

Factors influencing adherence to antiretroviral therapy among patients with high human immunodeficiency virus viral loads attending Serem Comprehensive Care Centre, Vihiga County, Kenya

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<https://doi.org/10.51867/ajernet.7.4.68>

ABSTRACT

Virological non-suppression remains a challenge in Human Immunodeficiency virus-HIV care, particularly where treatment monitoring and adherence support are constrained. This heightens the risk of disease progression, transmission dynamics and drug resistance. This study assessed factors associated with self-reported antiretroviral therapy (ART) adherence among patients with a documented HIV-1 RNA level of at least 1,000 copies/mL at Serem Comprehensive Care Centre, Vihiga County, Kenya. This was a facility-based cross-sectional study. HIV-1 RNA was measured in plasma, CD4+ T-cell counts in EDTA-anticoagulated blood, cryptococcal antigen in serum, and tuberculosis screening was performed using GeneXpert MTB/RIF according to SOP. Adherence was assessed with the eight-item Morisky Medication Adherence Scale (MMAS-8). Descriptive statistics and exact or chi-square tests were used for categorical variables. Of 590 patients active in care, 94 (15.9%) had an HIV-1 RNA level $\geq 1,000$ copies/mL. The ART duration < 5 years was significantly linked with poor adherence ($p = 0.031$). Associations with viral load, CD4+ T-cell count, age, and marital status did not meet the prespecified $\alpha = .05$ threshold ($p = .067, .072, .078$, and $.064$, respectively). The findings support intensified, non-judgmental adherence assessment and enhanced adherence counseling for patients with unsuppressed viral load. They did not establish that poor adherence caused virological non-suppression, and the results should not be generalized beyond this facility-based sample without further study. Study findings necessitate enhanced ART adherence counseling, routine screening for opportunistic infections and integrated care model that is well-tailored to suit comprehensive care needs.

Keywords: Adherence, Antiretroviral Therapy, High Viral load, HIV, Opportunistic Infections

I. INTRODUCTION

The introduction and scale-up of combination antiretroviral therapy (ART) transformed HIV infection from a frequently fatal illness into a treatable chronic condition. Prompt ART initiation reduces HIV-related morbidity and mortality and, when viral suppression is achieved and maintained, prevents sexual transmission. ART also reduces the risk of perinatal transmission when used within a comprehensive prevention-of-mother-to-child-transmission programme (Ambia & Mandala, 2016; Cohen et al., 2016; World Health Organization [WHO], 2023). Approximately 40.8 million people live with HIV worldwide, with Sub-Saharan Africa bearing 70% of the cases (WHO, 2024). Kenya has nonetheless recorded a significant drop in HIV incidence from 5.6% in 2014 to 3.2% in 2024 among adults of ages 15-49 years (Schuner et al., 2024). This gain has been made possible by the proper administrative implementation of the laid down HIV national policy guidelines as well as interventions from non-governmental stakeholders who play a pivotal role as implementing partners in the fight against HIV (National AIDS and STIs Control program [NASCOP], 2022)

Viral load monitoring is a critical component of ART founded programs and serves as the gold standard for assessing treatment efficacy and adherence to medication (Pham et al., 2022). On the other hand, irrespective of widespread availability and accessibility of ART among PLWH, an extensive bulk of treatment experienced patients continue to exhibit high HIV viral load (HVL), defined as ≥ 1000 copies/mL of plasma HIV RNA following at least six (6) months of progressive therapy (Pyngottu et al., 2021). High viral load in ART exposed patients not only indicates treatment failure or sub-optimal adherence but also signals a risk for accelerated development of drug-resistant HIV strains and enhanced transmission dynamics of community acquired infection (Erjino et al., 2023). Consequently, the discovery undermines the effectiveness of HIV control strategies and poses a serious threat to the attainment of the global 95-95-95 targets that project towards 95% of all treatment-experienced cases achieving viral suppression that set to pave the way for ending AIDS as a public health threat by 2030 (Pham et al., 2022).

