



**PARENTS' KNOWLEDGE, ATTITUDE AND PERCEPTION ABOUT THE
COMMONLY USED DRUGS AND THEIR ADVERSE DRUG
REACTIONS IN CHILDREN**

**DR. JAYSHREE S. DAWANE *, MRS. KANCHAN D, BOROLE,
DR. VIJAYA A. PANDIT AND DR. SONALI D. SALUNKHE**

Department of Pharmacology, Bharati Vidyapeeth Deemed University Medical College, Pune, India.

ABSTRACT

Increasing incidence of adverse drug reactions (ADRs) because of inadvertent use of medicines in children is a matter of serious health concern. Children depend on their parents for medication. Study was planned to assess parents' knowledge about commonly used drugs in children for minor ailments and their adverse drug reactions (ADRs). A cross sectional study, 200 Parents of children below 12 yrs from low socioeconomic group were included in study. We interviewed one of the parents involved in taking care of child. Standardized and validated questionnaire was used. 94 % caretakers were mothers. 74 % respondents had no knowledge about medicines and 86.5% unaware about ADRs. Most of the irregularities observed in measuring dose, increasing duration, confusion in multiple drugs and storage of medicines. Low literacy has a major impact on patients' ability to understand potential ADRs and correct dosing. Parents had inadequate knowledge and misconceptions about drug use.

KEYWORDS: Caretakers, Misconceptions, Adverse drug reactions, Understanding



DR. JAYSHREE S. DAWANE
Department of Pharmacology, Bharati Vidyapeeth Deemed University
Medical College, Pune, India.

**Corresponding author*

INTRODUCTION

Providing safe medicine is a complex task that has received considerable global attention in recent times¹. Many times, medicines are used without any prescription. Medicines used for some ailment of family members are commonly re-used for treating other members with similar complaints. At this stage they might not be used correctly. Incorrect use could be because of many reasons- improper storage, neglecting expiry date, wrong selection of drug and dose etc. This can lead to adverse drug reactions (ADRs) which could be very serious. Problem gets compounded when drugs are used for children. Unfortunately, children are considered to be young adults for treatment purpose, which is not always true. In addition, children often cannot verbally express their own drug therapy experiences. As a result, newborns, infants and children who require medication for acute, chronic and life saving treatment are at risk of a range of ADRs ranging from ineffective treatment and minor ADRs to severe morbidity and death. It is for these reasons that children worldwide are described as "therapeutic orphans" and are placed at an increased risk of therapeutic failure, while ADRs continue to cause unnecessary disability and death². So, problem of occurrence of drug related ADRs become more prominent in this population. It may result in hospital admissions, prolonging hospitalization and also can lead to permanent disability or even death.

Colds, Cough, fever, diarrhea, minor injuries and stomach aches are the most common illnesses in children³. Drugs like Antipyretics & Analgesics (Paracetamol, Ibuprofen), Antihistaminics (Chlorpheniramine, Promethazine), Cough expectorants, ORS etc are used commonly for these complaints. Which are associated with mild to moderate adverse effects like sedation, dryness of mouth, nausea, vomiting, epigastric pain, rash etc. For relief of their complaints, children depend on their parents for medication. Parents obtain drugs either by getting a prescription or getting them OTC^{5, 6}. Not reading the label properly and not following doctor's instructions is a common practice. This leads to improper use of medications. It is very important, therefore, that parents have

proper knowledge about the drugs & its use.

Based on these concerns, we tried to explore parental knowledge, perceptions and behaviors with respect to use and ADR of commonly used drugs in children.

OBJECTIVES

- To assess parents' knowledge about drugs used in children for minor ailments.
- To investigate the parents' knowledge about adverse effects of these medicines.

MATERIALS & METHODS

This was a cross sectional study, 200 Parents of children below 12 yrs from low socioeconomic group were included in study from February -September 2012. The target population of the study was the 'parents' group regardless of age groups, ethnics, occupations and educational status. Out of both the parents, we interviewed one who was mainly involved in taking care of their child. Parents, knowledge, attitudes and perception of commonly used drugs and their ADRs was assessed using a standardized, structured and validated questionnaire⁶. Prior to administration in the actual study group, a pilot study was done on the 5% of the target sample population. Some modifications were done to improve the clarity of ADR related questions. The Questionnaires consisted of 32 items and was translated into local language (Marathi). Questionnaire which covered socio-demographic, occupational, educational characteristic of parents and their knowledge about drugs and ADRs was used for this purpose. In regard to parents' practice of medicines, dose measurement, dose exceeding, drug storage, drug disposal and expiry date checking were all assessed. Four volunteers were trained to fill up the questionnaire. After obtaining written consent from parents, information was collected and questionnaires were filled up.

