Scholars Journal of Applied Medical Sciences
Abbreviated Key Title: Sch J App Med Sci
ISSN 2347-954X (Print) | ISSN 2320-6691 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Medicine

Understanding Non-Compliance in Antiretroviral Therapy among HIV Positive Adolescents and Young Adults at Buea Regional Hospital: Challenges and Solutions

Tensaba Andes Akafa[1*], Oben Nkongho-Anyor Sandrine[3], Nyasa Raymond Babila[2], Solomon Ossom Asare[3], Gloria Omonefe Oladele[4], Victoria Seun Ajibade[5], Artu Ishishen John[6], John Sabo Ezeuhwe[7]

[1]Department of Community & Family Medicine, Faculty of Clinical Science, College of Health Sciences, Federal University Wukari, Taraba State, Nigeria
[2]University of Buea, Cameroon
[3]Assinman Nursing and Midwifery Training College Assin Foso -Ghana
[4]Family Medicine Department, Federal Medical Centre, Bida, Nigeria
[5]Department of Public Health Ahmadu Bello University Zaria,Kaduna State. Nigeria
[6]Department of Medicine, Jos University Teaching Hospital, Jos, Plateau State
[7]Maternity/Clinic Annex, Health Services Unit, Federal University Wukari-Nigeria

DOI: https://doi.org/10.36347/sjams.2025.v13i03.006 | **Received:** 14.01.2025 | **Accepted:** 24.02.2025 | **Published:** 07.03.2025

***Corresponding author:** Tensaba Andes Akafa
Department of Community & Family Medicine, Faculty of Clinical Science, College of Health Sciences, Federal University Wukari, Taraba State, Nigeria

Abstract **Original Research Article**

In the light of considerable efforts by the WHO and various international AIDS control initiatives, a significant number of adolescents and young adults at Buea Regional Hospital continue to face challenges with adherence to antiretroviral therapy (ART). This cross-sectional study aimed to identify specific factors contributing to non-compliance, revealing a disturbing non-compliance rate of 31.3%. Conducted from June to August 2022, the study utilized a convenience sampling technique to enroll 150 consented participants. Data were gathered through a structured questionnaire that assessed demographic characteristics alongside ART adherence. Statistical analysis was performed using SPSS version 26 and Excel 2013, resulting in an overall compliance rate of 68.7%. The analysis highlighted significant associations between non-compliance and factors such as taking medication during depressive episodes (p=0.016) and ceasing medication when experiencing depression (p=0.010). Although a majority, 76.0%, reported a good sense of well-being, the study also identified persistent challenges, with 16.4% of participants indicating a lack of interest in daily tasks. These findings emphasize the critical need for targeted interventions that specifically address the psychological and social factors impacting adherence among this population. In particular, enhancing support for adolescents and young adults during periods of depression, as well as providing education to bolster medication knowledge, could improve compliance rates. Understanding these underlying issues is essential for developing effective strategies to enhance ART adherence and ultimately improve the overall quality of life for HIV-positive adolescents and young adults. Therefore, a multifaceted approach that incorporates mental health support, education, and community engagement is vital to facilitate better compliance and health outcomes in this vulnerable population.

Keywords: Adherence, Antiretroviral Therapy (ART), Non-Compliance, Depression, Interventions.

Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

The primary goal of antiretroviral therapy (ART) is to prevent morbidity and mortality associated with HIV infection and to reduce viral load, thereby minimizing the risk of transmission. In the absence of a cure, effective viral suppression is achievable through proper ART adherence (Global AIDS Update, 2016). Adolescence is defined by UNICEF as the transitional phase from ages 10 to 19, represents a critical period for individuals living with HIV, particularly in low and middle-income countries (LMICs). This age cohort faces unique challenges that hinder medication adherence, necessitating an understanding of the factors influencing compliance during this developmental stage (Hudelson & Cluver, 2015).

Adolescents living in low and middle - income countries (LMICs) are disproportionately burdened by the global HIV/AIDS pandemic. Maintaining medication adherence is vital to ensure that adolescents living with HIV/AIDS receive the benefits of antiretroviral therapy (ART) although this group faces unique challenges to adherence. Knowledge of the factors influencing adherence among people during this unique developmental period is needed to develop more targeted and effective adherence -promoting strategies (Hudelson & Cluver, 2015).

Globally, there were over 250,000 new HIV infections among adolescents in 2017, with a higher proportion of these in sub-Saharan Africa. In Cameroon, UNICEF estimated over 4,200 new HIV infections in adolescents in 2015; by 2016, there were over 40,000 adolescents who had HIV. Given that the number of adolescents living with HIV in Cameroon is on the increase, there is need to better understand the factors influencing compliance to treatment (Bongfen *et al.*, 2020). Also, physical and psychosocial changes during adolescence could influence the psychological well-being and adherence or compliance to ART (Okawa *et al.,* 2018). However, several studies in Sub-Saharan Africa have linked family cohesion and social support to better ART adherence (Damulira *et al.,* 2019).

