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**Original Research Article**

# A prescription audit in the ear, nose and throat outpatient department, in a tertiary care hospital: a descriptive cross-sectional study

**Savita Z. Ninnekar[1], Janaki R. Torvi[2]*, Kadeeja P. Jasmine[1], Abhyshek S.[1], Adarsh E. H.[1]**

[1]Department of ENT, KMC and RI, Hubballi, Karnataka, India
[2]Department of Pharmacology, KMC and RI, Hubballi, Karnataka, India

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***Correspondence:**
Dr. Janaki R. Torvi,
Email: torvijanaki@yahoo.com



## ABSTRACT

**Background:** Prescription audit is a quality improvement process aimed at enhancing patient care and outcomes by reviewing prescriptions. It provides feedback to healthcare providers, (HCPs) to identify areas for improvement and ensure the quality of prescriptions. This study aims to analyse the prescription patterns and prescribing behaviour of doctors using world health organization (WHO) recommended core prescribing indicators and prescription audit guidelines from national health mission (NHM), India and implement action plan accordingly.
**Methods:** A descriptive observational cross-sectional study was conducted for one month in the ear, nose and throat outpatient department (ENT OPD) of KMC-RI, Hubballi. A total of 96 prescriptions were analysed using WHO-recommended core indicators and additional indicators from a prescription audit template. An action plan was created to enhance prescription quality.
**Results:** All the prescriptions contained complete demographic details of the patients, OPD registration name and date of consultation. Handwriting was legible in all 96 prescriptions with a score of 100%. Two lowest performing attributes were identified using prescription audit tool namely, allergy status and generic name with a score of 7% and 37.9% respectively. The study revealed that average number of drugs encountered was 1.9, the percentage of drugs prescribed by generic name was 37.9%, percentage of encounters with an injection prescribed was 2.08% and percentage of drugs prescribed from NLEM was 37.9%.
**Conclusions:** The prescription audit revealed that most prescriptions adhered to WHO standards. However, improvements are needed in documenting allergy status and prescribing by generic name. An action plan with a defined timeline has been prepared to provide feedback, aiming to enhance prescription quality and ensure better healthcare outcomes.

**Keywords:** WHO core indicators, Prescription audit, HCPs

## INTRODUCTION

Prescription audit is a key component of clinical audit and a vital quality improvement process that seeks to enhance patient care and outcomes through the systematic review of prescriptions against explicit criteria, followed by the implementation of necessary changes.[1] It involves regular assessments of prescriptions at healthcare facilities, helping to monitor and improve various aspects of outpatient care. By conducting periodic reviews, a prescription audit helps to assess the accuracy of patient-related information recorded on prescriptions, evaluate clinician's prescribing habits, and ensure the appropriateness of medicine usage. It also provides insights into drug dispensing practices and the workload of dispensaries. Prescription audits serve as an essential improvement tool. When conducted regularly, they ensure that patients receive high-quality care that is equitable, cost-effective and efficient.[2] One of the core principles of prescription audit is that it is not intended to be a fault-

finding exercise, but rather a fact-finding exercise. The primary objectives are to identify and assess irrational prescribing practices, reduce prescription errors, and find opportunities to improve prescribing at the local, district, state, and national levels. This process can reduce irrational use of antibiotics, syrups, and injections, and ultimately help to establish benchmarks in prescription quality. A prescription audit benefits HCP by enabling them to analyse and interpret the findings, providing valuable feedback to clinicians. This feedback helps improve prescription quality, particularly in public health facilities, and promotes rational drug use. By reducing prescription errors, prescription audits enhance patient safety, lower the cost of treatment by curbing unnecessary prescriptions, and encourage the use of generic medicines. Audits also help in minimizing polypharmacy, ensuring the efficient use of therapeutic agents, and improving overall quality of care.[3]

The WHO has developed core prescribing indicators that serve as standardized tools for assessing critical aspects of drug utilization. These indicators provide a reliable framework for evaluating prescribing patterns and behaviours of HCP. In this study, we aim to analyse the prescription patterns and prescribing behaviour of doctors in the ENT outpatient department using WHO-recommended core prescribing indicators and the prescription audit guidelines of the NHM, India. By doing so, we hope to identify key areas for improvement in prescribing practices, contributing to enhanced patient care and the rational use of medications.

## METHODS

A descriptive, observational, cross-sectional study on prescription audit was conducted for a period of one month from 16th April 2024 to 15th May 2024 in the outpatient department of ENT, Karnataka medical college and research institute (KMC-RI), Hubballi. The prescribing doctor was kept unaware of the auditing process. Approval was obtained from the institutional Ethics committee.

