

Original Research



PRESCRIBING TRENDS OF ANTIBIOTICS IN PEDIATRICS IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Objective:- To attain comprehensive knowledge about the prescribing trends of antibiotics in paediatrics population.

Method:-The study was designed as a prospective observational study to collect various data of paediatrics patients and thereby have a comprehensive knowledge of prescription trends of antibiotics in paediatrics.

Result & conclusion :- Data was collected from a total of 90 pediatric patients, of these 41.1% (n = 37) were male and 58.8% (n = 53) were female. Out of the total, 71.1% (n = 64) of children, 17.7% (n = 16) of adolescents and 10% (n = 9) of infants were prescribed with antibiotic for the treatment of various infections. About 24.4% (n = 22) patients were admitted in the hospital for 3 days and 22.2% (n = 20) cases for only 2 days. The most prominent category of antibiotic prescribed by the majority of pediatricians is penicillin which accounts for 46.6% (n = 42) of the total followed by cephalosporin as seen in 35.5% (n = 32) of cases. By assessing the prescription pattern of antibiotic use it was found that majority of patients i.e. 66.7% (n = 60) underwent mono therapy followed by 33.3% (n = 30) patients with dual therapy.

KEYWORDS:

Antibiotics, Pediatric, Penicillin, Cephalosporin, Hospital, Mono therapy, Dual therapy

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INTRODUCTION

Antibiotics play a major role in the treatment of infectious diseases and are among the drugs most commonly prescribed. The term "antibiotics" is derived from the Greek word 'anti' meaning 'against' and "bios" meaning "life". Antibiotics are drugs that kill or slow the growth of bacteria. Antibiotics are one class of antimicrobials, a larger group which also includes anti-viral, anti-fungal, and anti-parasitic drugs. The first antibiotic was discovered by Alexander Fleming in 1928 in a significant breakthrough for medical science.

Pediatrics is the branch of medicine which deals with the development, diseases and disorders of children. The term pediatrics derives from two words, "Pais" meaning child and "Iatros" meaning doctor or healer. Childhood can be subdivided into the following periods: Neonates are up to 1 month, infants are 1 month to 2 years, children are 2 years to 12 years, and adolescence is 12 years to 18 years. Factors to be considered while selecting a dosage regimen for a paediatric patient includes Age, weight, surface area, assess the appropriate dose, interval, the route of administration, interactions. Providing effective drug therapy for children remains a challenge in the field of pediatric medicine. There are marked differences in the pharmacokinetic and pharmacodynamic responses to drugs in the neonatal and pediatric population when compared with adults which includes differences in bioavailability, drug distribution, metabolism and excretion, efficacy and adverse effects.

Infants and children are among the most vulnerable population groups to contract illnesses and because of this the use of antibiotics has become a routine practice for the treatment of pediatric illness. Acute respiratory tract infection, diarrhea and viral fever are the most common childhood illnesses accounting for the major proportion of pediatric outpatient visits.

Irrational antibiotic use has contributed the emergence of antimicrobial resistance by selective pressure. In developing countries, antibiotics are prescribed for 44–97% of patients in hospital, often unnecessarily or inappropriately. Several socio-

economic and behavioral factors are thought to contribute to the inappropriate use of antibiotics and, consequently, to the increased incidence of bacterial resistance in developing Countries.

There are no reliable data concerning the quantity of antibiotic use and the appropriateness of prescriptions in many hospitals. Guidelines have been propagated for decades and yet they frequently are not followed. Thus it is very important to study the use of antibiotics and introduce interventions depending upon the local requirements and this process should involve the physicians/prescribes and the pharmacists in order to achieve judicious use of antibiotic drugs. Judicious use of antibiotics includes provider adherence to prescribing guidelines, not using antibiotics for probable viral infections, and using the narrowest spectrum agent that is active against the targeted pathogens.

Prompted by this problem, this study was undertaken to estimate the magnitude and quality of antibiotic prescribing in hospital through concurrent data collection. In this article, we describe the magnitude and quality of antibiotic use of pediatrics patient group and we explore the parameters like **Gender distribution**, Age distribution, most commonly prescribed antibiotics, Duration of stay in hospital, & prescribing pattern.

