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*Full Length Research Paper*

# **Unprotected sexual practice and associated factors among people on anti-retro-viral therapy at public health facilities of Arba Minch town: Cross-sectional study**

**Zelege Hailemariam Abebo<sup>1\*</sup>, Mekuria Asnakew Asfaw<sup>2</sup>, Alemayehu Bekele Kasahun<sup>2</sup>, Aleme Mekuria Belachew<sup>3</sup>, Tiglu Haile Haressa<sup>4</sup> and Alemayehu Worku Yalew<sup>5</sup>**

<sup>1</sup>Department of Public Health, College of Medicine and Health Science, Arba Minch University, Ethiopia.

<sup>2</sup>NTDs Training and Research Center, Arba Minch University, Ethiopia.

<sup>3</sup>Department of Public Health Nursing, Nursing School, Arba Minch College of Health Sciences, Ethiopia.

<sup>4</sup>ASURE Health Project, Amref Health Africa, Addis Ababa, Ethiopia.

<sup>5</sup>Addis Continental Institute of Public Health, Addis Ababa, Ethiopia.

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Unprotected sexual practice with multiple partners is identified as the greatest risk factor for transmission of human immunodeficiency virus (HIV) in Sub Saharan Africa and it is a public health concern among people infected with HIV. However, due to the focus of HIV prevention efforts was largely on people uninfected with HIV, people on anti-retroviral therapy (ART) were not addressed by prevention strategies in Ethiopia, particularly at the study area. Thus, the aim of this study was to determine prevalence of unprotected sexual practice and associated factors among people who were on ART at Public Health facilities of Arba Minch town. Facility based cross-sectional study was undertaken on a sample of 513 patients who were on Anti-Retroviral Therapy in public Health Facilities of Arba Minch town. The study was conducted from January to March, 2014 by asking participants without any interval. Interviewer-based questionnaire was used to collect the data. Statistical package for social science (SPSS), version 20 software was used to perform descriptive and logistic regression analysis. Statistical significance was declared for predictor variables at p-value less than 0.05. Among 513 participants who were currently sexually active, 267 (52%) practiced unprotected sexual practice within 3 months prior to the study period. Monthly income of less than 500 Ethiopian birr, AOR and 95% CI were 4.69: 3.5-11.87; non specified monthly income, AOR and 95%CI were 6.74: 2.14-21.26; less than one year duration since ART started, AOR and 95%CI were 5.5:2.08-14.5; lack of discussion about safe sex with partners, AOR and 95% CI were 7.03:4.20-11.80 and unknown partner's sero-status for HIV, AOR and 95%CI were 2.76:1.16-6.53, times more likely to practice unprotected sexual practice as compared to their counterparts. Prevalence of unprotected sexual practice was high. Low monthly income, unknown partner's HIV sero-status, less than one year duration on anti-retro viral treatment (ART) and lack of discussion about safe sex with sexual partner were positively associated with unprotected sexual practice. Health education at different level and local media should give due attention on partners testing, open discussion about safe sex, and positive living information for recently enrolled ART patients. Income generating activities should be planned by carefully identifying those patients with low income status.

**Key words:** Unprotected sexual practice, human immunodeficiency virus (HIV), anti-retro viral treatment (ART).

## INTRODUCTION

Human immunodeficiency virus (HIV) is a major global public health problem with more than 25 million lives lost over the past three decades and majority of new infections occur in Sub Saharan Africa (SSA) where sixty nine percent of all the people live with HIV (UNAIDS, 2010). Ethiopia is one of the highly affected countries in SSA with a large number of people living with HIV, approximately 44,751 human immune deficiency syndrome (AIDS) related deaths occur (WHO, 2011). According to the report of 2011 Ethiopian demographic and health survey (EDHS), HIV prevalence in Ethiopia was 1.9% for women and 1.0% for men with an overall prevalence of 1.5% (CSA, 2011).

Unprotected sexual practice with multiple partners is identified as the greatest risk factor for transmission of HIV in SSA, and it is a public health concern among people infected with HIV (PLHIV). The prevalence of unprotected sexual practice is very high in African countries ranging from 40.1% among males and 46.3% among females in Cape Town, South Africa to 83% in Uganda (Eisele et al., 2008; Quirk et al., 2008).

The health status of HIV infected patients was improved due to widespread availability of antiretroviral therapy (ART), despite this benefit, treatment may have unintended effects on sexual practice. Understanding the sexual practices and its risk factors among people living with HIV, who are on ART is critical for preventing the transmission of the disease, prevent the acquiring of new strain and improving the life of people on ART (Crepaz and Marks, 2002).

However, due to the focus of HIV prevention efforts was largely on people uninfected with HIV, people on ART were not addressed by prevention strategies in Ethiopia, particularly at the study area. Therefore, this study determined magnitude for unprotected sexual practice and risk factors among people on ART at public facilities of Arba Minch town. The finding of this study will help concerned bodies to design appropriate interventions and it will be used as a baseline for further study.

## METHODS

### Study setting, design and population

The study was conducted among HIV patients who were on ART in public health facilities of Arba Minch town, which is a capital city of Gamo Gofa Zone. There were one public hospital and one health center which provide ART services for the town and surrounding community. Facility based cross-sectional study design was undertaken from January to March 2014 at the two health facilities.

Study participants were those patients who were taking ART, who had sexual experience within 3 months of the study period. HIV patients who were enrolled in ART services and whose age greater than or equal to 18 years were included. However, people who were seriously ill and unable to respond were excluded.

