

Drug utilisation pattern of antihistamines in upper respiratory tract infections in paediatric patients

Bharati JP,¹   Ulak S,²  Keshari A,³  Acharya A,⁴ 

¹Jyoti Prabha Bharati; ⁴Anna Acharya, Lecturer, Department of Pharmacology, Kathmandu Medical College and Teaching Hospital, Duwakot, Bhaktapur, Nepal; ²Sanjay Ulak, Consultant, Department of Paediatrics, Bhaktapur Hospital, Dudhpati, Bhaktapur, Nepal; ³Aniket Keshari, Undergraduate Medical Student, Kathmandu Medical College and Teaching Hospital, Sinamangal, Kathmandu, Nepal.

Abstract

Background: Upper respiratory tract infections (URTIs) are the most common infections in the paediatric population leading to health care consultations. Antihistamines are commonly prescribed medicines in children.

Objectives: This study attempted to assess the current prescription patterns of antihistamines used in the treatment of URTIs.

Methods: A descriptive cross-sectional study was conducted in the outpatient paediatric department of Kathmandu Medical College from January 2020 to January 2021. Ethical approval was taken from Institutional Review Committee of Kathmandu Medical College. A convenient sampling technique was used. The data were collected from the outpatient department prescription card into a suitably designed proforma. Drug use indicator developed by the World Health Organisation for Rational Use of Drugs was utilised. Data were analysed using SPSS v.20.

Results: Data from prescriptions of 345 patients aged less than 14 years were collected from the paediatric outpatient department of KMCTH. The most common condition was common cold (132, 38.26%). Most commonly prescribed antihistamines were Fexofenadine (156, 45.21%). Average number of drugs per prescription was 2.31. The total number of drugs prescribed by generic name was 128 (16%). Antibiotics made its place in prescriptions 279 (34.96%) times. No parenteral medication was used and 140 (17.5%) of all drugs prescribed were from the National List of Essential Medicines.

Conclusion: Antihistamines, mostly second generation, were commonly prescribed in URTIs in paediatric patients. Majority of WHO indicators were within normal limits while some needed marked improvement. Different programmes can be implemented for improvement in prescribing patterns and promotion of rational drug use.

Key words: Antihistamines; Drug utilisation; Paediatric patients; Upper respiratory tract infections.

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Address for correspondence

Dr. Jyoti Prabha Bharati
Lecturer, Department of Pharmacology,
Kathmandu Medical College and Teaching Hospital,
Duwakot, Bhaktapur, Nepal.
E-mail: jtbharati@gmail.com

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INTRODUCTION

Drug utilisation research is defined by World Health Organisation (WHO) as “the marketing, distribution, prescription, and use of drugs in a society, with special emphasis on the resulting medical, social, and economic consequences.”¹ Rational prescribing implies, using right drug for right patient at right time in right dose, and manner of administration at affordable cost with right information.²

Drug utilisation study is important for clinical, educational, and economical purposes as well as for proper distribution and effective regulation. Irrational drug prescribing is still in practice all over world, more so in developing countries.³ Prescribing patterns should be evaluated periodically to increase therapeutic efficacy, decrease effects and provide feedback to prescribers.⁴

Upper respiratory tract infections (URTIs) are the most frequently occurring infections in paediatric population leading to health care consultations.⁵ Though URTIs are mild and self-limiting, antihistamines are prescribed in most cases.⁶ The older first generation H₁ antihistamines penetrate brain to cause sedation, drowsiness, fatigue and impaired concentration, so their use should be discouraged.⁷ The second-generation H₁-antihistamines are safer, cause less sedation, and are more efficacious.⁸

This study attempted to assess the current prescription pattern of Antihistamines used in URTI treatment to provide relevant and useful feedback to paediatricians and general practitioners.

METHODOLOGY

A descriptive cross-sectional study was conducted in paediatric outpatient department (OPD) of Kathmandu Medical College Teaching Hospital (KMCTH) from January 2020 to January 2021. Ethical clearance (Ref. 200120203) was obtained from the Institutional Review Committee of Kathmandu Medical College prior to the start of the study. Paediatric patients diagnosed with upper respiratory tract infections visiting paediatric department of KMCTH were asked to participate in the study. Informed consent was taken from parents/guardians of the participants. The data were collected conveniently from the outpatient OPD prescription card into a suitably designed individual proforma.

