

Retraction

The article titled, "Prescription audit and drug utilization pattern in a tertiary care teaching hospital in Bhopal", published in the International Journal of Basic & Clinical Pharmacology, Volume 5, Issue 5, 2016, Pages 1845-1849, DOI: <http://dx.doi.org/10.18203/2319-2003.ijbcp20162852> is being retracted.¹ It has been observed that the article contains several overlapping text sections from a previous published article titled, "Prescription auditing and drug utilization pattern in a tertiary care teaching hospital of western UP" published in the International Journal of Basic & Clinical Pharmacology, Volume 1, Issue 3, 2012, Pages 184-190, DOI: <http://dx.doi.org/10.5455/2319-2003.ijbcp003812>.²

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Prescription audit and drug utilization pattern in a tertiary care teaching hospital in Bhopal

Shikha Mishra*, Parag Sharma

Department of Pharmacology,
L.N. Medical College,
Associated J.K. Hospital,
Bhopal, India

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***Correspondence to:**

Dr. Shikha Mishra,
Email: shikhabiya.2015
@rediffmail.com

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ABSTRACT

Background: In India, a proper reporting of medication errors in the hospital is not available. Drugs worth crores of rupee are consumed every year but substantial parts of these drugs are irrationally prescribed. In order to promote rational drug usage standard policies on use of drugs must be set and this can be done only after the current prescription practices have been audited. The prescriptions were analyzed based on the objectives of the study in order to promote rational use of drugs in a population.

Methods: The study was carried out prospectively over a period of three months in Medicine, Surgery, Gynaecology, Paediatrics, Skin, Orthopaedics, ENT and Psychiatric OPDs of our tertiary care hospital.

Results: Two Hundred and fifty prescriptions were analyzed. Total no. of drugs in 250 prescriptions was 1001. Therefore average number of drugs/ prescription is 4.004. Drugs were prescribed by generic names in 3.79% of cases, drugs on EDL are only 53.25% and fixed dose combinations are 26.87% of total drugs. Dosage forms used were mostly oral-93.51%. Injectables were only 6.19% and topical forms were least 0.299%. Basic information of patient was written in 72.57% prescriptions. Complete diagnoses were written in 70.04% prescriptions. Only 88.61% prescription were legible and only 76.79% prescriptions were complete in terms of dose, route, dosage form, strength and frequency. Most common drug groups prescribed were NSAIDs+serratiopeptidases, antibiotics, antihistaminics, multivitamins, minerals enzymes and expectorants & bronchodilators. The incidence of polypharmacy was also common with maximum number of drugs which were prescribed per prescription were four in 39.24% of prescriptions.

Conclusions: This study showed that there is scope for improvement in prescribing patterns in areas of writing generic names of drugs, essential drugs, writing legible and complete prescriptions as well as writing prescriptions in capital letters. Polypharmacy was also evident from our study. Establishment and implementation of appropriate clinical guidelines, use of essential medicines list, public education about medicines and regular update to the clinicians will help in implementing the principles of rational pharmacotherapeutics.

Keywords: Prescription auditing, Drug utilization pattern, Polypharmacy, Rational pharmacotherapy

INTRODUCTION

Prescription auditing is a type of vigilance activity, which is beneficial in clinical practice in terms of reducing the burden of disease because of medication errors.

Rational use of drugs is multifaceted. Its medical, social and economic aspects are well reflected in the WHO definition: "Rational use of drugs requires that patients receive medications appropriate to their clinical need, in doses that meet their own individual requirements for an

adequate period of time, at the lowest cost to them and their community".

Irrational prescribing is a global problem. The rationality of prescribing pattern is of utmost importance because bad prescribing habits include misuse, overuse and underuse of medicines which can lead to unsafe treatment. Examples of irrational use of medicines include: Polypharmacy, inadequate dosage, and use of antimicrobials even for non-bacterial infections, excessive use of injections when oral forms are available and inappropriate, self-medication and non-compliance to dosing regimens.¹

The specialist departments in teaching hospitals should define prescribing policies for clinical prescriptions, teaching and examinations based on its formulary.

The World Health Organization (WHO) has formulated a set of "core prescribing indicators" for improvement in rational drug use in outpatient practice. It includes the prescribing indicators, the patient care indicators and the facility indicators.² Based on these indicators, studies have been carried out all over the world and even in India.³⁻⁸

Hence the present study was carried out with the objectives of

- Information on diagnosis pattern
- Collect information on number of drugs prescribed their prescribing patterns and calculate the mean number of drugs per prescription.
- Calculate the percentage of drugs prescribed from the Essential drug list.
- Percentage of fixed dose combinations (FDCs) prescribed, the percentage of drugs prescribed by generic name and the number of antibiotics prescribed.
- Calculate the percentage of prescription with complete diagnosis, legibility with seal and signature of doctor present on the prescriptions.
- Analyze the prescriptions for basic information of patient like, name, age sex and address of the patient and completeness of prescriptions in terms of dose, strength, route, frequency, duration and dosage forms of prescribed drugs.

