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A STUDY TO ACCESS THE PRESCRIBING PATTERNS OF ANTIBIOTICS IN THE DEPARTMENT OF PEDIATRICS.

Dr. Eshwarachary, Dr. Hari Krishna, Maddineni Sindhu, Sandagalla Lipi Keerthana, Saranya Arun Kumar, Steffi Jose, Dr. B. Sai Suyagna*

Department of Pharmacy practice, Malla Reddy College of Pharmacy, Telangana, India

Corresponding author: Dr. B. Sai Suyagna
Email id: bheemasaisuyagna@gmail.com

ABSTRACT

Aim: The aim of the study is to assess the prescribing patterns of antibiotics in the department of paediatrics.
Materials and Methods: The study is prospective observational study carried out among 400 children from 0- 17 years of age for a period of 6 months. Data was recorded in the patient proforma, prescriptions were analysed and follow up was done throughout the period of hospitalization for adverse drug reactions, and drug interactions.
Results: Out of 400 patients, 230 - male (58%), 170 -female (42%). 6 (1.5%) -neonates, 98 (24.5%)- infants, 217(54.3%) - child age, 79 (19.8%) - adolescents. POU was most commonly occurring disease condition in 56 patients (38- male, 18-female). The 2nd most commonly occurring disease condition was bronchopneumonia in 45 patients (27-male, 18-female). 3rd most commonly occurring condition was LRTI in 35 patients (22-male, 13-female). The most commonly prescribed antibiotics in empirical therapy are Ceftriaxone (171-patients) and Amoxicillin/Clavulanic acid (135-patients). The most commonly prescribed antibiotics in definitive therapy are Amoxicillin/Clavulanic acid (10-patients), Ceftriaxone (9-patients). Most of the drug interactions found are mild (51%), moderate (23%) and severe (26%). 80% of the antibiotics were of normal dose, 12% - under dose and 8% - over dose. One adverse drug reaction was seen. Amoxicillin/Clavulanicacid when given orally antibiotic associated diarrhoea was seen.
Conclusion: paediatrics of child age group (1yr-11yrs) should be focused. The most commonly prescribed antibiotic was Ceftriaxone, Amoxicillin/Clavulanic acid. Most of the prescribed antibiotics are of normal dose. ADRs and Drug Interaction to antimicrobials are occasional and usually mild.

Keywords: Antibiotic, paediatric, prescribing pattern, In-patient.

INTRODUCTION

Antibiotics are commonly used in paediatric illness and irrational use of antibiotics can lead to bacterial resistance, leads to increase morbidity, mortality, and economic burden for health care. In most cases, antibiotics are started on an empirical basis, without proof of a bacterial infection, either before the start of therapy or afterwards. [1] Antibiotic guidelines are standard set of guidelines for the treatment of infectious diseases based on local culture sensitivity data. These guidelines help the physician to prescribe the antibiotics rationally to paediatric patients when definitely indicated.[2] An overall rise in health care costs, lack of uniformity in drug prescribing and the emergence of antibiotic resistance, monitoring and control of antibiotic use is of growing concern. Thus, judicious use of antibiotic is therefore an important way to reduce the problem of antimicrobial resistance. So, detailed rationale knowledge of antibiotic prescribing pattern must be implemented in the clinical practice. [3] The rational use of antibiotics is therefore, like any other therapeutic intervention in daily practice and it should not be random. It requires reflection and thought and should be based on rules. [4] The correct diagnosis, the patient's condition, the location of the infection, the severity of the microbial cause sensitivities to antibiotics, the pharmacokinetics and pharmacodynamics of antimicrobials, the side effects and cost are the main elements which must be supported in every decision for their use. [5]

