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Research Article

ASSESSMENT OF PARENTAL UNDERSTANDING OF PAEDIATRIC MEDICAL PRESCRIPTIONS

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ABSTRACT

Introduction: Medical prescriptions are bound to be misinterpreted by patients and pharmacists if not properly conveyed. Pediatric prescriptions differ from adult prescriptions having wide variation in doses and formulations.There is a need to evaluate the lacunae in the parental understanding of pediatric prescriptions.**Aims and objective:** To evaluate the parental understanding ofpediatric prescription and to evaluate the adequacy of communication with the physician and pharmacist regarding the same.**Material and methods:** 550 parents were enrolled and their literacy level was noted.They were subjected to modify MUSE questionnaire.Physician's prescription was analyzed in terms of ease of understanding by parents. These parents were followed up till the pharmaciesand the pharmacist understanding of prescription was analyzed and their communication with parents regarding drug usage was noted. Finally, ease of usage of drugs by parents was noted. **Results:**MUSE scale was modified to suit pediatric prescription understanding by parents and also additional questions were asked to include complete parental understanding of doctor's prescription. Majority of parents failed to completely understand the written prescription. Though around 80% of pharmacist could understand the prescription, their communication with parents was poor resulting in difficulty for parents to even enquire about medicines from them. Parental overall understanding of prescription increased with their literacy levels. **Conclusion:**Not all prescriptions are completely understood by parents as well as a pharmacist. This can lead to misuse of drugs. Efforts to explain the drug usage are not adequate enough from the doctor or the pharmacist. While communicating literacy levels of parents is not being considered which may further worsen the understanding ability.

Keywords: Pediatric medical prescription,pediatric physicians, pharmacists, parents, communication.

INTRODUCTION

Medical prescription is meant to offer respite to human suffering due to ill health.Central to this is to understand that which is written in the prescription which If not properly conveyed will remain as medical jargon not only for the patient, but also the pharmacist which can result in usage of incorrect drug, inadequate dose and may be associated with potentially harmful medication errors.Unfortunately various problems in understanding, interpreting and communicating have been documented across the health care.[1]Patients often misunderstand the proper dosage of the medication as well as the warnings associated with the medication.Medicines designed for the betterment of patients health can actually

prove detrimental when misused. Therefore the medicine's side effects, dosage and usage must be properly communicated. While most doctors can see the importance of patient's knowledge of prescription when dealing with medicines, most of them hardly make appropriate efforts to communicate the same to them.[1-3]Pharmacists can contribute to positive outcomes by educating and counselling patients to prepare and motivate them to follow their pharmacotherapeutic regimens and monitoring plans.[4]
Physiological factors like age, weight and surface area should be considered. The following age groups should be used for drug use in children: neonate (birth to 1 month), infant (1 month to 2 years), child (2 to 12 years) and adolescent (12-18 years). Errors in drug administration are among the commonest medical errors. Children are particularly at risk for such errors because of the need to calculate doses individually. Doses that are ten times the correct amount (1000% of the correct dose) are occasionally given and can be life-threatening.[5]
Alteration in the amount of drug used or reconstitution of powdered formulations may not only alter the drug response, but also carries the risk of giving rise to drug resistance. As antibiotic resistance is already on the rise, causing a heavy toll on health care in developing countries like India; proper prescription, dosing, dispensing and usage of drugs specifically antibiotics may become an important contribution towards our attempt in reducing drug resistance thus facilitating the achievement of a hurdle free dispensing of health care in our country.
The ability to read and understand prescription label instructions may appear to be a simple task, yet van den Broek& Kremer describesthe various sources of failure in comprehension that are particularly applicable for the abbreviated text on container labels. These include readers' cognitive characteristics, constraints on the reading situation, and the nature of the presented health information.[6]
Pediatric prescription differs from adult prescription as drugs are supposed to be prescribed as per the body weight of child unlike adult prescription where the dosage is uniform for most of them.Thus, it makes pediatric prescription more complex as it demands clarity from the prescription in terms of dosage, formulation, timing, frequency, and duration, as well as clarity from the pharmacists when they dispense drugs to the parents. Thus the assessment of parental knowledge of pediatric prescription is very important in determining the extent of understanding of prescription by them, which acts as a vehicle in implementing technical care.
Evidence shows that although health literacy interventions might help to improve the overall outcome in the patient, it may not eliminate health disparities.[2]
Various scales were designed in the past to assess the patient's understanding of medical prescription as well as the ease with which medications can be used by them. Of all the scales, MUSE (medication use and self-efficacy) scale was found to be more reflective of the patients understanding and use of prescribed drugs, but even this scale did not cover all areas of patient understanding. [7-12]
None such studies were done in India especially on pediatric prescriptions. As there is an increasing need to understand the grey areas in parental understanding of pediatric prescription, this study was devised.
Our study aims to assess the inadequacies in understanding pediatric prescriptions written by pediatric consultants, inability of the pharmacist to interpret the prescribed prescription as well as incapability of the parent to understand the doctor's prescription or to understand the method of usage of drugs in the right manner.
This would help us to understand the cause of misinterpretation of the prescription and also help us devise newer methods of overcoming these problems.

