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Prescription Audit in Outpatient Department of a Tertiary Care Teaching Hospital in Jharkhand: An Observational Study

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Abstract
Background: *The quality of a prescription is an important part of rational prescribing. Rational use of drugs is an essential factor for achieving high quality patient care. The aim of this study is to audit the prescriptions in outpatients departments as per WHO core prescribing indicators for rational use of drugs.* ***Materials & Methods****: 1050 prescriptions were audited over a period of two months in a tertiary care hospital in Jharkhand. Prescriptions were assessed for WHO core prescribing indicators and legibility.* ***Results****: Antibiotic use was more than recommended WHO criteria. 96.14 percent of medicines were prescribed from essential drug list. Percentage of injections was within WHO recommended limit. Two percent prescriptions were not legible. 29.25 % of drugs prescribed were in generic name.* ***Conclusion:*** *Sensitization, awareness , and motivation of prescribers is needed for rational prescription and avoidance of medication errors.*

Keywords: *prescription audit, legibility, NLEM, generic*

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I. Introduction

According to WHO rational drug use is defined as "patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community ." [1]

A prescription is an instruction from a prescriber to a dispenser. [2] It is an important link between the doctor and the patient. The quality of a prescription reflects the competence of a physician and his attitude towards rational prescribing. [3] An ideal prescription must follow guidelines. One of the most important requirement is that the prescription must be clear (legible) and indicate properly what should be given. Poor handwriting can lead to medication errors which is easily preventable . Medication errors can lead to adverse drug reactions which can be disastrous. [4]

Prescription audit is an active process that checks for improvement in quality of health care. [5] Prescription audit involves examining prescriptions and comparing with internationally accepted criteria given by the World Health Organization (WHO) as a guide for good prescription writing. [6]

Audit is defined as evaluation of data, documents and resources to check performance of systems to meets specified standards.

Medical audit is defined as "A quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change." [7] Data generated on the morbidity pattern coupled with the current practices of treatment of these diseases provided an objective basis for preparing an essential medicines list. [8]

II. Materials & Methods

This was a prospective study conducted at Rajendra Institute of Medical Sciences which is a tertiary care teaching hospital in Ranchi. Data were collected from the prescriptions coming from various departments at the pharmacy centre situated in hospital.

Study Design: Prospective open label observational study

Study Location: Rajendra Institute of Medical Sciences,Ranchi,Jharkhand (India)

Data collected were entered in excel spreadsheet and analysed by calculating means.

Legibility of prescriptions were assessed by two pharmacists and categorized into three categories of legibility-legible,poorly or hardly legible and illegible.

Following particulars and parameters were noted and evaluated from the data collected from prescriptions
1.Registration number
2.Department
3.Address
4.Age and gender of patient
5.Mention of provisional diagnosis
6.Number of drugs prescribed
7.Mention of dose
8.Legibility
9.Number of drugs prescribed in generic name
10.Number of drugs written in capital letters
11.Investigations advised
12.Referral
13.Number of injectable drugs
14.Number of antibiotics
15.Number of injectable antibiotics
16.Vitamins,calcium & iron salts prescribed
17.Non-steroidal anti-inflammatory drugs(NSAIDS)
18.Initials of prescriber

The average number of drugs prescribed per encounter was calculated to measure the degree of polypharmacy. It was calculated by dividing the total number of drugs prescribed by the number of encounters . Combinations of drugs prescribed was counted as one. Percentage of drugs prescribed by generic name was calculated by dividing the number of drugs prescribed by generic name by total number of drugs prescribed, multiplied by 100.

III. Results

Prescriptions were evaluated from December 2019 to January 2020. Number of patients in OPD in different departments is shown in Table No. 1 and Figure no.1). Age wise distribution of patients is presented in Table no.2.

