



Prescribing Pattern in Paediatric In-Patient Department with Upper Respiratory Tract Infection at Atertiary Care Teaching Hospital.

*Dr. Akhila James¹, Dr. Jose John²

^{1*}Department of Pharmacy Practice, Bapuji Pharmacy College, Davangere, Karnataka, India.

²Clinical Pharmacist

Correspondence Author: Dr. Akhila James, Department of Pharmacy Practice, Bapuji Pharmacy College, Davangere, Karnataka, India.

Conflicts of Interest: Nil.

Abstract

Objective: The **Objective** of the study was carried out with the aim to study and analyse the drug prescribing pattern in paediatric patients with upper respiratory tract infections (URTIS) among patients aged 1-12 years and also to evaluate the rationality of drug use in these cases at a tertiary care teaching hospital, davangere using WHO Core Drug Prescribing Indicators. The secondary objective of the study is to analyze the number of antibiotics per prescription. A retro- prospective observational study was conducted at SSIMS & RC, Davangere, Karnataka for a period of four months.

Methodology: include, a total of 100 case records of pediatric patients were analyzed in the study. The collected data include patient's information's on demography, drug therapy and length of hospital stay which were collected from inpatient case sheets of paediatric ward. The

Results: of the study include, out of total of 235 drugs (Respiratory drugs are the most frequently prescribed 36% followed by antihistamines 28.5%, nasal drops / spray 8% antimicrobials, 9.36%,nsaids and antipyretics – analgesics 8.9, bronchodilators 5% and herbal cough/cold preparations 2.1%.There were a total of 100 admissions of pediatric out patients with upper respiratory tract

infections. Gender distribution of the subjects indicated that 56% were males and 44% were females and 85% of antibiotic drugs were prescribed by their Generic names

Conclusions: The study reflects the current drug prescribing patterns in patients of URTI among patients aged 1-12 years. This study is helpful to understand the drug prescribing practices so that appropriate feedback and awareness is generated among the health care providers on the various aspects of rational drug therapy. This will not only help the patients by reducing polypharmacy, reduction in antibiotic resistance & reduction of adverse drug reactions but also help the society at large in ensuring the optimum utilisation of the limited health sources especially in a developing country like India.

Keywords: URTI, Pediatric Inpatients, Prescribing Pattern, WHO core drug prescribing indicators

Introduction

Respiratory tract infections are the predominant cause for most of the health care consultation.¹viruses is perhaps the major cause for these infections. The types of upper respiratory tract infections (URTIS) are: common cold, pharyngitis, otitis media and sinusitis.² URTI forms a continuum with lower respiratory tract infection, which is more often associated with bacterial infection. Wide

number of URTIS is caused by viruses that are self-limited.³ Here is a lot of studies reported that 50% to 85% of children receive antibiotics in developed and developing countries prescribed by physicians. The random use increases the risk of bacterial drug resistance and thus has prompted the need to use antibiotics judiciously in paediatric practice⁴ we have chosen the field of the antibiotics prescription due to the paediatric group are commonly affected by various infectious diseases. The aim was to study the prescribing pattern of antibiotics in hospital of paediatric in-patient.⁵

Objective

The objective of the study was carried out with the aim to assess the prescribing pattern of antibiotic drugs with upper respiratory tract infection (URTI) at a tertiary care teaching hospital, Davangere using WHO core drug prescribing indicators. The Secondary objective of the study is analysing the number of antibiotics per prescription. A Retro- Prospective Observational study was conducted at SSIMS& RC, Davangere, Karnataka for a period of four months methodology include a total of 100 patients were included in the study. The collected data include patient's information's on demography, drug therapy which were collected from in-patients case sheets of paediatric ward.

Materials and Methods

1. Study site: Shamanur Shivashankarappa Institute of Medical Sciences And Research Centre (Ssims & Rc), Davangere. Duration of study: Study was conducted for a period of 4 months
2. Sample size: 100 subjects
3. Study design: a retro- prospective observational study
4. Source of data: The data about patients was collected from in-patients case sheets of paediatric ward.