### Sample size and Sampling procedure

From the two health facilities, all patients who had sexual experience within the last three months and attending ART clinic during study period was included without any interval in this study. The total sample size, 513 was eligible population included from both facilities without any interval (consecutively) until the end of three months. Further, strong care was taken to prevent the repetition during data collection.

### Data collection

A face to face interview using pretested structured questionnaire was used for data collection. Four diploma nurse as data collectors and one bachelor degree in public health as supervisor were recruited for data collection.

### Measurement

1. Unprotected sexual practice: Non-use, inconsistent use or inappropriate use of condom during sexual intercourse with either HIV-negative, positive or unknown sero-status partners in the previous three months.
2. Steady partner: One with whom the respondent had a regular sexual relationship and who is perceived by the respondent to be the spouse or regular boy/girlfriend for more than three months.
3. Casual partner: one other than the regular partner with whom the respondent had sexual intercourse with or without payment during three months prior to the study period.
4. The independent variables: Socio-demographic characteristics including age, sex, ethnicity, education, religion, marital status, occupation and income status; relationship factors including the number of sexual partners, types of sexual partner and any discussion about condom use, partner's HIV sero-status and their disclosure status. Other independent variables included medically related factors like safer sex beliefs and the duration of HIV diagnosis and start of ART, safe sex beliefs about ART and safer sex knowledge, pleasure and effectiveness. Active substance and alcohol use; behavioral factors included self-efficacy to use a condom, and general social support by family and friends.

### Data analysis

The data were cleaned, coded and entered to Epi Info version 7 and exported to SPSS for analysis. Descriptive statistics was used to present mean, frequency and percentage distributions. Chi-square was checked for each independent and dependent variables, for those variables which could not fulfil the chi-square assumptions, variable recoding was done. Bivariate and multivariate logistic regression model were used to identify factors associated with unsafe sexual practices. Significance of association and precision was tested by odds ratio and p-value, where p-value less

\*Corresponding author. E-mail: zelehyle@gmail.com

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than or equal to 0.2 and 0.05 were considered significant for bivariate and multivariate, respectively.

### Quality assurance

The questionnaire was first prepared in English and then translated into Amharic, and then back translated to English to check for consistency by two different individuals who were fluent both in English and Amharic. Pre-testing of the questionnaire was done on clients who were receiving ART at Geresse health center, which was at the nearby district. Accordingly, corrections were made based on the errors identified to improve the tool. The data collectors and supervisors were trained in the methods, objectives, and other technical aspects of the study before the commencement of data collection. During the data collection process, the principal investigator and supervisors closely supervised process for errors and completeness.

### Ethical consideration

Ethical approval was obtained from Arba Minch University college medicine and health science ethical review board. Official letter was sent to the hospital and the health centre from Arba Minch University College of Medicine and Health Sciences, and permission was obtained from respective managers before data collection. Informed consent was obtained from the study participants, and the information was confidential.

## RESULTS

### Socio demographic characteristics of respondents

A total of 513 respondents were involved in the study. Majority, 350(68.2%) of the respondents were female. The mean age of the participants was  $32.7 \pm 8$ (SD) and 238 (46.4%) were in the age group of 25 to 34 years. Average monthly income of the participants was less than 500 Ethiopian Birr for 176(34.3%) (Table 1).

### Medical and lifestyle related characteristics of respondents

#### *Sexual practices of respondents*

Of the total participants, more than half, 267 (52%) had used condom inconsistently or not used at all in the last 3 months. More than one fourth of the participants, 153 (29.8%) had multiple sexual partners within the last three months. Among the participants, 348(67.8%) had sexual experience with steady partners, 78(15.2%) had sexual experience with casual partners and the rest with mixed partnership (Table 3).

#### *Factors associated with unprotected sexual practice*

To identify factors associated with unprotected sexual practice, bivariate and multivariable analysis were done.

For those variables which fulfilled the Chi-square test assumptions, bivariate analysis was done and variables with  $P$ -value $<0.25$  such as: Age, sex, current marital status, current occupation, average monthly income, time since ART started, discussion about safe sex, partner HIV sero-status, reduced concern of safe sex b/se of ART, poor knowledge on safer sex, perception on sexual pleasure with condom, perception on effectiveness of sex with condom, alcohol use within the last three months, number of sexual partner in the last three months, type of sexual partner partnership, with sexual partner at bivariate analysis were identified (Tables 1 to 3) were taken in to multivariable analysis.

All variables with  $P$ -value $<0.25$  in bivariate analysis were included in the multivariable analysis to see the effect of individual variables on the dependent variable while controlling for potential confounding variables. The multivariable logistic regression analysis result revealed that monthly income of less than 500 Ethiopian birr, AOR and 95% CI were 4.69: 3.5-11.87; monthly income of non-specified income, AOR and 95%CI were 6.74: 2.14-21.26; less than one year duration since ART started, AOR and 95%CI were 5.5:2.08-14.5; lack of discussion about safe sex with partners, AOR and 95% CI were 7.03:4.20-11.80; unknown partner's sero-status for HIV, AOR and 95%CI were 2.76:1.16-6.53 more likely to practice unprotected sexual practice as compared to their counterparts (Table 4).

