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Research article

Evaluation of the World Health Organization's Prescribing Indicators for Antibiotics at a Madhya Pradesh Tertiary Care Hospital

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ABSTRACT

It is crucial to evaluate the antibiotic usage pattern using the World Health Organization's drug use indicators in order to encourage the responsible use of antibiotics in developing nations. A disease's progression, increased health care expenses, and inefficient and dangerous therapy are all consequences of inappropriate prescribing practices. The objective of this research was to evaluate the drug prescription practices at the tertiary hospital in Madhya Pradesh Tertiary tertiary by utilizing core drug use indicators from the World Health Organization. At Madhya Pradesh Tertiary tertiary care hospital, a prospective cross-sectional study was conducted to ascertain the state of prescription practices at the moment. In this investigation, 2506 prescriptions in total were gathered and examined. Out of 3000 patient visits, 6000 antibiotics were prescribed. There were 10 medications on average each contact. There were two instances in which an antibiotic was used. The most often patient given antibiotics were levofloxacin (26%), ceftriaxone (8.68%), and amoxicillin (9.0%). Eighty-eight percent of prescribed medications came from the list of necessary pharmaceuticals, while three percent were prescribed by generic name. While poly pharmacy and the usage of brand names were identified as major issues during the investigation, the rate of antibiotic prescriptions deviated from the World Health Organization's suggested norm. To stop antibiotic overuse and stop more problems, interventions targeted at enhancing antibiotic prescribing practices must be put into place.

Keywords: WHO prescribing indicators, Medication practices, Rational drug usage, Poly-pharmacy

INTRODUCTION

Antibiotics are essential for preventing illness and preserving health, particularly in underdeveloped nations where infectious illnesses continue to be a major problem. Twenty to fifty percent of all hospital drug expenditures are allocated to antimicrobial agents. Nowadays, antibiotics are the most often prescribed medications in hospitals across the globe. Antibiotics are prescription drugs that have the ability to either selectively kill or stop the growth of microorganisms that cause disease. [1, 2]

When patients receive pharmaceuticals that are appropriate for their clinical needs, at the lowest cost, for an acceptable length of time, and in doses that suit their unique needs, this is known as the rational use of medications. [3, 4, 5, 6, 14] The World Health Organization (WHO) held an international conference in Nairobi, Kenya in 1985 to create guidelines for the responsible use of pharmaceuticals. [5, 18]

Self-medication, polypharmacy, improper antibiotic usage, excessive use of injectable medications, and dispensing medications without adhering to pertinent clinical practice guidelines are the most frequent reasons of irrational medication use. [2, 4, 6]

The supervision, audit, and feedback procedures constitute a fundamental framework for encouraging responsible drug use. [7] The process of analyzing a prescription for appropriateness and providing feedback is known as prescription audit and feedback. Promoting the

Sensible use of drugs requires the evaluation of drug use patterns using WHO drug use indicators. Finding and describing the different ways that drug usage is irrational such as polypharmacy, overuse of antibiotics, and injectable medication use is essential to promoting rational drug use. [3, 4, 8, 13].

The World Health Organization's (WHO) core indicators support better prescribing practices, which in turn encourages the prudent use of medications in healthcare facilities. Periodic prescription audits are a useful tool for evaluating doctors' proficiency in rational prescribing. [3, 7, 16] this study detailed the medication prescription practises at the Madhya Pradesh tertiary care hospital.

MATERIALS AND METHODS

This prospective cross-sectional study was carried out in three hospitals' medical wards to evaluate the antibiotic prescription trend. Between March 2019 and February 2020, inpatient prescription data were gathered using random sampling procedures. A total of 3000 prescriptions were gathered and assessed in accordance with the WHO prescribing indicators guideline. Patient details such as age, sex, and ailment were gathered, together with information about the prescribed products, including dosage forms and medications. The Medicine department was the owner of the collected prescriptions. In the current study, WHO prescribing indicators were employed. It consists of drug/prescription, antibiotic prescribed/prescription, antibiotic prescribed by brand name, antibiotic prescribed by generic name,

Antibiotic Combination at Fixed Dose

Change from parenteral to oral therapy; NLEM prescribes an antibiotic, Assuming that each medication is an individual item and that the same generic drug is taken as an individual medication in various dosage forms, the average number of medications per prescription was determined. An endorsement from Bhopal, Madhya Pradesh's & Research's Institutional Review Committee Prior to the investigation, tertiary tertiary was obtained. A data collecting format based on WHO-designed criteria was used to generate the data collection form. For each patient visited, the precise kind of data needed to measure the prescribing indicators was noted and put straight into a computer using Microsoft Office Excel. Parameters like average and percentages were used to analyze the study data.

