

**DRUG UTILIZATION STUDY OF ANTIBIOTICS IN SKIN AND VD OPD OF
GOVERNMENT AND PRIVATE HOSPITALS OF RAJASTHAN****Kamal Kishore Khichi^{*1}, Monika Sharma² and Anusuya Gehlot³**¹Associate Professor, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.²Senior Demonstrator, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.³Senior Professor, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.***Corresponding Author: Kamal Kishore Khichi**

Associate Professor, Department of Pharmacology, Dr. S.N. Medical College, Jodhpur.

Article Received on 21/09/2021

Article Revised on 11/10/2021

Article Accepted on 31/10/2021

ABSTRACT**Aim-** A prospective cross sectional study conducted in skin & vd OPD of Public and Private hospital of Rajasthan.**Method-** It was a prospective cross-sectional study. The study was based on the prescription pattern of antimicrobials agents prescribed in selected OPDs of the Government and Private hospitals Of Western Rajasthan. The data from the prescriptions were entered into a specially designed Performa in accordance with the WHO prescribing indications. **Results-** Average number of drugs and antibiotic utilization higher in both hospitals. Less number of antibiotic prescribed by generic name in private hospital. **Conclusion-** This study clearly has shown the practice of poly-pharmacy, low use of generic drugs especially in Private hospitals, and higher use of antibiotics.**KEYWORD:** Cross sectional study, WHO core indicators.**INTRODUCTION**

“If we use Medicines (specially Antibiotics) when not needed, we may not have them when they are most needed.” -Dr. Tom Frieden, Director U.S. CDC

Medicines are the main pillar of health care system.^[1] If drugs are use rationally then battle against disease is almost half won. Now a days There are more effective and new drugs are available in the market. Consumers are more aware, and they have more demands from Medicare centres, and often use multiple sources of health care system. Unfortunately the use of medicine not according to their full power and not based on commonly established criteria specially antibiotics. All the prescribe drugs are not essentially according on patient requirement and all consumers demands are not appropriately link up with prescribed drug treatment. therefore, inappropriate prescribing are much concerned as compared to under-prescribing.^[2] Antibiotics are most commonly used drugs in Hospital settings for the treatment of infections. Irrational, inappropriate and overuse of antibiotics can be associated with a number of serious outcomes to the patients and community.^[3] The evolution of drug utilization research made it feasible to study prescribing pattern of drugs and medicament usage in a scientific manner.^[4] Drug Use Evaluation (DUE) of commonly used antibiotics can improved treatment efficacy and conserving cost and preventing unwanted adverse effects The major objective of drug use study is to promote appropriate utilization of drugs in

populations.^[5] Prescription is a very important document to promote rational use of drugs for individual patients. A prescription should contain well-documented drug in a right dose for right symptoms, along with the appropriate details and at an economic cost.^[6] In the absence of awareness on how drugs are prescribed appropriately and used for right indication, it is very tough to start a debate on logical use of drug and to advise methods to improve prescription writing skills for the better health care facilities.

AIMS & OBJECTIVES

To evaluate the extent of antibiotic utilization pattern in Skin & VD OPDs of Government and Private Hospitals in Western Rajasthan, India by using WHO core indicators.

MATERIAL AND METHOD**Settings**

The present study was carried out in Skin & VD OPDs of Government and Private hospitals of Western Rajasthan.

Study Design

It was a prospective cross-sectional study. The study was based on the prescription pattern of antimicrobials agents prescribed in Skin & VD OPDs of the Government and Private hospitals Of Western Rajasthan. The data from the prescriptions were entered into a specially designed Performa in accordance with the WHO prescribing indications. The following parameters were write down

for every prescription: Diagnosis, Name of antibiotic (generic/brand name), Dose, Frequency, Route, Duration.

Duration of Study

The data was collected from October 2017-march 2018.

Ethical Aspects

The study project was approved by the institutional Research Ethics Committee. The researcher signed a commitment term related to data utilization for the study purpose, ensuring the ethical aspects, according to Resolution.

Study Population

A total of 200 prescriptions were collected and copied from both Government and Private hospital during the study from the OPDs of Skin and VD. 100 prescriptions were collected from each hospital.

Inclusion Criteria

- Out patients who were prescribed or treated with antimicrobial medication, were included in this study.
- Patients between 18 years to 65 years were included in study.