In resource constrained settings, where healthcare systems are often over-burdened and laboratory monitoring remains deficient, the understanding of the magnitude and predictors of HVL among ART recipients is fundamental. Timely identification of HVL patients besides implementation of comprehensive interventions including enhanced adherence counseling, resistance profiling and regimen switching are imperative to achieving steady viral suppression (Kippen et al., 2024). However, there is a paucity of localized HVL specific data in vast HIV high-burdened localities that significantly impairs formulation of targeted strategies to mitigate both high viral load and improved ART outcomes in our setting (Cherutich et al., 2016; Maman et al., 2015).

As such, investigating the prevalence of high HVL and its associated factors in patients on progressive ART is critical for informing public health policy, optimizing ART program implementation and achieving continual virological control. The evidence collectively serves to improve on individually tailored health outcomes as well as integrated public health approaches that curb HIV transmission while ultimately ending the HIV epidemic.

1.1 Statement of the Problem

Poor adherence to ART remains the most consistent predictor of virological failure across settings. However, adherence as a predictor is influenced by a complex interplay of treatment-related, biological, and socio-behavioral factors, including drug side effects, co-morbidities, stigma, and access barriers. While these factors are well documented globally, there is limited context-specific evidence on adherence patterns among patients with virological non-suppression in Kenya, particularly at facility level like in Serem Health Centre

1.2 Research Objective

What are the factors influencing adherence levels among patients on antiretroviral therapy with high HIV viral load attending Serem comprehensive care centre, Vihiga County, Kenya.

II. LITERATURE REVIEW

2.1 Theoretical review

2.2.1 HIV Treatment, viral load and adherence.

All persons who have their HIV tests confirmed positive are eligible for ART initiation regardless of their cd4 levels, WHO clinical stage, age, pregnancy or breastfeeding status, co-infection status, risk group or any other criteria (NASCOP, 2022). Complexity of ART regimens is a fundamental challenge to adherence. Some regimens require several doses of medication per day together with various requirements or restrictions on food intake or other activities. These complexities, in addition to the problems of toxicity and side-effects can greatly influence an individual's willingness and ability to adhere to therapy (Chesney *et al.*, 2000). Side-effects have also been consistently associated with decreased adherence and patients who experience more than two adverse reactions are less likely to continue with their treatment.

The literature on side-effects clearly shows that optimal adherence occurs with medications that remove symptoms whereas adherence is reduced by medications that produce side effects (Sendagala, 2010). Patients quickly discontinue therapy or request changes of medications if they experience side-effects. Both real and perceived side-effects account for more regimen changes than does treatment failure. Kenya was among the early African countries to scale up a national HIV viral-load monitoring program (Mwau et al., 2018). Before the scaling up of the viral load monitoring program, Kenya was one of the resource-limited Nations amongst many that decried their historical resource limitation to perform CD4 cell count, a marker of immune status to monitor patient response to HIV antiretroviral therapy. However, HIV viral load (VL) measurement of plasma HIV concentration remains the gold standard and is a more direct measure of response to treatment. Viral load monitoring among patients on ART is a useful indicator of clinical HIV care within a population engaged in treatment and maybe helpful in estimating the infectiousness of a population receiving HIV care.

2.2 Empirical Review

2.2.1 HAART adherence levels influencing factors

Prior studies support an inverse association between antiretroviral drug exposure or adherence and HIV-1 RNA level, but the magnitude varies by regimen, measurement method, duration of treatment, and population (Byrd et al., 2019; Masika et al., 2024). Patients with high adherence rates were significantly more likely to achieve viral suppression compared to those with lower adherence. Similarly, Nachega et al. (2010) reported that non-adherence was the most significant predictor of high viral load among HIV patients. This study emphasized the need for continuous adherence support to maintain viral suppression.

Moreover, Bezabhe et al. (2019) conducted a longitudinal study that highlighted the dynamic nature of adherence and its direct impact on viral load. This study showed that even short-term lapses in adherence could lead to significant increases in viral load. Contrary to these findings, some studies have highlighted other factors influencing

viral load beyond adherence. Bang et al. (2022) suggested that co-infections, drug resistance, and individual patient factors also play critical roles in determining viral load outcomes.

