Study on Antibiotic Prescribing Pattern in the In-Patient Surgery Department of Tertiary Care Teaching Hospital Using WHO Indicator

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Authors’ contributions
This work was done in a joint effort among all authors. Author MN planned the review, composed the convention and composed the main draft of the original copy. Author AP dealt with the investigations of the review and dealt with the writing look. Author AG gives direction and ideas to the improvement of the composition. All authors read and approved the final manuscript.

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ABSTRACT

Aims: The evaluation of antibiotic agents conveyed is critical for guaranteeing that the quality and fittingness of therapy. The study's purpose was to assess the use of antibiotics on the basis of WHO indicator in surgery department.

Study Design: A prospective observational study was carried out in the surgery inpatient department for a period of six months after the approval of the ethical committee in tertiary care hospital.

Place and Duration of Study: Department of Surgery, National Institute of Medical Sciences (NIMS), Tertiary Care Teaching Hospital Jaipur, Rajasthan, between Feb 2019 and July 2019.

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**Methodology:** The information was gathered in a predesigned performa from the clinical case sheets, drug charts of patients. Descriptive statistics were applied to the gathered information and dissected utilizing Microsoft Excel programming.

**Results:** A total of 190 prescriptions were collected of which 995 drugs were prescribed. The total number of antibiotics in prescription was found to be 263. The percentage of antibiotics was found to be 88.42% which was found to be higher on comparing with the WHO marker. Various class of antibiotics was prescribed in which cephalosporin with a total of 120 (45.62%), followed by penicillin 33 (12.54%), macrolide 1 (0.38%) fluoroquinolones 23 (8.75%), nitroimidazole 39 (14.82%), aminoglycoside 38 (14.44%) and other classes 9 (3.45%).

**Conclusion:** The adequacy of anti-microbial is undermined by the worldwide ascent in bacterial resistance and antimicrobial resistance is currently perceived as a significant medical issue. The study shows that the pattern of antibiotics was found to diverge from the WHO recommendation and also practice was lacking in terms of selection of antibiotics as there was no culture sensitivity test was performed. There gives off an impression of being an urgent requirement for the improvement of recommending rules with regards to the use of antibiotic agents.

**Keywords:** Prescription; WHO indicator; antibiotics; culture sensitivity; resistance.

1. **INTRODUCTION**

Medication remedy is basic in clinical practice, and it straightforwardly affects patient confidence in the medical services framework. The capacity to recommend drugs is completely reliant upon the expert's preparation and demeanor toward disease treatment. Various factors impact irrational medication solutions. A great many medication fabricating firms sell their product under different brand names [1,2]. Nonsensical remedy prompts unseemly and over-the-top medication utilization. The nonsensical remedy is known to cause interactions, unusual effects, and antagonistic medication responses. Anti-microbial abuse brings about treatment disappointment and anti-infection obstruction [3].

Unreasonable utilization of drugs is for the most part accused on the allocator, prescriber, patient, and local area. In such a circumstance, it's basic to dissect various issues and devise interventional measures. Recommending markers, patient consideration pointers, and facility markers are three separate segments of center pointers created by INRUD and WHO [4,5]. The normal measure of meds endorsed, the level of medications recommended by conventional name, the level of anti-infection agents recommended, the level of medications suggested from the fundamental medication list, and the extent of infusion experiences endorsed are largely recommending measurements [6,7]. The level of encounters with antibiotics endorsed (b) is determined by separating the quantity of clinical encounters where at least one anti-infection agent was recommended (f) by the absolute number of encounter (x) and communicated as a rate. The level of experiences with anti-microbial recommended (b) is determined by separating the quantity of clinical encounters where at least one anti-infection was endorsed (f) by the complete number of encounters (x) and communicated as a rate [8].

**Formula - Percentage (%) of encounters with an antibiotic prescribed**

\[ (b) = \frac{f}{x} \times 100\% \]

The investigation of recommending designs surmises to screen, assess, and propose adjustments in the expert's solution propensities, in order to make patient consideration sensible and successful [9]. The information about antibiotic use patterns is fundamental for a helpful way to deal with issues that emerge from various antibiotic agent uses. It is critical that organizations and emergency clinics ought to have an anti-microbial strategy and guarantee that the most ideal decisions are made by individual prescribers [10,11]. Highly representative information helps the prescribers in sane anti-microbial utilize and can work on the nature of patient consideration. This further visualizes the requirement for the current examination [12,13]. The objective of this investigation was to gather information on anti-microbial endorsing examples and soundness identified with antibiotic use utilizing the WHO recommending marker.
2. MATERIALS AND METHODS

2.1 Study Design, Setting and Study Population

A prospective observational study was carried out in inpatient surgery department at NIMS tertiary care teaching hospital Jaipur, Rajasthan, India for a period of six month (Feb–July 2019). Total 190 prescription was randomly collected from both male and female surgery ward. Patients were enrolled in study on the basis of following criteria.