STATISTICAL ANALYSIS

Data were coded and entered into SPSS software. Each factor was treated by simple

frequency tables. Results are expressed in percentage.

OBSERVATIONS & RESULTS

From the total of 200 parents (94 %) Caretakers were Mothers. Most parents were

less than thirty years of age (68%) and had two or more children (65.5%). Table 1 summarizes the demographics details of parents answering the questionnaire

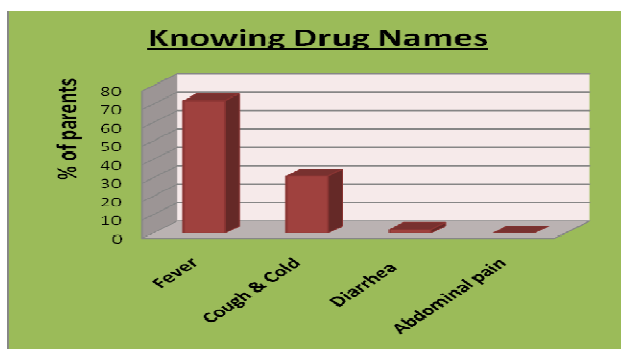
Table 1
Demographic details

Variable	Percentage (%)	Number(n)
Age of parents	20 – 30 years	68
	31 – 40 years	27.5
	> 40 years	4.5
No of children (< 12 yrs)	1	34.5
	2-3	61.5
	≥ 4	4
Education	Un-Educated	18.5
	Primary	28.5
	Secondary	34.5
	Higher Secondary	15.5
	Graduate	3
	Post graduate	-
	Super specialization	-
Occupation	Government employee	15
	Self-employed	10
	Employed by a private business	2
	Unemployed(House wife)	73
	Family Monthly Income(Rs)	84
<10,000	168	
>10,000 & < 20,000	16	32

History about the number of attacks of these minor elements in last three months was asked and it was observed that most of the children had at least one or two attacks of cough and common cold. Fever was again an important disease seen in this population. Very few of them suffered from diarrhea and abdominal pain. During the interview mothers expressed

that many a times they obtain a medicine from chemist for such complaints where no prescription is required. Sometimes they use the medicine available at home. Only 31% of the parents could recollect the names of the medicines for the cough and cold and 72 % for fever where crocin was used regularly.

FIGURE 1
Parents Knowing the names of the drugs used in their children



When the parents were asked about the side effects 41% said they understand the meaning of adverse effects. Parents' idea about ADR

was totally different. Only 28% experienced such type of effects in their child but when this question was asked in a different manner like

any other symptoms appeared after drug administration it was confirmed that they were actually unaware about the ADRs or there are some misconceptions about it.

Table-2
Parents' Knowledge about the ADR

Items	Percentage	n
Do you know what is the meaning of Side effect / Adverse effect ?	41	82
Has your child ever experienced any side effects?	28	65
Idea about the Side effect/ Adverse effect		
Happen in every person	19	38
Happen only in some people	54	108
Occur only if you take a large dose	16.5	33
Happen in persons with chronic disease only	2	4
Any other	8.5	17
Symptom appeared after taking the medication		
Sedation(sleepy)	81	162
constipation	32	64
vomiting	38	76
diarrhea	7	14
restlessness	-	
Stomatitis	-	
allergy/rashes	11	22
In your opinion, how safe are the medicines that you have used?	80	160
Do you worry about giving your child too much medicine?	35	70

