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## Prescribing Pattern of Beta Lactam Antibiotics In Paediatrics

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### ABSTRACT

This pilot study aims to assess the prescribing pattern of beta lactam antibiotics in paediatric subjects. Informed consent as per ICMR guidelines were obtained from caretakers of pediatric subjects. Case records were analyzed to identify the prescribing pattern of antibiotics. Required data were collected using a suitably designed proforma. 30 subjects with a mean age  $6.5 \pm 1.35$  years were involved in the study. 66.67% of the subjects belongs to male respondents and 33.33% belongs to female population. 56.67% of the subjects were involved in the age category of 2 to 5 years and 6.67% of subjects belongs to age category in between 10 to 12 years. 76.67% of pediatric subjects have a diagnosis of respiratory tract infection. No cases of CNS disorders were reported. 43.33% of Ceftizoxime, 23.33% of Cefotaxime, 13.34% of Amoxicillin+ Clavulanic acid, 10% Cefuroxime, 6.67% Ceftriaxone and 3.33% of Cefaperazone+ Tazobactam were prescribed for these pediatric subjects for various infectious states. Use of antibiotics in pediatric subjects requires great care considering the increased incidence of antibiotic resistance. From this pilot study beta lactam antibiotics were found to be prescribed commonly due to its safety and efficacy in pediatric subjects.

**Keywords:** Antibiotics, Pediatrics, beta lactam, prescription pattern

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## INTRODUCTION

Antibiotics are the key drugs for treatment of bacterial infections and are the mostly prescribed drugs in pediatric group. Pediatric patients are among the most vulnerable group to contact illnesses. Evaluation of prescribing pattern will help in minimizing adverse drug reactions.

Beta actam antibiotics are commonly prescribed in pediatrics due ti its safety and efficacy. Beta lactam antibiotics, which are named for the beta-lactam ring in their chemical structure , include the penicillins, cephalosporins, and related compounds. Bacteria often develop resistance to  $\beta$ -lactam antibiotics by synthesizing a beta-lactamase, an enzyme that attacks the  $\beta$ -lactam ring. To overcome this resistance,  $\beta$ -lactam antibiotics are often given with beta-lactamase inhibitors such as clavulanic acid. beta-lactam antibiotics are indicated for the prevention and treatment of bacterial infections caused by susceptible organisms. At first, beta-lactam antibiotics were mainly active only against Gram-positive bacteria, yet the recent development of broad-spectrum beta-lactam antibiotics active against various Gram-negative organisms has increased their usefulness.

## MATERIALS AND METHOD

A prospective observational study was conducted in patients from department of Pediatrics in Cosmopolitan Hospital who were treated with beta-lactam antibiotics during the study period after obtaining permission for collection of data from the Human Ethical Committee.

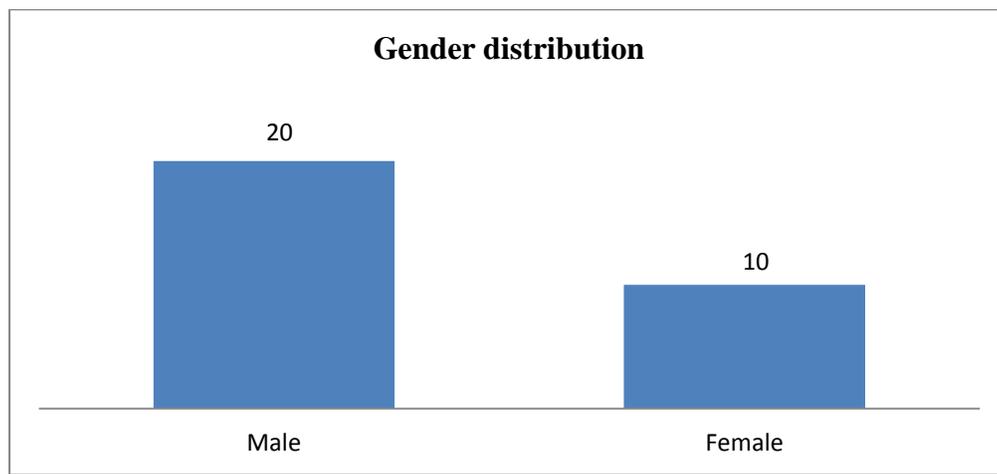
### **Patient selection:**

Patients of both gender below 12 years of age and who were willing to participate were included in the study. Complete medical records were collected from their caretakers and physician. Only inpatients were selected on to the study and outpatients were excluded. Pediatric subjects who were immunosuppressed were excluded from the study.