METHODS

The study was cross sectional observational study conducted in various OPDs of J.K. Hospital associated with L.N. Medical College and research centre, Bhopal.

Photocopies of various prescriptions were taken randomly from various OPDs.

These prescriptions were also analyzed based on the objectives of the study. The age and sex of patients and doctors profile were recorded. The clinical diagnosis, number of drugs prescribed, number of drugs prescribed from the Essential drug list, number of fixed dose combinations (FDCs) used, number of drugs prescribed by generic name and the number of antibiotics prescribed were analyzed.

The prescriptions were also analyzed for their legibility, presence of doctor's seal and signature on the prescriptions, basic information of patients and completeness of prescriptions in terms of dose, strength, route, frequency and duration and dosage forms of prescribed drugs.

RESULTS

Two hundred and fifty prescriptions were collected in this period. Total numbers of drugs prescribed in 250 prescriptions were 1001. Therefore average number of drugs/prescription is 4.004.

The demographic profiles of the patients were found to be as follows:

Age distribution of children (<14 years) constituted 17.18%, adolescents (15-19 years) were 7.59%, adults (20-60 years) formed 64% and >60 age group formed 5.90%. Age was not written in 5.2% of the prescriptions. The proportion of males was higher at 57.33% as compared to females who were only 37.59%. Sex was not written in 4.4% cases (Table 1).

Table 1: Demographic profile of patients.

Age distribution	Number (%)
Children (<14 years)	43 (17.18%)
Adolescents (15-19 years)	19 (7.59%)
Adults (20-60 years)	160 (64%)
Above 60 years	15 (6%)
Sex distribution	Number (%)
Males	143 (57.33%)
Females	96 (37.59%)

Drugs were prescribed by generic names only in 3.6% of cases. Fixed dose combinations were used in 38.8% cases. More than one antibiotic was prescribed in 4.4% cases. Basic information of patient (Name, age, sex and complete address) was written only in 68.8% prescriptions. Complete diagnosis was written in 66.4% prescriptions. Only 84% prescriptions were legible and only 72.8% prescriptions were complete in terms of dose, route, strength, frequency and dosage forms and only two prescriptions were written in capital letters (0.8%) (Table 2).

Table 2: Prescription profiles.

Parameters	Number of prescriptions (%)
Drugs prescribed by generic names	9 (3.6%)
Fixed dose combinations used	97 (38.8%)
More than 1 antibiotics prescribed in	11 (4.4%)
Follow up advice was written in	54 (21.6%)
Basic information of patient written (Name, Age, Sex, Address)	172 (68.8%)
Complete diagnosis written in	166 (66.4%)
Legibility of prescription	210 (84%)
Complete prescription in terms of dose, route, strength, frequency and dosage forms	182 (72.8%)
Prescription in block letters	2(0.80%)

Table 3: Drug profiles.

Parameters	Number of prescriptions (%)
Drugs on EDL	533 (53.25%)
Fixed dose combinations used	269 (26.87%)

Drugs on EDL are only 53.25% and fixed dose combinations are 26.87% of total drugs.

The pattern of diagnosis seen was as follow,

One diagnosis was written in 88% prescriptions, 2 diagnoses were written in 8% prescriptions and 3 diagnoses were written in 2% prescriptions and no diagnosis written in 5 prescriptions (Table 4).

Table 4: Diagnosis patterns in various prescriptions.

Diagnosis pattern	Number of prescriptions %
1 diagnosis	220(88%)
2 diagnosis	20 (8%)
3 diagnosis	5 (2%)
No diagnosis	5(2%)

The most common drug groups prescribed were NSAIDs+serratiopeptidases, antibiotics, antihistaminics, multivitamins, minerals and enzymes and expectorants & bronchodilators. More than one antibiotic was prescribed in 4.64% cases (Table 5).

The incidence of polypharmacy was also common and maximum no. of four drugs were prescribed per prescription in 37.2% of prescriptions, 18.8% had 3 drugs and 15.2% had 5 drugs per prescription (Table 6).

Various problems were also encountered in these prescriptions which were as follows:

- Absence of probable diagnosis,
- Duration of treatment not mentioned clearly

- Age and sex not written,
- OPD number absent,

Seal with registration number and signature of doctor absent (Table 7).

Table 5: Common categories of drugs prescribed to outpatients.

Category of drugs	Number of prescriptions (%)
NSAIDs± serratiopeptidases	207 (20.67%)
Opioid analgesics	29 (2.89%)
Antibiotics	175 (17.48%)
Anti-ulcer drugs/GIT	94 (9.39%)
Cardiovascular drugs	44 (4.39%)
Central nervous system drugs	60 (5.99%)
Antihistaminics	154 (15.38%)
Hormones	29 (2.89%)
Multivitamins, minerals & enzymes	101 (10.08%)
Expectorants & bronchodilators	108 (10.78%)

Table 6: Number of drugs prescribed per prescription - poly pharmacy.

