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Modern Contraceptive Utilization and Associated Factors among HIV Positive Women on Antiretroviral Therapy in Mizan-Tepi Teaching and Referral Hospital, South-West Ethiopia

Kindie Mitiku*
Sharew Mulugeta and
Buraka Lemessa

Public Health, Mizan-Tepi University,
Ethiopia

*Corresponding author: Kindie Mitiku

✉ mitikukindie@gmail.com

Lecturer, Mizan-Tepi University, Public
Health, Ethiopia.

Tel: +251917742402

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Abstract

Background: Women living with human immunodeficiency virus encounter unintended pregnancy with related risk of mother to child transmission of HIV. Unintended pregnancy among these peoples is associated with inconsistency use of contraceptives. The aim of this study is to assess the prevalence of modern contraceptive utilization and associated factors in the Mizan-Tepi teaching and referral hospital.

Methods: Hospital based cross-sectional study was conducted on 382 HIV positive reproductive age women who were on antiretroviral therapy. Data was gathered using pretested structured questionnaire in exit interview. Data was entered using Epidata version 3.1 and exported to SPSS version 21.0 for further analysis. Binary and multivariable analyses were done using SPSS.

Results: Majority (98.2%) of women ever heard at least one type of modern contraceptives. However, only 64.1% of them were using modern contraceptives. Injectables (64.9%) and condoms (31.4%) were the most commonly used contraceptives whereas intrauterine devices and implants were used by only 2.4% and 9.8% of the participants respectively. Women whose age ≥ 35 years old (AOR=0.30; 95% CI: 0.09, 0.96), Muslims (AOR=0.34; 95% CI: 0.17, 0.67), widowed/separated (AOR=0.21; 95% CI: 0.10, 0.45), monthly income ≥ 1500 birr (AOR=0.29; 95% CI 0.13, 0.69) and not having discussion with partner (AOR=0.18; 95% CI 0.07, 0.47) were less likely to use modern contraceptives. Whereas, women whose partner educational status secondary and above (AOR=2.78; 95% CI 1.22, 6.36) were more likely to use modern contraceptives.

Conclusion: Modern contraceptive utilization is suboptimal. But, utilization of long acting contraceptives was found to be very low. Partner level of education and open discussion with partner were positively associated with contraceptive use. However, old age, being Muslim and being widowed/separated were negatively associated with current contraceptive use. Therefore, behavioral education and communication targeted on improving contraceptive use among HIV positive women need to address these factors.

Keywords: HIV positive; ART attendees; Contraceptive use and Family planning

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Background

In 2013, an estimated 35.0 million people were living with human immune deficiency virus worldwide. Sub-Saharan Africa alone accounted for 71% of the global burden of HIV infection [1]. Women and children are disproportionately affected by HIV/AIDS. As estimated by UNAIDS, globally, 3.2 million children were living with HIV in the year 2013. Similarly, as of 2013, an estimated 16 million women aged 15 years and older were living with HIV and 80% of them live in sub-Saharan Africa. The adult prevalence of HIV in Ethiopia was estimated to be 1.1% in 2016 [2]. In Ethiopia, women are disproportionately affected by HIV/AIDS. The 2011 Ethiopian demographic and health survey showed that HIV prevalence in women was 1.9% which is higher than prevalence in men (1.0%) [3]. In sub-Saharan Africa, the main mode of HIV transmission is through heterosexual sex with a concomitant epidemic in children through vertical transmission [4]. Despite the risk of mother to child transmission of HIV, significant proportion of parents living with HIV continued to desire to have children [5-8]. Studies also revealed that HIV-positive women encountered unintended pregnancies with associated risk of mother to child transmission of HIV [9-11]. The experience of repeated unintended pregnancy among HIV positive women particularly adolescents is partially due to inconsistency use of contraceptives [12].