## RESULTS AND DISCUSSION

30 subjects with a mean age  $6.5 \pm 1.35$  years were involved in the study. 66.67% of the subjects belong to male respondents and 33.33% belongs to female population (Graph 1). 17 out of 30 subjects (56.67%) of subjects have age in between 2 to 5 years, 20% in between 6 to 9 years, 16.66% in between 1 month to 1 year and 6.67% in between 10 to 12 years respectively (Graph 2). 76.67% of the subjects were immunized and remaining 23.33% were non immunized (Graph 3). The cause for hospital admission was found to be RTI in 76.67%, GI complaints in 30%, UTI in 6.66% subjects etc (Graph 4). Analysis of prescribing pattern suggested that 43.33% of Ceftriaxone, 23.33% of Cefotaxime, 13.34% of Amoxicillin clavulanic acid combination, 10%

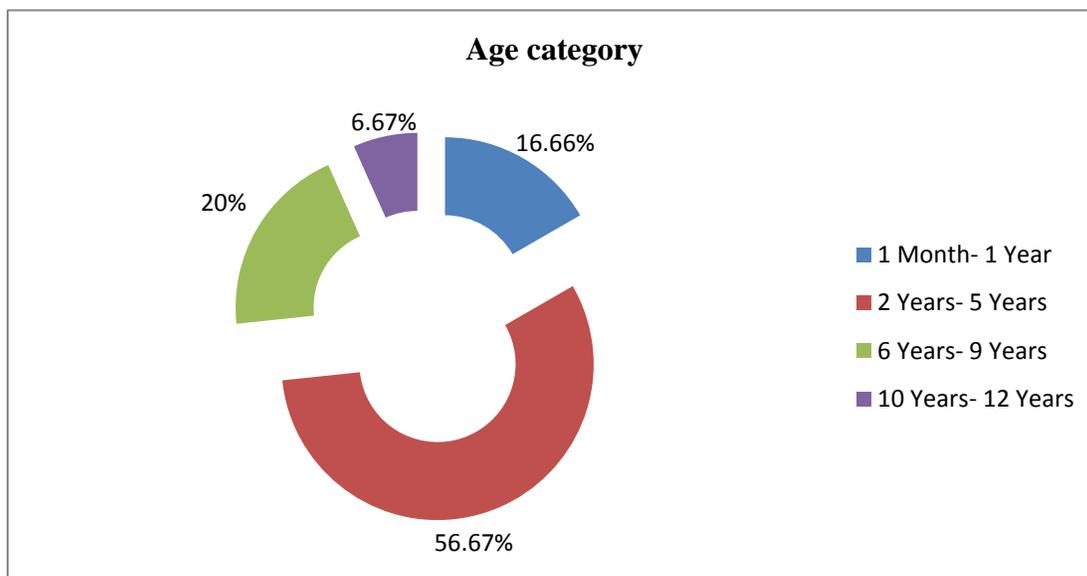
Cefuroxime, 6.67% of Ceftriaxone and 3.33% of Cefaperazone Tazobactum combination was prescribed to treat infection in pediatrics (Graph 5). 5 subjects out of 30 received combination therapy. 80% received Amoxicillin clavulanic acid combination where as 20% received Cefaperazone tazobactum therapy (Graph 6).83.33% of the subjects received antibiotics once daily where as 16.67% received antibiotics twice daily. None of the subjects were prescribed with antibiotics in a frequency of thrice daily (Graph 7).



