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Research Article

DRUG PRESCRIPTION PATTERN IN PEDIATRIC OUT PATIENT DEPARTMENT IN A TEACHING HOSPITAL IN CENTRAL INDIA

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ABSTRACT

Children 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 and less effective treatment. Drug prescribing in any speciality is important but its importance further increases with paediatrics. It also gives a clue towards physician attitudes for his patients. In view of this, it is important to do study the pattern of prescribing in paediatric patients on continuous basis. The aim of this study was to analyze the prescribing pattern in a paediatric outpatient setting. A prospective cross-sectional study was conducted for a period of four months. A total of 645 prescriptions were collected and analysed. Average number of drugs per prescription was 1.69. Most common reason for Out Patient Department visit was Upper Respiratory Tract Infection (50.07 %) followed by Acute Gastroenteritis (20.94 %). Most frequently prescribed drug classes were Antipyretics (44.18 %) followed by Antibiotics (37.2 %) & Antihistaminics (29 %). Most frequently prescribed antibiotics was ofloxacin & metronidazole combination (25 %) followed by cefpodoxime (22.83 %). Mostly drug prescribed orally (99.32 %). Most common drug formulation was syrup (62.19 %) followed by drops (13.87 %). From this study feedback information can be provided to the prescribers & authorities of the institute to improve the prescription patterns.

Keywords: Prescription pattern, paediatrics, Out-patients.

INTRODUCTION

Paediatrics is the branch of medicine dealing with the development, diseases and disorders of children[1]. Drug therapy is considered to be major component of paediatric management in health care setting like hospital. Effective medical treatment of a paediatric patient is based upon an accurate diagnosis and optimum course of therapy, which usually involves a medication regimen.

Infants and children are among the most vulnerable population groups to contact illnesses. At the same time Infancy and childhood is a period of rapid growth and development. Most of these are self-limiting[2] and are often treated not only inappropriately, but also resorting to polypharmacy [3, 4].

The use of antimicrobial agents, especially antibiotics has become a routine practice for the treatment of paediatric illnesses[4,5]. However, there are also reports of an irrational use of antibiotics[6,7] which may even lead to infections that are worse than the originally diagnosed ones.

The assessment of drug utilisation is important for clinical, educational and economic reasons[8]. Now a day's large numbers of drugs are prescribed as branded drugs and use of generic drugs has been decreased[9-11]. Prescription audit is an important tool to assess prescription pattern of drugs in any institute.

Data about drug usage patterns in India are particularly lacking. Keeping these facts in consideration the present study has been planned to define the pattern of drug use in the paediatric out-patient department.

The present study was undertaken to evaluate the drug prescription patterns in patients attending the paediatric out-patient department and to generate data on the extent of rational/irrational prescribing in this institute. Feedback from the study would help both the prescriber and institutional authorities to review their prescribing practices and modify if necessary to facilitate better health care delivery.

MATERIALS AND METHODS

A prospective study was carried out over four months (April to June 2012) in the Pediatric out-patient department attached to the L. N. Medical College and affiliated J. K. Hospital, Bhopal, Madhya Pradesh, India. After obtaining requisite permission, prescriptions were copied using digital camera on random basis to minimize bias. A total of 645 prescriptions were collected. The information such as case OPD No, age, sex, weight, date of consultation, diagnosis, antimicrobial drugs (AMD) and all other drug prescribed and their doses, doses form and route of administration, total duration of drugs received was recorded and analyzed.

The following parameters were used to measure rationality of prescription:

- Total number of drugs prescribed

- Average number of drugs per prescriptions

- No of drugs in generic name

- Doses and doses form and route of administration of drug

- No of Antibiotics prescribed

- No of drugs selected from national list of essential medicines

RESULTS

A total of 645 prescriptions were analyzed. The population consists of 398 male and 247 female patients. All the patients were divided into different age groups (table 1).

The number of drug per encounter was found to be with a minimum of 0 and maximum of 5 drugs. The average number of drugs per prescription was 1.69 (table 2).