## DISCUSSION

The aim of this study was to determine magnitude of unprotected sexual practice and identify factors associated with it. The prevalence of unprotected sexual practice in this study was 52% (95% CI: 48, 56). This high magnitude of unprotected sexual practice might be due to patients feel better after anti-retro viral therapy initiation, and they assume as if they are free of virus. There is markedly higher variation between the finding of this study and that of reports from Addis Ababa and North Shewa, Ethiopia, where the prevalence was (36.9%) and (38%) respectively (Assefa, 2011; Dessie et al., 2011). The variation could be due to difference in socio-cultural situation and, health service delivery approach at different regions of the country, for instance engaging minorities and HIV positive people at different social situations help them to use different positive living approach so as to enhance their health status.

In this study, participants on ART follow up for less than a year (12 months) were 17.3%. Similar finding was reported from the study conducted in Debrezeit town, Ethiopia (16.8%) (Etsub et al., 2014).

Unknown HIV sero-status among partners of participants was 37.8% in this study. The study from Debrezeit town, Ethiopia reported 12.14% (Etsub et al., 2014). This visible difference on the magnitude of the



**Table 1.** Socio-demographic characteristics of respondents attending ART clinic at public health facilities of Arba Minch Town, 2014 (N=513).

Variable	Frequency (%)	Unprotected sex (n/N*100)	COR(95% CI)	P-value
<b>Age</b>				$\chi^2=0.025^*$
18-24	112(21.8)	13.6	3.9(1.40, 10.90)	0.010
25-34	238(46.4)	23.4	2.4(0.90, 6.40)	0.08
35-44	143(27.9)	13.8	2.3(0.80, 6.30)	0.106
>44	20(3.9)	1.2	Ref.	
<b>Sex</b>				$\chi^2=0.062^*$
Male	163 (31.8)	14.6	0.70(0.48, 1.09)	0.062
Female	350 (68.2)	37.4	Ref.	
<b>Educational status</b>				$\chi^2=0.408$
Unable to write and read	171(33.3)	18.7	1.4(0.80, 2.35)	0.283
Primary	270(52.6)	26.5	0.982(0.554, 1.568)	0.791
Secondary and above	72(14.1)	6.8	Ref.	
<b>Current marital status</b>				$\chi^2=0.00^*$
Married	243(66.9)	28.8	Ref.	
Single	118(23.0)	15.6	2.77(1.78, 4.32)	0.00
Divorced	39(7.6)	6.04	5.10(2.28, 11.40)	0.00
Widowed	13(2.5)	1.6	2.108(0.678, 6.57)	0.199
<b>Area of residence</b>				$\chi^2=0.58$
Urban	459(89.5)	46.1	0.85(0.48, 1.50)	0.58
Rural	54(10.5)	5.8	Ref.	
<b>Current occupation</b>				$\chi^2=0.006^*$
Employed	66(12.9)	5.2	Ref.	
House wife	365(71.2)	35.8	1.468(0.863, 2.50)	0.157
Students	31(6)	4.1	3.03(1.23, 7.5)	0.016
Commercial sex workers	51(9.9)	6.8	3.16(1.465, 6.81)	0.003
<b>Average monthly income</b>				$\chi^2=0.00^*$
Non-specified	279(54.4)	31.5	3.07(1.68, 5.63)	0.00
<500 ETB	176(34.3)	16.9	2.17(1.5, 4.07)	0.016
$\geq$ 500ETB	58(11.3)	3.5	Ref.	

$\chi^2$ =refers to p-value of Pearson chi-square test, n=unprotected frequency in the given category (N=513).

study might be due to the reported magnitude in the mentioned reference was sero-status of single partners. With regard to this fact, those who reported about discussing condom use (safe sex) with their sexual partners was 35.6%, which is similar with the study finding reported from North Shewa, Ethiopia 35.9% (Dessie et al., 2011).

The current study revealed that those who had no or unspecified income and those who had an income of less than 500 birr were positively associated with practicing unprotected sex. Similar study done in France showed positive association between being in low monthly income and risky sexual practice (Bouhnik et al., 2007).

This similarity could be due to financially unsecured

people might expose themselves to unprotected sex to generate money.

Participants who never or partly discussed with their sexual partners about safe sex were more likely to practice unprotected sex as compared to their counter parts. This is in line with a study finding reported from Addis Ababa, Ethiopia (Assefa, 2011), and the reason might be those who did not discuss about sexual life among HIV positive people might not have knowledge on the importance of protected sex for preventing HIV and other sexually transmitted infections to HIV positive people.

In this study, participants who attended ART for less than a year were more likely to practice unprotected sex

**Table 2.** Medical and lifestyle related characteristics of respondents attending ART clinic at public health facilities of Arba Minch Town, 2014.

