ORIGINAL ARTICLE

Patient adherence to prescribed pharmacological treatment at a specialized pediatric institute

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ABSTRACT

Adherence to pharmacological treatment is essential for controlling diseases, preventing complications, and promoting healthy development in childhood, ensuring long-term health and well-being. This study aimed to analyze factors associated with treatment adherence in pediatric patients attending an outpatient clinic at a specialized institute. An observational, cross-sectional study was conducted, surveying 385 parents or guardians using a 13-item questionnaire and the Morisky-Green-Levine test. The findings revealed that treatment adherence was 14.4 % among those with a high school education, 18.4 % among housewives, and 14.1 % among those with incomes below the minimum wage. Although 78.4 % of respondents reported no adverse reactions, only 17.2 % demonstrated treatment adherence. Adherence also varied by gender and age: 16.4 % in women, 19.1 % in the 36–45 age group, 12.8 % in cohabiting couples, and 17.8 % in family households. The study highlights low adherence, particularly among parents or guardians with high school education, housewives, and those managing treatments that last more than 15 days. Female caregivers aged 26 to 45 and cohabiting couples were particularly associated with lower medication adherence. Interventions such as educational programs, mobile reminders, and emotional support are recommended to enhance adherence rates.

Keywords: Treatment Adherence and Compliance; Child; Ambulatory Care Facilities (Source: MeSH)

Adherencia al tratamiento farmacológico recetado en pacientes de un instituto especializado pediátrico

RESUMEN

La adherencia al tratamiento farmacológico es crucial para controlar enfermedades, prevenir complicaciones y promover un desarrollo saludable en la infancia garantizando una mejora en la salud y bienestar a largo plazo. El objetivo fue analizar los factores relacionados a la adherencia al tratamiento en pacientes pediátricos atendidos por consultorio externo en un instituto especializado. Se realizó un estudio observacional y transversal en el que se encuestó a 385 padres o apoderados utilizando un cuestionario de 13 preguntas y el test de Morisky-Green-Levine. Los resultados indicaron que la adherencia al tratamiento fue del 14,4 % en quienes tenían educación secundaria, 18,4 % en amas de casa y 14,1 % en aquellos con ingresos menores al sueldo mínimo. A pesar de que el 78,4 % de los encuestados no reportó reacciones adversas, solo el 17,2 % mostró adherencia al tratamiento. Esta también varió según el género y la edad, con un 16,4 % en mujeres, 19,1 % en el grupo de edad de 36 a 45 años, 12,8 % en parejas convivientes y 17,8 % en viviendas familiares. El estudio identifica problemas relacionadas con la baja adherencia al tratamiento, especialmente entre padres o apoderados de menores con educación secundaria, amas de casa y aquellos responsables de tratamientos que superan los 15 días. Se observó que las mujeres cuidadoras de 26 a 45 años; convivientes, presentaron una adherencia baja en la administración de medicamentos. Se sugieren intervenciones como programas educativos, recordatorios a través de dispositivos móviles y apoyo emocional para mejorar la adherencia.

Palabras clave: Cumplimiento y Adherencia al Tratamiento; Niño; Instituciones de Atención Ambulatoria (Fuente: DeCS)

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INTRODUCTION

In the clinical management of pediatric patients, adherence to pharmacological treatment is an essential component of therapeutic success. The World Health Organization (WHO) defines therapeutic adherence as "the extent to which a person's behavior (taking medication, following a diet, and/or executing lifestyle changes) corresponds with agreed recommendations from a healthcare provider" (1). Despite this clear definition, adherence remains a global challenge, negatively affecting both the effectiveness of treatment and the costs associated with healthcare management (2).

Low adherence to prescribed treatments not only reduces the expected benefits of medications but is also the leading cause of therapeutic failure, particularly among patients with chronic diseases. This can lead to disease exacerbations, misinterpretation of laboratory results, and, consequently, a deterioration in the quality of life of patients and their families (3,4). Chronic diseases in children, such as asthma and diabetes, require continuous and accurate treatment management, where lack of adherence can result in serious complications and recurrent hospitalizations (5).

