Contraceptive Use among sexually active reproductive age HIV Positive Women Attending ART Clinic at Felege Hiwot Referral Hospital, Northwest Ethiopia: A cross-sectional study

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Abstract

Background: Contraception helps prevent unintended pregnancies and mother to child Human Immune Virus (HIV) transmission among human immune virus positive women. Ethiopia has made remarkable progress in increasing contraceptive use rate but there is still a disparity of contraceptive use in the country. Understanding the extent of and barriers of contraceptive use among HIV positive women in Ethiopia is important for learning how to best improve level of contraceptive use among this group of population. Therefore, this study aimed to determine contraceptives use and associated factors among HIV positive sexually active women at anti-retroviral therapy clinic at Felege Hiwot Referral Hospital ART clinic in Bahir Dar, Ethiopia.

Method: A facility-based cross-sectional study was conducted from June 01-30, 2018 among (n=308) randomly selected HIV positive women at Felege Hiwot Referral Hospital. Data were collected using a pretested interviewer-administered questionnaire and analyzed using SPSS version20. Logistic regression analysis was employed to identify determinants of contraceptive use. Statistical significance was declared at p-value <0.05.

Results: Out of three hundred eight participants, 118(38.3%) reported contraceptive use at the time of the study. Injectable is the most preferred (43.5%) contraceptive method. Participants with age 15-34 years (AOR =3.09, 95%CI: 1.59-5.99), disclosed their status to sex partner, (AOR=2.7, 95%CI: 1.14-6.66), had history of contraception use; (AOR=3.36, 95%CI: 1.68-6.74), were sexually active in the last six months (AOR=5.45, 95%CI: 2.72-10.91) had higher odds of contraceptive use. However, participants who had drinking habit (AOR=4.35, 95%CI: 1.82-10.38) had lower odds of contraceptive use.

Conclusion: A significant proportion of HIV positive women had low level of contraceptive use that was lower than the national recommended level. These results suggest that multi-sectorial and multi-disciplinary approaches are needed to increase contraceptive use in the HIV positive women. Emphasis should be given for HIV positive women who have drinking habit and older age women.

Introduction

Even though the global community is working to end HIV/AIDS epidemic by 2030, it remains a major global epidemic in post millennium development era [1, 2]. It remains the leading cause of illness and death throughout the world. Since the start of the epidemic, around 76.1 million peoples were infected and 35 million people died of AIDS related illness[3]. In 2017, 36.9 million people were living with HIV; 1.8 million people were newly infected worldwide. From these, 18.2 million were women of reproductive age and 1.8 were children under-15 years old[2]. In Ethiopia, there were an estimated total 722,248 people infected with HIV, 14,872 annual AIDS related deaths, 22,827 new HIV infection in 2017 [4]. In Sub-Saharan Africa, women, infants and young children account for more than 60 percent of new HIV infections[5]. According to a 2013 family health international report, there were about 100,000 pregnancy
of HIV positive women and 12,000 HIV positive births annually, mostly unintended pregnancies in Ethiopia [6].

Family planning is one of a key intervention to curve HIV/AIDS epidemic[7, 8]. It allows people including HIV positive women to make informed choices about their sexual and reproductive health through information, education and contraceptive methods [8-11]. HIV positive women, like other women, may wish to plan pregnancy, limit their family and avoid pregnancy[12]. In the time when about 36.9 people are living with HIV/AIDS[2] and women of reproductive age accounts for nearly half of the infected population, family planning plays a critical role in averting HIV/AIDS epidemic by reducing unintended pregnancy[9, 11]. Despite, unmet need of for family planning remains high in most of the world countries especially in low and middle-income countries[13]. By the year 2015-2019, the proportion of unintended pregnancy ending in abortion was 61% increased by 10% in 2000-2004 which was 51% [14]. In 2012, there were about 85 million unintended pregnancies [9]. Moreover, 190 million reproductive age women worldwide who wanted to avoid pregnancy were not using any method of contraception in 2019[13].