MATERIALS AND METHODS

The prospective observational study was carried out among in-patients admitted to the pediatric ward of the tertiary care teaching hospital.Permission to carry this study was obtained from the authorities of ethical committee after submission of the study protocol. The IEC approval code of the study is IEC/MRIMS/O8/2018. Written informed consent was obtained from patient parent or legal guardian, with the provision of a witness when the guardian was illiterate. 400 patients were selected randomly during the study period with various conditions following inclusion and exclusion criteria. Subjects of either gender or age between 0 to 17yrs were recruited into the study over 6 months, if their in-patient prescriptions contained antibiotics. Critically ill patients were excluded from study. Data of pediatric patients who were prescribed antibiotics was taken and recorded in the standard data entry form. Information was collected from observing and interacting formally to the patients without any harm or disturbance. Each patient's consent was taken. Data was collected in the form which is specially prepared for this purpose.The format contains the details such as patient demographic details(name, age, weight, IP(In-patient) number, DOA(Date of admission) complaints, patient past medical and medication history), laboratory investigations (LFT, Lipid profile, serum electrolytes, etc), treatment chat, progress chat, drug interaction chat, ADR'S chat& medication adherence. . Prescription was analyzed (Age, Disease condition, Empirical and Definitive therapy, Dosage, Frequency, Dosage adjustment and Medication adherence)and follow up was done throughout the period of hospitalization. Most commonly prescribed antibiotics were categorized and compared with the standard guidelines. Suspected ADRs and drug interactions were identified.Microsoft Excel 2007 was used for statistical analysis of the data. Results were illustrated in the graphical and tabular form.

RESULTS

A prospective observational study was carried out in the hospital on 400 pediatric patients showed that males are more prone to diseases that the females. Males are distributed to 58% [230-patients] where as females distributed to about 42% [170-patients].

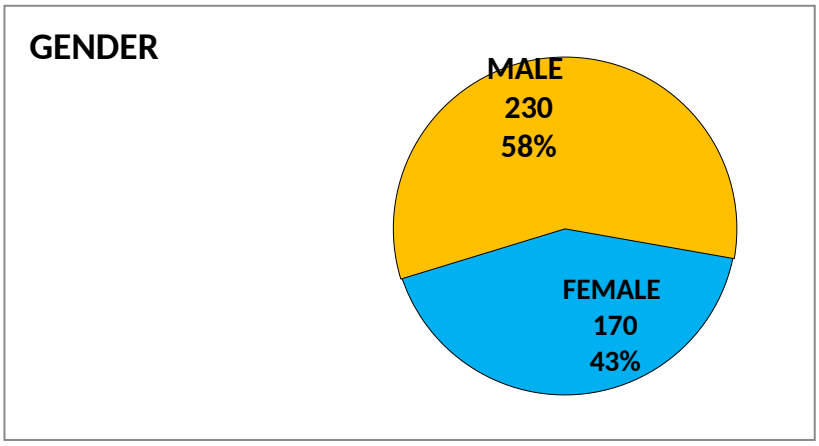

Fig 1: Distribution based on gender

No. of patients of neonatal age group were 1.5%[6-patients] , infants were 24.5% [98-patients], child age group were 54.3% [217-patients], adolescents were19.8% [79-patients]. Most of the patients are of child age group i.e., between 1yr to 11yrs.

Table 1: Distribution based on age.

	GENDER			
AGE IN MONTHS	**FEMALE**	**MALE**	**TOTAL**	**%**
0-1	2	4	**6**	1.5%
1-12	51	47	**98**	24.5%
13-132	84	133	**217**	54.3%
ABOVE 133	33	46	**79**	19.8%
TOTAL	**170**	**230**	**400**	100.0%

