

doi: <http://dx.doi.org/10.18203/2319-2003.ijbcp20150882>**Research Article****Study of drug use in outdoor pediatric patients of upper respiratory tract infections in a tertiary care hospital**

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ABSTRACT

Background: Upper respiratory tract infections (URTI) are the most common and frequent occurring infections in the pediatric population. URTI is mostly viral in origin and requires mostly symptomatic treatment. The present study was undertaken to analyze the pattern of drug use in the management of URTI in the pediatric age group.

Methods: It is a retrospective study to assess the pattern of drug use in URTI in pediatric outpatient department during the 5 months period from January 2015 to May 2015.

Results: A total of 2256 prescriptions were analyzed. Most of the pediatric patients belonged to 1-5 years age group and 58.33% were males, and 41.66% were females. A total of 6332 drugs were prescribed out of which the antibiotics used was 1341. The average number of drugs per prescription used was 2.81. The percentage of prescriptions containing antibiotics was found to be 59.44%. Amoxicillin (70.91%) was the most frequent prescribed antibiotic followed by cotrimoxazole (10.21%). Antihistaminic and expectorant combinations were found to be the most common prescribed class of drugs (29.34%) followed by analgesic and antipyretics (26.45%) and antibiotics (21.17%).

Conclusions: The study revealed that the majority of children were below 5 years of age. The most common class of drugs prescribed was antihistaminics and expectorant combinations followed by analgesics and antipyretics. Although the majority of the patients received antibiotics, 40.55% of patients received symptomatic treatment. This is a welcome step as inappropriate use of the antibiotics can potentiate to the increasing trend of antimicrobial resistance.

Keywords: Upper respiratory tract infections, Pediatric, Prescription, Antibiotics

INTRODUCTION

The upper respiratory tract (URT) includes nose, the paranasal sinuses, adenoids, tonsils, nasopharynx and eustachian tube.¹ URT infections (URTI's) include common cold, laryngitis, pharyngitis/tonsillitis, acute rhinitis, acute rhinosinusitis and acute otitis media.² The most common signs and symptoms observed in URTI are coughing and sneezing, congestion, runny nose, low-grade fever, anorexia, and myalgia.³ URTIs are amongst the leading cause of morbidity and the most frequent cause of health service access worldwide.^{4,5}

The majority of URTI's are of viral origin, due to rhino virus, parainfluenza virus, corona virus, adeno virus, coxsackie virus, and influenza virus.⁶ However, pharyngitis and common cold have the greatest probability of being of viral origin.^{7,8} Only 10% of URTI has been attributable to bacterial etiology.⁹

Common cold does not require antimicrobial agents unless it is complicated by acute otitis media with effusion, tonsillitis, sinusitis and lower respiratory tract infection.¹⁰ The management of URTI of viral origin involves symptomatic treatment like antihistamines, antipyretics or anti-inflammatory agents, cough suppressants (such as dextromethorphan), expectorants and decongestants.^{11,12}

Antibiotic treatment is beneficial to children only if symptoms persist for 10-14 days without improvement.¹³ Hence it poses a challenge to the clinicians to differentiate between viral and bacterial origin of URTI. While many of these infections are caused by viruses, clinicians prescribe antibiotics for over half of the visits for these conditions.^{14,15}

In India, 69.4% of patients with uncomplicated acute respiratory infections were prescribed antibiotics.¹⁶ Antibiotic overprescribing is also evident in children with 74% of children with URTI in Canada¹⁷ and 46% of

children with URTI in the United States receiving antibiotic prescription.¹⁸

Problems associated with the overuse of antibiotics include development of bacterial resistance, increasing the burden of chronic disease, raising the cost of health services and the development of side effects (e.g.: Adverse gastrointestinal effects).¹⁹

The following study was done to analyze the use of antibiotics and other drugs while prescribing for the treatment of URTI.

METHODS

This is a retrospective study of 5 months duration which was carried out from January 2015 to May 2015 in Pt. J.N.M. Medical College and associated Dr. B.R. Ambedkar Memorial Hospital, Raipur, Chhattisgarh. The data was obtained from the hospital records of patients who had visited the outpatient department of the pediatric of Dr. B.R. Ambedkar Memorial Hospital, Raipur. Permission was obtained from Institutional Ethical Committee.

Patients of either sex, up to the age of 14 years who were prescribed drugs for URTIs were included in the study. A total of 2256 records were analyzed. Data regarding demographics such as age, sex, drug details which include name of the drugs, dosage form, dose frequency and duration were recorded. Total number of drug used, average number of drug per prescription, the average number of antibiotic per prescription was calculated. The results were presented as mean and percentage.