Studies have shown that approximately 50% of patients with chronic conditions in developed countries do not fully follow their treatment regimens. In contrast, in developing countries, these figures are considerably higher (6). The disparity in adherence rates between developed and developing countries can be attributed to several factors, including differences in access to healthcare, health education, and socioeconomic support (7).

In Peru, studies have found that between 34% and 43% of patients attending public hospitals have a low level of health literacy, which can significantly affect their ability to follow prescribed treatment instructions (8). Other factors, such as the patient's age, educational level, and affiliation with Comprehensive Health Insurance (SIS), also influence adherence.

Limited understanding of medications, dosing errors, or the purchase of incorrect medications are some of the consequences of low health literacy (9).

The doctor-patient relationship, particularly the quality of communication, is a crucial determinant of adherence. Trust and clear communication foster a better understanding of treatment, thereby enhancing the likelihood that patients and their caregivers will properly follow medical recommendations (10). Healthcare professionals should dedicate sufficient time to explain treatment details and address questions, ensuring that patients feel comfortable and confident in their therapeutic plan (11).

Given the importance of adherence to pharmacological treatment and the challenges identified both globally and locally, this study aims to evaluate adherence to prescribed pharmacological treatment among pediatric patients treated at the outpatient clinic of the Instituto Nacional de Salud del Niño - San Borja between November 2021 and April 2022. The main objective is to identify factors that influence adherence and to develop targeted interventions to improve treatment effectiveness.

The study seeks not only better to understand the barriers to adherence in this specific context but also to contribute to the continuous improvement of the quality of life of pediatric patients and their families. The findings of this research could be crucial for shaping more effective health policies and designing educational programs that raise awareness about the importance of therapeutic adherence, thereby mitigating the risks associated with inadequate follow-through on prescribed treatments.

METHODS

Study design

This study employed a descriptive, observational, cross-sectional design.

Population and sample

A sample size calculation for a proportion was performed (assuming a 50% rate of good treatment adherence), and convenience sampling was used based on the researchers' data collection availability. The final sample consisted of 385 parents or guardians of minors treated at the outpatient clinic between November 2021 and April 2022. Only parents or guardians of children treated at the Instituto Nacional de Salud del Niño - San Borja (INSN-SB) who signed the informed consent form were included. Parents or guardians with cognitive impairments that would hinder understanding or completion of the survey were excluded.

Variables of interest

Adherence to the patient's pharmacological treatment was assessed by considering socioeconomic factors, treatment-related factors, sociodemographic factors, and medication compliance. To this end, the Morisky-Green-Levine test was used as the evaluation criterion.

Procedures

Prior to data collection, an informed consent form was provided to the parents or guardians, and assent was obtained from the minors. Patients were recruited in the facility's Central Pharmacy service on the day of their appointment after receiving the prescribed pharmacological treatment. The survey was conducted through the pharmacy window during medical consultation hours, from 7 a.m. to 7 p.m.

The data collection instrument was a questionnaire designed specifically for the study, consisting of 13 questions distributed across four dimensions: socioeconomic factor, treatment-related factor, sociodemographic factor, and medication compliance using the Morisky-Green-Levine test (12). The Morisky-Green-Levine test is a questionnaire used to assess treatment adherence and consists of four dichotomous-response questions. It is widely used in clinical research as it provides information about possible causes of nonadherence and is characterized by its low cost. For this study, the

questions were adapted to fit the research objective and were validated by expert judgment for use. The study was approved by the Institutional Research Ethics Committee of the INSN-SB prior to implementation. Patient anonymity and confidentiality of the collected data were protected.

Statistical analysis

After data collection, the information was entered into a database using SPSS v25 (IBM Statistical Package for the Social Sciences, Chicago, USA). Descriptive statistical analysis was performed using absolute and relative frequency distribution tables according to the variables and study objectives.

RESULTS

Adherence to pharmacological treatment in pediatric patients, considering socioeconomic factors, in a population of 385 respondents, is shown in Table 1. It indicates that 68.3% of participants had completed secondary education, of whom only 14.4% were adherent to their pharmacological treatment. Regarding the occupational group, 59.2% were housewives, and of these, 18.4% demonstrated adherence. In addition, 62.6% of the population reported incomes below the minimum wage, with an adherence rate of 14.1%.

