

Assessment of Drug Compliance Using Home Medication Review in Pediatric Population- A Community Based Study

A Ramakrishna Shabaraya¹, Karol Sara Mathew², Jewel Janice Fernandes², Akhila Ullas², Mohammed Adil Ashraf²

¹Associate Professor, Department of Pharmacy Practice, ²Student Pharm D, Srinivas College of Pharmacy, Manglore, Karnataka, India

Corresponding Author: Karol Sara Mathew

ABSTRACT

The safety and efficacy of a treatment mainly depends upon the drug compliance. Drug compliance refers to whether the patient is taking their drugs according to the advice of the physician in the right time and proportion. A failure in compliance can lead to failure of therapy or may also have future complications. The pediatric population is a vulnerable part of the community as they should be treated with utmost care due to their differing pharmacokinetic properties. This study is a community-based prospective study where the information regarding pediatric compliance was obtained through home medication review of each study subjects. The study consisted of 150 pediatric participants who were assessed for their drug compliance. It was found that 52% of the population had low adherence, 30% of the population had medium adherence and 18% of the population were highly adherent. About 82% of the study population was noncompliant to their therapy. In this study, majority of the study population were noncompliant and hence it is necessary to bring awareness among the general public regarding pediatric medication adherence.

Keywords: compliance; home medication review; pediatric medication adherence

INTRODUCTION

The WHO has defined medication adherence as the “degree to which the person's behaviour corresponds with the agreed recommendations from a health care

provider”¹. This study takes into account the pediatric population and is intended to monitor patient's adherence towards their medication. The pediatric population is considered to be a vulnerable group where immense care should be given due to differences in the physiology as they are in a growing stage. The International Conference on Harmonization (ICH) E11 classifications have classified the paediatric population into: Pre-term newborn, Newborn (0–28 days), Infant (>28 days–12 months), Toddler (>12 months–23 months), Pre-school child (2–5 years), School age child (6–11 years) and Adolescents (12–18 years)².

Drug compliance is an important part of a patient's therapy. It is necessary that it is maintained to maximize the outcomes from the therapy that is received. Especially when pediatric population is considered to have altered pharmacokinetics and pharmacodynamics from adults, compliance plays an important role in the therapeutic goals.

Making children to take their medication may sometimes become difficult for their parents/caregivers depending upon the age of the child. Unlike inpatient care where nursing staff will ensure timely delivery of different drugs, it is very difficult in outpatient care where health professionals will be unable to ensure timely delivery of oral drugs³. Today, children take responsibility for their medications at

different ages; children often take responsibility for taking medications at a young age especially when they are suffering from chronic conditions⁴. When the medication adherence is assessed in pediatric subjects below the age of 12 the compliance of the child and compliance of the parents/caregiver should be taken. In pediatric population, their parents/caregiver have a major part in administration of the medication especially because children are not aware about their condition or they don't understand their disease to the fullest⁵. Administering drugs to small children maybe a tiring process for the parents because they might not accept the drug due to its palatability or smell. The data regarding the patient's disease status and therapy was obtained during home medication review (HMR). HMR is a patient-focused process which advocates the optimal and quality use of medication at the patient's home. It involves systematic assessment of the patient's medication in order to identify and meet the medication-related needs as well as to identify and prevent medication errors.

MATERIALS & METHODS

Study site: A prospective observational study was carried out within Dakshina Kannada district, Karnataka.

Study Design: Community-based prospective observational study.

Study period: The study was conducted for 6 months from August 2019 to February 2020.

Study criteria:

Inclusion criteria

- Patients of age 18 years and below
- Patient on medication for any illness (current or chronic)

Exclusion criteria

- Patients of age above 18 years
- Patients who are homeless or do not have a proper place to stay

Sampling method: Various houses in different parts of Dakshina Kannada with pediatric population who meets the required criteria were visited between August 2019

to February 2020. A total of 150 study subjects were included in the study which included more than one subject from the same household who satisfy the selection criteria.

Study method: A specially designed data collection form was used to collect the data from the patients who are eligible for the study. Data collected included demographic details, presenting complaints, medical & medication history, diagnosis, treatment including dose, frequency, formulation, duration and patient progress. All the details were kept confidential.

Data Analysis: The collected data was analysed using Microsoft Excel 2010. The filters were used to separate the different groups of the study population for scrutiny of study

RESULT

The study was carried out in about 150 pediatric patients in the community level acquiring information from the patients or/and from the caregiver/parents, among which 82 were male and 68 were female subjects.

