

Prevalence of fertility desire and its associated factors among 15- to 49-year-old people living with HIV/AIDS in Addis Ababa, Ethiopia: a cross-sectional study design

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Background: The magnitude of unprotected sex to satisfy the desire for fertility among people living with HIV/AIDS (PLHIV) may rise more due to the availability of antiretroviral therapy (ART) in most HIV-affected countries. This could, however, have the risk of passing on HIV to sexual partners and children. The aim of this study, therefore, was to determine the magnitude and factors associated with the fertility desire of reproductive-age PLHIV in Addis Ababa, Ethiopia, for research-based and timely actions.

Methods: A cross-sectional study was carried out from April to June 2016 among 442 randomly selected, reproductive-age PLHIV who had been attending ART clinics in Addis Ababa. Twelve experienced and trained nurses collected the data. The questionnaire was pretested and interviewer-administered, and the interview was executed after obtaining voluntary consent from each study subject. The data were then cleaned and analyzed by using Epi Info version 3.5.4 and SPSS version 20.0, respectively. Binary logistic regression was done in order to describe the association of fertility desire with some sociodemographic and sexual behavior-related factors.

Results: Among the total 441 respondents, 54.6% reported the desire for fertility, 87% disclosed their HIV status, 24.3% had two or more sexual partners in the earlier year, and only 55.6% used a condom during their last sexual intercourse. In addition, current health status (AOR=2.03; 95% CI: 1.01–4.07) and partner being tested for HIV (AOR=6.31; 95% CI: 1.35–29.64) showed statistically significant associations with fertility desire during multivariate logistic regression analysis.

Conclusion: A considerable number of PLHIV in the study area reported a desire for having children. Current health status and partner being tested for HIV were found to be factors associated with the fertility desire among PLHIV. Thus, more efforts to effectively address the health concerns related to fertility desire and risky sexual behavior among HIV-infected people of reproductive age could play a significant role in prevention and control measures against HIV/AIDS epidemic.

Keywords: fertility desire, PLHIV, reproductive age, risky sexual behavior, Ethiopia

Introduction

It was estimated that there were about 36.7 million people living with HIV/AIDS (PLHIV) in the world in 2015. Of these, 17 million had access to antiretroviral therapy (ART).¹ The contemporary projected population of Ethiopia, one of the most HIV/AIDS-affected countries in the globe, was about 90.9 million (50.8% female).^{2,3}

The people most affected by HIV/AIDS are those who are sexually active and economically more productive falling within the 25–49 age group.⁴ According to some

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studies, the desire for having children among PLHIV is rising because of the return to normal life, including maintenance of sexual activity due to ART.⁵⁻⁷ After the worldwide introduction of ART, the HIV/AIDS-related illnesses and deaths have decreased considerably, and in addition, the quality of life of PLHIV has significantly been improved leading to a rise in the need for having children.^{8,9}

The desire has increased due to the enhanced quality of life and survival as a result of the availability of ART and improvement in reproductive health services in most HIV-affected countries.¹⁰ Nevertheless, unprotected sex that is aimed at achieving fertility among PLHIV has the risk of transmitting HIV to their respective sexual partners and also to their children during birth and/or breastfeeding.^{6,7}

The health and economic status of PLHIV can be improved due to the availability and widespread use of ART. This, in turn, may increase their need for fertility and having more children, though it has the risk of passing the virus to children.^{11,12} Consequently, the judgment related to fertility desire among PLHIV must be preceded by adequate knowledge of HIV and its mode of transmission. Sexual partners must also be well informed about the case as they can have a significant positive effect on the health of their families and the public at large. Although the main aim of ART is to decrease the HIV-related illnesses and deaths, and thereby extend the continued existence of PLHIV, there are still growing public health and demographic consequences of ART that are not fully understood.^{6,13} For instance, the sexual desire as well as an intention for fertility of PLHIV can be increased due to the expected improvements in health and economic status. This, in turn, can increase the probability of HIV transmission to the discordant couples and their fetuses or babies.^{14,15}

As an effect of the multifaceted correlation between fertility intention and HIV/AIDS transmission, the preventive and control measures against the HIV epidemic can be challenged in many affected countries with low utilization of prevention of mother-to-child transmission (PMTCT) service and high fertility rate, like Ethiopia.¹⁶