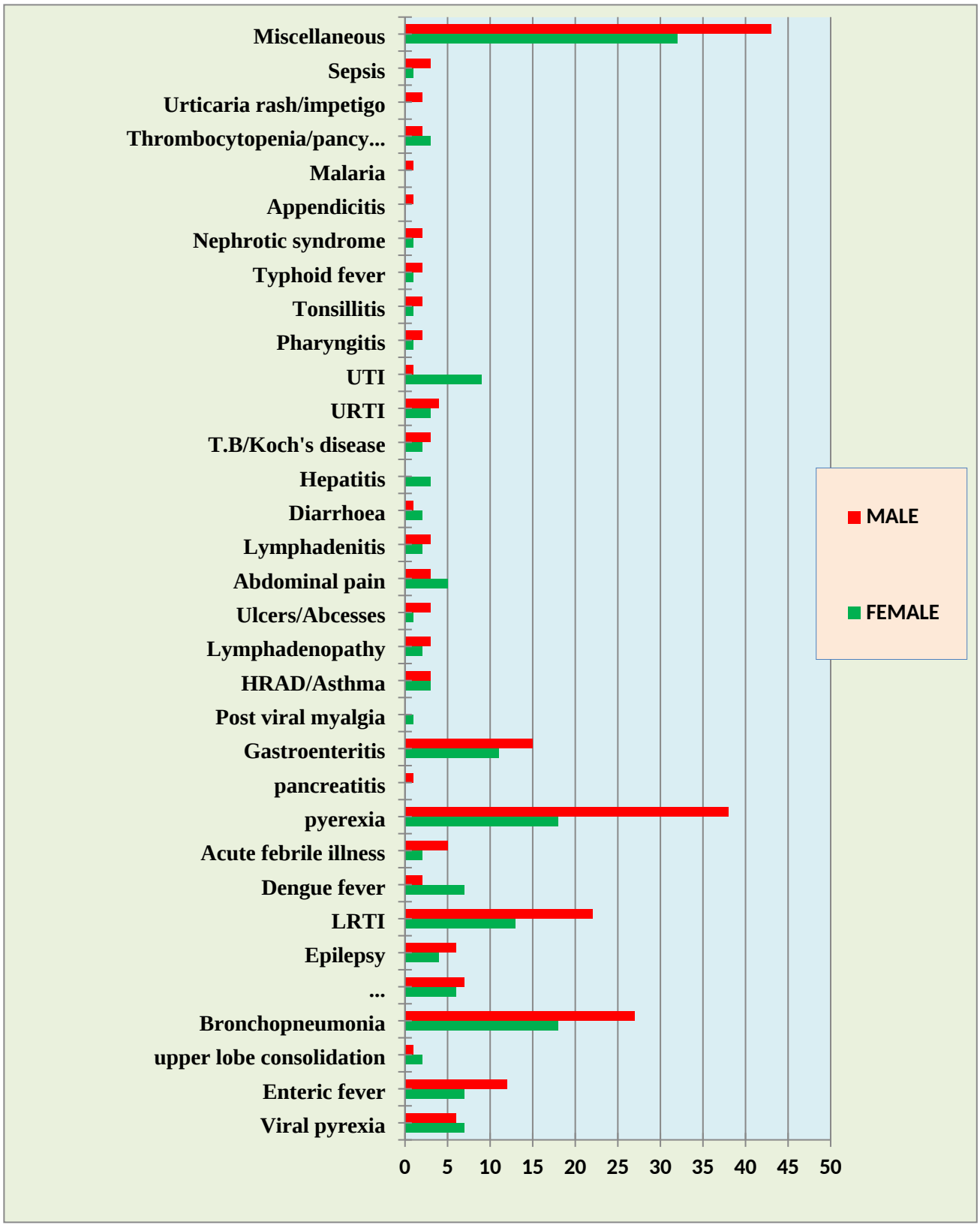

Fig 2: Distribution with respect to disease condition

Prescriptions were reviewed out of which pyrexia of unknown origin was most commonly occurring disease condition in 56 patients[38-male, 18-female]. The second most commonly occurring disease condition was bronchopneumonia in 45 patients [27-male, 18-female]. Third most commonly occurring condition was LRTI [lower respiratory tract infections] in 35 patients [22-male, 13-female]. Fourth most commonly occurring condition was gastro enteritis in 26 patients [15-male, 11-female]. The most commonly seen comorbid condition was LRTI with bronchopneumonia.