### *Inclusion criteria*

Both male and female patients attending ENT OPD between 9 am to 4 pm were included.

### *Exclusion criteria*

Age below 5 years and above 75 years were excluded. IPD patient's and emergency patient's prescriptions were excluded.

A sample size of 96 was calculated using convenient sampling method and the formula $\sqrt{n}=1.96\sqrt{pq}/l$, where prevalence 'p' was taken as 50% based on the findings that the drugs prescribed by their generic name were 50% in a study and q=100-p=100-50%=50% and 'l' is the allowable margin and 'n' is the sample size and the percentages of p and q are converted into decimals and l=10%, hence l=0.1.[5] Prescriptions were selected using convenient sampling method and prescription audit was conducted by collecting data using the prescription audit template, a standard format given by the prescription audit guidelines of NHM that encompasses the following details. As WHO core prescribing indicators do not provide information on recording the patient's demographic details, clinical details, legibility of notes etc., the prescription audit template is used so as to cover all dimensions of prescription writing to analyse the completeness of the prescription, legibility and rationality of the prescription. All 27 attributes were written in a tabular form and each prescription evaluated against these attributes in the form of observed response as "yes" or "no" and the results were analysed using the formula: Number of prescriptions with OPD registration/number of prescriptions audited×100 and expressed as a percentage score.

The names and the number of drugs prescribed were noted down along with dosage forms, route of administration, dosage, frequency and duration of treatment to assess the WHO core prescribing indicators namely.[4]

Average number of drugs prescribed per encounter: Average calculated by dividing the total number of drugs prescribed by the total number of encounters sampled.

Average number of drugs prescribed per encounter=Total number of drugs prescribed/total number of encounters sampled=182/96=1.895=1.9

Percentage of drugs prescribed by generic name=Number of drugs prescribed by generic name/total number of drugs prescribed=69/182×100=37.9%

Percentage of encounters with an antibiotic prescribed=Number of patient encounters with an antibiotic/total number of encounters sampled×100=39/96×100=40.6%

Percentage of encounters with an injection prescribed=Number of patient encounters with an injection prescribed /Total number of encounters sampled×100=2/96×100=200/96=2.08%

Percentage of drugs prescribed from NLEM (National list of essential medicines)=Number of drugs prescribed from essential drug list/Total number of drugs prescribed×100=69/182×100=6900/182=37.9%

## RESULTS

A total of 96 prescriptions were analysed on the basis of "core prescribing indicators" established by WHO to cover all dimensions of prescription writing in terms of patient's and prescriber's details and indicators relating to the legibility and rationality of the prescription. Indicators for the completeness of the prescriptions were used and the results are as follows: A total of 96 prescriptions were analysed in this study and in all the prescriptions

demographic details of the patients were mentioned such as complete name of the patient, age in years and gender of patient was mentioned. OPD registration number, date of consultation in day/month/year format was mentioned. Handwriting of the prescriber was legible in all 96 prescriptions, but none of the prescriptions was written in capital letter with a score of 0 %. Brief history of patient's complaints was written in 75 prescriptions with a score of 78.12%. Allergy status of patients was mentioned in only 7 prescriptions with score of 7.29%. Salient features of clinical examination recorded in 90 prescriptions with score of 93.75%. Presumptive /definitive diagnosis was written in 48 prescriptions with a score of 50%.

In this study medicines were prescribed in 84 prescriptions with total of 182 medicines. In 182 medicines, 69 medicines were prescribed by generic name with a score of 37.92% and 113 medicines were prescribed in trade names with score of 62.08%. Medicines were not prescribed in 12 prescriptions. In 72 prescriptions medicines prescribed are in line with standard treatment guidelines of our hospital with a score of 75%. The dosage of medicines and the schedule of treatment is clearly written in 69 prescriptions with a score of 71.8%. The duration of treatment was written in 59 prescriptions with a score of 61.45%. Date of next visit was written in 69 prescriptions with a score of 71.8%. The 11 patients were referred from ENT OPD mentioning the relevant clinical details and reason for referral. Follow up advise and precautions wherever necessary were written in 68 prescriptions with a score of 70.8%. 80 prescriptions were duly signed by the prescribers with a score of 83.3%. Prescriptions with medicines prescribed were as per EML. The 84 patients were prescribed medicines and thus 84 prescriptions were as per EML and 12 patients were not prescribed any medicines and hence the score is 100%. All medicines prescribed in 84 prescriptions were available in the OPD dispensary with a score of 100%. Vitamins and enzymes were prescribed in 8 prescriptions with a score of 8.3%. Antibiotics were prescribed in 39 prescriptions with a score of 40.6%. Investigations were advised in 23 prescriptions with a score of 23.95%. Injections were prescribed in only 2 prescriptions with a score of 2.08%.