RESULTS

Every patient file that was reviewed included information about the patient's age, sex, and prescription date. However, the patient's height and weight were not included in any of the patient files. Every prescription that was examined included full references to drug-related information, including the name of the medication, its strength, how often it was taken, and how long it was taken for. Every prescription document included a diagnosis of the illnesses.

Table 1 illustrates that 53.33% of the prescriptions were written for men. The age range of the majority of patients (22%) was between 21 and 30 years old. A total of 6000 antibiotic prescriptions were written, with an average of two medications written for every 3000 patients. Of the total number of prescriptions, 1050 (35%) had just one antibiotic, whereas 8 prescriptions (0.133%) comprised six medications (Table 2).

Table 1: Sociodemographic Characteristics of Sampled Patients at Hospital Inpatient medicine Department

Characteristics		
Gender	**Frequency**	**Percentage**
Male	1600	53.33
Female	850	28.33
Age Range		
21 - 30	660	22.0
31 - 40	582	19.4
41 - 50	496	16.53
51 - 60	470	15.7
61 - 70	380	12.67

Table 2: Summary Report of Number of Drugs per Encounter at Hospital Inpatient medicine Department [13]

No of antibiotic drugs/ prescription	No of Prescription	Percentage
1	1050	35
2	580	19.33
3	670	22.33
4	178	5.93
5	58	1.93
6	8	0.133

Table 3: Summary Report of Prescribing Indicators [14]

Prescribing Indicators	Frequency
Average Antibiotic Prescribed/ Prescription	2
Antibiotic prescribed by generic name	168(2.8%)
Antibiotic prescribed by brand name	5080(84.67%)
Fixed Dose of Combination	799(13.31%)
Antibiotic Prescribed from NLEM	4399(73.31%)
Switch Over Therapy parenteral to oral route	486 (8.1%)

About 73.31% of the drugs were prescribed from the National list of essential medicine. The details are shown

in Table 3. By antibiotics category, Fluroquinolones was the most frequently prescribed (1933, 32.21%) category of antibiotics like Cephalosporin (1860, 31 %) (Table no 4).

Table 4: Most Commonly Prescribed Class of antibiotics [15]

Drug Class	Percentage	Frequency
Fluroquinolones	32.21	1933
Cephalosporin	31.0	1860
Fixed dose combination	11.67	700
Penicillin	8.17	490
Macrolide	5.17	310
Tetracyclin	3.68	221
Nitroimidazole	5.0	300
Aminoglycoside	2.97	178
Nitrofurantoin	0.13	8
Total	100	6000

Table 5: Drug prescribing percent [17]

DRUG NAME	TOTAL	PERCENTAGE
LEVOFLOXACIN	1560	26.0
MOXIFLOXACIN	310	5.17
CIPROFLOXACIN	200	3.3
OFLOXACIN	10	0.167
CEFTRIAXONE	801	13.35
CEFIXIME	220	3.67
CEFOTAXIME	200	3.33
CEFTRIAXONE SALBACTUM	521	8.68
CEFOPARAZONE SALBACTUM	30	0.5
PIPERACILLIN TAZOBACTUM	198	3.3
AMOXICILLIN CLAVULANICACID	241	4.01
TRIMETHOPRIM SULFAMETHAXOLE	8	0.13
CEFOTAXIME SALBACTUM	20	0.33
AMOXICILLIN	540	9.0
AMPICILLIN	80	1.33
PENICILLIN	10	0.167
PIPERACILLIN	29	0.48
DOXYCYCLIN	231	3.85
MINOCYCLIN	7	0.11
CLARITHROMYCIN	263	4.38
ERYTHROMYCIN	8	0.13
AZITHROMYCIN	175	2.92
METRONIDAZOLE	200	3.33
AMIKACIN	130	2.17
NITROFURANTOIN	8	0.13
	6000	100

By specific types of antibiotics, Levofloxacin (1467, 28.4%) was the most frequently prescribed antibiotic, followed by ceftriaxone (791, 15.3%) and Amoxicillin (510, 9.9%) (Table no 5). Among the 2506 prescriptions, Respiratory tract infections (1176, 46.93%) were the most common diagnosis for frequently prescribed antibiotics followed by Gastrointestinal infections (784, 31.28% (Table 6**).**