Graph 1

Table 1

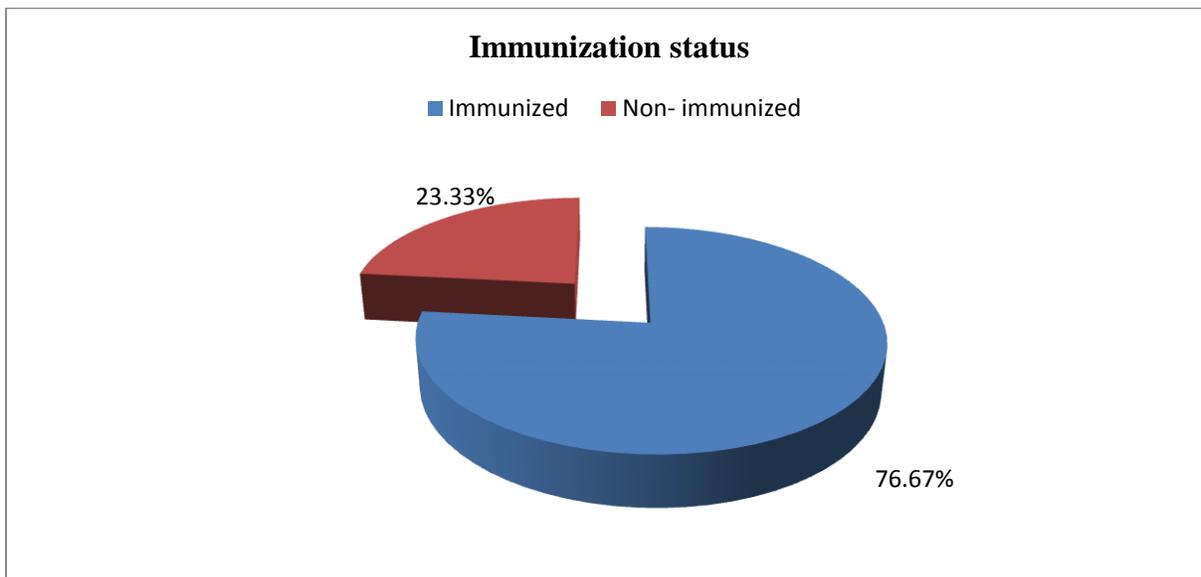
Gender	Frequency	Percentage
Male	20	66.67%
Female	10	33.33%



Graph 2

**Table 2**

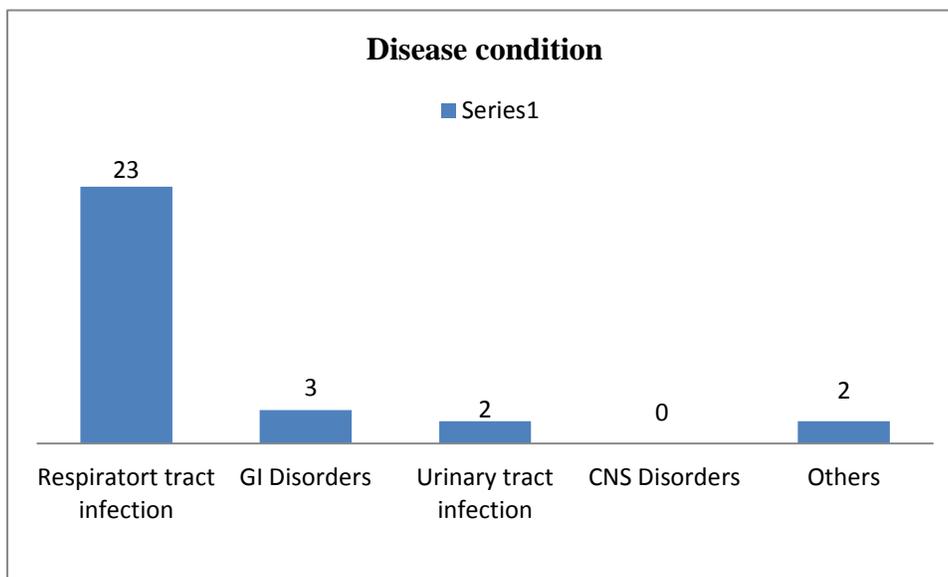
Age category	Frequency	Percentage
1 Month- 1 Year	5	16.66%
2 Years- 5 Years	17	56.67%
6 Years- 9 Years	6	20%
10 Years- 12 Years	2	6.67%



