Vol 5|Issue 4| 2015 |374-378.

International Journal
of
Pharmacy Review & Research
www.ijprr.com

e-ISSN: 2248 – 9207
Print ISSN: 2248 – 9193

PRESCRIBING PATTERN OF DRUGS IN PEDIATRIC WARDS AT A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Pediatrics differs from adult medicine in many respects. Inappropriate prescribing is a recognized worldwide problem of the health care delivery system. Antibiotics are the widely used drugs in modern medical care. A prospective observational study was carried out at inpatient department of pediatrics in Tertiary Care teaching hospital, Tirupati from Nov 2014 to Feb 2015 during regular ward rounds. This study was aimed to find the types of diseases and the drug prescribing patterns in the children. The demographic, disease prevalence, immunization history and treatment data of 100 in patients were collected in a specially designed proforma. In this study male patients were listed more 57% than the female patients 43%. Majority number of patients was in Children's (1-6 years) age group 42% followed by children's (6-12years) 29% patients. In our study most of the patients were diagnosed for respiratory tract infections i.e. 23 patients followed by 20 patients were diagnose for fever. In total 100 patients, majority of drugs were antibiotics 137 (23.18%) followed by NSAIDS 90 (15.22%) and bronchodilators 42 (7.1%). In total antibiotics Cephalosporins (51%) were the major class of drugs prescribed followed by Aminoglycosides (23%).This study shows the wider usage of antibiotics in hospitalized pediatric patients. Rational use of cephalosporins will enhance the appropriate of therapy and treatment, which reduces the resistance of antibiotic ADR and benefit cost to the pediatric population.

Key words: Antibiotics, disease pattern, drug pattern, rational use, resistance, pediatrics.

INTRODUCTION

Inappropriate prescribing is a recognized worldwide problem of the health care delivery system. In recent years, drug utilization studies are found to be useful tool to facilitate rational use of drugs in health care delivery systems [1]. It truly reflects the status of health care system. In order to be rational use of a drug must be effective, safe, prescribed for the proper therapeutic indication and the correct dosage in an appropriate formulation, easily available and of a reasonable cost. The design of a drug use indicator study, however, varies from settings to settings. While a large number of drug utilization studies are available for adults all over the World, a very few studies provides information on drug use patterns in Paediatrics [2].

Pediatrics constitutes about 40% of India's population. Infants and children suffer from frequent but usually no serious illnesses. Most of these are self-limiting1 and are often treated not only inappropriately, but also resorting to polypharmacy [3]. Infancy and childhood is a period of rapid growth and development. Compared to adult medicine, drug use in pediatrics is not extensively researched and the range of licensed drugs in appropriate dosage form is limited. Drug therapy is considered to be major component of pediatrics management in health care setting like hospital. Effective medical treatment of pediatric patient is based upon an accurate diagnosis and optimum course of therapy, which usually involves a medication regimen. Infants and

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children are among the most vulnerable population groups to contract illnesses [4].

Infections are the largest cause of morbidity and mortality worldwide. The course and severity of infection depend on a variety of factors, including the virulence of the strain of infecting organism, the resistance of the individual, which may be reduced by famine or intercurrent disease, social factors such as lack of sanitation, poor housing and contaminated water supply; and the availability of medical facilities providing vaccination or diagnosis and treatment [5]. Pediatric population is prone to suffer from recurrent infections of the respiratory tract and gastrointestinal system. Lower respiratory tract infections are the leading cause of death in children below 5 five years of age. Acute respiratory infection, acute watery diarrhea and viral fever are the common childhood illnesses accounting for the major proportion of pediatric visits. The use of antimicrobial agents, especially antibiotics has become a routine practice for the treatment of pediatric illnesses [6]. A common problem encountered in children is failure to comply with therapeutic regimen due to either inconvenient dosing schedule and/ or large number of medicines prescribed [7]. It is well documented that safe and effective drug therapy is possible only when patients are well informed about the medication and their use [8].

The present study was designed with the aim to assess current prescription patterns, patient non-compliance and to provide proper counseling in the pediatric department. The information is anticipated to aid in interventions that would improve the prescribing patterns and rational drug use in pediatrics.

