FACTORS ASSOCIATED WITH POOR ADHERENCE TO HAART IN PATIENTS WITH HIV DURING THE COVID-19 PANDEMIC

FACTORES ASOCIADOS A MALA ADHERENCIA AL TARGA EN PACIENTES CON VIH DURANTE LA PANDEMIA POR LA COVID-19

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ABSTRACT

Introduction: In the COVID-19 pandemic, the fear of contagion and the risk of poor evolution were conditions that circumscribed HIV-infected patients, potentially influencing adherence to HAART (A-HAART). **Objective:** To determine the factors associated with poor adherence to HAART (PA-TARGA) in patients with HIV during the COVID-19 pandemic in a hospital in northern Peru during April-October 2021. **Methods:** A study was developed cross-sectional analytical study in 162 patients with a confirmed diagnosis of HIV infection on HAART. To establish A-HAART, the Morisky-Green-Levine Test was used. The association between sociodemographic, personal/family factors of COVID-19, health, and PA-HAART was evaluated using the Pearson Chi-square test, considering statistical significance for a p value < 0.05. The risk statistic was the Odds ratio (OR) > 1. **Results:** The prevalence of PA-HAART was 32%, the mean age 45.8±8.3 and 44.6±7.3 years (with poor and good adherence to HAART), predominantly male. Factors associated with PA-HAART were living alone (p=0,036, OR:3,1), personal history of COVID-19 (p=0,027, OR: 2,42), history of a close relative with COVID-19 (p =0,038, OR 3,42), depression (p=0,036, OR: 2,18) and comorbidity (p=0,027, OR: 2,21). **Conclusion:** In patients with HIV, living alone, a personal history of COVID-19, a history of a close relative with COVID-19, depression and presenting comorbidity are factors associated with PA-HAART.

Keywords: Associated factor; Poor adherence; HAART; HIV. (Source: MESH-NLM)

RESUMEN

Introducción: En la pandemia por la COVID-19, el temor al contagio y el riesgo de una mala evolución, fueron condiciones que circunscribieron a los pacientes infectados por el VIH, lo que influyó potencialmente en la adherencia al TARGA (A-TARGA). **Objetivo:** Determinar los factores asociados a la mala adherencia al TARGA (MA-TARGA) en pacientes con VIH durante la pandemia por la COVID-19 en un hospital del norte del Perú durante abril-octubre del año 2021. **Métodos:** Se desarrolló una investigación analítica transversal en 162 pacientes con diagnóstico confirmado de infección por VIH en TARGA. Para establecer la A-TARGA, se usó el Test de Morisky-Green-Levine. Se evaluó la asociación entre factores sociodemográficos, personales/familiares de COVID-19, de salud y la MA-TARGA mediante la prueba de Chi Cuadrado de Pearson y se consideró significancia estadística para un valor p < 0,05. El estadígrafo de riesgo fue el Odds ratio (OR) > 1. **Resultados:** La prevalencia de MA-TARGA fue del 32 %, la media de edad 45,8±8,3 y 44,6±7,3 años (con mala y buena adherencia al TARGA); predominó el sexo masculino. Fueron factores asociados a MA-TARGA: Vivir solo (p=0,036, OR:3,1), antecedente personal de COVID-19 (p=0,027, OR: 2,42), antecedente de familiar cercano con COVID-19 (p=0,038, OR 3,42), depresión (p=0,036, OR: 2,18) y comorbilidad (p=0,027, OR: 2,21). **Conclusión:** En pacientes con VIH, vivir solo, antecedente personal de COVID-19, antecedente de familiar cercano con COVID-19, depresión y presentar comorbilidad, son factores asociados a MA-TARGA.

