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STUDY OF ANTIBIOTIC UTILIZATION PATTERN IN MEDICINE OPD OF GOVERNMENT AND PRIVATE HOSPITALS OF WESTERN RAJASTHAN

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ABSTRACT

Background: Irrational and inappropriate use of antibiotics can cause antibiotic resistance. The present study was a prospective study done in general medicine ward of Government and Private hospital to analyze the utilization pattern of antibiotics using Prescriber indiactor of the World Health Organization core drug use indicators. **Method:** It was a prospective, cross sectional study conducted in Medicine OPD OF Government and Private hospitals of Rajasthan. Total 200 prescriptions were analysed. Result: Average number of drug per prescription was 3.4 in Government and 4.2 in private sector. Drug prescribed by generic name was very low in private hospital. Antibiotic utilization was slightly high in both hospital. Less number of Injections were prescribed in both hospitals. **Conclusion:** There is a critical need of improvement in the standards of prescribing patterns in many aspects. The prescriptions should include more generic drugs as they decrease the cost of treatment specially in private hospital.

KEYWORDS: Antibiotic utilization pattern, Antibiotic resistance.

INTRODUCTION

Drug utilization studies are main tool for the formulation of drug policy. These study also provide useful methods for teaching and training in drug therapy to the health practitioners. Irrational and inappropriate use of antibiotics has become a matter of major concern for health authorities all over the world. WHO developed a "Drug utilization program" to understand better the problem and find the appropriate solution of the problem.[1,2] Antibiotics are drugs which is used to prevent and treat the bacteria. Antibiotic resistance occurs when bacteria dose not respond to the antibiotic.[3] The discovery of penicillin by Sir Alexander Fleming in 1928 was the starting of antibiotic revolution, which changed the course of modern medicine.[4] Antibiotics have effectively prolonged the life span and are currently the most commonly and widely prescribed drugs in hospitals.[5] But, irrational and inappropriate use of antibiotics, increased the antibiotic resistance.[6-8] The rational use of antibiotics is a major health need. Antibiotic resistance is increasing critically all over the world. According to WHO, Antibiotic resistance is a worldwide health emergency and greatest challenge for public health.[4] Due to antibiotic resistance most of the infection like Tuberculosis, Pneumonia, and other food borne diseases are becoming harder to treat. Irrational and overuse of antibiotics is the main factor for antibiotic resistance and can cause adverse drug reactions. In India antibiotic resistance due to overuse of antibiotics has been a persistent public health problem. Antibiotics are mainly active against bacteria, so they are only effective against bacterial infections. Several studies have confirmed the overuse of antibiotics is harmful to the patients. Inappropriate use of antibiotics has made once easily treatable bacterial infections harder and oftener impossible to cure because bacteria rapidly develop resistance against antibiotics. To tackle the problem of antibiotics W.H.O. promote various programs. W.H.O. (1985) has defined drug utilization as the marketing, distribution, prescribing and use of drug in a society with main emphasis on resulting medical, social, and economical consequences. It is an important and reliable tool to evaluate the use of antimicrobial and development of resistance for it. So this study conducted in Medicine OPD of Government and Private hospital.

MATERIAL AND METHOD

The present study was conducted in Medicine OPDs of Government and Private hospitals of Western Rajasthan. 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 hospital Jodhpur. The data from the prescriptions were entered into a specially designed Proforma in accordance with the WHO prescribing indications. The following parameters were recorded for each

prescription: Diagnosis, Name of antibiotic (generic/brand name), Dose, Frequency, Route, Duration. The study duration was 6 months.

