Print ISSN: 2319-2003 | Online ISSN: 2279-0780

IJBCP International Journal of Basic & Clinical Pharmacology

DOI: http://dx.doi.org/10.18203/2319-2003.ijbcp20195274

Original Research Article

Outpatient prescription audit in a tertiary care hospital at Puducherry

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Received: 19 September 2019
Revised: 21 October 2019
Accepted: 25 October 2019

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ABSTRACT

Background: Rational use of medicines promotes good health practices and prevents inappropriate use of medicines, polypharmacy, unnecessary use of antimicrobials, injections, and also encourages use of medicines from essential medicine list and dispensing by generic names. The aim of the study was to analyze the outpatient prescriptions of a tertiary care centre by utilizing World Health Organization (WHO) core drug use prescribing indicators.
Methods: A retrospective observational study was conducted in a tertiary care health setup at Puducherry, South India. Outpatient prescriptions from all the major clinical departments were analyzed using WHO prescribing indicators and they were compared with some similar studies.
Results: The average number of drugs per prescription was 2.74. The percentage of prescriptions with antibiotics was 20.33% and the percentage of prescriptions with injections was 0.16%. The percentage of drugs prescribed by generic names and from essential medicine list was 83.13% and 87.9 respectively. Further antibiotic utilization was found to be higher in the department of ENT (56.67%), respiratory medicine (45%) and surgery (40%). Percentage of drugs prescribed by generic names in pediatrics and respiratory medicine were found to be 67.88% and 65.27% and percentage of drugs prescribed from essential medicine list in dermatology was 69.62%.
Conclusions: Prescription pattern followed in our Institute almost adheres to the guidelines laid down by the WHO. Moreover, it is also implied that a routine audit of this type should be done in health care setups to ensure that they adhere to the WHO guidelines for better health care.

Keywords: Essential medicine, Outpatient prescriptions, Prescribing indicators, Prescription audit

INTRODUCTION

The World Health Organization (WHO) defines rational use of medicines as "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community".[1] Polypharmacy, antibiotic misuse, use of parenteral formulations when oral preparations are appropriate, prescription not in adherence to clinical guidelines and inappropriate self-medication are examples of irrational medicine use.[1] Periodic monitoring of drug prescription, dispensing and patient use helps in assessing irrational use of medicines. Drug utilization study and studies on drug consumption are some of the methods to identify irrational medicine use. The WHO core drug use prescribing indicators were devised to assess irrational drug use.

Prescription audit is an effective approach to improve the quality of health care provided to the patients by the Physicians.[2,3] Several studies have shown that prescription audit had a positive impact on clinicians by increasing their proficiency and satisfaction on prescribing.[4-7] Prescription audit gives an idea about the prescription pattern followed in a health care setup, and highlights any deviation from the standard guidelines laid down by the WHO. Failure may conceal any inappropriateness happening at the level of the health care set up and can adversely affect the health care outcomes and in turn jeopardize patient's health.[8-10] It

may also negatively impact the health cost burden to the patients and the government.[8,9]

The ultimate aim of the prescription audit is to monitor and assess prescriptions and if required changes may be suggested on prescribing habits of a physician for a rationale and cost effective health care.[11] Routine prescription audit is also insisted by medical regulatory bodies of various countries. Hence the study was planned with the objective to analyze the outpatient prescriptions of a tertiary care centre by utilizing WHO core drug use prescribing indicators.

METHODS

It was a retrospective observational study conducted at Indira Gandhi Medical College and Research Institute, a tertiary health care setup at Puducherry, South India. Outpatient prescriptions from major clinical departments from April 2017 to September 2017 (6 months) were analysed. Major clinical departments which were considered for prescription audit were general medicine, general surgery, obstetrics and gynaecology, paediatrics, psychiatry, ENT, dermatology, orthopaedics, respiratory medicine and ophthalmology. Systematic random sampling was followed for collecting 60 prescriptions from each clinical department. A total of 600 prescriptions (encounters) from all clinical departments were analysed by using the WHO prescribing indicators. They are as follows.

Average number of medicines prescribed per patient encounter=

$$\frac{\text{Total no. of different drug products prescribed}}{\text{Number of encounters surveyed}}$$

Percentage of encounters with an antibiotic prescribed=

$$\frac{\text{No. of patient encounters during which an antibiotic was prescribed}}{\text{Total no. of encounters surveyed}} \times 100$$

Percentage of encounters with an injection prescribed=

$$\frac{\text{No. of patient encounters during which an injection was prescribed}}{\text{Total no. of encounters surveyed}} \times 100$$

Percentage of drugs prescribed by generic name= $\frac{\text{No.of drugs prescribed by Generic name}}{\text{Total no.of drugs prescribed}} \times 100$

Percentage of drugs prescribed from essential medicines list or formulary=

$$\frac{\text{The no.of products prescribed,which are listed on the essential drug list}}{\text{Total no.of products prescribed}} \times 100$$

In addition to the above, 60 prescriptions from each clinical department were individually analyzed by the WHO prescribing indicators by the formulas as mentioned above. The Essential Medicines list followed for the analysis is the National List of Essential Medicine 2015 Version.