Lower levels of adherence to ART among adolescents as compared to adults are influenced by individual, psychosocial, and treatment-related factors. Successful transition of older adolescents into HIV adult care from pediatric and adolescent focused care requires an understanding of barriers to ART adherence. Futhermore, the reduction of ART pill burden and inclusion of assessment of ART self - efficacy will go a long way to enhance adherence (Nyawira *et al.,* 2020). In Africa and Asia, more than 70% of HIV positive adolescents 10 - 19 years and above are on ART and are adherent (Kim *et al.,* 2014).

Adherence is a patient's ability to follow a treatment plan. Drug adherence means collaboration between patient and provider. The physician works with the patients to decide how best to meet their needs. The patient is carried along and meant to understand the need to carry out the instructions, be part of it, plan how best to take it in a way that will benefit the patients and fit into their lifestyle (Onyekwere, 2013).

Compliance describes the ability to take all ARVs in the correctly prescribed doses, at the prescribed time intervals and in the right manner, observing any dietary restrictions. Alternatively, it could mean a patient correctly following medical advice. Moreover, adherence in most cases is used interchangeably with compliance but compliance has a hierarchical controlling provider in charge connotation (Onyekwere, 2013). Compliance to ART is an important factor in ensuring optimal clinical outcomes and is associated with improved survival among HIV/AIDS patients. Sustained high levels of compliance are essential for treatment success. Non-compliance to treatment has been associated with virologic, immunologic and clinical failure, and may increase the risk of resistance to first-line ART drugs (Bauleth, 2013). A study conducted in Cameroon reported a compliance rate of 83% (Bongfen *et al*., 2020) as compared to that of a previous study (59.6%) obtained in Ivory Coast among HIV-positive adolescents on ART (Eboua *et al*., 2018). HIV positive adolescents are less compliant to ART compared to adults, resulting to lower rates of immunological recovery and viral suppression (Villiera *et al*., 2022). As such, compliance to ART still remains a challenge in the care of young people living with HIV (Eboua *et al*., 2018).

The factors associated with compliance to ART have been categorised as religious, cultural, family and community factors; patient related factors; socio-economic factors; work place related factors; and health care team and system related factors (Bauleth, 2013). Some factors such as a female gender, age greater than 49 years, higher levels of education, positive perceptions of treatment, high motivation, satisfaction with information provided by physician and higher CD4 count at initiation of ART were captured in a systematic review in Cameroon as factors associated with compliance (Mbuagbaw *et al*., 2012). Moreover, other factors including being of ages 35–44 years, having moderate monthly income, no history of opportunistic infection and having good family support were identified in a study to be associated with compliance to ART in Eastern Ethiopia (Letta *et al*., 2015). The age factor (20-29 years) in a previous study in Nigeria was found to be associated with non-compliance (Okoronkwo *et al*., 2013). In addition, some factors such as male gender, having parent widowed or divorced, CD4 inclusion rate $\geq$ 500 cells/ml and duration on ART $\geq$ 10 years, have been found to be associated with non-compliance to ART among HIV-Infected adolescents in Ivory Coast. Despite the availability of ART, large numbers of adolescents still find it difficult to comply with their treatment regimens (Hudelson and Cluver, 2015). The factors associated with compliance and non-compliance to ART among adolescents and young adults in Cameroon, especially Buea have not been adequately studied.

Many PLHIV find it challenging to attend to daily tasks of living, participate in moderate to vigorous physical activities, or have sufficient energy to engage in an active social life while managing HIV/AIDS. The well-being of PLHIV has emerged as a significant medical outcome measure, and its improvement as an important goal (Basavaraj *et al*., 2010). ART can increase survival and improve the overall well-being of patients (Busi *et al*., 2021). Despite ART, adolescents living with HIV still face many health challenges which

have an impact on their well-being (Salako *et al*., 2022). There is a paucity of information on the well-being of HIV positive adolescents and young adults in Buea and Cameroon as a whole. As such, it was necessary to identify the factors associated with compliance and non-compliance with ART among HIV positive adolescents and young adults receiving treatment and to equally evaluate their sense of well-being. The study aim to identify the factors associated with non-compliance to ART by HIV positive adolescents and young adults. This will help to bring down the incidence of ARV drug failure and ensure adequate intervention to encourage regular and consistent compliance to the ARV medication so that HIV positive adolescents and young adults could attain more than 95% compliance. With the positive sound knowledge of these factors, clinicians and other health workers attention to compliance when working with PLHIV will surge their management strategies. This will in turn improve the well-being of positive adolescents and young adults while abolishing the incidence of drug resistance and spread of the HIV virus.

Aim

This study aims to identify the factors associated with non-compliance to ART among HIV positive adolescents and young adults receiving treatment at Buea Regional Hospital. Understanding these factors will inform targeted interventions to improve adherence and overall health outcomes.

