

Adherence to Antiretroviral Therapy Under the 95-95-95 Target in Jaraguá do Sul, Brazil

Adesão à Terapia Antirretroviral Sob a Ótica da Meta 95-95-95 em Jaraguá do Sul-SC
Adhesión a la Terapia Antirretroviral Según la Meta 95-95-95 en Jaraguá do Sul, Brasil

RESUMO

Objetivo: avaliar o perfil pacientes soropositivos no município de Jaraguá do Sul para verificar a adesão ao tratamento do HIV em correspondência aos componentes da meta 95-95-95. **Método:** estudo transversal realizado em Jaraguá do Sul, com dados secundários (prontuários médicos), em 892 pessoas atendidas no serviço público, com idade superior a 18 anos de idade. **Resultados:** Encontrou-se 892 pessoas vivendo com HIV (2,2% da população total), o sexo masculino (64,2%), raça branca (76,9%) e o grau de instrução escolar ensino médio completo (37%), com procedência de outras localidades (81,8%), 167 pessoas se apresentaram como detectáveis, 2,8% abandonaram o tratamento. O município alcançou a meta em dois aspectos, 97,1% dos indivíduos em tratamento e 96,4% com carga viral indetectável, em relação ao diagnóstico houve uma redução (90,4%). **Conclusão:** O município não alcançou a meta em todos os aspectos, principalmente quanto ao diagnóstico.

DESCRIPTORIOS: HIV; Terapia Antirretroviral; Carga viral

ABSTRACT

Objective: To evaluate the profile of HIV-positive patients in the municipality of Jaraguá do Sul to verify adherence to HIV treatment according to the 95-95-95 target components. **Method:** A cross-sectional study conducted in Jaraguá do Sul using secondary data (medical records) from 892 individuals over 18 years old receiving care in the public health service. Results: A total of 892 people living with HIV were identified (2.2% of the total population); most were male (64.2%), White (76.9%), and had completed high school (37%). The majority came from other municipalities (81.8%). Among them, 167 individuals had detectable viral loads, and 2.8% abandoned treatment. The municipality achieved the target in two indicators: 97.1% on treatment and 96.4% with undetectable viral load. However, diagnosis coverage reached only 90.4%. **Conclusion:** The municipality did not fully achieve the 95-95-95 target, mainly due to lower diagnostic coverage.

DESCRIPTORS: HIV; Antiretroviral therapy; Viral load

RESUMEN

Objetivo: Evaluar el perfil de los pacientes seropositivos en el municipio de Jaraguá do Sul para verificar la adhesión al tratamiento del VIH según los componentes de la meta 95-95-95. **Método:** Estudio transversal realizado en Jaraguá do Sul, con datos secundarios (historias clínicas) de 892 personas mayores de 18 años atendidas en el servicio público de salud. **Resultados:** Se identificaron 892 personas que viven con VIH (2,2% de la población total); la mayoría hombres (64,2%), de raza blanca (76,9%) y con educación secundaria completa (37%). La mayoría procedía de otros municipios (81,8%). Entre ellos, 167 presentaron carga viral detectable y el 2,8% abandonó el tratamiento. El municipio alcanzó la meta en dos indicadores: 97,1% en tratamiento y 96,4% con carga viral indetectable. En cuanto al diagnóstico, hubo una reducción (90,4%). **Conclusión:** El municipio no alcanzó la meta completamente, principalmente en el diagnóstico.

DESCRIPTORIOS: VIH; Terapia Antirretroviral ; Carga Viral

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INTRODUCTION

The global expansion of antiretroviral therapy (ART) has reduced HIV-related morbidity, playing an essential role in terms of treatment effectiveness^{1,2}. Medication adherence must exceed 95% of antiretroviral doses for sustained viral suppression to occur².

In order to control the HIV epidemic, the 2021 "Paris Declaration" launched the 95-95-95 Project with the goal of ending the epidemic by 2030, with the following targets: to diagnose 95% of the population living with HIV, to treat 95% of the diagnosed population, and to achieve an undetectable viral load in 95% of patients undergoing antiretroviral therapy (ART)^{3,4}.