III. METHODOLOGY

3.1 Study Design

This was an observational, facility-based study conducted at Serem Comprehensive Care Centre in Vihiga County, Kenya. Since being set as an ART site, the facility has had 1,292 people living with HIV, of whom 590 were active on care. Participants were selected purposively from patients with a documented HIV-1 RNA level $\geq 1,000$ copies/mL after at least six months on ART from the period of February 2022 to February 2023. Patients with incomplete medical records, HIV exposed Infants (HEIs) below 2 years and those initiated on ART for <6 months were excluded from the study.

3.2 Study Area

Study was done at Serem Health Centre in Hamisi Sub County of Vihiga County. It had a 2.5% HIV prevalence according to National Syndemic Disease control council-NDCC report of 2024, with a total of 1292 HIV positive patients ever enrolled in care and only 590 active on care.

3.3 Target Population

The target population comprised people living with HIV attending Serem Comprehensive Care Centre who had received ART for at least six months and had a documented HIV-1 RNA level $\geq 1,000$ copies/mL.

3.4 Sample Size

A sample size of 94 was determined using Cochran 1977 formula (Bartlett et.al, 2001). Using an average prevalence of HIV non-suppression rate of 6.5% (Aoko et al., 2023) a confidence level of 95% with a margin of error of 5% was used which corresponds to a Z-score of 1.96. The sample size was calculated as follows;

$$N = \frac{Z^2 \times P \times (1-P)}{C^2}$$

$$N = \frac{1.96^2 \times 0.065 \times (1-0.065)}{0.05^2}$$

$$N = 94$$

3.5 Data collection and Data analysis

Data were collected from consenting patients using medical records abstraction tools capturing adherence, socio-demographic and clinical variables Statistical analysis was conducted using GraphPad Prism v8 software (GraphPad™, California, USA). Fishers exact test was employed for a two-by-two data and Pearson chi-square for a three-by-two data. These tests analyzed categorical data including ART adherence with immune and viral load status. Binary logistic regression identified predictors of poor ART adherence. Descriptive statistics were summarized as proportions and expressed in form of tables. Normality test (Shapiro-Wilk) was conducted for continuous variables. Data was expressed as medians and interquartile range (IQR). All statistical significance was considered at $P \leq 0.05$.

3.6 Ethical Considerations

Ethical approval was granted by Masinde Muliro University of Science and Technology Institutional Scientific and Ethics Review Committee (MMU/COR: 403012 Vol 5(01) and study authorization from Serem Health Center, Vihiga County, Kenya. The study permit was granted by National commission for Science, Technology and Innovation-NACOSTI (NACOSTI/P/22/15883). Confidentiality of patients' information was maintained throughout the study.

IV. FINDINGS & DISCUSSION

4.1 Socio-demographic characteristics of study participants.

A total of 94 participants were enrolled in the study, with a majority being male ($n=56$; 59.6%). The median age of participants was 40.5 years with an interquartile range (IQR) of 20 years. Participants had a median weight of 55.6 kg (IQR: 17.7 kg), median height of 160.0 cm (IQR: 13.0 cm), and median BMI of 22.2 kg/m² (IQR: 5.6). The Z-score for participants aged below 17 years was -1.0 (IQR: 1.0). Majority of participants 88.3% earned less than Kshs 15,120, living below the poverty line. 76.6% of participants reported no alcohol use. A significant portion had multiple sexual partners at 72.3%, cigarette smoking was reported by 7.4% of participants. 43.6% were married, 30.9% were single, and 25.5% were divorced. 28.7% were underweight, 17% overweight, and 4.3% were obese.