Exclusion criteria

- Prescriptions which did not containing antibiotics were excluded from the study
- Emergency and Inpatients department (IPD) were excluded from the study.
- Pregnant women and Peadiatric population were excluded from the study.

The WHO and International Network for Rational Use of Drugs (INRUD) have developed a standard set of drug use indicators⁷. The data collected was analysed on the following criteria, which includes selected WHO core indicators and additional indicators of drug use the data was enclosed in the form similar to drug use indicator consolidation form as outlined below.

Prescribing Indicators

- 1) The average number of drugs per prescription was calculated by dividing the total number of various drug prescribed of prescriptions surveyed.
- 2) The percentage of drugs prescribed by the generic name was determined by dividing the number of the generic drugs prescribed by the total number of drugs prescribed, multiplied by 100.
- 3) The percentage of prescriptions with an injection that was prescribed was calculated by dividing the number of patient encounters during which an antibiotic or injection was prescribed by the total number of s surveyed, multiplied by 100.
- 4) The percentage of drugs prescribed from the essential medicine list (Rajasthan State Essential Medicine List 2019) was determined by dividing the

number of drugs from the essential medicine list of the hospital.

Additional Indicator

1) The percentage share of different antibiotics
The percentage share of different antibiotics also calculated by formula given below-

$$\frac{\text{Total number of particular group of antibiotics} \times 100}{\text{Total number of antibiotics prescribed in particular OPD}}$$

Statistical Analysis

The Epi info version 7 was used for data analysis. The comparison of both hospitals was done by using the Chi-square test. For all the tests, a probability (p) value of less than 0.05 was considered to be significant.

RESULTS

The present prospective drug utilization study was undertaken in Skin & VD outpatient departments of Government and Private hospitals of Western Rajasthan. Once, the consultation by clinician was over the prescriptions were noted down from OPD prescriptions and data were noted in data acquisition form. The data obtained from the prescription were analysed as per the WHO drug utilization guidelines as described in material and methods.

1. Average Number of Drugs Per Encounter

The average number of drugs per prescription was calculated by dividing the total number of different drug products prescribed of encounters surveyed. This indicator helps to calculate the degree of polypharmacy. The average number of drugs per encounter was 3.7 in Government and 3.6 in private hospital.

2. Percentage of Antimicrobials Prescribed By Generic Name

The percentage of drugs prescribed by the generic name was determined by dividing the number of the generic drugs prescribed by the total number of drugs prescribed, multiplied by 100. This indicator measures the tendency to prescribe by generic name. Most of the antibiotics (43.46%) were prescribed by generic name in Government hospital. Generic antibiotic prescribing was Lowest (3.26%) in private hospital.

2. Percentage Of Total Number Of Antibiotic Prescribed

The percentage of total number of antibiotic were calculated by total number of antibiotics dividing the total number of drugs, multiplied by 100. This indicator helps to measure the overall use of antibiotics in health facility. 49.72% antibiotics were prescribed in Government hospital and 42.5% antibiotics were prescribed in private hospital This suggests variations depending on the need of medicines due to different type of diseases.

