

A Prospective Study on Prescribing Pattern of Antibiotics in Paediatrics In a Tertiary care Hospital

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ABSTRACT

Background: Paediatrics is the branch of medicine dealing with the disease and disorders of children. The Paediatrics age range from 0-16 years. Drug therapy is considered to be major component of paediatric management in health care setting like hospital. Many infectious disease have been controlled in 20th century by improving living condition public health measures and with the use of anti-microbial agents. Antibiotics are the key drugs for treatment of infections and are among the most commonly prescribed drugs in paediatrics department. Many of the antibiotics are unnecessarily prescribed for viral infection such as common cold. Thus using antibiotics to treat this viral infections is considered misuse/overuse of antibiotics. According to the National Ambulatory Medical Care Survey (NAMCS), antibiotics are 2nd leading drugs which is been prescribed or considered for treating infectious disease in children. Therefore a proper selection of antibiotics along with prescribing of appropriate dose, formulation, pharmacokinetics profile, response and ADR must be considered very seriously otherwise they may lead to fatal effect and promote the spread of antibiotics resistance.

Data and METHOD: Population based point prevalence study was Carried Out to investigate The the knowledge, Attitude and Practices of Self-medication among the general population Of Yelahanka from April to September Among the paediatrics by using both Qualitative and Quantitive Data

Study period was 6 months and Study population was 150

SOURCES OF DATA AND MATERIALS.

Patient case sheet, Medication/ treatment chart, Laboratory data report.

Results: A sample of 150 patients were assessed in the paediatrics department of a tertiary care hospital in the study population of 150 patients, Male patients were 55% and female patients were 45%.

OBJECTIVES

Primary objectives:

To conduct observational study on prescribing pattern and evaluation of antibiotics in paediatrics in tertiary care hospital.

To conduct observational study on the first line choice of antibiotics.

Secondary objectives:

To evaluate rational use of antibiotics in disease like pneumonia, anaemia etc. To assess the usage of antibiotics in all type of paediatrics disease.

Tertiary objectives: To assess the Therapeutic dosage of different antibiotics formulation.

To examine the choice of drug according to the age classification in paediatrics like neonate, infant and children.

Conclusion: the review has exhibited that endorsing patterns of antibiotics drug is extremely normal among paediatrics the utilisation of anti-infection agents, antidepressants, and set subtleties among little fragment of respondents without appropriate development or lab test by medical care suppliers might prompt serious well-being risks, not exclusively to themselves and additionally to those to whom they could propose the prescription. Accordingly, it is the sole liability of the medical care experts and medication administrative specialists to guarantee the protected utilisation of medications and control the activity of self-organization of prescriptions by portraying the all out effect of the medications on the body to general society. As the review was restricted to a little populace, further exploration is expected to test the pervasiveness of self-medicine rehearses among everyone and how these vary by sort of prescription. Moreover, steps ought to be taken to screen the medication selling framework by partners particularly of those medications with possibly destructive impacts.

Keywords Antibiotics, Safe dose, Antibacterial medications, Medication usage, Insights, Prescription, Self Medicine, Pharmacovigilance, Judicious Medication Use, Study Survey.

Introduction

Paediatrics is the part of medication managing the illness and problems of kids. The Paediatrics age range from 0-16 years. Drug treatment is viewed as significant part of paediatric administration in medical care setting like emergency clinic. Numerous irresistible illness have been controlled in twentieth 100 years by further developing day to day environment general wellbeing measures and with the utilisation of hostile to microbial specialists. Anti-microbial are the critical medications for treatment of diseases and are among the most regularly endorsed drugs in paediatrics division. A considerable lot of the anti-microbial are superfluously endorsed for viral contamination like normal virus. Along these lines utilising anti-toxins to treat this viral contaminations is viewed as abuse/abuse of anti-microbial. National Ambulatory Medical Care Survey (NAMCS), antibiotics are 2nd leading drugs which is been prescribed or considered for treating infectious disease in children. Subsequently a legitimate determination of anti-toxins alongside endorsing of suitable portion, detailing, pharmacokinetics profile, reaction and ADR should be viewed as genuinely any other way they might prompt deadly impact and advance the spread of anti-infection agents obstruction

