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CRITICAL APPRAISAL OF PRESCRIPTION PATTERN BY WHO PRESCRIBING INDICATORS IN OUTDOOR PATIENTS ATTENDING INTERNAL MEDICINE DEPARTMENT AT TERTIARY CARE TEACHING HOSPITAL IN NORTH INDIA

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ABSTRACT

Introduction: Irrational prescriptions by healthcare professionals is a worldwide concern, as it affects patient safety. It unnecessarily increases financially burden on the patient by wastage of essential resources. **Aim and Objectives:** The aim of this study was to assess the prescription pattern in outdoor patients of internal medicine department using WHO core prescribing indicators. **Material and Methods**: This was a prospective cross-sectional study conducted at Internal Medicine department in PGIMER, Chandigarh. About 717 prescription forms of outpatients from January 2019 to May 2019 were analysed for WHO core prescribing factors. **Results:** Total of 1988 drugs were prescribed in the 717 prescriptions included in the study. The average number of drugs prescribed per prescription was 2.77. Drugs prescribed by generic names were 14.59%. The most common category of drugs prescribed was multivitamins (20.97%) out of total number of drugs. Drugs prescribed from essential drug list and fixed dose combinations was 11.11% and 0.6% respectively. The most common route of drug administration was oral (92.2%). **Conclusion**: Majority of drugs were prescribed by brand names and prescription from National essential drug list was low. This was not adequate to meet the ideal values of WHO core prescribing indicators. There is need to improve awareness among doctors about prevalent government policies on generic drugs and rational prescription. This can make essential drugs more cost effective to the public and improve quality of healthcare services.

KEYWORDS: Prescribing indicators, generic drugs, essential drug list, World Health Organization.

Abbreviations: World Health Organization (WHO), Prescription pattern monitoring studies (PPMS), fixed dose combinations (FDC), essential drug list (EDL)

INTRODUCTION

Rational use of drugs is based on the use of right drug, right dosage at a right cost which is well defined by World Health Organization (WHO): "Rational use of drugs requires that patient receives 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".[1]

Irrational prescription is a common worldwide problem. It includes: polypharmacy, overuse of medicines, injections that lead to adverse effects, drug resistance or interactions. It increases morbidity, mortality and economic burden on the patient and wastage of resources.[2]

The prescribing behaviour of the healthcare provider depends upon the inputs received from various sources like patients, academic literatures, professional colleagues, commercial publicity and government regulations.[3]

Generic medication is a pharmaceutical product which is bioequivalent to the patent product regarding dosage form, route of administration, quality, safety, performance characteristics and intended usage. Generic medicines offer cost savings which is a big advantage in a poor country like India. Many patients and their families lose their lifetime savings due to unbearable healthcare cost.[4] In September 2016, the Medical Council of India (MCI) brought an amendment in the Indian Medical Council Regulations (Professional Conduct, Etiquette and Ethics) in clause 1.5.[5] This is related to the use of generic names of drugs by doctors. It stated that 'every physician should, as far as possible, prescribe drugs with generic names legibly and preferably in capital letters and he/she shall ensure that there is a rational prescription and use of drugs. This was

followed by a statement made by the honourable Prime minister of India on 17th April, 2017 regarding the framing of a law to make it mandatory for doctors to prescribe medicines by their generic names.[6] Another circular dated 22nd April, 2017 was released by the MCI to the medical community, asking them to follow the amended clause 1.5 and stated provision for disciplinary action against defaulters.[6]

WHO defines essential drugs as those drugs that meet the health care demands of bulk population, available at all times in adequate amounts and in appropriate dosages, at a price the community can give.[7] Essential Medicine Concept was launched in 1977 and became one of the eighth pillar of WHO's "Priority Health Care needs of the population". Essential drugs are of proven efficiency, safety, cost-effective which meet the needs for prevention and treatment of most prevalent diseases of the population.

Prescription pattern monitoring studies (PPMS) are a tool for assessing the prescribing, dispensing and distribution of medicines. The main aim of PPMS is to facilitate the rational use of medicines.[8] Prescription pattern may be influenced by aggressive pharmaceutical promotion, patients' self-demand for specific drugs or lack of awareness. Previous studies conducted have revealed that clinicians do not follow guidelines properly made by government which leads to irrational use of medicines, antimicrobial resistance, adverse drug reactions and economic burden on the patient.

Prescription pattern is beneficial to promote the rational prescription, use of essential and generic drugs. It supports learning of health professionals by making them aware regarding standard guidelines of prescription.[9] Prescription pattern ensures the quality of patient care and safety.

