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Original Research Article

A Prescription Audit Utilizing the World Health Organization Recommended Key Medication Use Indicators at a Tertiary Care Hospital, India

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ABSTRACT

Background: Inappropriate drug usage is a global health issue, particularly in developing nations like India. Irrational drug use has a negative impact on both health and medical expenses. Prescription auditing is a crucial method for raising the standard of prescriptions, which raises the standard of care provided. The current study was conducted to evaluate the rational use of pharmaceuticals for completeness, readability, and against the key drug use indicators specified by the World Health Organization (WHO).

Material and methods: In the surgery department, 300 prescriptions were chosen at random from the medical records for a cross-sectional retrospective analysis, regardless of the patient's diagnosis or characteristics. The WHO core drug use indicators, medical components, and general information were assessed for each prescription. Using Microsoft Excel, the collected data were tallied and shown as descriptive statistics. SPSS version 25 was used for analysis.

Results: General information is included with every prescription. 67 percent of prescriptions were written under a generic name, while 85.6% of prescriptions included the diagnosis. On average, 11.45 prescription drugs were written. In 53.8% of prescriptions, the clinical examination was mentioned; however, in 94% of prescriptions, the history of allergy was not included.

Conclusion: According to WHO-recommended parameters for quality improvement, our study emphasises the necessity of providing our prescribing physicians with detailed prescription writing training.

Keywords: Fundamental indicators, audit of prescription drugs, sensible prescription

INTRODUCTION

The concept of rational medicine use, as delineated by the World Health Organization (WHO), mandates that patients receive medications that are in line with their medical requirements, in doses tailored to their requirements, for a sufficient period, and at the least possible cost to both them and their community.[1] The act of prescribing, which entails the issuance of a written directive for patient treatment by a certified

practitioner, is not only an indication of the caliber of medical care provided but also a skill honed through extensive training.[2] The landscape of medicine use is, however, fraught with challenges such as polypharmacy, antibiotic misuse, unnecessary preference for parenteral over oral formulations, non-compliance with clinical guidelines, and self-medication, all of which constitute irrational drug use.[1] Such practices engender prescription errors, diminish patient adherence[3], inflate the cost and extend the length of therapy[4], and lead to drug interactions, resistance, and adverse reactions,[5] culminating in increased patient morbidity, mortality, and financial burden.[6]

Prescription audit stands out as a critical instrument for elevating healthcare quality. It has been proven to enhance clinicians' proficiency and satisfaction with prescribing, according to several studies.[7–11] This process scrutinizes prescription patterns within healthcare settings against WHO standards, identifying deviations that may compromise patient safety and outcomes, thereby magnifying the risk to patient health and contributing to the healthcare cost burden.[12,13] Alarmingly, the global administration of nearly 16 billion injections annually, especially in developing countries, presents a significant health risk due to the use of non-sterile syringes and needles, often for unnecessary treatments that could be substituted with oral medications.[14,15] Evidence from developed nations reveals that drug-related issues account for about 5% of all hospital admissions, half of which are preventable[16,17], highlighting the importance of meticulousness at every step of the prescription process.

The benefits of prescription audits are extensive, ranging from identifying and encouraging best practices, and enhancing professional practice and quality standards, to supporting staff and organizational development. These audits help identify and eliminate inadequate practices, reduce waste, encourage multidisciplinary teamwork, and allocate resources effectively for improved patient care. Furthermore, they provide opportunities for showcasing findings and promoting shared learning among faculty members.[18]

The misuse of medications not only leads to adverse drug events, treatment failure, and increased costs for patients and society but also heightens the risk of adverse drug reactions from polypharmacy and antibiotic resistance, necessitating alternative treatments that may be unavailable or unaffordable, ultimately eroding patient confidence in the healthcare system.[18,19]

Prescription indicators (average number of prescriptions, percentage of generic medications, facility-specific medication list, percentage of antibiotic encounters, and percentage of injections prescribed); patient care indicators (average consultation and dispensing time, percentage of medications dispensed with proper labelling, and patients' awareness of their dosage); and health facility indicators are currently the three main categories of core drug use indicators used to assess drug use (availability of essential drugs list and key drugs).[20]

This study conducted a comprehensive audit of the caliber of inpatient department (IPD) prescriptions at a central government hospital in Bihar, evaluating their compliance with WHO-recommended key indicators of drug use for responsible drug use, focusing on completeness, legibility, and adherence to prescribed guidelines.