Unintended pregnancy is a major root cause for abortion. Each year, about 22 million unsafe abortions occur contributing for 67,000 annual maternal deaths worldwide [10, 11]. In Africa, nearly 5.5 million women have unsafe abortion. Nearly 36,000 of these women die of the abortion procedure [14, 15]. The situation is worse in Ethiopia. Low levels of contraceptive use including in HIV positive women lead to high level of unintended pregnancy [15].

Unsafe abortion is a major cause to the sustained high global maternal mortality and morbidity. Evidences showed that presence of legal abortion and access to reproductive health and contraceptive are vital to reduce abortion rate[16]. Accordingly, Ethiopia has liberalized its abortion law in 2005, which had formerly allowed the procedure only to save the life of a woman or protect her physical health. Now, abortion is legal in Ethiopia in case of rape, incest, fetal impairment and if the fetus has severe defect, or if a girl is under the age of 18 years old [15, 17]. Despite this, a significant number of abortions continue to occur outside health facilities unsafely in the country [18].

Family planning has a tremendous benefit to the world population. Advancing human rights, reducing poverty, improving nutrition, saving millions of lives, advancing gender equality and empowerment contributing to the economic growth are some of the benefits of family planning[9, 19].

Many factors affect contraceptive use. Economic factors, Cultural reasons, place of residence, education, attitude and knowledge about contraception, cultural beliefs, myths and misconceptions about contraception are some of the factors affecting contraceptive use [10, 20]. Also, earlier studies done on HIV positive women showed that HIV status disclosure, previous contraceptive use, age, drinking habit, and sexual activity are determinant of contraceptive use [6, 21-27].

Prevalence of any method contraceptives varies across the countries and within each country. In sub-Saharan Africa, Eswatini and Namibia (both 52%) have the highest level of modern contraceptive prevalence in 2019, while South Sudan 4% and Chad 6% had the lowest level[13]. Ethiopia, one of sub-
Saharan country, has made remarkable progress in increasing contraceptive prevalence rate over the last 15 years. Despite this success, there is an inconsistency of contraceptive use rate between regions, urban and rural areas, and younger and older women \[17\]. Modern contraceptive prevalence rate among married women has increased from 14% in 2005 to 41% in 2019\[28\]. Previous studies in the Ethiopia have demonstrated that the rate of contraceptive use ranged between 36.3% in wollega, Ethiopia\[29\] and 50% in Gondar, Ethiopia\[6\]. Although there are some studies about contraceptive use in Ethiopia, there is limited evidence about contraceptive use among sexually active HIV positive women. Therefore, the aim of this study was to investigate contraceptives prevalence rate and associated factors among HIV positive sexually active women at anti-retroviral therapy clinic in Felege Hiwot Referral Hospital ART clinic in Bahir Dar, Ethiopia.

Materials And Methods

Study area and setting

This study was conducted at Felege Hiwot referral Hospital ART clinic which is located in Bahir Dar City, capital city of Amhara regional State, from June 01\(^{th}\) -30\(^{th}\), 2018. Bahir Dar City is located 564 km northwest from Addis Ababa, the capital city of Ethiopia. The Hospital has started providing ART services for free since 2005. the Hospital provides different inpatient and outpatient services to the population of the region including ART and family planning services for clients referred from all district and zonal health care facilities in the Regional State.

Study design and population

An institution-based, cross-sectional study design was used to investigate contraceptive use and its associated factors among HIV positive women attending ART clinic at Felege Hiwot referral Hospital. The source population for this study was all reproductive age (15-49 years old) living with HIV/AIDS who were attending the ART clinic. A total 11,120 people living with HIV were enrolled in ART of the hospital during the study period. Out of these, 50.76% were reproductive age women. All of them were on HAART at the time of the study. Randomly selected sexually active HIV positive women between 15 and 49 years old, available at the time of data collection, who were sexually active in the last six months and who had at least one visit were included in this study. Sexually active HIV positive reproductive age women with surgical removal of uterus, permanent contraception, who were unable to communicate, who were pregnant, who had a known infertility, received service for less than one month and who were below the age of 18 without family or guardian were excluded from the study.