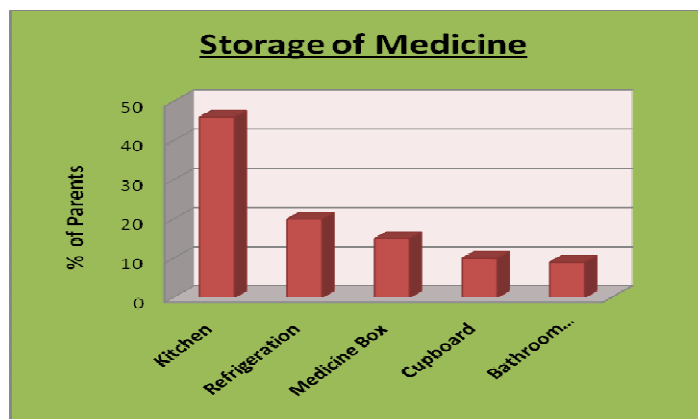
Extent /type of medication practices in the family

Most of the parents said when their child shows the first sign of ailment, which of the following would they prefer-most of them seek help from a doctor or a nurse but 20% will wait and see if they get better on its own. 7 % used the medicine which was available at home only 3% give them the medicine obtained it from over the counter. Only 22 % parents fill free to discuss the medication with their doctor before giving it to child. They think that whatever doctor has said is correct no need of discussion. No body from the study used internet or book for collecting information about the medicines before giving it to the child.

Parents' beliefs, attitude and practices of medications they use for their children.

Nobody agreed for giving their child a higher amount of drug than recommend on the prescription but few of them preferred to give lower amount than recommend with the fear of safety of the drug. Usually all the parents purchase the medicines from the chemists. Sometimes they feel to give the medicine for more than the number of days written in the prescription if symptoms are not relieved. But about the precise amount of the medicine there was lot of confusion. Sometimes the amount was measured with the tea spoon, sometimes with measuring cup and sometimes the drug is directly poured in the oral cavity. They prefer to keep the medicine in the cupboard and are least bothered about the temperature. Some of them said they keep it at the safe place, when it was kept it in inappropriate places like kitchen, bathroom and bedroom etc.

FIGURE 2
Storage sites of the Medicines



According to the 92 % parents medicine was very effective. They will keep it for the next time or if finished they will note down the name of the medicine for future use. Most of them never used to read the instructions on the box or leaflets inserts in the box. Concern about the expiry date was also less. In the open ended question most of the parents mentioned that doctor should spend little more time with them and give them the details about drug use and ADRs in Marathi language.

DISCUSSION

ADR has been recognized as one of the main causes of pediatric morbidity in USA and some European countries⁶. In India no such data is available for the children, even for the adults as well Pharmacovigilance programme is in infancy. Drug safety in pediatric patients is a serious public health concern. According to the study in Germany, the incidence of ADR varies greatly from 0.7%-2.7% among pediatric out patients & from 2.6-18.1 among pediatric inpatients⁷. ADRs in hospitalized children are sometimes noticed and can be treated in time but when the children are treated as outpatient or at the home with the OTC drugs, will go unnoticed. When using OTC medication in children, parents may not be fully aware of indications, doses, contraindications, and medication interactions and it becomes the matter of serious concern⁸.

Polypharmacy is one of the important factor contributing to ADRs, chances of

confusion about instructions and warning get multiplied here⁹. In our study it was observed that many of the mothers were confused about the exact quantity of the drug given to their child from multiple medicines. Another reason many new drugs are released into the market used commonly without the gross evidence of benefit and limited experience on ADRs in this age group increases severity of the problem¹⁰. Natural health products are often regarded as harmless agents; however, untoward effects have been documented with the use of such products as well¹¹. Use of over the counter drugs is rampant with poor knowledge of its indications, uses and adverse drug reactions. A recent study in Sweden estimated that children are likely to receive at least one over-the-counter drug during any given 3-month period and that information relating to paediatric use is lacking with respect to several of these drugs¹².

A parent's / caregiver's understanding about the instructions given by the doctor as well as on the leaflet given with medicine are essential prerequisite in use of the drug in children¹³. Ability to understand medicine information is considered as safety issue. A systematic review revealing that parents' knowledge about the normal temperature in children and the definition of fever is generally poor¹⁴. One more study showed that some parents have inadequate knowledge of medications used for childhood ailments which affects the outcome¹⁵. To make decisions about medication usage and to ensure that they are taken safely and appropriately,

parents must have at least a basic understanding about the risks and benefits of drugs and how to administer them¹⁶.

