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Original Article

Prescription Pattern of Antibiotics in Paediatric In-Patient Department at a Tertiary Care Hospital in South India

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ABSTRACT

Introduction: Antibiotics are the most commonly used dug in paediatric age group. Widespread use of antibiotics can cause antimicrobial resistance.

Aim: To analyse the prescription pattern of antibiotics in paediatric age group.

Method: A retrospective study of 75 patients was carried out from January 2019 till March 2019.Age, sex, antibiotics used, route of administration, concurrent drugs were used as parameters.

Result: Most of the children who were prescribed antibiotic belonged to the age group1-5years. Cefexime is the most commonly used antibiotic followed by Augmentin (amoxicillin+clauvinic acid combination)

Keywords: Rational, Paediatric, FDCs**,** NLEM

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INTRODUCTION

India is one of the countries with maximum antibiotic consumption. Antibiotics are medications used to destroy or slow down the growth of bacteria. It is used both for the treatment as well as the prophylaxis for bacterial infection. Children below the age of 15 years consist of 28% of the world population. [1] According to NAMCs (National Ambulatory Medical Care Survey) antibiotic is the second most common drug used to treat infection in children.[2] Although antibiotics have a lot of benefits they often produce diarrhoea , nausea, omitting, rashes, stomach upset as side effects. Their prolonged use can cause fungal infection of digestive tract. It may cause immediate or delayed hypersensitivity reactions. Etiopathogenesis and developmental stage of the child must be considered before prescription. Irrational antibiotic prescription can cause antimicrobial resistance, ADR, drug-drug interactions and treatment failure. To avoid this antibiotic guidelines based on culture sensitivity data are required in a hospital set up.[3] Fixed drug Combinations are formulations that consist of a mixture of two or more active drugs combined in a mixed ratio and are available in a mixed dosage form. It reduces the pill burden of the patients and shows the combined profiles of both the drugs. However extensive uses of FDCs can cause antimicrobial resistance. Rational use of drugs means patient receive medications appropriate to their clinical needs, in doses that meet their own clinical requirement, for adequate period of time at the lowest cost. WHO contributes to the rational use of drug through its Model list of essential Medicine" (NLEM) and has also categorised antibiotics based on the order of priority. This study deals with the prescription pattern of antibiotic in paediatric In-Patients.[4]

MATERIALS AND METHODS

Study setting: This study was conducted at Saveetha Medical College Hospital, a tertiary care teaching hospital in Thandalam, Chennai. The approval for conducting this study was obtained from the Institutional Ethics Committee (SMC/IRC/2018/11/467) prior to the study. The study was conducted for a period of 3 months starting from January 2019 till March 2019

Study data collection: A total of Prescription of 75 patients was audited. The study population included Patients of either sex within the age group of 1-15 years in the paediatric In-Patient department. All Out-Patients in the paediatric department and patients belonging to other departments who were taking antibiotics were excluded from the study.

Study procedure: A Case report sheet was designed using age, sex, diagnosis, antibiotic used, concurrent drugs used, route of administration as the parameters. Data was collected base on this from the Medical Records Department.

Statistical analysis: The data collected based on these parameters was analysed. The results were expressed as percentage or proportion or pictorial representation in the form of bar graph or pue chart or in the form of tabular column.

RESULTS AND DISCUSSIONS

Table 1A: Demographic Characteristics of Patients:

AGE	NUMBER(PERCENTAGE)
1-5	37(49.3%)
6-10	22(21.3%)
11-15	16(29.9%)
Male: Female	42:33

Maximum number of children for whom antibiotics were prescribed belonged to the age group 1-5 years; more number of male patients (56%) was admitted than female patients (44%).