To achieve these goals, adherence to treatment is necessary. Adherence to ART is a dynamic, multi-determined process that is the responsibility of the patient, with characteristics typical of each age group and health care team⁵. Brazil, in turn, with its Unified Health System (SUS) legislation, has improved access to public health for the Brazilian population, providing free treatment for people living with HIV through the National Coordination of HIV/AIDS and Hepatitis⁶.

With advances in treatment, once patients achieve an undetectable viral load through the use of antiretroviral

therapy (ART) and remain stable, without any symptoms or diseases related to the virus, they can no longer transmit it through sexual intercourse. This is the concept of U=U, where undetectable equals untransmittable. In other words, HIV becomes a controllable chronic disease, and the patient no longer transmits it sexually as long as they are using ART and have an undetectable viral load⁶. The perception of HIV infection as a chronic condition and the consequent increase in the number of people living with AIDS has led to the reorganization of the healthcare model².

Technological advances in antiretroviral drugs with easier dosages, greater potency, and fewer adverse effects, their free distribution in Brazil, and the establishment of comprehensive care for these users have resulted in a decrease in hospitalizations for opportunistic diseases and a consequent drop in mortality².

There are still many challenges to be overcome, such as the diagnosis of HIV infection, which has been facilitated by the introduction of rapid testing, but which still poses a major obstacle. The same is true of the stigma and prejudice associated with HIV.

Therefore, this study aimed to evaluate the profile of HIV-positive patients in the municipality of Jaraguá do Sul to verify adherence to

HIV treatment in accordance with the components of the 95-95-95 target.

METHOD

A descriptive cross-sectional study was conducted with a quantitative approach in the municipality of Jaraguá do Sul (SC). Data were obtained from physical and digital medical records covering the entire HIV-positive population.

A total of 892 people living with HIV were identified, monitored by the public health service in the municipality of Jaraguá do Sul. Patients living with HIV of both sexes, confirmed via rapid testing or laboratory tests, residing in Jaraguá do Sul and aged between 18 and 85 years were observed. Children and individuals under investigation for HIV without confirmation through testing did not participate in the study.

Data on sociodemographic characteristics were collected from medical records. The following variables were collected:

- Age: individuals aged 18 years or older, with no upper age limit.
- Sex (male; female): there were both male and female individuals, presenting a ratio of men and women living with HIV.
- Skin color: patients classified as white, black, brown, yellow, or indigenous.

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d) Education: level of schooling, ranging from illiterate to completed higher education

e) Origin: from Jaraguá do Sul or other locations, but currently residing in Jaraguá do Sul

f) Viral load: whether they were undetectable or detectable and how many copies were present in those individuals who had a detectable viral load

g) Diagnosis time: analysis of the number of years that these individuals had been diagnosed with the disease.

h) Treatment abandonment: among individuals who tested positive for HIV, how many remained in treatment and how many abandoned it.

i) Among the variables, there was no classification regarding occupational status, economic status, or religion.

All data were tabulated using Microsoft Excel for Windows, with corrections made and inconsistencies eliminated. The descriptive analysis identified the general characteristics of the study population and estimated the prevalence of the outcome, which is the achievement of the 95-95-95% target. For statistical analysis, the Chi-square and Fisher's Exact tests were applied using IBM SPSS Statistics software.

Data analysis took place between April and August 2024 at the SAE outpatient clinic in the municipality of Jaraguá do Sul. It was submitted to the Brazil platform, with approval from the Research Ethics Committee of the participating institution, corresponding to opinion number 6.981.024 and CAAE: 79172224.4.0000.5357, which authorized data collection. The identities of users and the confidentiality of the individual data obtained were preserved.

RESULTS

A total of 892 patients living with HIV were evaluated, corresponding

to 2.2% of the total population of Jaraguá do Sul. However, it was found that of these 892 people with the virus, 25 abandoned treatment.

