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Prescription Audit using WHO Core Drug Use Indicators in a Tertiary Care Centre in Eastern India: Clinical Pharmacology Block 1 Elective for MBBS Students

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ABSTRACT

Background: Coherent drug usage is indispensable for confirming operative, safe, and economical treatment. Unsuitable prescribing practices contribute to drug resistance, adverse effects, and increased healthcare costs. Treatment reviews using WHO core drug use indicators help measure and advance prescribing patterns in healthcare situations.

Methods: A cross-sectional, OPD-based study was directed at a tertiary care hospital in Eastern India as part of the MBBS elective database. A total of 150 outpatient prescriptions were casually selected and analysed over one month. Parameters included prescription format completeness, WHO prescribing indicators, patient care indicators, and health facility indicators.

Results: The average number of drugs per encounter was 3.02, with 85.8% prescribed by generic name. Antibiotics were prescribed in 52.5% of come across and injections in 10.8%. Use of the essential drug list was 88.3%. The average conference and dispensing times were 2.8 and 1.2 minutes, respectively. Drugs were sufficiently labelled in 73.3% of cases, and 51.7% of patients had correct dosage knowledge. EDL was available in 87.5% of OPDs, and 93.3% of important drugs were in stock.

Conclusion: The study concluded there are concerns over the low use of generic drugs, with marketing strategies significantly influencing prescription practices. While the use of antibiotics and injections remains within acceptable limits, there are gaps in patient communication, drug labeling, and clinical documentation that require attention to improve overall prescribing practices and patient care.

Key-words: Prescription audit, WHO core indicators, Rational drug use, Tertiary care, prescribing practices, Essential drug list, MBBS clinical elective

INTRODUCTION

The component of healthcare systems, universal in coherent prescribing, is important. Confirming that patients receive suitable medications at the right dose, duration, and cost. However, irrational recommending practices such as polypharmacy, overuse of antibiotics, and unfortunate drug selection remain predominant, mainly in developing nation-states [1].

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To dissertation these apprehensions, the World Health Organisation has established core drug use gauges to assess recommended patterns, patient-care indicators, and facility-specific indicators in healthcare organisations [2].

A prescription assessment is a decisive tool for assessing drug utilisation designs and identifying areas requiring development in clinical preparation. It the stage an essential part in indorsing rational drug use, reducing healthcare costs, minimising adverse drug reactions, and confirming optimal therapeutic consequences [3]. The WHO core recommending gauges, including the average number of drugs per treatment, percentage of drugs arranged by generic name, percentage of the chance conference with an antibiotic or injection arranged, and

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percentage of medicines prescribed from an indispensable drug list, provide a standardised background for measuring prescription value [4-6].

Medical instruction the stage a vigorous role in shaping upcoming prescribers' boldness and capabilities in coherent drug use. The Scientific Pharmacological Medicine Elective Program for MBBS students offers a view to engage in prescription assessments as part of their training [5]. Medical students who aggressively take part in these examinations have practical experience assessing prescribing patterns, identifying irrational behaviour, and supporting corrective measures. Their knowledge which also endorses evidence-based decision-making of clinical pharmacological medicine standards is improved by this hands-on involvement.

Tertiary care facilities are ideal settings for performing prescription assessments since a significant portion of their patient population acts as a referral intermediary. These centres often come across complex cases requiring multiple drug therapies, making it essential to monitor and recommend tendencies to prevent polypharmacy and adverse drug interactions [7]. Eastern India, similar to other regions, faces unique healthcare contests, including limited resources, adjustable adherence to prescribing guidelines, and the influence of pharmaceutical marketing on prescribing behaviour. Conducting a prescription audit in a tertiary care centre in Eastern India provides an appreciated understanding into local prescribing trends and areas requiring policy interferences [8].

This study proposes to measure prescription patterns in a tertiary care centre in Eastern India using WHO-recommended central drug use indicators as part of the Clinical Pharmacology Elective Program for MBBS students [9]. The study will analyse prescriptions to measure reasonableness, compliance with WHO guidelines, and possible areas for improvement. The results of this examination were endorsed in improving the prescribing performs, developing rational drug use, and establishing medical education in clinical pharmacological medicine [10].