Table 1
Socio-Demographic Characteristics of the Study Participants

Variable	Frequency n, (%)
Gender	
Male	56 (59.6)
Female	38 (40.4)
Age	40.5 (20.0)
Weight, kg	55.6 (17.7)
Height, cm	160.0 (13.0)
BMI, kg/m ²	22.2 (5.6)
Underweight	27 (28.7)
Normal	47 (50)
Overweight	16 (17)
Obese	4 (4.3)
Z-score	-1.0 (1.0)
Income (Kshs.)	3000 (5000)
< 15,120	83 (88.3)
>15,120	11 (11.7)
Alcohol use	
Yes	22 (23.4)
No	72 (76.6)
Sexual behavior	
Multiple	68 (72.3)
Active	8 (8.5)
None	18 (19.1)
Cigarette smocking	
Yes	7 (7.4)
No	87 (92.6)
Marital status	
Married	41 (43.6)
Single	29 (30.9)
Divorced	24 (25.5)

4.1.1 MMAS-8 Score for HAART adherence

Figure 1 below displays HAART adherence among study participants using MMAS-8 scoring tool. The score criteria classified ART adherence into: good adherence (0 MMAS-8 score); inadequate adherence (1-2 MMAS-8 score) and poor adherence (3-8 MMAS-8). Notably, 66% (n=62) of patients demonstrated good adherence to HAART (score 0), while 12% (n=11) exhibited poor antiretroviral therapy adherence representing 3.0 – 8.0 and 22% (n=21) showed inadequate adherence on the MMAS-8 score.

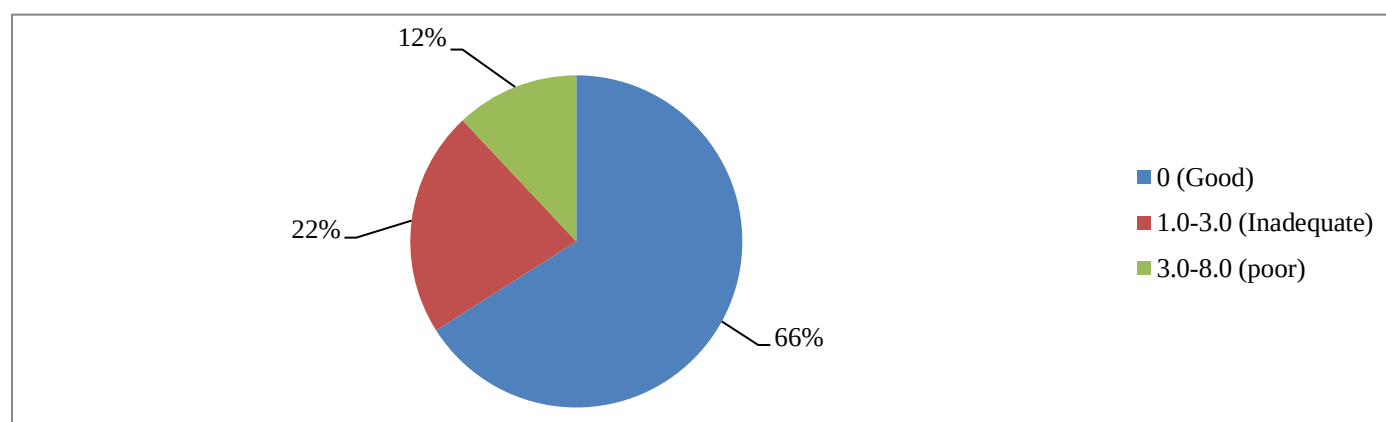


Figure 1
Antiretroviral Therapy Adherence using MMAS-8 Score

4.1.2 Association of HAART Adherence with Socio-Demographic Characteristics

In chi square (χ^2) analysis of HAART adherence association with demographic characteristics of study participants, we adjusted adherence scores as; 0 (zero) score for good adherence and scores of 1 – 2 for inadequate adherence were coded two (2), while scores >3 were coded one (1) for poor adherence. Of the 56 male participants, 49 (60.5%) had poor adherence alongside 32 (39.5%) female counterparts with recorded p-value of 0.763. A considerable number of study subjects were living below poverty line with 87.7% (n=71) displaying poor adherence. Interestingly, the majority of non-alcoholics equating to 76.5% (n=62) showcased poor adherence with a p-value of 0.999. To add further, 81.5% (n=66) of study participants reporting inactive sexual behavior exhibited poor antiretroviral adherence. Similarly, the bulk of non-cigarette smokers (79.8%; n=75) also revealed poor level of HAART adherence. The married participants were also more non-adherent at proportion of 48.1% (n=39; p=0.064) compared to their single (27.2%; n=22) and divorced (24.7%; n=20) counterparts. The association of HAART adherence with socio-demographic characteristics is presented in Table 2.