Inclusion criteria

1. Patients of either sex from pediatric department.
2. All in-patients with URTI admitted to paediatric wards.

Exclusion criteria

1. All outpatients of paediatric ward.
2. Patients on ventilators or seriously ill patients requiring
3. ICCU admission.
4. Patients unwilling to participate.
5. Patients with other diseases such as hepatic, renal, TB, GI Tract infections etc

Study procedure

Patient case records were analysed for demographic characteristics, date of admission, duration of hospitalization, diagnosis, date of discharge, class of drugs used and dosage regimen (form, route, frequency and duration) using WHO core drug prescribing indicators. Data were recorded in a separate data collection form and documented.

Statistical method

Simple percentage calculations were used and expressed using columns. Approval were obtained from the institutional ethics committee before initiating the study

Results

Table 1: Male Female Ratio:

Gender distribution	Total number	Percentage (%)
Male	56	56%
Female	44	44%

During the 4 months study period, there were a total of 100 admissions of pediatric in patients with upper respiratory tract infections. A gender distribution of the subjects indicated 56% were males and 44% were females

Table 2: Age Distribution among Paediatric Groups

Age group	Male	Female	Total	Percentage
1-5	24	20	44	44%
5-10	23	14	37	37%
10-12	9	10	19	19%
	56	44	100	100%

The age distribution of the patients showed that the age group of 1-5 years constituted 44% of the patients followed by the age group of 5-10 years (37%) and 10-12 years (17%)

Table 3: WHO Details Of Prescribing Indicators

Prescribing indicators	Percentage (%)
Medicines prescribed per prescription	2.1%
Medicines prescribed by generic name	85%
Percentage of drugs prescribed from essential drug list	79%
Percentage of encounters in which Antibiotic was prescribed	9.36%
Percentage of encounters with an injection Prescribed	0%

The prescriptions were further analysed for various prescribing indicators as laid down by WHO Prescribing Indicators and the details are presented as per table 3. The average number of drugs per prescription was 2.1%. The percentage of drugs that were prescribed by generic name was 85% while the percentage of drugs prescribed from essential drug list (edl) was 79%. A total of 9.36% encounters were prescribed antibiotics and there was no encounter in which an injection was prescribed.

Table 4: Distribution of Different Types Of URTI Diseases.

Types Of Urti	Number	Percentage (%)
Non- Specific Urti	31	31
Sinusitis	23	23
Common Cold	13	13
Rhinitis	12	12
URTI With PNDS	9	9
Laryngitis	7	7
Otitis Media	5	5
Total	100	100

Majority Of Patients Suffering With Non- Specific Urti 31%, Followed By Sinusitis 23%, Common Cold 13%, Rhinitis 12%, Urti With Post nasal drip syndrome 9%, Laryngitis 7%, and Otitis Media 5% Table 5: Distribution Of Different Class Of Drugs.

Drug class	Frequency	Percentage (%)
Respiratory drugs (cold & cough combinations)	85	36.5
Antihistamines	67	28.5
Nasal drops /sary	23	9.7
Antimicrobials	22	9.36
Nsaids and antipyretics - Analgesics	19	8.9
Bronchodilators	14	5
Herbal cough/cold preparations	5	2.1
Total	235	100%

A total of 235 drugs were prescribed for 100 patients. Table 4 shows the commonly prescribed drug classes. Respiratory drugs are the most frequently prescribed 36.5% followed by antihistamines 28.5%, nasal drops /sary 9.7% antimicrobials, 10%, nsaid and antipyretics – analgesics 8.9%, bronchodilators 5% and herbal cough/cold preparations 2.1%.

Table 6: Antihistamine and Antipyretic Drug Use Profile

Serial Number	Drug (Antihistamines)	Number of Drugs	Percentage
1	Cetirizine	29	43.29
2	Cetirizine+ambroxol	13	19.40
3	Chlorpheniramine+phenylephrine	9	13.44
4	Fexofenadine	7	10.44
5	Loratadine	6	8.95
6	Promethazine	3	4.48
7	Total	67	100

Among total 67 antihistaminic drugs, cetirizine was found to be the maximally prescribed (43.29% of the patients) followed by cetirizine+ambroxol (19.40%), chlorpheniramine+phenylephrine (13.44%), fexofenadine 10.44%, loratadine 8.95%, and promethazine 4.48%.