Table no 1: Number of patients in OPD in different departments in our sample

Serial No	Department	No of patients	Percentage
1	Cardiology	4	0.38
2	Medicine	265	25.23
3	Obstetrics & gynecology	262	24.95
4	Ear,nose & throat	93	8.85
5	Emergency	113	10.76
6	Ophtaalmology	9	0.85
7	Neurology	15	1.42
8	Oncology	1	0.09
10	Orthopaedics	93	8.85
11	Pediatrics	28	2.66
12	Physical medicine & rehabilitation	18	1.71
13	Psychiatry	1	0.09
14	Dermatology	99	9.42
15	Surgery	40	3.80
16	Chest & tuberculosis	9	0.85

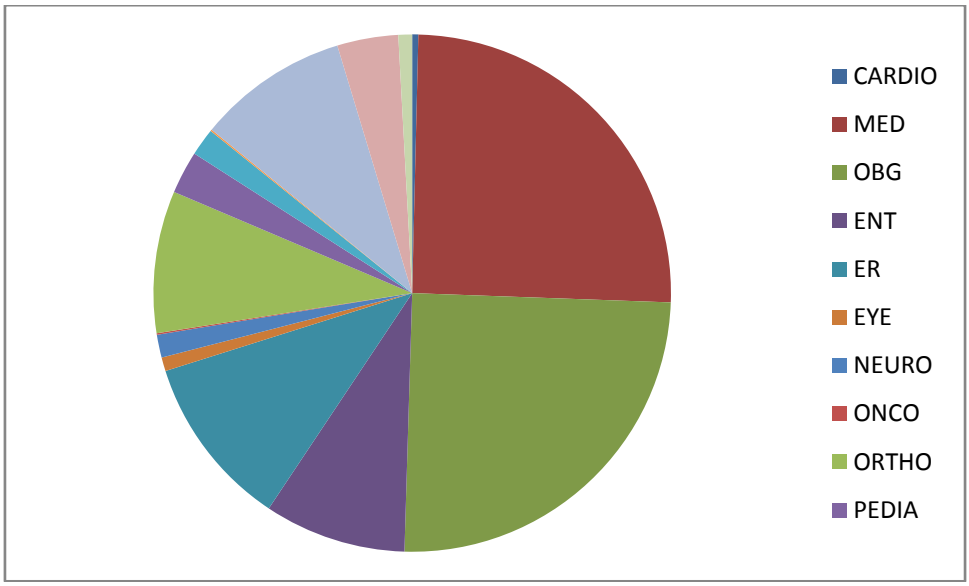

Figure no1: Distribution of patients in various departments. Legends:CARDIO cardiology,MED medicine,OBG obstetrics & gynecology,ENT ear,nose,throat ER emergency,NEURO meurology,ONCO oncology.ORTHO orthopedics.PEDIA pediatrics

Table 2: Age wise distribution of patients

Serial No	Age interval	No of patients	Percentage of total patients
1	1-10	30	2.85
2	11-20	170	16.19
3	21-30	351	33.42
4	31-40	210	20
5	41-50	150	14.28
6	51-60	86	8.19
7	61-70	45	4.28
8	71-80	7	0.66
9	81-90	1	0.09

In our study out of total 1050 patients ,580 patients were female and 470 patients were male.Total 106 pediatric(up to age 18 years,10.09 % of total patients) and 81 geriatric patients(60years and above,7.71% of total patients) were found in our sample.Dose of medicines were mentioned in 1021 (97.23%) prescriptions and dosage were clearly mentioned in 1028(97.90%) prescriptions. Initials of prescriber were found in 1035 (98.57 %) prescriptions .Full name and registration number of prescriber were not mentioned separately.