Table 1: WHO Core Drug Use Indicators for Prescription Audit [11]

Core Drug Use Indicator	Definition	Significance
Average number of drugs per prescription	The total number of drugs prescribed divided by the total number of prescriptions analysed.	Measures polypharmacy and potential for drug interactions.
Percentage of drugs prescribed by generic name	The number of drugs prescribed by generic names is divided by the total number of drugs, multiplied by 100.	Evaluates observance of generic prescribing policies and cost-effectiveness.
Percentage of encounters with an antibiotic-prescribed	Number of patient encounters where an antibiotic was prescribed divided by the total number of encounters, multiplied by 100.	Identifies tendencies in antibiotic use and potential overprescribing.
Percentage of encounters with an injection prescribed	Number of patient encounters where an injection was prescribed divided by the total number of encounters, multiplied by 100.	Monitors unnecessary use of injectable drugs, promoting safer alternatives.
Percentage of drugs prescribed from the essential drug list	The number of medications prescribed by the WHO or National Essential Drug List is divided by the total number of drugs prescribed, multiplied by 100.	Measures adherence to critical drug lists, ensuring rational and cost-effective prescribing.

Using assessing these indicators, the study made available a complete evaluation of recommended performs in the tertiary care centre, and supervisory interferences to improve medication safety and optimise patient care [12].

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MATERIALS AND METHODS

Research Design- The research design of this study is a prospective observational study aimed at conducting a prescription audit in a tertiary care centre in Eastern India. The study was conducted from August 2024 to February 2025. The study was conducted as a component of the Clinical Pharmacology Block 1 elective program for MBBS students. Prescriptions from both outpatient and inpatient departments were collected and evaluated by the students. These prescriptions were assessed for completeness, legibility, and rationality using the World Health Organization-recommended core drug use indicators. The collected data included departmental distribution, identification parameters, and drug-related details. The prescription format and completeness were assessed by examining general details such as the patient's name, age, sex, OPD registration number, date of meeting, and legibility of handwriting. In addition, medical components were reviewed, including documentation of patient history, physical examination findings, presumptive or definitive diagnosis, investigations advised details of medication, follow-up instructions, referral information, dos and don'ts, presence of a legible doctor signature, and mention of the doctor's medical council registration number. Supplementary, the study utilised the WHO core drug use indicators to assess prescribing, patient care, and facility-level practices. Prescribing indicators included the average number of drugs per prescription, the percentage of drugs prescribed by generic name, the percentage of prescriptions that contained antibiotics or injectable medications, and the percentage of drugs prescribed from the hospital's Essential Drug List. Patient care indicators protected average consultation time and dispensing time, the percentage of drugs dispensed, the percentage of drugs adequately labelled, and patients' knowledge of the correct dosage. Health facility indicators marked the availability of a copy of the EDL in all OPDs and the availability of 18 important drugs as identified by hospital establishments.

Exclusion Criteria

- ✓ Unreadable prescriptions where information could not be accurately interpreted.
- ✓ Incomplete prescriptions with missing key identifiers such as patient name or registration number.

Inclusion Criteria- Irrespective of patient demographics, diagnosis, or department and all outpatient prescriptions issued during the study period.

Statistical Analysis- Descriptive statistics were used to summarise the results. Data were entered and managed in Microsoft Excel and analysed using SPSS version 16.0 (SPSS Inc., Chicago, IL). Continuous variables were expressed as mean ± standard deviation, while categorical variables were presented as frequencies and percentages.

Ethical approval- This study was approved by our hospital's Ethical Committee.

RESULTS

The average number of drugs prescribed per encounter was 2.76 ± 0.67, representing a moderate level of polypharmacy. Around 56.21% of drugs were prescribed using their generic names. This shows much lesser number of drugs are prescribed by their generic names and conversely, brand names are mostly used in prescriptions. This is majorly due to the marketing and promotion of the pharmaceutical companies and influencing the prescription process. However, the percentage of encounters with an antibiotic prescribed was 47.3%, which is relatively high and may raise concerns regarding antibiotic stewardship. Injections were prescribed in 14.2% of encounters, which is within acceptable limits. 91.1% of prescribed drugs were from the essential drug list, representing good compliance with institutional and national guidelines. Regarding patient care indicators, the average consultation time was 3.1 minutes, and dispensing time was 1.4 minutes, signifying limited time for thorough patient interaction and counselling. While 89.2% of drugs were dispensed, only 76.5% were adequately labelled, potentially compromising proper usage. In addition, just 61.3% of patients had correct knowledge of their dosage, representing the need for improved communication during dispensing. For health facility indicators, 91.3% of outpatient departments had admission to a copy of the essential drugs list, and 96.7% of key drugs were accessible, representing a well-stocked facility environment (Table 2).