MATERIALS AND METHODS

The pattern of prescribing drugs was observed in the In-Patients of the pediatric department at a tertiary care teaching hospital in Tirupathi, Andhra Pradesh during Nov 2014 to Feb 2015.

A Prospective observational study was carried out for a period of four months a total of 100 patients were recorded after obtaining Ethical approval and consent of the patients. The patients of either sex who are admitted in the pediatric department were included in the study. The out patients were excluded from the study. All the necessary and relevant data were collected from specially designed proforma which includes patient demographics (age, sex, weight, past medical history, past medication history, birth history, immunization history, and developmental history), general examinations, laboratory investigations, drug details (name of the drug, dosage form, frequency, route of administration, duration of treatment) and medication profile. The subject's demographical data, physical examination, past medical history and medication history were recorded in the proforma. The data obtained & the patient related parameters were computed using Ms-Excel 2007. The results were expressed as percentage/proportion either as pictorial representation in the form of bar diagram & pie chart or in the tabular form.

RESULTS

During the study period, total of 100 patients (57 males and 43 females) were included in the study. Out of 100 patients male patients 57 (57%) were found to be higher than the female patients 43 (43%). Among 100 patients Neonates (up to 4 weeks) 11(11%), Infants (4 weeks -1 year) 18 (18%), children's (1-6 years) 42 (42%), children's (6-12years) 29 (29%). The mean age of pediatric in-patients was 4.3 years.

Figure 1 shows Disease wise distribution of patients. Among 100 patients different Diagnosis was done. Majority of patients were found to be diagnosed with Respiratory tract infections 23 (23%) followed by Fever 20 (20%), Hematological disorders 19 (19%), CNS disorders 17 (17%), Renal disorders 09 (09%), Gastro intestinal disorders 09 (09%), and Deramatological disorders 03 (03%).

Table 1 shows category wise distribution of drugs. Among 100 patients 591 drugs were prescribed. Majority of patients prescribed with antibiotics 137 (23.18%) followed by NSAIDS 90 (15.22%), Bronchodilators 42 (7.1%), Antiulcers 39 (6.5%), Vitamins 34 (5.7%), O_2 inhalation 30 (5.07%) and ORS 29 (4.9%).

Table 2 shows no. of drugs per prescription, all patients were exposed to atleast two drugs. Most of the patients were prescribed 4 drugs per prescription followed by 5 drugs. The average no. of drugs per prescription was 4.

A major no. of patients (about 82%) was prescribed at least one antibiotic. The multiple antibiotics were found in 57 (57%) prescriptions whereas the single antibiotic was prescribed in only 24 (24%) prescriptions. Three antibiotics were observed in 31 (31%) prescriptions. No single antibiotic, but multiple antibiotics were administered to the pneumonia, Urinary Tract Infections (UTI) & meningitis diagnosed patients. Ceftriaxone was the leading antibiotic prescribed followed by Cefotaxim. Penicillin (mainly Amoxycillin) was also prescribed significantly. Amoxycillin with Potassium clavulanate was administered to 19 (19%) of the total patients, given in combination.

Table 3 shows orally administered drugs contributed the highest proportion of drugs prescribed with 351 (59.39%) of total drugs. Parenteral drug preparations were 134 (22.67%). Mostly inhalational preparations were given to patients with pneumonia.

Figure 2 shows Immunization history of patients. Among 100 patients 73 (73%) patients were immunized and 27 (27%) patients were not immunized.

