

A Community-Based Study Evaluated Drug Compliance among Children by Employing Home Medication Reviews

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Abstract

Objective: Drug compliance is a key factor in determining a treatment's safety and effectiveness. Medication compliance is the question of whether a patient is taking their medications as prescribed by a doctor and in the appropriate quantity and timing. Failure to comply can result in therapy failure or have long-term effects. Due to their unique pharmacokinetic characteristics, the pediatric population is a particularly vulnerable segment of society and needs to be handled with the utmost caution. The information regarding pediatric compliance was gathered for this community-based prospective trial by reviewing each study subject's home medication regimen.

Method: At Department of Pediatric, MGM Medical College and LSK Hospital, Kishanganj from April 2021 to May 2022, 155 children participated in the study and had their drug compliance evaluated.

Results: 52% of the population had low adherence, 31% had medium adherence, and 17% had strong adherence, according to the findings. The study population's noncompliance with therapy was about 81%.

Conclusion: As the majority of the participants in this study were noncompliant, it is essential to raise public awareness about pediatric drug adherence.

Keywords: Compliance, At-Home Medication Monitoring, and Child Medication Adherence.

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Introduction

The WHO has said that the "degree to which the person's behaviour conforms with the approved instructions from a health care practitioner" [1] is the definition of medication adherence. The goal of this study is to track patients' medication adherence while taking into account the

pediatric population. The pediatric population is seen as a vulnerable group that requires special care due to physiologic changes brought on by their stage of development.

The pediatric population has been divided into the following categories by the

International Conference on Harmonization (ICH) E11 classifications: 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].

An essential component of a patient's

therapy is drug compliance [Figure 1]. In order to get the most out of the therapy that is obtained, it must be maintained. Compliance is crucial to achieving treatment goals, especially when it is thought that the pharmacokinetics and pharmacodynamics of the juvenile population differ from those of adults.

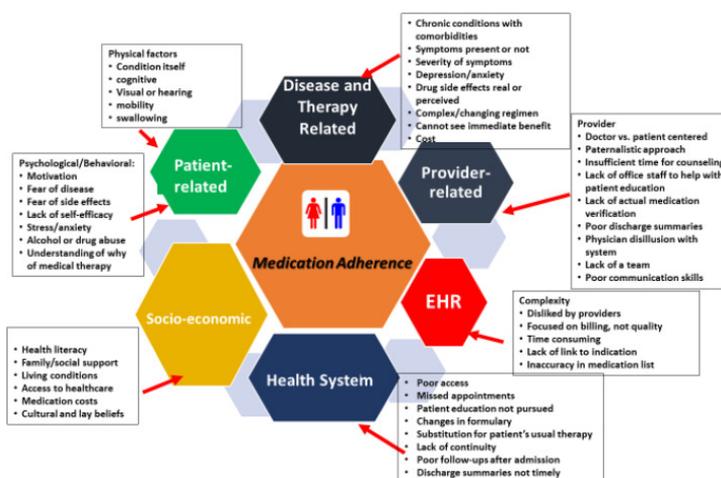


Figure 1: Drug compliance

Depending on the child's age, forcing youngsters to take their medication can occasionally become challenging for parents or caretakers. It is highly challenging in outpatient treatment when health professionals will not be able to assure the timely supply of oral medications, unlike inpatient care where nursing personnel will ensure timely delivery of various drugs [3]. Children now accept responsibility for taking their drugs at a variety of ages, especially when they have chronic conditions [4]. Children frequently take responsibility for taking medications at an early age. When evaluating paediatric subjects under the age of 12, both the child's compliance and the compliance of the parents' or carers' compliance should be considered.

Pediatric patients' parents and carers play a significant role in medicine administration, particularly when youngsters often lack a comprehensive understanding of their illness or are unaware of their condition [5].

It can be difficult for parents to give medications to young children because they might not like the taste or scent of the medicine. During a home medication review (HMR), information on the patient's medical status and treatment was gathered. HMR is a patient-centered process that promotes the best possible administration of medication to patients at home. It entails systematically evaluating the patient's pharmaceutical regimen in order to spot medication-related requirements and address them, as well as to spot and avoid medication errors.