FORMULA FOR DOSE CALCULATION OF PAEDIATRICS

A. DOSE CALCULATION RELATED TO AGE

1. Young's rule

$$CHILD DOSE = \frac{AGE(YEAR)}{AGE(YEAR) + 12} \times ADULT DOSE$$

2. Dilling's rule

$$CHILD DOSE = \frac{AGE(YEAR)}{20} \times ADULT DOSE$$

3. Fried's rule

$$CHILD DOSE = \frac{AGE(MONTH)}{150} \times ADULT DOSE$$

B. DOSE CALCULATION RELATED TO BODY WEIGHT

$$CHILD DOSE = \frac{BODY WEIGHT(KG)}{70} \times ADULT DOSE$$

Antibiotics play a vital role in the treatment of infectious disease globally. Antibiotics are amongst the commonest medication prescribed for Paediatrics. Over prescribing of antibiotics has led to antibiotic resistance which has led to difficulty in treating certain infections, increase morbidity and mortality rates and health care cost. Inappropriate prescribing of antibiotics for common disease in Paediatrics patient has also contributed to an increase in antibiotics resistance.

Irrational and inappropriate use of antibiotics has contributed largely to the development of the antibiotic resistance. Antibiotics should be used rightly and for the right patients at the right time, at the right dose and administered correctly while providing them at an affordable cost with the right information. Rational prescribing of the antibiotics is a vital controlling and antibiotic resistance. Therefore, prescribers need to have detailed knowledge of antibiotics prescribing patterns. The incidence of medication errors in infants & children have higher than in adults.

LIST OF ANTIBIOTICS WITH ITS DOSE

S.NO	BRAND NAME	DRUG NAME	DOSE
1	INJ. MONOCEF	CEFTRIAZONE	500MG, 1GM
2	INJ. TAXIM	CEFOTAXIM	500 MG, 1GM
3	TAB. CEFIX	CEFIXEME	100MG, 200 MG
4	TAB. SPODOX	CEFODOXIME	100 MG, 200 MG
5	Inj. AMIKATIL	AMIKACIN	250 MG, 500 MG
6	TAB. CIPLOX	CIPROFLOXACIN	500 MG
7	TAB. DONEX	DOXYCILLIN	100 MG
8	TAB. AMOX	AMOXICILLIN	500 MG
9	INJ. GENTICIN	GENTAMYCIN	50 MG
10	INJ. REPIME	CEFEPIME	1 GM
11	INJ. VENTOX	VENCOMYCIN	500 MG
12	SYP. AZITHRAL	AZITHROMYCIN	100 MG, 200 MG
13	TAB. AUGMENTIN	AMOXICILLIN	375 MG, 625MG

LIST OF THE DISEASE TAKEN IN THIS STUDY

1. Acute gastritis
2. Enteric fever
3. Diarrhoea
4. Pneumonia
5. Hepatitis
6. Otitis media
7. Lower respiratory tract infection
8. Urinary tract infection
9. Tonsillitis
10. Dengue fever
11. Epilepsy
12. Neonatal jaundice

DATA AND METHOD:

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Study period was 6 months and Study population was 150

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STUDY CRITERIA

Inclusion criteria: Patients who are admitted in the department of paediatrics with at least one antibiotic drug, of either Gender and who are willing to participate in the study

Exclusion criteria : birth defects Patients who are not willing to participate other than paediatrics all age groups are excluded

The procedure of data collection was segmented into three steps. The first step was to fill out the questionnaire including socio-demographic information by the study subjects. The second step was to discuss the study protocol, and the final step was to cross-check the questionnaires filled by the respondents. The questionnaire was adopted from a formerly published study which was developed, standardised,

Statistical Analysis

Descriptive statistics was used for the calculation of proportions. The Chi-square test was performed to measure the association between the demographic characteristics and responses to understanding, perceptions and self-use of medication.

The p values were calculated using Microsoft Excel using the Chi Test Function. An alpha level of 0.05 or less was considered significant. Microsoft Word and Excel was used for data analysis, chart, graph, and diagram preparation

RESULTS

A sample of 150 patients were assessed in the paediatrics department of a tertiary care hospital in the study population of 150 patients, Male patients were 55% and female patients were 45%, as shown in the figure 1

TABLE 1: GENDER DISTRIBUTION OF PATIENTS

GENDER	NUMBER	PERCENTAGE
MALE	83	55.34%
FEMALE	67	44.66%
TOTAL	150	100%

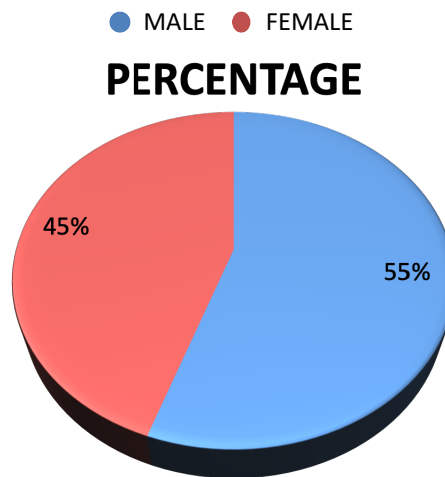


FIGURE 1: GENDER DISTRIBUTION OF PATIENTS

TABLE 2: AGE WISE DISTRIBUTION OF PATIENTS

AGE GROUP	NUMBER	PERCENTAGE
0-1 MONTH	2	1.33%
1 MONTH-1 YEAR	19	12.67%
1 YEAR-5 YEARS	46	30.67%
5 YEARS- 12 YEARS	56	37.33%
12 YEARS- 16 YEARS	27	18%
TOTAL	150	100%