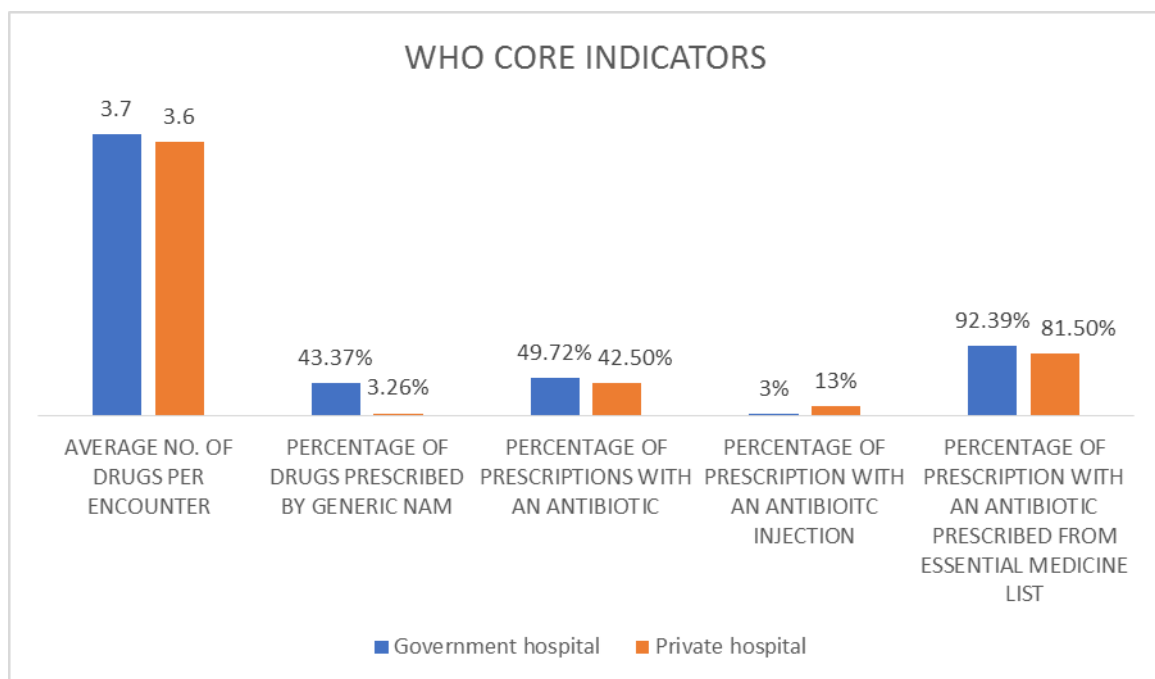
4. Percentage Of Prescriptions With Antibiotic Injection Prescribed

The Highest number of antibiotic injection (13%) were prescribed in private hospital. The lowest number of antibiotic injections(3%) were prescribed in Government hospital.

5. Percentage of Antibiotics Prescribed From An Essential Medicine List (EML)- In Government hospital 92.39% antibiotics were prescribed from Rajasthan state essential medicine list 2019. In private hospital 81.04% of antibiotics prescribed from EML.

Table-01:

Who core indicators	Government hospital	Private hospital
AVERAGE NO. OF DRUGS PER ENCOUNTER	3.7	3.6
PERCENTAGE OF DRUGS PRESCRIBED BY GENERIC NAME	43.47%	3.26%
PERCENTAGE OF PRESCRIPTIONS WITH AN ANTIBIOTIC	49.72%	42.5%
PERCENTAGE OF PRESCRIPTION WITH AN ANTIBIOTIC INJECTION	3%	13%
PERCENTAGE OF PRESCRIPTION WITH AN ANTIBIOTIC PRESCRIBED FROM ESSENTIAL MEDICINE LIST	92.39%	81.04%



Percentage of Antibiotics In Skin & Vd Opd Of Government And Private Hospital

During study Fluconazole, Cotrimazole and Ketoconazole and other drugs were frequently prescribed in Government (76.08%) hospital. Cephalosporins were mostly prescribed Private (20.91%) hospital. Fixed dose

combinations were mostly prescribed in Private (11.76%) hospital. Broad spectrum antibiotics were used Private (16.99%) and Government (2.17%) hospital. Macrolides used in Private (9.15%) and Government (8.69%) hospital. Penicillins were only prescribed in Private (5.22%) hospital.

Table-02: SKIN & VD OPD.

Antibiotic group	Percentage of Prescription		Difference Δ%
	Govt. Hospitals	Private Hospitals	
Cephalosporins	3.2%	20.91%	16.99%
Penicillins	-	5.22%	5.22%
Macrolides	8.69%	9.15%	0.46%
Fluroquinolones	2.17%	1.9%	0.27%
Broad spectrums	2.17%	16.99%	14.82%
Aminoglycosides	4.34%	2.61%	2.18%
Nitroimidazoles	-	11.76%	11.76%
FDCs	3.26%	11.76%	8.5%
Others	76.08%	19.60%	56.48%