The data were entered in Microsoft Excel 2010 and analysis was done using mean and proportions. The study was approved by the institutional research and ethics committee.

RESULTS

Prescription audit of major clinical departments (600 prescriptions) conducted by utilizing WHO core drug use prescribing indicators in the tertiary health care setup had shown that, the average no. of drugs per prescription (encounter) was 2.74. The percentage of prescriptions with antibiotics prescribed was 20.33% and the percentage of prescriptions with injections was 0.16%. The percentage of drugs prescribed by generic names was 83.13% and the percentage of drugs prescribed from essential medicine list was 87.9% [Table 1].

Table 1: Prescription audit of major clinical department using WHO prescribing indicators.

Indicator	Result
Average number of drugs per encounter	2.74
Percentage of encounters with an antibiotic prescribed	20.33
Percentage of encounters with an injection prescribed	0.16
Percentage of drugs prescribed by generic name	83.13
Percentage of drugs prescribed from essential drugs list	87.9

Results of analysis of prescriptions of individual department using WHO prescribing indicators, are as follows. The average number of drugs per encounter in the department of medicine was 3.75 and it was slightly high when compared to the standard guidelines and other departments. Percentage of antibiotics utilized was found to be higher in the department of ENT (56.67%), respiratory medicine (45%) and surgery (40%). None of the departments prescribed injections for out-patients except Department of Obstetrics and Gynecology (OBG) (1.66%). Percentage of drugs prescribed by generic names in the Department of Pediatrics and Respiratory medicine were found to be 67.88% and 65.27% respectively which was less when compared to other departments. Percentage of drugs prescribed from Essential medicine list in the Department of Dermatology had a score of 69.62% which was lower when compared to other departments [Table 2].

Table 2: Individual prescription audit using WHO prescribing indicators of major clinical departments.

	Average no. of drugs per encounter	% encounters with antibiotics	% encounters with injections	% drugs prescribed by generic name	% drugs prescribed from essential medicine list
Standard as per WHO guidelines	**≤3**	**<30**	**<10**	**100**	**100**
Medicine	3.75	13.33	0	86.67	87.56
Surgery	2.2	40	0	78.03	84.84
OBG	1.88	15	1.66	82.3	93.8
Pediatrics	1.81	13.33	0	67.88	87.16
Psychiatry	2.85	0	0	93.57	81.29
ENT	2.75	56.67	0	82.42	86.67
Dermatology	2.63	16.67	0	84.81	69.62
Orthopedics	2.9	0	0	99.43	99.43
Resp. medicine	4.8	45	0	65.27	89.58
Ophthalmology	1.85	3.33	0	90.99	99.09

DISCUSSION

A prescription audit is an effective way of assessing the competency of a health care provider and it promotes the rational use of medicines on a health care seeker. In the present study, the average no. of drugs per prescription was 2.74. This indicator cautions about polypharmacy. Polypharmacy may interfere patient's compliance to the prescribed medications and may also predispose to the risk of drug drug interactions.[12-14] The cost involved in the management of drug drug interactions can lead to huge economic burden on the patients and also the health care providers.[15-17] Since the average number of drugs prescribed per encounter was less than the WHO recommendations, the risk of drug interactions and its attendant burden are at a meager level in study centre.

The percentage of prescriptions wherein antibiotics were used was 20.33 in our set up (WHO standards<30%) which is appreciable. This variable was devised by the WHO to avoid indiscriminate use of antimicrobials which in turn helps to reduce the risk of antimicrobial resistance.[18-20] Lesser incidence of resistance reduces the health care related expenditures, as the cost involved in managing antimicrobial resistance is quite exhaustive.[21]

An appreciable score of 0.16% against the WHO standards of <10% pertaining to the prescriptions with injections was observed in our study. Avoiding unnecessary injections when equivalent oral replacements are available can lead to lesser time spent on each patient in busy outpatient department (OPD), which causes lesser inconvenience to the patients and it is also cost effective.

