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Research Article

# Study of Drug Prescribing Pattern in Pediatric Outpatient Department at a Tertiary Care Teaching Hospital

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### Abstract



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**Background:** Infants and children suffer from frequent but usually non serious illnesses and are more vulnerable to various adverse events related to drugs and poor understanding of instructions on prescription by the patient or caretakers were likely to cause medication error. The correct identification of an illness and its management with medications is a vital aspect of patient care, especially for paediatric population. So, prescribing pattern studies are very helpful in promoting the appropriate use of drugs in population. **Objectives:** It aims to obtain data on the current prescribing pattern in pediatric OPD at a tertiary care teaching hospital with ultimate goal to promote appropriate use of drugs. **Methods:** This study was conducted in 62 pediatric patients of either sex visiting Pediatric out-patient department over a period of three months at NMCH and RC, Raichur, Karnataka. **Results:** Prescription analysis showed that the average number of drugs per prescription was 3.32. Drugs were mostly prescribed by brand name (98.06%), Injections (4.83%) were least prescribed, drugs prescribed from Essential Drug List was 48.54%. Antibiotics were most prescribed class of drugs (33.9%). **Conclusion:** The study concludes that polypharmacy was slightly seen in prescriptions. Diagnosis of the patient was recorded for most of the prescriptions. There is need to conduct many such studies at regular interval as it is useful for auditing large number of prescriptions to find out early signals of the irrational drug use. Our study evaluated drug use pattern only from the outpatients hence prescription pattern may vary among inpatients.

**Keywords:** Prescribing pattern, Infants, WHO core prescribing indicators, Polypharmacy, Generic name

## INTRODUCTION:

Around 28% of global population consists of children and newborns.<sup>1</sup> They are more likely to suffer from acute watery diarrhoea, viral fever, and recurring illnesses of the respiratory tract and gastrointestinal system, which account for the bulk of paediatric visits. Lower respiratory tract infections are the primary cause of mortality in children under the age of five, making it necessary to accurately diagnose the condition and give appropriate drug therapy.<sup>2,3</sup> While prescribing, not only knowledge of Pharmacology (Pharmacokinetics – Absorption, Distribution, Metabolism, Excretion, and drug interactions) but also Gestational maturity, developmental stage of child at that time, weight of child, pathophysiology of disease, correct diagnosis, microbiological pattern, and adverse drug reaction are essential.<sup>4</sup>

Polypharmacy and other inappropriate forms of prescribing could be potentially harmful in children because of their physiological differences.<sup>5</sup> The uses of antimicrobial drugs, particularly antibiotics, have become common practice in the treatment of children's diseases. However, there have been reports of irrational antibiotic use, which has been identified

as a major problem in many pediatric prescription studies; this could lead to antimicrobial resistance, treatment failures, higher healthcare costs, and infections that are worse than the ones that were originally diagnosed.<sup>6</sup> In the vast majority of cases, physicians prescribe antibiotics prophylactically. However, in the majority of circumstances, either culture or sensitivity testing are not performed, or antibiotics are continued for extended periods of time despite the fact that the organisms are not sensitive.<sup>7</sup>

Prescription pattern studies are required to ensure safe and effective medication usage at all stages of therapy, which aids in identifying inappropriate types of prescribing such as polypharmacy and irrational use of antimicrobials and injectables. It is also necessary to describe trends and ensure that various treatment guidelines are followed.<sup>5</sup> Such studies act as effective tools for determining the role of drugs in society.<sup>8</sup>

Since the data on pediatric prescription patterns in India is limited, it is necessary to conduct regular prescription audits to ensure that drugs are used appropriately in the pediatric population.<sup>2</sup> In this context, the Department of Pharmacy Practice has proposed the study entitled "Study of Drug Prescription Pattern in Pediatric Outpatient Department at a

Tertiary Care Teaching Hospital,” with the goal of assessing prescribing patterns in pediatrics through a prospective study.

**MATERIAL AND METHODS**

A prospective observational study was carried out for a period of three months from January to March 2021 in Navodaya Medical College, Hospital & Research Centre (NMCH&RC) Raichur, India. Permission was obtained from ethical clearance committee before the beginning of study. A total of 62 prescriptions which met the inclusion criteria were collected during the study period. Patients of either sex and below 12 years of age were included in the study. Pediatric inpatients and patients admitted in casualty & ICU were excluded from the study. The patient related information such as age, sex, diagnosis and drug related information such as drugs, dose, dosage form and route of administration were collected in suitably designed data collection form. All the collected data were analysed and evaluated using suitable statistics.