Variable	Frequency (%)	Unprotected sex (n/N*100)	COR(95% CI)	P-value
<b>Time since ART start</b>				$\chi^2=0.00^*$
< 1 year	54(10.5)	9	6.02(2.78, 13.08)	0.00
1-2year	66(12.9)	5.6	0.821(0.485, 1.387)	0.460
>2year	393(76.6)	37.4	Ref.	
<b>Time since tested positive</b>				$\chi^2=0.84$
≤ 2 years	49(9.54)	5.81	1.5 (0.82, 2.72)	0.179
> 2 years	464(90.44 )	46.1	Ref.	
<b>Discussion about safe sex</b>				$\chi^2=0.00^*$
Yes	183(35.6)	18.5	Ref.	0.00
No/partly	330(64.4)	33.3	7.89(5.17, 12.00)	
<b>Partner sero-status for HIV</b>				$\chi^2=0.00^*$
Negative	62(12.13)	6.04	Ref.	
Positive	327(63.7)	26.3	0.703(0.408, 1.20)	0.205
Unknown	124 (24.17)	19.6	4.391(2.20, 8.60)	0.00
<b>Reduced concern of safe sex b/c of ART</b>				$\chi^2=0.00^*$
Yes	246(48)	36.06	6.08(4.10, 8.90)	0.00
No	267(52)	16	Ref.	
<b>Poor safer sex knowledge</b>				$\chi^2=0.07^*$
Yes	82(15.9)	10.9	2.25(1.36, 3.75)	0.07
No	431(84.1)	41.1	Ref.	
<b>Condom reduces sexual pleasure</b>				$\chi^2=0.843$
No	200(39)	20.07	Ref.	
Yes	313(61)	31.96	1.03(0.73, 1.5)	0.843
<b>Condom has poor effectiveness to prevent infection</b>				$\chi^2=0.006^*$
No	489(95.3)	48.3	Ref.	
Yes	24(4.7)	3.7	3.7(1.4, 10.4)	0.011
<b>Alcohol use within the last 3 months</b>				$\chi^2=0.028^*$
Yes	209 (40.7)	23.5	1.5(1.04, 2.10)	0.028
No	304 (59.3)	23.4	Ref.	
<b>Addiction to substances</b>				$\chi^2=0.176$
Yes	378(73.7)	37.03	1.3(0.80,1.90)	0.177
No	135(26.3)	15	Ref.	
<b>HIV status disclosure</b>				0.70
Yes	368(71.7)	31.2	Ref	
No/partly	145(28.2)	20.8	3.66 (2.40, 5.90)	0.70

\*Refers to eligible variable for multivariable analysis at p-value&lt;0.25; tested by chi-square and bivariate analysis;N=513, n=frequency of unprotected sexual practice in the given category of variable; b/c=because.

**Table 3.** Current sexual practices of respondents among patients attending ART clinic at Public Health Facilities of Arba Minch town, 2013/2014 (N=513).

Variable	Frequency (%)	Unprotected sex(n/N)	COR(95% CI)	P-value
<b>Use condom always and appropriately</b>				
Yes	246(48)	0		
No	267(52)	100		
<b>Number of sexual partner in the last 3 months</b>				
One	360(70.2)	32.3	Ref.	$\chi^2=0.00^*$
Multiple	153(29.8)	19.7	2.2(1.50, 3.30)	0.00
<b>Type of sexual partnership</b>				
Steady	348(67.8)	30.7	Ref.	$\chi^2=0.00^*$
Causal	78(15.2)	8.90	1.7(1.05, 2.8)	0.031
Mixed	87 (20)	12.28	3.1(1.88, 5.20)	0.00

\*Refers to eligible variable for multivariable analysis at p-value<0.25, tested by chi-square; N=frequency of the specific variable category;n=frequency of unprotected sexual practice.

**Table 4.** Multivariable analysis results for factors of unprotected sexual practice among respondents who are attending ART clinic at public health facilities of Arba Minch town, South Ethiopia2013/2014.

Variable	Unprotected sexual practice (N=267)	Protected sexual practice (N=246)	AOR 95%CI	p-value
<b>Monthly income</b>				
Not specified	162(60.7)	117(47.6)	6.745(2.14, 21.26)	0.001*
<500 birr	87(32.6)	89(36.2)	4.69(1.85, 11.87)	0.001*
>=500 birr	18(6.7)	40(16.3)	Ref.	
<b>Time since ART was started</b>				
< 1 year	46.7(17.3)	7.3(3)	5.5(2.08, 14.5)	0.001*
1-2 year	28.7(10.7)	37.3(15.1)	0.70(0.36, 1.36)	0.300
>2 year	191.8(71.8)	201.2 (81.7)	Ref.	
<b>Discussion about safe sex with partners</b>				
Yes	95( 36 )	88(35.4)	Ref.	
No/partly	172 ( 64 )	159(64.6)	7.03(4.20, 11.80)	0.00*
<b>Partner's sero-status for HIV</b>				
Negative	31(11.6)	31(12.6)	Ref.	0.00
Positive	135(50.5)	192(78.04)	0.57(0.29, 1.106)	0.097
Unknown	100.5(37.8)	23.5(9.5)	2.76(1.16, 6.53)	0.021*

\*Significant category of the variable at cutoff point, p-value<0.05.

as compared to their counterparts. This might be due to behavioral change; might not be brought over night, and when patients stay longer on ART, they better practice positive living parameters. This finding was inconsistent with study conducted in Debrezeit town, Ethiopia (16.8%) (Etsub et al., 2014), which reported no significant

difference on the length of stay on ART follow-up. This might be due to the eligible participants in the cited study is sexually active participants in the last one year and in this study it is three months, which might mask the actual information due to recall bias.

In the current study, respondents who had sex with

partners of unknown HIV sero-status were more likely to experience unprotected sex. This might be due to the fact that HIV status determination reduces risky sexual behavior, and in other hand, the study participants might feel ashamed of demanding protected sex from their partners who did not know their HIV-status, if they themselves did not disclose their HIV-status to their partners. However, the finding from this study is not consistent with findings reported from studies done in Addis Ababa, Ethiopia and the Dominican Republic, where the likelihood of risky sex was found to be higher among respondents who had positive partners (Sears et al., 2008; Assefa, 2011). This variation might be related to socio-cultural difference among respondents. Another reason might be this study is done at rural setting other than the reference studies mentioned above, and in Ethiopian context people at rural level usually considers HIV positive status as a taboo, and do not want to tell the status for anybody.

