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Identifying Potential Hurdles to Adequate HIV Treatment Adherence, Santo André/SP, Brazil

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Abstract

Overcoming potential limitations for retention can improve the health of people living with HIV and favor epidemic control (Undetectable=Untransmittable), resulting in fewer AIDS complications that also impact scarce health resources. Adherence to exam collection, appointment and medication withdrawal was associated with better viral suppression (viral load < 50 copies/mL, p < 0.001) with lack of time off work or financial resources to go to the outpatient clinic pointed out as major limiting factors for adherence. Exemption of the public transport tariff and expansion of pharmacy's opening hours could improve adhesion, an investment that may save costs in dealing with complications of AIDS and new infections.

Keywords

HIV, Retention, Epidemiology, Viral load, Antiretroviral

Introduction

The evidence that undetectable is Untransmittable (U=U) makes adherence to antiretroviral treatment one of the pillars for controlling the epidemic [1]. From a public health perspective, the U=U concept will reduce stigmatization of persons living with HIV (PLWH), strengthening public opinion in accepting that HIV infection is not a death sentence [2]. Action to tackle the inequalities driving AIDS is urgently required to prevent millions of new HIV infections this decade and to end the AIDS pandemic [3].

Methods

The Brazilian Medication Logistic Control System (SICLOM) of the antiretroviral medication dispensing unit (UDM) in Santo André, in the metropolitan area of São Paulo (available at https://siclom.aids.gov.br/), provided data on users registered assets. These were contacted via *WhatsApp message* and invited to answer a simple questionnaire entitled "We want to get to know you", sent as a *Google search management application* (https://docs.google.com›forms), with 13 questions. A printed version of the survey was randomly offered to some patients who reported not having responded to it electronically. The survey data was evaluated as always missing, sometimes or never concerning appointments, withdrawal of antiretroviral drugs and exam collections. SICLOM provided data on age, sex, days of delay of last antiretroviral treatment withdrawal, and last HIV viremia (VL) result. This service data on some key variables allowed the comparison of those answering the questionnaire to the overall patient population served by the infectious disease outpatient clinic (IDOC).

Statistical Analysis

The statistical analyzes were performed in IBM SPSS Statistics for Windows, Version 24.0. (Armonk, NY: IBM Corp.) The results of continuous variables were expressed in medians, with the 25th and 75th percentiles (IQR), 95% confidence interval (CI 95%). Variables were compared using Mann-Whitney test for continuous variables and Fisher's exact tests for categorical variables, as appropriate. Kruskal-

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Table 1: Viral suppression according to lack of commitment to presential service activities.

	Yes, always	Viral load	VL < 50 (n = 397)	Sometimes	Viral load	VL < 50 (n = 420)	No, never	Sometimes	VL < 50 (n = 420)	p
Appointment	11/479 (2.3%)	8/10	3/8 (37.5%)	111/479 -23%	98/111	87/98 (88.8%)	357/479 (74%)	314/357	307/314 (97.7%)	< 0.001
Antiretroviral withdrawal	15/479 -3%	14/15	10/14 (71.4%)	76/479 -16%	72/76	64/72 (88.9%)	388/479 (81%)	344/388	323/334 (96.7%)	< 0.001
Exam collection	10/479 -2%	8/10	4/8 -50%	76/479 -16%	64/76	55/64 -86%	393/479 (82%)	348/393	338/348 (97%)	< 0.001

VL*Viral load; Viral suppression as proportion of viral load below 50 mL copies/mL at last test (Realtime PCR) according to type of visit to the service. Responder perception, described as always, sometimes or never faulty on adherence to (i) Medical appointments, (ii) Antiretroviral withdrawal and (iii) Blood drawn for monitoring testing.

Wallis test was used to compare three levels of adherence (always, sometimes, never) to presential service activities. A significant level of $p < 0.05$, two-tailed, was applied to all analyses.

Ethics

The study was approved by the institutional ethical committee (CAAE: 21164819.7.0000.0082) and all participants provided informed consent.

Results

The questionnaire "We want to get to know you" was sent to 1553/2810 (55%) active users at SICLOM on September 14, 2021, and answers were obtained between August and October 2021. The information of message was viewed (blue check-in) in 1414/1553 (91%), but only 479/1553 (30.8%) responded, mostly electronically, with 17/479 (3.6%) responses using a physical form. A median age of 42 years (IQR25-75 32-53), mostly (70%) male population with 92% with a viral load below 50 copies/mL, was comparable among responders and not responders. The questionnaire provided additional information regarding: (i) Gender, but 92/471 (20%) could not identify their gender, giving answers such as "I am gay", "I am a man", "I am normal", with 10 (0.4%) marked as transgender, (ii) Race was marked as white in 257/479 (53.7%); (iii) Higher education in 164/479 (34.2%), (iv) Time since diagnosis was responded in 479, < 1 year in 34 (7.1%), 1 to 5 years in 154 (32.2%), 6 to 10 years in 98 (20.5%) and > 10 years in 193 (40.3%).

