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Original Article

Antibiotic Prescribing Pattern in Pediatric Patients in a Tertiary Care Hospital: A Cross-sectional Study

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ABSTRACT

Background: Infants and children are among the most vulnerable population groups that contract illnesses. The use of antimicrobial agents has become a routine practice for the treatment of pediatric illnesses, and antibiotics are among the most prescribed drugs in pediatrics.

Materials and Methods: A total of 316 pediatric patients were reviewed during the study. All the information was collected using data collection form to assess the patient demographic characters, diagnosis, and drugs prescribed.

Results: Among 316 pediatric patients, the highest number of patients were in age group of <1 year (28.8%) and lowest group were in 10–12 years' age group (12.7%). The mean age of pediatric patients was 5.2±1.2 years.

Conclusion: Prescription patterns and usage of antibiotics in this study were inappropriate in comparing our results with WHO prescribing indicators. Effective interventions required to reduce inappropriate antibiotic prescriptions. This situation comes from parents' pressure of quick relief using strong medications.

KEYWORDS: Antibiotics, Prescribing Pattern, Antimicrobial Resistance, Pediatrics.

INTRODUCTION

Infants and children are among the most vulnerable population groups that contract illnesses. The use of antimicrobial agents has become a routine practice for the treatment of pediatric illnesses, and antibiotics are among the most commonly prescribed drugs in pediatrics.[1] The rising incidence of bacterial resistance to commonly used antibiotics, particularly the emergence of multi-drug resistant organisms has made it mandatory that antibiotics are used judiciously in pediatric practice.[2] Antimicrobial therapy demands an initial clinical evaluation of the nature and extent of the infective process and knowledge of the likely causative pathogen(s). This assessment should be supported, whenever practical, by laboratory investigation and its susceptibility to antimicrobial agents appropriate for the treatment of the infection. Irrational usage of antibiotics increases the risk for the antimicrobial resistance, leads to increase morbidity, mortality and economic burden on healthcare services.[3] India is a lower middle income developing country in south Asia which have high potential for overuse and misuse of antibiotics and have less public awareness of antimicrobial resistance.[4]

The World Health Organization (WHO) developed the prescribing indicators to measure the rational usage of drugs in primary care and to assess the prescribing pattern of antibiotics.[5] This present study was to aimed to assess the prescribing pattern of antibiotics in pediatric patients in a tertiary care hospital.

MATERIALS AND METHODS

Study Population: 316 cases were included.

Study Area: This cross-sectional and prospective study was carried out in the Departments of Pharmacology in collaboration with department of Pediatrics of P K Das Institute of Medical Sciences, Palakkad, Kerala, India, during the period from January 2015 to May 2015.

Patients demographic characters (age, gender), diagnosis, and antibiotics prescribed were recorded. Class of antibiotic, dose, route of drug administration, frequency and duration of treatment were recorded in data collection form.

Based on this collected data, average number of drugs prescribed per patient encounter, percentage of encounters with an antibiotic prescribed, percentage of

antibiotics prescribed by generic name, and percentage of antibiotics prescribed from essential drugs list or formulary. The collected data was checked for the completeness.

Table 1: Baseline demographics (age) of study sample

Age in Years	Frequency (%)
<1	91 (28.79)
1-3	84 (26.58)
3-6	55 (17.40)
6-9	46 (14.55)
9-12	40 (12.65)
Toatl	316 (100)
Mean±SD	5.16±1.24