Table 1. Socioeconomic characteristics of parents by children's adherence to treatment

	Total		Adherence		Non-adherence	
	n = 385	%	n = 66	%	n = 319	%
Educational level						
Illiterate	3	0.8	3	100.0	0	0.0
Primary	40	10.4	10	25.0	30	75.0
Secondary	263	68.3	38	14.4	225	85.6
Higher	79	20.5	15	19.0	64	81.0
Occupation						
Employed	101	26.2	17	16.8	84	83.2
Unemployed	56	14,5	7	12.5	49	87.5
Homemaker	228	59.2	42	18..4	186	81.6
Monthly income						
Above minimum wage	144	37.4	32	22.2	112	77.8
Below minimum wage	241	62.6	34	14.1	207	85.9

Concerning treatment-related factors in the same population (Table 2), 78.4% of respondents reported no adverse reactions, among whom 17.2% adhered to treatment. Furthermore, 85.7% of the population underwent treatment lasting more than 15 days, with a treatment adherence rate of 17%.

Table 3 shows adherence to pharmacological treatment in pediatric patients according to the sociodemographic characteristics of their caregivers. It reveals that 84.2% of caregivers were female, with a treatment adherence rate of 16.4%. The age group of caregivers between 36 and 45 years represented 44.9% of the total sample, with 19.1% adherence. Moreover, caregivers in a "cohabiting" relationship made up 50.9% of the sample, with an adherence rate of 12.8%. Lastly, 48.1% of the population lived in family-owned housing, of whom 17.8% demonstrated adherence.

Table 2. Treatment characteristics by children's adherence to treatment

	Total		Adherencia		No adherencia	
	n = 385	%	n = 66	%	n = 319	%
Adverse reaction						
Yes	83	21.6	14	16.9	69	83.1
No	302	78.4	52	17.2	250	82.8
Treatment duration						
More than 15 days	330	85.7	56	17.0	274	83.0
Less than 15 days	55	14.3	10	18.2	45	81.8

Table 3. Sociodemographic characteristics of parents by children's adherence to treatment

	Total		Adherence		Non-adherence	
	n = 385	%	n = 66	%	n = 319	%
Guardian's sex						
Male	61	15.8	13	19.7	48	15.1
Female	324	84.2	53	80.3	271	85.0
Guardian's age (years)						
18 to 25	38	9.9	7	10.6	31	9.7
26 to 35	150	39.0	24	36.4	126	39.5
36 to 45	173	44.9	33	50.0	140	43.9
Over 45	24	6.2	2	3.0	22	6.9
Marital status						
Married	63	16.4	25	37.9	38	11.9
Single	103	26.8	12	18.2	91	28.5
Widowed	4	1.0	2	3.0	2	0.6
Divorced	19	4.9	2	3.0	17	5.3
Cohabitant	196	50.9	25	37.9	171	53.6
Type of housing						
Owned	56	14.6	11	16.7	45	14.1
Rented	144	37.4	22	33.3	22	6.9

Finally, Table 4 presents adherence to pharmacological treatment in pediatric patients based on the Morisky-Green-Levine test. It shows that 51.2% of caregivers reported not forgetting to administer their child's medication, with 33.5% of them adhering to treatment. Additionally, 44.4% stated they administered medication at the scheduled times, with a 38.6% adherence rate. A total of 48.6% indicated they did not stop giving the medication, with 35.3% adherence. Lastly, 44.9% reported not interrupting the administration of medication, with 38.2% adherence to treatment.

