

# Risky sexual behavior and associated factors among antiretroviral therapy attendees in Nekemte Referral Hospital, Western Ethiopia: a cross-sectional study

Getu Mosisa<sup>1</sup>  
Kifle Woldemichael<sup>2</sup>  
Fantahun Ayalew<sup>3,†</sup>

<sup>1</sup>Department of Nursing and Midwifery, College of Health Sciences, Wollega University, Nekemte, Ethiopia;

<sup>2</sup>Department of Epidemiology, College of Health Sciences, Jimma University, Jimma, Ethiopia; <sup>3</sup>Department of Nursing and Midwifery, College of Health Sciences, Jimma University, Jimma, Ethiopia

<sup>†</sup>Fantahun Ayalew passed away on August 31, 2017

**Background:** HIV/AIDS remains a major public health problem. Practice of risky sexual behaviors is the major effective driver of the HIV epidemic among HIV-positive individuals. This behavior exposes their partners to HIV, and for those that are already positive it exposes them to a risk of superinfection by other strains.

**Objective:** The aim of this study was to assess the prevalence of risky sexual behavior and associated factors among people living with HIV attending antiretroviral therapy (ART) clinic at Nekemte Referral Hospital.

**Methods:** An institution-based cross-sectional study was conducted at the ART clinic of Nekemte Referral Hospital from March to April 2016. A total of 337 people living with HIV on ART for at least 3 months were selected by consecutive sampling technique. Data were collected through face-to-face interview. Data were entered into Epi-data Version 3.1 and analyzed using SPSS version 20. Variables significant on bivariate logistic regression analysis at  $p < 0.25$  were considered as candidates for the multivariable logistic regression analysis, and statistical significance was set at  $p < 0.05$ .

**Results:** Approximately one third (32.9%) of the study participants were engaged in risky sexual behavior in the past 3 months prior to the study. Having multiple sexual partners (adjusted odds ratio [AOR] = 6.38, 95% CI: 1.65, 24.74), being with a positive sero-status partner (AOR = 2.68, 95% CI: 1.31, 5.5), not disclosing sero-status (AOR = 5.99, 95% CI: 1.36, 26.35), having a desire for a child (AOR = 2.6, 95% CI: 1.5, 4.51), having experience of perceived stigma (AOR = 2.63, 95% CI: 1.5, 4.62), and lack of education on importance of protecting self from strain (AOR = 5.64, 95% CI: 3.19, 9.96) were significantly associated with risky sexual behavior.

**Conclusion and recommendation:** The prevalence of risky sexual behavior was high, and approximately one third of study participants were engaged in risky sexual behavior. Efforts to increase awareness through health education and counseling are highly recommended.

**Keywords:** HIV, risky sexual behavior, Nekemte Referral Hospital, Ethiopia

## Introduction

HIV/AIDS remains a major public health problem. According to UNAIDS global statistics, about 36.7 million people globally were living with HIV and 1.8 million people became newly infected with HIV in 2016. About 19.5 million people were taking antiretroviral therapy (ART) and an estimated 1 million people died from AIDS-related illnesses in 2016.<sup>1</sup> According to a 2014 report, in sub-Saharan Africa there were 25.8 million people living with HIV and 5 out of 7 people on ART live in this region.<sup>2</sup>

In 2013, in Ethiopia there were an estimated 793,700 people living with HIV and there were ~45,200 AIDS-related deaths.<sup>3</sup> Risky sexual behavior is commonly

Correspondence: Getu Mosisa  
Department of Nursing and Midwifery,  
College of Health Sciences, Wollega  
University, PO Box 395, Nekemte,  
Ethiopia  
Email [getumosisa344@gmail.com](mailto:getumosisa344@gmail.com)

defined as behavior that increases one's risk of contracting sexually transmitted infections and experiencing unintended pregnancies.<sup>4</sup>

