

## **The Most Common Antibiotic Prescribed Among the Paediatric Population**

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### **ABSTRACT**

**Objective:** To gain a thorough understanding of antibiotic prescribing trends in the pediatric population.

**Method:** The study was designed as a prospective observational study to collect various data from pediatric patients in order to gain a comprehensive understanding of antibiotic prescription trends in pediatrics.

**Result & conclusion:** Data was collected from 90 pediatric patients, 41.1% (n = 37) of whom were male and 58.8% (n = 53) of whom were female. Antibiotics were prescribed to 71.1% (n = 64) of children, 17.7% (n = 16) of adolescents, and 10% (n = 9) of infants for the treatment of various infections. About 24.4% (n = 22) of patients were admitted to the hospital for three days, while 22.2% (n = 20) were only admitted for two days. The most common antibiotic prescribed by pediatricians is penicillin, which accounts for 46.6% (n = 42) of the total, followed by cephalosporin, which is seen in 35.5% (n = 32) of cases. By analyzing the prescription pattern of antibiotic use, it was discovered that the majority of patients, 66.7% (n = 60), received monotherapy, while 33.3% (n = 30) received dual therapy.

**KEYWORDS:** Antibiotics, Pediatric, Penicillin, Cephalosporin, Hospital, Mono therapy, Dual therapy

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### **INTRODUCTION**

Antibiotics are among the most commonly prescribed drugs and play an important role in the treatment of infectious diseases. The term "antibiotics" is derived from the Greek words "anti" (against) and "bios" (life). Antibiotics are medications that either kill or slow the growth of bacteria. Antibiotics are one type of antimicrobial, which also includes antiviral, antifungal, and antiparasitic medications. Alexander Fleming discovered the first antibiotic in 1928, which was a significant breakthrough in medical science.

Pediatrics is the branch of medicine that deals with children's development, diseases, and disorders. The term pediatrics is derived from two words: "Pais" (child) and "Iatros" (doctor or healer). Childhood is divided into the following stages: Neonates are up to one month old, infants are one month to two years old, children are two years to twelve years old, and adolescents are twelve years to eighteen years old. Age, weight, surface area, assessing the appropriate dose, interval, route of administration, and interactions are all factors to consider when choosing a dosage regimen for a

paediatric patient. In the field of pediatric medicine, providing effective drug therapy for children remains a challenge. When compared to adults, there are significant differences in the pharmacokinetic and pharmacodynamic responses to drugs in the neonatal and pediatric populations, including differences in bioavailability, drug distribution, metabolism and excretion, efficacy, and adverse effects.

Because infants and children are among the most vulnerable populations to illness, the use of antibiotics in the treatment of pediatric illness has become standard practice. The most common childhood illnesses are acute respiratory tract infection, diarrhea, and viral fever, which account for the majority of pediatric outpatient visits.

Antibiotic overuse has contributed to the emergence of antimicrobial resistance through selective pressure. Antibiotics are prescribed for 44-97% of hospitalized patients in developing countries, often unnecessarily or inappropriately. Several socioeconomic and behavioral factors are thought to contribute to inappropriate antibiotic use and, as a result, increased bacterial resistance in

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developing countries.

In many hospitals, there is no reliable data on the quantity of antibiotics used or the appropriateness of prescriptions. Guidelines have been circulated for decades, but they are frequently ignored. Thus, it is critical to study antibiotic use and implement interventions based on local needs, and this process should involve physicians/prescribers and pharmacists in order to achieve judicious antibiotic use. Antibiotic judicious use includes following prescribing guidelines, not using antibiotics for likely viral infections, and using the narrowest spectrum agent active against the targeted pathogens.

In response to this issue, this study was conducted to estimate the scope and quality of antibiotic prescribing in hospitals using concurrent data collection. In this article, we describe the magnitude and quality of antibiotic use in pediatric patients and investigate parameters such as gender distribution, age distribution, most commonly prescribed antibiotics, hospital stay duration, and prescribing pattern.