In conclusion, prevalence of unprotected sexual practice was found to be high among people attending ART at public health facilities of Arba Minch city administration. Low monthly income, unknown partner sero-status, recent enrollment on ART, and lack of discussion about safe sex with sexual partner were factors positively associated with unprotected sexual practice. Therefore, health education at different level of health system and local media too should give due attention to partners testing, open discussion about safe sex for all patients attending ART, and positive living information to recently enrolled ART patients. Income generating activities should be planned by carefully identifying those patients with low income status.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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*Full Length Research Paper*

# Challenges of the care of HIV positive adolescents in Jos, Nigeria

**Esther S. Yiltok<sup>1\*</sup>, Vivian Yuwa<sup>3</sup>, Asabe Mshelia<sup>4</sup>, Helen Akhiwu<sup>2</sup>, Emeka U. Ejeliogu<sup>1</sup>, Augustine O. Ebonyi<sup>1</sup>, Patricia A. Agaba<sup>5</sup>, Oche Agbaji<sup>6</sup> and Stephen Oguche<sup>1</sup>**

<sup>1</sup>Department of Paediatrics, Faculty of Clinical Sciences, University of Jos, Jos, Plateau State, Nigeria.

<sup>2</sup>Department of Paediatrics, Jos University Teaching Hospital, Jos, Plateau State, Nigeria.

<sup>3</sup>Department of Nursing Services, Jos University Teaching Hospital, Jos, Plateau State, Nigeria.

<sup>4</sup>HIV Counselling Unit, APIN Centre, Jos University Teaching Hospital, Jos, Plateau State, Nigeria.

<sup>5</sup>Department of Family Medicine, Faculty of Clinical Sciences, University of Jos, Jos, Plateau State, Nigeria.

<sup>6</sup>Department of Medicine, Faculty of Clinical Sciences, University of Jos, Jos, Plateau State, Nigeria.

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The introduction of highly active anti-retroviral therapy (HAART) to children with perinatally acquired HIV has prolonged their lifespan to adolescence and beyond. These HIV positive adolescents on care face challenges as they undertake their treatment which this study aimed to determine. The study was a cross-sectional descriptive study of challenges faced by adolescents between the ages 10 and 19 years on routine follow up at the HIV Clinic of Jos University Teaching Hospital (JUTH) over a period of six months. Ethical approval was obtained from the Health Research Ethical Committee (HREC) of JUTH and permission was also obtained from the AIDS Prevention Initiative in Nigeria (APIN) center JUTH. Data obtained was entered into Epi Info version 7.2 and analyzed. Among the 147 subjects that were recruited, 56 (38%) were males, while females were 91(62%), M: F ratio of 1: 1.6. Of this, most were single (99%). Among the subjects, 81 (55%) were orphans, of which 53 (65%) were single orphan. Of the total patients studied, 68% lived with one or both parents, while 26% stayed with relatives and 5% lived in orphanages. Most were in school 137 (96%) and 85 (59%) were aware of their diagnosis. Discrimination was reported among 19 (13%) subjects by pupils/students, teachers, friends and/or family members, while 31 (21%) had thought of committing suicide. Among the subjects, 100 (70%) have considered stopping medication. HIV positive adolescents in our study suffer several challenges which include being orphans, discrimination and suicidal ideations. These challenges could interfere with retention in care and compliance with their antiretroviral drugs.

**Key words:** Adolescents, HIV, orphaned child, social discrimination, suicidal ideation.

## INTRODUCTION

In 2017, United Nations Children's Fund (UNICEF) estimated that 1.8 million adolescents aged between 10 and 19 years were living with HIV and 250, 000 of those aged 15 to 19 years were newly infected with the disease

(UNICEF, 2019). The estimated mortality for the adolescents aged 10 to 19 years was 38,000/year. With the introduction of the highly active anti-retroviral therapy (HAART) to children with perinatally acquired HIV; these

children now live to adolescence and beyond (WHO, 2014a; Patrice-Coy et al., 2016). The implication of this is that it allows these children to transit into adulthood. Generally, the use of HAART has reduced mortality of those who acquire the infection thereby transforming the disease from a debilitating and fatal one to a chronic and manageable one (Davies et al., 2009).

Adolescents and young people are a special group to consider in HIV control programs because of the high disease burden among them, their tendency for a care-free attitude, ignorance as well as high risk behavior which allows them to transmit the infection to other people (Abadia-Barrero and Castro, 2006). These HIV positive adolescents who are being cared for face challenges which bother on disclosure, adherence, psycho-social issues, reproductive health and stigma/discrimination among others (Willis et al., 2014; Naswa and Marfatia, 2010; Ledlie, 2004).

The Paediatric ART programme of Jos University Teaching Hospital (JUTH) started about 15 years ago with mostly children who had acquired HIV perinatally. These children on follow up in the clinic have reached adolescent years and may now be facing some additional challenges aside from those common to all adolescents. It has therefore become increasingly important in JUTH to look at the challenges that these special group of adolescents face as they are cared for in a pediatric setting and as they prepare to transit to adult medicine clinic to continue with their care. This study therefore, looked at the challenges of this cohort of patients that have been managed from childhood to adolescence in order to put in place measures necessary to address these problems so as to improve their wellbeing.