Table 4. Parental practices in treatment administration by children's adherence

Question	Total	
	n = 385	%
Do you ever forget to give your child the medication?		
No	197	51.2
Yes	188	48.8
Do you give your child the medication at the scheduled time?		
No	214	55.6
Yes	171	44.4
When your child feels well, do you ever stop giving the medication?		
No	187	48.6
Yes	198	51.4
If your child ever has an adverse reaction to the medication, do you stop giving it?		
No	173	44.9
Yes	212	55.1

DISCUSSION

This research presents the findings obtained and includes a comparative analysis with previous studies to provide greater context. The results of this study reveal a low rate of treatment adherence, with only 17.4% of the total population showing adherence. Pharmacological treatment adherence is defined as the continuous use of medications or therapies as prescribed by healthcare professionals. Among the various methods used to measure adherence, the Morisky-Green-Levine test is one of the most widely applied due to its reliability in identifying potential causes of nonadherence and its low cost (12).

The adherence levels reported here are lower than those found by Munares and Gómez (13), who reported an adherence rate of 24.4%. These findings also contrast with those of Mojica (14), who reported a treatment adherence rate of 34.9%. Our results indicate that having only secondary education is associated with lower adherence within the socioeconomic dimension, at 14.4%. This finding is consistent with Espinoza (15), who reported a rate of 6.35% for the same group. In the sociodemographic dimension, being in a cohabiting relationship was associated with low adherence (12.8%), similar to the 15.8% reported by Espinoza. These findings help identify low educational levels and marital status (specifically cohabitation) as factors associated with poor treatment adherence. This predisposition is further confirmed by the study conducted by Marcacuzo et al. (16), which aimed to determine the factors associated with adherence to micronutrient supplementation in children under 3 years of age. They found that 34.6% of mothers were nonadherent to treatment. Our study also included a high proportion of female respondents (84.2%), in contrast with the study by Álvarez et al. (17), conducted in Spain, where 51.1% of respondents were male.

The Morisky-Green-Levine test revealed that 55.6% of pediatric patients did not adhere to their medication schedules. This finding is consistent with García (18), who identified forgetfulness as a significant factor in nonadherence. The limited number of studies and systematic reviews on adherence among pediatric patients in Peru may reflect a predominant focus on adult populations in existing research.

This study identifies several areas of concern related to low adherence to pharmacological treatment in pediatric patients: caregivers with only secondary education, those who are housewives, and treatments lasting more than 15 days. Additionally, female caregivers aged 26 to 45 years, particularly those in cohabiting relationships, exhibited low adherence to administering medications to their children. These findings highlight the need for targeted interventions, such as education and guidance on medication use, mobile phone reminder systems, and emotional support for caregivers. It is also recommended to provide follow-up and personalized treatment adjustments to reduce nonadherence and improve health outcomes in pediatric patients.

Author contributions

Conceptualization: RAAA; data collection, management, and curation: RAAA, ECH; original draft writing: RAAA, ECH; review and editing of the final version: RAAA, ECH.

Conflicts of interest

The authors declare no conflicts of interest.

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Ethical considerations

The researchers committed to upholding and protecting the anonymity and confidentiality of the participants' data throughout the survey process. Additionally, the study was approved by the Institutional Research Ethics Committee of the Instituto Nacional de Salud del Niño San Borja (CIEI-INSNSB) (020-2022; PI – 635). Informed consent was obtained from each parent or legal guardian, and informed assent was also requested from the minors when applicable.