MATERIALS AND METHODS

The study was conducted in the Medical Record Department (MRD) of AIIMS, Patna, focusing on a retrospective analysis of prescriptions from admitted patients within the Department of Surgery. The study utilized a random sampling technique, whereby prescriptions issued over the preceding year were selected for examination. This selection process was facilitated by a random number table-generated code, ensuring a representative and unbiased sample. A total of 300 prescriptions were randomly chosen for this study, adhering to sample size recommendations based on WHO guidelines. The data was entered Microsoft Excel and analyzed using SPSS 25.0 version with appropriate statistical test applied.

RESULTS

Table-1: Demographic details and Superscription elements

Characteristics	Percentage	
Age(years)		
<20	4	
21-40	39.4	
41-60	33.9	
>60	14.4	
Gender		
Female	56.6	
Male	43.4	
Parameters	**Present (%)**	**Absent (%)**
Date of Prescription	100	0
Patient's registration number	85	15
Patient's name	92	8
Age	80	10
Gender	82	18
Weight	61	39
Height	59	41
Ward/Bed no	72	28
Diagnosis	85.6	14.4
H/O Drug allergy	5.66	94.34
Chief complaint	70.33	29.66
Clinical examination	53.8	46.2
Investigation advised	84.2	15.8
Legible Handwriting	79.5	20.5

Out of 300 prescription interactions evaluated throughout the research period, 170 (52.0%) were female patients and 130 (39.8%) were males. The age of patients ranged from the youngest being 3 years and the oldest being 73 years as depicted in Table 1. Nearly 92% of the patient's name was mentioned, 80% of the time age was mentioned, 82% of the time sex was mentioned, 61% of the time weight was mentioned, 72% of the time ward/bed no. was mentioned, 85% of the time Case Report no. was mentioned and 86% of the time consultant name was mentioned.

Table-2: Inscription elements related drugs

Parameters of drugs prescribed	Present (%)	Absent (%)
Names of prescribed medicines in full or abbreviation	67	33
Route of administration	100	
Dosage form	78	22
Frequency	98	2
Dose	84.7	15.3
Duration	32.1	67.9

Table-2 depicts about the drug detail mentioned in prescription. About 67.9% of the time drug strength was mentioned, 84.7% of the time dose of drug was mentioned and 32.1% of the time duration of the drug was mentioned. There was mention of the diagnosis in 85.6% prescription, brief history of patient was mentioned in 66.1%, clinical examination in 53.8% and about 79.5% prescriptions had a legible handwriting.

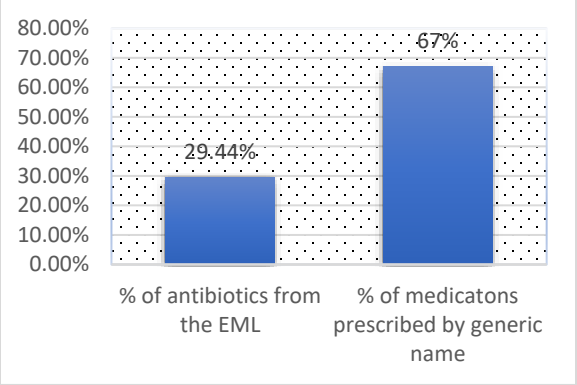

Figure-1: Hospital indicators

Figure 1 depicts about the details of hospital indicators like % of antibiotics prescribed from the Essential Medicine List and % of drugs that are prescribed under generic names.

Table-3: Antimicrobial consumption indicators

No. of AMAs received by the patients	652
Avg. no. of AMAs/ patient	652/300=2.17

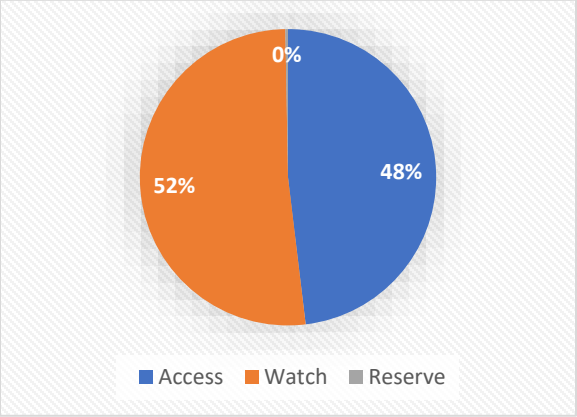

Figure-2: Drug prescribed according to Access, Watch and Reserve

Figure 2 explains about the % of drugs prescribed according to the Classification of Access, Watch, and Reserve.