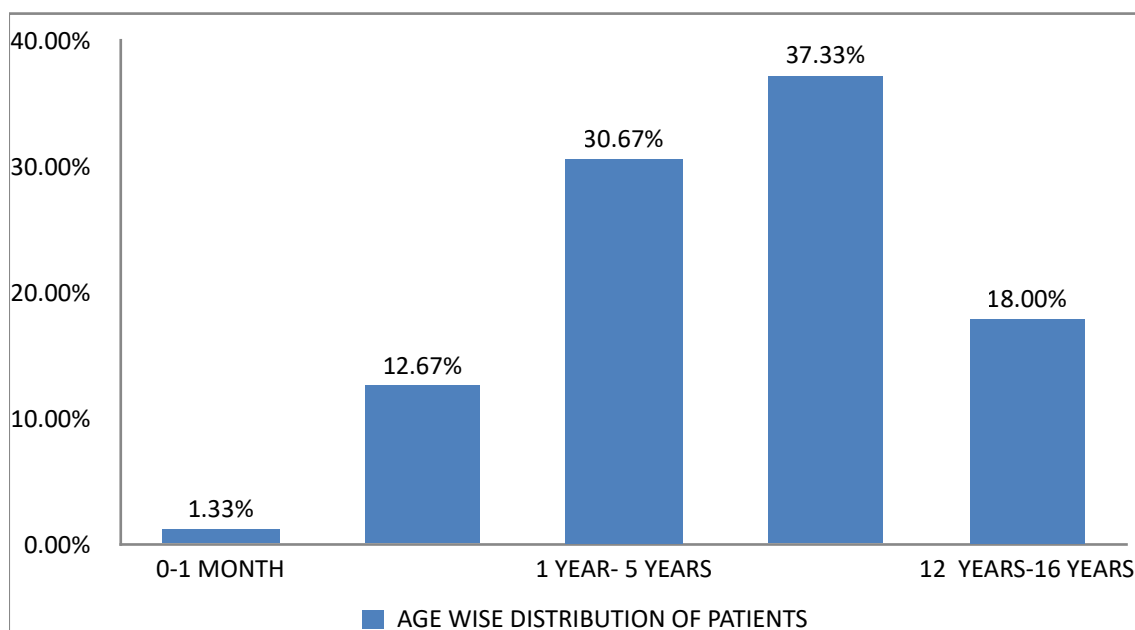


FIGURE 2: AGE WISE DISTRIBUTION OF THE PATIENTS

Out of 150 patients, 2 patients were under the age group of 0-1 month (1.33%), 19 patients were under the age group of 1 month to 1 year (12.67%), 46 patients were under the age group of 1 to 5 years (30.67%), 56 patients were under the age group of 5 to 12 years (37.33%), 27 patients were under the age group of 12 to 16 years (18%).

