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Research Article

A study on drug prescribing pattern in upper respiratory tract infections among children aged 1-12 years

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ABSTRACT

Background: The present study was conducted to study and analyse the drug prescribing pattern in Upper Respiratory Tract Infections (URTI's) among patients aged 1-12 years and also to evaluate the rationality of drug use in these cases.

Methods: It was a quantitative, observational, cross-sectional type of study done in a tertiary healthcare centre between February 2015 to May 2015. Two hundred (200) prescriptions were collected of the patients attending OPD and diagnosed with URTI in age group of 1-12 years. Prescriptions of URTI patients who were suffering from other co-morbidities were excluded and only one prescription per patient was collected and utilized for the purpose of the study. The data collected was then analysed for various prescribing indicators as laid down by world health organisation (WHO) for analysis of drug use parameters. The parameters that were analysed were the average number of drugs per encounter, percentage of drugs prescribed by generic name, percentage of encounters with an antibiotic prescribed, percentage of encounters with an injection prescribed and percentage of drugs prescribed from the essential drugs list (EDL).

Results: A total of 200 prescriptions were collected during the study period and analysed for various prescribing indicators as laid down by WHO. The average number of drugs per prescription was 2.38. The percentage of drugs that were prescribed by generic name was 69.39% while the percentage of drugs prescribed from essential drug list (EDL) was 70.23%. A total of 33% encounters were prescribed antibiotics and there was no encounter in which an injection was prescribed. Use of anti-microbial agents (AMA) was seen in 66 of the 200 prescriptions analysed in the study which is around 33% of the encounters. The combination of amoxicillin + clavulanic acid was prescribed maximum being given to 40/200 cases followed by amoxicillin (10 cases), azithromycin (7 cases) and ciprofloxacin (4 cases). 12 encounters received Albendazole. The most commonly prescribed drug in the study was paracetamol which was prescribed in 142/200 cases (71%). The second most commonly prescribed group of drugs were the anti-histaminic agents both first generation (diphenhydramine) and also second generation (cetrizine/L-cetrizine).

Conclusions: The study reflects the current drug prescribing patterns in patients of URTI among patients aged 1-12 yrs. Regular studies such as this are the need of the hour to study 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 esp in a developing country like India.

Keywords: Prescription patterns in URTI, WHO Prescribing indicators

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INTRODUCTION

The upper respiratory tract infections (URTI) are one of the commonest causes of childhood morbidity and school leave and are one the commonest reasons for OPD consultation. Most of the URTIs are caused by viruses and hence they resolve spontaneously with conservative management. However it has been seen that drug therapy is resorted to in many of these cases without adequate justification. Moreover, these drugs provide only symptomatic relief without any benefit in terms of shortening of duration of illness or reduction in morbidity. Many a times even multiple drugs are prescribed in these cases and such cases of polypharmacy not only impose high cost burden on the patient but also on health services in terms of adverse effects. 12-14 Use of antibiotics in cases of URTI is another area of serious concern and such irrational misuse of antibiotics has led to a rise in cases of bacterial resistance and many important antibiotics are slowly and steadily losing their efficacy, threatening to push us back in pre antibiotic era. 3,4,8-10

Many studies have highlighted the irrational drug prescribing practices in URTI and official bodies including the American academy of paediatrics has recommended for appropriate diagnosis and has laid out clear criteria for use of drug therapy including antibiotics in cases of URTI. 9,10,12-14,16,17 However there is a clear requirement to conduct drug prescribing studies in cases of URTI especially in children so that correct and timely feedback can be offered to all stakeholders and ensure corrective measures if any. Hence this study was planned to study the drug prescribing pattern in URTI's among patients aged 1-12 years and also to evaluate the rationality of drug use pattern in these patients with special emphasis on antibiotics.

METHODS

The study was undertaken after obtaining approval from the Institutional Ethical Committee (IEC). It was a quantitative, observational, cross-sectional type of study done in a tertiary healthcare centre between February 2015 to May 2015. Two hundred (200) prescriptions were collected of the patients attending OPD and diagnosed with URTI in age group of 1-12 years. Prescriptions of URTI patients who were suffering from other co-morbidities were excluded and only one prescription per patient was collected and utilized for the purpose of the study. Care was taken to obtain the prescriptions from patients at different times of the day during the OPD timings and also from different health care providers (HCP) to offset any confounding factors relating to rush hours and individual preferences of a HCP.