Risky sexual behavior among people receiving ART is an area of concern; hence, it is the major effective driver of the HIV epidemic. Among people living with HIV (PLHIV), these behaviors are common and potentially expose their partners to risk of disease, and for HIV-positive partners these habits expose them to a real risk of suprainfection by other strains of HIV.<sup>5-7</sup> The magnitude of unprotected sexual practice among PLHIV is high in sub-Saharan Africa; about more than 1 in 3 PLHIV were engaged in risky sexual practice.<sup>8-10</sup> In Ethiopia, the magnitude of risky sexual behavior among PLHIV is also high, more than one third and nearly one quarter of respondents engage in risky sexual behavior in Addis Ababa and Debrezeit, respectively.<sup>11,12</sup>

In HIV-related studies, risky sexual behavior has been one of the most documented topics. It has driven most HIV intervention and programs worldwide, and especially in sub-Saharan Africa which is the most affected area.<sup>13</sup>

However, little is known about risky sexual behavior among PLHIV attending ART in Ethiopia, particularly in the study area. Therefore, the current study aimed to assess the prevalence and associated factors of risky sexual behavior among PLHIV attending ART clinic at Nekemte Referral Hospital.

## Methods and materials

### Study area

The study was conducted in Nekemte Referral Hospital which is located in East Wollega zone, Nekemte town. Nekemte town is located at a distance of about 331 km to the west of the capital city, Addis Ababa. The town has 1 referral hospital and 2 public health centers. About 2,105 PLHIV were on ART at the time of the study.

### Study design and period

An institution-based cross-sectional study was conducted at Nekemte Referral Hospital from March to April 2016.

### Study population

The study population included adult clients on ART who were sexually active in the 3 months prior to the study period.

### Sample size determination and sampling technique

The sample size of the study was calculated by using single proportion formula, using prevalence of unprotected sex in

the past 3 months among ART attendees in Addis Ababa 36.9%,<sup>11</sup> margin of sampling error tolerated (d) 5%, CI 95%. Then, the sample size becomes 358. Since the source population was 2,105 clients, which are below 10,000, finite population corrections formula was used to get sample size of 306. Finally, by adding nonresponse rate of 10%, the total sample size was 337. Consecutive sampling technique was used to select study participants. Participants were selected based on inclusion criteria until the required sample size was achieved. People living with HIV/AIDS who were on ART treatment and sexually active in the previous 3 months and 18 years of age and above were included in the study.

### Data collection

A structured questionnaire was developed after reviewing relevant literatures<sup>8,10,11,14</sup> and modified to the local context based on the study objectives. Prior to data collection, the tool was pretested among 5% (17) of study population at Gimbi Hospital to ensure the clarity and applicability of the tool, and then necessary modifications and correction were undertaken.

The questionnaire was designed to obtain information on sociodemographic characteristics, partner-related factors, clinical-related factors, health-related service, child-related factors, psychosocial related factors, and pattern of condom use.

The outcome variable, risky sexual behavior, was measured by inconsistent use of condoms or no condom-protected sex with HIV-negative, HIV-positive, or unknown-status partners in the previous 3 months.<sup>10,11,14</sup>

The study was conducted for 1 month; 2 nurses who worked in ART unit were recruited as data collectors and 1 senior BSC nurse was a supervisor. Data collectors and supervisor were trained on interview techniques for 1 day before data collection. Face-to-face exit interview was conducted, and the interview was conducted in an isolated private room.

### Data processing and analysis

Data were entered into Epi-data Version 3.1 (The EpiData Association, Odense, Denmark) and exported to SPSS 20 (IBM Corporation, Armonk, NY, USA) for analysis. Descriptive measures like percentages and frequency distributions were used in the form of tables and graphs. Bivariate logistic regression analyses was carried out to assess association between the dependent and all the independent variables and to identify candidates for multivariable analysis. Then, variables with *p*-values <0.25 were entered in to final

multivariable logistic regression model; then, independent variables, which had a statistically significant association with the dependent variable at  $p < 0.05$ , were entered to the final regression model. Statistical significance was set at  $p < 0.05$ .