Table 1. Category wise distribution of drugs in the prescription

S.no	Category	No. of drugs (n=591)	Percentage
1.	Antibiotics	137	23.18%
2.	NSAIDS	90	15.22%

3.	Bronchodilators	42	7.1%
4.	Antiulcers	39	6.5%
5.	Vitamins	34	5.7%
6.	O_2 inhalation	30	5.07%
7.	ORS	29	4.9%
8.	Antiepileptics	28	4.7%
9.	Minerals	25	4.2%
10.	Antiemetics	22	3.7%
11.	NS nebulisation	19	3.2%
12.	Corticosteroids	19	3.2%
13.	Antimalarials	16	2.7%
14.	Antihistamines	14	2.3%
15.	Anti tubercular drugs	5	0.84%
16.	Antiprotozoals	4	0.67%
17.	Diuretics	4	0.67%
18.	Miscellaneous	34	6.5%

Miscellaneous include**: (**antiviral, plenty of oral fluids, breast feed)

Table 2. No. of drugs per prescription

Drugs/patient	No. of prescriptions	Percentage
1	0	0
2	05	5
3	11	11
4	23	23
5	22	22
6	19	19
7	13	13
8	07	07
Total	100	100
Range	1-8	
Avg.no. of drugs	4	

Table 3. Route of drug administration

S.no.	Route	No. of drugs (n=591)	Percentage
1	Oral	351	59.39%
2	Parenteral	134	22.67%
3	Inhalation	83	14.04%
4	Topical	17	2.87%
5	Others	06	1.01%