**Table 1: Sociodemographic details and completeness of the prescription in relation to patient and prescriber identifiers, diagnosis and instructions.**

| Variables | No. of prescriptions/ encounter | |
|---|---|---|
| **Total no. of prescriptions** | 96 | |
| **Age (in years)** | 28.7 | |
| **Gender** | | |
| Male | 47 | 48.99% |
| Female | 49 | 51.01% |
| Patient identifiers | 96 | 100% |
| Prescriber identification | 80 | 83.3% |
| Diagnosis | 48 | 50% |
| Advice/instructions | 68 | 70.8% |

*Data expressed as mean, frequency and percentages.

Average number of drugs prescribed per encounter is 1.9 (1.895). Percentage of drugs prescribed by generic name is 37.9%. Percentage of encounters with an antibiotic prescribed is 40.6%. Percentage of encounters with an injection is 2.08%. Percentage of drugs prescribed from NLEM is 37.9%.

**Table 2: Completeness of the prescription with regard to the dosage regimens of the total drugs prescribed.**

| Variables | Number of drugs prescribed (%) |
|---|---|
| **Capital letters** | 0 (0) |
| **Dosage** | 69 (71.8) |
| **Frequency** | 69 (71.8) |
| **Route** | 74 (77.08) |
| **Duration** | 41 (42.7) |

*Data expressed in percentages.

**Table 3: Results of WHO core prescribing indicators (total encounters=96, total drugs=182).**

| Core prescribing indicators | Total drugs | Value encounters |
|---|---|---|
| **Average numer of drugs prescribed per encounter** | 182 | 1.9 |
| **Percentage of drugs prescribed by generic names** | 69 | 37.9 |
| **Percentage of encounters with an antibiotic prescribed** | 39 | 40.6 |
| **Percentage of encounters with an injection prescribed** | 2 | 2.08 |
| **Precentage of drugs prescribed from the national list of essential medicines.** | 69 | 37.9 |

*Data expressed in percentages.

## DISCUSSION

In this study, all the prescriptions contained general patient information, demographic details, as these details are mentioned in the standardized prescription format and the information is filled by the data operation using a unique identification number (Aadhar card) issued by unique identification authority of India, thus helping in identifying the patient easily and it also serves as a record where retrospective information about the patient can be easily retrieved.[7] The weight of the patient is not mentioned in all 96 prescriptions, as this demographic information helps in planning the treatment schedule, especially dose of a drug.

Regarding prescriber information, the registration number and qualification of the prescriber is not mentioned in all 96 prescriptions. A well-maintained prescriber's information helps the patient with an easy approach to the same doctors during their regular visits and also serves as a proof in case of any medico-legal issue.[8]

The results were similar to a study conducted by Navadia et al in which the patient related information is 100%.[6]

In this study the average number of drugs per prescription is 1.9 which is lower than a study conducted by Meenakshi et al in which the average number of drugs per prescription is 2.38±1.1.[9] However, the optimal value recommended by the WHO is 1.6-1.8 drugs per encounter. The prescribers are adhering to this recommendation.

The percentage of drugs prescribed by generic name in this study is 37.9% according to WHO prescribing indicator calculation which is much lower when compared to a study conducted by Meenakshi et al.[9] As per prescription audit guidelines, the percentage of prescription of drugs by generic name is 72% which is better than a study done at a secondary level hospital in Maharashtra, where 60% of drugs were prescribed by generic name.[10]

The percentage of prescriptions with an antibiotic prescribed was 40.6%, as per WHO core indicators with the same result when calculated as per NHM prescription audit guidelines. This is much higher than WHO recommendations (20%-26.8%).[11] The main reason for this higher percentage of prescriptions of antibiotics in ENT OPD could be due to patients visiting OPD are diagnosed with infections such as acute and chronic suppurative otitis media, acute tonsillitis, acute cervical lymphadenitis, pharyngitis, acute laryngitis etc that require treatment with antibiotics.