The global prevention of mother to child transmission of HIV strategy advocates a four-pronged strategy of elimination of new HIV infections among children and keeping their mothers alive. The four pillars of the strategy are primary prevention of HIV infection, preventing unintended pregnancy among HIV-infected women, preventing HIV transmission from HIV-infected women to their infants, and care for HIV-infected mothers and their children [13]. One of the pillars of the strategy "preventing unintended pregnancy among HIV-infected women" could be addressed through effective contraceptive utilization. Effective contraceptive utilization could prevent unintended pregnancies among HIV/AIDS patient. In fact, the effectiveness of contraceptive use in preventing HIV positive births has already been established [14].

Despite its potential benefit, significant proportions of women in many sub-Saharan African countries including Ethiopia don't use modern contraceptives. For instance, in Kumsia Ghana only 42.6% of women living with HIV/AIDS were reported to use modern contraceptives in 2014 [15]. Further analysis of the Malawi demographic health survey in 2015 also revealed that only 51.2% of women living with HIV/AIDS used modern contraceptives [16].

Studies in South-west Uganda [17] and three other districts of Uganda namely Wanyenze et al. [18] revealed that 28.8% and 68% of women living with HIV/AIDS used modern contraceptives respectively.

In Ethiopia, studies suggested that modern contraceptive utilization among women living with HIV/AIDS varies from region to region. For instance, it was reported as high as 80% in Bahir Dar in 2015 [19]. While coverage was as low as 47% in Debremarkos [20], 44.3% in Tigray [21], 61.6% in Nekemte hospital [22] and 56.7% in Gimbe town [23]. However, the prevalence of modern

contraceptive utilization among women living with HIV/AIDS is better than general population. The most recent EDHS estimated that the national and regional (South nation nationalities and peoples region) prevalence of modern contraceptives among the general population was 35% and 39.6%, respectively [24].

Various factors have been reported to be associated with utilization of modern contraceptives among women living with HIV/AIDS. Studies revealed that there is significant difference in the utilization of modern contraceptives between educated and uneducated women. Educated women are more likely to use modern contraceptives than uneducated women [25,26]. Particularly, women who completed primary and secondary education are more likely to use modern contraceptives. There is also urban-rural difference in contraceptive utilization. Those women who reside in urban areas use contraceptives more likely than their counterpart. In fact, women residing in remote and rural areas are less likely to use modern contraceptives due to distance barriers. Some studies revealed that there is significant variation in utilization of modern contraceptives among poor and rich women living with HIV/AIDS where women from the rich wealth quintile and having higher income are more likely to use modern contraceptives. Socio-demographic profile of women such as marital status [27], number of children and age of women also influence women utilization of modern contraceptives. There is positive relation between marital status and modern contraceptive utilization in which married women are more likely to use modern contraceptives. The numbers of children the couples would have also influence women access to modern contraceptives. Women who have more numbers of children are more likely to use modern contraceptives. Some studies argued that as women's age increase the likelihood to use modern contraceptive decrease [28].

Information on the available options of modern contraceptive and where they found is crucial for women to access and use contraceptives. Studies suggested that women who discussed about family planning with providers are more likely to use modern contraceptives [29]. Not only discussing with providers but also discussing with spouse increase women probability of using modern contraceptives. In fact, women who decide jointly are more likely to use modern contraceptive than who decide alone.

Despite several studies in sub-Saharan Africa and Ethiopia, there are scarce studies in the most remote region of Ethiopia like that of this study area. Up to the level of investigators knowledge, this study is the first attempt in remote South-west Ethiopia and aimed to assess the magnitude of modern contraceptive utilization and associated factors among women living with HIV/AIDS who were on HAART in Mizan-Tepi university teaching and referral hospital.

Methods

Study area and period

This study was conducted in Mizan-Tepi university teaching and referral hospital starting from July to August 2016 G.C. Mizan-

Tepi university teaching and referral hospital is found in Bench Maji Zone, South-west region of Ethiopia which is 561 km away from Addis Ababa. This hospital was established in 1987 GC and currently serving an estimated total population of 760,314 [30].

