



## INFECTIOUS DISEASES IN CHILDREN AND THE REFLECTION ON THE VARIOUS COMMONLY USED ANTIBIOTIC AGENTS

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### ABSTRACT:

**Background:** Pediatric patients are the most frequent population visiting the out patient department with various illnesses round the year. Infections are among the most common reason for illness in this population. **Aims:** This study of cross sectional design was executed to evaluate different pediatric infections in patients visiting pediatric department of Muhammad Medical College. **Methodology:** A total of 506 pediatric admitted patients were assessed in pediatric department and data was collected through consecutive sampling over one-year time period and data thus obtained was evaluated in terms of frequency and percentage for various diseases and presented in tables and figures. The response towards antibiotic therapy was estimated as resolution of symptoms. **Results:** The male proportion of patients dominated over female proportion with 327 (64.62%) and 179 (35.38%) respectively. Most cases were of age under 1 year 286(56.52%) followed by age between 1-5 years 115(22.73%) and age group above 5years was the least affected group 105(20.75%). Gastroenteritis cases were most common followed by RTIs and non-infectious diseases.

**Conclusion:** Gastrointestinal infections were found to be more common in pediatric patients followed by respiratory infections and the response towards Macrolides and Cephalosporin groups of antibiotics was excellent

**Key Words:** RTIs, UTIs, Meningitis

## INTRODUCTION:

Infectious diseases constitute the dominant part of illness specially RTIs (Respiratory tract infections) are the major causes for morbidity and mortality [1]. Acute infections account for 1/3<sup>rd</sup> pediatric deaths under 5 years age in under developing countries [2]. Respiratory tract infections are the only cause of hospitalization in >12 million children below the age of 5 year yearly [3]. Factors like malnutrition, underweight children, poorly breast fed children, children under the influence of polluted air, children living in crowded houses and population lack of immunization, parental smoking, deficiency of zinc and vitamin A, concomitant diseases, low or un-educated mothers and cooled climate and winter season contribute for the infections. These infections are of viral infection or bacterial etiology resulting into mild, moderate and severe illness [4]. Infection of the respiratory tract are responsible for an estimated 4-5 million child deaths in developing nations per year [5,8] Typhoid or enteric fever caused by a gram negative bacillus salmonella typhi, affects all age groups with gastrointestinal manifestations [6,7]. The transmission of typhoid infection is accomplished with water and food contamination along with poor personal and public hygiene [6-8]. The pediatric population with an age between 1-5 years is on more risk due to poor immune system. Malaria and meningitis both has worse impact on pediatric life if poorly treated and consequently on the overall society. This study addressed few common and important infections observed in pediatric patients which hopefully add some knowledge scientific community and stimulus for concerned authorities that will ultimately help our children.

## METHADODOLOGY:

This current cross-sectional research was managed at the department of pediatrics, Muhammad Medical College, Mirpurkhas, Sindh, Pakistan from January 2018 to December 2018. There was inclusion of all pediatric indoor and outdoor cases irrespective of age and gender while the only exclusion was the pediatric emergencies and non-infectious diseases. Frequency and percentage of various common respiratory infections. Age wise frequency and percentage was calculated for different age groups and results were presented in tables and figures, various antimicrobials were used as per guidelines. Data was collected after taking informed written consent from parents and analyzed accordingly.

## RESULTS:

There were 506 admitted patients evaluated in this study, the male proportion of patients was 327(64.18%) and the female proportion was 179(35.38%). Most cases were of age under 1 year 286(56.52%) followed by age between 1-5 years 115(22.73%) and age group above 5years was the least affected group 105(20.75%)[Table-1]. Gastroenteritis cases were most common 247(41.51%) followed by RTIs 146(24.54%), UTIs 26(4.37%), Dysentery 28(4.71%), Typhoid 22 (3.70%) , Malaria 12(2.02%), Meningitis 25(4.20%), various antibiotics used are represented in [Figure-2].