Palabras clave: Factor asociado; Mala adherencia; TARGA; VIH. (Fuente: DeCS- BIREME)

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INTRODUCTION

In March 2020, the World Health Organization (WHO) declared the 2019 coronavirus disease (COVID-19) a pandemic [1], which caused repercussions and concern in the general population [2]. Since the beginning of the pandemic until the present day, there have been 676,609,955 confirmed cases of COVID-19 worldwide, with a total of 6,881,955 deaths attributed to this disease [3]. In Peru, the total number of patients diagnosed with COVID-19 to date is 1,346,232, with a cumulative total of 219,663 deaths and a fatality rate of 4.89% [4].

People living with HIV (PLHIV) are at risk of contracting COVID-19 and exhibit similar progression patterns compared to HIV-negative individuals. It has become evident that multiple comorbidities and older age in PLHIV are associated with severe morbidity and death from COVID-19 [5,6]. It is essential to address comorbidities in PLHIV, ensure the continuity of their highly active antiretroviral therapy (HAART), and consider them a vulnerable population [7].

Within the pandemic scenario, the fear of becoming infected and having a poor outcome persists among these patients, especially in light of potential complications. This situation likely influences good adherence to HAART [8-10]. Since HIV infection has become a chronic disease, HAART is now used long-term and initiated early [11]. Treatment response is conditioned by numerous interdependent factors, including non-compliance, which can lead to therapeutic regimen failure [12].

The health sector crisis caused by COVID-19 and the measures imposed to control the pandemic can pose a significant challenge for PLHIV, especially in low- and middle-income countries like Peru [7]. While adherence is crucial for long-term treatment efficacy, it is a dynamic factor and, therefore, difficult to assess. The interaction between adherence and response to HAART requires communication among the entire multidisciplinary care team [13-18]. Reports on good adherence to HAART vary depending on the health context of each nation and the influence of the COVID-19 pandemic. Countries such as India [17], Ethiopia [19], and Brazil [20] have reported adherence rates of 77%, 81.5%, and 88.7%, respectively. However, in pre-pandemic periods, countries like Cuba already

had low HAART adherence rates (70.5%), demonstrating that this topic was already being addressed inefficiently [21]. In a Peruvian study conducted during the current pandemic, Barrera-Espinoza RW et al. [22]. found that 82.9% of patients with HIV showed poor adherence to HAART.

The COVID-19 pandemic overwhelmed healthcare systems, especially public services, where routine care was restricted, and progressive panic spread. Day by day, hospitals faced increasing pressure to care for SARS-CoV-2-infected patients. However, special attention populations, such as people living with HIV, faced the risk of contracting SARS-CoV-2 when seeking hospital care and, at the same time, the risk of interrupting continuous care in HAART programs due to various implemented restrictions [15-20,22]. In this context, the present study aimed to investigate the factors associated with poor HAART adherence in patients living with HIV, as therapeutic efficacy depends on adequate compliance.

METHODS

Study Design

During the period from April to October 2021, a cross-sectional analytical study was conducted on 162 HIV-infected patients receiving HAART at the Hospital Regional Docente de Trujillo, in the La Libertad region of Peru.

Selection Criteria

The study included individuals of both sexes aged ≥ 18 years who had previously received care in the mental health area (psychiatry and/or psychology) and who provided their consent by phone for participation. Patients in the terminal phase of illness, bedridden, with severe mental disorders (e.g., major depressive disorder, dementia, schizophrenia), or those who decided to withdraw or did not complete the required data were excluded.

Procedures

The informed consent form was read to the participants over the phone, explicitly detailing its content, with emphasis on its recording. Their approval to participate was duly recorded.

A data collection instrument was structured, consisting of two sections: one that gathered sociodemographic data (age, sex, marital status, education level, residence, living alone) and clinical history (disease duration, anxiety, depression, comorbidity, personal history of COVID-19, family history of COVID-19), and another that included the Morisky-Green-Levine Test.

Statistical Analysis

SPSS 28.0 statistical software was used for data processing and information generation. Absolute and relative frequencies were used, along with measures of central tendency (mean and median) and measures of dispersion (standard deviation). Pearson's Chi-square test was used to assess the independence between associated factors and poor adherence to HAART, with statistical significance considered for p-values < 0.05 and risk for OR > 1.