MATERIAL AND METHODS

This study aims at evaluation of adequacy of parental understanding of medical prescription written by pediatric practitioner,assessing the drug dispensing at the level of pharmacist and the parental understanding of the usage of the prescribed drugs by using modified MUSE (medication understanding and use self-efficacy) scale[13]along with additional questions added to it.
Prior permission from the ethics committee of our hospital was taken for the present study. This is a cross sectional study conducted in the out-patient department of Princess EsraHospital, Hyderabad and the pharmacies attached to it. It is a 1000 bedded teaching hospital providing tertiary level health care services to all strata of people.Pediatricoutpatientturn over varies from 150 to 250 patients with 3 to 5 attending pediatric consultants.

A total of 550 participants were enrolled in the study, out of which 500could be followed up at the pharmacy for evaluating drug dispensing.

Parents/guardians who came to the pediatric outpatient department of the Princess Esra Hospital were included irrespective of their literacy or their child's age or sex. Those who came for immunization of their children, those who were referred to other departments for further management and those who were admitted as inpatients from the outpatient department were excluded.

The parents/guardians of the children who came to the out-patient department of the Princess Esra Hospital were enrolled after explaining the study process and taking an informed consent. Parents or guardians were subjected to a preformed questionnaire which included eight MUSE scale questions along with additional questions added to the scale to cover the understanding of the complete prescription details by the parent as well as a pharmacist. Among the six additional questions, four were asked to the patient's representative and the remaining two for the pharmacist.

The original MUSE scale was designed for adult patients and included eight items of which four were associated with taking medication and remaining four were associated with learning about medication. As the scale does not consider assessment ofunderstanding of prescription details by the parent or the pharmacist, we have adequately modified it to suit the parent's response to their kids medication needs and also added four questions to the scale to assess parent's understanding of the details of the medical prescription and two questions to assess the pharmacist's understanding of the same. Thus, our scale included a total of 14 items taken as an extended and modified MUSE scale.

The prescriptions given to parents/guardians by the pediatric consultants were assessed and their details in terms of formulation, dosing, frequency and duration of the use of drugs prescribed were noted in the preformed questionnaire. Parental understanding of the prescription was noted after receiving it from the doctor. The education level of parents varied from illiteracy to graduation. These parents were followed up till the pharmacy. Here the understanding of prescription by the pharmacist was assessed. After the drugs were dispensed to the parents, their understanding of the usage of drugs was noted and the ease with which they can use the prescribed drugs was enquired through the questionnaire. Response to the questionnaire was recorded in terms of yes or no replies.

Statistical analysis: Statistical analysis was done using epi info 7.

Table 1: Components of the questionnaire asked to parents and pharmacist

	Modified Patient medication understanding questionnaire
Questions asked to parent in addition to MUSE scale.	
1	It is easy for me to understand strength of medications from the prescription
2	It is easy for me to understand dose of medications from the prescription
3	It is easy for me to understand frequency of medications from the prescription
4	It is easy for me to understand duration of medications from the prescription
Questions asked to parent from original MUSE scale.	
5	It is easy for me to give medicine to my child on time
6	It is easy for me to ask my pharmacist questions about my child's medicine
7	It is easy for me to understand my pharmacist's Instructions for my child's medicine
8	It is easy for me to understand Instructions on medicine bottles
9	It is easy for me to get all the information I need about my child's medicine
10	It is easy to remember to give all my child all the medicines
11	It is easy for me to set a schedule to give my child's medicines each day
12	It is easy for me to give my child's medicines every day
	Questions asked to pharmacist.
13	It is easy for the pharmacist to interpret overall prescription as lucid.
14	It is easy for the pharmacist to interpret the individual drug details

RESULTS

When the overall response to modifiedMUSE scale was analyzed, the following results were obtained. Of the 4 questions added to assess the parent's understanding of the doctor's prescription,it wasrevealed that most difficult area to understand from the prescription was the strength of medication(only16.36% could understand) and the easiest was to understand the duration of medication from prescription(80% could understand)

When the two questions posed to the pharmacist were assessed, it was revealed that, for 83% of times the overall prescription was lucid to pharmacist and in 76.6% of the total prescriptions it was easy for the pharmacist to clearly interpret the individual drug details.