Table 2

Association of HAART Adherence with Socio-Demographic Characteristics

Variable, n (%)		Good	Poor	P-value
Gender	Male	7 (53.8)	49 (60.5)	0.763
	Female	6 (46.2)	32 (39.5)	
Age		36.0 (44.0)	43.0 (68.0)	0.078
Weight, kg		53.9 (41.7)	58.7 (44.6)	0.191
Height, cm		159.5 (28.0)	164.0 (40.0)	0.194
BMI, kg/m ²		19.7 (12.31)	22.5 (14.79)	0.224
Normal		7 (53.8)	13 (16.0)	0.435
Underweight		4 (30.8)	17 (21.0)	
Overweight		2 (15.4)	51 (63.0)	
Income (Kshs.)	<15,120	12 (92.3)	71 (87.7)	0.999
	>15,120	1 (7.7)	10 (12.3)	
Religion		13 (13.8)	81 (86.2)	
Alcohol use	Yes	3 (23.1)	19 (20.2)	0.999
	No	10 (76.9)	62 (76.5)	
Sexual behavior	Inactive	10 (76.9)	66 (81.5)	0.709
	Active	3 (23.1)	15 (18.5)	
Cigarette smoking	Yes	1 (7.7)	6 (6.4)	0.999
	No	12 (92.3)	75 (79.8)	
Marital status	Divorced	4 (30.8)	20 (24.7)	0.064
	Single	7 (53.8)	22 (27.2)	
	Married	2 (15.4)	39 (48.1)	
Occupation	Formal	2 (2.1)	18 (19.1)	0.360
	Informal	4 (4.3)	36 (38.3)	
	Unemployed	7 (7.4)	27 (28.7)	

Data is presented as number (n) and proportion (%) of the study participants. Statistical analysis was conducted using chi square (χ^2) test. HAART; highly active antiretroviral therapy. Statistical significance was set at $P \leq 0.05$.

4.1.3 Association of HAART adherence with HAART use history

With regards to association of HAART adherence with HAART use history, there is a strong relationship between ART duration in years and HAART adherence (p= 0.031). Study subjects on medication for above 5years duration demonstrate poor adherence to antiretroviral drugs (n=71; 87.7%). In particular, poor adherence was observed for current antiretroviral regimen (n=63; p=0.999) composed of nucleoside reverse transcriptase inhibitors (NRTI's) and integrase inhibitors (II). Further, 86.4% of participants (n=70; p=0.999) showed poor HAART adherence irrespective of being on HIV viral load support and monitoring. The NRTIs (nucleoside/tide reverse transcriptase inhibitors) were categorized among: TDF (tenofovir disoproxil fumarate), 3TC (lamivudine), ABC (abacavir), AZT (zidovudine) and D4T (stavudine), whereas protease inhibitors (PIs) included LPV/r (Lopinavir + ritonavir) and ATV/r (Atazanavir + ritonavir), while integrase inhibitors (IIs) constituted DTG (dolutegravir).

Table 3*Association of HAART Adherence with HAART use History*

Variable n (%)		Good	Poor	P-value
1 st line regimen	NRTIs + NNRTIs	12 (92.3)	74 (91.4)	0.999
	NRTIs + PI/II	1 (7.7)	7 (8.6)	
2 nd line regimen	NRTIs + ATVr	1 (33.3)	7 (63.6)	0.538
	NRTIs + LPVr	2 (66.7)	4 (36.4)	
Current regimen	NRTIs + II	10 (76.9)	63 (77.8)	0.999
	NRTIs + PIs	3 (23.1)	18 (22.2)	
ART duration (yrs.)	≤ 5	5 (38.5)	10 (12.3)	0.031
	>5	8 (61.5)	71 (87.7)	
Adherence support and monitoring	Yes	11 (84.6)	70 (86.4)	0.999
	No	2 (15.4)	11 (13.6)	

Data is presented as number (n) and proportion (%) of the study participants. Statistical analysis was conducted using Fisher's exact tests for a two-by-two table. NRTIs; nucleoside/tide reverse transcriptase inhibitor. PIs; protease inhibitors. II; integrase inhibitors. ATVr; atazanavir. LPVr; lopinavir. ART; antiretroviral therapy.

