

Factors associated with viral non-suppression among patients on antiretroviral therapy (ART) at the Federal Medical Centre, Abeokuta, Ogun State, Nigeria

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Abstract

Objectives: Human Immunodeficiency Virus (HIV) remains a public health issue with more than 25 million deaths since 1990. As at 2019, Nigeria has national prevalence of 1.4% among 15- 49 years and about 1.9 million people living with HIV according to Joint United Nations Programme on HIV/AIDS. This study assessed the factors responsible for unsuppressed viral load among patients accessing care at Federal Medical Centre HIV Clinic in Abeokuta, South West Nigeria.

Methods: The study design was descriptive cross-sectional. Data was collected using qualitative method; In-depth interview was conducted among 20 virally unsuppressed HIV patients currently on Antiretroviral Therapy (ART) at Federal Medical Centre Abeokuta. The participants were purposively selected. The data was analysed using thematic analysis.

Results: Although almost all the participants were aware of HIV but their knowledge on HIV was inadequate. Non-adherence to drugs, side effects of medications, psychological effect of the disease, forgetfulness, and combination of anti-retroviral drugs with local herbs and alcohol were identified as associated factors of viral non-suppression among the patients in this study.

Conclusion: Scaling up psychological care services using Short Message Services (SMS) to improve viral suppression is therefore strongly recommended.

Key words: Viral non-suppression, HIV, Determinants

Plain English summary

This study was conceptualized due to the high number of cases of viral load non-suppression among patients on ART in FMC Abeokuta. The objective of this study was to assess factors responsible for the non-suppression of viral load among patients accessing health care at the HIV clinic in FMC Abeokuta. This study was conducted using both qualitative and quantitative methods. An interviewer-administered questionnaire was adopted and developed, while an in-depth interview was adopted for the qualitative assessment and was analyzed thematically. Our findings showed that drug non-adherence, forgetfulness of clinic appointments, and combination of anti-retroviral drugs with local herbs were the critical factors influencing viral non-suppression among patients receiving ART.

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Introduction

Human Immunodeficiency Virus (HIV) remains a public health issue with more than 25 million deaths since 1990 (1). Globally, the estimated overall number of People Living with HIV (PLHIV) by the end of 2014 was 36.9 million and sub-Saharan Africa was the most affected region, having 25.8 million PLHIV constituting 66% of all people with HIV (2). As of 2019, Nigeria has a national prevalence of 1.4% among 15- 49 years and about 1.9 million people living with HIV according to the Joint United Nations Programme on HIV/AIDS (3).

Substantial progress has been made in increasing access to antiretroviral therapy (ART) for HIV/AIDS treatment in sub-Saharan Africa (4). Nigeria, nevertheless, has also shown steady progress at increasing access to treatment, following the adoption of the test and treat policy in 2016 (4). Adoption of this measure accelerated referrals to treatment facilities for people who test positive for HIV. Furthermore, from 2010 to 2017, a three-fold increase in ART coverage from 360 000 persons to more than 1 million persons was recorded in 2018.

The goal of ART is to completely suppress viral replication. This will prevent further damage to the immune system, decreasing Acquired Immune Deficiency Syndrome (AIDs) associated morbidity and mortality, allowing the immune function to return to normal and reducing the risk of transmitting HIV infection to others (5, 6).

Viral load monitoring was recommended by World Health Organization as a gold standard to monitor patients on ART (7). This allows for timely detection of treatment failures, identification of patients in need of more intensive adherence support, and minimizes the development of drug resistance and unnecessary switch to expensive and limited ART regimen options (7, 8).

Access to ARTs no doubt has enhanced the quality of life of people living with HIV/AIDs in resource-limited settings, but the success of ART is contingent on adherence to achieve and maintain viral suppression (9). Data have shown that not all HIV-positive individuals on ART have viral suppression. while even fewer maintain viral suppression over time (1, 11). Globally, there are 11 million PLHIV who need to achieve the target of the Joint United Nations Program on HIV/AIDS (UNAIDS) on viral suppression, not including the 3–5 million new infections expected between 2017 and 2020 (9).

