

**TREATMENT PATTERN IN CHILDREN ADMITTED FOR RTI IN PAEDIATRICS  
DEPARTMENT OF MIMS, MANDYA**Blessy David\*<sup>1</sup>, Athul Raj<sup>2</sup>, Binu Francis<sup>3</sup> and A. Vikneswari<sup>4</sup><sup>1,2,3</sup>6<sup>th</sup> Year Pharm D. Students, Bharathi College of Pharmacy, Mandya, Karnataka, India.<sup>4</sup>Associate Professor, Department of Pharmacy, Bharathi College of Pharmacy, Mandya, Karnataka, India.**\*Corresponding Author: Blessy David**6<sup>th</sup> Year Pharm D. Students, Bharathi College of Pharmacy, Mandya, Karnataka, India.

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**ABSTRACT**

**Background:** Respiratory tract infections are the main cause of children's morbidity and mortality both in the developing and developed countries. Emergence of newer pathogenic organism, reemergence of disease previously controlled, and widespread antibiotic resistance are the major cause of RTI globally. LRTI are generally more serious than upper respiratory tract infections. It is an important problem to the society. Pediatric populations are prone to suffer from recurrent infections of respiratory tract. WHO recognized respiratory tract infections as the second important cause of death for children under five years in 2010. **Objectives:** This was a record based prospective study with the aim to describe the treatment modalities to those children admitted for Respiratory Tract Infection. **Method:** The study has been conducted on male and female patients who were satisfying the inclusion criteria. A suitably designed patient profile was used to collect required information. **Result:** A total of 150 patients were analyzed in our study. Out of that 88 were males and 62 were females. A total of 988 drugs were prescribed, in that most patients were given parenteral route 472(47.77%) of administration and the most preferred dosage form by physicians was injectables 452(45.74%). Out of 150 patients, Antibiotics 137(91.33%) were the most prescribed class of drugs. 104(39.84%) group of aminoglycoside were the most frequently prescribed antibiotics. Out of 261 antibiotics prescribed 214 were given as twice a day. **Conclusion:** Amoxiclav was the highly prescribed drug among the antibiotics. The antibiotics were mostly prescribed as twice a day. Antibiotic was the highly prescribed class.

**KEYWORDS:** Paediatric RTI, Prospective, Treatment modalities, MIMS Teaching Hospital.**INTRODUCTION**

Respiratory tract infection (RTI) refers to any of a number of infectious diseases involving the respiratory tract. An infection of this type is normally further classified as an upper respiratory tract infection (URTI) and a lower respiratory tract infection (LRTI).<sup>[1]</sup>

Worldwide, infants and children represent a higher proportion of the 28% of the world's total population is accounted by children younger than 15 years of age.<sup>[2]</sup> Pediatrics population is prone to suffer from recurrent infections of the respiratory tract.<sup>[3]</sup> (fig.1).

Drugs are important components of healthcare and play a crucial role in saving life. Three limited information available on drug use throughout the world indicated that drugs are not optimally used. This inappropriate use has serious health and economic consequences for individuals community and for the success of national health care system.<sup>[4]</sup>

**Epidemiological Data**

WHO recognized respiratory tract infections as the second important cause of death for children's under 5 years in 2010. Pneumonia was diagnosed approximately 156 million children in 2008(151 in developing countries and 5 million in developed countries) and lead to 1.4 million death(28 – 34% of all deaths in younger than 5 years of age).<sup>[5]</sup>

Approximately 1 in 5 child death (18% worldwide) occurred during south East Asia stand for first in number of LRTI incidence. In developing countries on an average every child have episodes of ARI per year accounting for 30-50% of the total pediatric inpatient visits 20-30% of pediatrics admissions.<sup>[6]</sup>

In India more than 4lakh deaths every year are due to pneumonia accounting for 13-16% of all deaths in pediatrics hospital admissions.<sup>[7]</sup> Million death study based on the register general of India.

