

Assessment of WHO Core Drug Use Indicators in a Government Teaching Hospital of Assam: Evidence from Prescription Audit Data



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ABSTRACT

Background: With the rise of irrational drug prescriptions, leading to polypharmacy, increased health care costs, drug interactions, and risks of adverse drug reactions, irrational antibiotic prescribing, overuse of injections, and hospitalization, it has become important to monitor drug use patterns.

Materials and methods: With the objective to assess the drug use indicators of a government teaching hospital of Assam using WHO Core Drug Use Indicators, 700 prescriptions from OPDs of various specialties were assessed prospectively from the hospital dispensary and details of core drug use indicators were noted and analyzed for each in a proforma as per WHO recommendation on investigating drug use in health care facilities. Descriptive statistics were used thereafter to express the results.

Results: The WHO core prescribing indicators analysis revealed that the average number of drugs per encounter was 3.6. The percentage of drugs prescribed by generic name was 37%, with only 6% being injectable drugs; however, 39.14% of prescriptions included one or more antibiotics. Only 37% of the drugs prescribed were from the NLEM.

Conclusion: This study highlights that only prescriptions involving injectable drugs were in accordance with WHO recommendations, while the other parameters exceeded the WHO-recommended values.

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INTRODUCTION

With the rise of irrational drug prescriptions, leading to polypharmacy, increased health care costs, drug interactions, and risks of adverse drug reactions, irrational antibiotic prescribing, overuse of injections, and hospitalization, it has become important to monitor drug use patterns. Polypharmacy, inappropriate use of antimicrobials, overuse of injections, and failure to prescribe as per clinical guidelines shall be labeled as irrational use of medicines.¹ The drug utilization pattern can be reliably assessed by the World Health Organization (WHO) core prescribing indicators, which is a highly standardized tool to identify the drug use problem areas and alert physicians to rational prescribing.²

Interventions to promote rational use of medicines are: framing appropriate policies on medication use, use of clinical guidelines, adaptation of National List of Essential Medicines, incorporating committees for drug use in respective hospitals, initiating of case-based pharmacotherapy modules in undergraduate curriculum, continuing medical education as an essential component for licensure renewal, supervision, timely audit of prescriptions and feedback to the physicians, use of Drug Information Centers

(DIC) for prescribing and public education, refraining from financial incentives, adhering to guided regulations and sufficient government expenses to ensure round-the-clock availability of medications and health care providers.³

As part of the monthly prescription audit for the hospital, this study aims to analyze the trends in drug prescribing patterns in a tertiary teaching hospital in Assam, adopting the WHO-core prescribing indicators.

MATERIALS AND METHODS

A cross-sectional study was carried out in the dispensary of a teaching government hospital. 700 prescriptions were analyzed (WHO "How to investigate drug use in health facilities"² document advocates minimum 600 prescriptions) using simple random sampling for the WHO core prescribing indicators in the process of routine monthly prescription audits for the hospital. The investigator visited the hospital dispensary every day for a month and collected digital photographs of the prescriptions, irrespective of the department and diagnosis, after the prescribed drugs were dispensed.

The WHO guidelines and methodology² were followed as mentioned in the document

to ensure data reliability. Data was collected and recorded in a data collection form, designed to contain the parameters for evaluation, excluding details of patient identifiers. Completeness of the prescriptions was also assessed along with the core prescribing indicators, which include patient identifiers (Name, Age, Sex, Address, Religion), physician identifier (name/signature), instructions (review, follow-up advice), and dose regimen.

All the values were recorded and analyzed using Microsoft Excel. Data are presented using descriptive statistics, including means, frequencies, and percentages.

RESULTS

A total of 700 outpatient prescriptions were assessed. On analyzing the dosage regimes, the total drugs prescribed were found to be 2,521, of which only 1,080 drugs were available in the hospital dispensary (1.54 drugs per prescription were available). Hence, 42.8% of drugs were actually dispensed, and the remaining 57.2% of prescription drugs either had to be bought from pharmacies or, if expensive, they might be skipped by the poor who cannot afford them, thereby leading to incomplete treatment.

The WHO prescribing indicators of the 700 analyzed prescriptions are listed in Table 1.

