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Original Research Article

A Study to Evaluate out Patient Prescriptions and Patterns of Drug Used

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Abstract

Introduction: Prescription pattern monitoring studies are tools for assessing the prescribing, dispensing, and distribution of medicines prevailing in a particular locale. The main aim of such studies is to facilitate rational use of medicines. Hence we decided to do this study as this would throw light on deficiencies which require appropriate and sustained interventions to avoid being carried onto the next generation.

Methods: The present Retrospective analytical study is carried out on 500 prescriptions / Subjects / Patients. Prescriptions were analyzed using the WHO core prescribing indicators: Average number of drugs per encounter. Percentage of drugs prescribed by generic name, Percentage of encounters with an antibiotic prescribed, Percentage of encounters with an injection prescribed, Percentage of drugs prescribed from essential drugs list or formulary. In addition, quality of prescription writing was also assessed in terms of legibility and completeness of information e.g. whether diagnosis, strength, frequency and duration of drug prescribed was written or not.

Results: A large number of fixed dose combinations (46.67) had been prescribed. In this study we found 69.51% prescriptions incomplete in one or more aspect that is, in term of either absence of diagnosis /complains in the prescription or absence of duration, frequency and strength of the drug prescribed. A diagnosis was not mentioned in 418 (25.55%) prescriptions. Strength of the medicine was not mentioned for 573 (35.0%) drugs, while frequency of intake was omitted for 198(12.09%) and duration of therapy was missing in 483 (29.5%) of the drugs. All these prescriptions were considered as incomplete, amounting to 1138 (69.51%) incomplete prescriptions.

Conclusions: Our audit did bring out the areas where there is a scope for improvement that is generic prescribing, use of essential medicines, restraint in use of irrational fixed dose combinations and better quality of prescription writing in terms of completeness of information provided and legibility of prescriber details.

Keywords: Prescription, Audit, OPD, FDC, WHO, Drugs

Background

The rational use of drugs is imperative for an effective and efficient health-care system. Prescribing drugs is the most common therapeutic approach offered to patients by the doctors. Evaluation of drug prescription pattern is an important aspect of patient care, which also serves as a measure of the quality of care provided. It is therefore imperative that this tool be used to make the best possible use of a valuable resource that is a drug [1]. One way of ensuring this is by regular and periodic audits of prescriptions. Prescription pattern monitoring studies are tools for assessing the prescribing, dispensing, and distribution of medicines prevailing in a particular locale. The main aim of such studies is to facilitate rational use of medicines [2].

By throwing light on problems of irrational prescribing, a prescription audit helps in promoting most efficient use of therapeutic agents, reducing prescribing costs by reducing unnecessary use of antibiotics and injections in prescriptions, encouraging generic prescriptions and reducing polypharmacy. This in turn improves patient care and management and reduces noncompliance and wastage of valuable resources [1,2].

Besides irrational prescribing, many ADEs are caused by medication errors, which in turn are often due to errors in prescription writing, like illegibility, ambiguous abbreviations, lack of date of prescription, dose, route, frequency of administration and duration of treatment [1,2].

At the prescriber level, a prescription audit enables continuing professional and personal development of the practitioner and helps to identify, analyze and plan future development needs. Since a prescriber is clinically and legally responsible for his/her own prescription, every practioner needs to demonstrate that they prescribe effectively and safely, by regularly analyzing and changing their practice where necessary.

Prescription audit provides a means of developing a personal learning plan for self-appraisal and the appraisal process. Well-documented evidence shows that audits and feedback on prescribing performance can result in a small to moderate change in the prescribing practices of physicians (ranging from a 16% decrease to 70% increase in compliance with prescription guidelines) [3]. A review by the Cochrane Collaboration concluded that intensive feedback may have a greater potential given that the tested “feedback” interventions are usually confidential and contain only benchmarking on average.

Prescription pattern monitoring studies are tools for assessing the prescribing, dispensing, and distribution of medicines prevailing in a particular locale. The main aim of such studies is to facilitate rational use of medicines. Hence we decided to do this study as this would throw light on deficiencies which require appropriate and sustained interventions to avoid being carried onto the next generation.