RESULTS

The present prospective drug utilization study was undertaken Department of Pharmacology (Dr. S.N. Medical college, Jodhpur) and 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. Average number of drug per prescription was very high in both private hospital (4.2) and government hospital (3.4). WHO optimal value for this indicator is 2. Antibiotic prescribed by generic name was 75.71% in Government hospital. Very low percentage of antibiotics was prescribed by generic name in private hospital (8.5%). Prescription with an antibiotics were slightly high in both hospital as compare to optimal value of WHO 20.0%-26.8%. injections were prescribed very less in Private (10%) and Government (8%) hospital. Most of the antibiotics were prescribed from Rajasthan Essential Medicine List (2019) in Government Hospital (97.29%). Mostly prescribe group of antibiotic was cephalosporin in both hospitals followed by fluroquinolones. Mostly prescribed drug in Governemt hospital was Cefixime, Cefuroxime, Azithromycin, Ofloxacin and Ciprofloxacin. In Private hospital mostly prescribed drugs were Cefixime, Ceftriaxone, Cefpodoxime, Azithromycin and Levofloxacin. Ofloxacin + Ornidazole and Amoxicillin + Clavulanic acid were mainly prescribed in both Government and Private hospitals.

Table 1: WHO Core Indicators.

WHO Core Indicators	Government Hospital	Private Hospital
1. Average number of drugs per prescription	3.4	4.2
2. Percentage of Antibiotics prescribed by generic name	75.61%	8.5%
3. Number of Antibiotics prescribed per prescription	31.71%	29.76%
4. Percentage of antibiotics injection per prescription	8%	10%
5. Percentage of antibiotics prescribed from EML	97.29%	88%

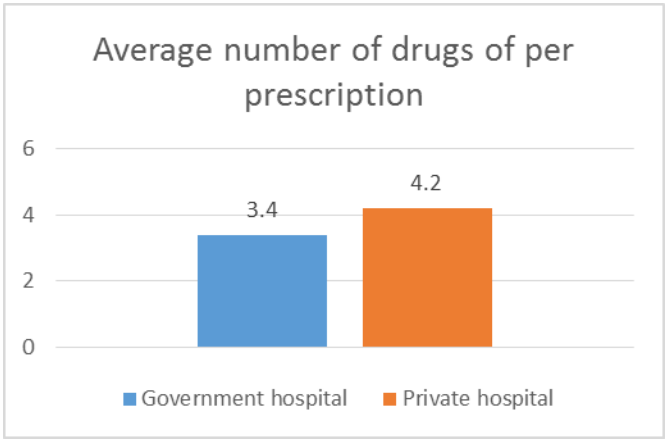
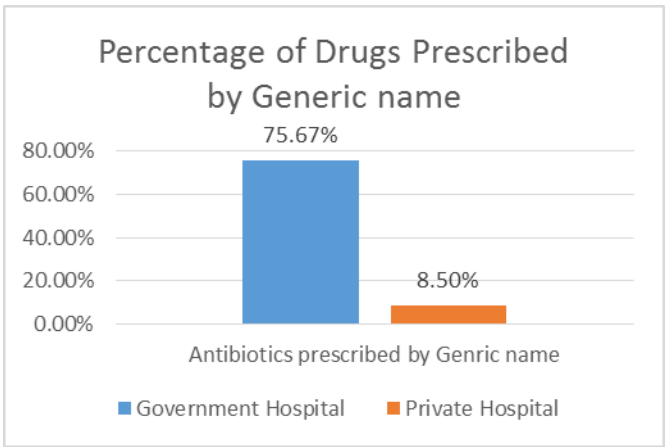


Figure-1.



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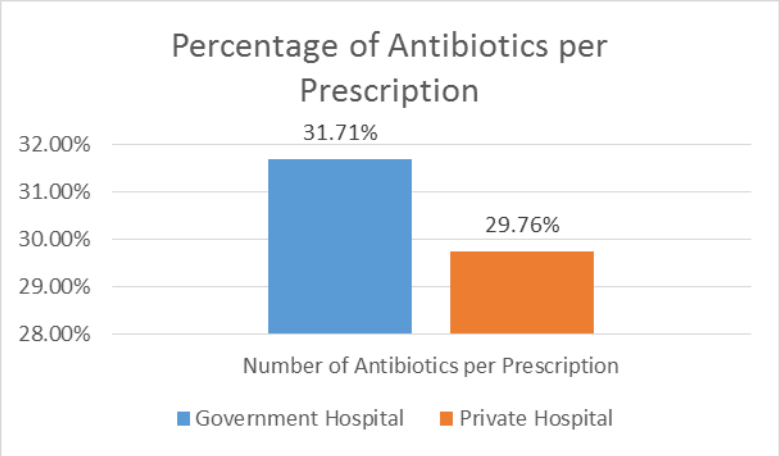