The data collected was then analysed for various prescribing indicators as laid down by world health

organisation (WHO) for analysis of drug use parameters.^{5,6} These are as under:

- The average number of drugs per encounter,
- Percentage of drugs prescribed by generic name,
- Percentage of encounters with an antibiotic prescribed,
- Percentage of encounters with an injection prescribed,
- Percentage of drugs prescribed from the essential drugs list or formularies.

RESULTS

A total of 200 prescriptions were collected and analysed during the study period. The demographic characteristics of the patients are presented in Table 1. There was a slight preponderance of male patients vs female patients (107 vs 93). The age distribution of the patients showed that the age group of 1-5 years constituted 52% of the patients followed by the age group of 5-10 (47%) and 10-12 years (7%) (Table 1).

Table 1: Number of antimicrobials prescribed by generic name and from NLEM.

Age group	Male	Female	Total	Percentage (%)
1-5	61	43	104	52%
5-10	40	42	82	47%
10-12	6	8	14	7%

The prescriptions were further analysed for various prescribing indicators as laid down by WHO and the details are presented as per Table 2. The average number of drugs per prescription was 2.38. The percentage of drugs that were prescribed by generic name was 69.39% while the percentage of drugs prescribed from essential drug list (EDL) was 70.23%. A total of 33% encounters were prescribed antibiotics and there was no encounter in which an injection was prescribed (Table 2).

Table 2: Details of prescribing indicators.

Prescribing indicators	Details
Medicines prescribed per prescription	2.38
Medicines prescribed by generic name	69.39%
Percentage of drugs prescribed from essential drug list	70.23%
Percentage of encounters in which antibiotic was prescribed	33%
Percentage of encounters with an injection prescribed	0%

Use of anti-microbial agents (AMA) was seen in 66 of the 200 prescriptions analysed in the study which is around 33% of the encounters. The combination of amoxicillin + clavulanic acid was prescribed maximum being given to 40/200 cases followed by amoxicillin (10 cases), azithromycin (7 cases) and ciprofloxacin (4

cases). 12 encounters received Albendazole. The distribution of AMA's is given Figure 1.

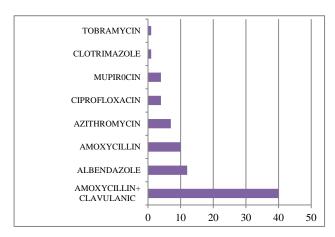


Figure 1: Antimicrobial agents prescribed.

An analysis was done of the top five drugs prescribed and they are tabulated in Table 3.

Table 3: Top 5 drugs prescribed.

Drugs	No of prescriptions
Paracetamol	142
Nasoclear nasal drops	71
Diphenhydramine	73
Cetrizine/levo-cetrizine	47
Amoxicillin/+clavulanic acid	50

The most commonly prescribed drug in the study was paracetamol which was prescribed in 142/200 cases (71%). The second groups of drugs were the antihistaminic agents both first generation (diphenhydramine) and also second generation (cetrizine/L-cetrizine). The distribution of anti-histaminic agents is given in Figure 2 (Figure 2).

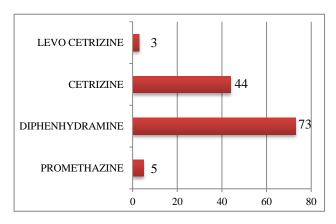


Figure 2: Antihistaminics prescribed.

Apart from the drugs mentioned above some of the other drugs that were prescribed are given as under (Table 4).

Table 4: Other drugs prescribed.

Drug	Number of cases
Asthalin	13
M/vit	12
Ondansetron	5
Ors	3
Xylometazoline	2
Tonoferon	2
Dexamethasone	2
Soliwax	2
Tonoferon	2
Callamine	2
Combiflam	2
Honitus	2
Fluticasone	1
Zincus	1
Montelukast	1
Glycerol	1
Domperidone	1
Momentasone	1
Chlorhexidine	1
Betadine gargle	1
Pantac	1
Bromohexine	1
Brufen	1
Chlorhexidine	1

DISCUSSION

Our study was a prescription-based survey, which is considered to be one of the effective means to assess and evaluate the prescribing trends and attitude of physicians. Moreover we had used the drug prescribing indicators of the WHO for the purpose of our study and hence the adherence to these indicators can be used as feedback to guide and help in promoting rational drug use. The average number of drugs per prescription was 2.38 in the current study; the relatively lower number of drugs noted is a welcome sign and needs to be encouraged though the internationally accepted ideal number is 2. It has been proved that there is an increase in compliance, lower cost of therapy and decreased risk of drug interactions when lesser number of drugs are prescribed.

