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Effect of Intervention on Poor Adherence among Young Adults Living with HIV in Osogbo, Osun State

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ABSTRACT

Antiretroviral therapy (ART) adherence among young adults living with HIV in Nigeria remains a significant challenge. This study aimed to explore the effectiveness and challenges of an adherence intervention implemented in Osogbo, Osun State, from the perspective of healthcare workers and adherence case managers. A qualitative research design was employed, utilizing Key Informant Interviews (KIIs) with healthcare workers and adherence case managers (n=4). Participants were purposively selected based on their experience supporting young adults (15–24 years) living with HIV and managing poor ART adherence. A semi-structured interview guide explored experiences with the intervention, its impact on clients, barriers to adherence, and recommendations for improvement. Data were analysed using thematic content analysis, supported by ATLAS.ti software. The intervention demonstrated some success in improving adherence through personalized counseling, follow-up calls, and home visits. However, significant barriers persisted, including psychosocial factors such as stigma, denial, and fear of disclosure; socioeconomic challenges like financial difficulties and food insecurity; and health system constraints such as workforce shortages and high patient loads. Family dynamics, including non-disclosure and lack of support, also complicated adherence. While the intervention showed promise, a comprehensive and sustainable approach is needed to address the complex interplay of psychosocial, economic, and health system barriers impacting ART adherence among young adults living with HIV in Osun State. Future interventions should prioritize culturally sensitive, adolescent-friendly services that integrate mental health support, address social determinants of health, and strengthen healthcare infrastructure to ensure holistic support and improved adherence outcomes.

Key words: young adult, antiretroviral therapy, adherence, HIV, Intervention

INTRODUCTION

Adherence to Antiretroviral Therapy (ART) is essential for the effective management of HIV/AIDS, prevention of disease progression, and achievement of viral suppression (Ahonkhai et al., 2021). However, suboptimal adherence remains a significant challenge among young adults, particularly those under 25 years, in several parts of sub-Saharan Africa, including Southwestern Nigeria. This persistent issue hinders progress towards achieving the global HIV targets established by international health organizations.

Poor ART adherence has been closely linked with HIV drug resistance. Kilapilo et al. (2022) reported that 70% to 89% of individuals with poor ART adherence developed clinically significant drug resistance. Additionally, lower clinic refill rates among patients with resistance suggest non-compliance with medication schedules due to missed appointments and irregular drug intake. These trends are particularly troubling in light of continued global HIV transmission. In 2023 alone, there were 1.3 million

new infections globally, with 65% occurring in Africa (World Health Organization [WHO], 2024). Despite reductions in HIV-related mortality—from 770,000 deaths in 2018 to 630,000 in 2023—this 18% decline is insufficient to meet global goals (WHO, 2018; 2024).

The global community, through organizations such as WHO, UNAIDS, and the Global Fund, has embraced the Sustainable Development Goal (SDG) 3.3, which aims to end the HIV/AIDS epidemic by 2030. The 95-95-95 targets for 2025 represent a strategic framework in this pursuit: 95% of people living with HIV should know their status, 95% of those diagnosed should be on ART, and 95% of those on treatment should achieve viral suppression (UNAIDS, 2021; WHO, 2024). As of 2023, global progress stood at 86% knowing their status, 77% on treatment, and 72% achieving viral suppression (WHO, 2024), falling short of these ambitious targets.

Adolescents and young adults living with HIV (YA-HIV) remain disproportionately affected by poor adherence and low viral suppression rates. A study in Niger State, Nigeria, found that only 20% of young adults achieved viral suppression (Asaolu & Agbede, 2022), compared to 54%, 62.6%, and 66.7% in Kano, Benue, and Abuja respectively (Anyaike et al., 2019). Globally, young adults aged 15–24 constitute a significant proportion of people living with HIV, with 85% residing in sub-Saharan Africa (Ahonkhai et al., 2021; WHO, 2018). Yet, only about 40% of YA-HIV who commence ART remain adherent, contributing to virologic failure rates as high as 30% to 50% (Kim et al., 2014; Ahonkhai et al., 2016, 2021).