Study design, source and study populations

Hospital based cross-sectional study was conducted. The source populations were HIV positive reproductive age women enrolled in HIV/AIDS care at ART clinic in Mizan-Tepi university teaching and referral hospital. On the other hand our study populations were HIV positive reproductive age women enrolled in HIV/AIDS care at ART clinic in Mizan-Tepi University teaching and referral hospital that was included in the study.

Sample size determination and sampling procedure

The minimum sample size was computed by using single population formula based on the following assumptions: the prevalence of modern contraceptive utilization (61.6%) taken from previous study; Z-value at 95% confidence level (CI) 1.96; and 5% margin of error. By adding 10% non-response rate, the final sample size was 400. All women that fulfil the inclusion criteria were interviewed consecutively.

Inclusion and exclusion criteria

Married or cohabiting reproductive aged women (15-49 years old) and women who were sexually active one year prior to our survey was included. However, those women who were severely ill and admitted for inpatient management were excluded. Furthermore, infertile women were excluded.

Data collection tools and procedure

Apre-tested structured questionnaire was used. The questionnaire was derived from related questions in the Demographic Health Survey and other related literatures [31]. The data collection tool (questionnaire) was prepared first in English and then translated to Amharic which is spoken by the local peoples and then re-translated back to English language. The pretest was conducted on 19 women in the same city but different health institution (i.e., at Mizan health center). After pretest; grammatical errors, logical flow of the questioners was corrected. Three public health graduated students collected the data. The primary investigators supervise the data collection process. Data collectors were trained on the tool and the procedure by principal investigator. Data were gathered through an exit interview outside the ART clinic.

Operational Definitions

Current use of contraceptive method: Referred to respondents who responded positively for use of at least one type of contraceptive methods at time of the survey to delay or avoid pregnancy.

Modern contraceptives: Contraceptive method queries included male and female condoms (restricted to those reporting "Always" use), injections (depo medroxy progesterone acetate (DMPA) or norethisterone enantate), oral contraceptive pills, diaphragm,

intrauterine devices (IUD), female tubal ligation, hysterectomy, and male partner sterilization.

Sexually active: Women who had sexual practice during the last one year before interview was labeled as sexually active.

Cohabiting with partner: Referred to women responded as they are living in union but legal marriage has not established.

In Fertile: Women who never used contraception, and not had a birth in past five years, reported as they "can't get pregnant" or have had a hysterectomy were considered infertile for this study.

Data processing and analysis: The data were checked, coded and entered in to Epidata version 3.1 and exported to SPSS version 21.0 for analysis. Using SPSS, Proportions and medians were computed as univariate analysis. Furthermore, bivariate analysis and Multivariable analysis were done. Each variable was first analyzed by using bivariate logistic regression (bivariate analysis) and covariates having p-value less than 0.2 was further entered in to multivariable logistic regression model for final analysis. Multivariable analysis was done using 'enter' method. In the multivariable analysis, P-value less than 0.05 was used as a statistical significant and odds ratio with 95% CI was used to assess the presence and strength of association between covariates and dependent variable. The multivariable logistic regression model explained 38.7% (Nagegeke R square) of the variance in modern contraceptive utilization. Hosmer lomeshow goodness of test was done to assess fitness of the model. Hosmer lomeshow test greater or equal to 0.05 was considered to ensure goodness of fit of the model.

Ethical approval: Ethical clearance was obtained from research community development and support office of Mizan-Tepi University. Official permission letter was collected from the office of Mizan- Tepi teaching and referral hospital. Verbal consent was obtained from each study participants. All the study participants were informed about the objective and importance of the study and were also informed about their right not to participate or withdraw from the study at any time. Confidentiality was assured by conducting interviews in a private room out of the ART clinic. Data were password protected and stored on computers that was accessed only by the principal investigators.

