637(33.6%)
Four drugs	282(14.87%)
Five drugs	438(23.1%)
Six drugs	209(11.02%)
Seven drugs	64(3.37%)
More than seven drugs	15(0.79%)

Table 1: Number of drugs per prescription

Around 11.40% prescribed medicines were parenteral and 7.40% were topical in nature (figure number 2).

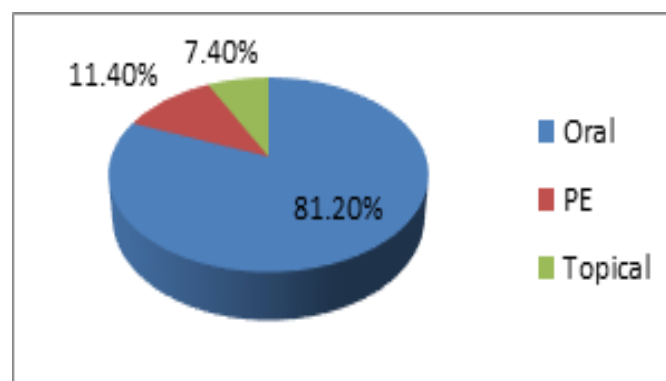


Figure 2: Various dosage forms of prescribed drugs

54% drugs were written in generic names, 13.19% were fixed dose combinations and 88% drugs are from the National List of Essential Medicines (figure number 3).

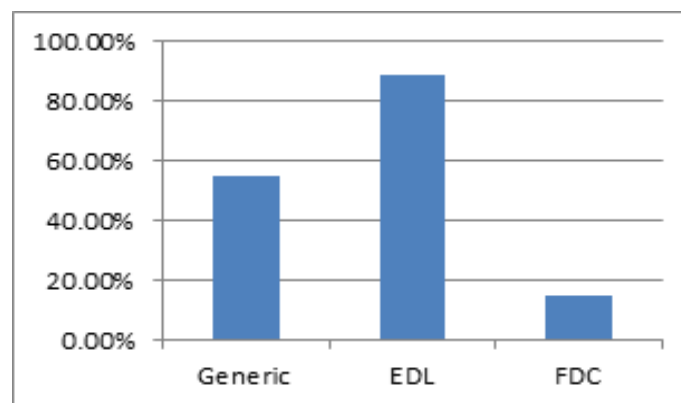


Figure 3: Generic drugs, essential drug list and fixed dose combinations

In analysis of parts of prescriptions, it was observed that only in 2.78% prescriptions drugs were written in capital letters. Superscription and subscription was absent in 23.4% and 41.2% cases respectively. Faulty inscription

was found in 37.4% cases and 13.4% prescriptions were deficient in doctors signature, designation and seal (table number 2).

Prescription parameters	Percentage
Drugs written in capital letters	2.78%
Date written	100 %
Address written	100 %
Superscription absent in	23.4%
Faulty Inscription	37.4%
Absent Subscription or direction to the pharmacist	41.2%
Faulty Instructions for Patient	32.7%
Signature absent in	13.4 %
Doctor's designation absent in	13.4%
Doctors 'seal absent in	13.4%

Table 2: Assessment of Parts of prescription.

Among collected prescriptions a greater percentage was from department of medicine (22.05%), surgery (16.03%) and dermatology (15.03%). Table number 3 shows distribution of prescriptions according to outpatient departments.

Department	Prescriptions(percentage)
General Medicine	418(22.05)
General Surgery	304(16.03)
Obstetrics and Gynaecology	231(12.18)
Pediatrics	208(10.97)
Dermatology	285(15.03)
Ear, Nose and Throat	118(6.22)
Ophthalmology	102(5.38)
Psychiatry	64(3.37)
Orthopedics	127(6.7)
Dental	39(2.06)

Table 3: Distribution of prescriptions according to departments.

In this present study when prescribed drugs were categorized according to textbook of pharmacology, we found that antimicrobial drugs (23.08%) were in top followed by Analgesic and anti-inflammatory agents (20.17%) and Gastro intestinal drugs (14.88%).

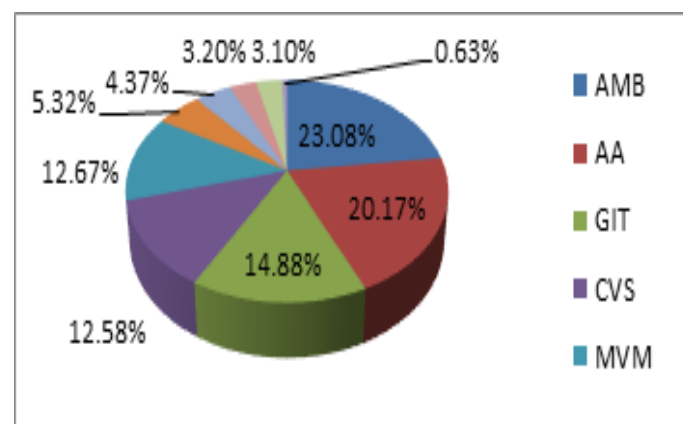


Figure 4: Distribution of drugs according to textbook of pharmacology

AMB- Antimicrobial, AA- Analgesic and anti-inflammatory, GIT- Gastro intestinal, CVS- Cardiovascular system, MVM-Multivitamin and minerals, CNS- Central nervous system, RS- Respiratory System, AH- Anti histaminics, MISS- Miscellaneous.