## Types of RTIs

### Upper Respiratory Tract Infection

Although some disagreement exists on the exact boundary between the upper and lower respiratory tracts, the upper respiratory tract is generally considered to be the airway above the glottis or vocal cords. This includes the nose, sinuses, pharynx, and larynx. Typical infections of the upper respiratory tract include tonsillitis, pharyngitis, laryngitis, sinusitis, otitis media, certain types of influenza, and the common cold. Symptoms of URIs can include cough, sore throat, runny nose, nasal congestion, headache, low grade fever, facial pressure and sneezing.<sup>[8]</sup>

### Lower Respiratory Tract Infection

The lower respiratory tract consists of the trachea (windpipe), bronchial tubes, the bronchioles, and the lungs. Lower respiratory tract infections are generally more serious than upper respiratory infections. LRIs are the leading cause of death among all infectious diseases. The two most common LRIs are bronchitis and pneumonia. Influenza affects both the upper and lower respiratory tracts, but more dangerous strains such as the highly pernicious H5N1 tend to bind to receptors deep in the lungs.<sup>[9]</sup>

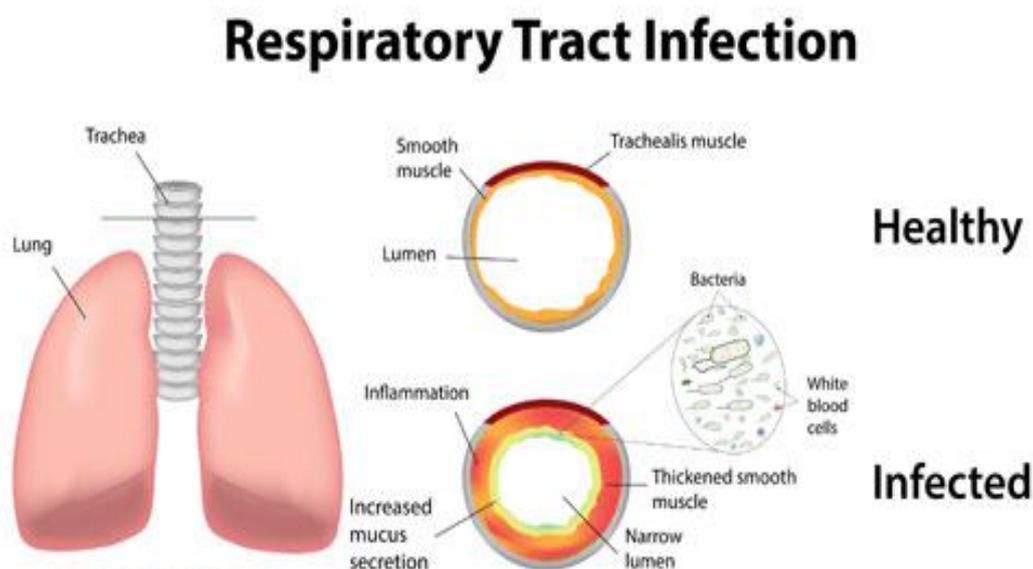


Figure 1: Respiratory Tract Infection.

### Common Causes of RTIs

Most common organisms known to cause ARI among children include bacteria such as *Staphylococcus aureus*, *Streptococcus pyogenes*, *Pneumococci*, *Haemophilus influenzae* & *Klebsiella pneumoniae*. Viruses such as Adeno, Rhino, Corona & Influenza are also the common etiological agents.<sup>[10]</sup>

### AIMS AND OBJECTIVES

1. To describe the treatment modalities of children admitted for RTI.

### METHODOLOGY

The study was conducted at Mandya Institute of Medical Science and Teaching Hospital (MIMS Teaching Hospital). It is a 550 bedded tertiary care teaching hospital having different specialties like medicine, surgery, orthopaedics, paediatrics, obstetrics and gynaecology etc. The hospital provides health care services to people in and around Mandya and nearby villages.

The study on treatment modalities of children admitted for RTI was done in paediatric department of MIMS, Mandya. Details from 150 RTI patients were collected

using specially designed case report form to evaluate it. The parameters noted were: Demographic details, Present complaints, and Present history and Medication history.