Sample size and sampling procedure

A total sample of 308 was calculated using single population formula; \[n=\frac{Z^2_{α/2} \times P \times (1-P)}{d^2} \] \[30\]; with the following assumptions. Prevalence of contraceptive use \(P=76\%\) from previous study conducted in Addis Ababa, Ethiopia\[24\], (d) margin of error \(d=5\%\), \(Z_{α/2}=1.96\) at 95% confidence interval and non-response rate of 10%. We recruited study participants by using simple random sampling method i.e., lottery
method. The research team carried out the following activities in the sampling procedure. First, we retrieved the list of female clients from ART service record. Then, we enumerated and listed the numbers of sexually active HIV positive women aged 15-49 years old based on eligibility criteria. A code number was given to each eligible participant and was written on a piece of paper. All pieces of papers were placed into a box. Finally, each pieces of paper were picked randomly until the required sample size was achieved.

**Measurement**

**Variables**

The main outcome variable was self-reported contraceptive use of any method. Independent variables included in this study were age of woman, educational level, and number of living children, drinking habit, and partner HIV status, HIV status disclosure to partner, having stable sexual partner, previous contraceptive use, condom use, and having sexual activity in the last six months.

**Operational definitions**

**Contraceptive use**: Current use of any method by women to delay or avoid pregnancy for the last six months prior to the study commencement[6].

**Consistent condom use**: The use of female or male condoms in all vaginal sexual relationships with casual and/or steady partners[23].

**Sexual activity**: A woman who had sexual intercourse at list once in the last six months[24].

**Drinking habit**: Drinking of alcohol more than 12 drinks per week[31].

**Data collection instrument**

The questionnaire had assessed Socio-demographic characteristics, reproductive history, sexual history, contraceptive use and HIV related factors. The questionnaire was developed by organizing variables from previously done researches [5, 23, 24]. First, the developed questionnaire was structured, modified and prepared in English language. Then, language experts translated it to local language (Amharic) and back to English language. The content validity of the questionnaire was assessed by seven experts from the Bahir Dar University Nursing, Public Health, and Midwifery Departments who had more than four years of research experience each. The internal consistencies of all indexes were assessed, and were found to be satisfactory. The team then pre-tested the questionnaire at Addis Alem Hospital, located in Abay Mado, out of the study area with 30 mothers (10% of the sample size). Based on the pre-test results, the questionnaire wording was modified for clarity. Medical records of participants were also reviewed to get clinical information on anti-retroviral treatment and CD4 cell count.

**Data collection and data quality assurance**
Trained data collectors have collected the data using the pre-tested interviewer administered questionnaire at working hours. Four diploma nurses as data collectors and two Bachelor of Science nurses as supervisors were recruited. Additionally, we gave training for data collectors and supervisors on the overall content of questionnaire, ethical issues, and data collection process for two consecutive days. Assigned supervisors have closely managed the data collection process on daily basis.

**Data processing and analysis**

The collected data were checked manually for completeness and consistency. Then, coded and entered into EPI Info version 3.5.3 and transferred to SPSS version 20 for analysis. Descriptive statistics were used to summarize sociodemographic characteristics of participants and to show prevalence of contraceptive use. Binary logistic regression analysis was carried out at two levels to identify factors associated with contraceptive use. First, bivariate logistic regression was performed to each independent variable with the outcome variable. Then, variables with p-value < 0.05 in bivariate analysis were included in multivariate analysis. Strength of association was measured using odds ratio and 95% confidence intervals. Finally, statistical significance was declared at p-value <0.05.

**Result**

**Socio-demographic characteristics**

All 308 sampled HIV positive women participated in the current study making a response rate of 100%. About two-third 180 (60.1%) of participants were in the age category of 15 -34 years and the mean age was 27±4.8 years. More than two third 214(78.2%) of participants were from Orthodox Christianity. Almost half of participants 164 (53.2%) were educated, 144(46.8%) participants were uneducated and almost two-third (59.7%) of participants were unemployed. The majority of participants, 260(84.4%) had drinking habit (Table 1).