Although many studies have highlighted the different factors responsible for unsuppressed viral load, regional variation exists (7, 8). It is

pertinent to study the local factors responsible for this, as factors may differ across various settings. The findings from this study will guide the management in implementing interventions to prevent viral non-suppression. Likewise, it will provide key information policymakers must consider in addressing the situation locally. In the light of the benefits, this study was conducted to assess the factors responsible for viral non-suppression among patients attending the HIV clinic at Federal Medical Centre Abeokuta.

Methodology

The study was conducted at the HIV Clinic of the Federal Medical Centre Abeokuta (FMCA). This clinic was established in 2006, is managed by the Department of Community Medicine and Primary Care, and is supported by AIDS Prevention Initiative in Nigeria (APIN). FMCA is a 500-bedded regional specialist hospital that has a goal of providing excellent medical services to Ogun state and other neighboring states. Ogun state has an HIV prevalence of 1.6% (3) and has 327 centers for the management of HIV. The study was descriptive cross-sectional in design. All patients who have viral non suppression aged 18 years and above who gave their consent were recruited for the study.

An in-depth interview guide was developed using literature to elicit information on respondents' knowledge on HIV, viral load, and factors contributing to viral non- suppression (6-12). With regards to the interview, information was obtained using a recorder. A timekeeper note taker and research assistants were around to take notes and recordings of the information.

A purposive sampling method was used to select 20 virally non-suppressed participants for the in-depth interview. The patients were obtained from a list of patients with viral non-suppression in 2018 generated by the Monitoring and Evaluation (M&E) unit of the HIV clinic. Patients with a viral load of more than 1000 copies/ml were taken to be virally non-suppressed.

Data obtained from in-depth interview sessions were transcribed and translated into the English language and reported using a thematic approach. Major themes identified Knowledge of HIV, viral load, and viral non-suppression and factors responsible for viral non- suppression

Results

Sociodemographic characteristics

Table 1 shows the sociodemographic characteristics of the study respondents. The

majority of the respondents were between the ages of 40-45 years with a Mean and Standard deviation of D=38 and 1.5 years, respectively. About half (45%) of the respondents have no formal education. Trading was revealed to be the

main occupation among respondents, and the majority of the respondents were female (70%) while more than half of the respondents (65%) are married.

Table 1: Sociodemographic characteristics of respondents (N=20)

Variables	Frequency	Percentage (%)
Age		
20 – 29 years	4	20.0
30 – 39 years	7	35.0
40 – 49 years	8	40.0
≥50 years	1	5.0
Mean ±SD = 38±1.5		
Sex:		
Male	6	30.0
Female	14	70.0
Occupational status		
Civil servant	1	5.0
Business/ Trading	9	45.0
Artisans	8	40.0
Health Care workers	1	5.0
Others	1	5.0
Marital Status:		
Married	13	65.0
Single	4	20.0
Divorce/Separated	3	15.0
Education:		
No formal education	9	45.0
Primary	8	40.0
Secondary	1	5.0
Tertiary	2	10.0

Knowledge of HIV

Out of 20 participants, only one of them had basic knowledge about HIV/AIDS before they were diagnosed. Although almost all of the respondents were aware of HIV, they lacked adequate knowledge regarding the transmission and cause of the infection. A55 years trader said, "I never knew anything about HIV before I was told I have it" Another participant said, "I just hear people talk about it but I don't know anything about it. I wish I knew about the cause and how it is spread".

Knowledge about viral load & viral non-suppression

Almost all the participants 19 (96%) could explain what viral load means and almost all 19 (96%) of the respondents were knowledgeable about what un-suppressed viral load meant.

Respondent's perception of why he/she is virally un-suppressed

Non- adherence to medication as a result of forgetfulness was one of the factors identified for

viral non-suppression among the patients as evidenced by some of their responses

"I was not using my drugs regularly because most times before I get back from market time would have gone so I just skip it or I don't even remember."

Side effects of drugs such as vomiting also contributed to viral non suppression among patients

"I do not adhere to my drugs because it makes me vomit".

Other factors of viral non suppression among respondents include the psychological effect of the disease and a combination of anti-retroviral drugs with local herbs and alcohol.

"I was not using my drugs regularly because I faced a difficult period in my life when I lost my husband and mother-in-law".

"There was a time I do use herbs with my drugs"

Challenges with keeping clinic appointments

Only 7 (35%) of them often keep to clinic appointments. The majority of them often miss

clinic appointments due to lack of transportation fare, clinic appointments clashing with the work schedule, and forgetfulness.