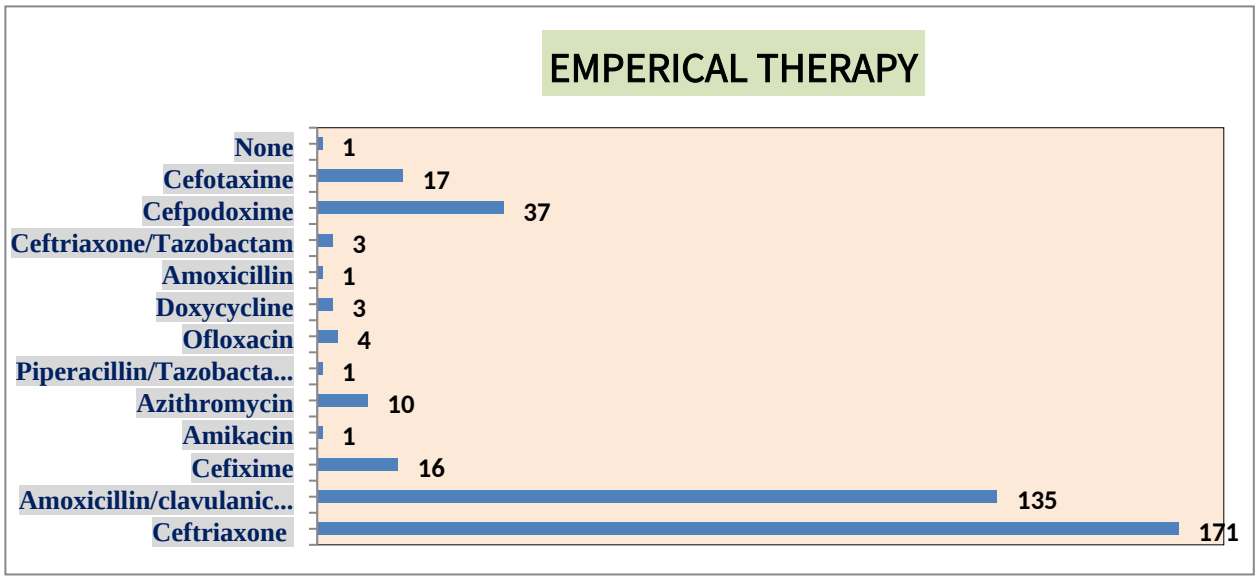

Fig 3: Analysis of most commonly prescribed antibiotic in empirical therapy.

The most commonly prescribed antibiotics in empirical therapy were Ceftriaxone[171-patients] and Amoxicillin/Clavulanic[135-patients]. The other antibiotics were very less commonly used.

