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RESEARCH ARTICLE

PRESCRIPTION AUDIT FOR EVALUATION OF PRESCRIBING PATTERN OF THE DOCTORS FOR RATIONAL DRUG THERAPY IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Background: Irrational prescribing is a global problem. 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.
Methods: The study was carried out prospectively over a period of six months in the department general medicine of our tertiary care hospital.
Results: 288 prescriptions were analyzed. Total no. of drugs in 288 prescriptions is 2559. Therefore average number of drugs/prescription is 8.8. Drugs were prescribed by generic names in 4.16% of cases, drugs on EDL are only 36.92% and fixed dose combinations are 35.87% of total drugs. Dosage forms used were mostly oral 84.40%. Injectables were only 12.07% and topical forms were least 0.58%. Basic information of patient was written in 100% prescriptions. Complete diagnoses were written in 73.26% prescriptions. Only 86.80% prescriptions were legible and only 72.56% prescriptions were complete in terms of dose, route, strength, frequency and dosage forms. Disease pattern seen was variable. Diseases of cardiovascular system were maximum 33.33% followed by diseases of respiratory system 22.91% and diseases of endocrine system 11.45%. The most common drug groups prescribed were multivitamins, minerals & enzymes, cardiovascular drugs, antiulcer drugs and antibiotics. The incidence of polypharmacy was also common.
Conclusions: There is immense scope for improvement in prescribing patterns in areas of writing generic names of drugs, essential drugs, writing legible and complete prescriptions. Polypharmacy was evident from our study.
Keywords: Prescription auditing, Rational pharmacotherapy, Polypharmacy, Essential drug

INTRODUCTION

The prescription order is an important transaction between the doctor and the patient[1]. The prescribing behavior of the doctor depends upon the input from various sources like patients, academic literatures, professional colleagues, commercial publicity and government regulations. Various prescribing errors are result of ineffective use of these inputs and are very common in clinical practices[2]. One of the most pressing problems facing public health providers and administrators in many countries is the rational use of drugs[3].

Rational use of drugs is based on use of right drug, right dosage at right cost which is well reflected in the world health organization (WHO) definition: "Rational use of drugs requires that patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community"[4]. 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[5].

Irrational prescribing is a global problem. The rationality of prescribing pattern is of utmost importance because bad prescribing habits including misuse, overuse and underuse of medicines can lead to unsafe treatment, exacerbation of the disease, health hazards, and economic burden on the patients and wastage of resources. Examples of irrational use of medicines include: poly-pharmacy, 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 regimes[6].

Prescribers can only treat patients in a rational way if they have access to an essential drugs list and essential drugs are available on a regular basis[7]. Essential drugs offer a cost-effective solution to many health problems in a developing country. They should be selected with due regard to disease prevalence, be affordable, with assured quality and be available in the appropriate dosage forms[8].

Surveillance of drug use by the doctors, within the institution as well as in the community is assuming an increasingly important role in therapeutics[9]. The continuous monitoring of prescriptions may help to identify the problems involved in therapeutic decisions and promote the rational prescribing[10].

METHODS

The study was carried out prospectively over a period of 6 months in the department of general medicine of our institute, MMIMSR, Mullana, Ambala. The present study was carried out with the objectives of:

a) Obtaining information on demographic characteristics of the patients profile in our area.

b) Information on diagnosis pattern and disease pattern.

c) Collect information on number of drugs prescribed their prescribing patterns and calculate the mean number of drugs per prescription.

d) Calculate the percentage of drugs prescribed from the Essential drug list.

e) Percentage of fixed dose combinations (FDCs) prescribed, the percentage of drugs prescribed by generic name and the number of antibiotics prescribed.

f) Calculate the percentage of prescription with complete diagnosis, legibility with signature of doctor present on the prescriptions.

g) 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.

These prescriptions were analyzed based on the objectives of the study.