For instance, studies from various African countries, including Ethiopia, reported that the magnitude of fertility desire and unprotected sex among PLHIV is about 37% and 69%, respectively. These findings pointed out the likelihood of HIV transmission, particularly among discordant sexual partners.^{17,18} Although two in every five pregnancies are unplanned globally, women living with HIV are more at the danger of unintended pregnancies.^{19,20} This results in the

occurrence of about 1,600 new HIV infections through vertical transmission, that is, mother-to-child transmission of HIV, among the total 14,000 new infections in a day globally.²¹

Since most PLHIV are in their childbearing age, one of the unexpected effects of ART is its likelihood to increase the fertility desires of people infected and affected with HIV/AIDS.²² This effect could be even more significant in most sub-Saharan African countries where people give higher social value to fertility or childbearing couples.⁶ Furthermore, a study also showed that there was increased intention of childbearing among PLHIV because of the availability of ART and PMTCT programs.²³

The sociocultural and economic factors influence the reproductive preferences and choices of men and women, regardless of serostatus, particularly in sub-Saharan Africa.⁶ Moreover, as it holds true for the general population, the pleasure, happiness, and sense of social fulfillment associated with parenthood are some of the reasons for the likely increase in fertility intentions among PLHIV.^{6,14} In addition, the disclosure of one's HIV status was found to be associated with the desire for fertility among this population.^{17,18}

In contrast, HIV/AIDS infection can affect fertility directly by causing spontaneous abortion^{24,25} or indirectly through decreased sexual desire, marital disruption, and use of condoms.²⁶

However, research-based and updated data on the fertility and reproductive intentions among PLHIV are scarce.²⁷ As Ethiopia is one of the most HIV-affected countries in the world, exploring the magnitude and factors associated with the fertility desire among sexually active people aged 15–49 years could have a pivotal contribution to the national efforts to prevent and control the epidemic.²⁸

In general, understanding the factors associated with fertility desire was believed to play an important role in evidence-based and timely intervention by all concerned sectors and actors in Ethiopia and other similar countries.

Materials and methods

Study design and setting

This cross-sectional study was conducted at four randomly selected health centers, a regional hospital, and a tertiary-level hospital located in different sub-cities in Addis Ababa City Administration. Addis Ababa is located at 9° North latitude and 38° East longitude with altitude ranging between 2,200 and 2,800 m above sea level. In 2014, the projected population of Addis Ababa, as per the national census report of 2007, was 3,197,000, and of this, about 52% were females.^{2,3,29,30}

In Addis Ababa, the number of people tested for HIV until 2012/2013 was 503,930. Of this, 19,149 (3.8%) persons tested positive, and it was the highest compared to all regions in the country and that of the national data (1.1%).^{30,31}

Sampling procedure

All patients attending ART clinics of health institutions in Addis Ababa City during the study period were considered as the source population of the study. The real data collection, however, focused on those ART clinics of public hospitals and health centers in the city.

For this study, four public health centers (Arada, Bole, District 3, and District 9) and two public hospitals (St Paul's Hospital Millennium Medical College and Ras Desta Damtew Hospital) were randomly selected from various sub-cities. Then, a random sampling technique with reasonable formulas of assumptions and 15% contingency was used, in order to get the representative samples among the HIV patients of the reproductive age group who were attending the respective ART clinics. In addition, the total number of HIV patients selected was estimated using the following single-population proportion calculation formula: $n = (Z^2 \cdot p \cdot q) / d^2$. As "n" was the sample size of the study, Z was the upper $\alpha/2$ point of standard normal distribution, where $\alpha=0.05$, and $Z_{\alpha/2}=1.96$. According to the findings of previous studies conducted in different sub-Saharan countries, the rate of contraceptive utilization and condom use among HIV-positive people was about 48%.^{11,32-42} Consequently, the real prevalence rate considered was $p=0.48$ and $q=0.52$ as indicated.

The maximum-allowed difference between the maximum likelihood estimate and the unknown population parameter denoted by "d" was desired to be 0.05. The required sample size was calculated as declared in the equation, and then for the possible nonresponse rate, 15% contingency was added. Thus, 442 randomly selected HIV-positive individuals who were attending ART clinics of the targeted public health facilities in Addis Ababa were taken as the final sample. Moreover, the sample size was proportionately allocated to each randomly selected health facility based on their number of ART clients during the study period. Nonetheless, those HIV-positive patients whose ages were less than 15 years, who were severely ill during the study period, and who were unable to take part in the study were excluded.