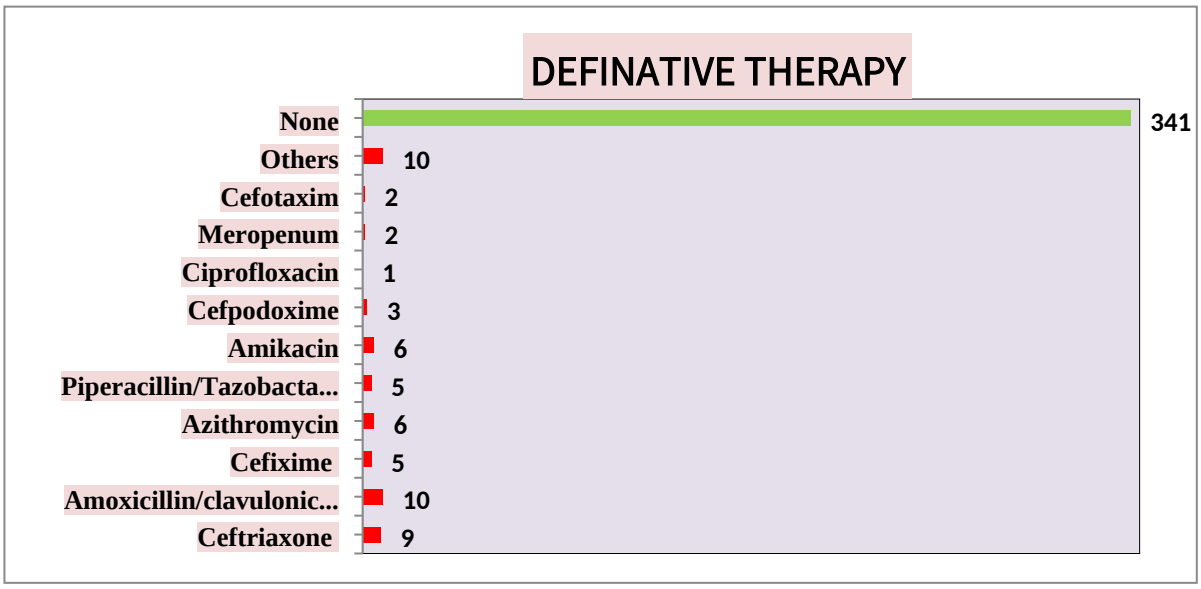

Fig 4: Analysis of most commonly prescribed antibiotics in definitive therapy.

The most commonly prescribed antibiotics in definitive therapy were Amoxicillin/Clavulanicacid [10-patients], Ceftriaxone [9-patients], other antibiotics are less commonly used.

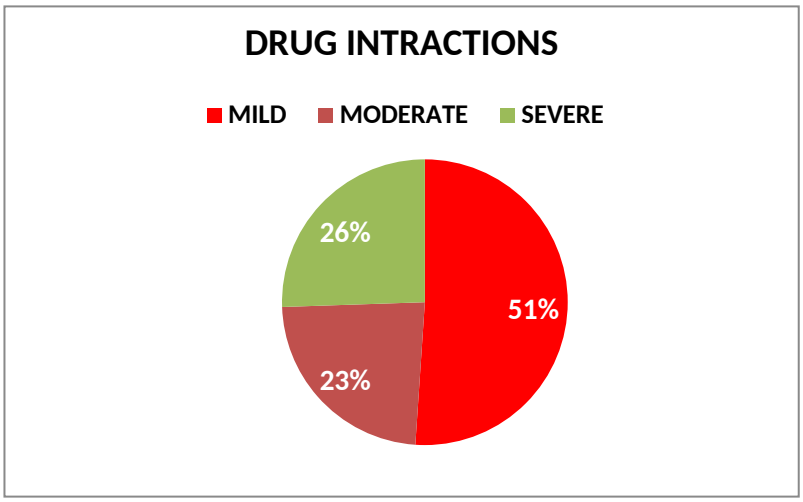

Fig 5: Analysis on drug-interactions.

Prescriptions were reviewed out of which most of the drug interactions found are to be mild 51% [48- drug interactions], very few are moderate 23% [22-drug interactions] and severe 26% [24-drug interactions].