Ethical Aspects

The study fully complied with Peru's General Health Law [23] and the Declaration of Helsinki [24,25], ensuring that participants' rights and interests were never compromised. Respect for all patients and their individual rights—such as information integrity, confidentiality, anonymity, and respect for their decisions—was promoted and guaranteed, as evidenced by the informed consent process. The content of medical records was neither altered nor falsified. Additionally, the study was approved by the Universidad Privada Antenor Orrego (Bioethics Committee Resolution No. 0017-2023-UPAO) and the Hospital Regional Docente de Trujillo (Authorization Certificate from the Office of Support for Teaching and Research).

RESULTS

Sociodemographic factors

The adherence to HAART in HIV patients was 68%. For patients with poor HAART adherence (PA-HAART) and good HAART adherence (A-HAART), the average age was 45.8 ± 8.3 and 44.6 ± 7.3 years, respectively. Regarding the duration of the disease, it was 7.2 ± 3.5 years and 6.8 ± 3.3 years, respectively. In both groups, males predominated, and secondary education was the most frequent educational level. The majority of participants were single, lived in urban areas, and few lived alone. Only the condition of living alone was associated with poor adherence to HAART (p=0.036, OR: 3.1, 95% CI: 1.5-6.3).

Table 1. Sociodemographic factors associated with poor adherence to HAART in HIV patients during the COVID-19 pandemic.

Sociodemographic factors	Poor adherence n 52 / % 32%	Good adherence n 110 / % 68%	OR 95% CI	p-value
Age	45.8 ± 8.3	44.6 ± 7.3	NA	0.15
Duration of illness	7.2 ± 3.5	6.8 ± 3.3	NA	0.33
Sex				
Male	35 (67%)	69 (63%)	1.22	0.68
Female	17 (33%)	41 (37%)	(0.6-2.3)	
Education level				
No formal education	6 (12%)	10 (9%)	1.23	0.66
Primary	11 (21%)	21 (19%)	(0.5-1.9)	
Secondary	22 (42%)	46 (42%)		
Higher	13 (25%)	33 (30%)		

Marital status				
Single	34 (65%)	62 (56%)	1.46	0.56
Cohabiting	14 (27%)	38 (35%)	(0.7-2.2)	
Married	4 (8%)	10 (9%)		
Residence				
Urban	49 (94%)	105 (95%)	0.77	0.48
Rural	3 (6%)	5 (5%)	(0.4-1.6)	
Lives alone				
Yes	14 (27%)	12 (11%)	3.1	0.036
No	38 (73%)	98 (89%)	(1.5-6.3)	

Personal/Family Factors

A personal history of having had COVID-19 (p=0.027, OR: 2.42, 95% CI: 1.2-3.9) and a close family member's history of COVID-19 (p=0.038, OR: 3.42, 95% CI: 1.8-6.9) were associated with poor adherence to HAART.

Table 2. Personal/family history factors of COVID-19 associated with poor adherence to HAART in HIV patients during the COVID-19 pandemic.

Personal/Family History of COVID-19 Factors	Poor adherence n 52 % 32%	Good adherence n 110 % 68%	OR 95 % CI	p-value
Personal history of COVID-19				
Yes	36 (69 %)	53 (48 %)	2.42	0.027
No	16 (31 %)	57 (52 %)	(1.2-3.9)	
Family member's history of COVID-19				
Yes	33 (64 %)	37 (34 %)	3.42	0.038
No	19 (36 %)	73 (66 %)	(1.8-6.9)	

Health factors:

Depression (p=0.036, OR: 2.18, 95% CI: 1.4-5.1) and the presence of comorbidities (p=0.027, OR: 2.21, 95% CI: 1.3-4.9) were associated with poor adherence to HAART.

Table 3. Health factors associated with poor adherence to HAART in HIV patients during the COVID-19 pandemic.