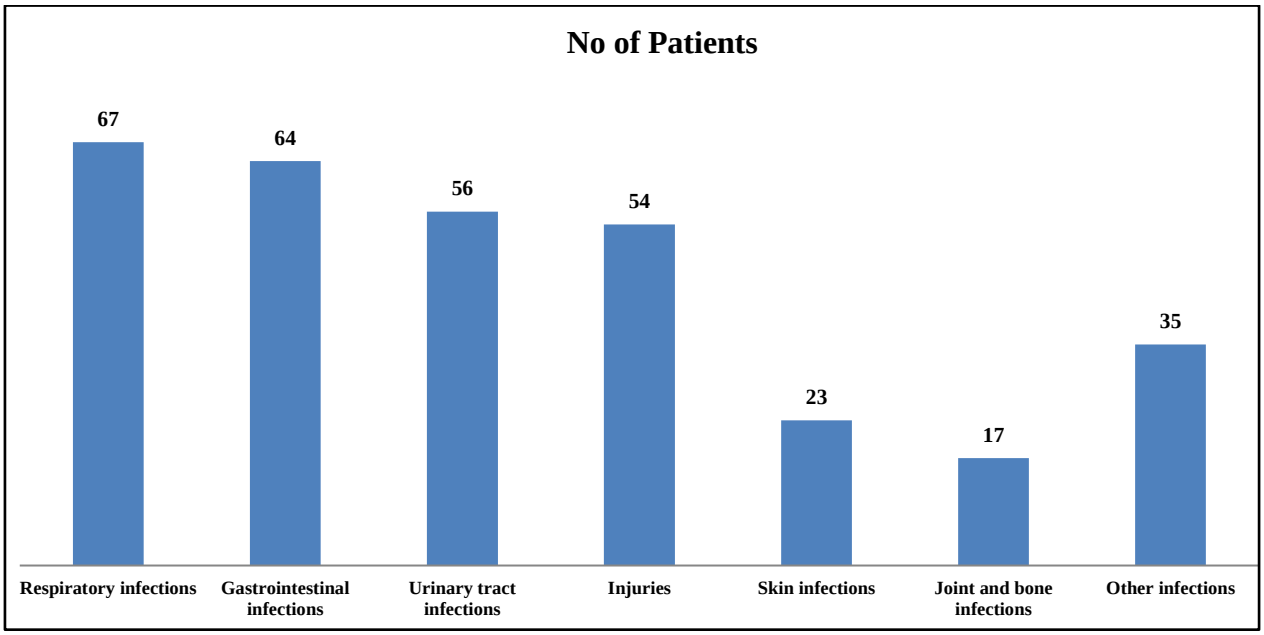

Fig 1: Shows the distribution of diagnoses in pediatric department.