**Reproductive and sexual characteristics**

Nearly one-third 67(21.8%) of participants had earlier child death and less than half of participants (45.5%) had desired to have more children in the future. More than half (55.8%) of participants were sexually active during the last six months before the survey. Similar proportion of women (55.8%) had stable sexual relationship. About one-third, 103 (33.4%) of participants had one partner during the last six months before the survey. About one-fourth of participants (24.4%) had changed their partner since their diagnosis. The main reasons for changing sexual partners were divorce (34.7%), partner death (25.3%), and 16(21.3%) spousal rejection (Table 1).

**Contraceptive use related features**

The prevalence of contraceptive use was 38.3 % (95%CI: 32.5%-43.5%). Almost two-third (64%) of study participants reported that they had previous experience of contraceptive use and only one-fourth (26%) of participants were using dual contraceptive method. The most commonly used contraceptive were...
injectable (43.5%) followed by pills (21.4) and implant (19.2%). Reasons for choosing particular method were convenience (34.4%), being used secretly (26.9%), no need of more children (20.4%) and used as a dual protection (9.7%). One hundred thirty-six (44.2%) participants were using condom consistently (Table 2).

**HIV related features of participants**

Regarding HIV related features of participants, most 67(47.2%) had a CD4 count \( \geq 500 \) cells/mm3 and 12(8.5) had <200 cells/mm3 CD4 count. More than three-fourth (72.7%) participants’ partners were tested for HIV and 4 out of 5 (81.3%) were sero-positive. More than three-fourth of participants, 243(78.9%) had not disclosed their HIV status to their partners. The majority of participants (89.0%) had not been treatment for STI's since their HIV diagnosis (Table 2).

**Factors associated with contraceptive use**

After adjusting confounding factors, maternal age, drinking habit, previous contraceptive use experience, HIV status disclosure to sex partner, and having sexual activity in the last six months remained significant in multivariate logistic regression. Age was positively associated with contraceptive use. Participants with younger age (15-34) years old were three times more likely to use contraception (AOR= 3.09, 95%CI: 1.59-5.99) compared with older (35-49) age. Likewise, HIV status disclosure to sex partner was positively associated with contraceptive use. Participants who disclosed their status to their sex partners were almost 2.75-folds more likely to use contraception (AOR=2.76, 95%CI: 1.14-6.66) compared with their counterparts. Similarly, previous contraceptive use history was positively associated with contraceptive use. Participants who had previous contraceptive use history were almost 3.36-folds more likely to use contraception (AOR=3.36, 95%CI: 1.68-6.74) compared with their counterparts. Besides, sexual activity was positively associated with contraceptive use. Participants who were sexually active in the last six months were 5.45-folds more likely to use contraception (AOR=5.45, 95%CI: 2.72-10.91) compared with their counterparts. Nevertheless, drinking habit was negatively associated with contraceptive use. Participants who had drinking habit were four times less likely to use contraception (AOR=4.35, 95%CI: 1.82-10.38) compared with women who did not have drinking habit (Table 3)

**Discussion**

Contraceptive use issue among women enrolled in HIV care and treatment programs in the study area has important implications for the health of women, and their children and their sexual partners. However, there is no adequate information about contraceptive use and associated factors among sexually active HIV positive women in the study area. Understanding the extent and barriers of contraceptive use among sexually active HIV positive women is important for learning how to best improve level of contraceptive use in this group of population.

In this study we carried out a cross-sectional survey to determine level of contraceptive use and factors associated with it among sexually active HIV positive reproductive age women. This study revealed that
only one hundred eighteen (38.3%) sexually active HIV positive reproductive age women were using any method of contraception. The finding was consistent with the study done in Wollega, Ethiopia (36.3%) [29] and Kenya (38.5%) [32]. The possible explanation could be due to similarity of study population in sociodemographic and socioeconomic characteristics, cultural beliefs, and birth traditions. On the other hand, the finding of the current study was lower than evidences from Zambia (69 %) [25], North West Ethiopia (47.7%) [23], Uganda (55.1%) [33], Ireland (55%) [12], Addis Ababa, Ethiopia (43.6%) [22], Tanzania (54%), and Gondar, Ethiopia (50%) [6]; however, prevalence of this study was higher than evidences from South Sudan (4%) [13], Chad (6%) [13], Uganda (27.8%) [21], and western Africa (8%) [12]. The variation in level of contraceptive use rate might be due socio-demographic and socioeconomic differences between populations, cultural dissimilarities, and timing of the studies, differences in health care service utilization and sample sizes differences between studies. For example, the lower level of contraceptive use in South Sudan and Chad could be due to socioeconomics crises and poor health care system due to political instability in the countries.