The most common diagnosis in the patients was upper respiratory tract infection (URI) (50.07%) followed by acute gastroenteritis (20.94 %) and Viral fever (5.73 %) (table 3).

Most frequently prescribed drug class was antipyretics (44.18 %) followed by antibiotics (37.21 %) and antihistaminic (29 %) of total prescription (table 4).

Antibiotics constituted 240 of total number of prescription. Out of 240 antibiotics used, the most frequently used antibiotics were ofloxacin & metronidazole combination (25%) followed by cefpodoxime (22.83 %) and amoxicillin & clavulanic acid combination (16.67 %) (table 5).

Out of total drug prescribed 99.32 % of drug administered by oral route and 0.68% by nasal drop. On oral doses form 62.19 %% drug were syrups followed by drops (13.87 %) and tablets (6.9 %) (table 6).

Table 1: pediatric out Patient characteristics

Parameters	No. (%)
Age:-	
0 - 1 Month	34 (5.8%)
1 Month – 1 year	240 (37.3%)
1 Year – 5 Years	224 (34.1%)
6 Years - 12 Years	144 (22.8%)
Sex:-	
Male	398 (61.7%)
Female	247 (38.3 %)

Table 2: Pediatric out patient exposures to drugs

Drugs /Prescription	No. (%)
0	60 (9.3 %)
1	137 (21.20 %)
2	250 (38.72 %)
3	125 (19.34 %)
4	62 (9.73 %)
5	11 (1.71 %)
>5	0

Tables 3: Profile of Basis of Morbidity

Diagnosis	No (%)
Upper Respiratory Infection	323 (50.07%)
Acute Gastroenteritis	135 (20.94%)
Viral Fever	37 (5.73%)
Abdominal Pain	26 (4.03 %)
Bronchiolitis /Asthma/Walri	7 (1.08 %)
Miscellaneous	117 (18.14 %)

Table 4: Classes of Drug prescribed

Drugs	No. (%)
Antibiotics	240 (37.21 %)
Antipyretics	285 (44.18 %)
Antihistaminics	187 (29 %)
Bronchodilators	23 (3.57 %)
H2 Blockers	15 (2.33 %)
Antiemetics	37 (5.74 %)
Steroids	8 (1.2 %)
Probiotics/ Prebiotics	37 (5.74 %)
Zinc	53(8.22 %)
Vitamin-D+ Calcium	7 (1.1 %)
Albendazole	22 (3.9 %)

Table 5: Profile of antibiotics prescribing

Antibiotics	No. (%)
Ofloxacin Metronidazole	60 (25 %)
Amoxycillin + Clavulanic acid	40 (16.67 %)
Amoxycillin	15 (6.25 %)
Cefpodoxime	53 (22.83 %)
Cefodroxyl	33 (13.75 %)
Macrolids	25 (11.41 %)
Ofloxacin	7 (2.9 %)
Levofloxacin	7 (2.9 %)

Table 6: Use of Dosage form of drugs

Dosage From	No. (%)
Syrup	740 (62.19 %)
Drops	165 (13.87 %)
Sachet	52 (4.37 %)
Tablet	82(6.9 %)
Nasal Drops	8 (0.67 %)
ORS	48 (4.4 %)
Parental	0

DISCUSSION

Correct diagnosis of a disease & its management with medicines constitute important aspect of patient care, which is more important in case of pediatric patient. The results of present study are based on data obtained from 645 patients. Higher male to female ratio is common in Indian scenario and obvious reason is skewed gender profile in India.

URI (56.97%) was the most common infection followed by acute Gastroenteritis (20.93%) & Viral fever (5.8%). Other study[12] also have URI as most common reason for Outpatient visit. Reason is obvious as 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 disorder.

In this Study average number of drugs prescribed was 1.69 per prescription. Result is comparable to Dimri et al. & mohajer et al., who have reported the average numbers of drugs prescribed to be 2.31 & 2.81 respectively[13,14]. Minimum number of drugs should be used to reduce cost as well as drug interaction.