According to Table 1, this is the sociodemographic profile of the municipality of Jaraguá do Sul, in which males predominate with 64.2%, whites stand out with 76.9% of the patients analyzed, and in terms of education, people with complete high school education prevail with 37%. It is noteworthy that the majority of

patients are not from Jaraguá do Sul, accounting for 81.8%. About 167 patients were detectable, those who fit into this group are equivalent to patients with a viral load of up to 22 copies. Continuing with the analysis of Table 1, there was a small portion of treatment abandonment, corresponding to 2.8%. Consequently, it is noted that the year 2024 had the highest number of treatment abandonments.

Table 1: Description of people living with HIV/AIDS who are monitored by the Unified Health System. Jaraguá do Sul, Santa Catarina, Brazil, 2024 (n = 892).

Descriptive Data		N	%
Gender	Male	573	64,2
	Female	319	35,8
Race	White	686	76,9
	Brown	155	17,4
	Black	50	5,6
	Indigenous	1	0,11
Education	High school graduate	330	37,0
	Incomplete elementary school	208	23,3
	Complete higher education	118	13,2
	Complete elementary education	96	10,8
	Incomplete higher education	80	9,0
	Incomplete secondary education	54	6,1
	Illiterate	6	0,7
Origin	Others	730	81,8
	Jaraguá do Sul	162	18,2
Viral load	Undetectable	725	81,3
	Detectable	167	18,7
Abandoned treatment	No	867	97,2
	Yes	25	2,8
Year Treatment Dropout	2020	167	18,7
	2021	5	20
	2022	1	4
	2023	6	24
	2024	6	24
	Total	7	28
	Total	25	

Source: Authors, 2024

The estimated number of patients infected with HIV in the municipality of Jaraguá do Sul follows the national model, which is estimated at 0.54% of the population. According to the 2022 census, the total population of Jaraguá do Sul would be 182,660. Calculating based on 0.54% and multiplying by 95%, which would be the target, we arrive at a number of 937 people (expected number of people infected with HIV). Given this, it is noted that Jaraguá did not reach the target, demonstrating in this study that 892 inhabitants are living with HIV.

The viral load in patients considered non-transmissible in the sample of 892 is about 85%. Analyzing the viral load above 200 to 1,000 copies is equivalent to 2%, while those between 200 and 50 copies account for 6% and patients with a load less than or equal to 50 correspond to 7%. For the 95-95-95% target, patients on regular ART who have less than 1000 copies in laboratory tests are classified as undetectable. Thus, about 96.4% are considered undetectable, with Jaraguá do Sul standing out positively⁴. Analyzing the subgroup of undetectable patients who had viral loads between 200 and 50 copies and less than 50 copies in tests, there was a difference with little significance.

The number of patients who abandoned treatment is 25. Thus, considering the sample of 892 patients, 867 individuals living with HIV remain in treatment, resulting in 97.1% of people remaining in treatment, achieving the goal of at least 95% of people in treatment. According to the analysis conducted between 1992 and 2024, the highest treatment discontinuation rate was in 2019.

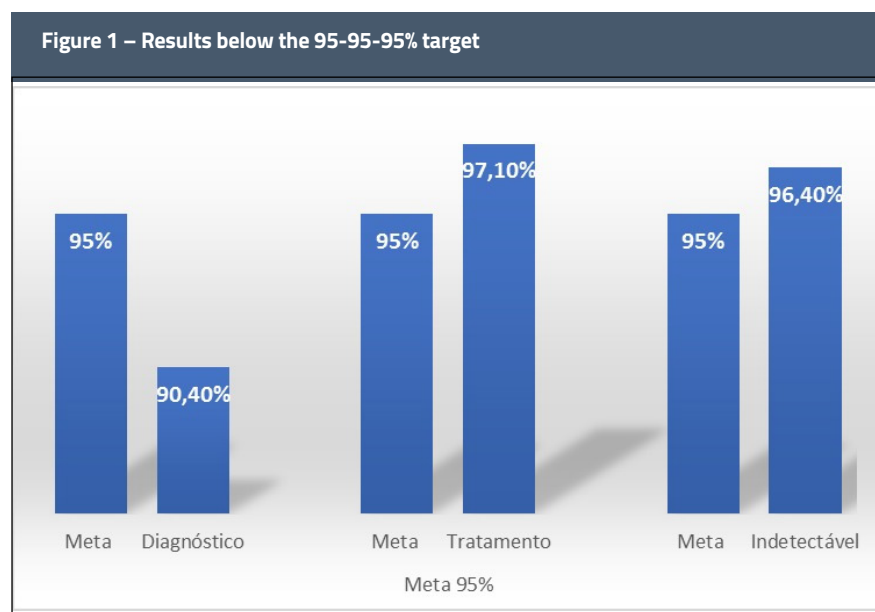
Most patients with detectable viral load fall within the 35-49 age group, corresponding to 8.4% of the population analyzed. This demonstrates that age is not associated with viral load detection and that the HIV epidem-