Many factors have predicted contraceptive use in the current study. Among these factors, HIV positive women with younger age (15-34 years old) were more likely to use contraceptive method compared with older (35-49 years old). Previous studies in Ethiopia, Uganda and Tanzania [6, 21, 23, 34] have reported similar findings. Other evidences have also shown that as the women gets older their need for contraception and rate of contraceptive use decreases [10]. This could be explained in terms of young mothers are usually more open to accept modern technology, often less bound to cultural beliefs that hinder contraceptive use and better educated than older mothers. In addition, younger mothers might regard themselves at risk of unplanned pregnancy while older women might not regard themselves at risk of pregnancy due to their older age. Previous studies from Nigeria and Namibia [35, 36] supported these explanations which showed that there is a significant association between educational status and contraceptive usage. Older mothers are also affected by cultural and religious beliefs that oppose contraceptive use, and they assume that they cannot get pregnant at their perimenopause period [10]. Currently, national and international family planning interventions focus on younger women but the finding of this study suggests that family planning intervention should be directed towards both younger and older women.

Similarly, HIV positive women with earlier contraceptive use history were more likely to use contraception compared with their counterparts. The finding is in line with studies done in different part of Ethiopia [22, 23, 37, 38] and Uganda [27]. The possible explanation could be due to past contraceptive use experience could minimize myths and misconceptions heard about contraception. There are some myths and misconceptions that hinder women from contraceptive use. For example, “some people believe that implants inserted in the arm could migrate to the brain and causes brain disease including brain cancer and contraceptive use can end up with infertility”. Other misconceptions about family planning include, contraceptive users end up with health problems, contraceptives are dangerous for woman’s health and contraceptive use can damage woman’s womb [20]. Previous study in urban Africa has demonstrated that negative myths and misconceptions about family planning in the community are barriers to modern
contraceptive use [20]. This suggests that community based educational programs are needed to dispel common myths and misconceptions about contraception especially for new contraceptive users.

HIV positive women who disclosed their HIV status to their partners had higher odds of using contraception. Previous studies from Ethiopia, Kenya, Nigeria and Zambia [24-26, 32] have reported similar findings. This highlights that disclosure of HIV status to a sexual partner might ease communication between sexual partners to make decision about reproductive issues including contraceptive use. Asfaw et al. [24] has concluded that disclosure of HIV status is important to get support from family especially, husband and discussion can clarify uncertainties about contraceptives and possibly to increase confidence of women. A study from Tanzania[39] has shown that couple-communication facilitates the uptake of contraceptive use among HIV-positive reproductive age women. Another study in Tigray region, Ethiopia[5] has also indicated that open discussion about contraceptive methods with husbands/sexual partners was positively associated with contraceptive use. Moreover, a study in Uganda [40] has revealed that women who did not disclose their HIV status to their sexual partners were less likely to use contraception. This implies that health care providers working in ART clinics must discuss with clients about disclosure of HIV status to their sexual partners.

Having Sexual activity in the last six months earlier to commencing the study was positively associated with contraceptive use. Participants who had sexual activity in the last six months were 5-folds more likely to use contraception compared with participants who had not sexual activity. The finding is in line with studies from Ethiopia and Zambia and Sub-Saharan Africa [22, 25, 41]. The possible explanation could be HIV positive women who engaged in sexual activity have concern about the risk of pregnancy if they don't use contraceptive methods. A previous study in Sub-Saharan Africa[41] has indicated that the odds of contraceptive use was increased for women who had unprotected sex either with partner or outside partner. The finding infers that women who engage in sexual activity should be appropriately counseled for family planning and provided with accessible contraceptive methods.