In our study 2.69 % of medications were prescribe by generic names. In other studies conducted by mohanty *et al* found this as 1.42% & Dimeri *et al* in Chandigarh as 5.8%[12,13]. The possible reason for less prescribing by generic name could be pressured advertisement of branded drugs by pharmaceutical company. Few drugs are available as generic drugs and prescriber is not having enough knowledge of the same. Branded drugs are easily available and easy to recall.

Approximately 40 % of drugs were prescribed from national list of essential medicine 2011. Prescribing pattern in other studies inclued Dimri et.al., Mohanty et. al, Adebyo et. al. & Bharty et.al., were 68%, 45%, 64% & 58% respectively. Being a developing country and less number of financial resources are important reason to promote drugs from NLEM[12-16].

In present study no injection were prescribed. In other studies conducted by Dimri *et al* & Kumari *et al* it was 1.18% & 1.17% respectively[13,17].

In our study prescribing percentage of antibiotics was 37.26%. Overprescription of antibiotics is very common. Overuse of antibiotics is known to cause drug resistance, increased side effect & make the treatment expensive. Other studies reported 18.5-29% of antimicrobial use[13,14].

Commonly prescribed antibiotics were ofloxacin & metronidazole combination (21.6% total antibiotics prescription). It is well known that ofloxacin is not indicated in paediatric population below 18 years because of known cartilage damage in animal models. Other common antibiotics prescribed are Penicillin (18.9 %), Cephalosporin (32.4 %) & Macrolides (8.1 %). It correlates with the disease as URI is most common reason for OPD visit.

Antipyretics are commonly prescribed drugs (44% of total patient) Paracetamol was prescribed 37% of patient followed by Ibuprofen in 8.1%. Nimesulide & Aspirin were not prescribed in any patient in our study. In our Study antihistaminics were prescribed in 29.07% of patient. URI is most common reason for OPD visit in which antihistamines are commonly indicated.

In our study two & three drugs are prescribed in 21.20 & 38.72 % of total patient. The result of this study (1.69 drugs /prescription) confirmed to WHO prescribing standards recommending a limit of 2.0 drugs/ prescription.

Prescribing by generic names is known to reduces the cost of drug treatment, rationalize drug therapy & avoid confusion. Despite this most clinician prefer brand name with which they are confident & familiar.

The interactions are generally more in patients who receive more number of medications[19]. As the study contains the average numbers of drug's in each prescription with 1.69 & reduces possibilities for major interactions. Davis *et al* (2008) says that four out of five patients (79%) in this study misinterpretended the instruction .There is significant knowledge gap in patient understanding of drug use. Therefore explicit instruction to patient on "when to take" the medicine using time period (e.g. 9 A.M., 6 P.M.) may better understood comprised to value instruction i.e. three times a day.

Most number of the drugs was prescribed by oral route (99.32%) which is followed by nasal (0.68%). The most commonly medicine dosage form has syrup (62.19 %) followed by drops (13.87 %) compared to tablet (6.9 %).

Dose measurement should always be advised with a cap which is having markings for 2.5, 5 and 10 ml. Spoon may cause underdosing[20]. Tablet form is not preferred by most of children.

CONCLUSION

Our Study provides important information regarding drug use patterns in the Pediatrics Out Patient Department of a tertiary care Teaching Hospital. It is well understood that for achieving the goal of rational use of medicines it is not sufficient to choose the right medicines only but also they must be employed in the most appropriate manner. There is a ample scope of improving prescribing pattern by keeping number of medicines as low as possible, prescribing medicines by generic name, using medicines appropriately after selecting and consciously keeping the cost of therapy low.

Similarly appropriate use of antibiotics delays the development of drug resistance by microorganism. Over prescription of antibiotics for insufficient duration may increase the risk of resistance. Significant overlap exists in the clinical manifestation of vital & bacterial infections which can leads to irrational prescribing of antibiotics for Viral URI. From this study feedback information can be provided to the prescribers & authorities of the institute to improve the prescription patterns also to evaluate clinical feature appropriately to avoid antibiotics prescription for viral disease. The study provides baseline data to carrying out further therapeutic audit with more parameters of analysis which in turn will provide regular feedback to researchers & prescribes.

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