**Study Design:** This was a record based prospective study, conducted in MIMS hospital.

### Inclusion Criteria

The subjects included in this study were patients of either sex aged 14 years or below, who have been diagnosed as RTI and admitted in the paediatrics department during the study period.

### Exclusion Criteria

- Records of children admitted to Intensive care unit.
- Records of patients with incomplete data availability.
- This study has been conducted on male and female patients who were satisfying the inclusion criteria. A suitably designed Case Record Form was prepared and used to record all the necessary and relevant data from the medical records of patients which mainly included admission sheets, patient history notes, progress sheets, nurses' records.

- The data were collected from General Medicine Department of MIMS, Mandya. The study was initiated after getting ethical clearance from Institutional Ethics Committee, MIMS, Mandya. Our team members collected data from the patient's case sheet. The details were also recorded from their case sheets. After acquiring the details, we have performed various analysis in the collected data. The analysis was based on patient treatment modalities.

### Prescribing Pattern

#### Route of drug administration

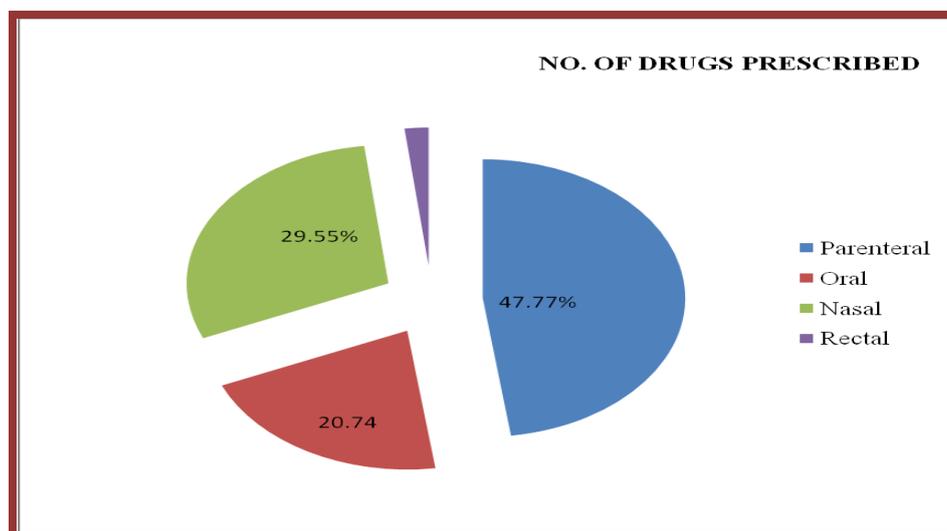
Out of 988 total drugs, 472 (47.77%) was given in parenteral route and it was the most common route of administration followed by oral 205 (20.74%), nasal 292 (29.55%) and rectal 19(1.92%).

## RESULTS AND DISCUSSION

This prospective, observational study was conducted in MIMS. A total number of 150 paediatric patients of 0-14 years were included.

**Table 1: Route of drug administration.**

| ROUTE      | NO. OF DRUGS PRESCRIBED | PERCENTAGE OF DRUGS |
|------------|-------------------------|---------------------|
| Parenteral | 472                     | 47.77%              |
| Oral       | 205                     | 20.74%              |
| Nasal      | 292                     | 29.55%              |
| Rectal     | 19                      | 1.92%               |