On the other hand, HIV- positive reproductive age women who had drinking habit were less likely to use contraceptive methods. The result is in line with the study conducted in Uganda[33]. This highlights that alcohol can affect women's judgment and memory. A woman consuming excessive amount of alcohol may forget to take the pill or use condom at that day. Previous studies in Britain and United States of America [31, 42] have demonstrated that women having drinking habit are usually engaged in risky sexual behaviors that expose to unwanted pregnancy and sexually transmitted infection. A systematic review by Terplan et al. [43] has also indicated that women with substance use disorders including alcohol used contraception less often than non-substance-users. Another study from USA[44] revealed that risk drinking is related to ineffective contraception and condom use. The finding suggests that women with drinking habits should use long acting contraceptive methods or be counseled to avoid the daily bases contraceptive methods. This study has some limitations. First, the study was cross-sectional in nature so that cause and effect relationship cannot be established. Second, men were not included in the study in spite of they have important roles to play in deciding about fertility issues and family size. Third, as fertility issue is a sensitive topic, social desirability bias cannot be avoided. Despite these
limitations, the results of the study can give important information about contraceptive use and factors that hinder or ease its use in HIV positive women to local and international stakeholders especially for those who are working to prevent unsafe pregnancy in HIV positive women.

**Conclusion**

A significant proportion of HIV positive women had low level of contraceptive use that was lower than the national recommended level. Injectable was the most preferred method of contraception while convenience was the main reason for contraceptive use. Participants with younger age (15-34 years), who disclosed HIV status to sex partner, had history of contraceptive use, and who were sexually active six months prior to the study were more likely to use contraception. However, participants who had drinking habit were less likely to use contraception. Increased attentions to women having drinking habit and with older age are recommended. Efforts like integration of family planning and ART services, counseling on safe conception and increasing accessibility of contraceptive methods should be made create better sexual and reproductive health services for HIV positive women to practice their reproductive right in a planned and safe way. Generally, the results of this study suggest that multi-sectorial and multi-disciplinary approaches are needed to increase contraceptive use in the HIV positive. Lastly, interventional and longitudinal studies are needed to improve contraceptive use among HIV positive reproductive age women.

**Abbreviations**

AIDS: Acquired Immunodeficiency Virus Syndrome; ART: Anti-Retroviral Therapy; BDU: Bahir Dar University; CMHS: Collage Of Medicine and Health Science; FHRH: Felege Hiwot Referral Hospital;; HIV: Human Immunodeficiency Virus; MTCT: Mother to Child Transmission; PMTCT: Prevention of Mother to Child Transmission; STI: Sexually Transmitted Infection; SPSS:Statistical Package For The Social Sciences; AOR: Adjusted Odds Ratio; CI: Confidence Interval.

**Declarations**

**Ethics approval and consent to participate**

Ethical clearance obtained from Bahir Dar University, department of nursing research committee and college of health science institutional review board. Permission letter was obtained from Felege Hiwot Referral Hospital medical director officials. Each study participant was adequately informed about the aim of the study and written consent was sought from each participant or the family/guardian when the participants were less than 18 years of age. Confidentiality was assured by conducting the interview in private rooms which were prepared for this purpose. All the participants’ information was held confidential by locking with keys in the boxes and passwords in computers to avoid access exposing to the third person. Moreover, personal identifiers were not included in the questionnaire.
Consent for publication

Not applicable.

Availability of data and materials

All the necessary data to make conclusion of this study are included in the manuscript. The data of this study can't be shared publicly due to the presence of sensitive (confidential) participants' information.

Competing interests

There are no competing interests among authors

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Author's contributions

All authors conceived, designed study. TA analyzed and interpreted data, and drafted the manuscript for important intellectual content. All authors read and approved the last manuscript.

