

# Perceived Risk Factors of HIV Infection and ART Adherence at Zewditu Memorial Hospital, Addis Ababa, Ethiopia: A Survey of People Living with HIV/AIDS Experiences

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## Abstract

**Introduction:** Despite several interventions, HIV/AIDS continued global leading cause of morbidity and mortality, particularly in developing countries including Ethiopia. **Aim:** This study was aimed at assessing the risks of HIV infection and conditions after ART initiation among people living with HIV/AIDS at Zewditu Hospital, Addis Ababa, Ethiopia. **Methods:** An ethnographic study was conducted using an in-depth interview through semi structured questionnaire and tape recorder. Using tape recorder, careful probing, verbatim transcription, interviewing up to saturation point and considering disparity are activities to keep data trustworthiness. Data were read carefully and grouped in to themes; risky behaviors, diagnosis and reactions, conditions after ART initiation, and future plan for thematic analysis. **Results:** Seven people living with HIV/AIDS (three male and four female) were participated. The mean age of respondents was  $39.29 \pm 6.34$  SD. There were three orthodox followers, three divorced, two in marriage and two college graduated. All had serious risky behaviors to HIV infection: four had multiple sexual partners, three were very poor, two with substance abuse, two had blood contact history, and one had unprotected sex with different men. All accepted their diagnosis result, but only four started ART soon. All participants stopped having children or pregnancy since knowing their status and only four disclosed status. All respondents showed health improvement, and four respondents have desire to have marriage and children. **Conclusions:** Interviewed people were with different serious risky behaviors that will lead them HIV infection. ART service helped them improve their health, weight gain and have future plan on marriage, having children and education. Coordinated community level education, strong counseling, accessing uninterrupted HIV testing and ART services, open partner/family discussion, early HIV diagnosis and treatment, avoiding substance abuse, improving income of people with HIV/AIDS and safe sex practice are crucial to prevent HIV infection and improve ART adherence.

**Keywords:** Risky behavior; HIV infection; ART; Treatment adherence; Zewditu hospital; Ethiopia

## Introduction

Despite several interventions to prevent human immune deficiency virus/HIV infection since 1980s, it remains leading public health concern worldwide, mainly to the developing world.<sup>[1-3]</sup> In 2015, there were 2.1 million [1.8 million–2.4 million] new HIV infections worldwide, adding up to a total of 36.7 million [34.0 million–39.8 million] people living with HIV.<sup>[1]</sup> According to the Joint United Nations Programme on HIV/AIDS (UNAIDS), the world's adult HIV AIDS cases will be 33.3 million and 1.8 million deaths by 2025, of which, the sub-Saharan African countries will show an alarmingly increasing rate of adult HIV infection and deaths; 22.2 million cases and 1.3 million deaths of the globe.<sup>[1-3]</sup> High prevalence of TB, poor partner discussion, poor economy, low education level, poor disclosure practices, and having more than one sexual partner were major factors to the high HIV infection.<sup>[1-6]</sup>

In Ethiopia, evidences showed as HIV infection is increasing from time to time for several reasons, mainly due to poor attention given to HIV/negligence at country and individual levels.<sup>[7-9]</sup> Based on the 2011-16 HIV/AIDS estimates and projections, there was 1.1(male: 0.7, female 1.4) HIV prevalence; 671, 941 (256, 319 male, 415 622 female) HIV positive; 14, 405 (5 995 male, 8410 female) new infection; 24,813 (10657 male & 14 156 female) annual HIV deaths and 485, 025 ART needs in 2016.<sup>[7]</sup>

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An important interventional program to increase the survival rate of people living with HIV/AIDS/PLWHA is the anti-retroviral therapy (ART). Currently, PLWHA are living for long period with good health conditions due to ART and AIDS related deaths have decreased by 36% since 2010. [1,2,5,7,8] Hence, the number of people on ART services increased from time to time; 7.5 million in 2010, 9.1 million in 2011, 10.9 million in 2012, 12.9 million in 2013, 15 million in 2014, 17 million in 2015 and 18.2 million in 2016. [1,2] In the world's most affected region, eastern and southern Africa, the number of people on treatment has more than doubled since 2010, reaching nearly 10.3 million people. [1]

The aim of this study was to assess perceived experiences of PLWHA on the risks of HIV infection and conditions after ART initiation at Zewditu Memorial Hospital, Addis Ababa, Ethiopia. This study will be important to Federal Ministry of Health, Addis Ababa Health bureau, and Zewditu Hospital to know potential risks to HIV infection, the status of ART adherence and do evidence based interventions to prevent HIV infection and improve adherence to ART services.