Specific Objectives

1. To assess the demographic characteristics of HIV positive adolescents and young adults attending Buea Regional Hospital and their relationship with ART compliance.
2. To evaluate the psychological factors, particularly the impact of depression, on ART adherence among the study population.
3. To explore the influence of social support and stigma on the compliance rates of HIV positive adolescents and young adults with their ART regimens.

By addressing these objectives, the study aims to provide insights that can enhance ART adherence strategies and improve the well-being of HIV positive adolescents and young adults in Cameroon.

MATERIALS AND METHOD

Study Area:

This study was carried out at the Buea Regional Hospital (BRH) (Figure 3). The BRH, is located in the Buea Sub-Division, Fako Division, South - West Region of Cameroon. It is located on latitude 4º 8’ 53.5” North and longitude 9º 14’ 11.5” East. The mean annual rainfall is 2625mm with a constant humidity of 75 – 80 % (Wanji *et al*., 2003). The district has approximately 184,602 inhabitants (Buea District Health Service records, 2022). Buea consists mainly of the Bakweri people who happen to be the indigenes of the area. Immigrants from other parts of the country can also be found in the area (Wanji *et al*., 2003). It has an altitude of 4100m (Delancey, 2000). The activities carried out in the area are: farming, business, teaching, schooling and artisanship.

Study Design:

The study was carried out from June 1st to August 31st, 2022. A cross-sectional study design was used to carry out this study at the Buea Regional Hospital.

Study Population: male or female adolescents and young adults receiving treatment for at least 6 months.

Inclusion Criteria:

i. Participants who are male or female adolescents and young adults, and who are 10-19 years and 20-30years of age respectively. They should have been receiving treatment at the treatment center for at least 6 months.

Exclusion Criteria: severely ill clients to participate, Participants who were less than 10 years of age.

Sample Size Determination: Minimum sample size (n) = Z^2pq / e^2

Where the proportion of population with the characteristic p=0.62, 1-p= 1-0.62. At 95% confidence interval, the critical value $Z_{\alpha/2}$=1.96. An error margin (e) of 5%

Thus

$1.96^2 (0.62) (1 - 0.62) / 0.05^2$ = 362 participants

However, according to Sekran (2003) rule of Thumb for sample size determination, a sample size greater than 30 and less than 500 is suitable for most qualitative research. Hence, a convenient sample size of 150 participants was used for the study that is, n=150 participants.

Sampling Technique:

Participants were selected by convenient sampling technique. Participants were enrolled for the study as they came for their regular meetings for follow up. Upon their arrival, the rationale of the study was explained to them.

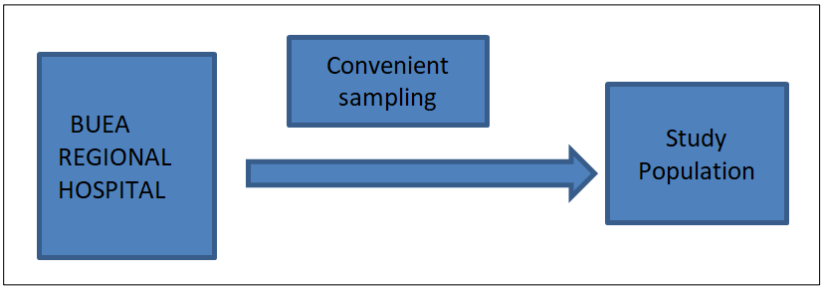

Figure 1: Sampling Technique flow chart.

Pre-Test of Questionnaires

For verification of reliability and validity, 10 questionnaires were pre-tested at the Limbe Regional Hospital on the 24th of May 2022. Limbe Regional Hospital was chosen because it has similar characteristics as the Buea Regional Hospital. Some minor adjustments were made to the questionnaire prior to the eventual take off of data collection at the Buea Regional Hospital.

Administration of Questionnaires

Data was collected using a well-structured questionnaire designed following a previous format (Carter *et al*., 2017). The questionnaire was structured into 4 parts comprising of Section A (demographic data), Section B (duration on ART and perceived lifestyle characteristics of respondents), Section C (compliance and non-compliance to ART) and Section D (evaluation of the sense of well-being). Section A was made up of demographic characteristics involving age, gender, level of education, marital status, religion, occupation (whether schooling or learning a trade), address and the duration from the house to the clinic by vehicle. Section B comprised of the time of initiation on ART in years so as to capture the duration on ART. Also, this section comprised of respondent intake of alcohol, whether they had sexual partners or not. Other aspects were opinion of sharing items with family members, opinion of what can be their Life expectancy, to enquire if it was appropriate for them to donate blood and to state if they have any lifestyle restrictions.