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**Tables**

**Table1.** Socio-demographic, Reproductive and sexual characteristics of participants attending ART clinic in FHRH, Bahir Dar City, North west Ethiopia, 2018.
| Variable                      | Category(n=308) | Frequency | Percent (%) |
|-------------------------------|-----------------|-----------|-------------|
| Age (in years)                | 15-34           | 185       | 60.1        |
|                               | 35-49           | 123       | 39.9        |
| Religion                      | Orthodox        | 241       | 78.2        |
|                               | Muslim          | 45        | 14.6        |
|                               | Others 1*       | 20        | 6.5         |
| Educational label             | Educated        | 164       | 53.2        |
|                               | Uneducated      | 144       | 46.8        |
| Marital status                | Married         | 66        | 21.6        |
|                               | Unmarried       | 241       | 78.4        |
| Occupation                    | Unemployed      | 184       | 59.7        |
|                               | Government employ | 63     | 20.5        |
|                               | Private organization employ | 61 | 19.8 |
| Having Monthly income         | Yes             | 181       | 58.8        |
|                               | No              | 127       | 41.2        |
| Drinking habit                | Yes             | 260       | 84.4        |
|                               | No              | 48        | 15.6        |
| Number of living children     | No child        | 56        | 18.2        |
|                               | One and above children | 251 | 81.8 |
| Child death                   | Yes             | 67        | 21.8        |
|                               | No              | 241       | 78.2        |
| Desire to have child in the future | Yes             | 140       | 45.5        |
|                               | No              | 168       | 54.5        |
| Stable sexual relationship    | Yes             | 172       | 55.8        |
|                               | No              | 136       | 44.2        |
| Had sexual activity in the last 6 months | Yes             | 172       | 55.8        |
|                               | No              | 136       | 44.2        |
| Number of sexual partners     | None            | 103       | 33.4        |
|                               | One             | 181       | 58.8        |
|                               | Two and above   | 24        | 7.8         |

1* = protestant, catholic, Jehovah witness

**Table 2.** Contraceptive use and HIV related features of participants attending ART clinic in FHRH, Bahir Dar City, North west Ethiopia, 2018.
| Variable                                             | Category (n=308) | Frequency | Percent (%) |
|------------------------------------------------------|------------------|-----------|-------------|
| Ever used contraceptives                             |                  |           |             |
| Yes                                                  | 197              | 64.0      |             |
| No                                                   | 111              | 36.0      |             |
| Currently using contraceptives                        |                  |           |             |
| Yes                                                  | 118              | 38.3      |             |
| No                                                   | 190              | 61.7      |             |
| Types of preferable methods used                     | Pills            | 66        | 21.4        |
| Injection                                            | 134              | 43.5      |             |
| Implant                                              | 59               | 19.2      |             |
| Others 1*                                             |                  |           |             |
| Reason for choosing particular method (n=186)         | Convenience      | 64        | 34.4        |
| Cost                                                 | 16               | 8.6       |             |
| Can be used secretly                                 | 50               | 26.9      |             |
| No need more children                               | 38               | 20.4      |             |
| Dual protection                                      | 18               | 9.7       |             |
| recommend contraception to others                   |                  |           |             |
| Yes                                                  | 209              | 67.9      |             |
| No                                                   | 91               | 29.5      |             |
| Not certain                                          | 8                | 2.6       |             |
| Use dual contraceptive method                        |                  |           |             |
| Yes                                                  | 80               | 26.0      |             |
| No                                                   | 228              | 74.0      |             |
| Currently using condom                               |                  |           |             |
| Yes                                                  | 143              | 46.4      |             |
| No                                                   | 165              | 53.6      |             |
| Use of condom in the last 6 months                   | consistently     | 136       | 44.2        |
| Not consistently                                     | 172              | 55.8      |             |
| With whom too often use condom? (n=139)              |                  |           |             |
| regular sexual partners                              | 76               | 54.7      |             |
| casual sexual partners                               | 63               | 45.3      |             |
| Recent CD4 count (cells/mm3) (n=142)                 |                  |           |             |
| <200                                                 | 12               | 8.5       |             |
| 200-349                                              | 32               | 22.5      |             |
| 350-500                                              | 31               | 21.8      |             |
| ≥500                                                 | 67               | 47.2      |             |
| Partner tested for HIV                               |                  |           |             |
| Yes                                                  | 224              | 72.7      |             |
| No                                                   | 84               | 27.3      |             |
| Partner HIV status (n=224)                           | Positive         | 182       | 81.3        |
| Negative                                             | 42               | 18.8      |             |
| Disclosure of your HIV status to partner              |                  |           |             |
| yes                                                  | 65               | 21.1      |             |
| No                                                   | 243              | 78.9      |             |
| sexual partner change since diagnosis                |                  |           |             |
| yes                                                  | 75               | 24.4      |             |
| No                                                   | 233              | 75.6      |             |
| reasons for changing sexual partner (n=305)          | Partner died     | 82        | 26.9        |
| Divorced                                             | 115              | 37.7      |             |
| Spousal rejection                                    | 108              | 35.4      |             |
| Treated for STI’s since HIV diagnosis                |                  |           |             |
| Yes                                                  | 34               | 11.0      |             |
| No                                                   | 274              | 89.0      |             |