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Table 2: Fundamental Drug Usage Indicators among Patients

Categories	Indicator	Frequency/ Percentage
Prescribing Indicators	Average number of drugs per encounter	2.76±0.67
	Percentage of drugs prescribed by generic name	56.21%
	Percentage of encounters with an antibiotic-prescribed	47.3%
	Percentage of encounters with an injection prescribed	14.2%
	Percentage of drugs prescribed from the essential drug list	91.1%
Patient Care Indicators	Average consultation time	3.1 min
	Average dispensing time	1.4 min
	Percentage of drugs dispensed	89.2%
	Percentage of drugs adequately labelled	76.5%
	Patients' knowledge of correct dosage	61.3%
Health Facility Indicators	Availability of a copy of the essential drugs list in OPDs	91.3%
	Availability of important drugs	96.7%

The day of consultation was noted in 97.3% of cases, and handwriting was legible in 96% of prescriptions. However, diagnostic information was present in only 67.3% of prescriptions, indicating a gap in clinical documentation. Among prescriptions that required investigations (n=90), 68.9% included appropriate advice for diagnostic tests. Of the 21 prescriptions that necessitated referrals, only 38.1% provided a stated reason for the referral, a need for improved communication and documentation. A legible doctor's signature was observed in 69.3% of the prescriptions, but the doctor's registration number was mentioned in only 6%, representing a significant area for compliance development (Fig. 1).

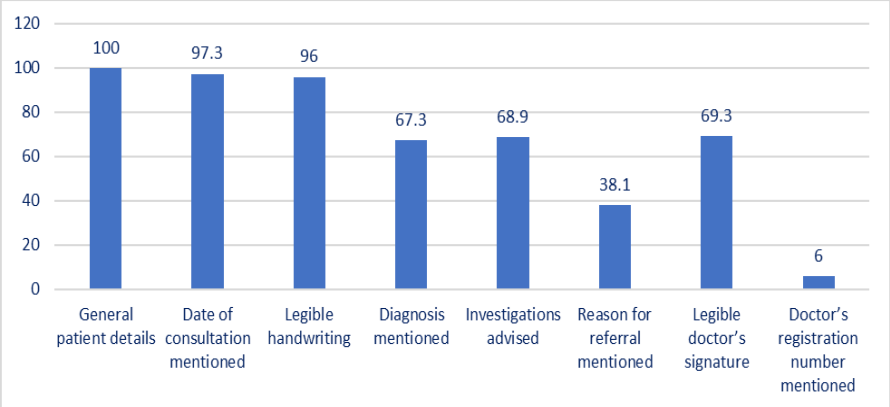

Fig 1: Assessment of Prescription Completeness and Legibility

DISCUSSION

Prescription reviews using the World Health Organisation-recommended core drug use indicators provide an appreciated understanding of the prescribing practices of healthcare institutes. This study, shown as part of the Clinical Pharmacology Block 1 elective program for MBBS students in a tertiary care centre in Eastern India, identified both fortes and areas requiring improvement in rational drug use [13].

Our discoveries designate that the average number of drugs per prescription was within the range recommended by WHO guidelines, but on the advanced end of the spectrum. This shows a tendency toward polypharmacy, which may increase the risk of drug

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interactions and adverse effects. A similar tendency has been observed in other Indian studies, where polypharmacy is frequently reported due to multiple simultaneous morbidities and prescribing habits [14].

A positive discovery was the relatively high percentage of drugs prescribed by generic names. WHO recommends prescribing by generic name to promote rational drug use and reduce healthcare costs. However, despite the reasonable compliance, there is still room for development, predominantly in reinforcing the importance of generics among prescribers and giving a lecture to alleviate possible apprehension about drug quality observations [15]. It is important to note that the prescription of brand-name drugs, often influenced by the marketing strategies of medical representatives, remains a common practice despite the availability of cost-effective generic alternatives. This trend may contribute to the observed higher use of branded medications, raising concerns about the potential for increased healthcare costs and the role of pharmaceutical marketing in shaping prescribing behaviours [14-16].