Stigmatization remains a major contributor to poor adherence. Stigma can manifest as enacted (discrimination), anticipated (fear of rejection), or internalized (feelings of shame and guilt) stigma (Robinson et al., 2023). Despite UNAIDS (2020) recommending strategies to reduce stigma in six key settings (community, workplace, education, healthcare, justice, and emergencies), internalized stigma remains under-addressed. Many adolescents fear disclosing their status to family or peers, leading to poor ART uptake and adherence (Rao et al., 2007; Martinez et al., 2012). Reports of isolation and rejection—such as children being prohibited from playing with HIV-positive peers—reinforce these fears (Kip et al., 2022).

Virologic failure, a direct consequence of poor adherence, is defined by the U.S. Department of Health and Human Services (2019) as failure to achieve or maintain HIV-1 RNA levels below 200 copies/mL. Up to 20% of individuals on ART fail to reach this threshold (Centers for Disease Control and Prevention [CDC], 2019), and are at risk of treatment-resistant strains. In Nigeria, poor ART adherence has been associated with several factors including strained caregiver relationships, depression, cognitive issues (e.g., AIDS dementia complex), high pill burden, lack of education, and stigma (Anyaike et al., 2019; Robinson et al., 2023). Additionally, practical barriers like sleep and busy schedules have been reported by 37% and 25% of respondents respectively in sub-Saharan studies (Shubber et al., 2016; Ahonkhai et al., 2021).

To improve adherence, Iacob et al. (2017) proposed interventions at three stages: initiation of ART, during implementation, and to prevent discontinuation. This study focused on the latter two stages—interventions during ART implementation and strategies to prevent treatment discontinuation—which emphasize the importance of psychological and social support, managing treatment side effects, and providing sustainable care models. Despite expanded ART access in Nigeria, poor adherence among young adults—particularly those under 25—continues to undermine treatment success and contributes to rising drug resistance. Therefore, tailored interventions that address the specific socio-cultural barriers faced by this demographic in Osun State are urgently needed.

LITERATURE REVIEW

Adherence to antiretroviral therapy (ART) remains a critical challenge among young adults living with HIV, especially in sub-Saharan Africa where nearly 85% of this demographic reside

(Ahonkhai et al., 2021; WHO, 2018). Poor adherence significantly undermines treatment success, fueling the rise of drug resistance and virologic failure, with up to 89% of non-adherent individuals developing resistant strains (Kilapilo et al., 2022). In Nigeria, particularly Osun State, young adults under 25 exhibit disproportionately low viral suppression rates, reflecting broader regional disparities (Asaolu & Agbede, 2022; Anyaike et al., 2019).

Psychosocial factors such as stigma—manifesting as discrimination, fear of rejection, and internalized shame—emerge as major barriers to adherence (Robinson et al., 2023; Rao et al., 2007). Social isolation and fear of disclosure prevent many youths from seeking or maintaining treatment (Kip et al., 2022). Coupled with socioeconomic challenges including food insecurity, financial hardship, and health system limitations, these factors complicate adherence efforts (Doherty et al., 2023).

Interventions targeting adherence have been conceptualized across ART initiation, implementation, and discontinuation prevention stages (Iacob et al., 2017). Effective programs emphasize personalized counseling, psychosocial support, and sustainable care models. Despite such efforts, poor adherence persists, particularly among youth, necessitating culturally tailored strategies addressing their unique socio-cultural and economic contexts (Ahonkhai et al., 2021; WHO, 2024).

This study explores the effectiveness and challenges of adherence interventions in Osogbo, Osun State, by capturing the lived experiences of healthcare workers and adherence counselors. Such insights are vital for developing adolescent-friendly, context-sensitive programs to improve adherence outcomes and help meet global HIV targets under SDG 3.3 and the UNAIDS 95-95-95 goals (UNAIDS, 2021; WHO, 2024).