## Ethical consideration

Ethical clearance was obtained from Institutional Review Board of Jimma University, College of Health Sciences. A formal letter from the College of Health Sciences of Jimma University was submitted to Nekemte Referral Hospital, then permission and support letter was written to ART clinic of Nekemte Referral Hospital. Oral consent was obtained from each study participant before the interview and confidentiality of the data was ensured. The respondents' right to refuse or withdraw from the interview was taken into consideration, and confidentiality for collected data was also ensured throughout the study process. Obtained oral consent was approved by the Institutional Review Board of Jimma University, College of Health Sciences.

## Results

### Sociodemographic characteristics of respondents

A total of 337 respondents were involved in the study, a response rate of 100%. Majority of the respondents 187 (55.5%) were females. The mean age of the study participants was 36.05 (SD  $\pm 8.17$ ), and majority of the study participants 147 (43.6%) were in the age category of 35–44 years. Regarding educational status, majority (148) (43.9%) of study participants had completed primary school. One hundred sixty-one (47.8%) were Protestants and 282 (83.7%) were of Oromo ethnicity. Concerning marital status, majority of respondents (314) (93.2%) were married and about 312 (92.6%) were from an urban area (Table 1).

### Partner-related factors and pattern of condom use

Majority of the study respondents, 322 (95.5%), had a single sexual partner in the past 3 months. Among those who had single partner, majority of them, 317 (98.4%), had a steady partner. More than half (8) (53.3%) of respondents had steady partner among those with multiple sexual partners. Regarding sexual desire after starting ART, about 186 (55.2%) of the study participants stated that their sexual desire had not changed. About 243 (72.1%) respondents' partners' sero-status was positive, and 321 (95.3%) disclosed this to their partners (Table 2).

**Table 1** Sociodemographic characteristics of PLHIV attending ART clinic at Nekemte Referral Hospital, East Wollega, Ethiopia, April, 2016

Characteristics	Frequency (n)	Percentage (%)
Sex		
Male	150	44.5
Female	187	55.5
Age (years)		
18–24	8	2.4
25–34	129	38.3
35–44	147	43.6
$\geq 45$	53	15.7
Educational status		
No formal education	55	16.3
Primary	148	43.9
Secondary	76	22.6
College and above	58	17.2
Religion		
Protestant	161	47.8
Orthodox	147	43.6
Muslim	25	7.4
Other <sup>a</sup>	4	1.2
Ethnicity		
Oromo	282	83.7
Amhara	45	13.4
Other <sup>b</sup>	10	3
Occupation		
Daily laborer	88	26.1
Government employee	78	23.1
House wife	69	20.5
Private employee	52	15.4
Merchant	33	9.8
Other <sup>c</sup>	17	5
Current residence		
Urban	312	92.6
Rural	25	7.4
Marital status		
Married	314	93.2
Single	17	5
Widowed/divorced	6	1.8
Monthly income (Ethiopian Birr)		
$\leq 500$	159	47.2
501–999	38	11.3
$\geq 1,000$	140	41.5

**Notes:** <sup>a</sup>Adventist, Catholic, Wakefata and Hawariyat, <sup>b</sup>Tigre, Guraghe, Wolayita and Silte, and <sup>c</sup>student, farmer, commercial sex worker, and house maid.

**Abbreviations:** ART, antiretroviral therapy; PLHIV, people living with HIV.

Regarding condom use, about 226 (67.1%) used condom consistently, 56 (16.6%) used it sometimes, and 55 (16.3%) did not use it at all in the past 3 months prior to the study. From those who did not use condoms consistently or at all, the majority of study participants, 99 (89.2%), failed to use a condom with steady partners. In this study, the prevalence of risky sexual behavior (inconsistent or no use of condom) was 111 (32.9%).