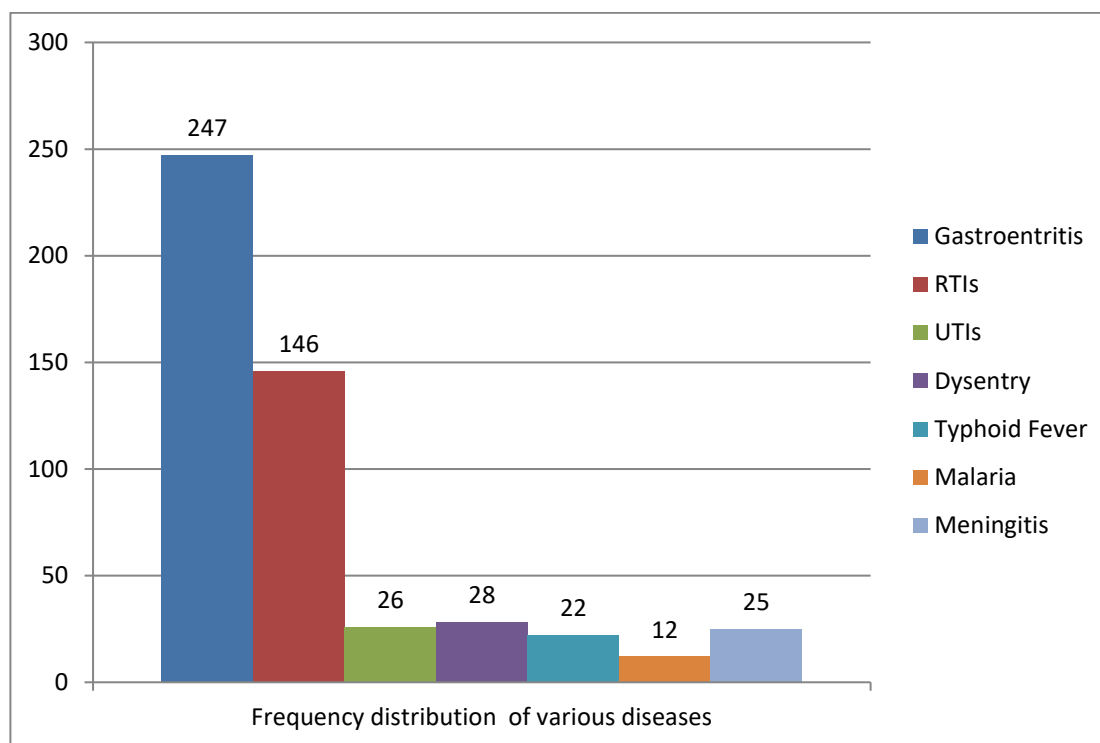
**Table-1: Age and sex distribution of patients**

Age	Under 1 Year	286(56.52%)
	Between 1-5 Years	115(22.73%)
	Above 5Years	105(20.75%)
Sex	Males	327 (64.62%)
	Females	179(35.38%)

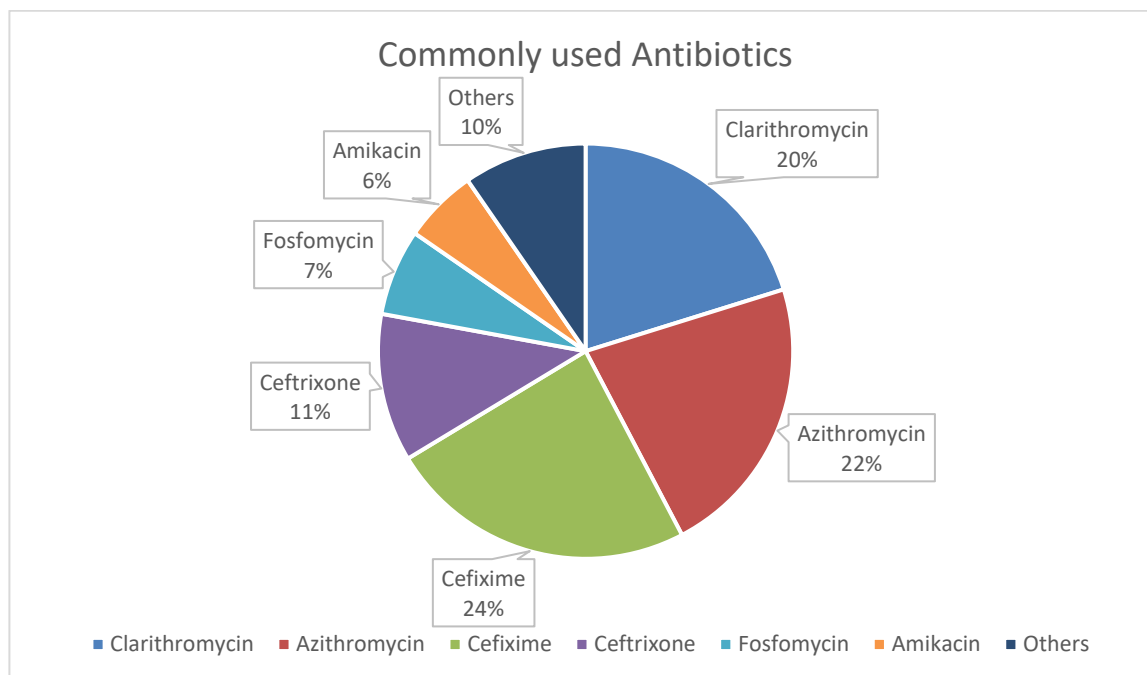
**Table-II: Distribution of Infectious Diseases**