Table no 3: WHO core prescribing indicators found in our study sample

WHO Core prescribing Indicators	Value found	Desirable value[9]
Average number of drugs per encounter	3.71	1.6-1.8
drugs with generic name	29.25%	100%
Antibiotics	60.85%	20-26.8%
Injectables	3.42%	13.4-24.1%
No of drugs prescribed from NLEM	96.14%	100%

WHO core prescribing indicators are very important for assessment of quality of prescription(Table no.3)
We found that total 1146 drugs(29.25% of total prescribed drugs) were prescribed in generic name. Antibiotics were most commonly prescribed followed by NSAID.Total 694 antibiotics(60.85 % of total encounters) were prescribed. Total 36(3.42% of total encounters)injectables were prescribed. Out of total 3917 drugs prescribed, 3766 drugs (96.14 % of total number of drugs) were prescribed from National essential list of medicines ,2015(NLEM).But physical copy of NLEM was not available in any OPD.
Out of total 1050 prescriptions, 787 (74.95 %) prescriptions were legible, 242 (23.04%)prescriptions were hardly or poorly legible and 21 (2%) prescriptions were illegible (Figure no.2).

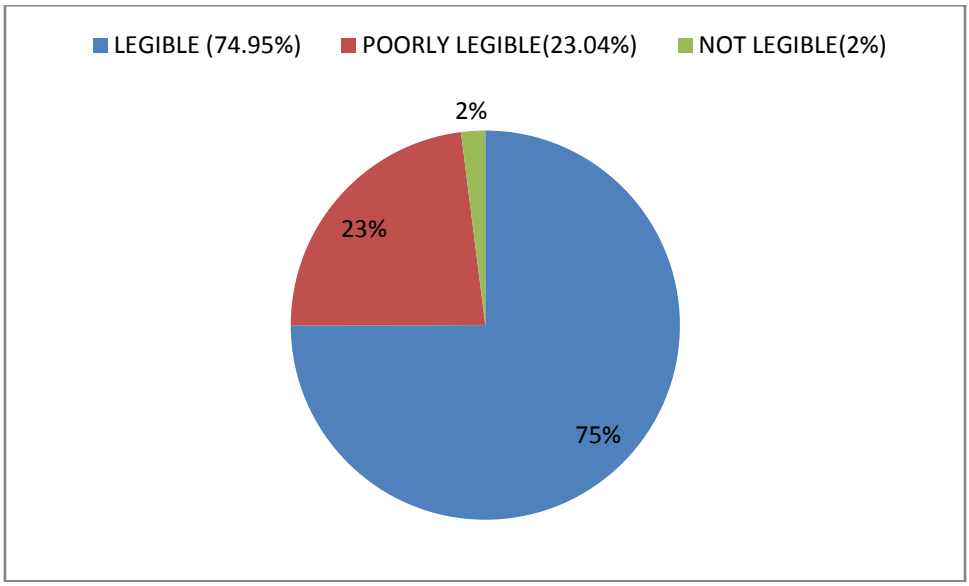

Figure no 2: Legibility of prescriptions

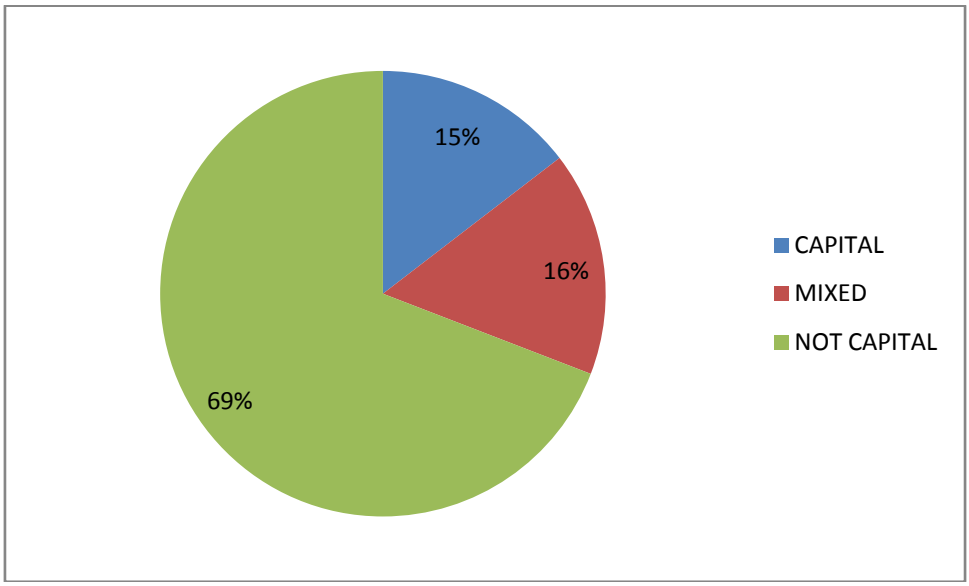

Figure No 3: Number of drugs prescribed in capital letters

Name of all medicines written in capital letters were found in 153(14.57%) prescriptions and in 171(16.28%) prescriptions some medicines were written in capital and some in small letters(mixed) and rest 726 (69.14%) prescriptions in only small letters(shown in Figure no.3) . No any prescription was found with mention of history of allergy to any medication.

Calcium and Iron tablets were prescribed in 321(30.57%) and 266 (25.33%) prescriptions respectively.Non-steroidal anti-inflammatory drugs were prescribed in 419(39.90%) prescriptions. Vitamin supplements were prescribed in 101(9.61%) prescriptions.

78 (7.42%)prescriptions were found with referral to other departments. Investigations were advised in 403 (38.38 %) of prescriptions. Body weight were mentioned in all prescriptions of paediatric patients but not in others.

IV. Discussion

Many studies has been conducted on prescription audits in India, using the World Health Organization (WHO) prescribing indicators for assessing the quality of prescribing. Conducting prescription audits helps in the better understanding of the prescribing behavior of the physicians and reduces the risk of medication error by improving the quality of health care delivery . [10]