Section C of the questionnaire consisted an important aspect to know if they missed any dose of medication for the past two weeks. This was to enable determination of compliance (did not miss any dose) and non-compliance (missed doses sometimes). Also, whether they had difficulties taking medications, if they would not take medication when they feel better and also whether they do not take medication when they feel depressed. These habits were used to assess if they are associated with compliance and non-compliance. Lastly, Section D had different components as follows; if they were lethargic towards their daily activity, felt depressed, had trouble staying asleep, felt tired, had poor appetite, felt bad about themselves, had trouble concentrating, spoke slowly and if they preferred to be dead. Each component was arranged on a scale with scores ranging from 0 to 3. This section was used to capture the sense of well-being of participants over the last two weeks.

Data Collection Tools:

The data was collected using self-administered semi-structured questionnaires consisting of closed and open-ended questions with information on their socio-demographic data of adolescent and young adults. Data obtained from the collection procedure were checked daily and the filled forms were put in a large envelope and stored in a cupboard to prevent it from destruction by insects. The questions were coded in SPSS (Statistical Package for Social Sciences) version 26 and the data collected were eventually entered in the data editor of SPSS. The data was checked for completeness by ensuring that all data were properly entered from the questionnaires. The data was also stored in Excel format and several copies kept save in a phone, computer and email account.

Statistical Analysis:

Data was analysed using SPSS version 26 for windows (SPSS Inc, Chicago USA) and also Excel 2013. Descriptive summary of the data was presented on frequency tables using percentages and also on graphs using Excel. Descriptive statistics was mostly used to describe outcome variables by frequencies and percentages. Chi-square test (χ^2) was used to compare the perceived life style characteristics within each component such as intake of alcohol, having a sexual partner. The major indicators estimated were compliance (did not miss any dose for the past two weeks). Binary logistic regression was used to identify the variables which were candidates for the multivariate analysis by considering $p<0.2$ as a cut-off point. The multivariate analysis was used to identify factors associated with compliance. The scores of component of wellbeing (being bothered over the last two weeks) for each participant was presented as percentage scored by each component. Chi-square test was used to compare the relationship between variables (socio-demographic characteristics, respondents' perceptions and habit) and the well-being of HIV positive adolescents and young adults.

Ethical Considerations:

An ethical approval was obtained from the Faculty of Health Sciences Institutional Review Board of

the University of Buea. Also, an administrative authorization was obtained from the Regional Delegation of Public Health for the South West Region. Other administrative authorisation was obtained from the Buea Regional Hospital. All participants were informed of the study goals, procedure, potential harm and benefits of the study.

A signed assent form was obtained from adolescents and their parents/guardians. An informed consent was obtained from young adults before the administration of the questionnaire. All consented participants were immediately enrolled in the study. Also, confidentiality of respondent's information was fully assured.

RESULTS

Table 1: Socio-demographic characteristics of respondents

Variables	Categories	Frequency	Percentage
Age	10-19	72	48.0
	20-30	78	52.0
	Total	**150**	**100.0**
Gender	Male	42	28.0
	Female	108	72.0
	Total	**150**	**100.0**
Level of education	Primary education	21	14.0
	Secondary education	67	44.7
	University/Professional education	62	41.3
	Total	**150**	**100.0**
Marital status	Single	146	97.3
	Married	4	2.7
	Total	**150**	**100.0**
Religion	Christian	142	94.7
	Muslim	8	5.3
	Total	**150**	**100.0**
Schooling or learning a trade	Schooling	118	78.7
	Learning a trade	32	21.3
	Total	**150**	**100.0**
Address	Buea	108	72.0
	Tiko	16	10.7
	Limbe	12	8.0
	Others	14	9.3
	Total	**150**	**100.0**
Duration from house to clinic by vehicle	10 minutes	4	2.7
	20 minutes	35	23.3
	30 minutes	53	35.3
	>30 minutes	58	38.7
	Total	**150**	**100.0**

The majority of participants (52.0%) were between the ages of 20-30 years. With respect to gender, most of the respondents were female (72.0%) as compared to males (28.0%) (Table 1). Also, most of participants were at the secondary level of education (44.7%) as compared to the primary (14.0%) and university (41.3%) levels of education. For marital status, 97.3% and 2.7% of the respondents were single and married respectively. About 94.7% of the participants were christians while 5.3% of the participants were muslims. Majority of participants were schooling (78.7%) while a minority of them were learning a trade (21.3%). The greater proportion of the respondents were from Buea (72.0%), while the rest were from Tiko (10.7%), Limbe (8.0%) and other areas (9.3%). The highest duration required by participants to travel from their homes to the hospital by vehicle was reported to be greater than 30 minutes (38.7%).