## Methods

### Study design and area

A cross-sectional qualitative study was carried out among PLWHA attending ART services at Zewditu Memorial Hospital. Zewditu Memorial Hospital, one of the hospitals with better ART services under the Addis Ababa Health Bureau, is the first hospital which has started ART services in Ethiopia in 2003 for those who can afford the cost. It is established in 1925 primarily to provide the delivery services with the help of foreign professionals. In Zewditu Memorial Hospital, more than 18,000 people had been enrolled for HIV care, support and treatment, 6,500 of these were adults put on ART regimen. [9,10] The CDC, WHO, Federal ministry of Health, and Addis Ababa Health bureau contribute more to improve the quality of Zewditu hospital ART clinic services.

### Source population

All people living with HIV/AIDS and attending ART at the Zewditu Memorial Hospital were source population to this study.

### Sample size and sampling technique

Seven individuals attending ART services at the Zewditu Memorial Hospital were selected purposively based on the recommendation from the ART clinic department and reviewing their history from the ART registration log book as they are more informative in terms of risky behaviors/sources of infections/challenges to ART initiation, health conditions after ART initiation, and future plan. All those tasks were made after getting informed consent from study participants and hospital administration.

### Operational definitions

• ART user: People who are confirmed for HIV infection and on ART service.

• Risky behaviors: Behaviors of individuals which exposed them to the HIV infection.

• Reactions after diagnosis: actions immediately after knowing the HIV status such as accepting/denying the diagnosis result, decide to start or not to start ART early, disclosure or making secret the result, searching for other options ...

• Conditions after ART: outcomes on individuals such as adhere to ART, side effects, health conditions (improved or deteriorated or no change) after being on ART services

• Future plan: plan of patients either diagnosis or starting the ART services such as plan to married, to have children, to live good life.

### Data collection

Data were collected through in-depth using semi-structured questionnaire and tape recorder. The interview was conducted until the saturation point/redundancy of ideas/was achieved. A saturation point was achieved after interviewing seven people who are on ART. The range of interviewing time was 30 to 45 minutes; average 34.28 and mode was 30 minutes per individual participant. Data collectors used probing technique to get adequate data on point of interest. Participants were coded as Mr. A, Mr. B, Mrs. C, Mrs. D, Mrs. E, Mrs. F and Mr. G., respectively according to their order of interviewing. Socio-demographic, risky behaviors (unsafe sex, extra marital sex, alcohol drinking, khat chewing, profession related, helping others without care ...), diagnosis and reactions (early diagnosis or delayed, accepting or denying the results, early starting the ART or delayed, disclosure or keep secret, ...), conditions after ART (improved health, ...) and future plan (desire to marry, to have children, to disclose the status, education...) were focusing areas of the interview.

### Data trustworthiness and analysis

Using validated semi structured questionnaire, tape recorder, careful probing, verbatim transcription, interviewing up to reaching the saturation point, and considering disparity were activities to keep data trustworthiness of the study. Data were analyzed using the thematic analysis technique. Data, transcribed by senior experts, were read several times/critically evaluated to get the concept and grouped in to themes based on the concept they contain. Thus, data were summarized in to four themes: risky behaviors, diagnosis and reactions after diagnosis, conditions after ART and future plan. Investigators analyzed data to answer study objectives and write a report based on these themes.

### Ethical clearance

Ethical clearance to this paper was taken from Bahir Dar University, College of medicine and health sciences. Informed consent from Zewditu Memorial Hospital administrator. After clarifying study objectives, data collection procedure and data confidentiality issues, written consent was taken from each participant.