**Table 2** Partner-related characteristics and pattern of condom use among PLHIV attending ART clinic at Nekemte Referral Hospital, East Wollega, Ethiopia, April 2016

Characteristics	Frequency (n)	Percentage (%)
Number of partners		
Single	322	95.5
Multiple	15	4.5
Type of relationship with single partner		
Steady	317	98.4
Casual	5	1.6
Type of relationship with multiple partners		
Steady	8	53.3
Casual	7	46.7
Sexual desire after ART		
Improved	26	7.7
The same as before	186	55.2
Decreased	125	37.1
Condom use		
Yes	282	83.7
No	55	16.3
Pattern of condom use		
Always	226	67.1
Sometimes	56	16.6
Never	55	16.3
Failed to use condom		
Steady partner	99	89.2
Casual	10	9
Both	2	1.8
Partner sero-status		
Negative	76	22.6
Positive	243	72.1
Unknown	18	5.3
Disclose sero-status		
Yes	321	95.3
No	16	4.7

**Abbreviations:** ART, antiretroviral therapy; PLHIV, people living with HIV.

## Clinical and psychosocial characteristics of respondents

About 269 (79.8%) of the respondents started ART medication more than 2 years ago. Majority of them, 304 (90.2%), had CD4 count >200 cells/mm<sup>3</sup>. Only 41 (12.2%) respondents consumed alcohol in the past 3 months, of those 27 (65.9%) drank once per week. Regarding substance use, about 14 (4.2%) had history of substance use in the past 3 months, of those 10 (71.4%) used chat, 2 (14.3%) cigarette, and 2 (14.3%) hashish. Regarding stigma, about 96 (28.5%) had experienced enacted stigma and about 139 (41.2%) perceived stigma (Table 3).

## Child desire and health-related service characteristics

Majority of respondents (311) (92.3%) had at least 1 child who was currently alive. Regarding fertility desire, 143

**Table 3** Clinical and psychosocial characteristics of PLHIV attending ART clinic at Nekemte Referral Hospital, East Wollega, Ethiopia, April, 2016

Characteristics	Frequency (n)	Percentage (%)
Duration after ART		
<1 year	25	7.4
1–2 years	43	12.8
>2 years	269	79.8
Current CD4 (cells/mm <sup>3</sup> )		
≤200	33	9.8
>200	304	90.2
Drink alcohol		
Yes	41	12.2
No	296	87.8
Frequency of consuming alcohol (per week)		
Once	27	65.9
Twice	10	24.4
Three times	3	7.3
Everyday	1	2.4
Substance use		
Yes	14	4.2
No	323	95.8
Type of substances used		
Chat	10	71.4
Cigarette	2	14.3
Hashish	2	14.3
Enacted stigma		
No	241	71.5
Yes	96	28.5
Perceived stigma		
No	198	58.8
Yes	139	41.2

**Abbreviations:** ART, antiretroviral therapy; PLHIV, people living with HIV.

(42.4%) desired to have children in the future, of which 75 (52.4%) desired to have 2 children. Concerning health-related service given to the respondents in past 3 months, 231 (68.5%) received education/counseling on the importance of protecting themselves from different strains and 262 (77.7%) were educated on risk reduction strategy (Table 4).

## Association between dependent and independent variables

In multivariable logistic regression analysis, the number of partners, partner sero-status, disclosure status, desire for child, perceived stigma, and education on importance of protection of self from different strains were statistically significantly associated with risky sexual behavior/unprotected sex.

Respondents who had multiple sexual partners were 6.38 times more likely to engage in risky sexual behavior than those who had single partner (adjusted odds ratio [AOR] =6.38, 95% CI: 1.65, 24.74).

Study participants with sero-positive partners were 2.68 times more likely to engage in risky sexual behavior than participants with negative sero-status partner (AOR =2.68, 95% CI: 1.31, 5.5).