Table 7: Antipyretic Drug Use Profile

Serial number	Drugs	Number of drugs	Percentage (%)
1	Pcm+Ibu	10	52.64
2	Pcm	5	26.31
3	Mefenamic Acid	3	15.78
4	Mefenamic Acid+Paracetamol	1	5.26
5	Total	19	100

Among Antipyretic medications Paracetamol+Ibuprofen combination was given 52.64% followed by Paracetamol

26.31%, Mefenamic acid 15.18% and Mefenamic acid + Paracetamol 5.26%.

Table 8: Anti Microbials Drug Use Profile

Serial number	Drugs	Number of drugs	Percentage
1	Azithromycin	12	54.5
2	Amoxicillin+clavulanic acid	7	31.8
3	Cefpodoxime	2	9.09
4	Clarithromycin	1	4.56
5	Total	22	100

Among The Antimicrobials Azithromycin Was The Mostly Prescribed Antibiotic With 504.5% Followed By Amox + Clav 31.8%, Cefpodoxime 9.09% And Clarithromycin 4.56%.

Table 9: Route of administration and dosage form

Serial number	Route of administration	Number of drugs	Percentage (%)
1	Oral route	89	89
2	Nasal route (nasal drops)	11	11
3	Total	100	100

And dosage form:

Serial number	Route of administration	Number of drugs	Percentage (%)
1	Syrups	56	62.92
2	Tablets and capsules	16	17.97
3	Oral drops	12	13.48
4	Suspensions	5	5.7
5	Total	89	100

Out Of The Total Drugs Prescribed, 89% Were Administered By Oral Route. Nasal Route Of Administration As Nasal Drops Was The Next Most Preferred Route (11%).

It was found that half Of the drugs Prescribed were the Syrups (62.92%), followed By Tablets And Capsules 17.97%, Oral Drops 13.48%, And Suspensions 5.7% and through Nasal Route Was 11% And among which all prescriptions were Nasal Drops.

Discussion

In the present study the gender distribution of the subjects indicated 56% were males and 44% were females which s similar to the study conducted by joseph n et al ³. In our study, varying percentage of antibiotics prescription to paediatric patients were seen an the total

number of antibiotics prescribed were 9.36% and these results are in agreement with previous study conducted by palikhe and sriram et al. ⁶. The average number of drugs prescribed increased with increase in number of diagnosis. In this study, average number of drugs prescribed was 2.1. The rational use of drugs demands to keep the number of drugs prescribed as low as possible to reduce the cost of treatment, drug interaction and adverse effects. Which was similar findings were seen in other studies in the hospitals of jazan region, kingdom of saudi arabia and guwahati in assam, india done by khaled et al. . ⁷. The results of das et. Al. ⁸ and torvi et. Al⁹ from paediatric outpatient setting reported the average number of drugs prescribed as 2.37 and 2.22, respectively which is greater than that in the present study. Among all the drugs utilized for the treatment of URTI, cough and cold combinations were found to be the most commonly utilized class of drug (36%).which was similar to the study conducted by the results of the study carried out by das et. al,reported that 47% of the medicines were prescribed as cough and cold combination and 31% as antibiotics. ⁸. Similar observation was seen on the study conducted by Khan et. Al and ain et. al. have shown the use of B-lactam antibiotics to the tune of 74% and 45%.^{10,11}.According to the national institute of health (NIH) pediatric treatment guideline for respiratory tract infection, penicillin is the first line antibiotic for pharyngitis; and, macrolide is the drug of choice for treating cough and bronchitis.¹² In our study penicillins and macrolides were the most commonly utilized antibiotic used for the treatment of URTI. In the present study, only 85% of the medicines were prescribed by generic names which were more comparing to the study conducted by mirza et. Al. in

southern india found as 30%.¹³ .Oral route is the most convenient and safest route of drug administration among children. The most commonly used dosage form was syrup (62.92%). The convenience of oral dosage form as the easiest to administer in the children in outpatient setting explains this. The result was found comparable to the study carried out by karande et. Al. in which 61% of the drugs were pre- scribed in the form of syrup.¹⁴ Irrational (misuse/overuse) of antibiotics is an important public health issue that affects the community and the individual. Use of antibiotic in children for the treatment of upper respiratory tract infections is evidently inappropriate unless the infection was proven to be bacterial.