In our study average number of drugs per encounter was 3.73. This is in line with findings of study done by Aravamuthan A. et al in south India. [11] This should be maintained as low as possible to reduce adverse effect and cost of treatment.

Physical copy of NLEM should be be available in all OPD,so that prescriber can easily access it when needed. In our study 96.14 % drugs were prescribed from NLEM 2015,but it can be improved by providing copy of NLEM to all prescribers. In other study done by Inderpal Singh et al it was found to be 81%.[12] It may be due to increased awareness on the part of prescribers in our study.

Recently the Government of India and the Medical Council of India have framed rules to prescribe medicines in generic name . [13] In our study only 29.25 % of drugs prescribed were in generic name.This low percentage may be be due to doubts on its quality and availability or difficulty in writing combination drugs in generic name. There is need of improvement in awareness regarding benefits of generic medicines in patients,pharmacists and health care providers.In our study 2% of prescriptions were illegible and 23% were poorly legible. Legibility can be improved by adopting the use of electronic prescribing . [14]

Antibiotics were prescribed in 60.85 % of encounters which is much higher than

recommended 30% or less. The factors behind higher prescription of antibiotics in our study needs to be investigated. Overuse of antibiotics leads to wastage of resources and rise in antibiotic resistance. So there is need of awareness regarding rational use of antibiotics amongst prescribers and general public.[15] Injectable drugs were prescribed in 3.42% of encounters which is well within recommended norms .

V. Conclusion

Prescription audit is an important ongoing mechanism to improve the quality of care given by the hospitals. The result of our study showed that the percentage of drugs prescribed by generic name was less than required. The average number of antibiotic prescribed was higher than recommendation. Number of drugs prescribed from NLEM needs to be improved. Awareness ,continuing education and motivation of prescribers is needed for prescribing in clear handwriting with subscription in capital letters with drugs in generic name. Another option for improvement of legibility is use of electronic prescribing . Comparing the current usage of drugs with the standard treatment guidelines will enhance the effectiveness of treatment and render it cost-effective.

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