ic is a disease of young adults in their highly productive years.

It was observed that the years with the highest prevalence of HIV diagnosis were between 2015-2016, corresponding to 112 patients, and 2017-2018, with 111 people. The COVID-19 pandemic negatively affected the screening of the disease in the municipality, considering the years before and after the pandemic, when there were a greater number of diagnoses. Thus, in 2019-2020, there was a drop of 83 patients, and after heading towards the end of the pandemic, in 2021-2022, there was a new

increase in cases. It is worth noting that in 2024, medical records were analyzed up to July, not totaling 12 months.

According to the stipulated 95-95-95 target, 95% of patients diagnosed, 95% in treatment, and 95% with undetectable viral load, the municipality of Jaraguá do Sul achieved the stipulated target in two aspects, with 97.1% of patients in treatment and 96.4% of patients with undetectable viral load. However, in relation to diagnosed patients, there was a decrease, calculated at 90.4% (Figure 1).



Source: Authors, 2024

DISCUSSION

HIV infection targets the body's defense cells as its h, with CD4+ T lymphocytes being the main target⁷. HIV is a virus with the potential to cause Acquired Immune Deficiency Syndrome (AIDS), damaging the immune system, incapacitating its response to opportunistic agents and making humans more susceptible to disease⁷.

In an advanced stage of HIV infection, the person may present vari-

ous signs and symptoms, in addition to opportunistic infections (atypical pneumonia, fungal and parasitic infections) and some types of cancer. The ART (antiretroviral therapy) used to treat patients with AIDS is the same as that used to treat patients with HIV, since, with the advancement of knowledge, antiretroviral treatment should be started as early as possible.

AIDS was once considered the fifth leading cause of death among adults, but over the years it has been significantly reduced due to public

health campaigns on prevention and medications, improving knowledge about the disease. Given this, it is clear that if not prevented or treated, it becomes a serious disease⁹. HIV is linked to the National List of Compulsory Notification of Diseases, so when the disease is discovered it must be reported to the competent health authorities¹¹. Conceived since the Federal Constitution of 1988, the Unified Health System (SUS) provided improved access to public health for the Brazilian population. In addition, it presented pillars representing its principles and guidelines, ensuring the right to health, bringing the principle of comprehensiveness, equity, and universality, providing free treatment for people living with HIV, regardless of viral load¹⁰. Achieving the goals of the "Paris Declaration" should be an objective to be achieved.

The deficit in achieving the stipulated goal is observed due to several complications, among them, mainly poor adherence to treatment and recurrent abandonment of the specialized health care service available to patients living with HIV. Based on this, one of the strategies adopted is to approach the patient as soon as the disease is discovered (linking the patient to the Program). Without this, people who abandon treatment are susceptible to increased viral load, morbidity, and mortality, and may develop resistance to the medication, thus making it difficult to achieve the goal¹¹.

A national study identified that in 2020, the total number of patients living with HIV throughout Brazil was approximately 1,124,063 individuals, with the highest prevalence among males (66.1%), and in relation to race, 23.6% were white and 19.5% were brown. In terms of education, most people living with HIV have incomplete elementary school education (26.7%) or incomplete high school education (8.1%)⁹. In Jaraguá

do Sul, the same profile was found, with 64.2% male; with whites being the most common race at 76.9%, followed by brown at 17.4%. Most people had finished high school (37%), followed by college (13.2%), which means they should have better access to info, prevention methods, and disease risks.