Data collection and quality control

Pretested, structured, and interviewer-administered questionnaires were used to collect the data in 2016 for assessing the magnitude and factors associated with fertility desire

among HIV-positive people aged 15–49 years. Four hundred and forty-one HIV-positive patients aged 15–49 years who provided written consent to take part in the study were the sources for the collected data.

In order to ensure data quality, various actions were taken at different levels. Before the actual administration, the intended questionnaires were edited and pretested. In addition, the required training was given for data collectors and supervisors by the principal investigator (PI) and core-researchers. Twelve data collectors (nurses with BSc degree), two supervisors who had BSc degree and above in health sciences/core-researchers, and the PI carried out the process of data collection.

The prepared standard questionnaires originally in English were translated to Amharic and then back to English in order to check for regularity as well as to make effective pretests and then adjustments as required.

In addition, the pretesting of the data collection instruments was done prior to the main fieldwork using HIV-positive patients from two public health facilities which were not part of the real study. The health facilities in which the questionnaires were pretested had similar characteristics to that of the health facilities where the real study was conducted. The pretest was useful to recognize problems in clarity and exclude inappropriate questions as well as to make sure the time used up in answering. Moreover, it was aimed at improving the cross-cultural validity, precision, and reliability of the data. As a result of pretesting the research questionnaires, some unclear questions were either removed or rephrased. The data collectors were also equipped with some written "Dos and Dons" that were implemented during data collection.

Moreover, the filled questionnaires were checked at the field level, first by the data collectors themselves and then by their respective supervisors on a daily base. These questionnaires were cross-checked randomly for their completeness and consistency daily by the PI. At the entry level, the data were checked carefully for invalid codes, duplicated entries, missing values, and inconsistency of records with due emphasis to the expected quality of data.

Ethical considerations

The ethical principles of respect, beneficence, and justice were practiced with due concerns throughout the data collection processes as the study subjects were PLHIV who were attending ART clinics at public health facilities in Addis Ababa.

Official letters of cooperation were also written to all health facilities selected for the actual data collection from St Paul's Hospital Millennium Medical College. The let-

ters were written after securing ethical clearance from the Institutional Review Board of St Paul's Hospital Millennium Medical College prior to the field work.

In addition, informed and voluntary consent for the study were obtained from all subjects, as per the recommended principles of human research ethics. It was put into practice after giving full information to the study participants about the objectives of the study and their right to take part in the study or not. This was critical to the whole progress of the study. Last, all the data of the study were managed with confidentiality and anonymity.

Data management and statistical analysis

A computer with Epi Info software version 3.5.4 was used first to enter all the collected data, and then analyses were done using the SPSS software version 20.0. Various suitable statistical methods were used: frequency distribution, proportions, percentages, ORs, and AORs with 95% CIs.

The existing theoretical knowledge of the variables and statistical significance found during bivariate analyses was employed to choose the variables in multivariate analyses. Thus, the *P*-values less than 0.05 were taken as statistically significant.

Results

Sociodemographic features of study participants

Among the total 442 PLHIV interviewed for this study, 441 (99.8%) responded voluntarily. Of these, 313 (71.0%) were women. While the majority of study subjects (94.5%) were in the age range of 25–49 years, only 20 (4.5%) were in the age range of 15–24 years. With regard to marital status, 94 (21.3%), 208 (47.2%), and 139 (31.5%) were single, married, and divorced and widowed, respectively. The majority of the study subjects, that is, 244 (55.3%), were Amhara by ethnicity; 349 (79.1%) were orthodox religion followers, and 228 (51.7%) had secondary and above level of education during the study period (Table 1).

Sexual, clinical, and reproductive characteristics of study participants

Among the 441 participants, 418 (95.0%) ever had sexual intercourse, and 354 (85.1%) had a history of having sexual intercourse in the previous 12 months of the study period; 382 (87.0%) disclosed their HIV status to their respective sexual partners, parents, or friends, and the remaining 57 (13.0%) of the respondents did not disclose their HIV status to anyone.