MATERIALS AND METHODS

The study was conducted at the department of Paediatrics with the consent of director Fr. Julius Arakal cmi under the leadership of Dr. Vidhya Ramdas, Dr. Mohammed Ismail and Dr. Joby Paul in Paalana Institute of Medical Science at palakkad. The study was conducted over a period of six months from May 2011 to November 2011. The study was a prospective observational study and through this study we collected various data of paediatric patients and thereby have a comprehensive knowledge of prescription pattern of antibiotics in paediatrics. A total of 90 subjects were included in the study. All inpatients of the pediatric ward prescribed with antibiotics were included in the study. Out-patients, patients above 18 years, pediatrics who were not

prescribed with antibiotics, intensive care patients were excluded from study.

Literature Survey:

An extensive literature survey was done on usage of various categories of antibiotics in paediatrics that includes Official Journal of the American Academy of Paediatrics, British Journal of Clinical Pharmacology, The Annals of Pharmacotherapy, and Canadian Family Physician etc.

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

During the entire study period, a total of 90 pediatric patients were included: of these 41.1% (n = 37) was male and 58.8% (n = 53) were female [Figure 1, Table 1]. The data analysis showed that among 90 patients, 71.1% (n = 64) of children followed by 17.7% (n = 16) of adolescents and 10% (n = 9) of infants were prescribed with antibiotic for the treatment of various infections.

Similar studies conducted by Misbahuddin et al in 2009 revealed that the incidence of infection was higher in neonates i.e., 42.2%. [Figure 2, Table 2]. The study revealed that majority of patients, i.e.

24.4% (n = 22) were admitted in the hospital for 3 days followed by 22.2% (n = 20) cases for 2 days which is normally required for completion of the recommended treatment regimen of antibiotics. Similar studies conducted by Sriram.S et al in 2008 indicated that the maximum length of stay for children were between four to five days.[Figure 3, Table 3].

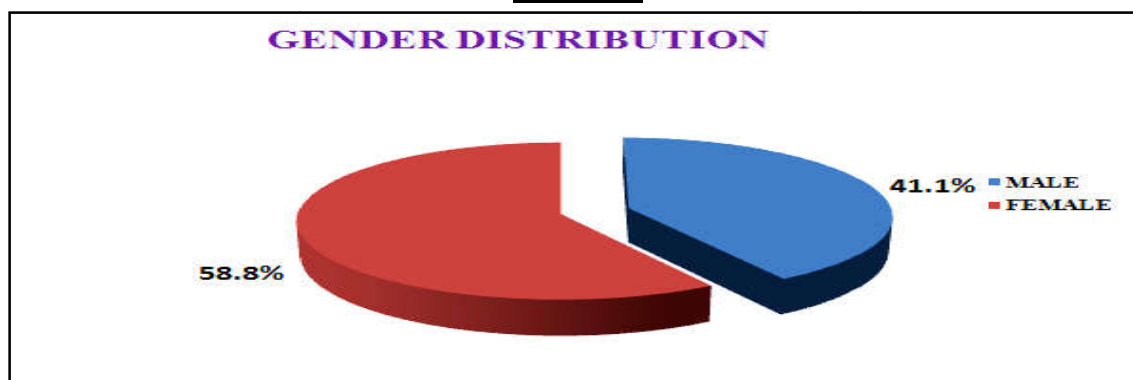
Various categories of antibiotics were prescribed during the entire study period. Of these, the most prominent category of antibiotic prescribed by the majority of pediatricians was penicillin which accounted for 46.6% (n = 42) of the total followed by cephalosporin in 35.5% (n = 32) of cases. Other categories of antibiotics prescribed included amino glycosides (15.5%), quinolones (14.4%) and macrolides (5.5%). The study conducted by Sriram .S. et al in 2008 revealed that antibiotics under cephalosporin class were the most frequently prescribed.[Figure 4, Table 4].