RESULTS

A total of 2256 pediatric patients' data were analyzed. In our study, patients were divided into four groups based on different age. Majority of the patients were from 1 to 5 years age group (49.02%) followed by 5-10 years age group (23.31%) and the least in 10-14 years age group (8.55%) (Table 1). 58.33% patients were male and 41.66% patients were female indicating that male patients were comparatively more than the number of female patients approaching for treatment (Table 2).

The total number of drugs prescribed was 6332. The average number of drugs per prescription was 2.81 (Table 3).

In our study, 1001 number of patients (44.37%) has received 3 drugs, followed by 2 drugs in 617 patients (27.34%) (Table 4 and Figure 1).

The total number of prescriptions containing antibiotic were 1341 (59.44%) as shown in Figure 2. Total number of antibiotics prescribed was 1341. The average number of antibiotics per prescription was 0.59.

Table 1: Age distribution of patients in our study (n=2256).

Age (in years)	Number of patients	Percentage
0-1	431	19.10
1-5	1106	49.02
5-10	526	23.31
10-14	193	8.55

Table 2: Sex distribution of patients in our study (n=2256).

Gender	Number of patients	Percentage
Male	1316	58.33
Female	940	41.66

Table 3: Prescription parameter.

Parameters	Numbers
Total numbers of prescription analyzed	2256
Total number of drugs prescribed	6332
Average number of drugs per prescription	2.81
Total number of prescription containing antibiotics	1341
Total number of antibiotics prescribed	1341
Average number of antibiotics per prescription	0.59
Total number of FDC (antibiotics) prescribed	195

FDC: Fixed dose combinations

Table 4: Number of drugs prescribed per prescription.

Number of drugs per prescription	Number of prescription
1 drug	196
2 drug	617
3 drug	1001
4 drug	341
5 drug	74
6 drug	24
7 drug	03

In our study, 40.55% (n=915) patients received symptomatic treatment only. 59.44% patients (n=1341) received both antibiotic and symptomatic treatment.

The most frequently prescribed antibiotic was amoxicillin (70.91%), followed by cotrimoxazole (10.21%), cefixime (5.21%), amoxicillin, and clavulanic acid combination (4.62%), azithromycin (3.65%), ampicillin (2.98%), ofloxacin (1.34%), ciprofloxacin (0.89%) and levofloxacin (0.14%) (Figure 3).

Among all the drugs utilized for the treatment of URTI, antihistaminics and expectorants combinations were found

to be the most common prescribed class of drug (29.34%) followed by analgesics and antipyretics (26.45%) as shown in Figure 4.

Regarding the route of drug administration, no drug was administered by the parenteral route. 97.66% of all the drugs were administered by oral route out of which syrup (68.22%) was the most common dosage form used, followed by tablets (28.95%) and lastly capsule (2.83%). Topical route of drug administration was employed only for 1.55% of the total drugs followed lastly by inhalational route (0.78%) (Figure 5).

DISCUSSION

In our study, the majority of the patients were <5 years age. The reason may be because they have less immunity and are more susceptible to infections. Sawalha et al., from an inpatient setting reported that 78% of the patients admitted with respiratory tract infection were <5 years in age.²⁰

The male pediatric patients were comparatively more than the female pediatric patients. In our study, on an average 2.81 drugs were prescribed per patient. A similar study done by Thandu et al.²¹ and Das et al.²² found the mean number of drugs per prescription to be 3.55 and 2.37, respectively. The study also revealed that more than half of the patients were prescribed three or more drugs for the treatment of URTI.

This may be because for the treatment of URTI a combination of analgesic, cough syrups, saline drops are prescribed with or without antibiotic.¹¹

The study revealed that 59.44% of patients were prescribed antibiotics and amoxicillin (70.91%) was the most frequently prescribed antibiotic followed by cotrimoxazole (10.21%). The use of amoxicillin is a welcome step as newer antibiotics are expensive and their use must be restricted for cases of antibiotic resistance. A study by Mungrue et al.²³ showed that amoxicillin (78.3%) was the most frequent antibiotic prescribed. Erythromycin (10.4%), amoxicillin and clavulanic acid (9.1%) were the other antibiotic used. Another study²⁴ in India showed that the most common prescribed antibiotic was penicillin (28.6%) followed by a fluoroquinolone (19.5%).

In the present study, expectorants and antihistaminics combination were found to be the most common prescribed class of drug. No drug was given by parenteral route. Most common route of drug administration was the oral route of which syrup was the most common dosage form used. This may be because most of the children were below 5 years of age.