4.1.5 Association of HAART adherence with immune and viral load status

The association of ART adherence with immune and viral load status showed that participants with CD4+ cell counts above 500 exhibited poor adherence (n=47; 95.9%; p=0.072) relative to their counterparts. Additionally, 6months following ART initiation, participants with HIV-1 viral load of less than 1000 copies/ml were poorly adherent (n=45; 55.6%) whereas majority of follow-up patients were non-adherent (n=79; 97.5%) especially with viral load levels above 1000 copies/ml.

Table 4*Association of HAART Adherence with Immune and Viral Load Status*

Variable, n (%)		Good	Poor	P-value
CD4 T cell counts/mL	≥ 500	5 (71.4)	47 (95.9)	0.072
	< 500	2 (28.6)	2 (4.1)	
HIV-1 RNA copies/mL (Initial)	≥1000	2 (15.4)	36 (44.4)	0.067
	< 1000	11 (84.6)	45 (55.6)	
HIV-1 RNA copies/mL (Follow-up)	≥1000	12 (92.3)	79 (97.5)	0.363
	<1000	1 (7.7)	2 (2.5)	

Data is presented as number (n) and proportion (%) of the study participants. Statistical analysis was conducted using Fisher's exact tests for a two-by-two table.

4.1.6 Association of HAART adherence with Opportunistic Illnesses

Regarding association of HAART adherence with opportunistic illnesses, all the participants who had no opportunistic illnesses exhibited a poor adherence to HAART use with insignificant associations. Tuberculosis and pneumonia exhibited higher comparable proportions at 7.4% each among opportunistic illnesses profiled in poor HAART adherent subjects.

Table 5*Association of HAART Adherence with Opportunistic Illnesses*

Variable, n (%)		Good	Poor	P-value
Herpes simplex virus-HSV	Yes	0 (0.0)	2 (2.5)	0.999
	No	13 (100)	79 (97.5)	
Cryptococcal meningitis	Yes	1 (7.7)	2 (2.5)	0.363
	No	12 (92.3)	79 (97.5)	
Pneumonia	Yes	1 (7.7)	6 (7.4)	0.999
	No	12 (92.3)	75 (92.6)	
Syphilis	Yes	2 (15.4)	2 (2.5)	0.091
	No	11 (84.6)	79 (97.5)	
Tuberculosis-TB	Yes	1 (7.7)	6 (7.4)	0.999
	No	12 (92.3)	75 (92.6)	
Cervical ca	Yes	1 (7.7)	4 (4.9)	0.533
	No	12 (92.3)	77 (95.1)	
Kaposi sarcoma	Yes	0 (0.0)	3 (3.7)	0.999
	No	13 (100)	78 (96.3)	

Data is presented as number (n) and proportion (%) of the study participants. Statistical analysis was conducted using Fisher's exact tests for a two-by-two table.

4.1.7 Regression modeling of relationship between adherence, ART duration, immune status, HIV-1 viral load, age and syphilis

Binary logistic regression identified predictors of poor adherence inclusive of ART duration (above and below 5 years), HIV-1 viral load suppression at 6 months (above and below 1000 copies/ml), CD4+ T counts, marital status, age and syphilis. The variables showed p-values less than 0.1, hence regression analysis was done. Analysis revealed no statistical significance among variables with likelihood of relationship. Syphilis and CD4+ cell count had small numbers hence omitted following regression modeling.

Table 6*Regression Modeling of Relationship between ART Adherence, Duration, Immune Status, VL Suppression at 6 Months, Syphilis and Age*

Variable	β	Wald	OR (95% CI)	P-value
Age	0.039	1.092	0.967	0.296
ART duration	-1.803	1.237	0.007	0.266
VL suppression @6months	-1.581	1.556	0.017	0.212
Marital status	1.537	2.638	0.728	0.104

Abbreviations: ART, antiretroviral therapy; VL, viral load; OR, odds ratio; CI, confidence interval.