Fig 1: Route of Administration

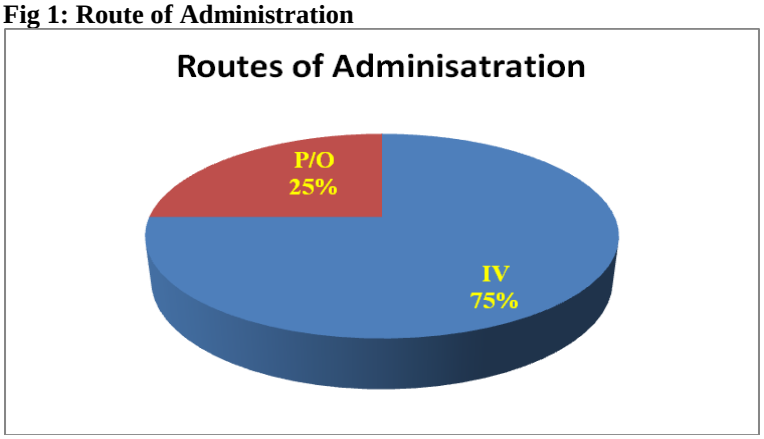
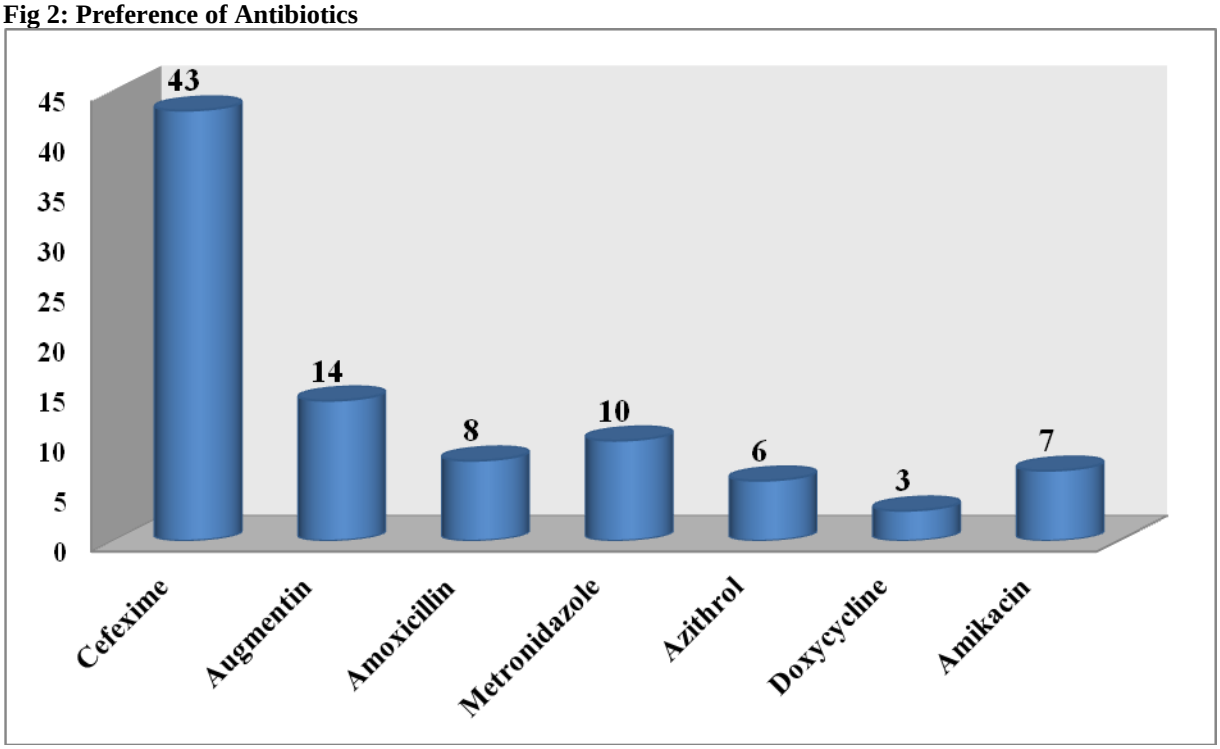


Table 2: Total Number of Antibiotics Prescribed Per Patient

Antibiotics Prescribed/Patient	Total Number(Percentage)
1	60(80%)
2	13(17%)
3	2(3%)

Among 75 prescriptions studied 58(77.3%) prescription constitute single antibiotic us.

Fig 2: Preference of Antibiotics



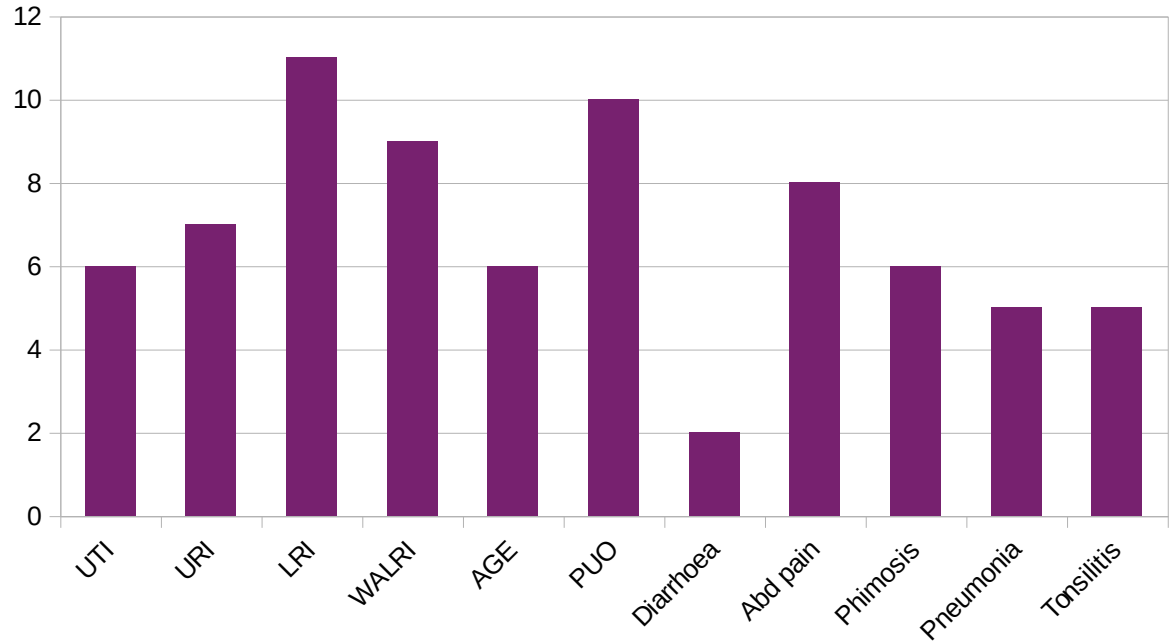
Cefexime is the most commonly prescribed antibiotic followed by Augmentin (amoxicillin+clauvinic acid).