Methodology

The present Retrospective analytical study is carried out on 500 prescriptions / Subjects / Patients .This Retrospective Analytical study involved Prior Consent from Chemists / Pharmacists of the Local Randomly selected Medical Shops near to Secondary & Tertiary care hospitals including ours to see the prescriptions from their Medical Records . Prescriptions were randomly chosen to be analyzed for the WHO prescribing indicators from September 2019 to June 2020. Two well-trained clinical pharmacists were involved in collecting data on prescribing indicators. Each prescription was regarded as single-patient encounter for calculation of the required parameters.The study was

conducted within ethical standards. Shops and Prescriptions were selected by simple random sampling from the pharmacy and the necessary information was filled in a pre-validated format. Prescriptions were analyzed using the WHO core prescribing indicators [4].

1. Average number of drugs per encounter - Average was calculated by dividing the total number of different drug products prescribed, by the number of encounters surveyed. Whether the patient actually received the drugs was not considered relevant in calculating this indicator.
2. Percentage of drugs prescribed by generic name - 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.
3. Percentage of encounters with an antibiotic prescribed - Percentage was calculated by dividing the number of patient encounters during which an antibiotic was prescribed, by the total number of encounters surveyed and expressed as a percentage.
4. Percentage of encounters with an injection prescribed - percentage was calculated by dividing the number of patient encounters during which an injection was prescribed, by the total number of encounters surveyed, multiplied by 100.
5. Percentage of drugs prescribed from essential drugs list or formulary- percentage was calculated by dividing the number of products prescribed which were on the essential drugs list or local formulary, by the total number of products prescribed and multiplied by 100.

In addition, quality of prescription writing was also assessed in terms of legibility and completeness of information e.g. whether diagnosis, strength, frequency and duration of drug prescribed was written or not.

Statistical Analysis

The data obtained were analysed in detail using the statistical software SPSS 21 for Windows. Data are reported as mean ± SD or proportions and 95% confidence intervals. Statistical analysis was performed by tests of significance. The collected data was analyzed in Microsoft Excel. Statistical analysis was done to obtain frequency, average/mean, and percentage.The difference was considered as statistically significant for a p value of less than 0.05.

Result

Total number of prescription analyzed were 500 which contained a total of 1637 drugs i.e. on an average 3.27 drugs per prescription (Table 1). Out of 500 prescriptions 91 (18.2%) contained 1 drug, 105 (21%) 2 drugs, 214 (42.8%) 3 drugs, 75 (15%) 4 drugs and rest contained more than 4 drugs. Generic names of drugs were used in only 48 (2.93%) out of the all drugs prescribed, while the rest 1589 (97.07) were branded (Table 1).

Table 1: Comparing outcome of the present study with standard derived as ideal

WHO prescribing indicators	Frequency (n)	Average/Percentage (%)	Ideal [15]
Average number of drugs per encounter		3.27	1.6- 1.8
Drug prescribed by generic name	48	2.93%	100%
Encounters with an antibiotic prescribed	359	21.9 %	20.0 - 26.8%
Encounters with an injection prescribed	31	1.89%	13.4- 24.1%
Drugs prescribed from NLEM	883	53.94%	100%

Out of 1637 drugs prescribed, 78.0% were given by oral route, 15.5% by topical route, 2.11% by inhalational route and only 1.89% by injections. In 2.5% of the medicines prescribed, route of administration was not mentioned.

A total of 359 antimicrobials were prescribing (Table 1). Of these, 287 (79.94%) prescriptions contained an antibacterial and the rest contained antifungals (41) and/or antiprotozoal (31). Amongst the antibacterial, amoxicillin-clavulinic acid fixed dose combination was prescribed in the majority followed by azithromycin, clindamycin and ofloxacin.

Table 2: Antimicrobials prescribed

S. No.	Name	Number of antimicrobials (n)#359
I	Antibacterial	287
1.	Amoxicillin - clavulanic acid	79
2.	Azithromycin	64
3.	Clindamycin	51
4.	Fluoroquinoles*	34
5.	Tetracyclines**	18
6.	Cephalosporins	21
7.	Miscellaneous	20
II	Antifungal	41
III	Antiprotozoal	31
	Total (I +II+III)	359

#One prescription may contain more than one antimicrobial
*Ofloxacycline-10, Levofloxacin-4, Ciprofloxacin-3
**Doxycycline-6, Minocycline-3

Large proportions (39.1%) of drugs prescribed were not included in the National List of Essential Medicines (NLEM). We were not able to find generic names of rest drugs 7% and hence unable to determine if they are included in the NLEM.