Infectious Diseases	Frequency
Dysentery	28(4.71%)
Gastroenteritis	247(41.51%)
Malaria	12(2.02%)

<b>Meningitis</b>	<b>25(4.20%)</b>
<b>RTIs</b>	<b>146(24.54%)</b>
<b>Typhoid</b>	<b>22(3.70%)</b>
<b>UTIs</b>	<b>26(4.37%)</b>
<b>Total</b>	<b>506(100%)</b>



**Figure-I: Frequency distribution of various infections**



**Distribution of various Antibiotics**

## DISCUSSION:

Study by Vinod KR et al (2016) on 400 children reported RTI as 109(19.25%) cases that is in accordance with our results [9]. The study results by Tazinya et al (2018) showed 42.58% female

and 57.62% male involvement which is consistent with our findings but they reported 280(54.7%) cases suffering from acute respiratory infection (ARIs) that was inconsistent with our observation of gastroenteritis as most common pediatric infection [10]. An Indian study by Mathew JL et al (2011) reported RTIs as 19% which is consistent with our study results [11]. Kumar S.G et al (2015) reported pediatric respiratory infections 59.1% while we found it as 24% so the results of two studies are inconsistent with each other [12]. Savitha A K and Gopala krishnan et al (2018) reported the prevalence of ARI among children < 5 years old as 41.6% which is inconsistent with our results however the gender 50.6% as males and 33.5% as female are consistent finding[13]. Typhoid fever is very common in Pakistan due lack of standard facilities for health care, unhygienic conditions, poor quality drinking water [14]. The annual incidence for typhoid in India is reported to be 980/100,000 population [15]. Although there is no list of antimicrobial drugs but Azithromycin is the drug of choice now due to increasing MDR [16]. Habte et al. (2018) reported 5.0% typhoid fever while we found it as 3% in our study [17]. Andualem G et al (2014) reported prevalence of typhoid fever as 4.1% that is also consistent to our results [18]. Whereas an Egyptian research showed 13.64% prevalence for typhoid by Hamdy MS et al(2014) which is inconsistent with our results [19]. There were many weaknesses and limitations in our current study but we the current study will guide the other workers in the field to work on broader range of parameters.

### CONCLUSION:

Gastrointestinal infections (gastroenteritis, dysentery and typhoid) were found to be more common in pediatric patients followed by respiratory infections well responding to Macrolides and Cephalosporins