Analysis of the eight questions of original muse scale, pertaining to learningabout the parent's knowledge of medication revealed thatgetting all the information needed about the medication was the most difficult task with just 39.63% participants giving positive response. Whereas, the participants reported that the easiest parthas been to give the medicine to their child regularly (97.27%) and on time (97.07%). Around 86% of participants believed that it is easy for them to set a schedule to give their child the medicines prescribed and to remember giving all the medicines required. About 68% of the participants reported that understanding the instructions on the container was easy for them.However, only 48.72% found understanding pharmacist's instructions for their medicines easy and only 42.27% found asking questions to a pharmacist about medications easy. (Table 1, Fig 1)

As the modified MUSE scale was analyzed in accordance to the literacy level of parent/guardian, it revealed that as the education level increases from illiteracy to graduation there was a gradual increase in understanding the doctor's prescription and also a gradual increment in attempting to learn about their medication as well as increased ease in taking the medications properly (fig 2). This increase was statistically significant leading to increased ability to complete the medication schedule as per the recommended format as shown in table 2 .There was no statistical significance in the increase in the understanding of strength of medication or ease with which they give their child's medicines on time and each day.

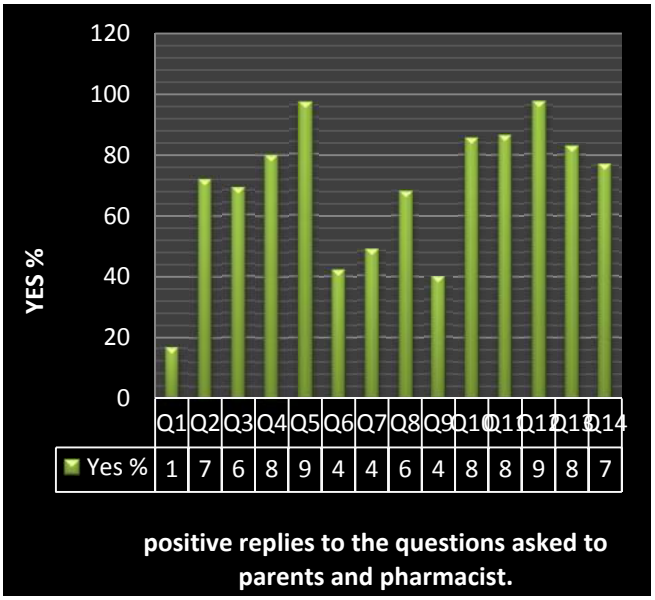

Fig 1: Percentage of positive replies obtained to questions 1 to 14

Table 1: Questions 1to 12 versus the literacy levels of parents {No of yes responses (%)}

Question	Illiterate Total : 52	1 to 6th Total : 54	7-10th Total : 267	Inter Total : 80	Graduate Total: 97	P value
1	7(13.4)	6(11.1)	39(14.6)	15(18.7)	23(23.7)	>0.05
2	23(44.2)	33(61.1)	188(70.4)	65(81.2)	88(90.7)	<0.001
3	24(46.1)	29(53.7)	177(66.3)	64(80.0)	85(87.6)	<0.001
4	33(63.1)	36(66.6)	213(79.7)	69(86.2)	89(91.7)	<0.001
5	50(96.1)	52(96.2)	257(96.2)	78(97.5)	97(100)	>0.05
6	11(21.1)	19(35.1)	130(48.6)	40(50.0)	60(61.8)	<0.001
7	15(28.8)	26(48.1)	119(44.5)	43(53.7)	65(67.0)	<0.001
8	17(32.6)	26(48.1)	180(67.4)	59(73.7)	92(94.8)	<0.001
9	4(07.6)	9(16.6)	98(36.7)	37(46.2)	70(72.1)	<0.001
10	45(86.5)	45(83.3)	227(85.0)	64(80.0)	90(92.7)	<0.001
11	41(78.8)	43(79.6)	233(87.2)	69(86.2)	90(92.7)	<0.05
12	50(96.1)	47(87.1)	265(99.2)	76(95.0)	97(100)	>0.05