Others 1* = loop, spermicide, calendar and traditional methods

Table 3. Multivariate analysis of factors associated with contraception use among participants attending ART clinic in FHRH, Bahir Dar City, North west Ethiopia, 2018.
| Variables                                      | Contraceptive use, n (%) | COR (95%CL) | AOR (95%CL) | p-value |
|-----------------------------------------------|--------------------------|-------------|-------------|---------|
| Age of woman of woman                         |                          |             |             |         |
| 15-34                                         | 92 (49.7%)               | 3.69 (2.19-6.21) | 3.09 (1.59-5.99)* | 0.001 |
| 35-49                                         | 26 (21.1%)               | Ref         | Ref         |         |
| Educational level of woman                    |                          |             |             |         |
| Educated                                      | 73 (44.5%)               | 1.77 (1.11-2.82) | 1.66 (0.92-3.03) | 0.095 |
| Uneducated                                    | 45 (31.3%)               | Ref         | Ref         |         |
| Drinking habit of woman                       |                          |             |             |         |
| Yes                                           | 79 (30.4%)               | 9.93 (4.59-21.47) | 4.35 (1.82-10.38)* | 0.001 |
| No                                            | 39 (81.3%)               | Ref         | Ref         |         |
| Previous contraceptive use experience         |                          |             |             |         |
| Yes                                           | 100 (50.8%)              | 5.33 (2.99-9.48) | 3.36 (1.68-6.74)* | 0.001 |
| No                                            | 18 (16.2%)               | Ref         | Ref         |         |
| HIV status of tested sexual partner            |                          |             |             |         |
| Positive                                      | 61 (33.5%)               | Ref         | Ref         | 0.101  |
| Negative                                      | 24 (57.1%)               | 2.65 (1.33-5.24) | 1.88 (0.89-4.00) |         |
| HIV status disclosure to partner               |                          |             |             |         |
| Yes                                           | 34 (52.3%)               | 2.08 (1.19-3.61) | 2.76 (1.14-6.66)* | 0.024 |
| No                                            | 84 (34.6%)               | Ref         | Ref         |         |
| Having stable sexual partner                   |                          |             |             |         |
| Yes                                           | 84 (48.8%)               | 2.86 (1.75-4.67) | 1.85 (0.94-3.64) | 0.075  |
| No                                            | 34 (25.0%)               | Ref         | Ref         |         |
| Having Sexual activity in the last 6 months    |                          |             |             |         |
| Yes                                           | 91 (52.9%)               | 4.74 (2.705-7.605) | 5.45 (2.724-10.908)** | 0.000 |
| No                                            | 27 (19.9%)               | Ref         | Ref         |         |
| used condom in the last six months             |                          |             |             |         |
| Yes                                           | 70 (49.0%)               | 2.34 (1.462-3.738) | 1.36 (0.754-2.468) | 0.304  |
| No                                            | 48 (29.1%)               | Ref         | Ref         |         |

*p-value <0.05;**p-value<0.01