The reasons given for faulty adherence to coming to the IDOC were mainly lack of money and time off work to go to the clinic for, (i) Appointments (44/160 27.5% and 60/160 37.5%, respectively), (ii) Withdrawal of antiretroviral (ART) drugs (40/108 37% and 40/108 37%, respectively) and (iii) Exam collections (14/114 12% and 41/114 36%, respectively).

The proportion of individuals who never missed in relation to those who sometimes or always missed ART withdrawals was not shown to correlate with color (white 43/257 17% versus non-white 48/222 22%, $p = 0.2$) or sex (male 56/341 16% versus female 35/141 25%, $p = 0.06$), however, not having a college degree had an important correlation with lower adherence (73/315 23% versus 18/164 11%, $p = 0.001$).

Table 1 shows the reasons given for the lack of adherence, or commitment to scheduled visits to the service, referred to as (i) Always, (ii) Sometimes, or (ii) Never, and the corresponding proportion of VL tests with viremia below 50 mL copies in the last evaluation.

Discussion

Although our study sought to reach a large proportion of users, there was a low proportion of responses to the form sent, which may be a limitation. We found that in relation to the actual patient characteristics, the individuals who answered the questionnaire had a higher proportion of self-reported as white, 257/479 (54%) versus 2122/3627 (59%) ($p = 0.04$), and with a higher level of education, 164/479 (34.2%) versus 990/3580 25% ($p = 0.002$). However, other characteristics such as age, a preponderance of male gender and viral suppression rates showed no significant differences in comparison to non-responders, suggesting that the responses to the questionnaire may reflect the profile of service users, possibly biased by overrepresentation of higher education. Educational level may compromise ability or interest in answering the survey, but some of the limitations pointed out by participants may be expected to also affect those not answering the survey.

Our patients reported a high rate of adhesion to medication withdrawal 388/479 (81%). According to SICLOM data, most responders, 400/425 (94%) had a last viral load record of fewer than 50 copies/mL, with 54 cases without information. We must remember that there was a 24% decrease in HIV viral load test collections, comparing 2020 to 2019, as a result of the COVID-19 pandemic [4]. The study was carried out during the pandemic, in the month following the resumption of scheduling routine consultations, in which the impact of the pandemic on the care provided at IDOC was documented. Also in this period, according to the official database, 87% were considered with sufficient adhesion (proportion of individuals with more than 80% ART adherence at the end of each year); 80% with sustained suppression (percentage of individuals on ART, withdraw in the last 100 days of the year, for at least two years and who performed at least 02 viral load tests with results below 50 copies/mL after at least 06 months from the beginning of the treatment); and 93% virally suppressed

(all individuals on ART, dispensed in the last 100 days of the year, who performed viral load, whose result was below 50 copies/mL) [4]. Although the metrics are not the same, our results are comparable to official registries, suggesting it may illustrate patient limitation for good adherence.

The impact of schooling on adherence to ART withdrawals probably reflects the social inequality impacting the success of treatment for HIV infection. Public policies for equity are urgent, as limited financial resources and obstacles to getting time off work to go to the IDOCaccount for more than 70% of the reported reasons for not taking medication. Some simple measures, such as the exemption from the municipal public transport tariff for travel to the IDOC, for all PLWH, regardless of the stage of the disease, and the expansion of the pharmacy's opening hours could be adopted, with a net result of actual saving of expenses as it can decrease complications of HIV disease. Improving therapy response and having more virally suppressed individuals with less transmission, also saves health resources needed for continuous ART and monitoring tests of new infections, as viremic patients are a potential source of ongoing transmission.

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Transparency Declarations

The authors declare that there are no conflicts of interest.

Author Contributions

All authors contributed to the study, commented on previous versions of the read manuscript and approved the final manuscript. Conception, design, statistical analysis and the manuscript were written by EMM. Sending the questionnaires by message, monitoring the visualization and response, and associating the data available in the SICLOM were carried out by LBB and ABON. Financing and supervision by LFMB. The review of the manuscript was carried out by IBC, VOC and LFMB.

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