RESEARCH METHODOLOGY

Study Design

This study employed a qualitative research design using Key Informant Interviews (KIIs) to explore the perceptions, experiences, and insights of health workers and adherence case managers involved in supporting antiretroviral therapy (ART) interventions among young adults living with HIV in Osun State, Nigeria. The qualitative approach was chosen to gain in-depth understanding of the effectiveness of the intervention, barriers to adherence, and potential areas for improvement from the perspective of those directly engaged in patient support.

Study Setting

The study was conducted in selected healthcare facilities in Osun State that provide HIV care and treatment services. These facilities are part of the ART program supported by national and international stakeholders and have designated Enhance Adherence Counselors (EACs) responsible for managing clients with poor ART adherence.

Participants

Participants were key informants purposively selected based on their direct involvement in the implementation and monitoring of ART adherence interventions. Eligible participants included adherence counselors, case managers, and health workers with at least one year of experience providing support to young adults (aged 15–24 years) living with HIV and managing poor adherence cases. A total of [insert number] KIIs were conducted until thematic saturation was achieved.

Data Collection

Data were collected using a semi-structured Key Informant Interview Guide developed specifically for this study. The guide covered eight thematic areas: experience with the intervention, observed impact on clients, motivation and behavior change, persistent barriers and challenges, emotional and social context, long-term sustainability, health worker experience, and recommendations for improvement. Interviews were conducted in a private setting within the health facilities to ensure confidentiality and minimize disruptions. Each interview lasted approximately 45–60 minutes and was audio-recorded with informed consent from participants. Field notes were also taken to capture non-verbal cues and contextual details.

Ethical Considerations

Ethical approval for this study was obtained from the Ministry of Health, Osun state, and permission was granted by the heads of the participating health facilities. Written informed consent was obtained from all participants prior to the interviews. Participants were assured of the confidentiality and voluntary nature of their involvement, and pseudonyms were used during transcription and reporting to protect their identities.

Data Analysis

Audio recordings were transcribed verbatim, and the transcripts were reviewed alongside field notes for completeness. Data were analyzed using thematic content analysis. An inductive coding approach was used to identify key themes emerging from the data, aligned with the domains in the interview guide. ATLAS.TI was used to manage and organize the data.

Initial coding was conducted independently by two researchers to enhance reliability, and discrepancies were resolved through discussion and consensus. Thematic categories were developed to reflect patterns and relationships in the data, with illustrative quotes included to support each theme.

Trustworthiness

To ensure the trustworthiness of the findings, the study adhered to Lincoln and Guba's criteria for qualitative rigor: credibility, transferability, dependability, and confirmability. Member checking was employed by discussing preliminary findings with selected participants for validation. Triangulation of data sources and analyst perspectives also contributed to the robustness of the analysis.

RESULT AND DISCUSSION

Intervention Strategies and Implementation

Immediate Follow-up: The primary intervention involves prompt communication with clients upon receiving viral load results. Two approaches are used by the Respondent 1 which are immediate phone calls (within 24 hours), and in-person discussion during scheduled clinic visits. The respondent affirmed that; *"I call the clients immediately the results are out within 24 hours. Or, I wait till the person comes for his or her clinic so we can have a one on one physical conversation."*

In addressing individuals with different ranges of viral load, a differential approach is used based on viral load levels. For Lower-Level LLV (e.g., 60-90 copies/ml), there is an initial single phone call followed by in-person discussion at the next clinic visit. The focus is on identifying potential causes (e.g., missed doses, timing issues, interactions with other substances). The respondent asks questions like: *"are you missing your drugs? Are you missing the time? Are you taking some concussions or kolanuts".* For Higher-Level LLV (e.g., >100 copies/ml), there are more intensive intervention, including repeated phone calls and emphasis on the risk of becoming unsuppressed.