Prescription containing number of drugs	Number of prescriptions (%)
One	8 (3.2%)
Two	18 (7.2%)
Three	47 (18.8%)
Four	93 (37.2%)
Five	35(14%)
Six	29 (11.6%)
Seven	17 (6.8%)
Eight	2 (0.8%)
Nine and more	1 (0.40%)

Table 7: Problems observed in prescriptions.

Problem description	Number of prescriptions (%)
Diagnosis not written	8 (3.2%)
Duration of treatment not written	15 (6%)
Sex not written	12 (4.8%)
Age not written	13 (5.2%)
Date not written	9 (3.6%)
OPD number absent	16 (6.4%)
Signature of doctor absent	19 (7.6%)
Total	92 (36.8%)

DISCUSSION

Providing the right medicine to the right people at the right time is a main priority of health care. The way to ensure this is through the effective implementation of the

WHO's recommendation on rational drug policies. Rational drug use is a function of prescription practices having medical, social and economic implications. Prescription auditing is the mainstay of quality assurance in hospitals. They should address problems that have serious consequences for patients if proper treatment is not given as it can minimize the misuse of drugs, plan essential drug selection and estimate the drug needs of the community. The audit data's will be of great value to health administrators, manufacturers, distributors and health professionals groups for their decision making and drafting policies.

In our study the total no. of drugs in 250 prescriptions analyzed were 1001. Therefore average number of drugs/prescriptions is 4.04. This number is very much higher than the recommended limit of 2.0.2 Increase in the number of average drugs per prescription may increase the risk of drug interactions, may lead to unwanted side effects and also increases the prescribing and dispensing errors. By minimizing the number of drugs per prescription can help in rational pharmacotherapeutics.

Drugs were prescribed by generic names in only 3.6% of cases. This figure is very low as compared to other Indian studies many of which have even reported upto 73.4% usage of generic name.⁹ This clearly shows how our prescribing habits are being directly influenced by the representative of the drugs companies for undue favours. Generic prescribing reduces the chances of dispensing errors which may be due to misinterpretation of sound alike drugs and also decreases the economic burden on the patients which will in turn improve the patient compliance. Hence we should encourage generic prescribing by educational intervention methods and strict compliance to WHO drug policies.

Drugs on EDL were only 53.25%. Though it was comparable with other Indian studies, but was still on the lower side.^{3,8} A local hospital formulary will help the physicians to prescribe on an outpatient basis and follow the clinical protocols.¹⁰

Fixed dose combinations used were in 38.8% of prescriptions. This figure is comparatively higher than other studies but lower than two Indian studies which reported 75% and 60% usage of FDCs respectively.^{11,12} It may warrant inappropriate use of unwanted drugs which can lead to adverse effects and drug interactions. Use of fixed dose combinations should be discouraged unless strictly necessary.

Antibiotics prescribed were 17.48% of drugs. More than one antibiotic was prescribed in 4.4% of cases. This result is acceptable and as compared to a study by Gupta et al in which half of the patients i.e. 50% received more than one antibiotic this figure is much lower.¹³ Appropriate use of antibiotics is absolutely necessary to prevent emergence of drug resistance and should be mostly used after culture

sensitivity testing. Most of the acute respiratory and acute gastroenteritis cases are viral in nature and may not need antibiotics. An antibiotic policy should be formulated so that the clinicians can use them judiciously according to patients.

Poly pharmacy was clearly visible in our data. Maximum number of prescription i.e. 37.2% had four drugs each followed by three in 18.8% and five drugs in 14% of prescriptions. Poly pharmacy is a very common practice now days as is reported by various studies.^{14,15} It is of concern in those patients with various co-morbidities as it increases the chances of drug interactions.

The most common categories of drugs prescribed to outpatients were NSAIDs+serratiopeptidases (20.67%) followed by antibiotics which were 17.48%, antihistaminics 15.38%, multivitamins, minerals & enzymes 10.08% and Expectorants & Bronchodilators 10.78%. Doctors should not prescribe unnecessary medicines like multivitamins, minerals, enzymes and i.v. saline unless absolutely required by the patient. They should adhere and prescribe from the essential drug list.

Ninety two prescriptions (36.8%) had various anomalies. Diagnosis was not written in 3.2% of cases while duration of treatment was not written in 6% of prescriptions. However age and sex were absent in 5.2% and 4.8% of cases respectively.

Date was not written in 3.6% of cases and OPD number was absent in 6.4% of prescriptions. Signature of doctor was absent in 7.6% of prescriptions. All these anomalies encountered in the collected data indicate that there is a huge scope for improvements in the prescriptions patterns in our hospital.

CONCLUSIONS

Prescription auditing gives a clear picture of the prescribing practices in our hospital setting. There is a need for improvement in the standards of prescription patterns in all aspects. In order to improve the quality of care. An action plan should be formulated and recommendations for changing the present prescribing practices can be set either by providing the hospital doctors with the Standard Treatment Guidelines, EDL, Antibiotic policy as well as time to time training sessions.

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