Inclusion Criteria– Age:-18 year and above, Gender:-Male and Female, IPD patients, Complete prescription and legible, Patient who are willing to participate.

Exclusion criteria-Age below 18 years, ICU patient, Blood Infusion and IV fluid, OPD patients, multiple co-morbidity.

2.2 Data Collection

Study data was gathered on self-designed proforma from patient medical record. It include patient demographic details, diagnosis and medication prescribed.

2.3 Rationality of Antibiotic Prescribed

World health organization (WHO) has given major core indicators such as prescribing indicators and facility indicators. The drug consumption was assessed by the WHO Prescribing indicator. It was measured and mentioned as the percentage of antibiotics prescribed.

2.4 Ethical Consideration

The research was done after obtaining permission and approval from Institutional Research and Ethics Committee.

2.5 Statistical Analysis

Descriptive statistics were applied to the gathered information utilizing Microsoft Excel programming. Results are communicated in percentage and mean.

3. RESULTS AND DISCUSSION

3.1 Total cases and Antibiotics

Total of 190 prescription were collected from inpatient surgery department of tertiary care hospital. Out of 190 prescriptions, half of the case were from male surgery ward (MSW) and half were from female surgery ward (FSW) as shown in Fig. 1.

3.2 Age Distribution

Patient were divided on the basis of age group in male and female surgery ward as shown in Fig. 2.

![Fig. 1. Total number of cases and antibiotics prescribed](image-url)
3.3 Different Class of Antibiotics

Different class of antibiotics prescribed were arranged on the basis of their preference as shown in Fig. 3.

3.4 Pattern of Use of Antibiotics in Study Population

Prescription having number of antibiotics prescribed were separated respectively as shown in Fig. 4.

3.5 Percentage of Antibiotics Prescribed

The percentage of encounters including antimicrobials endorsed was 88.42%. Taking a gander at it another way round it was tracked down that 26.43% of the total medications prescribed in prescription.

3.6 Route of Administration

The most commonly prescribed route was parenteral followed by oral and topical as shown in Fig. 5.
3.7 Discussion

Many infections, including nosocomial infections, are extremely harmful to the patient and require long and complex treatment procedures. Remedies for such diseases often include antibiotics [14]. As drug resistance grows, there is a great need to take steps to promote sensible use of antibiotics. Antibiotics are drugs that are widely used and can be misused by patients and prescribers [15].

Recognition of early diseases and early onset of treatment for the correction of such diseases of successful treatment. Periodic auditing of antibiotic confirms the reasonable use of drugs in accordance with who guidelines [16]. Different prescriber has a different plan of care, and which may be depends on the year of experience they have as well as the source of information [17].

It was seen in this investigation that the anti-microbial were utilized more in the division of surgery department for prophylactic purposes. Tracking down that 88.42% of the patients were treated for certain anti-microbial agent’s shows rather high utilization of anti-microbial, which could point more towards use in prophylaxis as opposed to in authoritative treatment. Percentage of antibiotic prescribed was found to be 88.42% which was higher than the study conducted by pathak et al, narendra et al, ulhas
et al, durga et al, hussain et al, farzana et al, bansal et al, and singh et al i.e. 24.64%, 78.25%, 31.8%, 46.21%, 19.70%, 15.95%, 18.10% and 18.5% [10-17].

The class of anti-microbial incorporates are cephalosporin, penicillin, aminoglycosides, nitroimidazole, macrolide, fluoroquinolones, and others. While prescribing the antimicrobial there was no culture sensitivity test was performed. The use of 3rd generation cephalosporin was found to be 45.62% which was highest among all other class of antibiotics. Determination and decision of medication should be possible based on definite analysis, patient hypersensitive status to the medication, and culture affectability test.

The most favored route of administration was injectables i.e. 74.90%. The injectables were recommended more due to the inpatient history. Injectable are given more on the grounds for critical control of contaminations and to limit dismalness when contrasted with an oral course.

4. CONCLUSION

Convenient remedy checking and examining in medical care facility help in surveying the recommending pattern just as utilization of medications, and it likewise gives data in regards to the endorsing practice pattern and demeanor of a professional. A multidisciplinary approach by specialists, staff, drug specialists, and the disease control board of trustees advances the discernment in drug use designs. Culture sensitivity tests to anti-infection agents help in the choice of appropriate antibiotics as per patients’ requirements. Data about clinic rules, model and anti-microbial strategy ought to be given and present at different section for better results.

5. LIMITATION

The study led in single place results isn’t material to another wellbeing facility. Information was gathered from the medication division based on determination standards which cutoff points finding. The absence of nearby rules and assessment of adherence to such rules was additionally a limit to contemplate. Various professionals having diverse recommending data and it was not practically identical in each IPD unit. As a strength, results help in understanding the pattern just as legitimate and judicious utilization of antibiotics.

CONSENT

Consent from the patients was gathered prior to beginning the study by clarifying the reason for the study, the secrecy of the data, and their entitlement to pull out from the study.

ETHICAL APPROVAL

All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 declaration of Helsinki.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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