Purpose of the study was to assess the parents' knowledge about the drugs used for Colds, Cough, fever, diarrhea, minor injuries and stomach aches which are commonly seen in children. Do they have enough information of the drugs they are using? Do they have any ideas about the ADRs and what they will do on the appearance of such reactions? In present study Problem Areas were measuring the dose, confusion if multiple drugs dispensed, adherence to duration & storage of the medicines. We observed that most of parents were unable to recollect names of the drugs given during illness except only about paracetamol (Crocin) and Antihistaminics (wikoryl). If the child sleeps for longer time after taking cough and cold remedies, was attributed to symptom relief. Nobody has bothered about the constipation, nausea and vomiting after consumption of drug. Parents have full faith on the physician but still some of them are worried about the side effects of the drugs. Nobody wanted to increase the dose more than the prescribed but some of them prefer to extend the duration of treatment on their own if the symptoms are not relieved. There is lot of confusion in measuring the medicine like using spoons of different size, measuring cup, use of the cap of the bottle or directly pouring into the mouth particularly for the cough and cold remedies this worsens the situation of ADRs.

In paediatric care, studies have demonstrated that parents with low literacy levels more commonly misunderstand the instructions for medications such as antipyretics and those used for the common cold^{17,18}. Educated women tend to provide better healthcare, hygiene and are more likely to seek help when a child is ill¹⁹. In our study majority of the parents had education below the higher secondary and they were from the low socioeconomic groups. Which was an obstacle to know the instructions on correct dosing and to understand potential adverse drug reactions. The paucity of information available is a major problem to the promotion of rational drug use, as primary health care is

the core of health systems in many developed and developing countries²⁰. Written medication information, as an adjunct to verbal instruction, is an important component of medication education for caregivers²¹. Many parents rely on written information, either on labels or on package inserts. Doctors were found to be the most common source of drug information followed by chemists and advertisements.²² One more problem that has been identified is that this information on medications is often inconsistent, incomplete and difficult for patients to read and understand²³. Better planned educational modification can be made to elevate the knowledge level among the parents. Information about medicines should be available to all medicine users regardless the educational or socioeconomic background. Children have the same right as adults to receive safe and effective drugs, i.e., well-tested drugs, in the correct dose, by an appropriate route of administration, for the right indication, and for the right period of time, together with adequate and correct information and medical surveillance¹¹. Therefore WHO launched a campaign "Making medicine child size" for which Health care providers & mass media will play a pivotal role.

CONCLUSION

This is a unique study on Parents' understanding which through light on Inadequate knowledge, Improper attitude and faulty practices about drug administration in children and Misconceptions about drug use and ADRs. Also explains the future risk of ADRs problem if not taken care of it in time. Reaching the grass root i.e. in the mass population involved in the drug use on large scale for children is essential to reduce risk of the problem. Improvements in the understanding of instructions and warnings can be done considering the low literacy level of women in India. Appropriateness of written medical information in vernacular language can improve parents' perceptions of drug warnings and safe use.