The WHO prescribing indicators were used in this study. Prescribing indicators include the total number of drugs prescribed, average number of drugs per prescription, percentage of drugs prescribed by generic name, percentage of antibiotics prescribed, percentage of injections prescribed and the percentage of drugs prescribed from essential drug list of Nepal.^{9,10} The sample size was calculated using the formula:

$$n = Z^2pq/e^2 = 1.96^2 * (0.246) * (0.754) / (0.05)^2$$

Where, Z= 1.96 (at 95% confidence limit); p = 0.246 (24.6%); assuming p of antihistamine prescription 24.6%;² q=1-p = 1-0.24.6 = 0.754; allowable error (e) = 0.05 (5%). The sample size was calculated to be 285.02 ≈ 286. Adding 20% of non-response rate, the total sample size estimated was 342.02 ≈ 345.

The data included demographic information of the patient along with total number, dose, dosage form, frequency, route, and duration of prescribed antihistamine. All the data were then imported into Microsoft Excel Sheet and analysed in IBM Statistical

Package for Social Sciences (SPSS) Statistics for Windows, version 20 (IBM Corp., Armonk, N.Y., USA). Descriptive analysis was done. Frequency and percentage were calculated and expressed in tables and figures.

RESULTS

A total of 345 patients of upper respiratory tract infections were enrolled among which 182 (52.8%) were male (Table 1). Majority of the children diagnosed with URTIs were preschoolers 137 (39.5%) and school-aged 96 (28%) (Figure 1).

Most common conditions were common cold (132, 38.26%) followed by viral URTIs, pharyngitis, tonsillitis, allergic rhinitis, laryngitis, sinusitis, and otitis media (Table 2).

Most commonly prescribed antihistamines were fexofenadine (156, 45.21%) followed by cetirizine, chlorpheniramine, levocetirizine, and pheniramine. Chlorpheniramine and pheniramine were given only in combination formulations as Chlorpheniramine+dextromethorphan+phenylephrine (26, 7.53%), Chlorpheniramine +pseudoephedrine+paracetamol (22, 6.37%) and pheniramine+dextromethorphan (19, 5.50%).

A total of 798 drugs were prescribed for 345 patients, the average number of drugs per prescription was 2.31 with a range between 1 and 4. The total number of drugs prescribed by generic name was 128 (16%). An antibiotic was given 279 (34.96%) times in various prescriptions. None of the patients received a drug by parenteral route and only few drugs prescribed from essential drug list of Nepal (Table 4). It was found that 448 (56%) were prescribed in syrups, 223 (28%) in tablets, and 127 (16%) in oral drops. The average cost of antihistamine was found to be Rs. 53.14.

Table 1: Demographic profile of antihistamine prescribed patients (n=345)

Sex	Frequency (%)
Male	182 (52.8)
Female	163 (47.2)

Table 2: Commonly seen conditions in upper respiratory tract infections

Conditions	Frequency (%)
Common cold	132 (38.26)
Viral URTIs	74 (21.44)
Pharyngitis	47 (13.62)

Tonsillitis	27 (7.82)
Allergic rhinitis	25 (7.24)
Laryngitis	18 (5.21)
Sinusitis	13 (3.76)
Otitis media	9 (2.60)

Table 3: Commonly prescribed antihistamines

Antihistamines	Frequency (%)
fexofenadine	156 (45.21)
cetirizine	92 (26.66)
chlorpheniramine	48 (14)
levocetirizine	30 (8.6)
pheniramine	19 (5.50)

Table 4: Prescribing indicators among outpatients

Indicators	Value	WHO optimal limit
Total number of prescriptions analysed	345	
Total number of drugs prescribed	798	
Average number of drugs per prescription	2.31	1.6–1.8
Drugs prescribed by generic name	128 (16%)	100%
Percentage of an antibiotic prescribed	279 (34.96%)	20.0–26.8%
Percentage of an injection prescribed	-	13.4–24.1%
Percentage of drugs from essential drug list of Nepal	140 (17.54%)	100%