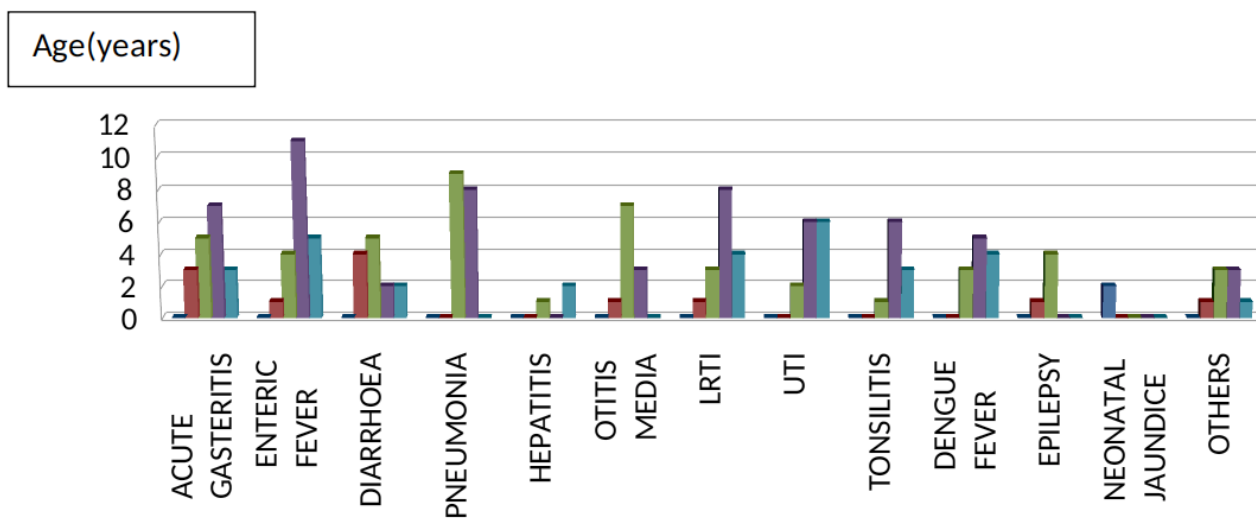


FIGURE & TABLE 3: DIAGNOSIS PATTERN IN DIFFERENT AGE GROUPS

Out of 150 patients, in the age group of 5-12 years, the highest no. of patients were found in enteric fever (11) and (8) patients were found in pneumonia and LRTI respectively.

In the age group 1-5 years the highest no. patients found in pneumonia(9), and 7 patients found in otitis media.

In the age group of 12-16 years the highest no. of patients were found in UTI(6).

In the age group of 1 month- 1 year the highest no. of patients were found in diarrhoea (4) and acute gastritis (3) respectively

TABLE 4: ANTIBIOTICS PRESCRIBED

ANTIBIOTICS	NUMBER	PERCENTAGE
CEPHALOSPORINS	76	55.07%
AMINOGLYCOSIDES	22	15.94%
PENICILLINS	23	16.67%
FLUOROQUINOLONES	3	2.17%
MACROLIDES	9	6.52%
TETRACYCLINS	1	0.72%
GLYCOPEPTIDES	4	2.89%
TOTAL	138	100%

Maximum number of antibiotics prescribed were cephalosporins were 76(55.07%), followed by penicillins 23(16.67%) and number of amino-glycosides prescribed were 22(15.94%) and least

number of antibiotics prescribed were tetracyclines 1(0.72%) and fluoroquinolones 3(2.17%) respectively

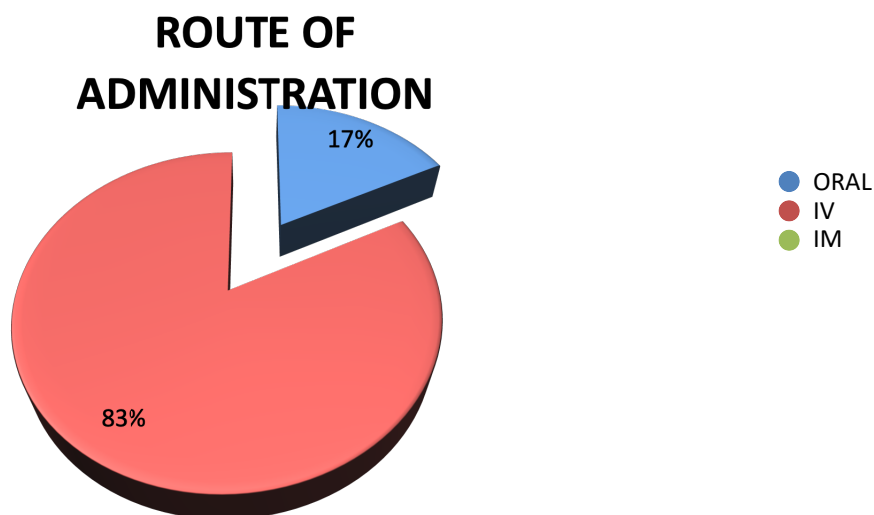
NUMBER OF ANTIBIOTICS	NUMBER OF PRESCRIPTION	PERCENTAGE
0	26	17.33%
1	79	52.67%
2	33	22%
3	12	8%
4	0	0%
TOTAL	150	100%

In the current study, 1 antibiotic prescribed in 79 prescriptions(52.67%), 2 antibiotics were prescribed in 33 prescriptions(22%), 3 antibiotics prescribed in 12 prescriptions(8%), and 4 antibiotics were not prescribed in any of the prescriptions(0%) and 26 patients were not prescribed with any antibiotics(17.33%).