Table 2: Lifestyle perception of respondents

Variables	Category	Frequency	Percentage	P-value
Intake of alcohol	Yes	44	29.3	<0.001
	No	106	70.7	
	Total	**150**	**100.0**	
Having a sexual partner	Yes	49	32.7	<0.001
	No	101	67.3	
	Total	**150**	**100.0**	
Partner's awareness of their HIV status	Yes	14	28.6	0.003
	No	35	71.4	
	Total	**49**	**100.0**	
Have as opinion sharing personal belongings with family members	Yes	7	4.7	<0.001
	No	143	95.3	
	Total	**150**	**100.0**	
Envisaged what their life expectancy can be (Years)	>25 years	2	2.7	<0.001
	>30 but <50	8	5.3	
	>50 but <60	16	10.7	
	>60 but <70	48	32.0	
	>70 but <80	41	27.3	
	>80	33	22.0	
	Total	**150**	**100.0**	
Assumed it is appropriate to donate blood	Yes	5	3.4	<0.001
	No	137	91.3	
	I don't know	8	5.3	
	Total	**150**	**100.0**	
Life style restrictions	Yes	25	16.7	<0.001
	No	125	83.3	
	Total	**150**	**100.0**	
Lifestyle restrictions; no unprotected sex (9), no sharing of blades, needles and other personal belongings (7), avoid blood donation (4), no alcohol (3), avoid bad friends (2)				

*P-value computed from chi square test.

A greater percentage (70.7%) of the participants reported that they take alcohol which was significantly higher (p<0.001) than those that reported not taking alcohol (29.3%) Most participants (67.3) did not have sexual partners and they were significantly (p<0.001) greater in number than those who had sexual partners (32.7). Out of those having sexual partners (n=49), only 28.6% reported that their partners were aware of their HIV status. Also, majority (95.3%) would not share personal body items with family members. A smaller proportion of respondents (27.3%) envisaged a life expectancy of >70 but <80 years. Those who did not have any lifestyle restriction (83.3%) were significantly more than (p<0.001) those with lifestyle.

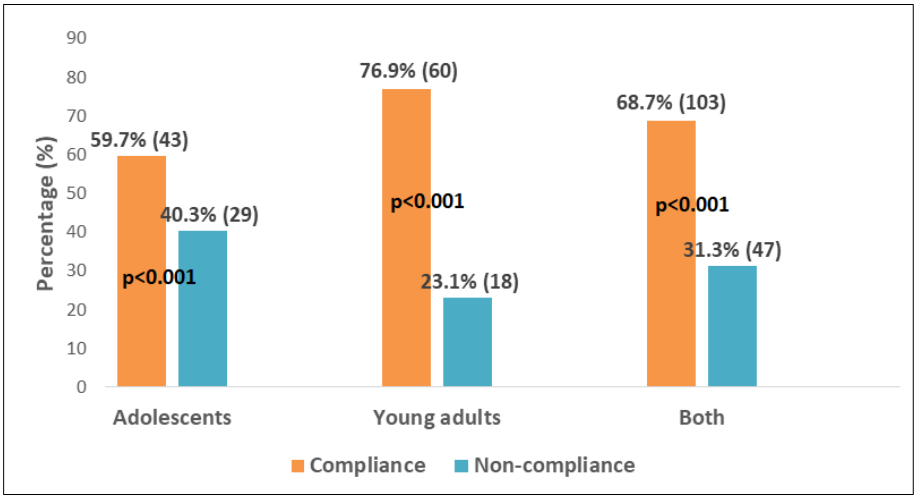

Figure 2: Compliance and non-compliance to HIV treatment regimen among adolescents and young adults

Out of the 150 participants, 103 (68.7%) were observed to comply to ART treatment as compared to a non-compliance rate of 31.3% with a significant difference (p<0.001) between the two Also, compliance in young adults (76.9%) was significantly greater (p<0.001) than that in adolescents (59.7%).

Table 3: Multivariate analysis of factors associated with non-compliance to ART

Variables	Category	Non-compliance			
		Yes N (%)	No N (%)	OR (95% CI)	P-value
Age	10-19	29 (61.7)	43 (41.7)	0.46 (0.19-1.12)	0.086
	20-30	18 (38.3)	60 (58.3)	-	-
Duration from house to clinic by vehicle	10 minutes	2 (4.3)	2 (1.9)	2.99 (0.20-44.38)	0.426
	20 minutes	8 (17.0)	27 (26.2)	1.47 (0.49-4.42)	0.489
	30 minutes	16 (34.0)	37 (35.9)	1.48 (0.60-3.66)	0.400
	>30 minutes	21 (44.7)	37 (35.9)	-	-
Duration on ART (years)	14-20	8 (17.0)	10 (9.7)	0.40 (0.11-1.51)	0.178
	7-13	27 (57.4)	55 (53.4)	0.83 (0.31-2.23)	0.713
	≤6	12 (25.5)	38 (36.9)	-	-
Envisaged sharing items with family members	Yes	4 (8.5)	3 (2.9)	0.14 (0.01-1.47)	0.101
	No	43 (91.5)	10 (97.1)	-	-
Difficulty in taking medication	Yes	4 (8.5)	4 (3.9)	0.73 (0.09-6.16)	0.769
	No	18 (38.3)	59 (57.3)	1.54 (0.66-3.59)	0.314
	Sometimes	25 (53.2)	40 (38.8)	-	-
Not taking medication when feeling better	Yes	2 (4.3)	2 (1.9)	0.10 (0.01-1.92)	0.126
	No	36 (76.6)	92 (89.3)	0.78 (0.20-3.14)	0.729
	Sometimes	9 (19.1)	9 (8.7)	-	-
Not taking medication when you feel depressed	Yes	1 (2.1)	8 (7.8)	51.23 (2.55-1027.9)	0.010
	No	35 (74.5)	89 (86.4)	5.04 (1.35-18.83)	0.016
	Sometimes	11 (23.4)	6 (5.8)	-	-
Eating well	Yes	38 (80.9)	79 (76.7)	0.49 (0.15-1.65)	0.248
	No	4 (8.5)	4 (3.9)	0.18 (0.03-1.20)	0.077
	Sometimes	5 (10.6)	20 (19.4)	-	-