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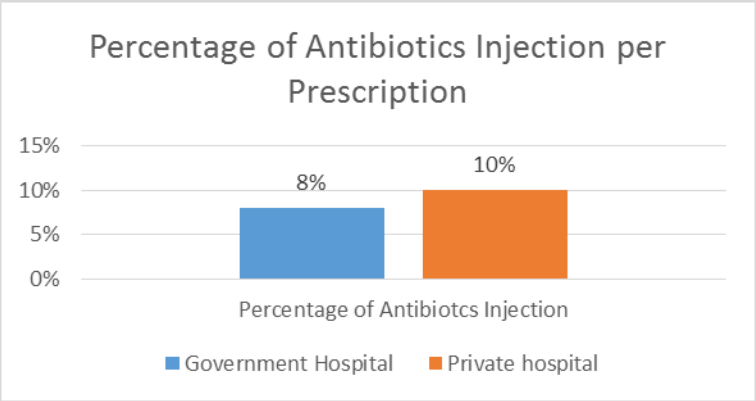

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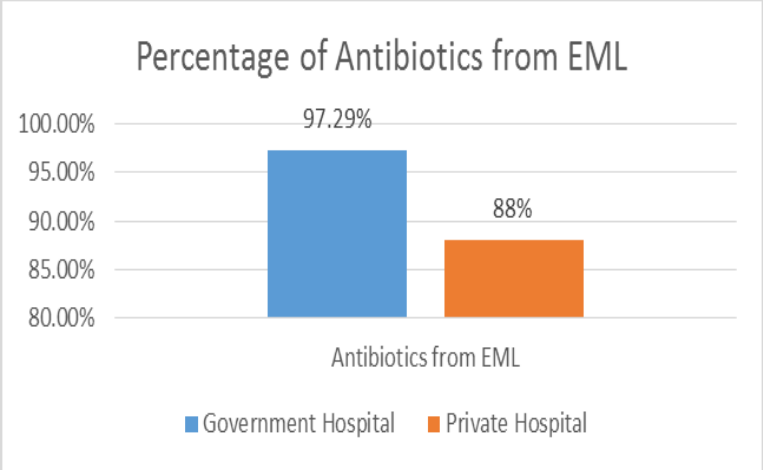

Figure 5.

DISCUSSION

A prescription by a medical practitioner may be taken as a reflection of the clinician's attitude towards the disease and the role of drugs in its treatment. It also provides an insight into the nature of the health care delivery system.[9] Antibiotics are effective and powerful drugs against various life-threatening infections. Antibiotics have saved millions of lives since their first appearance seventy years ago.[10] Inappropriate and irrational use of antibiotics has resulted in the emergence of antibiotic-resistant strains and many are dying despite antibiotic administration. Polypharmacy occurs when patients use more medicines than are necessary; for example, a patient with an upper respiratory infection receiving prescriptions for antibiotics, cough remedies, analgesics, and multivitamins. polypharmacy is usually judged by measuring the average number of medicines per prescription.