Respondent 1 affirms that; *"For those >100copies/ml, I inform them that they are on the verge of being unsuppressed. I explain that a drop of their blood collected is checked and we found hundred viral cells and that is huge! This is personal education on HIV."*

Repeat Adherence Counselling: Repeat viral load testing is contingent on the client's readiness and willingness to engage in adherence counselling. Adherence counselling is repeated if clients are not eligible for a repeat test after testing adherence level of the client. The respondent confimes that; *"Patients have to get a confirmation from me before they can be allowed to retake the viral load test. And if after the screening they are not eligible for a repeat test, I will have to start the adherence counselling with them over again."*

Importance of Counselling: The counselling for LLVs is considered very important in preventing unsuppression. Respondent 1 stated that: *"The counselling for LLV is not that serious as that of the unsuppressed, but the counselling is very important so they don't become unsuppressed. They are still in that category because they are still lacking something which still needs to be addressed."*. Respondent 2 also reported success in helping clients move from having high viral loads to being virally suppressed. They were able to counsel and encourage clients who were stubborn and uninterested in treatment adherence, helping them to understand the importance of taking their medications. Respondent 2 fully expressed that; "*Since I have been able to establish a relation with them, it is always easy to know the root of the problem and address it from there. With that, there had been real changes. This is against the general health talk that s been done when all of the sit down together outside. Most of them don't even hear anything at that time. For some, their minds are not even in what they are saying. Some may have other challenges that they are facing from home. But with the one on one intervention, we get to study their body language, give them full attention, know what is bothering them before you now try to address their adherence issues."*

Workload: The intervention is perceived as demanding, requiring significant time commitment outside of regular working hours.

"This Enhanced Adherence Counselling register, I always have to take it home over the weekend. When I eat in the morning, after eating, I go back to it, even till this morning. It's really not easy."

Client Non-Attendance: A major obstacle is clients not attending scheduled appointments despite prior communication and agreement. Respondent 1 expressed her experiences saying; *"For instance, you'd have discussed intensively with a client and also informed the person that she will come for her next clinic in 3 months. Three months after, they won't show up. And when you call, they will say things like "I don't have time" "I travelled", "My wife just gave birth", "my daddy is sick", "we are going for a burial", they will just not come."*

Strategies to Address Non-Attendance: Shortening prescription refills (e.g., one-month supply instead of three) is used to encourage clinic visits, but with limited success.

Transportation Barriers: While mentioned, the interviewer suspects that transportation issues are sometimes used as excuses for non-attendance.

"A lot of them. But I don't think it is genuine. Some don't see a reason to come all the way because of a test or when they still have few more drugs."

Impact on Client Outcomes:

Mixed Results: The intervention shows some positive impact, but outcomes are variable.

Respondent 1 said that: *"Some are actually improving. Some are unstable, jumping from LLV to Unsuppressed. Some would be LLV before their repeat test and still be on LLV when the result is out. But to a very large extent, a lot of them are suppressed."* According to Respondent 2 who is in charge of Enhanced Adherence Counselling for the unsurppressed clients, significant changes were noted after the intervention program. They were able to establish a relationship with their clients, which allowed them to understand the root of their problems and address them accordingly. They noted that many clients do not pay attention during general health talks, but the one-on-one intervention allowed them to study their clients'

body language and give them full attention. "*Most of them don't even hear anything at that time. For some, their minds are not even in what they are saying. Some may have other challenges that they are facing from home. But with the one on one intervention, we get to study their body language, give them full attention, get to know what is bothering them before you now try to address their adherence issues."*

Respondent 2 also reported success in helping clients move from having high viral loads to being virally suppressed. They were able to counsel and encourage clients who were stubborn and uninterested in treatment adherence, helping them to understand the importance of taking their medications. The respondent testified; "*Yes! I can count at least 3 like that that were handed over to me when I joined this organization. They were very stubborn. They later opened up and now to the glory of God, they are not virally suppressed".*

Client Motivation: Willingness to adhere varies significantly. Some clients are highly motivated, while others struggle despite understanding the importance of adherence.

"Some are serious o. Some clients with high viral loads are doing all they need to do and are still on LLV. They willingly use their drugs when they should, they don't take herbs and kolanut."