For the purpose of performing the analysis of the prescription pattern of antibiotic among pediatrics, the pharmacotherapy was categorized into mono therapy and dual therapy. The study revealed that majority of patients i.e. 66.7% (n = 60) underwent mono therapy followed by 33.3% (n = 30) patients with dual therapy. Concurrently, studies conducted by Azizullah S.G et al in 2011 revealed that most of the patients had undergone a dual therapy during the hospital stay. [Figure 5, Table5]

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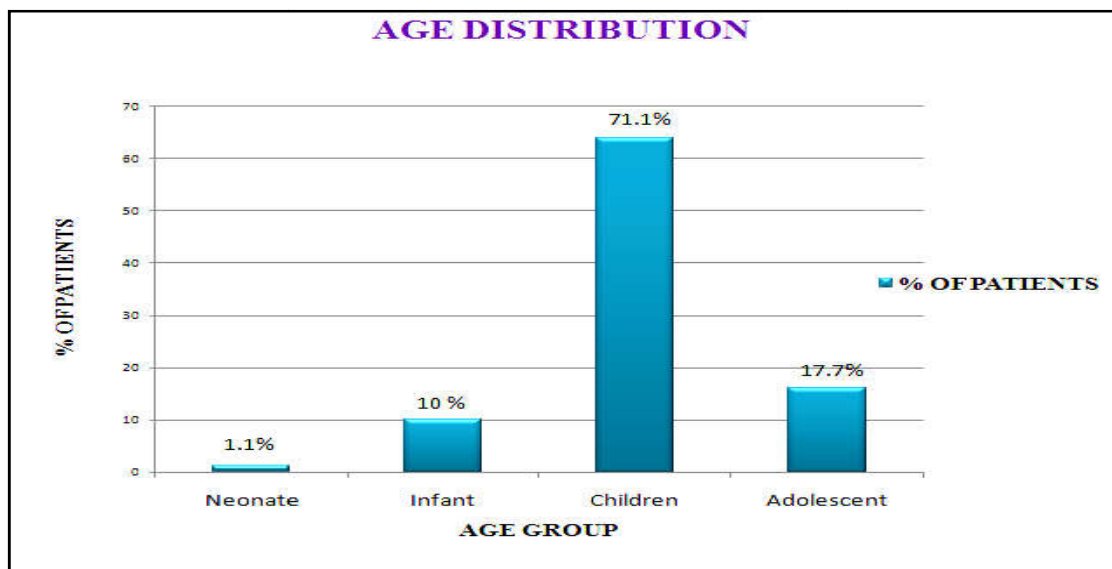
GENDER DISTRIBUTION