Table 3: Indications and the Ideal Dose for the Drugs Used

Drug	Ideal Dose	Indications
Cefexime	75mg/kg/day TDS	Diarrhoea FFE URI LRI UTI Sinusitis
Augmentin	100mg/kg/day BD/TDS	Sinusitis LRI UTI
Metronidazole	20mg/kg/day TDS	AGE LRI
Azithromycin	10mg/kg/day OD	Tonsilitis Sinusitis Otitis Media Pneumonia
Amoxicillin	50mg/kg/day TDS	URI LRI UTI Tonsilitis
Doxycycline	5mg/kg/day BD	Respiratory infections UTI

Amikacin	15mg/kg/day BD	URI LRI UTI AGE Neonatal sepsis Meningitis

Fig 3: Diagnosis for Which Antibiotics Were Used



LRI&PUO were the most common diagnosis in the paediatric In-Patient for which antibiotics were used

Table 4: Concurrent Drugs Used

Concurrent Drugs Prescribed	Number
Paracetamol	35
Ondensetron	14
Ranitidine	14
Bifilac	5
Salbutamol	9
Duolin	5
Z&D drops	4
Pantocid	3
Asthalin	4
Citralka	3
Ambrolite	23
Cyclopam	4

Paracetamol is the most commonly used supplementary drug followed by Ondensetron and Ranitidine

% of drugs from NELM =Total no of drugs from EDL*100
Total no of drugs

Total no of drugs=12Total no of drugs=12
Total no of drugs prescribed from EDL=7
[**EDL-** Essential Drug List]
[**NELM-**National List of Essential Medicine]

% of drugs prescribed from NELM=58.3%

This study was carried out in Saveetha Medical College and Hospital, Thandalam, Chennai, a tertiary care teaching hospital. It is a retrospective observational study was prescriptions of 75 patients were audited over a period of 3 months. Antibiotics are mainly administered between the age group of 1-5 years (49.3%) as they are more exposed to bacterial infection due to poorly developed immune system [Table 1]. The Cephalosporin's are the most commonly prescribed group of antibiotic as recommended by CDC [Fig 2]. This result is similar to the research by Buphalam Pradeepkumar were 46.33% of antibiotics used was Cephalosporins[5]. They are commonly used because of its broad spectrum action against both gram negative and gram positive or gram negative bacteria.

The most commonly used antibiotic combination is Augmentin (Amoxicillin+Clavulanic acid)[Fig 2] .This result coincides with the studies conducted by Jha V et al[6] and Ciofi Degil Atti et al[7]. Mostly only 1 antibiotic(80%) was used in this hospital[Table 2].This shows that there is rational use of drug by the hospital. In research by Deshmukh swapnil narayan and Mahajan manali mangesh average of 2.16 $\pm$ 0.72antibiotics were used[8]. Polypharmacy can result in drug interactions, ADR & treatment failure. Multiple antibiotics should be prescribed only in case of severe cases/ treatment failure on monotherapy. Prescription of antibiotic is more common in males (56%) than females (44%)(Table 1). Similar results were obtained by the results conducted by Palikhe (Male-61.9% and female-38.1%) [9]and Kolar and Hromadova (males-58.2% and females-48.1%) [10]. Parenteral route (25%) is less common than IV (75%)[Fig1]. Although children prefer in the form of syrups. Paracetamol is the most commonly used supplementary dug which is the same for almost all the researchers conducted on the similar topic(Table 4). Antibiotics are mainly indicated in case of upper and lower respiratory tract infections, pyrexia of unknown origin, urinary tract infections, Acute gastroenteritis and rarely in case of diarrhoea (Fig 3).

CONCLUSION

Single drug formulations were mostly preferred than drug combinations.58.3% of drugs was prescribed from Essesntial Drug List. Augmentin is the most common FDC approved combination used. Most of the patients were prescribed only single antibiotic considering the requirement and thus reducing the occurrence of antimicrobial resistance and ADR. Hence the study concludes that the prescribing pattern of antibiotics in paediatric in-patients in Saveetha Medical College & Hospital is found to be rational according to the guidelines.

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