Results

Socio-demographic characteristics

A total of 382 women were participated in this study yielding a response rate of 95.5%. About 18 women refused to participate in this study. The reasons for not participating were not directly linked to the study. The median age of study participants were 30.0 years old with IQR of (15, 45 years old). Majority of the participants 314 (82.2%) were urban residents and orthodox religion 223 (58.4%) followers. Nearly seventy percent (68.3%) of women were married and 222(58.2%) attended formal education. Of the total participants, 240(63.4%) had more than one child. The median monthly income of participants was 1000.00birr IQR (100birr, 9000birr) (**Table 1**).

Table 1 Socio-demographic characteristics of HIV positive reproductive age women who were on HAART Mizan-Tepi teaching and referral hospital, 2017.

Characteristics	Categories	Frequency (n)	Percent
Age at interview in years	15-24	45	11.8
	25-34	190	49.7
Median=30.0 years old IQR (15, 45)	≥ 35	144	37.7
Residence	Urban	314	82.2
	Rural	68	17.8
Religion	Orthodox	223	58.4
	Muslim	88	23
	Protestant	71	18.6
Women educational status	No formal education	160	41.9
	Primary education (1-8)	179	46.9
	Secondary and above (≥ 9)	43	11.3
Current marital status	Married	261	68.3
	Never married /single	21	5.5
	Widowed/separated/divorced	100	26.2
Partner level of education	No formal education	135	35.3
	Primary level education (1-8)	117	30.6
	Secondary and above (≥ 9)	72	18.8
Parity (number of children)	<1	140	36.6
	01-Apr	212	55.5
	≥ 5	30	7.9
Number of currently alive children	<1	152	39.8
	01-Apr	209	54.7
	≥ 5	21	5.5
Monthly income	≤500 ETB	103	27
	500-1500 ETB	189	49.5
Median 1000.00ETB IQR (100, 9000ETB)	≥ 1500 ETB	83	21.7

Note: ETB: Ethiopian Birr; IQR: Inter Quartile Range.

HIV related characteristics of study participants

Nearly three quarter 255 (66.8%) of women’s index child HIV status was positive. Majority of women 320 (83.8%) exposed their HIV status to their husband or partner. Almost all women 366 (95.8%) heard about mother to child transmission of HIV/AIDS. About 366 (95.8%), 202 (52.9%) and 140 (36.6%) of women mentioned that HIV could transmit from mother to child during pregnancy, child birth and breast feeding respectively **Table 2**.

Information on modern contraceptives and contraceptive utilization

Among 382 study participants, nearly all of them 375 (98.2%) have mentioned hearing about at least one type of modern contraceptive from various sources. The highest proportion of women 295 (77.2%) heard from health professionals. Concerning information about specific methods of modern contraceptive; injectables (94.5%), pills (94.1%) and condom (84.0%) were the most commonly known types of modern contraceptives.

Majority (86.1%) of them ever got information about modern contraceptives from ART clinics. Majority study participants 324 (84.8%) ever used at least one type of modern contraceptives. But, only 73 (19.1%) of them ever got modern contraceptives from ART clinic (**Table 3**). Nearly three quarter 245 (64.1%) of women were using modern contraceptives at the time of data collection. Injectables (70.1%), condoms (31.4%) and pills (27.8%) were the major modern contraceptives used by study participants (**Figure 1**).

About 35.9% of women were not using contraceptive at the time of data collection. Want to have child in the future (38.0%) and infrequent sexual intercourse (56.9%) were the main reasons mentioned by study participants.

Bivariate and multivariable analysis

Without controlling potential confounders; age of women, religion, current marital status, number of total and alive children, monthly income, discussion about modern contraceptive with

Table 2 HIV related characteristics of women who were on HAART in Mizan-Tepi teaching and referral hospital, 2017.