The vast majority of HIV-positive individuals analyzed in the study are not native to Jaraguá do Sul and come from other locations. Thus, the data represent the city's progress in terms of access to health care without discrimination, focusing on prevention and preserving the principles of the SUS, covering all residents. It also characterizes the large migration that occurs in the country, a country of continental dimensions, alerting to the fact that uniform national actions are needed to achieve the desired objectives¹⁰.

After analyzing the epidemiological data, it is noted that there are still a significant number of patients living with HIV and, in view of this, in an attempt to promote health prevention and minimize cases of the disease, as well as encourage correct treatment, the 90/90/90% target was developed and, over the years, improved to the 95/95/95% target.

One of the issues addressed within the goal is how essential treatment is and how it contributes to 95% of the proposal. This treatment is provided by ART, which has significantly reduced viral load or made it undetectable, improving the health of people living with HIV. In addition, individuals who use ART correctly tend to achieve undetectable levels of the disease, thus contributing to a reduction in the chances of transmitting the virus. Therefore, using ART keeps people healthy, even if infected with HIV, and prevents sexual transmission⁹. In 2021, there was a global increase of 28.2 million people using ART for HIV treatment. However,

inequality in access to these medications is seen in several countries around the world¹².

Similarly, the COVID-19 pandemic has created obstacles to achieving the UNAIDS goal due to limited access to testing and medication, resulting in delays in starting treatment and poor adherence among those already taking the drugs. In 2020, 73% had access to ART and 66% were considered undetectable¹². As shown in the results, there was a reduction in the number of diagnoses between 2020 and 2021, considered the peak of the pandemic, while in the previous year, 2019, the numbers of diagnoses were more significant, as well as in 2022.

This study seeks to obtain data from Jaraguá do Sul and analyze it, contributing to public health. One of the objectives is to compare the data obtained with data from previous years, given the COVID-19 pandemic in recent years and its impact on HIV/AIDS treatment.

In principle, the stipulated goal was 90/90/90% by the year 2020, currently progressing to 95/95/95%, which became valid in 2021. In a study analyzed in the state of Rio Grande do Sul (RS), no participating unit achieved the 90/90/90% target, nor the 95/95/95% target. This same study pointed to the influence of the pandemic on the data collected, which would require further monitoring for a more reliable result¹³.

In another study conducted in Santa Cruz do Sul (RS), the established target was not met, especially in terms of treatment, which totaled 92.9%, falling short of the 95% target¹⁴.

The study reproduced in Florianópolis, Santa Catarina (SC) cited another multicenter study with national representation, which evaluated seven Brazilian states and reported that 75% of patients living with HIV used 95% of the ART doses. Given this, the Florianópolis study mentions that antiretroviral drug consumption

must reach more than 95% for adequate viral suppression to occur².

Internationally, in Sweden, a study showed that it managed to achieve the UNAIDS target, with percentages of 96/99/98%¹⁵.

Most of the studies analyzed failed to achieve the 95/95/95% target, a fact that distinguishes the municipality of Jaraguá do Sul, which achieved even more than 95%, demonstrating effectiveness in treatment, diagnosis, and patient follow-up, emphasizing health promotion and prevention.

CONCLUSION

Based on the study, epidemiological data were analyzed and it was concluded that the municipality of Jaraguá do Sul still needs to conduct more active searches for patients, achieving more diagnoses and investing in prevention and health promotion. Considering the 95-95-95% target, the city of Jaraguá do Sul did not achieve the expected number of diagnoses in the population.

Another point observed in the re-

search was the origin of patients from other locations (81.8%), an issue related to migration to the municipality. It was noted that Jaraguá do Sul is close to diagnosing 95% of people infected with HIV. The municipality achieved the target in two aspects, with 97.1% of individuals undergoing treatment and 96.4% with an undetectable viral load. However, there was a reduction in diagnosis (90.4%). Given the above, Jaraguá do Sul did not achieve the target in all aspects (diagnosis).

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