CONCLUSION

The study revealed that the majority of children were below 5 years of age. The most common class of drugs prescribed

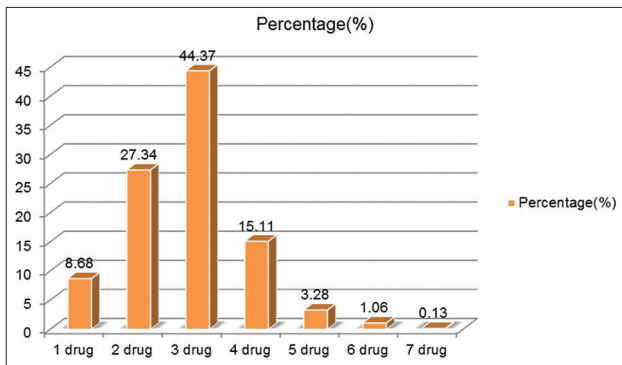


Figure 1: Percentage representation of prescriptions containing drug.

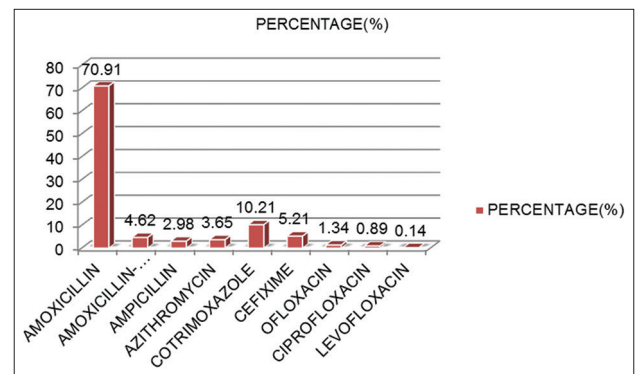


Figure 3: Antibiotic utilization in upper respiratory tract infections (%).

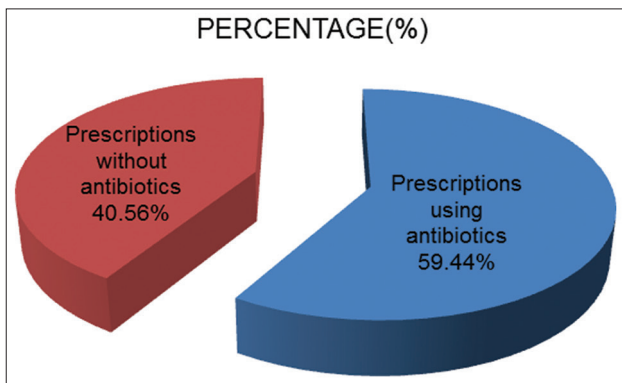


Figure 2: Percentage of prescriptions using antibiotics.

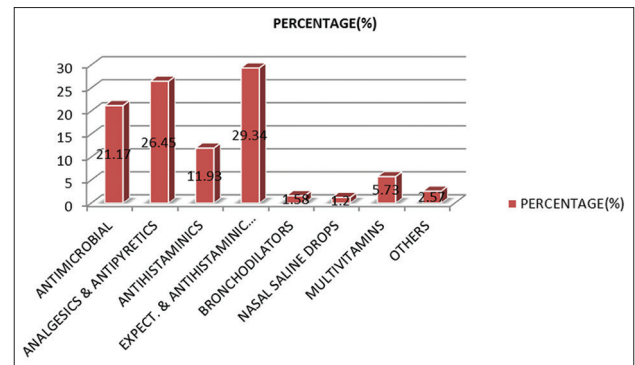


Figure 4: Percentage distribution of drugs used in upper respiratory tract infections.

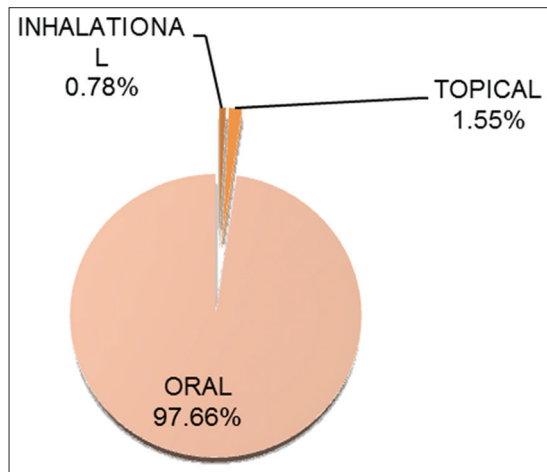


Figure 5: Routes of drug administration.

was antihistaminics and expectorant combinations followed by analgesics and antipyretics. The study also revealed that while 59.44% of patients were prescribed antibiotics, only 21% of the total drug prescribed for the treatment of URTI was antibiotics. The study also revealed that 40.55% of all the patients were prescribed drug without any antibiotics. This strategy of combating URTI by symptomatic treatment without prescribing antibiotic must be encouraged. A strict guidelines must be laid down for prescribing antibiotic in case of URTI as mostly it is of viral origin. Correct diagnosis of the disease and its treatment constitutes important aspects of patients care which becomes even more important in the case of pediatric age group.

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