**Figure 2: Route of drug administration.**

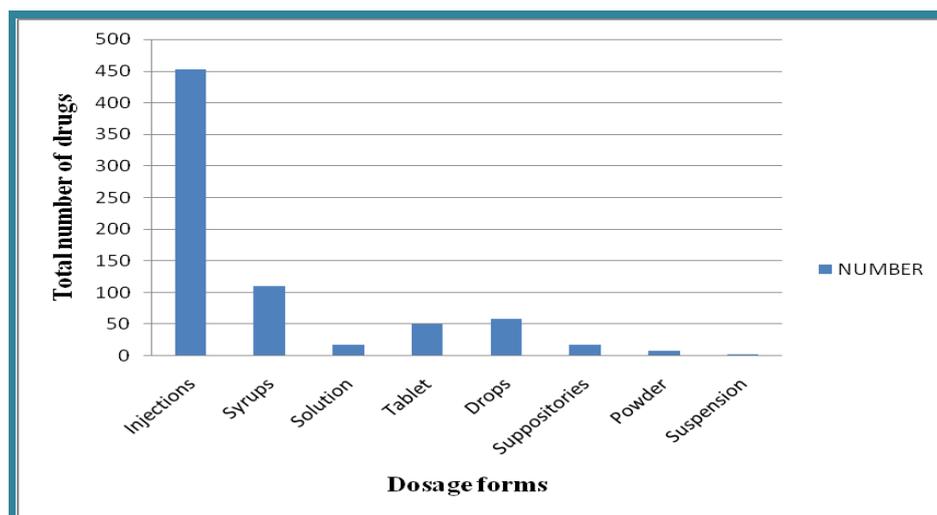
### Types of formulation used

Out of 988 total drugs given, injections 452 (45.74%) was the most common type of formulations used followed by syrups 111 (11.23%), solution 18 (1.82%),

tablet 51 (5.16%), drops 58 (5.87%), suppositories 18 (1.82%), powder 8 (0.80%) and suspension by 3 (0.30%).

**Table 2: Types of formulation used.**

| Dosage form   | Number | Percentage (%) |
|---------------|--------|----------------|
| Injections    | 452    | 45.74%         |
| Syrups        | 111    | 11.23%         |
| Solution      | 18     | 1.82%          |
| Tablet        | 51     | 5.16%          |
| Drops         | 58     | 5.87%          |
| Suppositories | 18     | 1.82%          |
| Powder        | 8      | 0.80%          |
| Suspension    | 3      | 0.30%          |



**Figure 3: Types of formulation used.**

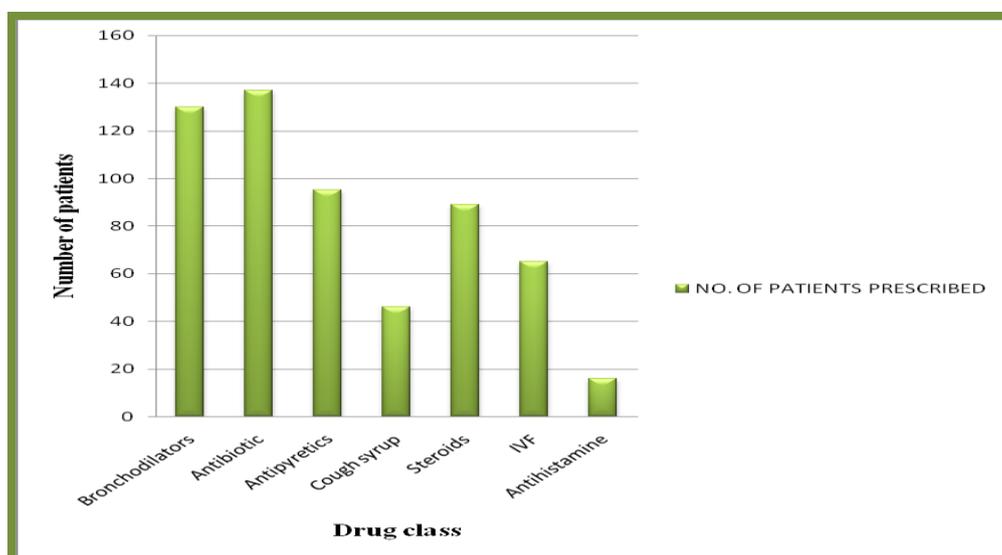
#### Percentage of prescription of major drug classes

Out of 150 patients prescribed, Antibiotic 137 (91.33%) was the major class of drugs prescribed followed by

Bronchodilator 130 (86.66%), Antipyretic 95 (63.33%), Steroids 89 (59.33%), IVF 65 (43.33%), Cough syrup 46 (30.66%) and Antihistamine 16 (10.66%).