**Table 4** Fertility and health service-related characteristics of PLHIV attending ART clinic at Nekemte Referral Hospital, East Wollega, Ethiopia, April, 2016

Characteristics	Frequency (n)	Percentage (%)
Number of children alive		
0	26	7.7
≥1	311	92.3
Desire for a child		
Yes	143	42.4
No	194	57.6
Number of children desired		
1	59	41.3
2	75	52.4
≥3	9	6.3
Received education on importance of protecting from strain		
Yes	231	68.5
No	106	31.5
Received education on risk reduction strategy		
Yes	262	77.7
No	75	22.3
Attended HIV prevention discussion/ support group		
Yes	168	49.9
No	169	50.1

**Abbreviations:** ART, antiretroviral therapy; PLHIV, people living with HIV.

**Table 5** Bivariate and multivariable logistic regression analysis of factors associated with risky sexual behavior among PLHIV attending ART at Nekemte Referral Hospital, April, 2016

Characteristics	Risky sexual behavior		COR (95%) CI	AOR (95%) CI	P-value
	Yes	No			
Number of partners					
Single	100/322 (31.1%)	222/322 (68.9%)	1		
Multiple	11/15 (73.3%)	4/15 (26.7%)	6.1 (1.89, 19.64)	6.38 (1.65, 24.74)	0.007
Partner sero-status					
Negative	15/76 (19.7%)	61/76 (80.3%)	1		
Positive	86/243 (35.4%)	157/243 (64.6%)	2.23 (1.195, 4.15)	2.68 (1.31, 5.5)	0.007
Unknown	10/18 (55.6%)	8/18 (44.4%)	5.08 (1.713, 15.087)	0.76 (0.17, 3.32)	
Disclose sero-status					
Yes	99/321 (30.8%)	222/321 (69.2%)	1		
No	12/16 (75%)	4/16 (25%)	6.73 (2.11, 21.376)	5.99 (1.36, 26.35)	0.018
Perceived stigma					
No	49/198 (24.7%)	149/198 (75.3%)	1		
Yes	62/139 (44.6%)	77/139 (55.4%)	2.45 (1.54, 3.89)	2.63 (1.5, 4.62)	0.001
Desire for a child					
Yes	65/143 (45.5%)	78/143 (54.5%)	2.68 (1.68, 4.276)	2.6 (1.5, 4.51)	0.001
No	46/194 (23.7%)	148/194 (76.3%)	1		
Received education on HIV strain					
Yes	46/231 (19.9%)	185/231 (80.1%)	1		
No	65/106 (63.1%)	41/106 (38.7%)	6.37 (3.84, 10.58)	5.64 (3.19, 9.96)	<0.001

**Abbreviations:** AOR, adjusted odds ratio; ART, antiretroviral therapy; COR, crude odds ratio; PLHIV, people living with HIV.

And those who did not disclose their status to their partner were 5.99 times more likely to engage in risky sexual behavior than those who disclosed (AOR =5.99, 95% CI: 1.36, 26.35).

Those who felt stigma in the past 3 months were 2.63 times more likely to engage in risky sexual behavior than those who did not (AOR =2.63, 95% CI: 1.5, 4.62).

Respondents who did not get education on importance of protecting themselves from different strains were 5.64 times more likely to engage in risky sexual behavior than those who received counseling (AOR =5.64, 95%, CI: 3.19, 9.96). This study also showed that participants with a desire for children were 2.6 times more likely to engage in risky sexual behavior than those who had no desire for child (AOR =2.6, 95% CI: 1.5, 4.51) (Table 5).

## Discussion

The study showed that about 32.9% of respondents were engaged in risky sexual behavior (condomless sex) in the past 3 months. This finding is consistent with studies conducted in Kenya (one third of respondents), Togo (34.6%), and Addis Ababa (30.4%).<sup>9,10,14</sup> The prevalence rate seems pretty consistent across the various studies. This might be due to similarity in socioeconomic status of the study population. A study from Tanzania showed that about 40% males and 37.5% females engaged in unprotected sex.<sup>5</sup> This value is higher than the current study. The difference might be due to variation in study unit, as they considered only young age (<24 years) respondents.