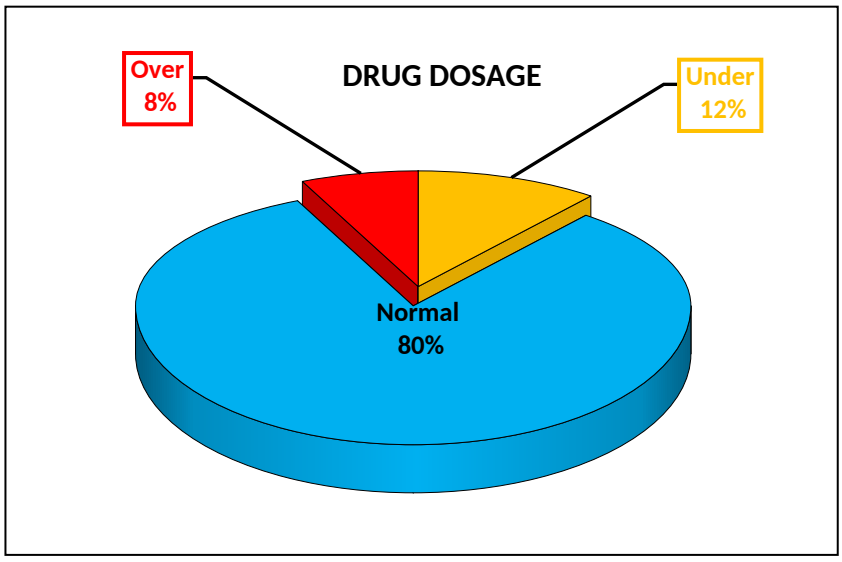

Fig 6: Analysis on dosage calculations of antibiotics prescribed.

Prescriptions were reviewed out of which 80% [369-antibiotics] of antibiotics are of normal dose, 12% [56-antibiotics] of them are under dose and 8%[37-antibiotics] were overdose.

Table 2: Analysis on culture sensitivity testing.

TYPE OF ORGANISMS	NO.OF ORGANISMS
Gm+ve	6
Gm –ve	5
Fungi	1
No growth	18
No.of test done	29

Prescriptions were reviewed out of which most of the cultures showed no growth [18-prescriptions], few cultures showed the presence of Gram positive organisms. [6-prescriptions], few of them showed the presence of Gram negative organisms[5-prescriptions] and there is only 1 culture which showed the presence of fungi, only 29 patients were tested for their culture sensitivity.

Adverse drug reaction

Treatment in the paediatrics started with the test dose, so very less adverse drug reactions were seen in the patients. One adverse drug reaction was seen. Amoxicillin/Clavulanic acid when given orally loose stools was observed, this is known as antibiotic associated diarrhoea. In this case Amoxicillin/Clavulanic acid was stopped and the patient was treated with Cepalosporins.

DISCUSSION

In our study out of sample size of 400, 230 patients were found to be male and 170 partients were females. The most commonly occurring disease condition was pyrexia of unknown origin. The most commonly prescribed antibiotic in empirical therapy were ceftriaxone[171-patients] and Amoxicillin/Clavulanic acid [135-patients] . The most commonly prescribed antibiotics in definitive therapy were Amoxicillin/Clavulanic acid [10-patients], Ceftriaxone[9-patients]. Conclusions were made based on the study conducted by LayaVahdati Rad, ModupalliAlekhya in Prescribing Pattern of Antibiotics in Pediatric Inpatient Department of a Tertiary Care Teaching Hospital in Bangalore. Out of 109 patients enrolled in the study, it was observed that respiratory tract infections in 29(26.60%), More respiratory tract infections were reported in our study as the study was conducted during winter season. Out of 155 antimicrobial agent prescribed, major class was cephalosporin's were 90(58.06%), followed by beta lactamase inhibitors in 30(19.35%) and amino glycoside antibiotics in 25(16.12%). Out of 90 cephalosporin's prescribed, the most commonly prescribed was ceftriaxone 61(67.77%), followed by Cefixime in 29(33.33%). It was found that in inpatient pediatrics department, majority of patients suffered from respiratory infection since the study was carried during winter season. Cephalosporins were mostly used for the infections caused by bacteria in the inpatient pediatrics department which was according to the prescribing guidelines of the hospital, and among the cephalosporin's, more than half of the prescribed one was ceftriaxone.

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CONCLUSION

Paediatrics of child age group (1yr-11yrs) should be focused. The most commonly prescribed antibiotic was Ceftriaxone, Amoxicillin/Clavulanic acid. Most of the prescribed antibiotics are of normal dose. ADRs and Drug Interaction to antimicrobials are occasional and usually mild.

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