DISEASES THAT HAS BEEN SEEN IN THE SUBJECTS

There are about 36 different diseases or symptoms that have been seen in the pediatric population. The different diseases/symptoms with their respective numbers are as follows: abdominal pain (5), anaemia (4), appendicitis (2), asthma (14), allergy (7), cold (47), cough (59), chicken pox (3), constipation (4), conjunctivitis (1), dengue fever (5), Down's syndrome (2), diarrhea (2), eczema (1), encephalitis (2), ear infection (1), fever (84), gastritis (2), hand foot mouth disease (2), loose knee cap (1), mouth candida (1), malaria (2), measles (1), nephrotic syndrome (1), pneumonia (4), rashes (6), seizures (12), sino-nasal polyposis (1), skin infection (4), thalassemia (2), throat infection (2), tinea infection (7), urticarial (2), UTI (1), vomiting (6), wheezing (4). Among these diseases majority of the pediatric population

suffered from fever, cough and cold and there were also a significant number of asthma and seizure cases. The total number of subjects with chronic disease was 52 (34.6%) and acute disease was 98 (65.3%). When these cases are distinguished based on

gender, it is seen that among male subjects, 33 have chronic diseases while 49 have acute and in case of female subjects 19 are chronic patients while 49 are acute. Figure 3 shows the number of acute and chronic patients of each gender.

Table 1: Chronic conditions in the study population

CHRONIC CONDITIONS	ANAEMIA	ALLERGY	ASTHMA	SEIZURES	LOOSE KNEE CAP	WHEEZING
NUMBER OF CASES	4	7	14	12	1	4

SINONASAL POLYPOSIS	THALASSEMIA	DOWN'S SYNDROME	NEPHROTIC SYNDROME	ECZEMA	URTICARIA	SKIN ALLERGY
1	2	2	1	1	2	4

Table 2: Acute conditions in the study population

ACUTE DISEASES	ABDOMINAL PAIN	APPENDICITIS	CHICKEN POX	COUGH	CONSTIPATION	COLD	FEVER
NUMBER OF CASES	5	2	3	59	4	47	84

GASTRITIS	MOUTH CANDIDA	DENGUE	ENCEPHALITIS	THROAT INFECTION	DIARRHEA	HAND FOOT MOUTH DISEASE	CONJUCTIVITIS
2	1	5	2	4	2	2	1

RASH	PNEUMONIA	MALARIA	UTI	VOMITING	EAR INFECTION	TINEA/ RING WORM
6	4	2	1	6	1	7

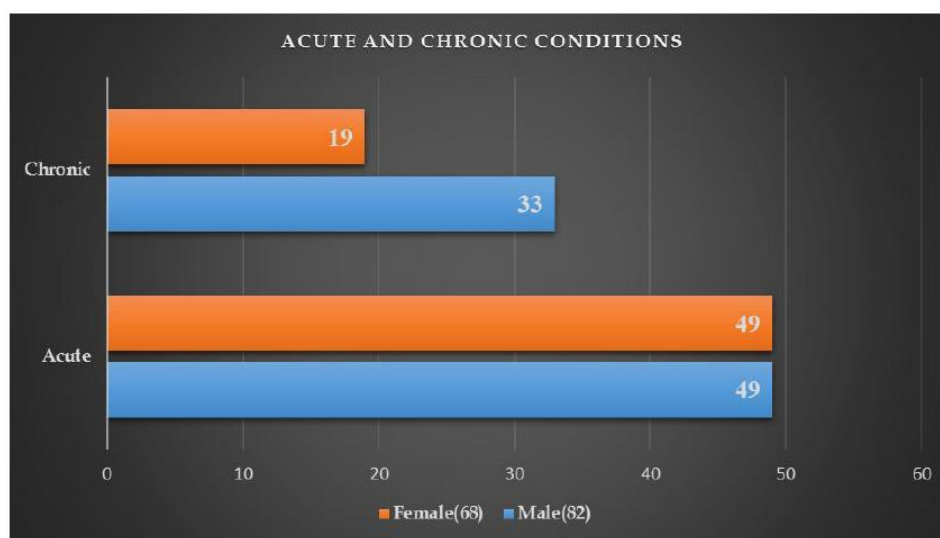


Figure 3: Acute and chronic patients of each gender

ADHERENCE OF THERAPY AMONG PEDIATRIC PATIENTS

Medication adherence of each study subject was recorded using the eight-item Morisky Medication Adherence Scale-8 (MMAS-8) with the information obtained from the caregiver. Morisky Medication Adherence Scale is a validated assessment tool which is used to check the adherence of

patient population. It consists of 8 questions with respective scores and as the score increases adherence increases and the maximum score that can be acquired is 8. It is divided into high adherence (= 8), medium adherence (6<8) and low adherence (<6). It was found that 78 (52%) of the population had low adherence, 45 (30%) of the population had medium adherence and

27 (18%) of the population were highly adherent. Hence, it is seen that more than half of the population has poor adherence. 78 (52%) low adherent patients were categorized according to their age and was

found that 24 (30.76%) of the population were between the age group (1-5 and 11-18 years) and rest 30 (38.46%) was 6-10year age group.