## MATERIALS AND METHODS

### Study setting

This study was carried out in the Aids Prevention Initiative in Nigeria (APIN) Centre of the Jos University Teaching Hospital (JUTH). APIN is a large treatment center for HIV patients supported by the Harvard School of Public Health, Boston USA and The President's Emergency Plan for Aids Relief (PEPFAR) USA. The center provides comprehensive HIV care, treatment and support for adults and children. Majority of the HIV positive children in APIN JUTH acquired their HIV infection perinatally and have been on regular follow up visits for drug pick-ups, treatment of common illnesses and prophylaxis and treatment of opportunistic infections, growth monitoring, treatment response and identification of treatment failures. Other services provided in the clinic are prevention of mother-to-child transmission of HIV (PMTCT), infant feeding counselling and support, HIV testing services (HTS), and adolescent HIV services. About two thirds of the children in the Paediatric ART programme have reached adolescence and some have even been transited to the adult ART programme.

### Study population

Consecutive consenting/assenting children aged 10 to 19 years attending the pediatric and adult ART program of JUTH were enrolled into the study. The study was a cross-sectional descriptive study of these adolescents on routine follow up over a period of six (6) months (June to November 2018).

### Data collection

A semi-structured interviewer-administered questionnaire was used to collect information from the respondents. The data collected included socio-demographic characteristics, history of discrimination, those whom they live with, whether they were orphans or not, educational history including school performance, suicidal ideation, and whether they had ever considered stopping ART.

### Data entry and analysis

The data obtained were entered and analyzed using Epi Info version 7.2.0.1 (2016). Univariate analysis was carried out to describe the characteristics of the adolescents while bivariate analysis (Chi-Square test) was used to determine the association between the characteristics of these adolescents. P value of <0.05 was considered as statistically significant.

### Ethical consideration

Written informed consent was obtained from the parents/guardians/older adolescents ( $\geq 18$  years) and assent from the younger adolescents (<18 years) before participating in the study. Participants were allowed to voluntarily withdraw at any stage of the study if they so desired. This did not affect their care in any way. All information obtained from the adolescents were kept confidential. Ethical approval was obtained from AIDS Prevention Initiative in Nigeria (APIN) authority and the Health Research Ethical Committee (HREC) of the Jos University Teaching Hospital (JUTH).

## RESULTS

Of the 147 subjects, 56 (38%) were males, while females were 91 (62%), M: F ratio of 1: 1.6 with most of them being single (99%). The other socio-demographic characteristics of the subjects are shown in Table 1.

Among the subjects, 81 (55%) were orphans, of which 65% (53) were single orphan. Of the total patients studied, 68% lived with one or both parents, while 26% stayed with relatives and 5% lived in orphanages. Most of the respondents (68.7%) were aged 14 years and above and 62.5% of them are living in an urban area. About 96% were in school while 78.1% have had at least secondary school education. Of the adolescents studied, only 85 (59%) were aware of their diagnosis. Seven (4.8%) of the children were not granted permission by

\*Corresponding author. E-mail: estheryiltok@yahoo.com.

**Table 1.** Socio-demographic Characteristics of HIV Positive Adolescents Attending JUTH HIV Clinic.

Characteristics	Frequency (n= 147)	Percentage
<b>Age group</b>		
Early adolescents (10-13 years)	46	31.3
Middle adolescents (14-16 years)	71	48.3
Late adolescents (17-19 years)	30	20.4
<b>Sex</b>		
Female	91	61.9
Male	56	38.1
<b>Address</b>		
Rural	17	11.6
Semi-Urban	26	17.7
Urban	92	62.5
Urban slum	12	8.2
<b>Marital status</b>		
Married	1	0.7
Single	146	99.3

their schools to come for regular clinic visits while 11 (7.5%) do not usually ask for permission from their schools. Discrimination from pupils/students, teachers, friends and/or family members was reported among 13% of the study subjects, 31 (21%) had considered committing suicide. Among the study participants, 100 (70%) have also considered stopping their medication at some point (Table 2).

There was no statistical significant difference in the challenges faced when both sexes were compared (Table 3). There was however a significant association between knowledge of the disease and educational status when the aged groups were compared p-value <0.05 (Table 4).

When the association between orphan status and the characteristics of HIV positive adolescents attending JUTH HIV Clinic was explored, it was observed that where the orphaned child lives and if he or she was in school were also statistically significant p-value <0.05 (Table 5).

## DISCUSSION

The introduction of HAART no doubt has led to the increase in the number of children with HIV that are transiting from pediatric care into adolescence and adulthood (Vijayan et al., 2009; Hussien et al., 2015; Machado et al., 2016). The disease which used to be a debilitating disease with a fatal outcome is now a chronic disease that can be managed over a prolonged period of time (Davies et al., 2009). However, as the children

developed into adolescents, they face different challenges because of the peculiarity of their physical and mental changes.

More than half of the subjects in this study were orphaned and majority are single orphans, a finding that is similar to the study by Nyamukapa et al. (2008). The orphaned and vulnerable children (OVC) especially those orphaned by HIV do face a lot of challenges. The odds are against the AIDS-orphaned children, as they are stigmatized, discriminated, psychologically distressed with no or poor access to basic health care and education (Willis et al., 2014). This study observed that there was a significant association between being orphaned and not being in school, as all the children who were not in school were orphaned. Additionally, about a quarter of the children in this study were living with relatives while 5% of them were living in orphanages and this may add to their psychological distress. This finding may have been as a result of loss of their parents and this is similar to what was reported by other authors (Parsons, 2012; Mavhu et al., 2013). Where the adolescents live was significantly associated with whether they were orphans or not.