Characteristics	Categorization	Frequency	Percent
HIV status of young child	HIV positive	74	19.4
	HIV negative	255	66.8
	Not tested	14	3.7
Exposed her HIV status to partner	Yes	320	83.8
	No	62	16.2
Knew HIV status of partner/husband	Yes	288	75.4
	No	94	24.6
Aware about MTCT of HIV	Yes	366	95.8
	No	16	4.2
When does HIV transmit from mother to baby?	During pregnancy	319	83.5
	During child birth	202	52.9
	During breast feeding	140	36.6
Aware about the presences of medicine that prevent MTCT of HIV	Yes	331	86.6
	No	51	13.4

Note: HIV-Human Immune Deficiency Virus, MTCT; Mother to Child Transmission.

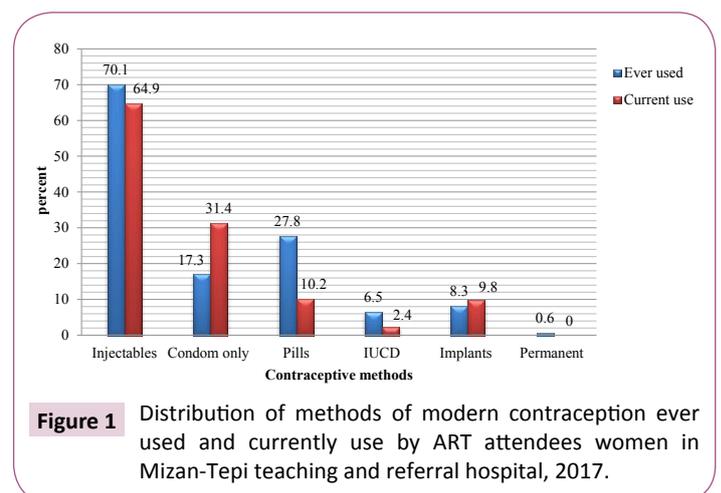


Table 3 Information on modern contraceptives and contraceptive use among female HAART attendees in Mizan-Tepi teaching and referral hospital, 2017.

Characteristics	Categorization	Frequency	Percent
Ever heard about modern contraceptives	Yes	375	98.2
	No	7	1.8
Source of information	Health professional	295	77.2
	Radio/television	56	14.7
	Friends	9	2.4
	Relatives	13	3.4
	Others*	2	0.5
	Methods respondent heard about	Condom	321
	Pills	354	94.1
	Injectables	361	94.5
	IUCD	228	59.7
	Norplant	111	29.1
	Permanent	19	5
Ever got information from ART clinic	Yes	329	86.1
	No	53	13.9
Methods respondent ever heard from ART clinic	Condom	268	70.2
	Pills	320	83.8
	Injectables	316	82.7
	IUCD	203	53.1
	Norplant	133	34.8
	Permanent	33	8.6
Ever used contraceptive method	Yes	324	84.8
	No	58	15.2
Ever got contraceptive method from ART clinic	Yes	73	19.1
	No	309	80.9
Current use	Yes	245	64.1
	No	137	35.9
Reasons for not using contraceptive Currently	Want to have child in the future	52	38
	In frequent sexual intercourse	78	56.9
	Lack of awareness	1	0.7
	Against my religion	1	0.7
	My husband don't allow	3	2.2
	Others**	2	1.5
Discussed about contraceptive with partner	Yes	334	87.4
	No	48	12.6
Decision making power on contraception	Women only	40	10.5
	Husband only	19	5
	Jointly	323	84.6
Family planning services should be given at ART clinic	Agree	363	95
	Disagree	19	5

Note: HAART–Highly Active Anti-Retroviral Therapy, IUCD: Intrauterine Devices.
*Leaflets/magazines, **Fear of side effect, Causes infertility.

partner or husband, knowing the HIV status of partner and HIV status exposure were significantly associated with current modern contraceptive use (Table 4). After controlling potential confounders; age of women, religion, current marital status, partner level of education, monthly income and discussion with partner about modern contraceptive remain significantly associated with modern contraceptive use. At Multivariable level; The odds of using modern contraceptives for women whose age ≥ 35 years old was 70% less likely as compared to women whose age was between 15 and 24 years old. Muslims were 66%

less likely to use modern contraceptive compared to orthodox religion followers. Similarly, widowed or separated women were 79% less likely to use modern contraceptive compared to married women. Women who didn't discuss about modern contraceptive with partner were 82% less likely to use modern contraceptive. Furthermore, the odds of modern contraceptive utilization among women whose monthly income ≥ 1500 birr were 71% less likely as compared with women whose monthly income ≤ 500 birr.