Methods

Study Design: From April 2021 to May 2022, a community-based prospective observational study was conducted Department of Pediatric, MGM Medical College and LSK Hospital, Kishanganj.

Methodology: Between April 2021 and May 2022, a number of homes in various areas of Kishanganj with a pediatric population that matches the necessary requirements were visited. The information

from the patients who qualify for the study was collected using a form that was especially created for data collection. Demographic information, presenting complaints, medical and drug histories, diagnoses, treatments (including dose, frequency, formulation, and duration), and patient progress were all included in the data collected. The specifics were kept private.

Sample Size: The study featured 155 study participants, including multiple people from the same household who met the eligibility requirements.

Inclusion criteria

- patients who are 17 years old or younger
- any patient taking medication for a disease (current or chronic)

Exclusion criteria:

- patients that are older than 17 years
- Patients who lack a proper place to stay or are homeless

Statistical analysis: Microsoft Excel 2010 was used to analyse the data that had been gathered. In order to scrutinize the study, the distinct categories of the study population were divided using filters.

Ethical Consideration: The study was approved by the ethical committee of MGM Medical College and LSK Hospital, Kishanganj after written consent was obtained from the subjects.

Results

The study involved about 155 pediatric patients in the community, of whom 85 were male and 70 were female. Data was collected directly from the children, their carers or both.

Diseases Visible in the Substant

The pediatric population has been associated with around 35 distinct diseases or symptoms [Table 1]. In addition to the majority of children suffering from fever, cough, and colds, there were also a sizable number of cases of asthma and seizures.

Conditions	No. of Patients
Anemia	5
Allergy	8
Asthma	15
Seizures	13
Wheezing	4
Sinonasal Polyposis	2
Thalassemia	3
Down's Syndrome	2
Nephrotic Syndrome	2
Eczema	2
Urticaria	1
Skin Allergy	3
Abdominal Pain	4
Appendicitis	1
Cough	60
Chickenpox	2
Cold	46
Constipation	3
Fever	83
Gastritis	1
Mouth Candida	2
Encephalitis	2

Dengue	4
Throat Infection	3
Diarrhea	2
Conjunctivits	2
Hand-Foot Mouth Disease	5
Rash	3
Pneumonia	3
Malaria	2
Uti	1
Ear Infection	1
Tinea/ Ringworm	4
Vomiting	5

Diseases Visible in the Patients:

The pediatric population has experienced roughly 35 distinct diseases or symptoms [Table 1]. In addition to the majority of children suffering from fever, cough, and colds, there were also a sizable number of cases of asthma and seizures.

51 (34.5%) patients overall had a chronic disease, whereas 104 (65.2%) had an acute disease. When these cases are broken down by gender, it can be seen that 20 of the female individuals have chronic illnesses while 50 of the male subjects have acute ones, and vice versa. The number of acute and chronic patients for each gender is depicted in Figure 2.

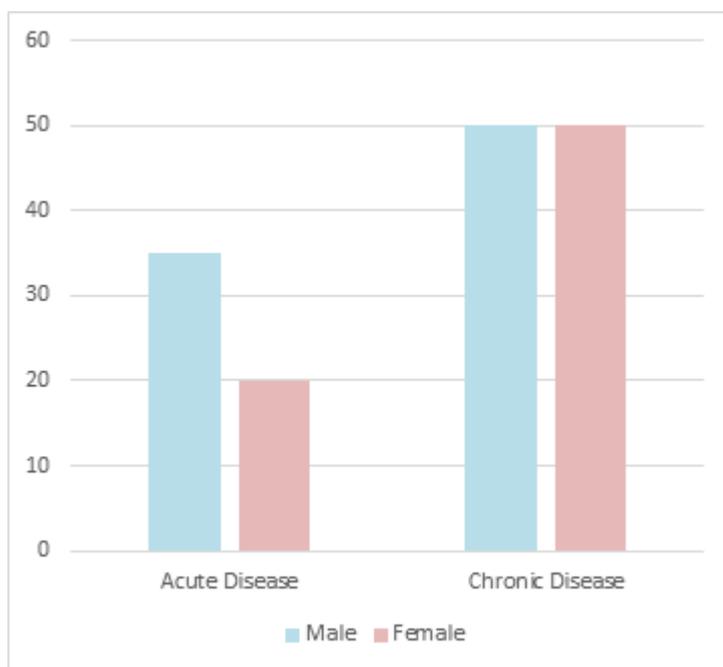


Figure 2: Distribution of diseases based on gender

Adaptiveness to Therapy among Children's Patients

Using information from the carer and the eight-item Morisky Medication Adherence Scale-7 (MMAS-7), medication adherence for each study patient was recorded. A