The percentage of drugs prescribed by generic name was 69.39% in our study this varies from 13.3% to 93% across the globe. The results of work conducted in India report this at 73.4%. Prescribing by generic name is known to reduce the cost of drug treatment and rationalizing the drug therapy. There could be a variety of reasons for poor prescribing by generic name; an important factor could be the limited availability of the paediatric formulations in the hospital pharmacy. Moreover many cough and cold formulations used for URTI contain a combination of anti-allergics, expectorants, demulscents etc and clinicians often prefer

to prescribe by trade names, with which they are familiar and the patients find it easier to procure.

Further, in our study 70.23% of drugs were prescribed from essential drug list (EDL). The concept of EDL as proposed by WHO is one of the cornerstone of rational drug therapy as drugs in this list are chosen based on relative safety, efficacy and cost-benefit ratio. It is recommended by experts that the majority of drugs prescribed must be from EDL. However in the present study, a good percentage of drugs came from the EDL; however there is a scope for change in this regard to ensure that most of the prescribed drugs are from the EDL.

The percentage of encounters with antibiotics was 33% which is high considering the viral etiology of most of the cases of URTI. However, the antibiotics used in the hospital were older generation antibiotics and this has to be welcomed. This is because the newer antibiotics are expensive and patients may not be able to afford a full course and hence may opt for a truncated course increasing the likelihood of resistance and hence the newer antibiotic should be kept in the reserve. However in the present study, the high empiric usage of clavulanic acid in combination of amoxicillin (40 out of 200 cases) without any evidence of pencillinase resistance is a matter of concern and needs to be addressed and corrected. An interesting observation was that Albendazole was prescribed in 12 cases, which could be because of the fact that parasitic infestation is very common in India and there is frequent association with respiratory tract infection. The Injections per encounter in our study was NIL which is commendable and should be appreciated.

As per frequency of prescription, the most commonly used drug in the study was Paracetamol which was prescribed in 71% cases; this is expected as most of the children with URTI are likely to have fever and may need an anti-pyretic agent. The other group of drugs that were commonly prescribed was the anti-histaminic agents both first generation (diphenhydramine) and also second generation (cetrizine/L-cetrizine). Although they provide symptom relief, there is no conclusive evidence that they shorten the duration of symptoms. The literature offers very little support for the use of anti- histaminics for the common cold. 16 While a few studies supported the use of cold preparations to alleviate symptoms of sneezing and runny nose in Adolescents, their use for children younger than five years is not recommended. In our study nasoclear drops were also very commonly used and has been shown to reduce symptoms in URTI.¹⁷

Our study had a limitation in that we did not interview patients for their knowledge of taking the correct doses. This is important, because the absence of the knowledge on correct drug administration will lead to poor achievements of rational practice.

CONCLUSION

In India, approx. 35 % of population comprises of children below 12 years which is a very large number. Hence, provision of good health care to them indirectly reflects on the healthcare set-up of the country. Hence this study was conducted and the aim was to carry out study of drug utilization pattern in an outpatient setting in paediatric patients. The average number of drugs per prescription was 2.35. Paracetamol and Nasal normal saline were the most common drugs prescribed, these are recommended and they also confirm to the rational prescribing practices in URTI. However, antibiotics prescribed per encounter accounted for 33% which is high; Moreover prescribing by generic names and from EDL was around 70% though satisfactory, should be encouraged more.

Rational drug utilization needs training of health professionals in treatment guidelines and prescriber education to ensure appropriate therapy. There is a need for education of both parents and doctors regarding the limited help of antibiotics or other drugs for this self-limiting condition. Regular studies such as this are the need of the hour to study drug prescribing practices so that appropriate feedback and awareness is generated. Moreover, the prescribing patterns reflects the ability of prescriber in terms of choosing such drugs which are accessible, affordable, safe, effective and give maximum benefit to patients. Thus, to ensure the rationality of drug prescription time to time monitoring, evaluation is absolutely essential as changes in health related behaviour usually take longer to achieve.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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