Original Research Article

A cross sectional study on prescribing pattern for children at primary health care clinics

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ABSTRACT

Background: Rational prescribing for pediatrics is very essential as there is increased risk from the use of medicines in them due to multiple reasons ranging from altered pharmacokinetics to long-term side effects. Drug related needs of children must be assessed on individual basis to meet appropriate health care out comes. This cross-sectional descriptive study aimed at assessing drug use pattern and rationality in prescribing pattern as per World Health Organization (WHO) core prescribing indicators.

Methods: A cross-sectional and prospective study was carried out in private primary health care clinics of Hyderabad, Telangana State. A total number of 300 prescriptions for children were reviewed. Patients' demographic characters, diagnosis, and drugs prescribed were recorded in a pre-structured and validated data collection form.

Results: Average number of drugs per prescription is 1.92. Fever and upper respiratory tract infections were found to be common complaints in this age group. Paracetamol is the mostly prescribed medication and among prescribed antibiotics, Fluroquinolones occupied major part. 67.3% of drugs were from the WHO model list of essential medicines for children. The percentage of drugs prescribed with generic names is very less.

Conclusions: In this study it was found that the prescription pattern in the selected primary healthcare centers in Hyderabad was in compliance with the WHO prescribing indicators except the generic prescribing practice.

Keywords: Antibiotics, Demographic characters, Pediatrics, Prescribing indicators

INTRODUCTION

The availability and affordability of good quality drugs and their rational use is needed for effective health care.[1] Rational prescribing is an essential component of health care system. Inappropriate prescribing negatively impacts the health of an individual and the economy of the society. Especially in children irrational prescribing may increase the risk of developing health complications in the later stages of their life. It was reported that the use of antibacterial at young age can develop respiratory problems, allergic manifestations and may increase the risk of obesity.[2,3] Thus medicine safety issues in children especially rational prescribing is an essential component of health care system. For the rational prescribing of medicines in children, the first model list of essential drugs for children (less than 12 years) was released in October 2007.[4] It is aimed to serve as a guideline for rational prescribing in this age group. Now the 7th edition of list was released in 2019 by World Health Organization.[5]

Drug prescribing and utilization in children is of utmost concern worldwide.[6] Information about prescribing practices and drug utilization in this population group is not up to the mark in developing and underdeveloped countries compared to western world so there is a need to carry out such studies by which rational prescribing can

be promoted in this age group. Hence the present study aimed at studying the drug prescribing pattern and utilization in children in selected regions of Hyderabad city, India.

METHODS

A descriptive cross-sectional study was carried out in the primary health care pediatric clinics for evaluation of drug prescribing patterns starting from 20th January 2019 to 23rd March 2019. The study protocol was approved by RBVRR Women's College of Pharmacy Institutional Research board (IRB). Only prescriptions with legible handwriting, demonstrating all the essential components of prescriptions were included. The data was collected from five private practitioners from chosen areas of Hyderabad. Five practitioners were randomly chosen each month from a pool of ten practitioners enrolled for the study. Prescriptions were selected by random sampling method. The study population included is under 13 years of age. Patients' demographic characters (age, gender), chief complaints and medicines prescribed were recorded. Class of medicines prescribed, dose, route of drug administration, frequency and duration of treatment was recorded in data collection form. WHO specifies drug use indicators for adoption in drug utilization studies.[7]

The sample size is calculated using following formula.[8]

$$N = Z^2 P (1-P) / d^2$$

Where n is the sample size, Z is the statistic corresponding to level of confidence, P is expected prevalence (that can be obtained from same studies or a pilot study conducted by the researchers), and d is precision.

The following basic drug use indicators (core indicators) were used in the study to describe the prescribing pattern: a) average number of drugs per encounter; b) percentage of drugs prescribed by a generic name; c) percentage of encounters with an antibiotic prescribed; d) percentage of encounters with an injection prescribed; e) percentage of drugs prescribed from the essential drug list. Based on this collected data, the WHO prescribing indicators were assessed.

Data collection was carried and supervised on daily basis by the investigators involved in the study. Completeness of data was checked every day during the data collection period. Data was analyzed descriptively and summarized using tables and charts.

RESULTS

Total 300 prescriptions were analyzed. 162 males and 138 females encountered the clinic during assessment period. Among 300 patients, 35% are below 4 years and 56% were of 4-10 years and 9% above 10 years. Major complaint was fever with or without upper respiratory

tract infections. 32% of prescriptions found to be with one drug. 44% of prescriptions have two drugs. Only 22% of prescriptions with three drugs and 2% with more than three drugs (Table 1).

Table 1: Summary of drugs per prescription.