Table 4 Factors associated with current modern contraceptive use among HIV positive women on antiretroviral therapy in Mizan-Tepi teaching and referral hospital, 2017.

Characteristics	Categories	Contraceptive use		COR (95% CI)	AOR (95% CI)
		Yes	No		
Age at interview in years* Median = 30.0 IQR (15, 45)	15-24	33 (73.3%)	12 (26.7%)	1	1
	25-34	136 (71.6%)	54 (28.4%)	0.92 (0.44-1.90)	0.80 (0.27-2.34)
	≥ 35	74 (51.4%)	70 (48.6%)	0.38 (0.18-0.80)*	0.30 (0.09-0.96)**
Residence	Urban	207 (65.9%)	107 (34.1%)	1	1
	Rural	38 (55.9%)	30 (44.1%)	0.66 (0.38-1.12)	0.70 (0.32-1.51)
Religion	Orthodox	159 (71.3%)	64 (28.7%)	1	1
	Muslim	45 (51.1%)	43 (48.9%)	0.421 (0.25-0.70)*	0.34 (0.17-0.67)**
	Protestant	41 (57.7%)	30 (42.3%)	0.550 (0.32-0.96)*	0.49 (0.21-1.13)
Women educational status	No formal education	98 (61.3%)	62 (38.8%)	1	1
	Primary (1-8)	120 (67.0%)	59 (33.0%)	1.287 (0.82-2.01)	
	Secondary and above (≥ 9)	27 (62.8%)	16 (37.2%)	1.068 (0.53-2.14)	
Current marital status	Married	195 (74.7%)	66 (25.3%)	1	1
	Single	15 (71.4%)	6 (28.6%)	0.85 (0.32-2.27)	0.40 (0.05-3.17)
	Widowed/separated	35 (35.0%)	65 (65.0%)	0.18 (0.11-0.30)*	0.21 (0.10-0.45)**
Partner education status	No formal education	87 (64.4%)	48 (35.6%)	1	1
	Primary education	72 (61.5%)	45 (38.5%)	0.88 (0.53-1.47)	1.190 (0.61-2.34)
	Secondary & above (≥ 9)	55 (76.4%)	17 (23.6%)	1.79 (0.93-3.41)	2.783 (1.22-6.36)*
Parity	<1	88 (62.9%)	52 (37.1%)	1	1
	1-4	144 (67.9%)	68 (32.1%)	1.25 (0.79-1.96)	2.13 (0.43-10.45)
	≥ 5	13 (43.3%)	17 (56.7%)	0.45 (0.20-1.01)	1.57 (0.17-14.86)
Currently alive children	<1	98 (64.5%)	54 (35.5%)	1	1
	1-4	141 (67.5%)	68 (32.5%)	1.14 (0.74-1.78)	0.61 (0.13-2.88)
	≥ 5	6 (28.6%)	15 (71.4%)	0.22 (0.08-0.60)*	0.73 (0.06-8.72)
Monthly income	≤500 ETB	66 (64.1%)	37 (35.9%)	1	1
	500-1500 ETB	134 (70.9%)	55 (29.1%)	1.37 (0.82-2.28)	1.55 (0.74-3.26)
	≥ 1500ETB	41 (49.4%)	42 (50.6%)	0.55 (0.30-0.99)*	0.29 (0.13-0.69)**
Ever got information from ART clinic	Yes	216 (65.7%)	113 (34.3%)	1	1
	No	29 (54.7%)	24 (45.3%)	0.63 (0.35-0.14)*	1.02 (0.45-2.32)
Discussed about contraceptive with partner	Yes	228 (68.3%)	106 (31.7%)	1	1
	No	17 (35.4%)	31 (64.6%)	0.26 (0.14-0.48)*	0.18 (0.07-0.47)**
Ultimate decision power on contraception	Women only	25 (62.5%)	15 (37.5%)	1	1
	Husband only	13 (68.4%)	6 (31.6%)	1.30 (0.41-4.14)	
	Jointly	207 (64.1%)	116 (35.9%)	1.07 (0.54-2.11)	
Exposed her HIV status to partner	Yes	221 (69.1%)	99 (30.9%)	1	1
	No	24 (38.7%)	38 (61.3%)	0.28 (0.16-0.49)*	0.83 (0.26-2.71)
Knew HIV status of partner	Yes	205 (71.2%)	83 (28.8%)	1	1
	No	40 (42.6%)	54 (57.4%)	0.30 (0.19-0.49)*	0.42 (0.15-1.16)
Aware about MTCT of HIV	Yes	237 (64.8%)	129 (35.2%)	1	
	No	8 (50.0%)	8 (50.0%)	0.54 (0.20-1.48)	
Aware the presences of medicine that prevent MTCT of HIV	Yes	214 (64.7%)	117 (35.3%)	1	
	No	31 (60.8%)	20 (39.2%)	0.85 (0.46-1.55)	