This study also showed a lower percentage of prescriptions with injections prescribed as 2.08% compared to the optimal value of 13.4%-24.1% recommended by WHO.[12]

The percentage of drugs prescribed from NLEM was 37.9% which is in contrast to a study done by Meenakshi et al that showed 88%, but the percentage of prescriptions with drugs prescribed as per NHM guidelines is 100% as 84 were prescribed medicines out of 96 prescriptions and 12 were not prescribed any medicines at all. This is almost similar to the finding in a study done by Aravindhan et al.[13]

In this study all the prescriptions contained general patient information, sociodemographic details as these details were filled in a standard printed format of prescription using unique identification number (Aadhar card) issued by unique identification authority of India. Similar findings were also seen in a study done by Singh et al in which the reason was also due to prescriber identifiers such as name of the doctor is mentioned in all prescriptions as this identifier is in the printed format prescriptions were duly signed by the doctor in 83% of prescriptions.[11]

The two lowest performing attributes in this study i.e. allergy status of the patient and generic name of the drugs was identified and an action plan with a defined timeline is prepared that comprises constructive feedback to all HCPs of ENT department by education regarding: How mentioning allergy status helps HCPs optimize medication and therapy, decreases the incidence of adverse drug reactions, reduces economic burden to the patient and health care system to ensure an improvement in quality health care. Encouraging the use of generic names helps reduce healthcare costs without compromising efficacy and offer more affordable treatment options. Mentioning a presumptive/definitive diagnosis can facilitate rational prescribing decisions thereby maximizing clinical effectiveness and minimizing harm to the patient.

## CONCLUSION

It was evident from the prescription audit that most of the prescriptions were in accordance with the WHO standard recommendations. There were no irrational use of antibiotics or unwanted use of injectables. Regular prescription auditing improves prescribing standards, reduce prescription errors, enhance both prescription quality and patients care and providing constructive non-judgemental feedback to reinforce correct prescribing behaviour.

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## REFERENCES

1. National institute for clinical excellence (NICE): principles for best practise in clinical audit. oxford: Radcliff publishing. 2002.
2. Ahsan M, Shaifali I, Mallick A.K, Singh H.K, Verma S, Shekhar A. Prescription auditing based on World Health Organization (WHO) prescribing indicators in a teaching hospital in North India. Int J Med Res Rev. 2016;4(10):1847-52.
3. Prescription audit guidelines national health system: ministry of health and family welfare, government of India. 2021;3-4.
4. World Health Organisation. how to investigate drug use in health facilities, selected drug use indication, Geneva: world health organisation /DAP/93.1;1993. Available at: https://www.who.int/publications/i/item/who-dap-93.1. Accessed on 3 August 2024.
5. Sahoo AK, Gupta D, Dhaneria S, Thangaraju P, Singh A. Retrospective analysis of drug prescription statistics in a tertiary care center in India: Recommendations for promoting prudent utilization of drugs. J Res Pharmacy Pract. 2020;9(3):146-6.
6. Navadia KP, Patel CR, Patel JM, Pandya SK. Evaluation of Medication Errors by Prescription Audit at a Tertiary Care Teaching Hospital. J Pharmacol Pharmacotherapeut. 2024;88(5):2315-26.
7. Selvaraj N, Vijaya Santhi Thulasiraman, Manickam S. Prescription audit of psychiatry department at a tertiary care hospital in South India using the World Health Organization recommendations-A cross sectional study. Indian J Pharmacy Pharmacol. 2022;9(4):214-8.
8. Shelat PR. Analysis of Out Door Patients' Prescriptions According to World Health Organization (WHO) Prescribing Indicators Among

Private Hospitals in Western India. J Clin Diagnostic Res. 2015;9(3):FC01-4.
9. Selvaraj N, Meenakshi R, Anandabaskar N, Dhamodharan A, Badrinath A, Rajamohammad M. Prescription audit of a teaching hospital in South India using World Health Organization core prescribing indicators-A cross-sectional study. Perspect Clin Res. 2022;13(3):132-6.
10. Potharaju H, Kabra S. Prescription audit of outpatient attendees of secondary level government hospitals in Maharashtra. Indian J Pharmacol. 2011;43:150-6.
11. Singh T, Banerjee B, Garg S, Sharma S. A prescription audit using the World Health Organization-recommended core drug use indicators in a rural hospital of Delhi. J Educ Health Promot. 2019;8:3.
12. Atif M, Sarwar MR, Azeem M, Umer D, Rauf A, Rasool A, et al. Assessment of WHO/INRUD core drug use indicators in two tertiary care hospitals of Bahawalpur, Punjab, Pakistan. J Pharmaceutical Policy Pract. 2016;9:27.
13. Aravamuthan A, Arputhavanan M, Subramaniam K, Udaya Chander JSJ. Assessment of current prescribing practices using World Health Organization core drug use and complementary indicators in selected rural community pharmacies in Southern India. J Pharmaceutical Policy Pract. 2016;10:1.

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