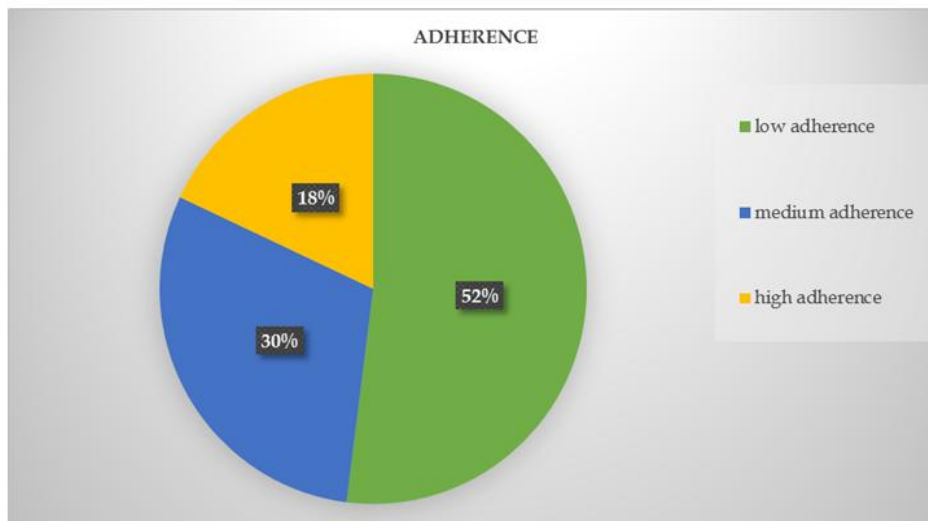


Figure 5: Adherence in pediatric patients

Table 3: Low-adherent study population

AGE (years)	STUDY PARTICIPANTS
1-5	24 (30.76%)
6-10	30 (38.46%)
11-18	24 (30.76%)

DISCUSSION

HMR is a patient focused collaborative teamwork of health care professionals provided in the community setting to enhance the right use of medication and to improve patient understanding. This is useful for the patients at home to improve the outcome of their therapy to bring out best results. This study scrutinizes the home medication review in pediatric patients in various factors such as adherence of the drug therapy, self-medication and storage of drugs among the population and also medications errors that can occur especially dosing and administration errors.

This study was conducted in a population of 150 pediatric subjects who were on medication for any chronic or current illness. It was seen that 52 (34.6%) population had chronic conditions while 98 (65.3%) had acute conditions.

Adherence to the given therapy is necessary for the best therapeutic outcome.

In this study, the adherence of the pediatric patients is assessed using MMAS-8 scale, constituting 8 questions, bearing score allotments and the total score is noted. The score ranges from 0-8 and the maximum score that can be obtained is 8 which indicates high adherence while 6-8 indicates medium adherence and 0 to <6 shows low adherence⁶.

In this study, it was found that 18% of the population was completely adherent to the therapy similar to that seen in a study conducted by Sarah El-Rachidi et al., were only 9.3% of the population were fully adherent while the majority of the population were not adherent to the therapy. There are several factors to paediatric nonadherence such as age, socioeconomic factors, family structure, dosing frequency and taste of the formulation⁷. Many studies have been done in the field of medication adherence in pediatric population but majority of these studies have taken into consideration a particular disease suffered by this population and its adherence. In a study done by Kristin Loiselle et al., where medication adherence of pediatric population with sickle cell disease was seen

and it was found that the adherence rates ranged from 12% to 100% across all medications. When the adherence rates of patients in terms of acute and chronic disease is checked, it was found that population having chronic diseases are more adherent (23%) than those with acute conditions (15%) in terms of a perfect score of 8 in the validated Morisky scale.

CONCLUSION

Following the prescribed pattern of medication can give the desired therapeutic outcome. But, when this pattern is not followed, the expected outcome may not occur or can only last for a short period of time. In this study, majority of the pediatric population were not fully compliant to their therapy. This shows that there is a need to ensure adherence in pediatric population. Especially the parents or the caregivers of pediatric population should be made aware about the importance of taking medications according to the advice of healthcare professional.

FUTURE PROSPECTIVES

- This study can be carried out in a larger population which can give adequate data for statistically significant outcomes.
- This study can be divided into different fields such as taking a specific disease or chronic or acute diseases in pediatric which may give more accurate and sharp results.

REFERENCES

1. Matsui DM. Drug compliance in paediatrics: clinical and research issues. *Pediatric Clinics of North America*. 1997 1;44(1):1-4.
2. Batchelor HK, Marriott JF. Paediatric pharmacokinetics: key considerations. *British Journal of Clinical Pharmacology*. 2015;79(3):395-404.
3. Goudar VR, Matti M, Kulkarni V. Factors affecting compliance of drug therapy in outpatient children. *International Journal of Contemporary Pediatrics*. 2019;6(6): 2369-2373.
4. Trivedi A. Communicating with parents and involving children in medicines optimization. *The Pharmaceutical Journal*. 2017;299:231-4.
5. Gardiner P, Dvorkin L. Promoting medication adherence in children. *American family physician*. 2006 1;74(5):793-8.
6. de Oliveira-Filho AD, Morisky DE, Neves SJF, Costa FA, de Lyra Jr DP. The 8-item Morisky Medication Adherence Scale: validation of a Brazilian-Portuguese version in hypertensive adults. *Research in Social and Administrative Pharmacy*. 2014;10(3):554-61.
7. El-Rachidi S, Larochelle JM, Morgan JA. Pharmacists and pediatric medication adherence: bridging the gap. *Hospital pharmacy*. 2017; 52(2):124-131.

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