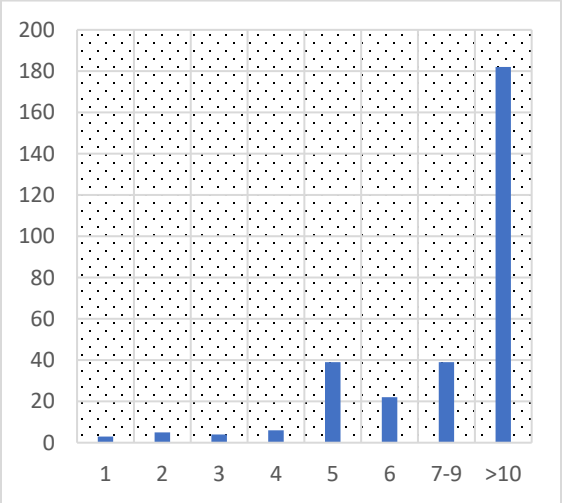

Figure-3: Number of drugs prescribed per prescription

Figure 3 indicated the quantity of medications prescribed per prescription. Maximum number of prescriptions (55.7%) contained >10 drugs and only 11.9% of prescriptions contained 5 drugs.

Table-4: WHO Prescribing indicators

Prescribing indicators (WHO standard)	**Total (300 prescriptions)**
During each encounter average number of drugs (1.6-1.8)	3435 (11.45)
Antibiotics percentage per encounter (20.0-26.8)	204 (68%)
Percentage of encounter with injection (13.4-24.1)	186(62%)
Drugs % prescribed by generic names 100%	780(22.70%)
Drugs % from the list of essential drugs 100%	1182(34.41%)

DISCUSSION

It is the practitioner's ethical and legal obligation to create thorough and readable prescriptions because the prescription is a substantial action taken by the physician. Our research shows that all prescriptions include the full patient information, including the prescription dates as well as their age, name, sex, and address. For the simple reason that these facts were printed out upon registration. Almost all prescriptions, according to studies that audited handwritten prescriptions, had inadequate patient details.[21] For medicolegal reasons and to make sure the patient gets the right therapy for his or her diagnosis, it is critical to mention the right patient details. Investigations, allergy histories, diagnoses, clinical examinations, and patient histories were all missing from the prescriptions upon analysis. Possible causes include clinicians preferring to speak rather than write, a high volume of general complaints, or a lack of time to address each patient's unique concerns.

Regarding medication composition, administration instructions, dos and don'ts, reasons for referrals, and follow-up guidance, the prescriptions were lacking. Moreover, frequent prescription mistakes were failing to provide a dosage and failing to mention the duration of therapy, which accounted for 7% and 77.9% of cases, respectively. Most medications are available in varied strengths and dosage formats and so it causes issues for dispensing. Additionally, it may result in problems like treatment failure, antibiotic resistance, and adverse drug reactions linked to under dosing or overdose. According to numerous studies conducted worldwide, the most frequent prescription error types were incorrect dosage, dose omission, and duration.[22–24] The doctors are notorious for having unreadable handwriting, which can result in dangerous drug reactions, incorrect prescriptions being filled, and medication errors. We found that the handwriting of 21.5% of prescribing physicians was unreadable. In 97 percent of the prescriptions in our investigation, the prescribing physician's initials or signature were readable. To verify the legality and identify the prescribing physician, these details are essential.

The WHO has developed core prescription indicators to examine the use of medications in healthcare institutions. These metrics seek to measure how well medical professionals perform in a number of critical areas related to appropriate or sensible pharmaceutical use. Following an analysis of outpatient institutions' prescribing practises for the treatment of both acute and chronic illnesses, the WHO developed these indicators.[20] Our study's average number of medications per consultation was 11.45, which was significantly more than the drug usage pattern found in secondary level hospitals (3.1).[25] The WHO suggests two medications per contact, and this indicator aims to measure polypharmacy. In addition to increasing the cost of healthcare for both the government and patients, polypharmacy can lead to dangerous medication reactions as a result of drug interactions. The bulk of the drugs in our study were administered using generic names and were taken from the hospital's Essential Medicine List (EML). The government's and hospital authorities' regular directives to prescribe generic medications and refrain from dispensing medications that aren't listed in the current EML may be the cause of this.

In order to ensure compliance, the hospital has also been conducting regular reporting, monitoring, and surprise checks. More than half of prescriptions contained an antibiotic, which is nearly twice as much as the WHO recommends (20–25.4%). Inappropriate use of antibiotics in our study setting is implied by the high prevalence of antibiotic prescriptions. Our ability to treat common infectious diseases is under jeopardy due to the alarming growth of antibiotic resistance caused by both the public's misuse of medicines and the over prescription of antibiotics by medical professionals. To guarantee that antibiotics are used properly, laws and a robust national action plan should be in place. Experts' knowledge should be raised by include antimicrobial resistance in their curriculum and by regularly offering trainings and certifications similar to those for biomedical waste. To rationalise medication prescriptions and support ongoing hospital quality improvement, the prescription audit should be conducted on a regular basis.