No. of drugs per prescription	Total prescriptions
One	96
Two	132
Three	66
More than three	6

Average number of drugs prescribed is 1.92. NSAIDs occupied 30% of the total medications prescribed. 24% of the medications are mucolytics and antitussives (Figure 1). Most frequently prescribed drug was found to be paracetamol followed by mucolytic agents. Together they contributed to more than 50% of the prescribed drugs.
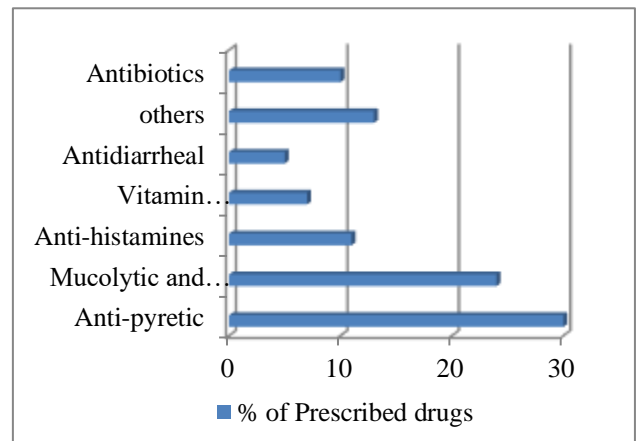

Figure 1: Percentage of prescribed drugs from various therapeutic classes.
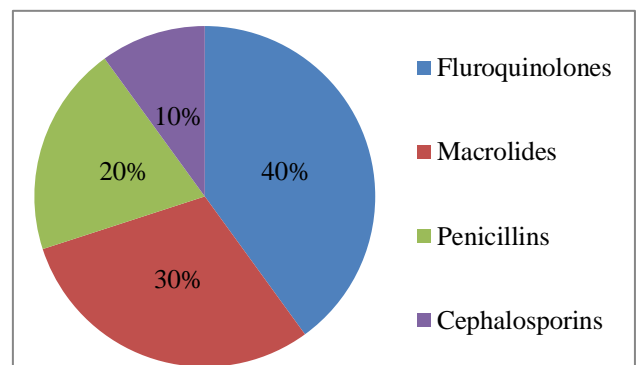

Figure 2: Relative percentage of prescribed antibiotics.

Only 10% patients received antibiotics and the overall percentage of antibiotics prescribed was also 10%. The most frequently prescribed antibiotics were fluoro-quinolones followed by macrolides (Figure 2). The

Percentage of drugs prescribed from the essential drug list 67.3%. Out of 300 prescriptions, only five (1.67%) patients have been prescribed with injections. Percentage of drugs prescribed by a generic name is only 13%.

Table 2: Analysis of prescriptions according to the WHO core prescribing indicators.

WHO prescribing indicator	Reported (%)	WHO standard (%)
Average number of drugs per encounter	1.92	2
Percentage encounters with one or more antibiotics	10	20-26.8
Percentage drugs prescribed by generic name	13	100
Percentage of encounters with an injection prescribed	1.67	13.4 -24.1
Percentage drugs from Essential drug formulary list	67.3	100

DISCUSSION

NSAIDs are the routinely prescribed drugs in children and paracetamol is the mostly prescribed drug among children.[9] Antipyretics, cough and cold preparations and vitamins were the commonest category of drugs prescribed as reported in some similar studies.[10] Fever and respiratory disorders are very common outpatient complaints in this age group.[11] The average number of drugs prescribed was comparatively less compared to the previous findings in a region of South India and is within the limits of WHO indicators. The percentage of antibiotics prescribed also less compared to the similar studies.[12,13] The total number of drugs from Essential list in this study was better compared to the studies at other cities.[14]

Percentage encounter with injection is only in 1.67% patients indicating a rational practice as previously reported.[12,15] Drugs prescribed from model EDL for children are relatively large compared to other studies.[16] But Generics prescription was very poor which was in line with other reports, which needs to be improved.[15,16] There are only few published studies in India on prescribing practices for children to conclude about this practice. Especially there is a need to study prescribing practices in rural areas of India. However, findings of our study highlighted few areas of prescribing that should be intervened appropriately.

CONCLUSION

Hence, the present study concludes that the prescribing pattern in children in selected areas of Hyderabad city and found overall prescribing practices were found to be good and rational in most of the aspects WHO guidelines. We also found some areas of concerns regarding prescribing practices. Low usage of generic drugs in prescription writing was the main drawback. So, there is an immediate need of encouraging physicians towards generic prescriptions. The number of drugs prescribed from Model EDL list can also improve by continuing education on rational drug use and development of easy to use treatment guidelines by the physicians. The study has few limitations also. The time of sample collection is only two months which might miss the data of seasonal effects on prescribing patterns. The sampling distribution is also not even as it is only from few areas of urban Hyderabad. Despite of these limitations the study can help to create awareness in healthcare professionals.

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