TABLE 6: ROUTE OF ANTIBIOTICS ADMINISTRATION

ROUTE OF ADMINISTRATION	NUMBER	PERCENTAGE
IV	114	82.6%
IM	0	0%
ORAL	24	17.39%
TOTAL	138	100%

Maximum number of patients were given with iv route of administration 114(82.6%) followed by oral of 24 patients(17.39%) an IM of 0 patients(0%) respectively.



ROUTE OF DRUG ADMINISTRATION

DISCUSSION

The present study provides the prescription pattern of antibiotics used in a Paediatrics patient admitted in Paediatrics ward in a tertiary care hospital. In this study the male patients were more as compared to female patients. The same finding were seen in other studies in the hospital (Palikhe, 2004).

In the current study I have observed that the patients of age group 5-12 years is more than other age groups. The Paediatrics patients of age group 5-12 years had received more no. of antibiotics, and a very few no. of antibiotics used in age group 1 month-1year and their was no antibiotics used in neonates age group.

Most common prevalence of disease among the study was enteric fever which was more in the age group 5-12 years and pneumonia was seen more in the age group of 1-5 years.

In the present study the most commonly prescribed antibiotics was cephalosporin and this result was comparable with other studies like chaudhary DK et al.

After cephalosporin, penicillin was more prescribed antibiotics followed by amino-glycosides, macrolides and glycopeptides respectively. The least prescribed antibiotics were tetracyclines and fluoroquinolones.

Cephalosporin was prescribed more frequently which may because of tertiary care hospital and patient would have already been administered and probably developed resistance to lower generation antibiotics like cotrimoxazole, chloramphenicol, penicillinase resistance penicillin (methicillin, cloxacillin) etc.

Culture sensitivity was done in most of the patients but due to the prior exposure to the antibiotics (before reaching the hospital) the culture report was negative most of the time.

In the study, more no. of patients have received single antibiotics i.e. 52.67%, 22% of Paediatrics patient were prescribed with two antibiotics, 8% of the prescription was found to be prescribed with 3 antibiotics and 17.33% prescription were not prescribed with any antibiotics.

LIMITATIONS

The sample size included in the study was less.

It was a single centre study, hence the validity of findings would increase if it is a multi- centre study.

It was a short term study of 6 months, study can be done for longer duration.

CONCLUSION

In the current study, out of 150 patients maximum number of antibiotics prescription were found in the age group of 5 -12 years. Most commonly prescribed antibiotics was cephalosporin and least prescribed antibiotics were tetracyclins and fluoroquinolones. As per the finding 82.6% of the antibiotics were given parenterally.

Current studies suggest that strategies to control irrational use of antibiotics should be implemented and the guidelines used for the treatment of paediatric patients should be upgraded periodically. As the resistance of antibiotics were increasing so the selection of antibiotics based on culture report and limited no. of antibiotics should be given in patient specially in paediatrics.

As no. of paediatrics drug utilisation studies is very small. We must seek ways and means to rationalise and priorities which antibiotics must be prescribed in paediatrics patient who would maximally benefit from them.

Majority of the drugs were given IV route followed by the oral route. This mainly indicates that the patients admitted in the wards necessarily requires IV route for urgent control of infection and minimise morbidity as compared to oral route.

Most of antibiotics prescription were based on clinical diagnosis, not a culture report. In some of cases antibiotics were prescribed based on a culture report and in most of the case sheets culture report were not mentioned. It is important to obtain proper specimen, examination and culture for selection of antibiotics. This can prevent developing of antibiotics resistance, reduced the side effects of drugs. This will help for selection of appropriate antibiotics.

Strict antibiotic prescribing policy significantly overcome the overuse of antibiotics and reduces the development of resistance to antibiotics. prescription pattern analysis or auditing types of studies are to be conducted on large scale in different health sectors then study will be more effective and help in making local policy for antibiotics prescription in paediatrics and also in other specialties.

Abbreviations

RGUHS: Rajiv Gandhi University of Health Sciences

ADRs: Adverse Drug Reactions

AMR: Antimicrobial Resistance

AOR: Adjusted Odds Ratio

CI: Confidence Interval

MOH: Ministry of Health

RTIs: Respiratory Tract Infections

SM: Self-medication

SMA: Self-Medication with Antibiotic

SPSS: Statistical Package for Social Sciences

UTIs: Urinary Tract Infections

WHO: World Health Organization

Declarations

Contribution Of Project Members: Satyam Arya carried out the data collection and segregation of the same. Ramesh chaudhary carried out the study design, methods and the statistical analysis along with creating the questionnaire, tables, graphs etc. and Rahul Gupta carried documenting the Article

Conflicts of Interest: No conflicts of interest were reported in the study

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