Taking medication when feeling depressed was significantly (OR 5.04, 95% CI: 1.35-18.83, p=0.016) associated with non-compliance than not taking medication when feeling depressed. Not taking medication sometimes when feeling depressed was significantly (OR 51.23, 95% CI: 2.55-1027.9, p=0.010) associated with non-compliance than not taking medication when feeling depressed.

DISCUSSION

Out of the 150 participants, 103 (68.7%) were observed to comply with ART treatment as compared to a non-compliance rate of 31.3% (47 participants). The rate of compliance in young adults was 76.9% while that in adolescents was 59.7%. The compliance in adolescents (59.7%) is in line with that obtained (59.6%) among HIV-Infected adolescents at the Paediatric Department of Yopougon University Hospital in Ivory Coast (Eboua *et al*., 2018). It is however below that obtained (83%) among HIV-positive adolescents on ART in the North West and South West regions of Cameroon (Bongfen *et al*., 2020). Compliance in young adults (76.9%) corroborates with a compliance rate of 79.2% reported in a previous study carried at the University of Nigeria Teaching Hospital Enugu (Onyekwere, 2013). Also, the overall compliance (68.7%) in the current study is similar to that of 67% reported among youths (15-24 years) in selected health facilities in Nyeri country, Kenya (Irakoze, 2021) but is below that of a previous study (82%) in Haiti by Dorcelus *et al*., (2021). It is also far below the average compliance rate (94.84%) observed in among adults (≥18 years) at a Tertiary Care Hospital in North Karnataka (Hasabi *et al*., 2016). The low level in the current study could be attributed to limited sample size (n=150) of recruited study participants. The level of non-compliance observed in the present study in adolescents (40.3%) and in young adults (23.1%) are respectively are similar to results obtained in Ivory Coast (40.4%) by Eboua *et al*., (2018) and in Cameroon (22.5%) by Perfua-Yone *et al*., (2013). They are however above the rate (5.16%) reported by a previous study (Hasabi *et al*., 2016).

This study showed that taking medication when feeling depressed was significantly associated to compliance with treatment than sometimes not taking medications when feeling depressed. Also, stopping to take medication when feeling depressed was

significantly associated with compliance compared to sometimes not taking medication when feeling depressed. No previous study has demonstrated such outcomes. However, previous studies demonstrated other factors to be associated with compliance. These factors were female gender, age greater than 49 years, higher levels of education, positive perceptions of treatment, high motivation, using reminder methods, satisfaction with information provided by physician, higher CD4 count at initiation of ART, and being transferred-in from another clinic, from a systematic review in Cameroon (Mbuagbaw *et al*., 2012). In addition, other factors associated with compliance were experiencing health improvement and receiving social support from a study in Nigeria (Onyekwere, 2013). Moreover, other factors were ages 35–44 years, having moderate monthly income, no history of opportunistic infection and having good family support in Eastern Ethiopia (Letta *et al*., 2015) and experiencing side effects and internalized stigma in the North West and South West regions of Cameroon (Bongfen *et al*., 2020). The high rate of overall non-compliance (31.3%) in the current study could be attributed to the limited sample size of 150 participants on site relative to the expected 362 participants from the sample size calculation study participants because of the short period of data collection. Non-compliance in adolescents (40.3%) was found to be significantly higher than the rate in young adults (23.1%), which could be due to lack of commitment by adolescents in adhering to ART treatment regimen.

However, a previous study conducted at the Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria, revealed the age group 20-29 years to be associated with non-compliance (Okoronkwo *et al*., 2013). Moreover, another outcome obtained in a study among hospitalized patients in North West Ethiopia identified the age group 31-45 years as a factor associated with non-compliance (Tsega *et al*., 2015). However, those do not stop taking their medication when they feel depressed will not full comply as they may fluctuate in taking their doses in trying to cope in the depression phase and as such may not fully adhere to ART treatment.