**Table 3: Percentage of prescription of major drug classes.**

| Drug Class      | No. of Patients Prescribed | Percentage (%) |
|-----------------|----------------------------|----------------|
| Bronchodilators | 130                        | 86.66%         |
| Antibiotic      | 137                        | 91.33%         |
| Antipyretics    | 95                         | 63.33%         |
| Cough syrup     | 46                         | 30.66%         |
| Steroids        | 89                         | 59.33%         |
| IVF             | 65                         | 43.33%         |
| Antihistamine   | 16                         | 10.66%         |



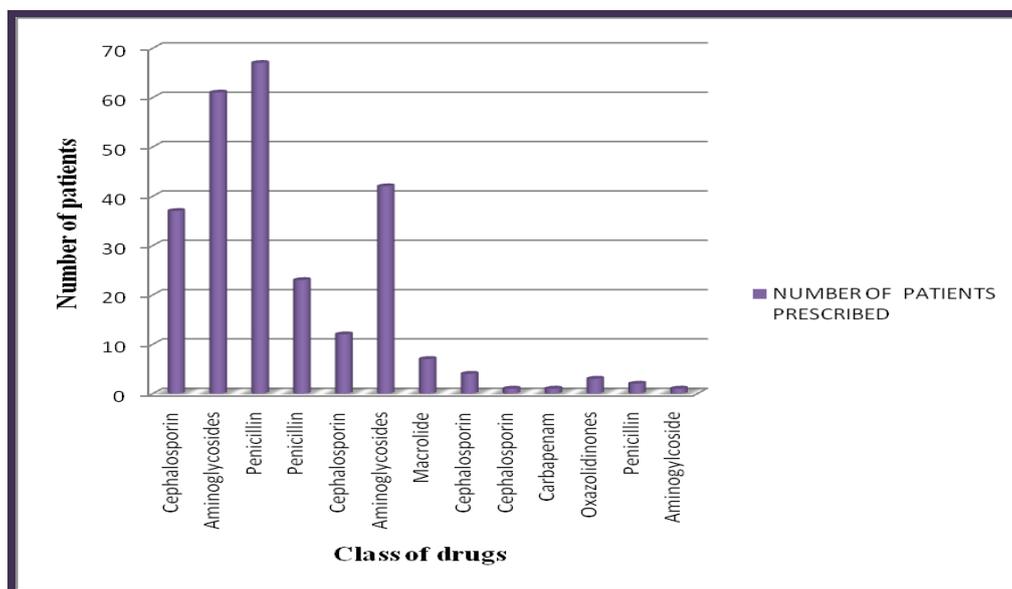
**Figure 4: Percentage of prescription of major drug classes.**

#### Prescribing pattern of antibiotics

Out of 150 patients prescribed Aminoglycoside 104 (39.84%) group of antibiotics were the most commonly prescribed antibiotics followed by Penicillin group 102 (35.4%), Cephalosporin 54 (20.64%), Macrolide 7 (2.68%), Oxazolidinones 3 (1.14%) and last Carbapenam 1 (0.38%).

**Table 4: Prescribing pattern of different class of antibiotics.**

| Drug Name    | Class of Drug   | Number of Patients Prescribed | Percentage (%) |
|--------------|-----------------|-------------------------------|----------------|
| Cefotaxime   | Cephalosporin   | 37                            | 14.17%         |
| Amikacin     | Aminoglycosides | 61                            | 23.37%         |
| Amoxiclav    | Penicillin      | 67                            | 25.67%         |
| Ampicillin   | Penicillin      | 23                            | 8.81%          |
| Ceftriaxone  | Cephalosporin   | 12                            | 4.59%          |
| Gentamycin   | Aminoglycosides | 42                            | 16.09%         |
| Azithromycin | Macrolide       | 7                             | 2.68%          |
| Cefopodoxime | Cephalosporin   | 4                             | 1.53%          |
| Cefixime     | Cephalosporin   | 1                             | 0.38%          |
| Meropenam    | Carbapenam      | 1                             | 0.38%          |
| Linezolid    | Oxazolidinones  | 3                             | 1.14%          |
| Amoxicillin  | Penicillin      | 2                             | 0.76%          |
| Tobramycin   | Aminoglycoside  | 1                             | 0.38%          |