Parts of the prescription containing patient particulars (Name, Age, Sex, Date of consultation, OPD registration number, Address, Religion) were printed at the ticket-dispensing counter and hence were 100% present in all prescriptions.

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Table 1: WHO prescribing indicators

Core prescribing indicators	Value	WHO optimal values
Average number of medicines per encounter	3.6 drugs per prescription	1.6–1.8
Percentage of prescriptions with generic name	37%	100%
Percentage of drugs prescribed from essential medicines list	45.3%	100%
Percentage of encounters with an injection prescribed	6%	13.4–24.1%
Percentage of encounters with one or more antibiotics	39.14%	20–26.8%

Table 2: Clinical examination details

Variables	Percentage (%) mentioned
Brief history/chief complaints of the patient	39.5
Salient features of clinical examination	32.5
Presumptive/definitive diagnosis	36.8
Any history of allergy to food/medication mentioned?	0

Table 3: Completeness of prescription

Variables	Percentage (%) mentioned
Percentage of prescriptions having medicines prescribed in generic name	37
Percentage of prescriptions having medicine schedules/doses written	95.5
Duration of treatment written	96.4
Date of next visit/review written	70.8
Follow-up advice and precautions (do's and don'ts) mentioned	24.5

However, to maintain the privacy of the study participants and the confidentiality of their personal information, the data were excluded from the data collection format. Out of all, 58 pediatric prescriptions were encountered, and weight was mentioned for only 46 of them (79.3%). Handwriting was legible in 82.1% of prescriptions, with 7.42% of them lacking a legible doctor's signature/name.

Clinical examination details of the patient mentioned are listed in Table 2. The completeness of the prescription concerning the dosage regimen is mentioned in Table 3. Routine investigations were prescribed to 43.8% of the patients. 36.2% of prescriptions included at least one Vitamin, tonic, or enzyme.

DISCUSSION

In this study, the WHO core prescribing indicators and completeness of prescriptions were assessed. Our observations were compared to studies conducted by Priyadarsini et al.,⁴ Meenakshi et al.,⁵ Özdamar et al.,⁶ Karki et al.,⁷ and Asmamaw et al.⁸ (Table 4) for different parts of the world.

Our study has the highest record for the number of drugs per prescription amongst all other studies compared with,^{4–8} although the availability of drugs was not at par. In our study, although only 37% of prescriptions had generic name drugs prescribed, the lowest percentage of 0 (zero) and the highest

87.5% was observed in other studies,^{4,6} respectively. Also, in this study, only 39.14% of the prescriptions had drugs being prescribed from the ELM, which is much lower than the WHO standard value (100%). Whereas, a highest of 88% and a lowest of 17.5% was seen with other studies,^{4,5} respectively. Generic drug prescribing helps decrease the cost of treatment burden for the patients, as most of them are available in the hospital dispensary free of cost, as per the NLEM. Hence, physicians should be motivated to prescribe generic drugs from the ELM.

Although our study had 45.3% of OPD prescriptions with an antibiotic (greater than the WHO optimal value), it is still less than those compared to other studies.^{4,8} This finding may be due to a lack of prescribing practice as per the standard treatment guidelines.⁹ Rational antibiotic prescribing can be achieved by adapting and implementing diagnostic and treatment guidelines for the hospital.

In the current study, the percentage of encounters with an injection was 6%, which is well below the WHO optimal value of 13.4–24.1%. This finding is consistent with the studies conducted by Priyadarsini et al.,⁴ Meenakshi et al.,⁵ Özdamar et al.,⁶ Karki et al.,⁷ and Asmamaw et al.⁸ The probable reason for the lower prevalence of injections could be the availability of cheaper, noninvasive, and less expensive oral medications over the parenteral route. Moreover, patients visiting outpatient services are more compliant with

oral medicines until it is a regular and easily administered injection (such as tetanus toxoid, antirabies vaccine, etc.).