## Results

### Respondents' profile

A total of seven, four female and three male PLWHA were participated in the interview. The mean age of respondents was 39.29 with a standard deviation of  $\pm 6.34$ . The age range of participants was 18 (minimum 29 and maximum 47). The majority, five out of seven, were employed with variety of monthly salaries. By religion, three were Orthodox Christian, two were protestant and the rest two were Muslims. Only two of the respondents were college graduated. All stopped pregnancy and only two are in marriage, which is too loose to end up. Five of the participants had clear evidence as they are on ART service [Table 1].

### Thematic analysis

Themes such as risky behaviors, diagnosis and reactions after

diagnosis, conditions after ART and future plan were used to analyze data and report is prepared according to these themes.

### Risky behaviors

Although most of the respondents claimed as they did not know how they acquired HIV infection, they mentioned different type of serious risky behaviors that will exposed them HIV infection. Having multiple sexual partners, inconsistent condom use, unsafe sex, partner behavior, substance abuse, poor economy, occupation risk, helping without self-care were reported respondents' behaviors under this section [Table 2]. Having multiple sexual partners, typical exposing factor to HIV infection, was practiced by more than half of the respondents (B, C D, E) due to the contribution of divorce and poor economic status.

**Table 1: Profile of respondents/PLWHA in Zewditu Memorial Hospital, Addis Ababa, 2017.**

Client ID	Age (year)	Sex	Religion	Marital Status	Education level	No of children	Occupation	Treatment status
Mr. A	43	M	Orthodox Christian	Married	Grade 12	Two	Business man	On ART
Mr. B	35	M	Muslim	Not married	Grade 7	Not known	Jobless	Not known
Mrs. C	40	F	Protestant	Divorced	College graduate	Two	Employed	On ART
Mrs. D	29	F	Orthodox Christian	Divorced	College graduate	One	Nurse	On ART
Mrs. E	45	F	Orthodox Christian	Divorced	Not known	Two	Currently Jobless	On ART
Mrs. F	36	F	Protestant	Widowed	Grade 10	None	Earning (but unspecified)	Not known
Mr. G	47	M	Muslim	Married	Not known	Five	Factory worker	On ART

**Table 2: Thematic analysis of PLWHA in Zewditu Memorial Hospital, Addis Ababa, 2017.**

Themes	Them descriptions	Involved participant
Risky Behaviors	Has multiple sexual partners	B, C, D, E,
	Use condom inconsistently	C
	Keep with marriage/has only one partner	A, F, G
	Currently practicing unsafe sex	G,
	Has partner with risky behavior to HIV	E, F
	Khat chewing, alcohol intake, smoking	B, C
	Has sever poverty to lead meaningful life	B, E, F
	Had risk related to occupation/profession	D
	Had sexual intercourse to get money	E
	Assisting others without self-care	A, D
Diagnosis and Reactions after diagnosis	Did early diagnosis without symptoms to HIV	A, C, D
	Accepting the result soon	A, B, C, D, E, F, G
	Not knowing how got the infection	B, E, G
	Stopping sexual intercourse	A, B, C, D, E, F
	Start ART immediately knowing the status	A, C, E, G
	Disclose to partner/family	A, B, E, G
	Keeping status secret due to fear of stigma	C, D, F
	Become confused and hopelessness at first	B, C, D, F
	Early visiting holy waters than ART clinics	D
	Copping activities as usual	A
Conditions after ART	Show improvement on health conditions	A, B, C, D, E, F, G
	Weight gain	C, D, E
	Current feeling good/bright future	A, C, D, E,
	Has safe sexual practice or abstinence	A, B, C, D, E, F
	Has desire to married/form family	B, D, E, F
Future plan	Has desire to have children	B, D, E, F
	Has plan to continue education	C, D
	Plan to disclose the status to partner/family	C
	Plan to use condom	G

On the other hand, respondents 'A', 'F' and 'G' had only one sexual partner. Respondents 'B', 'E' and 'F' had poor economic status to even to cover basic needs in addition to their HIV infection. As a result of being jobless, one respondent (E) used multi partner sex as a source of income [Table 2].