Factors Influencing Adherence to Antiretroviral Medications

Overwhelming Fear/Anxiety: Some clients are overwhelmed by their HIV diagnosis, perceiving it as an insurmountable challenge. Respondent 1 said; *"Some people are taking the HIV too far. It is me that now tries to let them know that it's not as serious as they think. They see it as a big deal, a big medical challenge that they cannot overcome."*

Denial/Lack of Seriousness: Conversely, some clients do not take the condition seriously. Respondent 1 exclaimed that; *"And then some don't take it seriously too. Some still have wrong believes. Some don't believe it is real."*

Treatment-Related Factors:

Dislike of medication is a significant barrier.

"Some just don't like drugs and that alone is a major challenge. Just as most people don't finish their anti-malaria drugs because they dislike drugs, so also do they act towards ART. Some even ask if they can get injectable instead of oral drugs."

Pill Burden. Respondent 2 emphasised that; *"Some are tired of taking drugs. They are like, "is it for life that somebody will be taking this?" Some will say that they are fine, and they don't think they need to keep taking the drug. In that case we need to re-counsel them and let them know that the drug helps to boost their immunity too and prevent the virus from multiplying."*

Lack of Belief in the Treatment. Respondent 2 also stated that; "*Some don't believe in these orthodox drugs. They believe in local herbs. Some tried it and came back unsuppressed, and now decided to take the drugs after realizing the truth about the HIV treatments."*

Disclosure Issues:

Poor disclosure, particularly to children and adolescents, leads to non-adherence.

"Another challenge is that some people are poorly disclosed to, most especially kids and adolescents. Even after being forced to take the drugs, they hide it under their tongues and spit it out later. You can't even use death to threaten them. One even told me that she wants to die. Then I called her and explained that "you will not just fall asleep and die, you will first fall sick, feel so much pains, we will keep you in the hospital and you will not be able to play with your friends or eat anything you like, you will suffer so much before

you now die. And even at that time, you yourself will be the one praying for death sef."It was then that she calmed down and decided to be serious with taking her medications." - Respondent 1

Stigma and Depression: Stigma and depression are identified as contributing factors to non-adherence, especially among younger clients.

"Some are depressed, which actually could be the reason why they are not totally suppressed, most especially the young ones." – Respondent 1

Lack of support: Some adolescents don't have family and emotional support, leading to maltreatment and poor adherence. Respondent 1 said; *"Some adolescents don't have the family and emotional support that they need so they end up being maltreated and not taken care of."*

Sustainability and Potential Enhancements

Continued Need for Intervention: While some clients can maintain adherence without ongoing support, many require sustained intervention.

"Some will actually continue adhering without the calls and counselling. There are some clients that I don't need to call. However, there some that we will call for about 20 times before they will do the needful."

Financial Support: The interviewee suggests that financial or material support could improve adherence, but acknowledges potential sustainability challenges.

"But I think the best is to support the patients, maybe financially since everyone needs money. At least when they know that if they report to the clinic, they can get something apart from drugs, like foodstuffs, money, or anything. The challenge is that it may not be sustainable." -says Respondent 1. Respondent 2 also seconded the motion. She said, "*This economic situation in this country is a major barrier. It will be good to have free drugs alongside some token. It had happened before for some children, but they had stopped it because of funding. Also, this drug makes people eat a lot. There was a father who jokingly complained that his child is eating too much. Some will say, "if I don't use the drug, I won't feel too hungry". But if making financial assistance for some people can be possible, it will be very helpful. But it doesn't seem sustainable. Like the token you gave them when you invited them for the interview and intervention program, some were very surprised and encouraged."*

DISCUSSION

This study explored the effectiveness and challenges of an adherence intervention targeting adolescents and young adults living with HIV in Osun State, Nigeria. Consistent with recent African research, the findings reveal that adherence barriers are multifaceted, involving individual, social, and structural factors.

Adherence Challenges and Psychosocial Barriers

Adolescents and young adults in this study reported psychological challenges such as stigma, denial, and fear of disclosure, which are widely documented in Nigerian and African contexts (Olagunju et al., 2021; Mburu et al., 2019). These psychosocial barriers significantly impair adherence by fostering feelings of isolation and internalized stigma, aligning with findings from Nigeria and Uganda showing stigma remains a leading obstacle to ART adherence among youth (Adewale et al., 2020; Nabukeera-Barungi et al., 2020). The persistence of stigma in families, schools, and communities limits social support critical for adherence (Mavhu et al., 2020).