Graph 3

Table 3

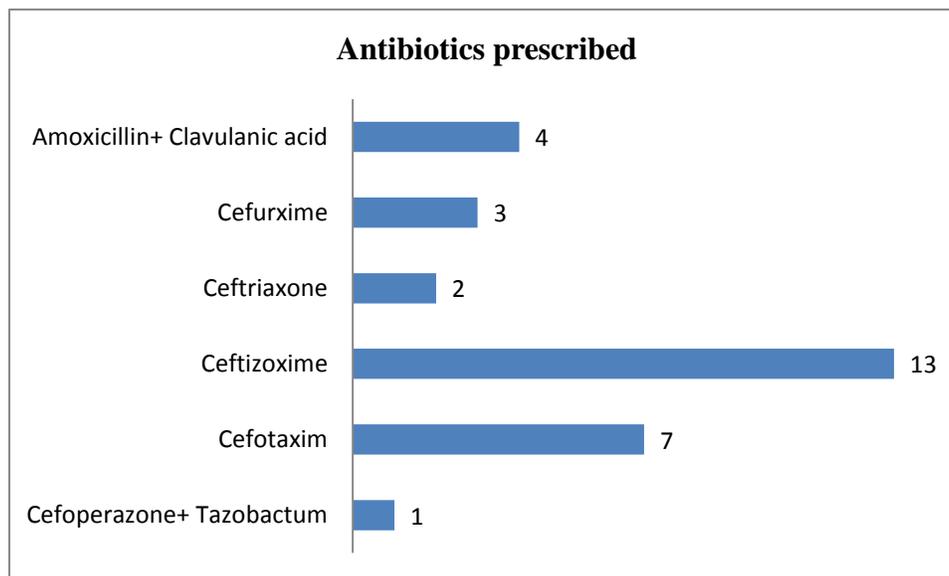
Immunization	Frequency	Percentage
Positive	23	76.67%
Negative	7	23.33%



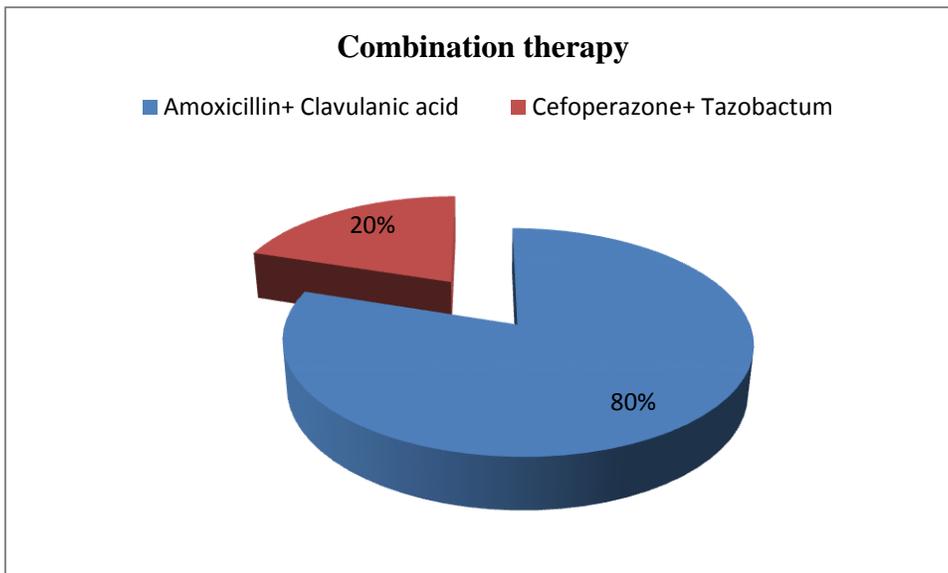
Graph 4

**Table 4**

<b>Disease</b>	<b>Frequency</b>	<b>Percentage</b>
RTI	23	76.67%
GI disorder	3	30%
UTI	2	6.67%
CNS disorder	0	0%
Others	2	6.66%

**Graph 5****Table 5**

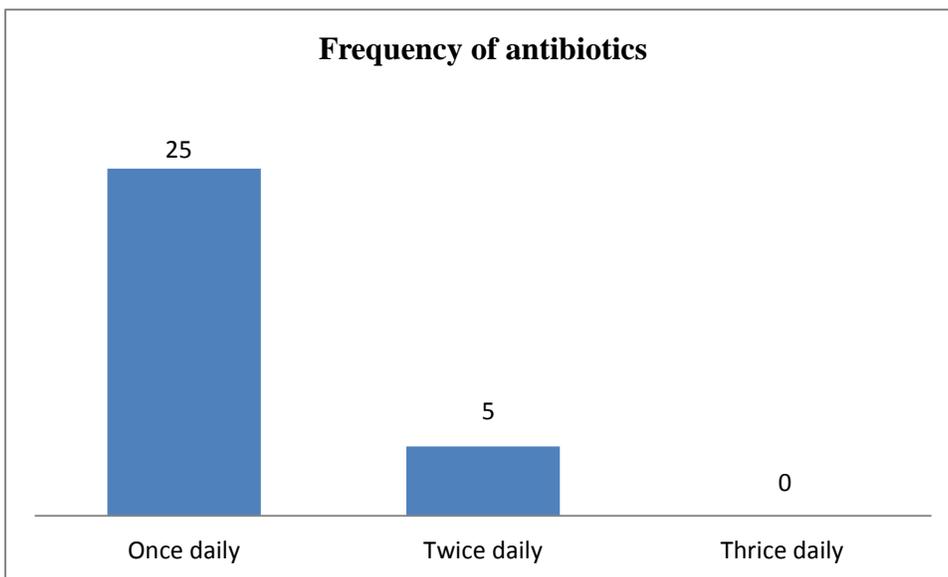
<b>Antibiotics prescribed</b>	<b>Frequency</b>	<b>Percentage</b>
Cefoperazone+ Tazobactum	1	3.33%
Cefotaxim	7	23.33%
Ceftizoxime	13	43.33%
Ceftriaxone	2	6.67%
Cefuroxime	3	10%
Amoxicillin+ Clavulanic acid	4	13.34%