Statistical analysis was conducted using binary regression analysis.

4.2 Discussion

The current universal context of 95-95-95 target aims towards 95% viral suppression among HIV patients on antiretroviral set to pave the way for ending AIDS as a public health threat by 2030 (Frescura et al., 2025). However, our study findings revealed that a significant proportion of participants struggled to achieve HIV viral suppression despite being on adherence support and viral load monitoring. This observation contrasts with prior research undertakings showing strong inverse relationship between ART adherence levels and viral load, whereby high adherence rates were significantly associated with viral suppression (Masika et al., 2024). Non-adherence remains the most significant predictor of high viral load in HIV patients, hence the need for continuous adherence support (Bezabih et al., 2019). Nonetheless, some studies have highlighted other factors influencing viral load independently of antiretroviral adherence. In particular, co-infections, drug resistance patterns besides varied patient dynamics including immune status and underlying opportunistic infections all contribute essential roles in determining viral load outcomes (Bang et al., 2022).

Additionally, psychosocial factors and relative ease of access to healthcare services also directly impacts on viral load outcomes (Gifford et al., 2025). This complexity highlights the need for comprehensive patient management that addresses adherence alongside other competing factors. On the whole, adherence to antiretroviral agents is imperative for overall maintenance of adequate drug levels to suppress viral replication, resistance development, and

achieving long-term viral suppression (Masika et al., 2024 & Byrd et al., 2019). The proportion of participants with high viral load despite good ART adherence may result from factors such as gene polymorphisms and concurrent medication and illicit substance use with associated drug interactions. The postulate partly corroborates with previous studies evaluating factors that influence ART adherence among HIV infected subjects encompassing patient-related factors and varied healthcare system facilitator roles (Saenjun et al., 2025). Further, concomitant heroin injection and heavy alcohol consumption are formerly described as risk factors for viral load rebound on ART enrolled subjects (Ladak et al., 2019)

In our study, opportunistic illnesses were occasioned especially among the poorly adherent subjects. This was profound especially among participants exhibiting high HIV viral load. Previous studies have consistently shown a strong association between high viral load, depleting CD4⁺ cell counts and increased susceptibility to opportunistic infections (Ayana et al., 2021 & Kirkoyun et al., 2023). More specifically, patients demonstrating high viral load and reduced CD4⁺ cell counts were linked with heightened acquisition of tuberculosis, pneumonia and bacterial infections attributable to weakened immune system and uncontrolled viral replication (Mouinga-Ondeme et al., 2024).

Despite the present study failing to establish significant odds ratio between ART adherence and viral load suppression, previous investigations have established high HIV viral load as a significant predictor of severe opportunistic infections inclusive of cryptococcal meningitis and Kaposi's sarcoma that exhibited predominance in patients with uncontrolled viraemia (Okome-Nkoumou et al., 2014; Wongkittipong & Kiertiburanakul, 2024). This study emphasized the need for viral suppression to lower emergence of opportunistic ailments. However, some studies have noted that the type and frequency of opportunistic infections can vary based on regional and demographic factors (Chhina, 2020), which further regulates acquisition dynamics.

V.CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

There is a notable, statistical significant association between ART duration and adherence. Patients who have been on medication for long, fail to adhere to medication hence high HIV viral load. Moreover, patients with high HIV viral load exhibit non-adherence among the study participants. Participants with higher CD4⁺ T cell counts and lower viral loads tended to have better adherence. There was existence of opportunistic/ comorbid illnesses among patients with high viral load. However, opportunistic/comorbid illnesses did not significantly affect ART adherence.

5.2 Recommendations

Develop targeted interventions to improve adherence among participants with low CD4⁺ T-cell counts and high viral loads. Conduct regular viral load testing and adherence assessments to identify and support individuals at risk of treatment failure. Screen promptly for opportunistic infections and comorbid illnesses among ART users to improve clinical outcomes and prevent HIV disease progression. Scale up adherence monitoring and support for individuals with high viral loads and suspected treatment failure.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Funding Declaration

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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