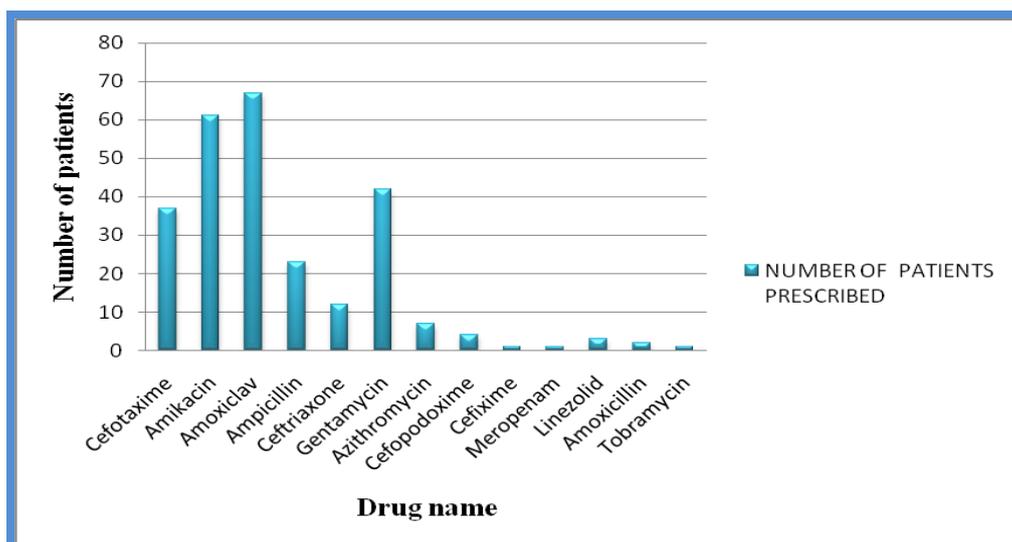
**Figure 5: Prescribing pattern of different class of antibiotics.****Distribution of individually prescribed antibiotics**

In this study out of 150 patients prescribed Amoxiclav was the highest prescribed drug 67 (25.67%) followed by Amikacin 61 (23.37%), Gentamycin 42 (16.09%), Cefotaxime 37 (14.17%), Ampicillin 23 (8.81%),

Ceftriaxone 12 (4.59%), Azithromycin 7 (2.68%), Cefopodoxime 4 (1.53%), Linezolid 3 (1.14%), Amoxicillin 2 (0.76%), Cefixime 1 (0.38%), Meropenam 1 (0.38%) and Tobramycin 1 (0.38%).

**Table 5: Distribution of individually prescribed antibiotics.**

| Drug Name    | Number of Patients Prescribed | Percentage (%) |
|--------------|-------------------------------|----------------|
| Cefotaxime   | 37                            | 14.17%         |
| Amikacin     | 61                            | 23.37%         |
| Amoxiclav    | 67                            | 25.67%         |
| Ampicillin   | 23                            | 8.81%          |
| Ceftriaxone  | 12                            | 4.59%          |
| Gentamycin   | 42                            | 16.09%         |
| Azithromycin | 7                             | 2.68%          |
| Cefopodoxime | 4                             | 1.53%          |
| Cefixime     | 1                             | 0.38%          |
| Meropenam    | 1                             | 0.38%          |
| Linezolid    | 3                             | 1.14%          |
| Amoxicillin  | 2                             | 0.76%          |
| Tobramycin   | 1                             | 0.38%          |