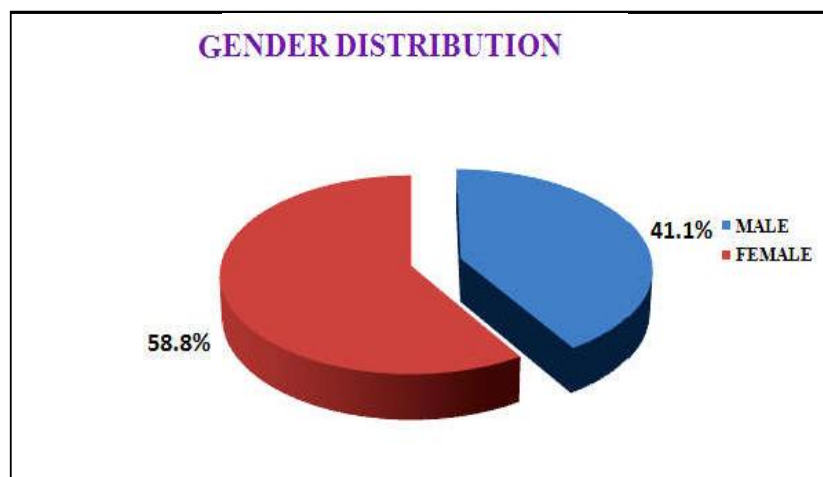
### MATERIALS AND METHODS

The study was conducted at the Institute of Medical Science. The study was conducted over a six-month period, from May to November 2011. The study was a prospective observational study in which we collected various data from paediatric patients in order to gain a thorough understanding of the antibiotic prescription pattern in paediatrics. The study included 90 participants. All pediatric ward inpatients who were given antibiotics were included in the study. The study excluded outpatients, patients over the age of 18, pediatrics who had not been prescribed antibiotics, and intensive care patients.

#### Literature Survey

An extensive literature review was conducted on the use of various antibiotic categories in pediatrics, including the Official Journal of the American Academy of Paediatrics, British Journal of Clinical Pharmacology, The Annals of Pharmacotherapy, and Canadian Family Physician, among others.

**FIGURE 1. GENDER DISTRIBUTION**



### Development of Patient Data Entry Form

A specially designed data entry form was used for collecting patient details. It consists of patient details, signs and symptoms, diagnosis, medication etc.

### RESULTS AND DISCUSSIONS

Throughout the study period, 90 pediatric patients were included, with 41.1% (n = 37) being male and 58.8% (n = 53) being female [Figure 1, Table 1]. According to the data analysis, 71.1% (n = 64) of children, 17.7% (n = 16) of adolescents, and 10% (n = 9) of infants were prescribed antibiotics for the treatment of various infections.

Similar research conducted in 2009 by Misbahuddin et al. revealed that the incidence of infection was 42.2% higher in neonates. [Figure 2 and Table 2] The study found that the majority of patients, 24.4% (n = 22), were admitted to the hospital for three days, followed by 22.2% (n = 20) for two days, which is normally required to complete the recommended antibiotic treatment regimen. According to similar studies conducted by Sriram.S et al in 2008, the maximum length of stay for children was between four and five days. [Figure 3] and [Table 3].

Various antibiotic classes were prescribed throughout the duration of the study. The most common antibiotic prescribed by pediatricians was penicillin, which accounted for 46.6% (n = 42) of the total, followed by cephalosporin in 35.5% (n=32) of cases. Antibiotics prescribed in other categories included amino glycosides (15.5%), quinolones (14.4%), and macrolides (5.5%). Sriram.S. et al 2008 .s study found that antibiotics in the cephalosporin class were the most commonly prescribed. Figure 4 and Table 4

Pharmacotherapy was divided into monotherapy and dual therapy for the purposes of analyzing the antibiotic prescription pattern among pediatrics. The study found that the majority of patients, 66.7% (n=60), received monotherapy, while 33.3% (n=30) received dual therapy. Concurrently, research conducted by Azizullah S.G et al in 2011 revealed that the majority of patients received dual therapy during their hospital stay. 32. [Figure 5, Table5]