Prescription audit will improve prescribing patterns based on WHO Prescribing Indicators.[10]

MATERIAL AND METHODS

A cross- sectional study was carried out in the Internal Medicine Department at tertiary care hospital, Post Graduate Institute of Medical Education and Research (PGIMER), Chandigarh patients from January 2019 to December 2019 (3 months). Total 717 prescriptions met the inclusion criteria, assuming that 80% legible prescriptions with 2.5% precision and 95% confidence intervals. Institutional ethics committee clearance was taken. Informed consent from the participating patients was taken. New Patients who visited OPD of Internal Medicine Department and shared the legible prescription were included in inclusion criteria**.**

A copy of prescription forms of patients fulfilling inclusion criteria during the study period was collected after getting consent from the patient. Data from the prescriptions was entered into a questionnaire/checklist They were analysed based on WHO prescribing indicators.

Average number of drugs per prescription, percentage of drugs prescribed by generic names, percentage of injections prescribed per prescription, percentage of antibiotics per prescription, percentage of drugs prescribed from Essential Drug List. All data was entered and analysed in the Statistical computer program, SPSS 20 for Windows. Data was presented as frequency, percentage, mean and standard deviation.

RESULTS

Data from 717 prescription forms who met the inclusion criteria of patients was analysed. The distribution of participants according to gender and age group is shown in (Table 1). The number of male participants (53%) was higher than females (47%). Age range varied from 12 years (minimum) to 80 years (maximum) with mean age 42.36 (SD=15.92).

A total of 1988 drugs were prescribed in the 717 prescriptions included in the study. The mean of drugs prescribed per prescription was 2.77. Around 30% prescriptions were having two drugs per prescription. The number of drugs prescribed per prescription as shown in (Table2).

Most frequently prescribed category of drugs were multivitamins (20.97%). Anti-ulcer drugs (1.26%), antivirals (0.6%) and antimycotics (0.2%) were prescribed out of total number of drugs (N= 1988). Most frequently antibiotics prescribed were cephalosporin (2.56%) followed by macrolides (1%), sulphonamide (0.9%), aminoglycoside (0.6%) and penicillin (0.4%). There was no tetracycline group of antibiotics prescribed in any prescriptions.

Majority of prescriptions (69%) had branded drugs only (Table -3). Around 5% prescriptions had generic names of drugs only. Among the 1988 drugs prescribed to the participants, around 15% were prescribed by generic names, and rest 85% by branded names. Mean number of prescriptions with generic drugs and branded drugs was 0.04 and 0.69 respectively. Mean drugs prescribed per prescription was 2.77 (generic drugs = 0.40 and branded drugs =2.37) Percentage of the number of drugs prescribed from the EDL list in total number of drugs (1988) was 11.12%, (n=221).

With regard to route of drug administration profile, it was observed that the majority of drugs prescribed from total no. of drugs (1988) were orally (92.2%, n=1833) followed by injectable (3.67%, n=73) and topical (2.11%, n=42). Drugs given through inhalation were (0.86%, n=17) and other routes (1.16%, n=23). It was observed that percentage of fixed drug combinations in total drugs prescribed (n= 1988) was 0.6% (n=12). There were no details of drug allergy mentioned in any prescription. It was found that duration of treatment was

mentioned in only 35.84 % (n=257) in total number of 717 prescriptions.

Table 1: Gender and Age wise distribution of patients.

Variable	Number (N=717)	Percentage (%)
Gender		
Males	383	53.42
Females	334	46.58
Age group(years)		
Less than 15	14	1.95
16 -30	189	26.36
31 - 45	208	29.01
46 - 60	190	26.5
61 - 75	107	14.92
Above 75	9	1.26

Table 2: Number of drugs prescribed per prescription.

Prescription containing number of drugs	Number of prescriptions (N=717)	Percentage (%)
One	133	18.55
Two	217	30.26
Three	173	24.13
Four	110	15.34
Five	57	7.95
Five and more	27	3.77

Table 3: Distribution of prescriptions and drugs according to generic and branded.

Parameters	No. of prescriptions N=717 (%)	No. of generic drugs N=290 (%)	No. of branded drugs N=1698 (%)
Prescription with Generic only drugs	35 (4.88)	60 (20.69)	0
Prescription with Branded only drugs	500 (69.73)	0	1290 (75.97)
Prescription with both Generic and Branded drugs	182 (25.39)	230 (79.31)	408 (24.03)

Table 4: Comparison of WHO prescribing indicators obtained in current study with other studies.