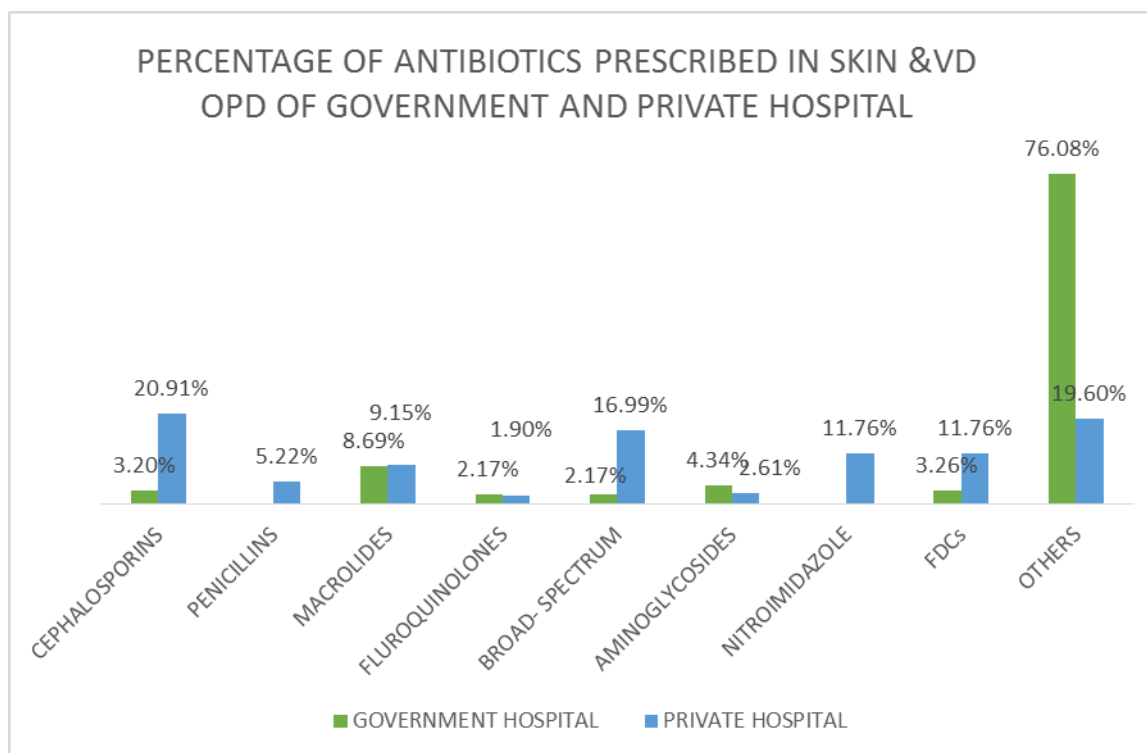


Figure 02: SKIN & VD OPD.

DISCUSSION

Antibiotics are effective and strong drugs against different life-threatening infections. Antibiotics have saved millions of lives since their first appearance seventy years ago.^[8] Inappropriate and irrational use of antibiotics is major cause of the emergence of antibiotic-resistant strains and many are dying despite usage of antibiotic.

Assessment of Average Number of Drugs Per Encounter

Polypharmacy occurs when patients use more number of drugs than are necessary; for example, a patient with an upper respiratory infection receiving prescriptions for antibiotics, cough remedies, analgesics, and multivitamins. polypharmacy is usually calculated by measuring the average number of medicines per prescription. The average number of drugs per prescription is an important parameter in prescription audit.^[9] Based on the WHO prescribing indicators, it was seen that the average number of drugs per prescription is an important way for review and educational intervention in prescribing practices. The total number of drugs per prescription should be as low as possible since a higher number of drugs increases the risk of treatment failure. In the present study, the overall average number of drugs per prescription was 3.6 in Government hospitals and 3.7 in private hospital. This number is very much higher than the recommended limit of 2.0 by WHO.^[10]

Assessment of Drugs Prescribed By Generic Name

For the encouragement of rational use of medicines in India, the All India Drug Action Network was founded in

1982. Since then; it is active in the campaign for rational use of medicine. Prescribing under the generic name is considered rational and economical but very low antibiotics were written under a generic name in Skin & VD Out Patient Departments of the private hospital. Drugs prescribed by Generic name helps the hospital drug store to have better inventory control. WHO (1997) has recommended that 100 % of the drug should be prescribed by generic name.

Assessment of Prescription With An Antibiotic

India is a crowded populated country with a larger Clinical need, so it becomes a perfect country for multinational companies to pump in their newly developed but poorly researched drugs including antibiotics. There has been an increasing need for new antibiotics because of inappropriate and irrational antibiotic use and the threat of bacterial drug resistance to almost all available antibiotics. A study by the National Academy of Sciences (NAS) reveals that Antibiotic use more than doubled in India between 2000 and 2015. Overuse and misuse of antibiotics lead to antibiotic resistance that is making common infections (such as sore throat, pneumonia, and tuberculosis) more difficult to treat. In Government hospitals 49.72 % of the prescriptions and in Private hospital 42.50% prescriptions had antibiotics. This percentage is high than that recommended by WHO (20.0-26.8).