Table 1 Sociodemographic characteristics of study participants by sex, in Addis Ababa, Ethiopia (2016)

Variables	Male (%)	Female (%)	Total (%)
Sex			
Male			128 (29.0)
Female			313 (71.0)
Age category			
15–24	3 (15)	17 (85)	20 (4.5)
25–34	41 (19.8)	166 (80.2)	207 (46.9)
35 and above	84 (39.3)	130 (60.7)	214 (48.5)
Total	128 (29.0)	313 (71.0)	441 (100.0)
Ethnicity			
Amhara	72 (29.5)	172 (70.5)	244 (55.3)
Oromo	28 (26.2)	79 (73.8)	107 (24.3)
Others	28 (31.1)	62 (68.9)	90 (20.4)
Religion			
Orthodox Christian	101 (28.9)	248 (71.1)	349 (79.1)
Others	27 (29.3)	65 (70.7)	92 (20.9)
Education			
Illiterate	4 (8.5)	43 (91.5)	47 (10.7)
Primary school	37 (22.7)	126 (77.3)	163 (37.2)
Secondary and above	86 (37.7)	142 (62.3)	228 (52.1)
Marital status			
Single	39 (41.5)	55 (58.5)	94 (21.3)
Married	69 (33.2)	139 (66.8)	208 (47.2)
Divorced and widowed	20 (14.4)	119 (85.6)	139 (31.5)

Moreover, 274 (75.71%) and 88 (24.3%) of the study participants reported that they had one and two or more sexual partners in the year preceding the study, respectively. Of the total participants of the study, 234 (56.4%) self-reported that they had sexual partners during the study time, of whom 204 (91.9%) responded that their partners were tested for HIV. Of those who reported partners' test, 152 (68.5%) responded that their partners' HIV status was positive, and the remaining 52 (31.5%) responded that their partners' HIV status was either negative or not understood at all. Of the study subjects, 165 (37.8%) and 271 (62.2%) individuals had been on ART for 5 or less years and more than 5 years, respectively. In addition, of the total participants, those who had the CD4 count of less than or equal to 200, 201–400, and greater than 400 per microliter of blood were 48 (11.3%), 148 (34.8%), and 229 (53.9%), respectively (Table 2).

As for the study subjects' general perceived health status, 229 (52.4%) self-reported as very good, 109 (24.9%) reported as good, and 99 (22.7%) reported as fair or bad (Table 2).

In addition, 302 (72.6%) of the participants were knowledgeable about the importance of PMTCT, and 277 (66.6%) reported that their attitude toward using PMTCT service was positive. Pertinent to desire to have children, 227 (54.6%) responded that they had desired for fertility or more children,

Table 2 Sexual, clinical, and fertility desire-related characteristics of PLHIV by sex in Addis Ababa (2016; N=441)

Variable	Male (%)	Female (%)	Total (%)
Ever had sexual intercourse			
Yes	120 (93.8)	298 (95.5)	418 (95.0)
No	8 (6.2)	14 (4.5)	22 (5.0)
Had sex in the previous 12 months			
Yes	102 (85.7)	252 (84.8)	354 (85.1)
No	17 (14.3)	45 (14.9)	62 (14.9)
Did you disclose your HIV status to your partner?			
Yes	114 (89.1)	268 (86.2)	382 (87.0)
No	14 (10.9)	43 (13.8)	57 (13.0)
How many sexual partners did you have in the previous 12 months?			
One	83 (76.9)	191 (75.2)	274 (75.7)
Two or more	25 (23.1)	63 (24.8)	88 (24.3)
Do you have a sexual partner currently?			
Yes	145 (63.9)	89 (47.3)	234 (56.4)
No	82 (36.1)	99 (52.7)	181 (43.6)
Is your current partner tested for HIV?			
Yes	112 (54.9)	92 (45.1)	204 (91.9)
No	16 (4.7)	2 (10.5)	18 (8.1)
HIV status of your current partner			
Positive	81 (53.3)	71 (46.7)	152 (68.5)
Negative	40 (57.1)	30 (42.9)	70 (31.5)
Did you use condom during your last sex?			
Yes	90 (73.8)	143 (48.3)	233 (55.7)
No	32 (26.2)	153 (51.7)	185 (44.3)
Current CD4 count			
33–200	14 (11.5)	34 (11.2)	48 (11.3)
201–400	51 (41.8)	97 (32.0)	148 (34.8)
401–1,291	57 (46.7)	172 (56.8)	229 (53.9)
Your current health status			
Very good	73 (57.5)	156 (50.3)	229 (52.4)
Good	34 (26.8)	75 (24.2)	109 (24.9)
Fair or bad	20 (15.7)	79 (25.5)	99 (22.7)
Knowledge of PMTCT			
Knowledgeable	173 (57.3)	129 (42.7)	302 (70.8)
Not knowledgeable	54 (47.4)	60 (52.6)	114 (27.4)
Attitude toward PMTCT			
Negative	87 (38.3)	52 (27.5)	139 (33.4)
Positive	140 (61.7)	137 (72.5)	277 (66.6)
Duration on ART in years			
More than 5 years	83 (65.9)	188 (60.6)	271 (62.2)
1–5 years	43 (34.1)	122 (39.4)	165 (37.8)
Being on ART increased your fertility desire			
Yes	63 (50.8)	164 (56.2)	227 (54.6)
No	61 (49.2)	128 (43.8)	189 (45.4)
Self-reported reasons for fertility desire by PLHIV			
To replace themselves	76 (65.5)	180 (61.0)	256 (62.3)
Think that once on ART, HIV will never be transmitted to their babies	17 (14.7)	54 (18.3)	71 (17.3)
Due to social pressure	23 (19.8)	61 (20.7)	84 (20.4)