In the present study, 21% of the respondents have had thoughts of committing suicide as a result of their HIV status or reasons unrelated to their disease. Mental and psychosocial problems are one of the challenges that children with HIV face and this usually comes from discrimination, fear of stigma, isolation and other social factors (Menon et al., 2007). These psychosocial problems can lead to suicide or having suicidal ideation. Studies have shown that perinatally HIV-infected youths

**Table 2.** Challenges and characteristics of HIV positive adolescents attending the JUTH HIV Clinic.

<b>Challenge and characteristic</b>	<b>Frequency (n= 147)</b>	<b>Percentage</b>
<b>Living with whom?</b>		
Husband	1	0.7
Orphanage	7	4.8
Parent(s)	101	68.7
Relatives	38	25.8
<b>Orphan</b>		
No	66	44.9
Yes	81	55.1
<b>Orphan type (n= 81)</b>		
Double	28	34.6
Single	53	65.4
<b>Know the disease you are treated for?</b>		
No	59	40.1
Yes	88	59.9
<b>Are you in school?</b>		
No	6	4.1
Yes	141	95.9
<b>Educational status</b>		
Drop out	1	0.7
Primary	31	21.2
Secondary	105	71.9
Tertiary	5	3.4
Completed secondary	4	2.8
<b>Boarding school</b>		
No	145	99.0
Yes	2	1.0
<b>Change school in the past?</b>		
No	106	72.1
Yes	41	27.9
<b>Change school because of your HIV status (N=41)</b>		
No	35	85.4
Yes	6	14.6
<b>School performance</b>		
Average	130	88.4
Excellent	15	10.2
Poor	2	1.4
<b>Discrimination</b>		
No	128	87.0
Yes	19	13.0
<b>Thought of suicide</b>		
No	116	79.0
Yes	31	21.0
<b>Felt like stopping ART drugs</b>		
No	47	32.0
Yes	100	68.0



**Table 3.** Association between sex and characteristics of HIV positive adolescents attending JUTH HIV Clinic (n=147).

Characteristic	Sex		Chi square	P-value
	Female	Male		
<b>Living with whom?</b>				
Husband	1	0	4.4015	0.2212
Orphanage	5	2		
Parent(s)	57	44		
Relatives	28	10		
<b>Orphan</b>				
No	40	26	0.0857	0.7697
Yes	51	30		
<b>Orphan type (n= 81)*</b>				
Double	17	11	0.0928	0.7606
Single	34	19		
<b>Know the disease you are treated for?</b>				
No	33	26	1.4908	0.2220
Yes	58	30		
<b>Are you in school?</b>				
No	4	2	0.0601	0.8062
Yes	87	54		
<b>Educational status</b>				
Drop out	1	0	1.5870	0.8111
Primary	19	12		
Secondary	64	41		
Tertiary	4	1		
Completed secondary	2	3		
<b>School performance</b>				
Average	81	49	0.1522	0.9267
Excellent	9	6		
Poor	1	1		
<b>Discrimination</b>				
No	77	51	1.2839	0.2571
Yes	14	5		
<b>Thought of suicide</b>				
No	70	46	0.5676	0.4512
Yes	21	10		
<b>Felt like stopping ART drugs</b>				
No	25	42	2.1071	0.1466
Yes	66	34		

have a higher tendency to developing a mental problem than perinatally HIV-exposed but uninfected youths (Malee et al., 2011; Mellins and Malee, 2013). Midtho et al. (2012), however demonstrated that children who attend peer support-support groups help them to cope

well with their disease by gaining knowledge about HIV, talking and sharing experiences which leads to positive perception of the disease and adherence to medications. Additionally, social support can minimize depression, isolation as well as help to improve self-confidence

**Table 4.** Association between age group and characteristics of HIV positive adolescents attending JUTH HIV Clinic (n=147).

Characteristic	Age group			Chi square	P-value
	Early	Middle	Late		
<b>Living with whom?</b>					
Husband	0	0	1	6.5481	0.3647
Orphanage	3	2	2		
Parent(s)	33	47	21		
Relatives	10	22	6		
<b>Sex</b>					
Female	30	39	22	3.3404	0.1882
Male	16	32	8		
<b>Orphan</b>					
No	27	29	10	5.6330	0.0598
Yes	19	42	20		
<b>Orphan type (n= 81)</b>					
Double	8	16	4	2.5848	0.2746
Single	11	26	16		
<b>Know the disease you are treated for?</b>					
No	37	19	3	47.7175	0.0000
Yes	9	52	27		
<b>Are you in school?</b>					
No	0	0	6	24.3957	0.0000
Yes	46	71	24		
<b>Educational status</b>					
Drop out	0	0	1	89.9237	0.0000
Primary	26	5	0		
Secondary	20	66	19		
Tertiary	0	0	5		
Completed secondary	0	5	5		
<b>School performance</b>					
Average	40	65	25	3.0097	0.5562
Excellent	6	5	4		
Poor	0	1	1		
<b>Discrimination</b>					
No	41	63	24	1.6802	0.4317
Yes	5	8	6		
<b>Thought of suicide</b>					
No	41	52	23	4.3501	0.1136
Yes	5	19	7		
<b>Felt like stopping ART drugs</b>					
No	19	16	6	6.3758	0.0413
Yes	25	54	22		

**Table 5.** Association between orphan status and the characteristics of HIV positive adolescents attending JUTH HIV Clinic (n = 147).