Challenges with meeting up with drug time

Regarding using drugs at the right time, 12 (60%) of the participants often forget to use their drugs and, in most cases, skip the drugs due to their work schedule. The remaining 8 (40%) of them did not have challenges meeting up with drug time. Responses from the respondents included statements like:

“Yes, I often forget. Sometimes I eat before 2hrs given to us to space before using our drug. Once I forget and eat my food, I won't use the drug again”.

“At first I often forget to use my drugs but I now make use of an alarm and my husband reminds me also”. “I keep to time with my drugs”

Knowledge of drug (ARVs) names

Assessing their knowledge on the names of their drugs (ARVs), all the participants could only mention Septrin as one of their drugs but do not know Highly Active Anti-Retroviral Therapy (HAART). However, according to the majority of the participants, they can identify their drugs when they see them.

The result of this study also revealed that out of 20 participants interviewed, 8 (40%) combine local herbs and alcohol with their drugs, and 1 (5%) of the participant reported issues relating to stigmatization and abuse from her husband. Also, 2 (10%) of the participants have treated certain ailment/disease (Malaria/Typhoid) and are on treatment for diabetes apart from HIV in the last 6 months.

Discussion

Unsuppressed viral load is associated with drug resistance, decreased survival, morbidity, and mortality, and increased HIV transmission (9). Almost all the respondents in this study were aware of HIV but they lacked proper education regarding the transmission and cause of the infection. This is similar to what was observed in a Ugandan study (9), where a majority of respondents had poor knowledge of HIV. However, a study in South Africa revealed that most of the participants had good knowledge of HIV (1). This is not surprising because, most of the respondents in the South African study had a tertiary level of education, compared to only a few respondents in this study that had tertiary level education (1). Variation in viral suppression rates exist. Rates differ between low- and middle-income countries (LMICs) compared with high-

income countries; for example, in sub-Saharan Africa, eastern and southern countries had better suppression rates than countries in the west/central region (5, 9).

The World Health Organization (WHO) cites poor access to services, complex drug regimens, pregnancy, mental health disorders, substance abuse, weak social support networks, and incarceration as major barriers to adherence (5). For this study, non-adherence to drugs, the psychological effect of the disease, side-effects of medications, forgetfulness, and combination of anti-retroviral drugs with local herbs and alcohol were some of the factors identified as the major cause of viral non-suppression among patients in this study. The factors identified in this study aligned with findings from a study done in Vietnam (13). The study used a visual analog scale (VAS) and an audio computer-assisted self-interview (ACASI) method to identify several factors associated with viral non-suppression such as sub-optimal adherence, including heavy alcohol use in the previous month, depressive symptoms, a greater number of medication side effects, unclear source for routine HIV care site for patients, low perceived quality of information from healthcare providers, low satisfaction with received support and low social connectedness (13).

A single-tablet regimen of Efavirenz, Lamivudine, and Tenofovir (TLE) combination has been significantly associated with viral suppression (12). This finding is consistent with a growing body of literature highlighting the benefits of TLE on patient satisfaction, adherence, and viral suppression (9). Despite all the study participants being on this combination, they were still virally non-suppressed due to issues such as meeting up with clinic appointments and drug time which were the major challenges faced by participants. The majority of them often miss clinic appointments due to lack of transportation fare, clinic appointments clashing with the work schedule, and forgetfulness.

Regarding using drugs at the right time, more than half of the participants often forget to use their drugs and, in most cases, skip the drugs due to their work schedule. This finding is also similar to what was observed by a study conducted on the assessment of the quality of life of patients attending HIV clinics in Ilorin, Kwara State, where some of the respondents also reported not meeting up with clinic schedules due to lack of transportation fare, clinic appointments clashing with the work schedule, and forgetfulness (14). More adherent PLHIV probably had better

virologic and immunological outcomes and therefore had a better health-related quality of life (14).