REFERENCES

1. Ortega Cerda JJ, Sánchez Herrera D, Rodríguez Miranda ÓA, Ortega Legaspi JM. Therapeutic adherence: a healthcare problem. Acta Med Grupo Angeles. 2018;16(3):226-32. Available from: https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S1870-72032018000300226
2. Diaz Santiago H, Marcial Cruz D, Galicia-Rodríguez L, Villarreal-Ríos E, Julián López C, Elizarrarás-Rivas J, et al. Factors associated with adherence to pharmacological treatment in patients with diabetes without arterial hypertension. Horiz Med Lima. 2023;23(4). doi: 10.24265/horizmed.2023.v23n4.01
3. Gagliardino JJ. People with diabetes: treatment adherence, quality of life and education. Rev Soc Argent Diabetes. 2019;53(3):85-6. doi: 10.47196/diab.v53i3.157
4. Casares-Cid S, Goncalves-Vázquez PN, Alonso-González A, Remigio-Lorenzo MJ, Vázquez-Rivera J, Martínez-Ques ÁA, et al. Relationship between quality of life, treatment adherence and patient knowledge level in hemodialysis. Enferm Nefrol. 2022;25(2):140-8. doi: 10.37551/52254-28842022015
5. Peiré García MA. Importance of clinical pharmacology in pediatrics. An Pediatr (Barc). 2010;72(2):99-102. doi: 10.1016/j.anpedi.2009.11.011
6. World Health Organization. Adherence to long-term therapies: evidence for action [Internet]. Geneva: WHO; 2004 [cited 2024 Jan 5]. Available from: https://www3.paho.org/hq/dmdocuments/2012/WHO-Adherence-Long-Term-Therapies-Spa-2003.pdf
7. Pagès-Puigdemont N, Valverde-Merino MI. Therapeutic adherence: modifying factors and improvement strategies. Ars Pharm. 2018;59(4):251-8. doi: 10.30827/ars.v59i4.7357
8. Rosas-Chavez G, Romero-Visurraga CA, Ramirez-Guardia E, Málaga G. Health literacy level and treatment adherence in patients with arterial hypertension in a national hospital in Lima, Peru. Rev Peru Med Exp Salud Publica. 2019;36(2):214-21. doi: 10.17843/rpmesp.2019.362.4279
9. Pinargote-Chancay RR. Factors influencing treatment adherence in tuberculosis patients: integrative review. Rev Arbitr Interdiscip Cienc Salud Salud Vida. 2023;7(14):80-102. doi: 10.35381/s.v.v7i14.2567
10. Forguione-Pérez VP. Doctor-patient communication: beyond a consultation, an educational process. Med UIS. 2015;28(1):7-13. Available from: https://revistas.uis.edu.co/index.php/revistamedicasuis/article/view/4924
11. Vega-Hurtado C. Importance of communication strategies between physician and patient. Rev Med Inst Mex Seguro Soc. 2020;58(2):197-201. doi: 10.24875/RMIMSS.M20000017

12. Morisky DE, Green LW, Levine DM. Concurrent and predictive validity of a self-reported measure of medication adherence. Med Care. 1986;24(1):67-74. doi: 10.1097/00005650-198601000-00007
13. Munares-García O, Gómez-Guizado G. Adherence to multimicronutrients and associated factors in children aged 6 to 35 months from sentinel sites, Ministry of Health, Peru. Rev Bras Epidemiol. 2016;19:539-53. doi: 10.1590/1980-5497201600030006
14. Mojica A. Adherence to antiretroviral treatment in children and adolescents aged 0 to 15 years with HIV/AIDS at the Manuel de Jesús Rivera Children's Hospital, Nicaragua, January to December 2019 [Internet]. Managua: Universidad Nacional Autónoma de Nicaragua Managua; 2020 [cited 2024 Jan 5]. Available from: https://repositorio.unan.edu.ni/14511/1/14511.pdf
15. Espinoza R. Adherence to prescribed pharmacological treatment in pediatric outpatients, Hospital San Bartolomé - MINSA, Lima 2017 [Internet]. Lima: Universidad Nacional Mayor de San Marcos; 2017 [cited 2024 Jan 5]. Available from: https://cybertesis.unmsm.edu.pe/bitstream/handle/20.500.12672/7125/Espin
16. Marcacuzo A, Gonzáles EOV, Figueroa ZM. Factors associated with adherence to micronutrient supplementation in children under 3 years of age from SOS Villages, San Juan de Lurigancho, 2017. Rev Colomb Salud Libre. 2018;13(1). doi: 10.18041/1900-7841/rcslibre.2017v12n1.4980
17. Álvarez Casaño M, Alonso Montejo MM, Leiva Gea I, Jiménez Hinojosa JM, Santos Mata MÁ, Macías F, et al. Quality of life and treatment adherence in patients aged 2 to 16 years with type 1 diabetes mellitus in Andalusia. An Pediatr (Barc). 2021;94(2):75-81. doi: 10.1016/j.anpedi.2020.03.016
18. García Valle S. Risk factors for nonadherence to treatment in elderly patients from a rural community. Rev OFIL ILAPHAR. 2020;30(2):115-20. doi: s1131-94292020000200010