**RESULTS**

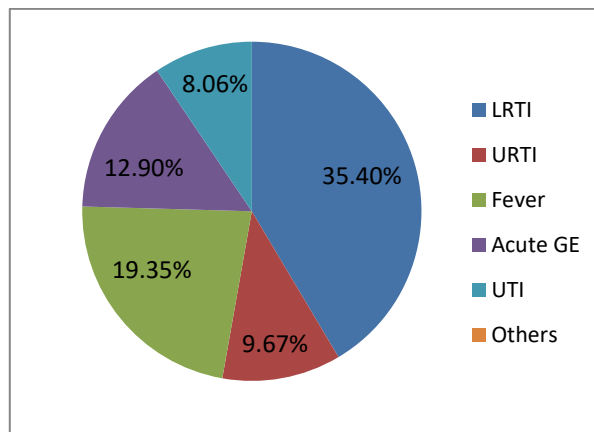
A total of 62 prescriptions were analysed. The neonates were 24 (4.8%). The male patients were 40 (64.5%) and female patients were 22 (35.4%).The distributions and proportions are as shown in Table 1 and Table 2. Majority of the paediatric patients were suffering from lower respiratory tract infection (35.4%) followed by acute gastroenteritis and fever. The number of drugs per encounter was found to be with a minimum of 0 and maximum of 5 drugs. The distributions of cases according to diagnosis are as shown in Figure 1. The average number of drugs per prescription was 3.32 ± 1.02. A total of 206 drugs were prescribed and most frequently prescribed drug class was antibiotics (33.9%) followed by bronchodilators (13.5%) and antipyretics (10.6%) of total prescription. The classes of drugs prescribed are as shown in Figure 2.

**Table 1: Gender distribution of study participants (n=62)**

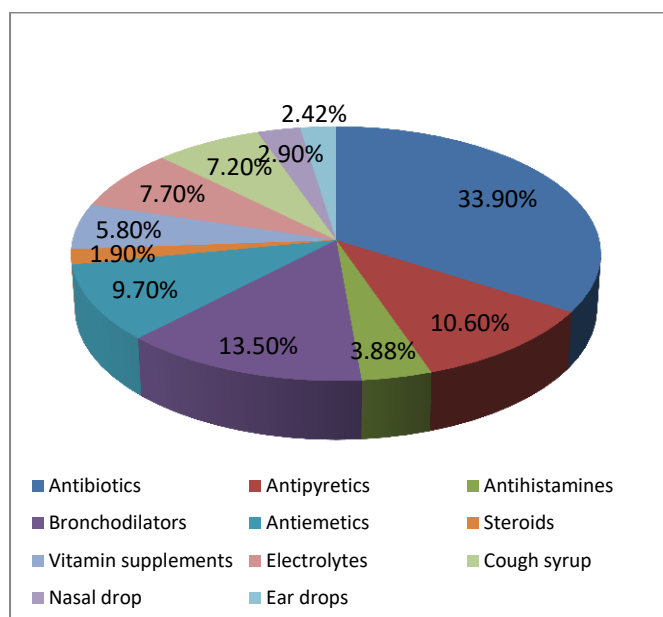
Gender	No. of patients (%)
Male	40 (64.5%)
Female	22 (35.4%)

**Table 2: Age distribution (n=62)**

Age	No. of patients (%)
0 – 4 weeks	6 (9.6%)
1 month – 1 year	10 (16.12%)
1 year- 5 years	32 (51.6%)
6 years – 12 years	14 (22.58%)



**Figure 1: Distribution of cases according to diagnosis (n=62)**



**Figure 2: Pie chart showing Prescribed Therapeutic drug classes in study participants (n=206)**

62 prescriptions were analyzed to describe the current prescribing pattern in the hospital and drug utilization trend. The average number of drugs per prescription was 3.32. Percentage of drugs prescribed by generic name was only 1.94%. Antibiotics were frequently prescribed and Percentage of encounters with antibiotic was 80.6%. Percentage of encounters with an injection prescribed was only 4.83%. The drugs prescribed from the EDL were only 48.54% (Table 3).

**Table 3: WHO core drug prescribing indicators used to assess study prescriptions (n=62)**

S.no	Indicators	Study Value	Standard value
1	Average number of drugs per prescription	3.32	1.6-1.8
2	Percentage of drugs prescribed by generic name	1.94%	100%
3	Percentage of encounters with an antibiotic prescribed	80.6%	20-26.8%
4	Percentage of encounters with an injection prescribed	4.83%	13.4-24.1%
5	Percentage of drugs prescribed from Essential Drug List	48.54%	100%

## DISCUSSION:

The correct identification of an illness and its management with medications is a vital aspect of patient care, especially for paediatric population. In this perspective prescribing pattern studies are very helpful in promoting the appropriate use of drugs in population. The present study was an attempt to describe the current prescribing pattern in Pediatric OPD in a tertiary care teaching hospital with an ultimate goal to promote proper use of drugs among prescribers.