REFERENCES

1. Lazarou J, Pomeranz B.H., Corey P.N. Incidence of Adverse Drug Reactions in Hospitalized Patients. *JAMA*, 1998; 279 (15):1200-1205
2. Bruce Carleton, Anne Smith, Canadian Paediatric Surveillance Program Recognizing and Preventing Adverse Drug Reactions in Children .CPSP resource article published March 2005 Pharmaceutical Outcomes Programme, Children's & Women's Health Centre of British Columbia
3. Heikkinen, T. and Ja' rvinen, A.,. The common cold. *The Lancet*, 2003; 361, 51–59.
4. Kogan, et al., Over-the-counter medication use among US preschool-age children. *Journal of the American Medical Association*, 1994; 272 (13):1025–1030.
5. Lokker N, Sanders L, Perrin EM, Kumar D, Finkle J, Franco V, Choi L, Johnston PE, Rothman RL. Parental misinterpretations of over-the-counter pediatric cough and cold medication labels. *Pediatrics*. 2009; 123(6):1464-71.
6. M. Himmelstein, T. Miron-Shatz, Y. Hanoch & M. Gummerum: Over-the-counter cough and cold medicines for children: A comparison of UK and US parents' parental usage, perception and trust in governmental health organisation, *Health, Risk & Society*, 2011;13(5): 451-468.
7. Hildtraud Knopf & Yong Du. Perceived adverse drug reactions among non-institutionalized children and adolescents in Germany. *British Journal of Clinical Pharmacology*, 2010; 70(3): 409–417.
8. Hughes L, Whittlesea C, Luscombe D. Patients' knowledge and perceptions of the side-effects of OTC medication. *J Clin Pharm Ther*. 2002; 27(4):243-8.
9. Asia N. Rashed , Ian C. K. Wong , Noel Cranswick , Stephen Tomlin , Wolfgang Rascher , Antje Neubert. Risk factors associated with adverse drug reactions in hospitalised children: international multicentre study *Eur J Clin Pharmacol* 2011;011:1183-4
10. Mei-Chuan Chang, Yueh-Chih Chen, Shu-Chuan Chang, Graeme D Smith Knowledge of using acetaminophen syrup and comprehension of written medication instruction among caregivers with febrile children *Journal of Clinical Nursing*, 21, 42–51
11. Elin Kimland & Ulf Bergman & Synnöve Lindemalm & Ylva Böttiger. Drug related problems and off-label drug treatment in children as seen at a drug information centre. *Eur J Pediatr* (2007) 166:527–532
12. Bushby SK, Anderson RJ, Braund R. New Zealand parent's perceptions of the use and safety of over the counter liquid analgesics. *Pharmacy Practice (Internet)* 2010;8(4):238-242.
13. William H. Shrank and Jerry Avorn. Educating Patients About Their Medications: The Potential And Limitations Of Written Drug Information. *Health Affairs*, 2007; 26(3):731-740
14. Anna Karwowska, Cheri Nijssen-Jordan, David Johnson, Dele Davies. Parental and health care provider understanding of childhood fever: a Canadian perspective. *CJEM • JCMU November 2002; 4 (6):394-400.*
15. Andreas Rousounidis , Vassiliki Papaevangelou , Adamos Hadjipanayis , Sotiria Panagakou , Maria Theodoridou , George Syrogiannopoulos, Christos Hadjichristodoulou □ Descriptive Study on Parents' Knowledge, Attitudes and Practices on Antibiotic Use and Misuse in Children with Upper Respiratory Tract Infections in Cyprus. *Int. J. Environ. Res. Public Health* 2011; 8: 3246-3262
16. Abla Albsoul-Younes, Linda Tahaineh, Basima Moumani. Parents' Knowledge, Perception, and Practices of Over-the-counter Medicines Used for Their Children. *Jordan Journal of Pharmaceutical Sciences*, 2011; 4(3):
17. Dawood OT, Ibrahim MIM, Palaian S. Parent's knowledge and management of their children's ailments in Malaysia. *Pharmacy Practice (Internet)* 2010;8(2):96-102.
18. Grace M. Mbagaya, Mark O. Odhiambo, Ruth K. Oniang'o. Mother's health seeking behaviour during child illness in a rural

- western Kenya community African Health Sciences 2005; 5(4): 322-327
19. Davis TC, Wolf MS, Bass PF, Thomason JA, Tilson HH, Neuberger M & Parker RM Literacy and misunderstanding prescription drug labels. *Annals of Internal Medicine* 2006;145, 887–895.
 20. Piero Impicciatore, Imti Choonara, Amanda Clarkson, Davide Provasi, Chiara Pandol@ni & Maurizio Bonati². Incidence of adverse drug reactions in paediatric in/out-patients:a systematic review and meta-analysis of prospective studies. *Br J Clin Pharmacol*, 2001;52: 77-83
 21. Chan G C, Tang S F. Parental knowledge, attitudes and antibiotic use for acute upper respiratory tract infection in children attending a primary healthcare clinic in Malaysia. *Singapore Med J* 2006; 47(4) : 266-270
 22. Dr.Pavan Kumar Kulkarni, Dr.Maseer Khan*, Dr.A.Chandrasekhar. Self medication practices among urban slum dwellers in Southindian City. *Int J Pharm Bio Sci* 2012 July; 3(3):81– 87.
 23. Shrank W, Avorn J, Rolon C, Shekelle P. Effect of content and format of prescription drug labels on readability, understanding, and medication use: a systematic review. *Ann Pharmacother*. 2007 May;41(5):783-801.