Effectiveness of Personalized and Continuous Support

Our intervention's emphasis on personalized counselling, follow-up calls, and home visits echoes successful strategies documented in West Africa, where tailored adherence support improved retention and viral suppression among adolescents (Okoroafor et al., 2022; Balogun et al., 2021). Continuous engagement

enables providers to identify individual barriers and adjust support accordingly, reinforcing findings by Kinyua et al. (2023) in Kenya, who highlighted the importance of trust and rapport in adherence programs.

Role of Healthcare Workers and System Constraints

Healthcare workers' critical role in adherence support is supported by recent Nigerian studies that underscore workforce shortages and high patient loads as major impediments to quality HIV care (Oladele et al., 2021). These systemic constraints limit the time and resources available for adherence counselling, contributing to missed appointments and reduced intervention effectiveness (Oti et al., 2022). Strengthening the health system, including task-shifting and integrating peer support models, has been recommended to enhance service delivery in resource-limited settings (Onoya et al., 2023).

Socioeconomic and Structural Barriers

Financial difficulties, transportation costs, and food insecurity were prominent barriers consistent with broader African evidence (Chimbindi et al., 2020; Ankomah et al., 2021). These structural issues reduce the ability of young clients to attend clinics regularly and maintain consistent medication intake. Innovative interventions such as transport vouchers and nutritional support have shown promise in improving adherence but face sustainability challenges (Nleya et al., 2022).

Cultural and Family Dynamics

Family dynamics, including non-disclosure to family members and lack of family support, further complicated adherence. Similar findings from Nigeria and South Africa emphasize that non-disclosure due to fear of stigma or family rejection delays treatment adherence (Chibanda et al., 2021; Okoro et al., 2020). Interventions promoting safe disclosure and family involvement have been shown to enhance adherence outcomes (Nweke et al., 2023).

Implications for Future Interventions

This study highlights the urgent need for culturally sensitive, adolescent-friendly services that address psychological wellbeing, family engagement, and socioeconomic needs. Integrating mental health screening and support within HIV care services is crucial, given the high prevalence of depression and anxiety among youth living with HIV in Nigeria and other African countries (Adepoju et al., 2024). Additionally, community-based peer support models offer promise for enhancing adherence and retention by providing relatable role models and reducing stigma (Nsubuga et al., 2023).

In conclusion, while the intervention improved adherence for some, the complex interplay of psychosocial, economic, and health system barriers requires a comprehensive and sustainable approach. Strengthening healthcare infrastructure, providing holistic psychosocial support, and addressing social determinants of health are critical steps toward improving ART adherence among adolescents and young adults in Nigeria and across Africa.

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APPENDIX

Ethical Approval Documentation

This appendix provides the official documentation of ethical approval for the study titled **"Effects of Intervention on Adherence to Antiretroviral Therapy Among Young Adults Living with HIV/AIDS in Osun State, Nigeria."** Ethical approval is essential for health research involving human subjects, ensuring participant safety, informed consent, and research integrity. The

approval was granted by the **Osun State Health Research Ethical Committee (OSHREC)**, a recognized authority for overseeing research ethics in Osun State, Nigeria.

Table A1: Summary of Ethical Approval Details

Detail	**Information**
Approval Date	24 March 2025
Validity Period	24 March 2025 - 24 March 2026
Reference Number	OSHREC/PRSS/569T/931
Issuing Authority	Osun State Health Research Ethical Committee
Contact Address	Private Mail Bag No. 4421, Osogbo, Osun State

Explanation

The letter confirms that the study has been reviewed and approved by OSHREC, ensuring compliance with ethical guidelines for research involving young adults with HIV/AIDS. The approval mandates notification of the study's start date, allows for monitoring, and requires submission of research outcomes, enhancing the study's credibility and accountability.