RESULTS

Total 288 cases were taken from the department of general medicine, in which a total of 2559 drugs were prescribed. Therefore average number of drugs prescribed per patient was found to be 8.8. Gender analysis revealed that male patients were more in number (54.16%) compared to females (45.83%). With regard to age 26.04% patients were in the age group of 41-50 years while 18.75 % patients were in the age group 21-30 and 51-60 years. (Table 1)

Table 1: Demographic profile of patients

	Parameters	No. of prescriptions (%)
1.	Drugs were prescribed by generic names	12 (4.16%)
2.	Fixed dose combinations used	282 (97.91%)
3.	More than 1 antibiotic prescribed in	24 (8.33%)
4.	Basic information of patient written (Name, Age, sex, Address)	288 (100%)
5.	Complete diagnosis written	211 (73.26%)
6.	Legibility	250 (86.80%)
7.	Complete prescription in terms of dose, route, strength, frequency and dosage forms	209 (72.56%)

Table 2: Prescription profiles

	Age group (Years)	Number	Percentage
1.	11-20	27	9.37
2.	21-30	54	18.75
3.	31-40	39	13.54
4.	41-50	75	26.04
5.	51-60	54	18.75
6.	Above 60	39	13.54
	Sex distribution		
1.	Males	156	54.16
2.	Females	132	45.83

Drugs were prescribed by generic names only in 4.16 % of cases. Fixed dose combinations were used in 97.91 % cases. More than one antibiotic was prescribed in 8.33% cases. Basic information of patient (Name, age, sex and complete address) was written in all prescriptions (100%). Only 88.80% prescriptions were legible and only 72.56% prescriptions were complete in terms of dose, route, strength, frequency and dosage forms. (Table 2)

Drugs on EDL are only 36.92% and fixed dose combinations are 35.87% of total drugs. With regard to dosage forms, it was found that majority of drugs prescribed were oral (84.40%) followed by injectables (12.07%) and inhalational (2.93%) and topical (0.58%). (Table 3)

Disease pattern seen was variable. Diseases of cardiovascular system were maximum 33.33 % followed by diseases of respiratory system 22.91 % and diseases of endocrine system 11.45 %. Diseases of central nervous system were 9.37 %, infectious and parasitic diseases were 7.29%, and of digestive system were 5.20%. Least was diseases of musculoskeletal system 2.77%. Others miscellaneous diagnoses were 7.63%. (Table 4)

Table 3: Drug profiles

	Parameters	Number of drugs (%)
1.	Drugs on EDL	945 (36.92)
2.	Fixed dose combinations used	918 (35.87)
3.	Dosage forms	
	Oral	2160 (84.40)
	Injectables	309 (12.07)
	Topical	15 (0.58)
	Inhalational	75 (2.93)

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Table 4: Disease pattern & Diagnosis pattern

	Disease pattern	Number of prescriptions (%)
1.	Diseases of cardiovascular system	96 (33.33)
2.	Diseases of respiratory system	66 (22.91)
3.	Diseases of endocrine system	33 (11.45)
4.	Diseases of central nervous system	27 (9.37)
5.	Infectious and parasitic diseases	21 (7.29)
6.	Diseases of digestive system (GIT)	15 (5.20)
7.	Diseases of musculoskeletal system	8 (2.77)
8.	Others	22 (7.63)

The most common drug groups prescribed were multivitamins, minerals & enzymes, cardiovascular drugs, antiulcer drugs, antibiotics, expectorants & bronchodilators and NSAIDs ± serratiopeptidases. More than one antibiotic was prescribed in 8.33% cases. (Table 5)

The incidence of polypharmacy was very common with maximum number of drugs which were prescribed per prescription were 8. 54.16% of cases had more than 9 drugs per prescription. (Table 6)