The present study is based on data obtained from 62 prescriptions. The male to female ratio reflected a higher number of male patients who are visiting OPD compared to female patients. The age distribution of the study subjects reveals that, there was more number of children aged from 1 year to 5 years (51.6%) when compared with infants (9.6%). This result was similar to the study conducted by Patil N *et al*<sup>3</sup>.

Our study reveals that, the majority of the paediatric patients were diagnosed with respiratory tract infections (45%) followed by fever (19.35%) and gastrointestinal disorders (12.9%). Results obtained in this study were similar to that published by Gedam DS *et al*<sup>6</sup>. Most of population of developing countries like India belongs to low socioeconomic category with poverty, inadequate medical care, poor sanitation and under nutrition. All these socioeconomic factors are responsible for higher incidence of infectious disorders.

In the present study out of 62 prescriptions containing 206 drugs, Antibiotics (33.9%) was majorly prescribed class of drugs which was supported by results of previous study conducted by Thomas LS *et al*<sup>8</sup>. Bronchodilators (13.5%) was the second most prescribed class of drugs followed by antipyretics (10.6%) and the least prescribed was steroids (1.9%). Paracetamol was the only antipyretic used. However, there is no proven role of cough syrup in respiratory infections but in 7.2% prescriptions it was advised.

The WHO core drug prescribing indicators were used in our study which measures the performance of health care providers in several key dimensions related to the appropriate use of drugs in outpatient setting. Of the 62 prescriptions containing 206 drugs studied, number of drugs per prescription ranged from one to five. This serves as a measure of degree of polypharmacy. The results revealed that average number of drugs prescribed in our study was 3.32 per prescription which is higher than the standard value. It is preferable to keep the number of drugs per prescription as low as possible, to reduce the risk of adverse effects drug interactions, development of bacterial resistance and to decrease cost of therapy to the patient. The results obtained were in contrast to the study done by Dimri S *et al*<sup>9</sup> who reported 2.31 as average number of drugs prescribed.

Percentage of drugs prescribed by generic name was only 1.94% which is less compared to the standard value. Earlier a study done at Karnataka<sup>3</sup> reported higher percentage of drugs prescribed by generic name (30.64%). The possible reason could be influence of the pharmaceutical companies over prescribers and branded drugs are easily available.

Percentage of encounters with an antibiotic prescribed was 80.6% in our study, which was higher compared to studies done by Gedam DS *et al*<sup>6</sup> and Dimri S *et al*<sup>19</sup> showed lower values (37.26%, 29%). In this study antibiotics were prescribed empirically in cases of infectious cases and non-specific symptoms which is appropriate. Some children received three or more antibiotics at the same time which

might increase the chance of antibiotic resistance. In some children, antibiotics were prescribed without investigation mainly patients who complained of fever. The excessive and irrelevant use of antibiotics leads to antibiotic resistance hence there is a need to develop antibiotic prescribing guidelines at the study site.

Percentage of encounters with an injection prescribed was only 4.83% which was only three prescriptions with injections of antibiotics and antipyretic. Results were similar to study done at Lucknow<sup>10</sup>.

Our study findings showed that drugs prescribed from the EDL was only 48.54% which is less than the standard value given by WHO i.e., 100%, but showed higher value when compared to the study done by Khan MS<sup>11</sup>. Use of drugs from EDL should be promoted for the optimal use of limited resources for maximum safety and satisfy the health care needs of majority of population.

Some of the limitations of this study were as it was conducted in a single centre; results may not be applicable to general population and our study evaluated drug use pattern only from the outpatients hence prescription pattern may vary among inpatients. The WHO core drug prescribing indicators indicates only the quantity of drugs prescribed, but cannot determine accuracy of diagnosis or adequacy of drug choices. Furthermore, patient care indicators and facility indicators were not included as this was a prescription-based study

## CONCLUSION:

This study provides important insights into the prescribing patterns of drug use in the pediatrics outpatient department of a tertiary care teaching hospital. It has helped to identify irrational prescribing patterns of drugs in pediatrics. Prevalence rate of respiratory tract infections was high. Evaluation of the drug use with the help of WHO core drug prescribing indicators showed that at our institute polypharmacy was slightly seen in prescriptions, use of injections was limited, majority of the drugs prescribed were antibiotics and half of the drugs were prescribed from essential drug list. Our study suggested a need for proper sensitization of clinicians in the art of rational prescribing, which can be achieved through short-term training sessions, continuing medical education, prescription audits at regular intervals. There is need to conduct many such studies at regular interval as it is useful for auditing large number of prescriptions to find out early signals of the irrational drug use.

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## Conflict of Interest

No conflict of interest

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