Health factors	Poor adherence n 52	% 32%	Good adherence n 110	% 68%	OR 95 % CI	p-value
Anxiety						
Yes	21 (40 %)		39 (35 %)		1.23	0.28
No	31 (60 %)		71 (65 %)		(0.8-2.1)	
Depression						
Yes	17 (33 %)		20 (18 %)		2.18	0.036
No	35 (67 %)		90 (82 %)		(1.4-5.1)	
Comorbidity						
Yes	15 (29 %)		17 (16 %)		2.21	0.027
No	37 (71 %)		93 (84 %)		(1.3-4.9)	

DISCUSSION

Our study aimed to evaluate the factors associated with poor adherence to HAART in HIV-infected patients. We found that poor adherence to HAART (PA-HAART) was 32%, with a mean age of 45.8 ± 8.3 years for individuals with poor adherence and 44.6 ± 7.3 years for those with good adherence. Male gender was more frequent in both groups (67% vs. 63%, p-value: 0.68). Previous studies have shown that HAART adherence is variable [26,27]. In Italy, there was a decline of up to 33.6% in antiretroviral adherence when comparing the pre-pandemic period of 2019 to 2020, with a higher occurrence in females [26]. In Chile [27], reported non-adherence rates to HAART reached up to 68%, while in Ecuador [28], the figures ranged between 49.1% and 55.9%.

A recent systematic review and meta-analysis reported an optimal HAART adherence rate of 77% [17]. In Peru, 17.1% of HIV (+) patients were found to be non-adherent to HAART, with male gender and comorbidities related to HIV/AIDS being identified as associated factors [22]. Regarding age, most studies have been consistent with our findings, indicating a trend toward earlier progression of HIV infection [15,17,22,26].

Of the factors evaluated, living alone and personal and family history of COVID-19 were associated with poor HAART adherence, highlighting the pandemic's impact on healthcare for HIV patients from various perspectives [5-7]. In countries with fragile healthcare systems, such as Uganda [29] and sub-Saharan Africa [30], similar effects were observed, emphasizing the impact of high perceived risk of SARS-CoV-2 infection on hospital visits, which resulted in reduced adherence to HAART.

Depression and the presence of comorbidities were health-related factors associated with poor HAART adherence. Barrera-Espinoza RW et al. [22], in a multivariate analysis, indicated that male gender and HIV-related comorbidities were associated with non-adherence to HAART, which could be attributed to a greater sense of responsibility among women [31]. In Colombia, it was found that the most common comorbidities in HIV patients were hypertriglyceridemia, prediabetes, and sexually transmitted infections, leading to increased medication use. This could cause confusion, disorganization, forgetfulness, and abandonment of therapies [32]. Situations such as unemployment, comorbidities, and

the occurrence of adverse reactions promote polypharmacy, which affects treatment adherence[33,34], especially in HIV (+) patients over the age of 50 [35,26].

HAART is the gold standard in the management of HIV infection; however, its immunological and clinical response is influenced by various factors. Treatment adherence is the cornerstone of its efficacy and, at the same time, a dynamic and difficult-to-assess factor[9,11-13]. The global interaction between HIV/AIDS and the COVID-19 pandemic has affected HAART adherence; social immobility and fear of SARS-CoV-2 infection diminished attendance at healthcare facilities, causing mental health disturbances, family structure changes, and altered attitudes towards medication and healthcare [2,5-8]. Therefore, during the COVID-19 pandemic, the primary priority for governments, donors, providers, and communities should be to maintain an uninterrupted supply of HAART for people with HIV to avoid additional deaths. Likewise, the provision of other preventive measures is also important to avoid an increase in HIV incidence.

Limitations and strengths

The main limitations were the social restrictions imposed during the COVID-19 pandemic, which led to conducting interviews with patients via telephone. The strength of our research lies in the access to a representative sample size and a high rate of participation acceptance among selected individuals.

CONCLUSIONS

In HIV-infected patients, living alone, a personal history of COVID-19, a close family member's history of COVID-19, depression, and comorbidities are factors associated with poor adherence to HAART.

ORIGINAL PAPER

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