Table 5: Common categories of drugs prescribed

	Category of drugs	Number of drugs (%)
1.	NSAIDS± serratiopeptidases	240 (9.37)
2.	Opioid analgesics	27 (1.05)
3.	Antibiotics	303 (11.84)
4.	Anti-ulcer drugs/GIT	378 (14.77)
5.	Cardiovascular drugs	414 (16.17)
6.	Central nervous system drugs	189 (7.38)
7.	Antihistaminics	48 (1.87)
8.	Hormones	96 (3.75)
9.	Anti-parasites	48 (1.87)
10.	Multivitamins, minerals & enzymes	564 (22.03)
11.	Expectorants & Bronchodilators	264 (10.31)

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

Prescription containing number of drugs	Number of prescriptions (%)
One	-
Two	3 (1.04)
Three	9 (3.12)
Four	12 (4.16)
Five	18 (6.25)
Six	24 (8.33)
Seven	30 (10.41)
Eight	36 (12.5)
Nine and more	156 (54.16)

DISCUSSION

The rationality of the scripts prescribed by physicians is of critical importance, since bad prescribing habits lead to ineffective and unsafe treatment, causing exacerbation or prolongation of disease and distress or harm to the patient, which adds an extra burden to health budgets.

In our study the total no. of drugs in 288 prescriptions analyzed were 2559. Therefore average number of drugs/prescriptions is 8.88. This number is very much higher than the recommended limit of 2.0[11]. 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. However, in certain conditions like cardiovascular problems, the patients may require more than one drug. The recently published Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC-VII) guidelines also permit polypharmacy in hypertension[12].

Drugs were prescribed by generic names in only 4.16% 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[13]. This clearly shows how our prescribing habits are being directly influenced by the representative of the drugs companies for undue favors. Generic prescribing reduces the chances of dispensing errors which may be due to misinterpretation of like sounding names of drugs and also decreases the economic burden on the patients. 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[14,15] but was still on the lower side.

Dosage forms used were mostly oral 84.40%. Injectables were only 12.09% and inhalational and topical forms were least 2.93% and 0.58%. But the use of injectables was high as compared to other studies[6]. We need to reduce the unnecessary use of injectables to prevent HIV and other blood borne infections[16].

Fixed dose combinations used were in 97.91% of prescriptions. This figure is comparatively very higher than other studies[2,17]. 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 11.84% of drugs. More than one antibiotic was prescribed in 8.33% 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[18]. 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 need.

Basic information of patients like name, age, sex and complete address was written in 100% of prescriptions. Complete diagnosis was written only in 73.26% of prescriptions. Completeness in terms of dose, route, strength, frequency and dosage forms was seen only in 72.56% of prescriptions. All these information should be

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complete in all respects. Only 86.80% of prescriptions were legible. Therefore proper training and education of physicians is necessary regarding legibility and completeness of prescriptions in all aspects.

Poly pharmacy was clearly visible in our data. Maximum number of prescriptions i.e. 54.16% had more than nine drugs per prescription. Poly pharmacy is a very common practice now days as is reported by various studies[19,20].

The most common disease pattern seen in patients attending department of general medicine of our hospital was diseases of cardiovascular system accounting for 33.33 % of cases followed by diseases of respiratory system which were 22.91 % and diseases of endocrine system which were 11.45 % of cases.

The most Common categories of drugs prescribed were multivitamins, minerals & enzymes 22.03% followed by cardiovascular drugs which were 16.17%, antiulcer drugs 14.77%, antibiotics 11.84%, expectorants & bronchodilators 10.31% and NSAIDs± serratiopeptidases 9.37%. Doctors should not prescribe unnecessary medicines like multivitamins, minerals and enzymes unless absolutely required by the patient. They should adhere and prescribe from the Essential drug list.

CONCLUSION

The present study suggests that there is immense scope of improvement in prescription pattern in the hospital. Generic prescribing is urgently needed. In order to improve the quality of care, an action plan should be formulated and recommendations for changing the present prescribing practices are set either by providing the hospital doctors with the Standard Treatment Guidelines, EDL and Antibiotic policy or by following the information, education, and communication (IEC) interventions.

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