The average number of drugs per prescription is an important parameter in prescription audit.[11] In our study the average number of drugs were high in both hospital

and its clearly show polypharmacy. The average number of drugs per prescription was very high in Uttarakhand (8.3)[12] as compared to our study. A similar finding is reported in Pondicherry (4.2)[13] and Western Maharashtra (3.41)[14], A study conducted in Bhuj (Gujrat)[15] reported 1.6 drugs per prescription which is very low as compare to our study. For the propagation 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. In our study 75.67% antibiotics were prescribed by generic name in Government hospital but very less percentage found in Private hospital (8.5%). Prescribing under the generic name is considered rational and economical but very low antibiotics were written under a generic name in all Out Patient Departments of the private hospital. Generic prescribing helps the hospital pharmacy to have better inventory control. Confusion among the pharmacist while dispensing can also be reduced when prescribing by generic names. The incidence of prescribing of drugs by generic name varies in different countries. None of the drugs were prescribed by generic name in Bangladesh.[16] In other countries like Ethiopia (98.7%)[17] and Nepal (83.6%)[18], drugs prescribed by generic names. The underuse of drugs by generic name was reported from Pakistan (56.6%)[19] and Kenya (27.7%). India is a crowded populated country with a larger Clinical need, so it becomes an ideal country for multinational companies to pump in their newly developed but poorly researched drugs including antibiotics. In Government hospitals 31.7% of the prescriptions and in Private hospital 29.76% prescriptions had antibiotics. This percentage is slightly high than that recommended by WHO (20.0-26.8). Antibiotic resistance among pathogenic microorganisms is a matter of worldwide concern. The main reason for antibiotic resistance is the overuse and misuse of antibiotics. Antibiotics are the most commonly prescribed drugs in hospitals. Physicians blamed the patient's desire for the overprescribing of antibiotics. Some Physicians think that diagnostic uncertainty and concern for bacterial superinfection was another reason for antibiotic over-prescription. 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 8% in Government hospitals and 10% in Private hospital which is less then WHO Optimal Value-13.4-24.1. This indicating a positive trend toward a reduction in the indiscriminate use of antibiotics and unnecessary injections. Injection increases chances to the infection causes pain at the injection site and also they are increasing the cost of treatment. 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 (97.29%) in comparison to Private hospitals where 88% of prescribed drugs were from EML. The reason for this high percentage of use of drugs from EML in Government hospitals is quite obvious. In Government hospitals it is compulsory to write drugs from the EML list. If any drug is prescribed out of this list, the cost of that particular drug will not be reimbursed. The reason may be due to their broad spectrum of activity and fewer incidences of adverse effects. The present study revealed that in both types of hospitals Cephalosporins were the most frequently prescribed drug According to the global antibiotic resistance partnership (GARP) between 2005-2009 sales of Cephalosporins were increased by 60%. An ICMR study show that more than 70% of Enterobacteriaceae (which include Salmonella, E. coli, Yersinia pestis, Klebsiella, and Shigella) are resistant to third-generation Cephalosporins. Among the Enterobacteriaceae species, Klebsiella and E. coli have been reported to be resistant to group third-generation Cephalosporins (80%) antibiotics. The combination of Ofloxacin and Ornidazole was mostly prescribed in Government hospital. Combining Antiamoebic with a fluoroquinolone (antibacterial) is irrational because the patient suffers only from one type of diarrhea. The large number of irrational FDCs is easily available in the Indian pharmaceutical market. These irrational FDCs increase the risk of adverse drug events and also increase the cost of treatment.

CONCLUSION

The situation of rational use of drugs as per the WHO prescribing indicators was not satisfactory. The prescribing practices were not up to the mark as they consist of polypharmacy, lesser number of prescription by generic name and over prescription of the antibiotic and FDCs. There is a critical need of improvement in the standards of prescribing patterns in many aspects. The prescriptions should include more generic drugs as they decrease the cost of treatment. The rational FDCs should be prescribed only when it is necessary. Recommendations to improve the current prescribing patterns should be based on the Standard Treatment Guidelines, EML, and antibiotic policy. This study can improve the rational and appropriate use of drugs. It is recommended that this study should be conducted on a larger scale to have a clearer picture of the situation.

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