Majority of the drugs in the present study were prescribed by generic name (83.13%) (WHO standards 100%). Prescribing by generic names gives the pharmacist a choice of dispensing a cheaper pharmaceutical product. Hence it makes the treatment cost effective and rational. Prescribing by generics can also avoid dispensing errors by the pharmacists due to similar sounding brands.[22] But, there is a trend of prescribing by trade names among health carers. The reason for this could be undue drug promotion by pharmaceutical industries for promoting their brands, by influencing the doctors with attractive incentives.[23-26] Further practitioners have the habitual practice of prescribing drugs with their familiar trade names. Lack of time in the crowded OPDs, and ease of documentation can also contribute to the latter fact.[27] Various national and international regulatory bodies recommend generic drug prescribing for the above mentioned reasons.[28]

The percentage of drugs prescribed from essential drug list in our center was 87.9 %, (WHO standards 100%) which indicates fairly enough drugs were prescribed from the essential medicine list. This trend encourages the health policy makers in economical investing on few but essential drugs which meets the priority health care needs of the majority of the population. Another implication of the above trend is that, "prescribing and dispensing becomes easier for health care professionals if they have to know about fewer items".[1] Prescribing from essential medicine list also brings down the economic burden on the health care seekers, because the cost of branded prescription medicines and their newer alternatives can be overwhelming and unaffordable.[29] The reason for a little deviation in the above variable could be because in a tertiary care institute not all the drugs needed for treating various clinical conditions are available in Essential Medicines List. Luring the physicians to prescribe their newer drug products by pharmaceutical companies can also be a contributing factor to the above mentioned fact.[30] The choice of drugs by the physician may also influence the prescription from drugs other than those listed in Essential Medicines List.

Individual departmental analysis of prescriptions using WHO core drug use indicators, in our health care set up revealed the following findings. The average no. of drugs

per encounter in the Department of Respiratory Medicine is more than 3. Most of the cases attending the respiratory medicine OPD were infective in etiology, which necessitate the use of antimicrobials, antacids to suppress the ensuing gastritis of antimicrobials, as well as other additional drugs to improve the symptoms of such infections, which all leads to increased usage of drugs per patient. A similar observation of increased cases with infectious etiology in the respiratory medicine department was found in the study done by Khan.[31]

Similarly, the usage of antimicrobials is more in the department of ENT, Respiratory medicine, Dermatology and surgery. This may be due to increased frequency of cases with infectious etiology attending the OPDs of ENT, Respiratory medicine and dermatology departments.[31-35] High percentage of antimicrobials used in the department of surgery may be because of the practice of utilizing antimicrobials for preoperative and postoperative prophylaxis. Many studies had substantiated the same fact.[36-38]

The percentage of drugs prescribed from non EML was found to be more in dermatology department. This may be due to the fact that wide variety of skin disorders presents to the OPD, which necessitates the use of drugs from non EML also.

A comparison of various similar studies done utilizing WHO core drug use prescribing indicators with the present study is depicted in Table 3.[39-47]

The prescription pattern followed in our health care setup is almost in accordance with the WHO guidelines. It indirectly implies that the judgment of the health care providers in providing the right health care and the wellbeing of the health care seekers are not compromised in our Institute.

The success of our tertiary health care setup in adhering to the WHO guidelines gives impetus to other health care setup also to adhere with WHO prescription guidelines. This in turn translates in to optimal health care with better pharmacoeconomic implications.

Table 3: Comparison of WHO prescribing indicators between various studies and present study.[39-47]

	Average No. of drugs per encounter	% encounters with antibiotics	% encounters with injections	% drugs prescribed by generic name	% drugs prescribed from essential medicine list
Standard	**≤3**	**<30**	**<10**	**100**	**100**
Study centre	2.74	20.33	0.16	83.13	87.90
Hazra[39]	3.2	72.8	3.9	46.2	45.7
Banerjee[40]	2.58	22.4	4.49	34.97	58.47
Rishi[41]	3.65	77.25	7	51	-
Gopalakrishnan[42]	4.54	55	81	62	37.3
De Costa[43]	2.76	63.5	13.8	48.4	66.8
Shelat[44]	3.38	54	18	6.7	70
Aravamuthan[45]	3.7	22	7.2	2.5	99.5
Rehan[46]	2.47	33.9	0.9	49.5	84.2
Potharaju[47]	3.1	35	25	60	46

CONCLUSION

The prescription audit done in our Institute reveals that the prescription pattern followed in our institute almost adheres to the guidelines laid down by the WHO. Moreover, it is also implied, that a routine audit of this type should be done in health care setups to ensure that they adhere to the WHO guidelines for better health care.

ACKNOWLEDGEMENTS

We would like to thank the head of the department of the various clinical departments of our Institute for permitting us to conduct the audit in their respective departments and the staff of department of pharmacy for the help rendered in data collection.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Babu LN, Maharani B, Jafrin LA, Priyadarshini P, Monisha P, Sivagnanam G. Outpatient prescription audit in a tertiary care hospital at Puducherry. Int J Basic Clin Pharmacol 2019;8:2655-60.