FIGURE: 1



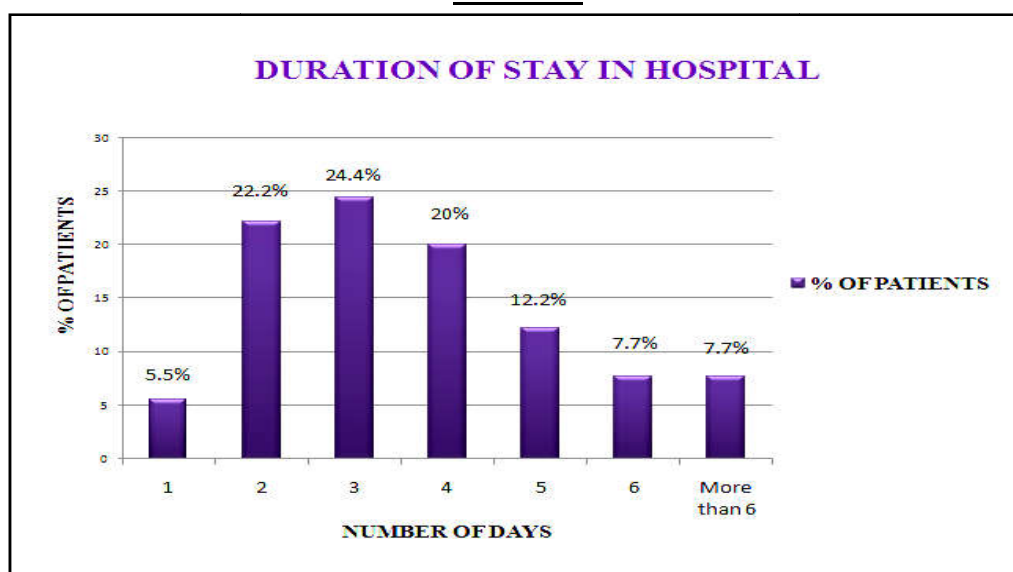
AGE DISTRIBUTION

FIGURE: 2



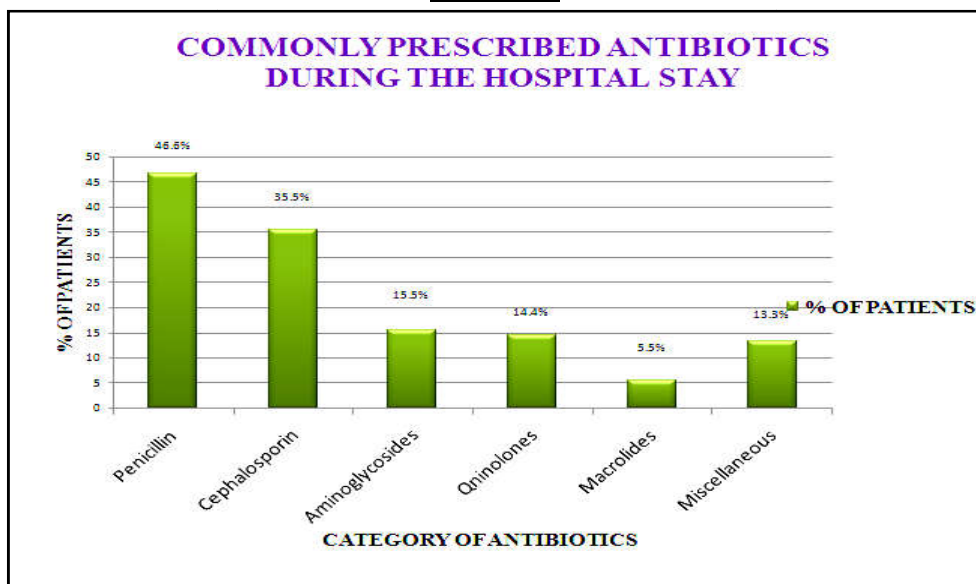
DURATION OF STAY IN HOSPITAL

FIGURE: 3



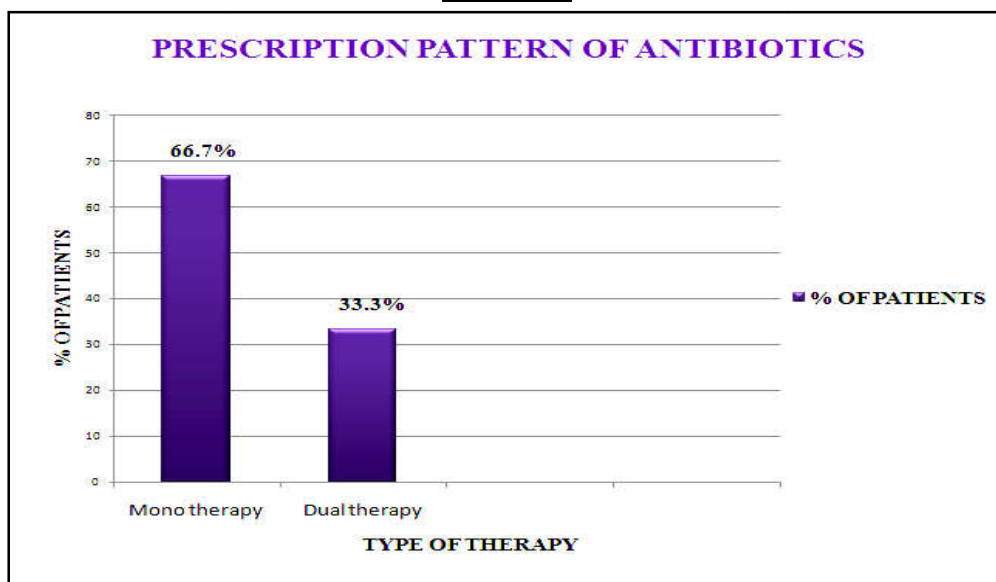
COMMONLY PRESCRIBED ANTIBIOTICS DURING THE HOSPITAL STAY

FIGURE: 4



PRESCRIPTION PATTERN OF ANTIBIOTICS

FIGURE: 5



CONCLUSION

The study concluded that the most common antibiotic prescribed among the pediatric population belong to the category of penicillin, followed by cephalosporin. Prescribing trends of antibiotic showed that majority of the patients underwent monotherapy, followed by dual therapy. The study on the usage of antibiotics for various clinical conditions revealed that amoxicillin was the most widely used antibiotic to treat RTI, Metronidazole + Amoxicillin for DTI, Norfloxacin for UTI and Amoxicillin for fever etc.

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