CONCLUSIONS

An overall compliance (68.7%) was observed against a non-compliance rate of 31.3%. The factors associated with compliance to ART treatment were; taking medication when feeling depressed significantly (p=0.016) associated to compliance with treatment than sometimes not taking medications when feeling depressed. Moreover, stopping to take medication when feeling depressed significantly (p=0.010) associated with compliance compared to sometimes not taking medication when feeling depressed.

Not taking medication sometimes when feeling depressed significantly (p=0.010) associated with non-compliance than not taking medication when feeling depressed.

Recommendations

The community should provide the necessary support to young people living with HIV by reducing stigmatization and discrimination.

Counsellors should educate HIV positive adolescents and young adults how to handle depression phase in their life in order not to interfere in their compliance with ART.

The government should provide enabling environment to adolescents and young adults ART and Health providers should educate parents as well as adolescents on the need to eat well in order to increase compliance.

Conflict of Interest- none declared by the authors

REFERENCES

- Ali, J. H., & Yirtaw, T. G. (2019). Time to viral load suppression and its associated factors in cohort of patients taking antiretroviral treatment in Esat Shewa Zone, Oromiya, Ethiopia, 2018. *BMC Infectious Disease*, *19*, 1084. https://doi.org/10.1186/s12879-019-4702-z.
- Basavaraj, K. H., Navya, M. A., & Rashmi, R. (2010). Quality of life in HIV/AIDS. *Indian Journal of Sexually Transmitted Diseases and AIDS*, *31*(2), 75-80.
- Bauleth, M. F. (2013). *Factors Associated with Poor Adherence amongst Patients Receiving Antiretroviral Therapy at the Intermediate Hospital Oshakati in Namibia*, Published mini-thesis report, University of the Western Cape.
- Bongfen, M. C., Torpey, K., Ganle, J., &Ankomah, A. (2020). Level of adherence and associated factors among HIV-positive adolescents on antiretroviral therapy in Cameroon, *African Journal of AIDS Research*, *19*(4), 269-275, DOI: 10.2989/16085906.2020.1833055.
- Busi, A. N., Nsoh, M., Otieno, M. O., Ndeso, S. A., & Halle-Ekane, G. E. (2021). Evaluation of quality of life and associated factors among HIV patients on antiretroviral therapy in North West region of Cameroon, *African health sciences*, *21*, 8-17, https://dx.doi.org/10.4314/ahs.v21i1.3S
- CDC. (2021). *CDC division of global HIV& TB*.
- Centers for Disease Control. (CDC) (1981). Kaposi's Sarcoma and Pneumocytis pneumonia among homosexual men in New York City and California. MMWR. *Morbidity and mortality weekly report*, *31*(23), 305-7.