Fixed Dose Combinations (FDCs) comprised 764 (46.67%) of the total drugs prescribed.

A diagnosis was not mentioned in 418 (25.55%) prescriptions. Strength of the medicine was not mentioned for 573 (35.0%) drugs, while frequency of intake was omitted for 198(12.09%) and duration of therapy was missing in 483 (29.5%) of the drugs. (Table 3) All these prescriptions were considered as incomplete, amounting to 1138 (69.51%) incomplete prescriptions.

Table 3: Duration, Frequency & Strength of Drugs

	Written[n, (%)]	Notwritten [n, (%)]	Total Drugs
Duration	1154 (70.5%)	483 (29.5%)	1637
Frequency	1439 (87.9%)	198 (12.1%)	1637
Strength	1064 (65%)	573 (35%)	1637

Discussion

A major concern related to irrational prescriptions is unnecessary use of antibiotics and the overuse of injections [5]. Although it is a global problem, irrationality in prescriptions is seen to be particularly rampant in low- and middle-income countries [5,7]. and is associated with many avoidable adverse drug events and more importantly the development of antimicrobial resistance (AMR). Increased

AMR and the spread of blood-borne infections has triggered a surge of research into interventions on prescribing practices [3,8-11].

Greater health care costs, loss of productivity and poorer health outcomes associated with the irrational use of antibiotics and injections have also attracted great concern globally [12].

Although there is no standard criteria to define what exactly should be the number of drugs per prescription to consider it as polypharmacy, generally five or more drugs per encounter can be considered as polypharmacy [13,14].

In our study only 3% prescriptions carried more than 4 drugs & 15% having 4 drugs. The average number of drugs per prescription were 3.27. This average is close to the recommended limit of 2.0 as mentioned by WHO [4], although it is out of the range of standard (1.6 to 1.8) derived as ideal [15]. This average is relatively low as compared to other similar studies done at tertiary care center of India [16,17].

Only 2.93% drugs were prescribed by generic name which is far away from the standard (100%) derived as ideal [15]. but comparable to other Indian studies that reported 4.1% [16] and 3.7% [17] usage of generic drugs. This is despite the directive by the government of India to prescribe by generic name only. The low percentage of generic prescribing can be partially explained by the widespread concern over quality of generic medicines in India [19].

Most of the drugs were given by oral route as expected as it was an OPD based prescriptions audit. Only 1.89% drugs were given by parenteral route which is lower than the standard (13.4 - 24.1%) derived to serve as ideal [15] 21.9% of the prescription had antibiotics prescribed which is within the range of standard (20.0 - 26.8 %) derived to serve as ideal [15] Thus our study showed that the parenteral route and antibiotics was not being used unnecessarily to treat patients attending local outpatient OPDs.

39.1% drugs prescribed were not from the National List of Essential Medicine 'NLEM' [19] In this study habit of prescribing from NLEM by target population was shown to be less as compare to other Indian studies [16,19]. This might be due to lack of awareness about NLEM or the attitude towards writing drugs from NLEM has not yet been developed

A large number of fixed dose combinations (46.67) had been prescribed and almost half amongst them were not approved by DCGI [20].

In this study we found 69.51% prescriptions incomplete in one or more aspect that is, in term of either absence of diagnosis /complains in the prescription or absence of duration, frequency and strength of the drug prescribed. A diagnosis was not mentioned in 418 (25.55%) prescriptions. Strength of the medicine was not mentioned for 573 (35.0%) drugs, while frequency of intake was omitted for 198(12.09%) and duration of therapy was missing in 483 (29.5%) of the drugs. (Table 3) All these prescriptions were considered as incomplete, amounting to 1138 (69.51%) incomplete prescriptions.

Our study showed that habit of writing drug strength is less as compared to writing duration or frequency.

Conclusion

This prescription audit revealed that polypharmacy and overuse of injections were not a concern in the target prescribers. Use of antimicrobials was also within reasonable limits, given the fact that the audit was carried out in a tropical country where infectious diseases make up a significant proportion of medical diagnoses.

But our audit did bring out the areas where there is a scope for improvement that is

generic prescribing, use of essential medicines, restraint in use of irrational fixed dose combinations and better quality of prescription writing in terms of completeness of information provided and legibility of precriber details.

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