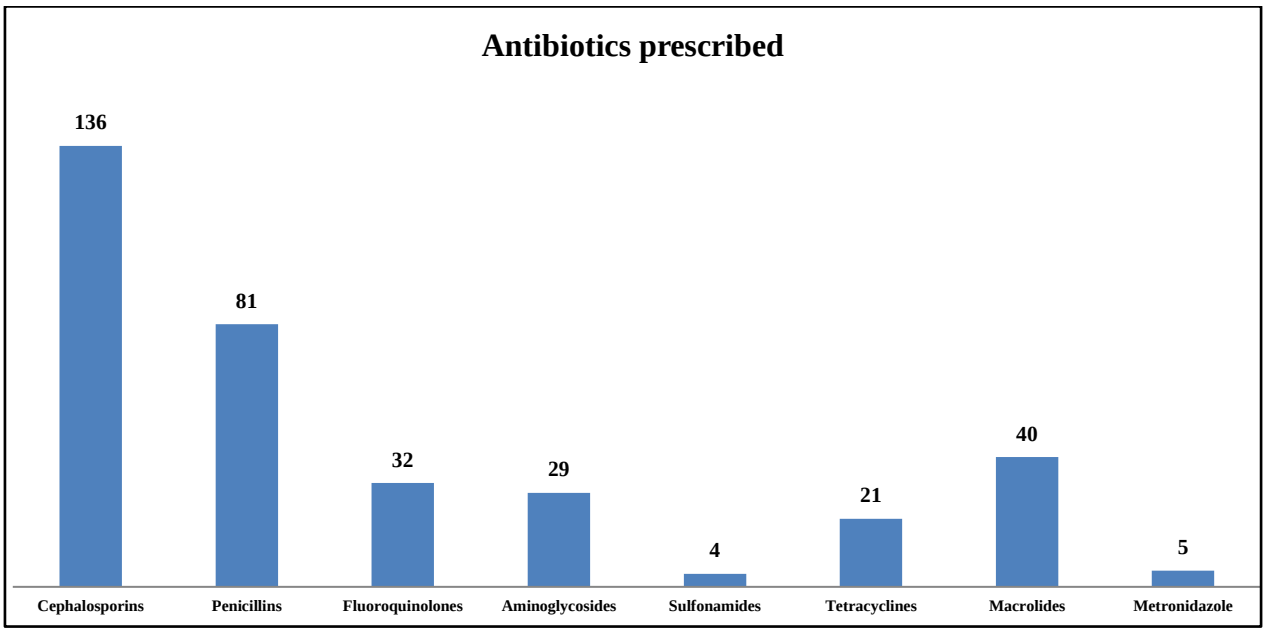

Fig 2: Shows the distribution of antibiotics prescribed in pediatric department

Table 2: World Health Organization prescribing indicators estimated from pediatric department

WHO prescribing indicator	Average percentage	WHO standard (%)
i. Average number of drugs per encounter	3.5	2.0
ii. Percentage of encounters with one or more antibiotics	50.9	20-26.8
iii. Percentage of drugs prescribed by generic name	24.2	100
iv. Percentage of antibiotics from essential drug formulary list	92.4	100

RESULTS AND DISCUSSION

This present study was conducted in the Department of Pharmacology in collaboration with department of Pediatrics, P K Das Institute of Medical Sciences, Palakkad. A total of 316 pediatric patients were reviewed during the study. All the information was collected using data collection form to assess the patient demographic characters, diagnosis, and drugs prescribed. Among 316 pediatric patients [Table 1], the highest number of patients were in age group of <1 year (28.8%) and lowest group were in 10–12 years' age group (12.7%). The mean age of pediatric patients was 5.2±1.2 years. This study designates that the age group less the 1 year were more susceptible for the infectious diseases. These results were supported with previous study by Thapaliya et al. 2015 who indicated that the age group less the one year received antibiotics more frequently than older children.[6] Among 316 sample size, 52.2% (165) were male and 47.8% (151) were female, similar observations were seen in Khaled et al. 2014.[7] The most prevalent diseases [Fig.1] were respiratory infections (21.2%) followed by gastrointestinal infections (20.3%) and cephalosporins [Fig.2] were the most frequently prescribed antibiotics (43.0%), similar results were found in the previous studies by Thapaliya et al. 2015 and Patra et al. 2011.[6,8]

WHO prescribing indicators: average of 3.5 drugs was prescribed per patient encounter as mentioned in Table 2. The WHO standard value for average number of drugs prescribed per patient encounter is 2.0.[9] Value higher than the standard is suggestive of polypharmacy which may increase the Adverse drug reaction, non-adherence, and antibiotic microbial resistance. While our observed study value is higher than the WHO index, it is like the values in previously published by Siva Prasad et al. 2015.[10,11] The present study reveals that the percentage of encounters with antibiotics was 50.9%, which was higher than WHO standard (20.0-26.8%). Previous studies reveal that Antibiotic usage in Sudan (81.3%), Nigeria (71.1%) was very high when compare with our study results.[12,13] In higher income countries like Saudi Arabia, the value was 18.5% which was less than WHO standard value.[14]

Among 161 antibiotic prescriptions, 24.2% prescriptions were prescribed with generic names. Prescribing generic medicine was suggestive because generic medicine was very cheaper with equal potential. The use of generic names in our sample was less when compare to the countries such as Sudan (49.3%) and Nigeria (68.9%).[12,13] Among 423 sample size, 92.4% antibiotics were prescribed from essential drug formulary list. The formulary list helps for rational prescribing of antibiotics by cheering selection of cost effective and appropriate to local drug resistance. The study shows high level of adherence, but better results still can be achieved like in UAE 100%.[15] The results of studies found to help policy makers to develop policy regarding quality of rational drug use in a health facility.[16,17]

CONCLUSION

These finding suggest that, prescription patterns and usage of antibiotics in this study were inappropriate in comparing our results with WHO prescribing indicators. Effective interventions required to reduce inappropriate antibiotic prescriptions. This situation comes from parents' pressure of quick relief using strong medications.

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