Characteristic	Orphaned		Chi square	P-value
	No	Yes		
<b>Living with whom?</b>				
Husband	0	1		
Orphanage	0	7		
Parent(s)	61	40		
Relatives	5	33	31.7984	0.0000
<b>Know the disease you are treated for?</b>				
No	32	27		
Yes	34	54	3.4748	0.0623
<b>Are you in school?</b>				
No	0	6		
Yes	66	75	5.0969	0.0239
<b>Educational status</b>				
Drop out	0	1		
Primary	18	13		
Secondary	45	60		
Tertiary	3	2		
Completed secondary	0	5	6.87	0.1429
<b>School performance</b>				
Average	59	71		
Excellent	7	8		
Poor	0	2	1.661	0.4358
<b>Discrimination</b>				
No	58	70		
Yes	8	11	0.0688	0.7910
<b>Thought of suicide</b>				
No	53	63		
Yes	13	18	0.1394	0.7089
<b>Felt like stopping ART drugs</b>				
No	24	19		
Yes	43	61	2.4747	0.1156

(Wang et al., 2018). The various components of suicidal behaviors include suicide ideation (thinking about killing oneself), planning suicide, attempting suicide and suicide itself (WHO, 2014b). In the present study, 31 (21%) had thoughts of committing suicide out of which 20 were females. Though this was higher in females, this finding was not statistically significant. However, Nock et al. (2008) documented that suicide ideation often emerges in adolescence and is prevalent among adolescent females. With 21% considering suicide, this finding is significant

especially considering the recent increase in cases of suicide as reported by the media in this country (Muanya et al., 2019). HIV/AIDS and suicidal behavior have increasingly presented major public health challenges and has become a burden to society. In recent years, mental health problems have gradually come to the fore as a critical issue among people living with HIV/AIDS (PLWHA), and such problems may cause them to develop suicidal ideation, thus leading to higher mortality (Wang et al., 2018). It has also been reported that

suicidal ideation is more common in HIV-positive patients than in the general population (Keiser et al., 2010; Onyebueke and Okwaraji, 2015; Ogundipe et al., 2015). Therefore, the need to prevent, or identify early these group of children cannot be overemphasized.

In this study, only about 60% of the adolescents know their HIV status. This shows that the level of disclosure of HIV status in our environment is still low. However, a similar study in Zambia (Okawa et al., 2017) showed higher disclosure rate but Hayfron-Benjamin et al. (2018) in Ghana showed lower disclosure rate. More of the adolescents in the middle and late stages know their status compared to those in the early stage. This may be as a result of the fact that the health care providers utilize a tailored and developmental counselling approach to disclosure, as each adolescent is unique (WHO, 2013).

This low level of status awareness could affect them psychologically as they daily take medications which they are not aware of the reason for doing so. This could also adversely affect adherence to the medications. A proper disclosure to the adolescents will help them to know their HIV status, learn and access information about HIV infection which will be beneficial.

The fact that most of our subjects (96%) are in school, will in addition aid learning and understanding of their condition. When the challenges faced by these adolescents were compared between the males and females respondents, there was no statistical difference between them.

Despite the increase in knowledge of HIV/AIDS in the society, reported cases of discrimination still abound as shown in this study. This discrimination is orchestrated by school mates, teachers, friends and family members. Over a quarter of the study participants have changed schools in which some of them were as a result of stigma and discrimination because of their HIV status while others were due to other reasons such as financial constraint and the need to relocate to another home. The implication of this is that it may affect their academic performance. In addition, stigma and discrimination associated with HIV may prevent many adolescents from disclosing HIV status even when involved in a sexual relationship. Also, about 99% of the patients who are in secondary school attend day schools though majority of them preferred boarding school. The caregivers/parents preferred them in day schools because they are afraid their school mates will be aware of their HIV status and that will lead to stigmatization and discrimination. Additionally, the issue of ensuring adherence to ARVs has denied them the opportunity to live in a boarding house in order to experience an independent-life like their peers. From the study, some of the children were denied permission to come for regular clinic follow up visits probably because the school authority were not aware of their HIV status and frequent absenteeism may be interpreted as truancy. In addition, this discrimination orchestrated by school mates, teachers, friends and family members demonstrates poor social support which

will ultimately affect the adherence to antiretroviral drugs and consequently leads to treatment failure.

A high percentage (70%) of our patients has considered stopping their medication. This can lead to skipping of medication which can lead to poor viral load suppression and drug resistance. Non-adherence to medication has also been shown to be the single most significant challenge to the successful management of the HIV infected individual. Therefore, there are barriers as well as facilitators to adherence at individual, family/caregiver and hospital levels. This may include any combination of structural, patient-related, provider-related, medication-related, disease-related, and psychological barriers. A well-developed intervention support for this category of patients can go a long way in helping with adherence (Agwu and Fairlie, 2013; Galea et al., 2018).

## LIMITATION

Data was generated by interviewing the adolescents; there could be the possibility of bias in some of their responses.

## Conclusion

HIV positive adolescents in the present study face many challenges which include being orphans, discrimination and suicidal ideations. These challenges may interfere with retention in care and the compliance with taking of their antiretroviral drugs. The development of intervention support, the improvement in the counseling, establishment of peer support group as well as orphans and vulnerable children (OVC) services to this category of adolescents could help to reduce these challenges and improve their quality of life. These could encourage retention in care and treatment as well as reduce the transmission of HIV infection to the populace.

## CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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