Conclusion

This current study gives an overview of use antibiotics prescribing in the study area by age and sex distribution, diagnosed diseases, frequency and percentage of single as well as combined drugs prescriptions, with one or more antibiotics in paediatric population. Management protocols did not fully abide to the current guidelines since culture and sensitivity tests were not carried out for most cases. The most common problem we have faced was the non-specific terms used in diagnosis as chest infection and upper respiratory tract infection. Physicians need to be more specific in their diagnostic terminology. We recommend from the results of this current study, that the professional organizations should take up projects to increase the awareness about antibiotic use among the practicing physicians through systematic approach and latest information in order to check the emerging problem of antibiotic resistance.

Acknowledgement

Our greatest regards to god almighty who is the source of all wisdom and knowledge and my beloved partners for their manual, strength and help for everything place. We

extend our special thanks to Shamanur Shivashankarappa Institute of Medical Sciences and Research Centre (SSIMS & RC), Davangere hospital for providing us opportunity to conduct this study. Our sincere thanks also go to our parents, guide, teaching staff, and friends. Last but not the least, we extend our thanks to all those who have been directly or indirectly associated with our study.

References

- [1]. meena kn, ahuja s. Drug prescribing pattern in upper respiratory tract infection in children aged 1 – 14 years. *International journal of pharma and bio sciences*. 2012;3(1):299-308.
- [2]. Mlynarczyk g, mlynarczyk a, jeljaszewicz j. epidemiological aspects of antibiotic resistance in respiratory pathogens. Elsevier inc. 2001;18(6):497-502.
- [3]. Joseph n, bharathi dr, sreenivasa b, nataraj gr, george n, safdar m. Prescribing pattern of drugs in upper respiratory tract infections in pediatric out patients. *Int j contemp pediatr* 2016;3:1006-8
- [4]. sharma m, eriksson b, marrone g, dhaneria s, lundborg cs (2012) antibiotic prescribing in two private sector hospitals; one teaching and one non-teaching: a cross-sectional study in ujjain, india. *Bmc inf d* 12:155.
- [5]. Al-ghazali maa, alakhali km, alawdi sm (2017) study of antibiotics prescribing pattern in paediatric patients of thamar province, in republic of yemen. *J appl pharm* 9: 247. Doi:10.21065/1920-4159.1000247
- [6]. Sriram s, leo m, manjula devi as, rajalingam b, ramkumar k, et al. (2008) Assessment of antibiotic use in paediatric patients at a tertiary care teaching hospital. *Indian j pharm pract* 1:30-36.
- [7]. Khaled.m. Alakhali, m and abdulkarim.k.alzomar, k and sirajudeen s. Alavudeen, s and noohu abdulla khan1, a and sam ali dawbaa2, a bacterial resistance of antibiotics

- used in urinary tract infection. *Asian j pharm clin res*, 6 (1). Pp. 1-5. Issn 0974-2441.
- [8]. das b, sarkar c, majumder ag. Medication use for pediatric upper respiratory tract infections. *Fundam clin pharmacol*. 2006; 20 (4): 385–90.
- [9]. Torvi jr, dambal s. Drug prescription pattern in paediatric out patient clinic in a tertiary hospital. *Curr pediater res*. 2011; 15 (2): 77–80.
- [10]. ain mr, shahzad n, aqil m, alam ms, khanam r. Drug utilization pattern of antibacterials used in ear, nose and throat outpatient and inpatient departments of a university hospital at new delhi, india. *J pharm bioallied sci*. 2010; 2 (1): 8–12.
- [11].khan fa, nizamuddin s, salman mt. Patterns of prescription of antimicrobial agents in the department of otorhinolaryngology in a tertiary care teaching hospital. *African journal of pharmacy and pharmacology*. 2011; 5 (14): 1732–38.
- [12]. Nice. Respiratory tract infections – antibiotic prescribing of antibiotics for self-limiting respiratory tract infections in adults and children in primary care. National institute of health and clinical excellence. 2008; 2008. P.1–122.
- [13]. Mirza ny, desai s, ganguly b. Prescribing pattern in a pediatric out-patient department in gujarat. *Bangladesh journal of pharmacology*. 2008; 4 (1): 39–42.
- [14]. Karande s, sankhe p, kulkarni m. Patterns of prescription and drug dispensing. *Indian j pediater*. 2005; 72 (2): 117–21.