S. No.	Indicators	Optimal/ideal value (WHO Prescribing indicators)	Current Study	Pathak et al [19] 2016	Aravamuthan Et al [12] 2017	Azayzih et al [17] 2017	Hussain et al [15] 2018
1	Average number of drugs per prescription	1.6-1.8	2.77	5.11	3.7	2.93	2.91
2	Percentage of Drugs prescribed by Generic name	100 %	14.59%	89.88 %	2.5 %	57.6 %	10.05 %
3	Percentage of prescriptions with an Antibiotic	20.0-26.8 %	15.35%	24.64 %	22 %	17.7 %	19.70 %
4	Percentage of prescriptions with an Injection	13.4-24.1 %	10.18 %	24.05 %	7.2 %	8.1 %	2.20 %
5	Percentage of Drugs prescribed from essential drug list (2015)	100 %	11.12%	23.04 %	--	99.9 %	22.57 %

DISCUSSION

In this study WHO prescribing indicators were assessed by analysing the data of 1988 drugs prescribed in 717 prescriptions. The average number of drugs prescribed per prescription is 2.77. This number is higher than the WHO recommended limit of 1.6-1.8.[10] In some other studies, the average number of drugs per prescription has been reported in the range of 2.8-3.2. Increase in the median number of drugs prescribed per prescription may increase the risk of drug interactions, side effects.

Drugs were prescribed by generic names in only 14.59% prescriptions, which was much lower than the ideal value 100%. Comparison of WHO prescribing indicators with similar studies was done (Table 4).

There may be presumed belief among some residents that bioavailability differences between generic and branded drugs could adversely affect the therapeutic outcomes. To overcome the barrier to generic drug prescription, there is need to include the government policies and guidelines and consistent monitoring of prescription pattern. Drugs prescribed from essential drug list (2015) in our study were 11.11% which is much lower than the WHO standard value 100%.[10] This number is lower as compared to other studies i.e. Kaur et al 92%,[11] Ramesh et al 81%,[13] and Kumar et al 52.9%.[14] It is comparable with similar study of Hussain et al 22.57%.[15] The reason behind this could be lack of knowledge and awareness of the National list of essential medicine.

In our study, 15.35% of prescriptions contained antibiotics. According to WHO, in developing countries, 20-26.8% of prescriptions with antibiotics are expected where infectious diseases are prevalent.[10] Other similar studies reported prescriptions with antibiotics 19.70% in Hussain et al[15] and 22% in Aravamuthan et al.[12] Appropriate use of antibiotics is very important to prevent drug resistance and higher health care cost. Antibiotic policy should be followed and antibiotics should be used after culture sensitivity test.

Most common classes of drugs prescribed were multivitamins, i.e. 20.97% followed by NSAIDS 13.58%. The study conducted by Potharaju et al[16] reported 16% prescriptions with multivitamins.

In this study it was seen that in 10.18% of total prescriptions, injections were prescribed. This figure is lower as compared to WHO prescribing indicators (13.4 %-24.1%).[10] In other similar study of Aravamuthan et al[12] injectable 7.2% were prescribed, which is low. If we compare this with other studies i.e. Karimi et al[18] injectables 41% and Pathak et al[19] injectables 24.05% were prescribed, which is high. Drugs through injections should be prescribed only when deemed necessary to prevent hepatitis, HIV and other blood borne infections.

In the present study, 0.6% number of FDC were prescribed in the prescription. This number is low as compared to other studies, i.e. Sci et al[20] 21.45% and Naveen et al[21] 15.7% were prescribed. Rational prescribing pattern is noted which is a good practice and should be continued to prevent adverse effects and allergies. It also reduces economic burden on the patients.

The present study revealed that route of drug was mentioned in 98.05% prescriptions which indicates rational prescription. Ideally it should be completely 100%. It will help to utilize drugs properly and increases patient satisfaction.

The present study revealed that route of drug administered orally was 92.2%. This figure is high in comparison to other studies i.e. Kaur et al[11] 84.40% and Sci et al[20] 83.59% drugs to take orally. This is a good prescribing practice as non-invasive route of drug is always preferred better than invasive.

To improve prescription pattern residents should undergo training under medical education unit regarding antibiotic policy, EDL, hospital drug formulary and rational prescription. They must be aware of recent government guidelines regarding prescription pattern. Prescription audit may be done to examine the prescription pattern written by doctors. Amrit and Jan Ausadhi scheme should be highlighted with advertisement in newspaper, TV, radio.

This study was limited to medicine department in one hospital for a short duration only. Its recommended to conduct such studies in different departments and multiple healthcare institutions for longer duration to get the actual scenario.

CONCLUSION

The present study shows that the majority of drugs were prescribed by brand names and the use of drugs from EDL was low. The average drugs prescribed per prescription was comparatively high, but the use of antibiotics and injectables was low. There is a need to educate doctors about prevalent policies on generic drugs prescription and national list of essential medicines. Efforts should be made to improve awareness about these policies among doctors by Information, education and communication (IEC) activities which should also include information about Government approved schemes like Jan Aushadi.

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