Assessment Of Prescriptions With Injection Prescribed

Generally oral route remains the preferred route for the administration of antibiotics but sometimes it becomes necessary to give antibiotics by parenteral route. In the

present study Percentage of prescriptions with an antibiotic injection was 3% in Government hospitals and 13% in Private hospital which is according to WHO (Optimal Value-13.4-24.1). This indicating a positive trend toward a reduction in the indiscriminate use of antibiotics and unnecessary injections.

Assessment of Drugs Prescribed From Essential Medicine List (Rajasthan state essential medicine list 2019)

Drugs should be prescribed from the Essential medicine list, it improves the quality of healthcare. Each individual receives the right medicine, in the right dose for the right duration with appropriate information and follow up treatment, at an affordable cost. This forms the concept of rational use of medicine. In Government hospital percentage of drugs prescribed from the Essential Medicine List was high (92.39%) in comparison to Private hospitals where 81.50% of prescribed drugs were from EML.

Assessment Of Percentage Share Of Different Antibiotics In Selected OPDS

India needs to banned irrational fixed-dose combinations, educate health practitioners about appropriate antibiotic prescribing, control over-the-counter sale of antibiotics. Antibiotic resistance can be reduced by increasing vaccination usages. Twenty-four antibiotics are included in India's Schedule H1 of the Drugs & Cosmetic Rules these antibiotics should have red-line labeling and pharmacist should keep a separate register and noted the name and address of the prescriber, patient's name, the name of the drug and the quantity supplied. So antimicrobial audit is an important index because they indicate the urgent changes in the pattern of antimicrobial use with the susceptibility patterns of bacteria. They also indicate the extent of the use of newer antimicrobial agents. We need strict regulations to stop the over-the-counter sale and irrational prescriptions.

CONCLUSION

This study clearly has shown the practice of poly-pharmacy, low use of generic drugs especially in Private hospitals, and higher use of antibiotics.

BIBLIOGRAPHY

1. Laxminarayan R, Duse A, Wattal C, Zaidi AK, Wertheim HF, Sumpradit N, et al. Antibiotic resistance the need for global solutions. *The Lancet Infect Dis.*, 2013; 13(12): 1057 - 98.
2. Robert Beaglehole AI, Thomson Prentice. *The World Health Report Changing History.* World Health Organization, 2004; 120-4.
3. Cecchini M, Langer J, Slawomirski L. *Antimicrobial resistance in G7 countries and beyond-Economic issues, policies and options for action.* Paris: Organisation for Economic Co-operation and Development, 2015.
4. Laxminarayan R, Matsoso P, Pant S, Brower C, Røttingen JA, Klugman K, et al. Access to effective antimicrobials: a worldwide challenge. *Lancet*, 2016; 387: 168-75.
5. Mendelson M, Røttingen JA, Gopinathan U, Hamer DH, Wertheim H, Basnyat B, et al. Maximising access to achieve appropriate human antimicrobial use in low- income and middle-income countries. *Lancet*, 2016; 387: 188-98.
6. Strom BL, Stephan EK, editors. *Pharmacoepidemiology.* 4 th ed. Wiley Blackwell: Wiley and Sons, English, 2005.
7. National laboratories for drug quality surveillance and control. WHO Expert Committee on Specification for Pharmaceutical Preparations. Twenty-ninth Report. WHO Technical Report Series No.704, Annex 1. Geneva, World Health Organization, 1984.
8. Sharma M, Eriksson B, Marrone G, Dhaneria S, Lundborg CS. Antibiotic prescribing in two private sector hospital; one teaching and one non-teaching : A cross-sectional study in Ujjain, India. *BMC Infect Dis.*, 2012; 12: 155.
9. R Selvaraj. Prospective assessment of antimicrobial prescribing pattern at a tertiary care hospital. *Al Ameen J Med Sci.*, 2015; 8(4): 276-280
10. Good laboratory practices in government drug control laboratories. WHO Expert Committee on Specification for Pharmaceutical Preparations. Twentieth Report. WHO Technical Report Series No.748, Annex 1. Geneva, World Health Organization, 1987.