Abbreviations: PLHIV, people living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission; ART, antiretroviral therapy.

while 189 (45.4%) reported no desire or were unsure about it. Regarding why some PLHIV desire for fertility, 256 (62.3%), 71 (17.3%), and 84 (20.4%) of the respondents replied that they wanted to replace themselves, they believed HIV cannot

be transmitted to their babies since they are on ART, and it is due to social pressure, respectively. Furthermore, of the total number of study subjects, only 233 (55.7%) used male condoms during the last sexual act (Table 2).

Factors associated with fertility desire among PLHIV

An attempt was made to identify the factors that are associated with fertility desire among PLHIV. In this regard, as binary logistic regression model in Table 3 shows, the factors affecting fertility desire showing statistically significant associations are found to be age being 35 and above (COR=0.62; 95% CI: 0.41–0.92), current health status (COR=2.56; 95% CI: 1.54–4.23), having sexual partner at present (COR=1.97; 95% CI: 1.33–2.92), sexual partner being tested (COR=6.57; 95% CI: 1.47–29.32), and attitude toward using PMTCT service (COR=1.64; 95% CI: 1.08–2.48).

The variables computed with fertility desire showed statistically significant associations or *P*-values <0.05 during bivariate analyses were further analyzed using the multivariable logistic regression model of the independent factors associated with the outcome variable. Accordingly, current health status (AOR=2.03; 95% CI: 1.01–4.07) and partner being tested for HIV (AOR=6.31; 95% CI: 1.35–29.64) showed statistically significant associations with fertility desire among PLHIV. On the contrary, age, currently having a partner, and attitude toward PMTCT service lost their statistical significance during multivariable logistic regression analyses (Table 4).

Discussion

This cross-sectional and health facility-based study was done among reproductive-age PLHIV in Addis Ababa, Ethiopia. The lion's share of the participants (94.5%) was above 25 years old, and females constituted 71%. This was in agreement with the prevalence of HIV/AIDS among adults in Ethiopia and globally.^{1,3,4,16,43–46} According to the results of this study, the greater portions of the PLHIV had completed at least secondary-level education. This is also consistent with the national progress report for the year 2014 on HIV/AIDS that showed a high rate of risky sexual behavior practices among university and secondary school students.⁴⁴ Nonetheless, this result is to some extent higher than the findings of a similar study that was conducted previously in Addis Ababa among female HIV patients. The experiential disparity might appear because of the difference in study duration and inclusion of both sexes in our study.^{44,45}

Among the 441 study participants, the proportion of fertility desires among male, female, and both sexes was 50.8%, 56.2%, and 54.6% with 95% CI of 50.6%–60.0%, respectively. The percentage of fertility desire among PLHIV in this study was higher than the findings of studies conducted previously in Fitch town, Ethiopia, and Cape Town, South Africa,

which were 39.1% and 51.0%, respectively.^{46,47} However, it was lower than the findings of the Ethiopian demographic and health survey of 2011 and a study from Nigeria, which were 63.0% and 63.3%, respectively.^{17,48} The differences could be explained in terms of variations in sociodemographic characteristics of the populations and cultural concerns of having a big family size and more fertility desires.