Antibiotic recommendations were another area of concern. The number of prescriptions containing antibiotics exceeded WHO's optimal range, which raises apprehensions about antimicrobial resistance. Overprescription of antibiotics has been steadily recognised in other Indian studies. Factors contributing to this tendency include empirical treatment in the absence of microbiological confirmation, patient demand, and unsatisfactory obedience to antimicrobial stewardship guidelines [16]. This requires stricter antimicrobial stewardship programs, continuous medical education, and the availability of rapid diagnostic tests to guide therapy.

The use of injections was within acceptable limits, reducing the risk of unnecessary parenteral drug use and its associated difficulties. WHO recommends limiting injection use unless necessary, and our study proposes that prescribers are mainly adhering to this principle. However, supplementary interventions should be taken to ensure injections are prescribed only when oral formulations are not suitable [17].

The percentage of drugs prescribed from the Essential Medicines List was encouraging, aligning with WHO recommendations for cost-effective and evidence-based prescribing. However, unconventionality from the EML in some cases proposes a need for targeted interferences, such as regular updates and dissemination of the EML among prescribers [18].

To place our answers in a setting, we compared them with similar studies conducted in different regions of India and altogether. The table below summarises important assessments (Table 3).

Table 3: Assessment with Similar Studies [19]

Parameter	Current Study (Eastern India)	North India	South India	Global - WHO Standard
Average Drugs per Prescription	3.2	2.9	3.5	<3.0
Drugs Prescribed by Generic Name (%)	75%	68%	82%	100%
Prescriptions Containing Antibiotics (%)	45%	40%	50%	<30%
Prescriptions Containing Injections (%)	12%	15%	10%	<15%
Drugs from Essential Medicines List (%)	85%	80%	90%	100%

Our prescription audit both adherence to and unconventionalities from WHO's core prescribing indicators in a tertiary care setting in Eastern India. While there is commendable obedience to indispensable medicine prescribing and rational use of injections, the overuse of antibiotics and the high number of drugs per prescription require urgent consideration [20].

To improve rational prescribing, we endorse the establishment of antibiotic stewardship through the application of stricter guidelines and surveillance systems to control antibiotic overuse. Reassuring generic prescriptions should be prioritised through continuous medical education and policy interferences to promote their use [21]. Reducing polypharmacy requires the

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development of interventions, including educational programs and prescription audits, to ensure minimal yet effective drug use. In addition, medical training by participating in more clinical pharmacology exercises in medical programs will reinforce evidence-based commendable practices.

CONCLUSIONS

The study concluded there are concerns over the low use of generic drugs, with marketing strategies significantly influencing prescription practices. While the use of antibiotics and injections remains within acceptable limits, there are gaps in patient communication, drug labeling, and clinical documentation that require attention to improve overall prescribing practices and patient care. Improvements are needed in consultation time, prescription completeness, and patient knowledge of correct dosages to enhance overall care quality.

This contribution not only emphasised the importance of regular prescription inspecting to promote rational drug use but also served as an excellent learning opportunity for MBBS students to appreciate the significance of evidence-based prescribing practices. Consolidation of these practices through continuous education, policy interferences, and system-based developments will ultimately improve patient care and confirm the optimal use of healthcare.

CONTRIBUTION OF AUTHORS

Research concept- Madhuri Chatterjee, Swagata Datta, Purnendu Mandal
Research design- Madhuri Chatterjee, Swagata Datta,
Supervision- Madhuri Chatterjee.
Materials- Swagata Datta, Purnendu Mandal
Data collection- Swagata Datta, Purnendu Mandal
Data analysis and Interpretation- Swagata Datta, Purnendu Mandal
Literature search- Swagata Datta, Purnendu Mandal
Writing article- Swagata Datta, Purnendu Mandal
Critical review- Madhuri Chatterjee, Swagata Datta,
Article editing- Swagata Datta
Final approval- Madhuri Chatterjee

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