*"...I had sex with women other than my partner...My partner left me when she knew that I was living with HIV. I am leading a very terrible life: no own shelter, no job, no food...If this destitute situation continues, I don't know the remedial measures that I take."* (a 35 year old man with substance abuse: Mr. B).

*"I divorced from my husband, a father of my two daughters, because of the disagreement between us as a result of ethnic conflict (he is Amhara and me is Tigrie)." What actions you did then and why? "I started going out with different men without using condoms in most cases. I started taking alcohol and the like. I used to take all these actions in order not to remember everything that happened on me."*(a 40 year old woman on ART: C).

*"I have one son and one daughter from different partners, but now divorced and I used to work as a cashier at Lalibela restaurant, but lost it...I started going out with different men to feed my children and myself."* (a 45 year old divorced woman: Mrs. E).

Unlike others, two respondents (A and D) had strong suspicion as they acquired HIV infection while helping others (giving first aid to friend on car accident whose status was unknown and administering IV fluid to HIV/AIDS patient, respectively) [Table 2].

*"I am helpful person, keep my personality, no substance abuse, better income, have sex only with my wife; My friend got a car accident and terribly injured; I helped him and bring to hospital, but got blood contact with him...my friend died due to HIV/AIDS; has strong suspicion that I got the virus from him. 'Innocent people are suffering from such bad occurrences as a result of their loyalty to the cultures, norms... of the given society'."* (a 43 year old man on ART: Mr. A).

*"I am a nurse, married which lasted only for one year, has one daughter; then, used sex with other man consistent use of condom (both my partners and daughter are free of HIV);... when I was searching for vein of HIV/AIDS patient to give I.V. fluid, I pierced my skin; when I did HIV testing for a medical checkup to the abroad education, I got myself as HIV positive"* (a 29 year old nurse).

Substance abuse such as chat chewing, taking alcohol, smoking... were reported risky behaviors by two respondents: B and C [Table 2].

*"My husband broke our marriage due to ethnic conflicts between us, left me with my two children, he got another marriage. I became very depressed and started...taking alcohol and others not to remember everything that happened on me."* (a 40 year old protestant woman on ART).

## Diagnosis and reactions after diagnosis

Early diagnosis without signs and symptoms, accept the result, stopping/managing sexual intercourse, start ART immediately after knowing personal status, disclosure the status, becoming confused/feeling hopelessness at first and not knowing source of infection were issues assessed under this unit. Although the time to start ART was varying, all respondents accepted their diagnosis result. Three respondents (A, C & D) and (B, E, & G) responded as they did early diagnosis for HIV and did not know how they got the infection, respectively. All, except one (G) stopped having sex with partners, but the decision of respondent 'A' is uncertain. Most of the respondents (A, C, E & G) started ART immediately after knowing the status [Table 2].

*"...I couldn't visualize the bad consequences of having unprotected sex with many partners. When my health condition was deteriorating, I realized that I was doing something wrong when my."* What actions did you take thereafter? *"I visited Zewditu hospital (TB, HIV and ART clinic); told that I was living with HIV/AIDS; during this time I felt hopelessness; fortunately, I started taking ART soon."*(a 40 year old woman on ART).

*"...I had visited a clinic to take HIV/AIDS testing for medical checkup to start education in the abroad...and informed as I was living with HIV..."*(a 29 year old woman on ART).

*"...I am on ART for the last four years; informed my status to my wife, but not tested yet and we are engaged in unprotected sex, but used contraceptive..."* (a 47 years old factory worker man).

*"...Currently, I stopped having sex with my wife, she is free of HIV..."* If you don't like to have sexual intercourse, how do you see the sexual desire of your wife? *"Now, she is in the Netherlands."* What about when she comes back? *"Only God Knows!"* (a 43 year old man on ART with unfinished decision).

The HIV status of four respondents (A, B, E, & G) is disclosed to their partners/families, whereas, respondent C, D & F did not disclose their status to their families due to fear of stigma. More than half (B, C, D & F) respondents became confused/hopelessness after hearing their status [Table 2].