Discussion

In our study after screening 2000 prescriptions, we found deficiencies in various aspects. First of all we have to discard 104(5.2%) prescriptions as these were not readable with effort. We designated these prescriptions as illegible. These prescriptions are often responsible for wrong dispensing of medicines leading to faulty treatment followed by unwanted drug reactions. Irshaid Y.M also found in his study that around 7 % prescriptions were illegible that is cannot be read with effort.⁸

In our study, in only 2.78% prescriptions drugs were written in capital letters. According to WHO and drug

controlling authority of India all medicines should be written in capital letters. Use of capital letters automatically increases the legibility of prescriptions. Study conducted by Patel V also stressed on that following issue.⁹ This can be improved by giving adequate time to the patient as well as by decreasing patient burden in OPD settings by increasing the number of resident doctors.¹⁰

In this present study date and address were written in all prescriptions. Superscription was absent in 23.4% prescriptions. 37.4% prescriptions were having faulty inscription and 41.2% prescription were lacking in subscription that is direction to pharmacist. Direction to the patients was inappropriate in 32.7% prescriptions. Doctor's signature, designation and seal were absent in 13.4 % prescriptions. In some other studies such mistakes were less as compared to our study.⁸⁻¹⁰

Around 54% drugs were written in generic names. This is not satisfactory as compared to other studies. In some studies the use of generic drugs were higher (76%) as compared to our present study findings.¹¹ This indicates that our prescribing tendencies are typically influenced by the representatives of drug manufacturing companies for bidirectional profits. The cost per prescription also gets increased for this. It increases financial burden upon patients. Administration of generic medicines decrease the incidence of dispensing error.^{12,13} In a study almost 92% of the prescriptions were containing drugs written in their generic name.¹⁴

Fixed dose combinations were 13.19% which is quite satisfactory as compared to other studies.¹⁵⁻¹⁷ Most of them were antimicrobial agents. The rationality for using fixed dose combinations must be evaluated. Government of India has recently banned a number of fixed dose

combinations. It also increases number and type of adverse drug reactions.¹⁵⁻¹⁷

Among prescribed drugs 23% were antibiotics. As compared to other studies this figure is quite low and acceptable. But there were many patients having diagnosed of upper respiratory tract infections which are self-limiting. Antibiotic usage should be appropriate, otherwise drug resistance is inevitable. Culture sensitivity testing should be done prior to the use of antibiotics.¹⁸ There should be proper guidelines regarding antimicrobial drug prescribing, so that the clinicians can choose an antibiotic appropriate for patients.^{19,20}

In the present study, 11.4% drugs were injections. Unsafe use and overuse of injection play an important role in the transmission of very serious blood-borne infections. A study revealed that injection prescribing proportion in rural Western China was higher than that in India and lower than that in Cambodia.²¹ The proportion of prescriptions with injection was 22.93%. Prescribing more injections per prescription increases the chance to transmit infections like HIV, hepatitis B and C. Further, excessive use of injection will lead to more generation of biomedical waste in that area.

In the present study 88% drugs are from the National List of Essential Medicines of India, 2015. A study on evaluation of drug using WHO prescribing indicators concluded that the percentage of prescriptions involving drugs from the essential drugs list averaged 93%.²² Use of essential medicines not only decrease financial burden on community but also discourage malpractice among physicians.²³⁻²⁵

Number of drugs per prescription is 3.2 which is also higher than the WHO guideline of 2.02. When individual prescriptions were analyzed polypharmacy was clearly visible in around 38% prescriptions where administration

of 5 or more than 5 drugs was found. Polypharmacy may be rationale or irrational. Irrational polypharmacy is the prime reason behind adverse drug reactions and drug interactions. It also increases financial burden on patients.²⁶⁻²⁸

The most common categories of drugs prescribed to outpatients were antimicrobials followed by analgesic and anti-inflammatory drugs. So, infection, musculoskeletal pain, fever and inflammation became the prime causes for which around drugs were prescribed. In some prescriptions, where an analgesic like paracetamol may be sufficient was replaced by ibuprofen and diclofenac. A significant number of multivitamins and minerals were prescribed without any specific indication. Similar was in case of antihistamines and cough syrups. The usage of these drugs without any specific indication may just increase the incidence of adverse effects.²⁹

Conclusion

Prescription audit is the current need to promote rational use of drugs, to prevent medication error and to decrease financial burden on patients. To improve the quality of prescriptions, doctors in the hospitals should be provided with standard treatment guidelines, list of Essential drugs and FDCs. Regular CME and workshops along with personal interaction with medical personnel will also help to improve the standards of prescription writing. Appropriate measures have to be implemented by policymakers to ensure rational and safe prescribing.

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