**Graph 6**

**Table 6**

<b>Subjects receiving combination therapy</b>	<b>Frequency</b>	<b>Percentage</b>
Amoxicillin+ Clavulanic acid	4	80%
Cefoperazone+ Tazobactum	1	20%



**Graph 7**

**Table 7**

<b>Administration schedule</b>	<b>Frequency</b>	<b>Percentage</b>
Once daily	25	83.33%
Twice daily	5	16.67%
Thrice daily	0	0

In this pilot study we conducted 2 month surveillance on paediatric patients prescribed with beta lactam antibiotics. 30 subjects were enrolled in the study.

In our study most of the subjects enrolled were male respondents (66.67%) which were found to be different from the study by Sattanatham *et al* as the number of female patients were more in this study<sup>[1]</sup>.

Majority of the subjects were found to be in the age category of 2 to 5 years (56.67%) which was found to be inconsistent with the study conducted by Laya Vahdati Rad *et al* which means that the age group is more prone to infections<sup>[2]</sup>.

In a study conducted by sattanathan k *et al* Ceftriaxone was found to be the mostly prescribed antibiotic. But our pilot study concluded Ceftrizoxime as the commonly prescribed beta lactam antibiotic (43.33%) and Cefoperazone tazobactam as less commonly prescribed antibiotic(3.33%).

## ACKNOWLEDGEMENT

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## REFERENCES

1. K.Sattanathan, V.Sekar, Shyamil *et al*; Prescription pattern and ADR of Betalactam antibiotics: International Journal of Allied Medical Sciences and Clinical Research, Volume3, Issue3 , July-Sept2015.
2. Laya Vahdati Rad, Modupalli Alekhya: Prescribing pattern of antibiotics in pediatric inpatient department. The Journal of Pharmacy and Biological Sciences: 2015Volume10Issue4VerI
3. Ashok Kumar Malpani,Manjunath Waggi,Asmila Rajbhandari,Gunda Anil Kumar, Reddy Nikitha,Alapathy Kalyan Chakravarthy. Indian Journal of Pharmacy Practice, Vol 9,Issue 4 ,Oct –Dec , 2016
4. Ravika Kanish ,Ranchan Gupta,Shivani Juneja,H.S Bains, Sandeep Kausha. Asian Journal of Medical Sciences, Oct-Dec 2014,Vol 6,Issue 4.
5. Akhil J. Issac, Yogananda R.,Mohamed Shehin T. International Journal of Contemporary Pediatrics, July-Sept 2016,Vol 3,Issue 3

6. Khaja Moinuddin,MA Altaf ,Githa Kishore. Journal of applied Pharmacy ,03 (04):606-613;July,2012
7. Stimson Jose, Yogananda Rajashekarachar, Basavanthappa S.P,Bharathi Raghunatha Naidu . International Journal of Contemporary Pediatrics,,Jan-March 2016,Vol 3,Issue 1
8. Deepak Bhatt ,Ajay Shah, Dinesh K Yadav,Ajay K Shah,Dr.NM Mahesh , Dr.B.Ravichander, Dr.Vidhya Alex .Journal of Biomedical and Pharmaceutical Reasearch. Vol 6 , Issue 4;July-Aug 2017.
9. Ashraf H,Handa S,Khan NA .International Journal of Pharmaceutical Sciences Review and Research,Vol3;issue 2;July-Aug 2010.
10. Lita Susan Thomas ,Selvaraj Lavanya,Murugaiyan Sudaroli,George Praveen Kumar. Indian Journal of Pharmacy Practice, Vol 7,Issue 4,Oct-Dec ,2014.

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