CONCLUSIONS

Our study demonstrates the need to train our prescribing physicians to write reasonable prescriptions and adhere to WHO prescription guidelines in order to improve hospital quality.

REFERENCES

1. World Health Organization. Promoting rational use of medicines [Internet]. Available from: https://www.who.int/activities/promoting-rational-use-of-medicines

2. Natarajan A, VR, Topno I. Prescription errors in the department of obstetrics and gynaecology: a cross-sectional, observational study. Asian J Pharm Clin Res. 2016; 9:233–5.

3. Fijn R, Van Den Bemt PMLA, Chow M, De Blaey CJ, De Jong-Van Den Berg LTW, Brouwers JRBJ. Hospital prescribing errors: epidemiological assessment of predictors. Br J Clin Pharmacol. 2002;53(3):326–31.

4. Ofori-Asenso R, Agyeman AA. Irrational use of medicines—A summary of key concepts. Pharmacy. 2016 Oct 28.

5. Maxwell S. Rational prescribing: the principles of drug selection. Clin Med (Lond). 2009 Oct 1.

6. Wettermark B, Elseviers M, Almarsdóttir AB, Andersen M, Benko R, Bennie M, et al. Introduction to drug utilization research. Drug Util Res. 2016 May 13.

7. Millard A. Perceptions of clinical audit: a preliminary evaluation. J Clin Effect. 1996;1(3):96–9.

8. Gabbay J, Layton AJ. Evaluation of audit of medical inpatient records in a district general hospital. Qual Health Care. 1992.

9. Gabbay J, McNicol MC, Spiby J, Davies SC, Layton AJ. What did audit achieve? Lessons from preliminary evaluation of a year's medical audit. BMJ. 1990;301(6751):526–9.

10. Lough JRM, McKay J, Murray TS. Audit and summative assessment: two years' pilot experience. Med Educ. 1995;29(2):101–3.

11. Firth-Cozens J, Storer D. Registrars' and senior registrars' perceptions of their audit activities. Qual Health Care. 1992;1(3):161–4.

12. Bandyopadhyay D, Nath Banerjee C, Chattopadhyay S, Singha P. A study of prescription auditing in a tertiary care teaching hospital of eastern India. J Drug Deliv Ther. 2014;4(1):140–9.

13. World Health Organization. Rational use of medicines by prescribers and patients: report by the Secretariat.

14. World Health Organization. WHO guideline on the use of safety-engineered syringes for intramuscular, intradermal and subcutaneous injections in health care settings.

15. Wyatt HV, Mahadevan S. Unnecessary injections in developing countries: the risk and costs. Int J Risk Saf Med. 1993;4(2):167–76.

16. Sonal Sekhar M, Adheena Mary C, Anju PG, Hamsa NA. Study on drug related hospital admissions in a tertiary care hospital in South India. Saudi Pharm J. 2011;19(4):273–8.

17. Mohan P, Sharma AK, Panwar SS. Identification and quantification of prescription errors. Med J Armed Forces India. 2014;70(2):149–53.

18. Shankar PR. Medicines use in primary care in developing and transitional countries: fact book summarizing results from studies reported between 1990 and 2006. Bull World Health Organ. 2009;87(10):804.

19. Quick JD, Hogerzeil HV, Rankin JR, Dukes MNG, Laing R, Garnett A, et al. Managing drug supply: the selection, procurement, distribution, and use of pharmaceuticals. 2nd ed. West Hartford, CT: Kumarian Press; 1997. 816 p.

20. World Health Organization. How to investigate drug use in health facilities: selected drug use indicators [Internet]. Available from:

https://www.who.int/publications/i/item/who-dap-93.1

21. Shelat PR, Kumbar SK. Analysis of outpatient prescriptions according to WHO prescribing indicators among private hospitals in Western India. J Clin Diagn Res. 2015;9(3):FC01–4.

22. Abidi A, Gupta S, Kansal S, Ramgopal R. Prescription auditing and drug utilization pattern in a tertiary care teaching hospital of western UP. Int J Basic Clin Pharmacol. 2012; 3:184.

23. Kiekkas P, Karga M, Lemonidou C, Aretha D, Karanikolas M. Medication errors in critically ill adults: a review of direct observation evidence. Am J Crit Care. 2011;20(1):36–44.

24. Seden K, Kirkham JJ, Kennedy T, Lloyd M, James S, McManus A, et al. Cross-sectional study of prescribing errors in patients admitted to nine hospitals across North West England. BMJ Open. 2013;3(1).

25. Potharaju H, Kabra S. Prescription audit of outpatient attendees of secondary level government hospitals in Maharashtra. Indian J Pharmacol. 2011;43(2):150–6.

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