All the sampled prescriptions in this study (700 prescriptions) were complete with the patient identifier data (100%) as a "Scan and Share" method, using ABHA ID to generate the OPD prescriptions for all departments. It is a convenient, faster, and accurate method used. Similar was the finding for studies conducted by Meenakshi et al.,⁵ Singh et al.,¹⁰ and Mercy et al.,¹¹ pertaining to printed details of the patient. Whereas, audits of handwritten prescriptions were usually found to be incomplete for the patient's details.¹²

The clinical examination details were mostly incomplete upon analysis in this study, and a similar finding was observed in other studies.¹⁰ This could be due to hectic OPDs with heavy patient loads, where the doctors prefer verbal communication rather than noting the details. Prescriptions were also found to be incomplete regarding medication dose, schedule, duration of treatment, dos and don'ts, review, follow-up advice, and precautions. Such omissions were also seen in other studies^{8,10} at various rates, which can lead to therapeutic failure, antibiotic resistance, drug reactions, incorrect intake of dose, incorrect duration of treatment, and omission of dose. Enrollment into the prescribing skills course designed for Indian medical graduates, sensitization of clinicians on both legal and ethical aspects of completeness of prescriptions, and discussion and dissemination of prescription audit data to all clinicians can help boost the writing of proper and complete prescriptions in daily practice.

The illegible handwriting of doctors has been infamous for ages.¹³ In this study, 17.9% of the prescriptions had illegible handwriting, which was in accordance with the study by Singh et al.¹⁰ This could lead to adverse drug reactions, medication errors, and even wrong dispensing of the drugs by the pharmacist. Contrary to this, in a study conducted by Meenakshi et al.,⁵ 97.8% of prescriptions were written legibly. Also, 7.42% of the prescriptions in our study lacked a legible doctor's signature. Meanwhile, in the study by Singh et al.¹⁰ and Meenakshi et al.,⁵ the

Table 4: Comparison of the WHO prescribing indicators with other studies

Prescribing indicators	Our study	Priyadharshini et al. ⁴	Meenakshi et al. ⁵	Özdamar et al. ⁶	Karki et al. ⁷	Asmamaw et al. ⁸
Average no. of drugs per encounter	3.6	2.5	2.38	2.9	2.6	1.83
Percentage of drugs prescribed by generic name	37%	87.5%	55.4%	0	41.4%	65.3%
Percentage of encounters with an antibiotic	39.14%	62.5%	7.3%	2.6%	11.7%	63.8%
Percentage of encounters with an injection	6%	0	10.5%	10.7%	3.8%	11.5%
Percentage of drugs prescribed from ELM	45.3%	17.5%	88%	33.8%	34.3%	78.9%

value is even higher, with 34.2% and 20.3% of prescriptions having illegible signatures, respectively. This value was highest in a study conducted by Asmamaw et al.,⁸ where 94% of prescriptions had a prescriber's signature. These details of the prescribing doctor are important to validate the authenticity of the prescriptions. No (zero) prescriptions from our OPD had doctor's registration numbers mentioned, while just 3.3% and 46.77% mentions were seen in other studies, respectively.^{10,11}

Routine investigations were ordered in 43.8% of our prescriptions, while 63.87% of investigations were ordered in the study conducted by Mercy and Antony.¹¹ This study provides constructive feedback to the hospital administration on implementing strategies and establishing guidelines for prescribing more generic drugs and appropriate antibiotics as per clinical guidelines. Further, the need for more legible and complete prescriptions still stands. Moreover, with continued regular prescription audits, the drug use pattern and behavior shall improve. It is also recommended that the hospital dispensary keep stocks of NLEM medicines updated and make them available for the patients at all times, which shall not only reduce the cost burden on the patients but also encourage physicians to prescribe from the NLEM for both OPD and IPD patients.

Inability to assess the indicators for patient-care and complementary drug use are the limitations of the study. However, the prospective design helps collect data directly from the patients and prevents data duplication as well.

CONCLUSION

For cost-effective health care and to provide sustainability to improve patient outcomes, WHO advocates the "Responsible use of Medicines," which indicates that appropriate use of medicines for optimum benefit to the patients can be achieved by aligning existing resources and healthcare facilities with the stakeholders.¹⁴ Regular audits of the OPD prescriptions have now provided insightful observation reports and continuing medical education on rational prescriptions, with adherence to clinical protocols and therefore improving and ensuring the quality of healthcare.

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