Fig1. Distribution of patients according to the Diseases

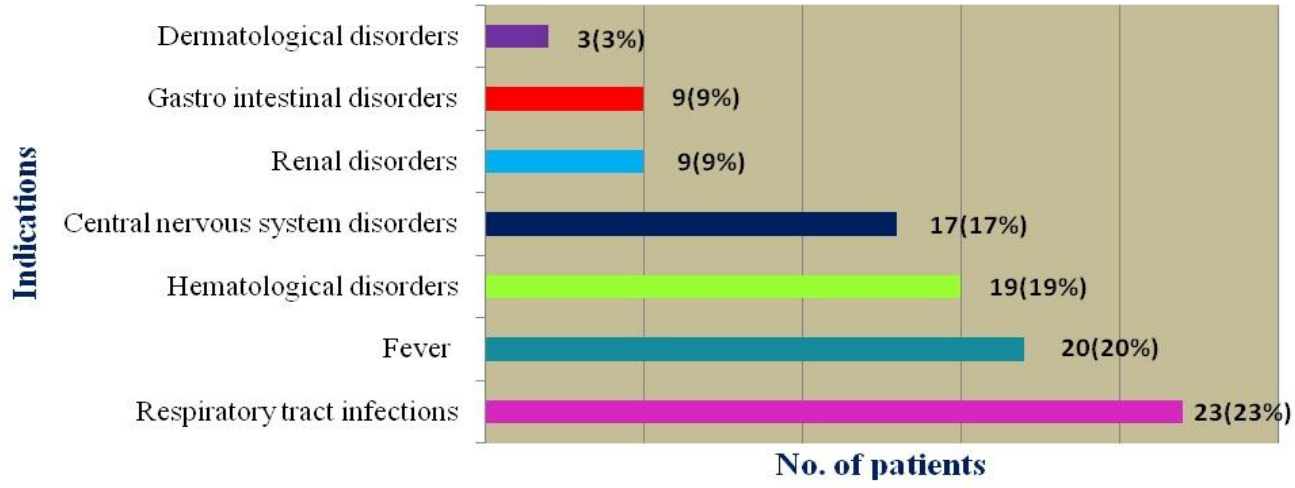


Fig 2. Proportion of different types of antibiotics prescribed

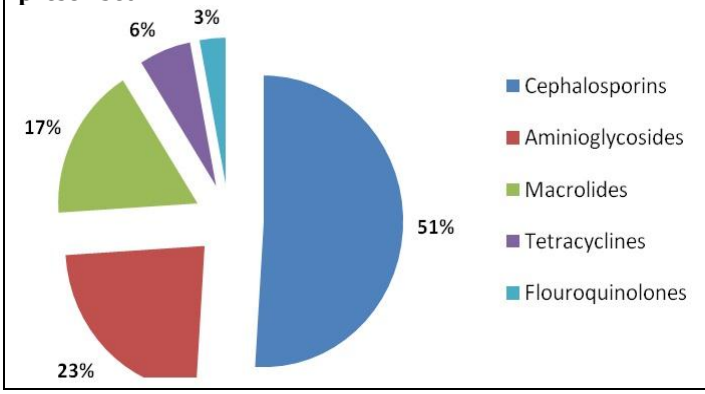
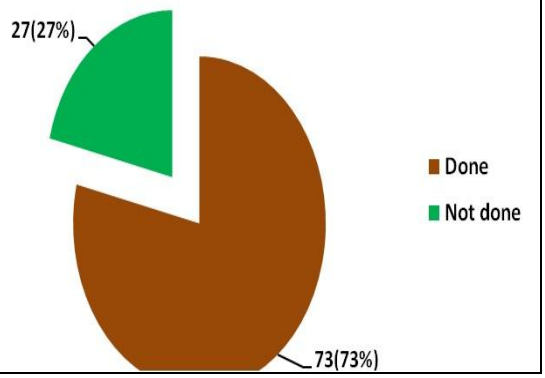


Fig 3. Immunization history



DISCUSSION

Drug utilization studies are found to be useful tool to facilitate rational use of drugs in health care delivery systems. It truly reflects the status of health care system. In order to be rational use of a drug must be effective, safe, prescribed for the proper therapeutic indication and the correct dosage in an appropriate formulation, easily available and of a reasonable cost.

Total 100 patients were included in the study. Children's (1-6 years) comprised the highest proportion of the patients. Comparatively less cases of disease were found among the patient of age Neonates (up to 4 weeks). The male patients were more as compared to the female patients. These results are similar to by Ashraf H *et.al* (2010) study Prescribing Pattern Of Drugs In Out Patient Department of Child Care Centre which reveals predominance of males (61%) than females [3].

In our study most of the patients were diagnosed for respiratory tract infections i.e. 23 patients followed by 20 patients were diagnose for fever. This result shows that pneumonia is more common in pediatric departments and it is more prevalence among children. Epidemiology states that over 1090 Indian children under five years of age die every day Prompt treatment of pneumonia is usually with a full course of appropriate antibiotics like Cephalosporins.

For various indications, 591 different drugs were prescribed for treating. Among them majority of drugs were antibiotics 137 (23.18%) followed by NSAIDS 90 (15.22%) and bronchodilators 42 (7.1%). In total antibiotics Cephalosporins (51%) were the major class of drugs prescribed followed by Aminoglycosides (23%). These findings are in contrast to the Nema Pallavi *et.al* study where in their study the beta-lactam antibiotics are majorly prescribed drugs than cephalosporins. The cephalosporins were the most common drugs prescribed for treating pneumonia infections. The prescribing of cephalosporin's for treating normal fever is unnecessary [6].Most of the patients were prescribed 4 drugs per prescription followed by 5 drugs. Majority (about 59.39%) of the drugs were administered orally whereas parentral route of administration was exposed in about 22.67% drugs (mainly intravenous route of administration). These results are similar to by Ashraf H *et.al* (2010) study Prescribing Pattern Of Drugs In Out Patient Department of Child Care Centre which reveals 75% of the drugs were administered orally whereas parentral route of administration was exposed in about 16% drugs [3].

Among 100 patients 73% patients were immunized and 23% patients were not immunized. These findings are related to the study conducted by Lexley M Pinto Pereira. Immunization will reduce the severity of occurrence of infections [20].

Our study had a number of limitations. The study was prospective observational and seasonal variations were not considered. The patient care indicators were not studied. The study was limited to only a paediatric department. Also, further studies for a longer period of time in all the clinical departments are required. The data presented here will be useful in future, long term and more extensive drug utilization studies in the hospital and in promotion of rational prescribing and drug use in hospitals.

CONCLUSION

The study concludes that the prescribing pattern of antibiotics were more frequently in paediatric patients. The treatment regimen application in majority of the cases is done without doing any culture sensitivity test which may lead to wide spread of irrational prescription. So physician must be more specific in their diagnosis despite the financial burden of culture test. Correct diagnosis of the disease and its management constitute important aspects of patient care which is even more important in case of pediatric patients. The involvement of the clinical pharmacist may also improve the rational prescribing of antibiotics.

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