### REFERENCES:

1. The UN Inter-agency Group for Child Mortality Estimation. Levels & Trends in Child Mortality: Report 2014. New York: UNICEF; 2014.
2. Ujunwa F, Ezeonu C(2014). Risk factors for acute respiratory tract infections in under-five children in Enugu Southeast Nigeria. *Ann Med Health Sci Res.* 4(1):95–9.
3. Nair H, Simoes EA, Rudan I, Gessner BD, Azziz-Baumgartner E, Zhang JS, et al(2013). Global and regional burden of hospital admissions for severe acute lower respiratory infections in young children in 2010: a systematic analysis. *Lancet* (London, England). 381(9875):1380–90.
4. Boloursaz MR, Lotfian F, Aghahosseini F, Cheraghvandi A, Khalilzadeh S, Farjah A, Boloursaz M(2013). Epidemiology of Lower Respiratory Tract Infections in Children. *J Compr Ped.* 4(2): 93-8.
5. Liu WK, Liu Q, Chen DH, Liang HX, Chen XK, et al. (2014) Epidemiology of Acute Respiratory Infections in Children in Guangzhou: A Three-Year Study. *PLoS ONE* 9(5): e96674. doi:10.1371/journal.pone.0096674.
6. Kaferstien F, Abdussalam M .(1999) Food safety in the 21st century. *Bull world Health Organ* 77(4):347-51.
7. Bhan MK, Bahl R, Bhatnagar S (2005). The Epidemiology of Typhoid fever *Lancet* 366: 749-762.
8. Ruby Biezen, Allan J Pollack, Christopher Harrison, Bianca Brijnath, Danilla Grando, Helena C Britt, Danielle Mazza (2015). Respiratory tract infections among children younger than 5 years: current management in Australian general practice *MJA* 202 (5):262-265.
9. Vinod K. Rama, Jayas hree Pattankar , Suresh Kura layanapaAPAla PuttahonnAPPA(2016). Acute Respiratory Infections among Under-Five Age Group Children at Urban Slums of Gulbarga City: A Longitudinal Study *Journal of Clinical and Diagnostic Research* 10(5): LC08-LC13.
10. Alexis A. Tazinya, Gregory E. Halle-Ekane, Lawrence T. Mbuagbaw, Martin Abanda1, Julius Atashili et al(2018). Risk factors for acute respiratory infections in children under five years

- attending the Bamenda Regional Hospital in Cameroon BMC Pulmonary Medicine 18:7 DOI 10.1186/s12890-018-0579-7
11. Mathew JL, Patwari AK, Gupta P, Shah D, Gera T, Gogia S, et al. Acute respiratory infection and pneumonia in India: a systematic review of literature for advocacy and action: UNICEF-PHFI series on newborn and child health, India. *Indian Pediatr.* 2011;48(3):191–218.
  12. Kumar, S. G., Majumdar, A., Kumar, V., Naik, B. N., Selvaraj, K., & Balajee, K. (2015). Prevalence of acute respiratory infection among under-five children in urban and rural areas of puducherry, India. *Journal of natural science, biology, and medicine*, 6(1), 3–6. <https://doi.org/10.4103/0976-9668.149069>.
  13. Savitha A K, Gopalakrishnan (2018). Determinants of acute respiratory infections among under five children in a rural area of Tamil Nadu, India *J Family Med Prim Care* 7(6): 1268-1273.
  14. Parry CM, Hien TT, Dougan G, et al(2002). Typhoid fever. *N Engl J Med.* 347(22):1770-82.
  15. Sinha A, Sazawal S, Kumar R, Sood S, Reddaiah VP, Singh B et al. Typhoid fever in children aged less than 5 years, *Lancet* 354:734–737.
  16. E. Gotuzzo(2018). Typhoid fever: A current problem Abstracts / *International Journal of Infectious Diseases* 73S 3–398.
  17. Limenih Habte, Endale Tadesse, Getachew Ferede, Anteneh Amsalu(2018). Typhoid fever: clinical presentation and associated factors in febrile patients visiting Shashemene Referral Hospital, southern Ethiopia *BMC Res Notes* . 11:605 <https://doi.org/10.1186/s13104-018-3713-y>.
  18. Andualem G, Abebe T, Kebede N, Gebre-Selassie S, Mihret A, Alemayehu H(2014). A comparative study of Widal test with blood culture in the diagnosis of typhoid fever in febrile patients. *BMC Res Notes.* 7:653.
  19. Hamdy MS, Abdel-Rahman S(2014). Evaluation of enterocheck WB test in diagnosis of typhoid fever among Egyptian adults. *Egypt J Med Microbiol.*23(4):47–50.