*"...My brother unconsciously disclosed my status to my children, relatives and neighbors..."* (a 43 year old divorced orthodox woman on ART)

*"...I have not told to my children about my HIV status...." Why did you do that? "Because, I didn't like to put them under a mental torture; I will let them everything when they become old enough and start living by their own."* (a 40 year old divorced protestant woman on ART).

## Conditions after ART

All respondents showed improvement in their health conditions: respondent C, D & E had weight gain compared to baseline. Four respondents (A, C, D & E) expressed as they feel good or had

bright future. All, except one, G, who is practicing unprotected sex, stopped having sex after they know their status [Table 2].

*“...I am in good health now; my weight has tremendously increased from 40 to 67 Kg. I am now leading a meaningful life.” (a 40 year old woman on ART). Similarly, a 29 year woman who is on ART responded as “...My health is improving, weight increased and I expect a bright future.”*

### Future plan

Four of the respondents (B, D, E & F) have desire to marry and have children. Only two (C & D) have education plan. Respondent C and G planned to disclose status and use condom, respectively.

*“I want to join AAU, get married, has a desire to have two more children and I expect a bright future” (a 29 year old woman: D). Likewise, “...I want to get married, would like to have 2 children...” (a 35 year old man: B, a 45 year old woman: E, and a 36 year old woman: F).*

### Discussion

This study had explored “profile of PLWHA” in different themes and discussion was according to the thematic order. In this study, even if all respondents showed health improvements after ART initiation, all participants stopped pregnancy and only two were in marriage [Table 2]. This is an important issue; in reality, they can have protected sex with their partner using condom, but they stopped it even if four respondents showed desire to get marriage and have children. The possible reason for this could be being divorced, not stable, poor counseling and follow up, need health recovery since most started ART after they deteriorated, less hope to future, no confidence on possibility of having HIV free child...these were supported by previous studies.<sup>[8-12]</sup> Thus it is an important issue need to be given a special consideration by the ART centers, counselors, and other concerned bodies.

Having multiple sexual partners/extra marital sex/was major risk factor to most of the study participants. They did it because of divorce for various reasons, not in marriage (Respondent B), economy related issues to lead family life (respondent E), became depressed/angry (Respondent C), and no open discussion between partners/families. In most of the time, such sexual practices are unprotected due to unconsciousness and partners push. For example, respondent ‘C’ in this study practiced unsafe sex with different men to forget the pain that her husband gave/breakage of marriage/due to ethnicity conflict. It was also reported as experience among PLWHA by other studies.<sup>[4,5,8-15]</sup> It is very danger practice and be major challenge to the HIV/AIDS prevention program unless appropriate action is made.

Substance abuse/khat chewing, alcohol intake, smoking.../ and poor income were important risky behaviors of study participants to HIV infection and ART adherence [Table 2]. Substance abuse can have several impacts such as direct affecting human health and indirect affection of economy, social, forgetting ART drug

intake, increase hopelessness, poor health improvement after ART, decrease work performance,...<sup>[11-16]</sup> Poor income can cause several scarcities such as shortage of basic needs, cost for healthcare, transportation, and others. As a result, people will start unsafe sexual practices that will lead them HIV infection as source of income to cover cost for survival like respondent ‘E’ did.<sup>[8,9,11,12,14,16]</sup> Hence, special attention on counseling of PLWHA, supporting them, and awareness creation using different media such as radio, Television, posters, leaflets, banners, conferences, conducting research and the like are crucial to prevent HIV infection and improve treatment adherence.

One respondent ‘G’ is still practicing unprotected sex with his wife who knew his status. She is using contraceptive; no conflict between them; her husband did not have any extra marital sex and he did not know how he got the infection, but no evidence on her testing status yet. It is unclear and based on given evidences and her reaction, probably, she may be the source to the infection and may know her status somewhere before her husband knew his status, but keep silent due to stigma and fear of her husband. This condition is very serious to HIV transmission and ART treatment initiation and adherence. The sources will easily transmit the infection to others even with mechanisms other than sexual intercourse. Therefore, HIV prevention programs and other concerned offices such as the Non-governmental organizations need to follow special strategies on how to improve community awareness, early diagnosis and treatment, open discussions, status disclosure, social supports, and minimizing stigma. All these could be vital to prevent HIV transmission.