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FIGURE 2. AGE DISTRIBUTION

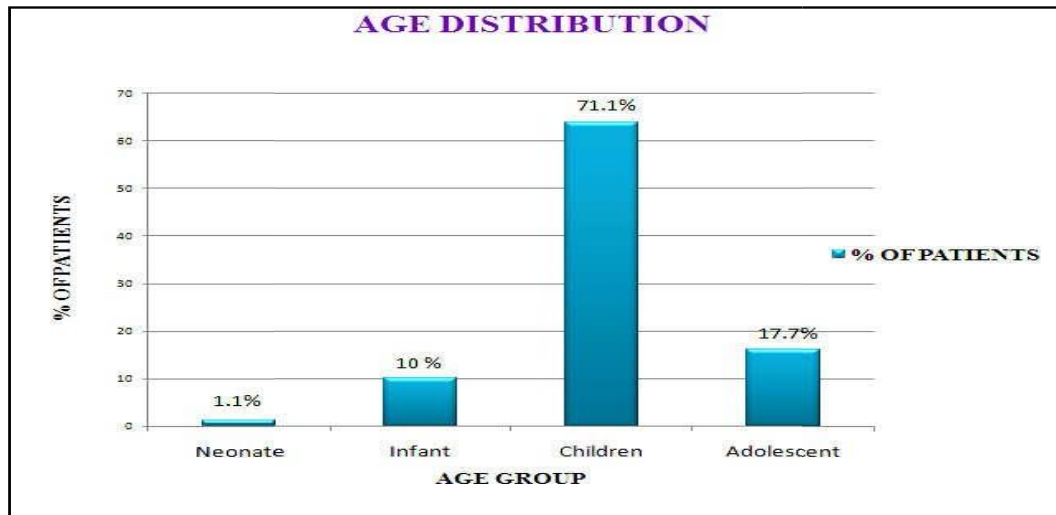


FIGURE 3. DURATION OF STAY IN HOSPITAL

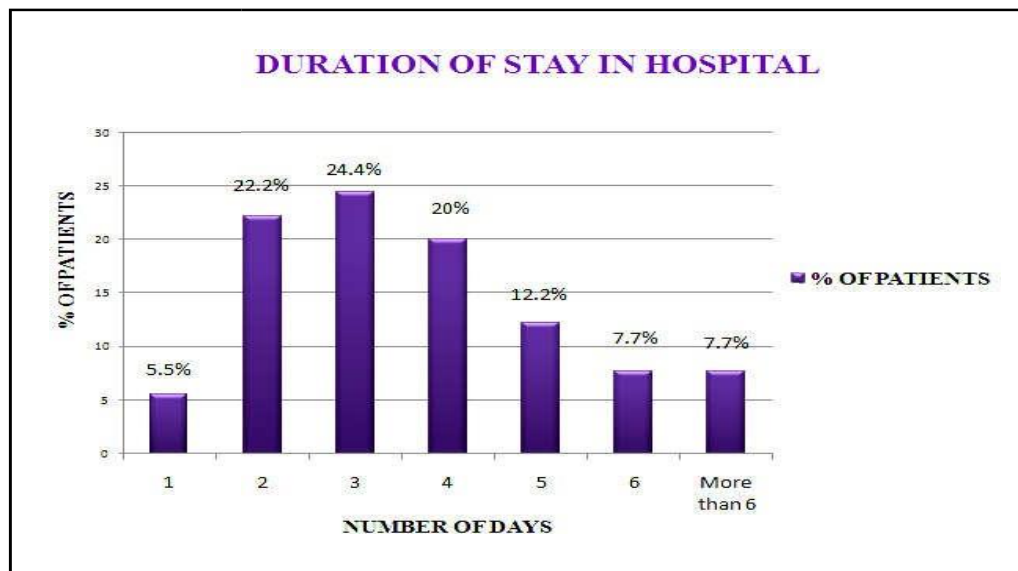
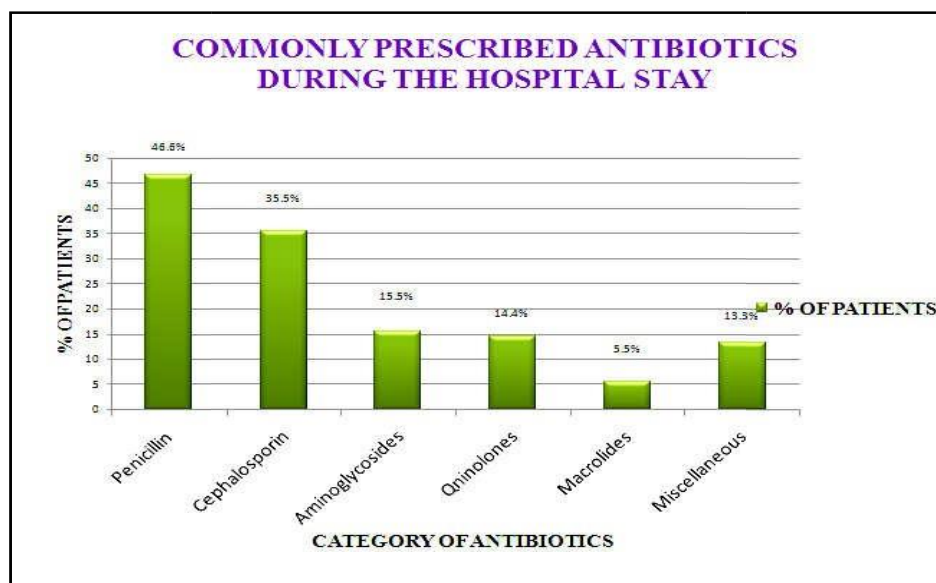
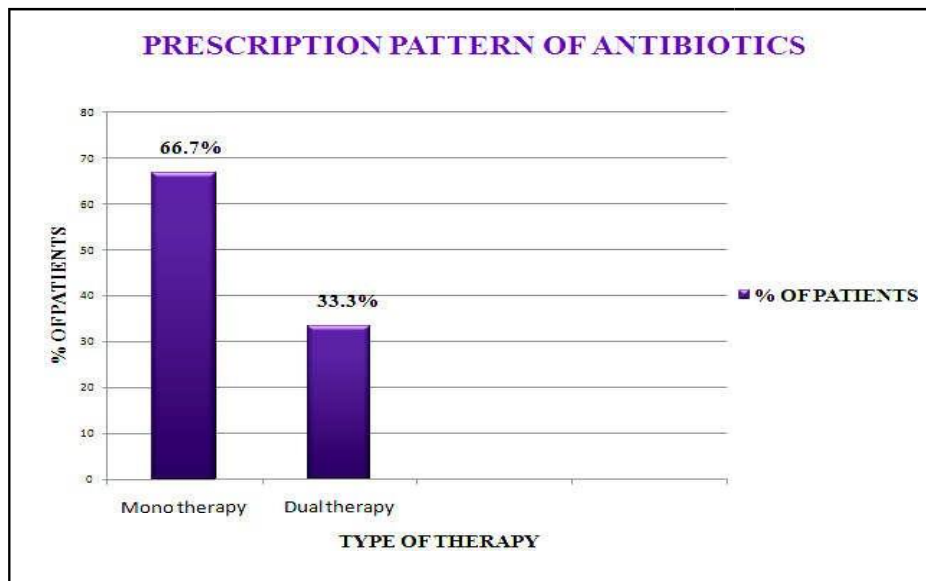


FIGURE 4. COMMONLY PRESCRIBED ANTIBIOTICS DURING THE HOSPITAL STAY



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FIGURE 5. PRESCRIPTION PATTERN OF ANTIBIOTICS



### CONCLUSION

The study concluded that penicillin is the most commonly prescribed antibiotic among the pediatric population, followed by cephalosporin. Antibiotic prescribing trends revealed that the majority of patients received monotherapy, followed by dual therapy. According to a study on the use of antibiotics for various clinical conditions, amoxicillin was the most commonly used antibiotic to treat RTI, Metronidazole + Amoxicillin for DTI, Norfloxacin for UTI, and Amoxicillin for fever, among other things.

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