In this study, participants who had multiple sexual partners were 6.38 times more likely to engage in risky sexual behavior than those who had a single partner. This is in line with a study in Addis Ababa in which practicing unprotected sex was higher among those who had multiple sexual partners compared to those who had a single partner.<sup>11</sup> The possible explanation might be due to the fact that those who had multiple sexual partners might not disclose their status to their partners, particularly those engaged in commercial sex.

The study result showed that respondents who had positive partners were 2.68 times more likely to be engaged in risky sexual behavior compared to those who have a sero-negative partner. Consistent with the current study, a similar study conducted in western India showed that those with sero-positive partners were 3 times more likely to engage in unsafe sex.<sup>15</sup> The possible explanation might be due to false belief that condom is not important if both of them are sero-positive. This might hasten HIV reinfection with different strains and may lead to drug resistance. In contrast with this, a study from Tanzania showed that clients with HIV-positive partners were significantly more likely than those with HIV-negative partners to use condoms consistently.<sup>16</sup>

Disclosing sero-status to partner showed a significant association with risky sexual behavior in this study. Participants who did not disclose their sero-status to their partners were 5.99 times more likely to engage in risky sexual practice than those who disclosed. This is consistent with a study from South Africa (Cape Town) where sexual transmission risk behaviors were reported mostly in people who had not disclosed their HIV status to sex partners, and the result is also similar to a study conducted among HIV-infected women in Cameroon where disclosure of HIV sero-status to the main partner has been associated with safer sexual practices.<sup>17,18</sup> Another study conducted in Johannesburg, South Africa, also indicated that participants who were aware of their partner's HIV status were 4 times more likely to use condoms in a consistent manner than those who were not.<sup>19</sup> This might be due to the possibility that PLHIV who did not know their partners' status might not push to use condom during sex.

In this study, individuals who felt stigmatized in the last 3 months were 2.63 times more likely to engage in risky sexual behavior than those who did not. This is in line with studies from Addis Ababa and western India.<sup>11,15</sup> This might indicate that individuals who felt stigmatized were afraid to disclose their status to their partner.

Desire for child showed strong association with risky sexual behavior. Participants who desired to have child/children were 2.6 times more likely to engage in risky sexual practice than those who did not desire a child.

This was supported by study conducted in South India that showed desire for children as being associated with unprotected sex.<sup>20</sup> Similarly, in study conducted in Kampala, Uganda, desire for more children was a strong independent predictor of engaging in high-risk sex.<sup>21</sup> This was also consistent with a study conducted in Southern Nations and Nationalities Peoples Region which showed risky sexual behavior was associated with desire for a child.<sup>22</sup>

Education on HIV prevention measures is an important strategy to reduce risky sexual behavior. The study result showed that respondents who did not receive education on importance of protecting themselves from different strains were 5.64 times more likely to engage in risky sexual behavior than those who were educated. This finding is consistent with studies from Uganda and Western India.<sup>8,15</sup> The reason might be due to the fact that progressive education and or counseling given on the importance of protecting oneself from strain could change their behavior to one of practicing safe sex.

## Conclusion and recommendations

The prevalence of risky sexual behavior in this study was high, and about one third of the study participants were engaged in risky sexual behavior in the past 3 months prior to study.

Having multiple sexual partner, being with positive sero-status partner, not disclosing sero-status, having desire for child, having experience of perceived stigma, and lack of education on importance of protecting oneself from strain were significantly associated with risky sexual behavior. ART counselors should integrate behavioral change intervention and secondary prevention strategies with the education and counseling session of clients.

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## Disclosure

The authors report no conflicts of interest in this work.

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