Unlike the others, respondent ‘A’ and ‘D’ had associated their source of infection to blood contact while helping others (helping a friend on car accident whose status was unknown and IV fluid securing to HIV AIDS patient). It is known that occupational hazards (needle injury, blade cutting, specimen contact...),<sup>[9,16,17]</sup> helping without self-caring, unsafe sex, mother to child... are major HIV transmission routes.<sup>[8-14,16,17]</sup> The probable reason that they got infection due to such occasions may be due to not getting counseling service, low awareness, and missing to take prophylaxis, which can reduce the risk of infection. Thus, the HIV prevention and control office need to use effective awareness creation strategies on possible HIV transmission, and prevention mechanisms such as public media, posters, mobile text messages, social media, conferences and the like to address the population at large.

Most of the respondents accept their diagnosis result, but only few started ART on time. In most cases, PLWHA may become depressed and not taking ART drug soon so that their health conditions became deteriorated. They may start when they had no choice like what respondent ‘D’ and ‘F’ did. Respondent ‘D’ first went to churches and holy water after knowing her status, but her life became worsened and decided to start ART [Table 2]. This is true for more people at initial time, even some may interrupt ART and joined to traditions<sup>[15]</sup> because they may be confused and no trust on ART, as a result, have poor adherence to ART.<sup>[10-15]</sup> This could be due to poor counseling, absence of support, and fear of stigma.<sup>[8,10,11-13,15,18]</sup>

Four of the respondents did not disclose their status to partners/family, which is very danger. The likely reason could be fear of stigma, poor family open discussion, fear of partner/divorce...<sup>[12-16,18]</sup> All these issues can be minimized through strong counseling and community awareness, but needs time.<sup>[12,14,18]</sup> That is why stigma remains major challenge in this century despite several interventions.<sup>[8,11,12,15,18]</sup>

Although they mentioned more serious risky behaviors to infection, respondents claimed as they did not know how they got the infection/respondent 'B', 'E', & 'G' [Table 2]. This clearly indicated that they do not have clear awareness on HIV transmission or fear of stigma; it may be resulted from poor counseling, information access, negligence (example respondent 'D' who is a nurse) and forgetting the severity of HIV infection.<sup>[1,8-14]</sup> This clearly indicated that there are major tasks that need to be conducted by the HIV prevention and control office.

All respondents showed health improvement, three remarkable weight gain, and majority feeling good after ART initiation. If PLWHA get adequate counseling and supports such as economy and social, they will adhere easily to ART service; act as per advice, take drug as per ordered (dose and timing), proper nutrition, personal care, become psychologically stable, have future plan and show radical change.<sup>[8,12-14]</sup> Because, ART can maximally suppress the virus/limit multiplication and viral load/and prevent transmission if taken as per the standard.<sup>[9,10,13,14]</sup> The health improvement was also supported by majority respondents' future plan to get marriage, have children and education [Table 2]. The message that HIV prevention office need to learn here is the importance of early screening and ART program on improving the health status of PLWHA even if it is not implemented as planned for various reasons. It is a reinforcing factor to the HIV prevention office and other concerned offices.

## Conclusions and Recommendations

Interviewed people were with different serious risky behaviors that will lead them HIV infection. ART service helped them improve their health, weight gain and have future plan on marriage, having children and education. Coordinated community level education/awareness creation, promoting early screening and treatment, strong counseling, accessing continual HIV testing and ART services, open partner discussion, avoiding substance abuse, avoiding stigma/improve social supports, improving income of PLWHA and safe sex practice are crucial to prevent HIV infection and improve ART adherence.

## Authors' Contributions

All authors participated in concept, design, literature search, data acquisition, and data analysis of the manuscript. Mulusew Andualem prepared the manuscript and did revision tasks in addition to the above tasks. All authors approved manuscript submission.

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## Conflict of Interest

All authors disclose that there was no conflict of interest.

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