With regard to the perceived health conditions of PLHIV during the study time, about three-fourths of the participants reported that they were either in a very good or in a good health status due to ART. This result is also consistent with the results of various earlier studies that showed a decrease in the magnitude of HIV/AIDS-related morbidity and mortality as well as new HIV infections, besides a real improvement in the quality of lives of PLHIV due to ART.^{8,9}

According to the findings of this study, the factors that correlated with the fertility desire among PLHIV were age, current health status, having a sexual partner during the study period, current partner has been tested, and attitude toward PMTCT. Even though the aforementioned factors have demonstrated statistically significant associations with fertility desire among PLHIV during bivariate analyses, age, having a sexual partner, and attitude toward PMTCT among PLHIV lost their experiential statistical significance during multivariate analyses (Table 4).

PLHIV who self-reported that their personal health status was good during the study period were found to have a fertility desire about two times more likely than their counterparts. This could be explained in terms of the probabilities of being improved in social, economic, and physical statuses of PLHIV due to the positive effects of ART. This finding was in accordance with most previous studies that have documented a positive relationship between ART use and desire for future fertility. For instance, a study in Brazil reported that ART use was positively associated with a woman's desire to have a child.⁴⁹ Similar positive associations between ART and fertility desire have been reported in studies from South Africa⁵⁰ and India.⁵¹ The availability of PMTCT program could have also increased fertility desire.⁴⁹

On the other hand, some studies did not find associations between ART use and fertility desires among PLHIV. A recent study in Soweto slums of South Africa found a lack of association between ART use and childbearing intentions.⁵² Similarly, the findings of the studies carried out in Nigeria and Uganda reported no association between ART use and fertility desires.^{17,53} Contrary to this, the finding of another study done in Nigeria revealed a negative association between ART use and fertility desires.⁵⁴

Table 3 Factors associated with the fertility desire among PLHIV in Addis Ababa, 2016 (N=441)

Variables	Desire for more children		Unadjusted OR (95% CI)
	Yes (%)	No (%)	
Sex of respondent			
Male	63 (27.8)	61 (32.3)	1
Female	164 (72.2)	128 (67.7)	1.24 (0.81–1.89)
Total	227 (54.6)	189 (45.4)	
Age category			
15–24	7 (3.1)	11 (5.8)	1
25–34	118 (52.0)	74 (38.5)	1.54 (0.58–4.13)
35 and above	102 (44.9)	104 (55.0)	0.62 (0.41–0.92)
Religion			
Orthodox Christian	179 (78.1)	153 (81.0)	1.14 (0.70–1.85)
All others	48 (21.1)	36 (19.0)	1
Ethnicity			
Amhara	128 (56.4)	104 (55.0)	1
Oromo	53 (23.3)	49 (25.9)	1.14 (0.71–1.82)
All others	46 (20.3)	36 (19.0)	0.96 (0.58–1.60)
Education			
Illiterate	29 (12.9)	15 (8.0)	1
Primary school	84 (37.3)	71 (37.8)	1.63 (0.81–3.29)
Secondary and above	112 (49.8)	102 (54.3)	1.76 (0.89–3.47)
Marital status			
Single	41 (18.1)	49 (25.9)	1
Married	114 (50.2)	83 (43.9)	1.51 (0.88–2.59)
Divorced and widowed	72 (31.7)	57 (30.2)	0.92 (0.59–1.44)
Current health status			
Fair and bad	35 (15.6)	55 (29.4)	1
Good	55 (24.4)	49 (26.2)	1.45 (0.90–2.32)
Very good	135 (60.0)	83 (44.4)	2.56 (1.54–4.23)
Do you have a sexual partner currently?			
No	82 (36.1)	99 (52.7)	1
Yes	145 (63.9)	89 (47.3)	1.97 (1.33–2.92)
Current sexual partner tested			
Yes	112 (54.9)	92 (45.1)	6.57 (1.47–29.32)
No	16 (88.9)	2 (11.1)	1
Partner's HIV status			
Negative	40 (33.1)	30 (29.7)	1
Positive	81 (66.90)	71 (70.3)	0.86 (0.48–1.51)
Disclosed HIV status to anyone?			
Yes	202 (89.4)	163 (86.2)	0.75 (0.41–1.35)
No	24 (10.6)	26 (13.8)	1
Current CD4 count			
33–200	24 (11.1)	22 (11.9)	1
201–400	75 (34.7)	62 (33.3)	0.90 (0.46–1.76)
401–1,291	117 (54.2)	101 (54.6)	0.94 (0.49–1.1.78)
Knowledge of PMTCT			
Knowledgeable	173 (76.2)	129 (64.6)	1.0
Not knowledgeable	54 (23.8)	60 (35.4)	1.49 (0.97–2.30)
Attitude toward using PMTCT			
Negative	87 (38.3)	52 (27.5)	1.0
Positive	140 (61.7)	137 (72.5)	1.64 (1.08–2.48)
Years on ART			
1–5 years	85 (37.6)	71 (38.4)	1
More than 5 years	141 (62.4)	114 (61.1)	1.03 (0.69–1.54)
Did you use condom during your last sex?			
Yes	124 (57.7)	96 (53.0)	1.21 (0.81–1.80)
No	91 (42.3)	85 (47.0)	1