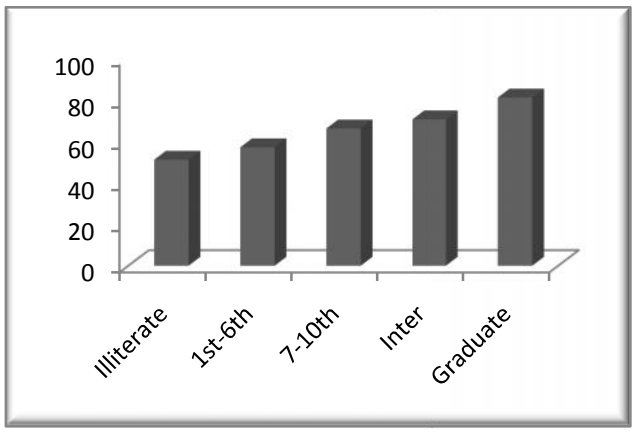

Fig 2: Overall understanding of parents (% of positive replies) as derived from the modified MUSE scale

DISCUSSION

The study reveals that the prescription written by the physician is not completely understood in terms of strength, dose, frequency and duration of the medication. This may be because either it is not properly communicated with the doctor or the pharmacist, illegibly written prescription or parent's literacy level is not adequate enough for them to understand the doctor's instruction either written or verbal.

Though pharmacist understand most of the prescriptions, their interaction with the parents is not adequate enough to make them understand the complete prescription.

Moreover,as the education level increases, their ability to understand the physician's prescription, ability to enquire about the prescriptions from the pharmacist, ability to understand the usage of prescribed drugs increases, leading to increased ability to complete their child's medication as recommended.However, there was almost uniformly decreased understanding of drug strength and the equal ease in giving their child drugs on time and each day for both uneducated and educated parents. (table 2)

Inference from table 2 reveals it is relatively difficult for parents with lower education levels to understand the strength, dose and frequency of medication to be used, it is difficult to interact with pharmacist and also difficult to understand instructions on medicine bottles.

Pediatric formulation, especially antibiotics are unique and different from the adult formulation as most common dosage forms are powdered formulation which is supposed to be reconstituted with water.[14]The dose of antibiotic and other medications are supposed to be prescribed as per the weight of the child. Hence, the dose of syrup formulation/number of drops may vary in amounts significantly from patient to patient, unlike adult prescriptions where fixed dose tablet formulations are prescribed.[15]

Under-dosing, overdosing, abnormal frequency or duration of antibiotics can be the most important contributing factor for developing antibiotic resistance.[16]Illegible handwriting in prescription can be the source for misinterpretation of the drug strength or drug as a whole by the pharmacist and inadequate counseling regarding the drug use by the doctor or the pharmacist may lead to gross errors by the patient in using the drugs.

If patient's literacy is not evaluated, it will be difficult to judge the amount of effort needed to make the patients understand the prescription.

CONCLUSION

Pediatric physician's prescriptions are not being completely understood by parents. Pharmacists are unable to follow all the physicians' prescriptions and are too busy to communicate either with the doctor or the patient for the same. Parents are unable to get all the information needed either from the physician or the pharmacist and this varies with their education levels. No attempt is made to understand the parent's ability to follow what is conveyed through prescription. Though parents are dedicated enough to use the drugs as prescribed, but unfortunately the lacunae in communicating the prescription properly is still strong enough to affect the health care delivery system.

RECOMMENDATIONS

1. Ideally prescription should be typed and checked by the doctors for completeness.
2. In case typing is not possible, care should be taken to ensure that specifically the strength of the antibiotics prescribed is written legibly or there should be an ease of communication between the doctor and the pharmacist dispensing the drugs in case of any discrepancy in understanding the prescription.
3. The patient should be properly counseled based on their literacy level. This can be done by a personspecifically appointed for counseling in case the doctor or the pharmacist is too busy to communicate. Special stress should be made on

dose and frequency of drug intake in counseling parents with lower education levels

4. There should be a system for taking feedback from the parent at the end of consultation as well as at the end of collecting the drugs in order to analyze difficulties faced and device methods to overcome the difficulties.
5. Pharmacist should be instructed to explain the reconstitution of the powdered formulation adequately.
6. It would be ideal to devise a uniform calibrated drug dispensing container for all oral liquid formulations to measure each ml of the drug to be used.

Limitations: Our study could not evaluate the actual usage of drugs by parents.Studies evaluating the outcome with typed prescriptions and a counselor to explain the usage of drugs should be done in order to confirm inadequacies of the current system of the drug prescription and delivery especially in hospitals with large patient turnover in the outpatient departments.

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Conflict of interest: None declared

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