validated evaluation instrument used to evaluate patient population adherence is the Morisky Medication Adherence Scale. It comprises 7 questions, each of which has a score. As the score rises, so does adherence, and the highest score possible is 7. It is

separated into three categories: high (= 7), medium (= 5-7), and poor (= 7) adherence.

It was discovered that 30 (17%) of the population was highly adherent, 48 (31%) of the population was adherent in the middle, and 77 (52%) of the population was not. As a result, it can be shown that more than half of the population adheres poorly.

It was discovered that 30.75% of the population of 77 (52%) low adherent patients fell into the 1-4 and 10-17 year age range, while the remaining 38.45% were in the 6-11 year age range.

Discussion

HMR is a collaborative workgroup of healthcare professionals that is patient-focused and offered in the community environment to improve patient knowledge and the appropriate administration of medication. This helps patients who are receiving therapy at home to achieve the best results possible. This study examines the home medication review in paediatric patients in terms of a number of variables, including medication adherence, population drug storage, self-medication, and pharmaceutical errors, particularly those involving dose and administration.

A total of 155 children who were taking medication for a chronic or present illness participated in this study. It was discovered that 65.2% of the population had acute disorders, compared to 34.5% who had chronic illnesses.

For the optimum treatment result, adherence to the prescribed therapy is required. The MMAS-7 scale, which consists of 7 questions and assigns scores, is used in this study to measure the adherence of the paediatric patients. The score goes from 0 to 8, with a maximum score of 8 indicating high adherence, 5-7 indicating medium adherence, and 0 to 5 indicating low adherence [6].

Similar to a study by Sarah El-Rachidi et al., where only 9.3% of the population was entirely adherent while the bulk of the

population were not adherent to the therapy, it was discovered in this study that 17% of the population was completely adherent to the therapy. Paediatric nonadherence is influenced by a number of variables, including age, socioeconomic status, family structure, dosage frequency, and formulation flavour [7,8].

Conclusion

The intended therapeutic result can be achieved by taking the drug according to the recommended schedule. The intended result, however, may not occur or may only occur briefly if this pattern is not followed. The majority of the pediatric population in this study did not fully comply with their treatment. This demonstrates the requirement to guarantee adherence in the pediatric population. It is important to emphasize the value of taking medications as prescribed by a healthcare practitioner, especially for parents and other caretakers of children.

References

1. Matsui DM. Drug compliance in pediatrics: clinical and research issues. *Pediatric Clinics of North America*. 1997 Feb 1;44(1):1-4.
2. Batchelor HK, Marriott JF. Paediatric pharmacokinetics: key considerations. *British journal of clinical pharmacology*. 2015 Mar;79(3):395-404.
3. Goudar VR, Matti M, Kulkarni V. Factors affecting compliance of drug therapy in outpatient children.
4. Trivedi A. Communicating with parents and involving children in medicines optimisation. *The pharmaceutical Journal*. 2017;299:231-4.
5. Gardiner P, Dvorkin L. Promoting medication adherence in children. *American family physician*. 2006 Sep 1;74(5):793-8.
6. de Oliveira-Filho AD, Morisky DE, Neves SJ, Costa FA, de Lyra Junior DP. The 8-item Morisky Medication Adherence Scale: validation of a

- Brazilian–Portuguese version in hypertensive adults. *Research in Social and Administrative Pharmacy*. 2014 May 1;10(3):554-61.
7. El-Rachidi S, Larochelle JM, Morgan JA. Pharmacists and pediatric medication adherence: bridging the gap. *Hospital pharmacy*. 2017 Feb; 52(2):124-31.
 8. Abdulhadi Z. T., & Muhsin Z. Y. Footprints to achieve digital smile design and esthetic: Narrative review. *Journal of Medical Research and Health Sciences*, 2023; 6(2): 2430–2440.