Abbreviations: PLHIV, people living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission; ART, antiretroviral therapy.

Table 4 Multivariable logistic regression analysis of factors associated with fertility desire among PLHIV of reproductive age in Addis Ababa (2016)

Variables	Desire for more children		Unadjusted OR (95% CI)	Adjusted OR (95% CI)
	Yes (%)	No (%)		
Age category				
15–24	7 (3.1)	11 (5.8)	1.0	1.0
25–34	118 (52.0)	74 (38.5)	1.54 (0.58–4.13)	0.69 (0.15–3.09)
35 and above	102 (44.9)	104 (55.0)	0.62 (0.41–0.92)	1.15 (0.26–5.09)
Current health status				
Fair and bad	35 (15.6)	55 (29.4)	1.0	1.0
Good	55 (24.4)	49 (26.2)	1.45 (0.90–2.32)	1.39 (0.68–2.83)
Very good	135 (60.0)	83 (44.4)	2.56 (1.54–4.23)	2.03 (1.01–4.07)
Having a sexual partner currently				
No	82 (36.1)	99 (52.7)	1.0	1.0
Yes	145 (63.9)	89 (47.3)	1.97 (1.33–2.92)	2.60 (0.97–6.96)
Current partner tested				
Yes	112 (54.9)	92 (45.1)	6.57 (1.47–29.32)	6.31 (1.35–29.64)
No	16 (88.9)	2 (11.1)	1.0	1.0
Attitude toward PMTCT service				
Negative	87 (38.3)	52 (27.5)	1.0	1.0
Positive	140 (61.7)	137 (72.5)	1.64 (1.08–2.48)	1.27 (0.70–2.30)

Abbreviations: PLHIV, people living with HIV/AIDS; PMTCT, prevention of mother-to-child transmission.

Furthermore, the study participants whose sexual partners were tested for HIV were about six times more likely to have fertility desire. This can be explained in terms of being tested for HIV and by that subsequent disclosure of one's HIV status to the sexual partners could increase options to facilitate the ability to make informed decisions on childbearing. This finding was also concurrent with the study conducted in South Africa among PLHIV.⁴⁷

Last, since there were some sexual behaviors-related questions in the study that were sensitive, social desirability bias might have occurred during the process of collecting data. In addition, the findings may not be generalized to other parts of the country, as the study participants were only from the Addis Ababa City.

Conclusion

In summary, as the results of this study have demonstrated, a considerable proportion of PLHIV in Addis Ababa, Ethiopia, reported that they have a desire for fertility or to have children. The practice of unprotected sexual interaction with a likely high rate of pregnancy was observed among PLHIV. More importantly, the factors associated with fertility desire were found to be perceived health status and current partner's undertaking of HIV test.

In addition, a considerable number of PLHIV in the study area were practicing risky sexual behavior or having multiple sexual partners (24.3%). Thus, the findings of this study give the call for more efforts to effectively address fertility desire,

safe sex, and contraception-related concerns for HIV-infected and HIV-affected people in reproductive health services of various developing countries.

Furthermore, the present study was limited to exploring the magnitude and factors associated with the fertility desire among PLHIV in the capital city, Addis Ababa. Consequently, there is a need for a nationwide study with more representative sample size to strengthen much-needed pragmatic data on the determinants of fertility desire among PLHIV. Finally, further research can look at enhancing the quality of sexual and reproductive health services in health facilities, schools, and other community-based pertinent institutions to improve the quality of health and productivity of PLHIV in Ethiopia and other sub-Saharan countries.

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Disclosure

The authors have no conflicts of interest in this work.

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