**Figure 6: Distribution of individually prescribed antibiotics.**

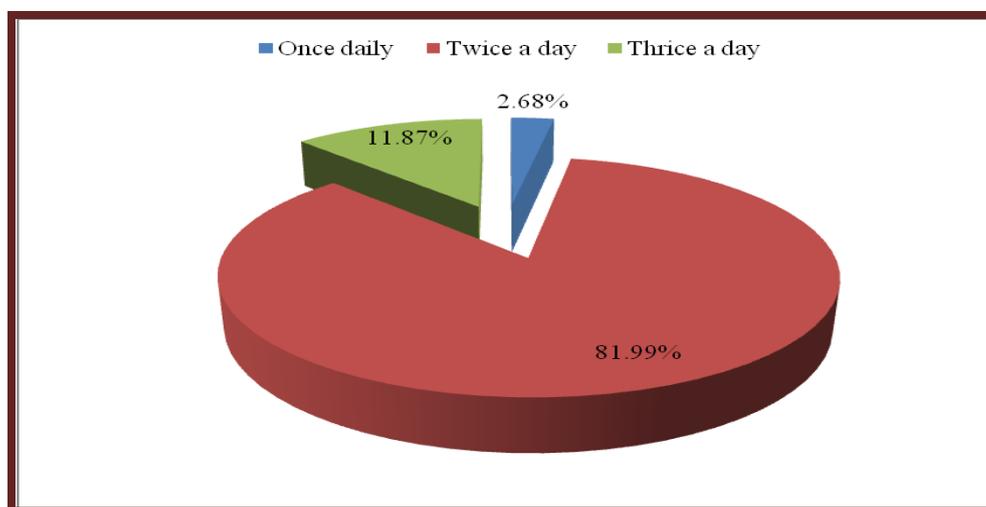
#### Frequency of antibiotic prescribed

Out of 261 antibiotics prescribed 214 (81.99%) were given as twice a day followed by 31 (11.87%) were

given three times a day and 7 (2.68%) were given once daily.

**Table 6: Frequency of antibiotics prescribed.**

| Frequency of Antibiotics | No of Antibiotics Prescribed | Percentage (%) |
|--------------------------|------------------------------|----------------|
| Once daily               | 7                            | 2.68%          |
| Twice a day              | 214                          | 81.99%         |
| Thrice a day             | 31                           | 11.87%         |



**Figure 7: Frequency of antibiotics prescribed.**

#### CONCLUSION

The present study aimed at assessing the treatment pattern of RTI patients. Antibiotic 137 (91.33%) were the highest prescribed drug class among the pediatric population. Aminoglycosides 104 (39.84%) were the highest group in the class of antibiotics prescribed which is mostly used for the infections caused by the bacteria in inpatient pediatric department. Amoxicillin + clavulanic acid 67 (25.67%) was the highly prescribed drug among the antibiotics, it is the combination of penicillin and beta lactamase inhibitor. Out of 261 antibiotics prescribed 214 were given as twice a day which is more

than half of the pediatric patients receiving antibiotic therapy. From our study we concluded that, more male paediatric patients were suffered LRTI compared to female. For LRTI, antibiotic are the most prescribing drugs, aminoglycosidic antibiotics are prescribed more for single antibiotic treatment and followed by amoxicillin + clavulanic acid combination was prescribed.

#### SUMMARY

The morbidity profile of RTI in pediatrics conducted in MIMS Teaching Hospital, Mandya was record based

prospective study. A suitably designed data collection form will be used to record all the necessary data. A total number of 150 case sheets of RTI pediatric patients were collected. The medications prescribed consisted mainly of injection, 452 (45.74%) times has given as dosage form with which were accordingly administered dominantly through parenteral route. And the number of drugs prescribed through parenteral route was found to be 472 (47.77%). Antibiotic were the highest prescribed drug class among the pediatric population. Aminoglycosides were the highest group in the class of antibiotics prescribed followed by combination of amoxicillin and clavulanic acid was prescribed drug, it is the combination of penicillin and beta lactamase inhibitor. Out of 261 antibiotics prescribed, 214 (81.99%) were given as twice a day which is more than half of the pediatric patients receiving antibiotic therapy.

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