Table 6: Summary of Common Diagnosis for Frequently Prescribed Antibiotics [16]

Disease Condition	No of prescription	Percentage
Respiratory Disorder	1280	21.33
GI Disorder	808	13.47
Urinary Disorder	410	6.83
Viral Infection	200	3.33

DISCUSSION

Every one of the 6000 prescriptions has the patient's name, age, and sex on it. This could be a result of advances in health professionals' prescription and dispensing methods, which could be attributable to ongoing professional development and cutting-edge procedures carried out by the hospital, particularly the pharmacy department.

A prescriber's education, perspective on the illness they are treating and the kind of healthcare system they operate in all have an impact on the prescription drug list. According to the study's findings, there were [8] prescription medicines on average, which was more than the norm of 1.5–1.7 prescription drugs per contact. [9] The average number of prescription medications in Madhya Pradesh, India, was 2.0, which is contrary to our findings. [3] more medications per prescription, which could be caused by a variety of factors. Lack of evidence-is based standards, polypharmacy, and medical incompetence. Higher prescription drug counts can have a negative impact on treatment outcomes because they increase the likelihood of non-compliance, interactions, and adverse events in patients.

According to this survey, respiratory tract infections (21.3%) and gastrointestinal tract infections (13.47%), respectively, were the most frequent reasons for prescribing antibiotics. This outcome was in line with research done in Bangalore, India, and the University of Gondar in Ethiopia.[1, 2] This may be because antibiotics are the standard treatment for respiratory tract infections like tonsillitis and pharyngitis, which typically result from poor personal cleanliness, and since these conditions are highly prevalent in India.

In our analysis, 3% of prescriptions were written under their generic names, which was substantially less than the benchmark of 100%. [9] This low rate of prescriptions for generic names has been noted in numerous other Indian research. [2, 3, 7] Approximately 40% of medications in India were prescribed under their generic names, according to a comparable research. [1] This could be the result of economic disparities between the populations of the two nations, or it

could be the result of variations in the drug procurement policies of the two countries, with the Ethiopian procurement policy encouraging the purchase of medications under generic names. Medical representatives from pharmaceutical corporations have the ability to influence doctors' prescribing behavior, which can result in a rise in the number of drugs prescribed under brand names. Prescription of generic medications would rationalize drug use and lower healthcare costs.

The most commonly administered class of antibiotics in this study was cephalosporin (31%), followed by fluroquinolones (32.21%). [1]. in the current study, the most commonly given antibiotics were levofloxacin (26%), ceftriaxone (8.68%), and amoxicillin (9%), in that order. This result was found differed from a study carried out at the University of Gondar in Ethiopia, where the most commonly given antibiotics were amoxicillin (28.5%) and ciprofloxacin (12%).[1,14] Research done in a Brazilian referral hospital and in Ethiopia revealed that amoxicillin and ampicillin were two of the most often administered antibiotics. [10] However, this was not the same as a study carried out in Bangalore, India, where the most commonly administered antibiotic was ceftriaxone. [2] This could be caused by regional differences in the susceptibility or resistance of bacteria, prescription practices, and the occurrence of infectious diseases in various nations. [11, 12]

The proportion of medications prescribed from the essential pharmaceuticals list in this study was 73.31%, which was not far from the WHO's recommended maximum of 100%. The present study's findings on good prescribing practices may be attributable to the hospital management's stringent oversight or the pharmaceutical procurement policy, which is based on the nation's Essential Drugs List and forbids prescribers from writing prescriptions for medications not on the list because only those medications are available in the healthcare facility [18].

CONCLUSION

The results of this study indicate that the criterion set by the World Health Organization is not always followed when administering antibiotics and medications under generic names. This study showed no issues with prescribing from NLEM. On the other hand, a high average of prescription medications was identified. The quality of prescriptions needs to be raised. This can be accomplished by giving professionals conventional treatment guidelines, an essential drug list, antibiotic policy, and continuing medical education (CME) and seminars. .

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Ethical examination

Ethics has been robbed of its ethical sanction.

Interests in conflict: None.

Abbreviations

NLEM - National list of Essential Medicine
FDC - fixed-dose combinations
WHO - World Health Organization

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