- Cescon, A. M., Cooper, C., Chan, K., Palmer, A. K., Klein, M. B., Machouf, N., Loufty, M. R., Raboud, J., Rachlis, A., Ding, E., Lima, V. D., Montaner, J. S. G., Rourke, S. B., SMIEJA, M., Tsoukas, C., Hogg, R. S. (2010). For the CANOC Collaboration. *HIV Medicine*, 12(6).
- Hasabi, I. S., Shaivashankarappa, A. B., Kachapur, C., & Kaulgud, R. S. (2016). A Study of Compliance to Antiretroviral Therapy among HivInfected Patients at a Tertiary Care Hospital in North Karnataka, *Journal of Clinical and Diagnostic Research*, *10*(5), 27-31, DOI: 10.7860/JCDR/2016/17948.7792.
- Hughes, J. P., Baeten, J. M., Lingappa, J. R., Magaret, A. S., Wald, A., de Bruyn, G., Kiarie, J., Imambao, M., Kilembe, W., Farquhar, C., & Celum, C. (2012). Determinants of Per-coital-Act-HIV-1 Infectibity Among African HIV-1 Serodiscordant Couples. The Journal of Infectious Diseases, *205*(3), 358-365.
- Insight Start Study Group. (2015). Initiation of antiretroviral therapy in early asymptomatic HIV infection. *New England Journal of Medicine*, *373*(9), 795-807.
- Irakoze, H. (2021). *Factors Influencing Adherence to Antiretroviral Therapy among Youth (15-24 Years) In Selected Health Facilities in Nyeri County, Kenya*, Published thesis report, Kenya Methodist University, Kenya.
- Jobanputra, K., Parker, L. A., Azih, C., Okello, V., & Maphulala, G. (2015). Factors associated with virological failure and suppression after enhanced adherence counselling, in children, adolescents and adults on antiretroviral therapy for HIV in Swaziland, *PLOS ONE*, *10*(2), eo116144.
- Maena, J., Banke-Thomas, A., & Mukiza, N. (2021). Determination of viral load non-suppression among adolescents in Mbale District, Eastern Rural Uganda. *AIDS Res Ther*, *18*(91). https://doi.org/10.1186/s12981-021-00408-1.
- Mann, J., & Tarantola, D. (2007). Responding to HIV/AIDS: A Historical Perspective. Health and Human Rights, doi:10.2307/4065182
- Mbuagbaw, L., Thabane, L., Ongolo-Zogo, P., Yondo, D., Noorduyn, S., Smieja, M., & Dolovich, L. (2012), Trends and determining factors associated with adherence to antiretroviral therapy (ART) in Cameroon: a systematic review and analysis of the CAMPS trial, *AIDS Research and Therapy*, 9(37). http://www.aidsrestherapy.com/content/9/1/37.
- Meintges, G., Moorhouse, M. A., Carmona, S., Davies, N., Dlamini, S., Van Vuuren, C., Manzini, T., Mathe, M., Moosa, Ya., Nash, J., Nel, J., Pakade, Y., Woods, J., Van Zyl, G., Conradie, F., & Venter, F. (2017). Adult antiretroviral therapy guidelines 2017. South African, *HJJournal of HIV Medicine*, *18*(1).
- Moss, A. R., Bachetti, P., Osmond, D., Krampf, W., Chaisson, R. E., Stites, D., Wilber, J., Allain, J. P., & Carlson, J. (1988). Seropositivity for HIV and the development of AIDS or AIDS related condition: Three year follow upof the San Francisco General Hospital Cohort. *British Medical Journal* (Clinical research ed.), *296*(6624), 745-50.
- Moss, A. R., Osmond, D., Bachetti, P., Chermann, J. C., Barre-Sinoussi, F., & Carlson, J. (1987) Risk Factors for AIDS and HIV Seropositivity in homosexual men. *American Journal of Epidemiology*, *125*(6), 1035-1047.
- National Guidelines on the Prevention and Management of HIV in Cameroon, 2015.
- Nigusso, F. T., & Mavhandu-Mudzusi, A. H. (2021). Health-related quality of life of people living with HIV/AIDS: the role of social inequalities and disease-related factors, *Health and Quality of Life Outcomes*, *19*(63), https://doi.org/10.1186/s12955-021-01702-2.
- Okoronkwo, I., Okeke, U., Chinweuba, A., & Iheanacho, P. (2013). Nonadherence Factors and Sociodemographic Characteristics of HIV-Infected Adults Receiving Antiretroviral Therapy in Nnamdi Azikiwe University Teaching Hospital, Nnewi, Nigeria, *ISRN AIDS*, Article ID 843794, 8 pages, http://dx.doi.org/10.1155/2013/843794.
- Onyekwere, L. I. (2013). *Factors Affecting Compliance with the Use of Anti-Retroviral Drugs among Persons Living with HIV/AIDS at the University of Nigeria Teaching Hospital Enugu, Nigeria*, Published dissertation report, University of Ibadan, Nigeria.
- Pefura-Yone, E. W., Soh, E., Kengne, A. P., Balkissou, A. D., & Kuaban, C. (2013). Non-adherence to antiretroviral therapy in Yaounde: Prevalence, determinants and the concordance of two screening criteria, *Journal of Infection and Public Health*, 6, 307-315, http://dx.doi.org/10.1016/j.jiph.2013.02.003.
- Popovic, M., Sarin, P. S., Robert-Guroff, M., Kalyanaraman, V. S., Mann, D., Minowada, J., & Gallo, R. C. (1983). Isolation and transmission of human retrovirus (human T-cell leukemia virus). *Science*, *219*(4586), 856-859.
- Salako, A. O., David, A. N., Opaneye, B. A., Osuolale, K. A., Odubela, O. O., Ezemelue, P. N., & Gbaja-Biamila, T. A. (2022). Health-related quality of life of children and adolescents living with HIV in Lagos, Nigeria: a cross-sectional study, *Pan African Medical Journal*, *41*(344). 10.11604/pamj.2022.41.344.23664.
- Tarser, F., Newell, M. L., & Barnighausen, T., Hund, L., Garnett, G. P., McGrath, N., & Newll, M. L. (2011). Effect of concurrent sexual partnerships on rate of new HIV infection in a high-prevalence, rural South African population; a cohort study. The Lancet, *378*(9787), 247-255.

- Tsega, B., Srikanth, B. A., & Shewamene, Z. (2015). Determinants of non-adherence to antiretroviral therapy in adult hospitalized patients, Northwest Ethiopia, Patient *Preference and Adherence*, *9*, 373–380.
- UNAIDS. (2015). *How AIDS changed everyuthing-MDG6: 15 years, 15 lessons of hope from the AIDS response/UNAIDS*.
- UNAIDS. (2018). *Fact sheet-Latest global and regional statistics on the status of the AIDS epidemic.*
- Violari, A., Steyn, J., McIntyre, J. A., Modhi, S. A., Cotton, M. F., Gibb, D. M., Babiker, A. G., Jean-Phillippe, P. (2008). Early antiretroviral therapy and mortality among HIV Infected Infants. *New England Journal of Medicine*, *359*(21), 2233-44.
- WHO. (2022), Global situation and trends, World Health Organization
- WHO/Treatment and care. (2019). WHO, World Health Organization