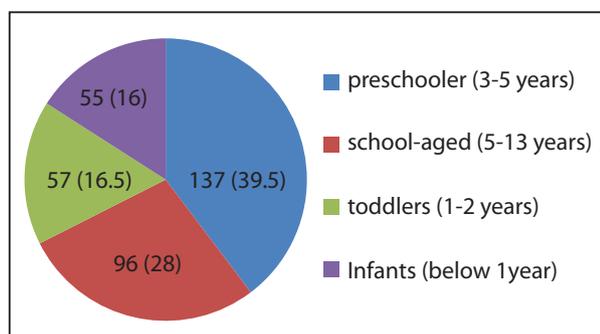


Figure 1: Age distribution among patients who were prescribed antihistamines

DISCUSSION

In the present study most of the patients with the diagnosis of upper respiratory tract infections were under six years of age (249, 72.17%) which was similar

to the study done by Tiwari et al. at Punjab where 80%¹¹ commonly in children who attend preschool and school. Children’s immune systems are not fully developed, so the incidence of respiratory infections is high in children under age of six years who are more susceptible to URTIs in comparison to other age groups. Our study showed the most commonly seen URTIs condition in children was common cold 132 (38.26%) which was similar to the study done by Zeru et al.¹² with 83 (39.0%). Antihistamines are the most commonly prescribed medicine in paediatric patients.¹³ In the present study commonly prescribed antihistamines were fexofenadine, cetirizine, chlorpheniramine, levocetirizine, and pheniramine. This shows that second generation antihistamines were prescribed more frequently compared to first generation drugs which is similar to the study done by Kolasani et al.¹⁴ where cetirizine (59.2%) was the most commonly prescribed H1 antihistamine drug.

Second generation drugs are safer, does not show central nervous system and anticholinergic side effects such as sedation and dry mouth, which are commonly seen in the first-generation antihistamines.¹⁵ Their longer duration of action also makes more patient-friendly and increases patient compliance.¹⁶ In present study 67 (19.42%) of the antihistamines were prescribed as fixed dose combinations; Chlorpheniramine+dextromethorphan+phenylephrine (26, 7.53%), Chlorpheniramine+pseudoephedrine+paracetamol (22, 6.37%) and pheniramine+dextromethorphan (19, 5.50%) similar to study of Tiwari et al.¹¹ Cetrizine+ambroxol combination was found to be the most commonly prescribed combination (28%) followed by combination of Chlorpheniramine+phenylephrine (18%).

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. In this study, the average number of drugs prescribed was 2.31 similar to results of Das et al. in paediatric outpatient settings which reported the average number of drugs prescribed as 2.37¹⁷ whereas WHO recommends optimal level to be 1.6-1.8.

Present study showed 128 (16%) drugs were prescribed by generic name which is less than the study of Mirza et al.¹⁸ in southern India where it was 30% (optimal value being 100%). Lesser number of prescriptions by generic name could be due to branded drugs being easily available and names are easy to recall for the prescriber and dispenser.¹⁹ The antibiotics also had fair share (279, 34.96%) in prescriptions, lesser than 52% reported by

Senok et al.,²⁰ just a little higher than WHO optimal level of 20-26.8%. Oral route is the most convenient and safest route of drug administration among children. The most commonly used dosage form was syrup in 448 (56.23%) followed by tablets in 223 (28%), and oral drops in 127 (16%). The result was found comparable to the study carried out by Karande et al. in which 61% of the drugs were prescribed in the form of syrup.²¹ The cost of prescription increases as the number of injection and antimicrobial drugs in the prescription increase. In this study, no parenteral medication was used which may be due to OPD patients study. The National List of Essential Medicines (NLEM) is prepared by the country which includes effective and safe medicines in order to meet patients need.²² The NLEM drugs are dispensed free of cost from government health facilities. Present study findings showed that only 140 (17.5%) of prescribed drugs were from essential drugs which is much lower in comparison to the study done by Tamuno et al. (94%).²³ According to WHO it is advised to prescribe drugs belonging to NLEM only but this percentage is lower may be because only selective antihistamines were there in our NLEM. Proper dose, dosage form, frequency, routes of administration,

and duration of prescribed antihistamines were properly mentioned in the prescriptions.

CONCLUSION

Antihistamines, mostly second generation, are commonly prescribed in upper respiratory tract infections in paediatric patients. Indicators like number of drugs per prescription, number of antibiotics per encounter, percentage of injection exposure were on a par with WHO standards. Use of generic name, percentage of drugs from NLEM was much below the recommended standards.

Clinicians should be encouraged to use generic names and include drugs from NLEM. Programme like formation of drug review committees, holding CMEs on rational prescribing, etc., can be organised to strengthen the good aspects and improve the shortcomings in prescribing patterns.

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