Conclusion:

Non-adherence to drugs, the psychological effect of the disease, side-effects of medications, forgetfulness, and combination of anti-retroviral drugs with local herbs and alcohol were the assumed major reasons for viral non-suppression among the patients in this study. The facility should consider scaling up services for psychological care such as pre and post-test counseling, adherence counseling, patients support group, and family planning counseling to improve the psychological effect of the disease on the patients. The Hospital should also consider setting up a tracking system based on Short Message Services (SMS) to send out reminders of clinic schedules and educate clients on HIV care.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Federal Medical Centre Ethical Review Committee (FMCA/470/HREC/12/2020/24). Patients were provided with informed consent forms. The forms explained the study aims, objectives, and voluntary nature of the study. Non-consenting patients were excluded from the study.

Consent for publication

The authors hereby give consent for the publication of our work under the creative commons CC Attribution-Non-commercial 4.0 license.

Availability of data and materials

The data and materials associated with this research will be made available by the corresponding author upon reasonable request.

Competing interests

Non to declare

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Authors' contributions

Conceptualization AA

Development of Research Tool: AA, ST, APA

Drafting of manuscript: AA, OMO, FGS

Data collection: AA, ST, APA

Data analysis: APA, IGB, ST, AA

Manuscript review: All authors.

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References

1. World Health Organization. Global update on the health sector response to HIV, 2014.
2. Joint United Nations Programme on HIV and AIDS. 2015. Factsheet 2015: World AIDS Day 2015.
3. Nigeria National HIV/AIDS Indicator and Impact Survey, 2019. Available from: https://reliefweb.int/sites/reliefweb.int/files/resources/20190314_PR_Nigeria_en.pdf. Accessed on 15th June 2020.
4. World Health Organization. Antiretroviral therapy (ART) coverage among all age groups 2015. Available from: https://www.who.int/gho/hiv/epidemic_response/ART/en/. Accessed on 20th June 2020.
5. World Health Organization. World Health Organization. HIV drug resistance. 2006. Available from: <http://www.who.int/hiv/topics/drugresistance/en/>. Accessed 2nd August 2020.
6. World Health Organization. Technical Brief on HIV Viral Load Technologies 2010. Available from: https://www.who.int/hiv/topics/treatment/technical_brief_20100601_en.pdf. Accessed 2nd August 2020.
7. World Health Organization. Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection, recommendations for a public health approach. 2013. Available from: <https://www.who.int/hiv/pub/arv/arv-2016/en/>. Accessed on 20th June 2020.
8. National AIDS and STI's Control Programme. National guidelines for HIV prevention, treatment, and care. Federal Ministry of Health, 2016
9. Nachega JB, Sam-Agudu NA, Mofenson LM, Schechter M, Mellors JW. Achieving viral suppression in 90% of people living with human immunodeficiency virus on antiretroviral therapy in low-and middle-income countries: progress, challenges, and opportunities. *Clinical Infectious Diseases*. 2018 May 2;66(10):1487-91. <https://doi.org/10.1093/cid/ciy008>

10. Mogosetsi NJ, Mabuza LH, Ogunbanjo GA. The Prevalence of HIV Load Suppression and Related Factors Among Patients on ART at Phedisong 4 Clinic, Pretoria, South Africa. *The Open Public Health Journal*. 2018 Apr 25;11(1):135-146.
<https://doi.org/10.2174/1874944501811010135>
11. Center for Disease and Control. HIV Treatment and Care: Information for Health Care Providers. Available from <https://www.hiv.gov/blog/new-tools-and-information-health-care-providers-cdc-about-hiv-treatment-care-and-prevention>. Accessed on 15th June 2020
12. McMahon JH, Elliott JH, Bertagnolio S, Kubiak R, Jordan MR. Viral suppression after 12 months of antiretroviral therapy in low-and middle-income countries: a systematic review. *Bulletin of the World Health Organization*. 2013; 91:377-85.
<https://doi.org/10.2471/blt.12.112946>
13. Rangarajan S, Colby DJ, Bui DD, Nguyen HH, Tou PB, Danh TT, Tran NB, Nguyen DA, Nguyen BT, Doan VT, Nguyen NQ. Factors associated with HIV viral load suppression on antiretroviral therapy in Vietnam. *Journal of virus eradication*. 2016 Apr 1;2(2):94-101.
14. Ahmed A, Uthman MM, Osinubi MO, Bolarinwa AO, Musa OI, Aderibigbe AA. Assessment of quality of life among patients attending HIV clinics in Ilorin metropolis. *Research Journal of Health Sciences*. 2018;6(4):226-35.
<https://doi.org/10.4314/rejhs.v6i4.9>

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