Note: IQR: Inter Quartile Range, COR: Crude Odd Ratio, AOR: Adjusted Odd Ratio, CI: Confidence Interval.

*Significant at bivariate analysis, **Significant at multivariable analysis, 1: Reference category.

Discussion

This study tried to assess modern contraceptive utilization and associated factors among HIV positive women who were on HAART at the time of the study in Mizan-Tepi teaching and referral hospital. This study is the first attempt in this remote teaching and referral hospital.

Congruent with other studies in developing countries nearly all of the study participants ever heard at least one type of modern contraceptives. Over all, more than half of married or

sexually active women were using at least one type modern contraceptives. This finding is higher than the regional (39.8%) and national (35.0%). Prevalence of modern contraceptive utilization. The higher prevalence of modern contraceptive utilization in this study area as compared to the national and regional estimate might be due to study population difference. The regional and national estimate of modern contraceptive was from the general population where as our estimate was from HIV positive women who were on HAART. Previous studies revealed that modern contraceptive utilization is relatively

higher among HIV positive women as compared to the general population [32]. Our finding is also higher than other studies conducted in various parts of Ethiopia such as Debreworkos (47.9%) and Northern Tigray (44.3%). The possible explanation for low utilization of modern contraceptives in these areas might be difference in study period and eligibility criteria. In our study, all participants had started HAART. Whereas, study participants in other studies (Debreworkos and Northern Tigray) were either who started HAART or pre-HAART HIV patients. Studies have found that modern contraceptive utilization is relatively higher among women who started HAART than pre-HAART women [33]. Similarly, the findings of this study is higher than studies conducted in other developing countries such as in Kumesia Ghana (42.6%), Democratic republic of Congo (35.5%) [34] and Malawi (51.2%). This might be due to geographical and study period difference. In contrary, our finding was relatively lower than study findings from Uganda (85%) [35] and Bahir Dar (80%). This variation might be due to study population and inclusion criterion difference. For instance, majority of the study populations in Bahir Dar (92.3%) were urban whereas in this study 82.2% of the participants were urban which is relatively lower than study conducted in Bahir Dar. It has been documented that urban populations are more likely to use modern contraceptive than rural counterparts.

Furthermore, a study conducted in Uganda included self-reported use of family planning in the previous 3 months to measure contraceptive use which is longer period as compared to this study. In this study, we measured current level of contraceptive. This in turn might decrease prevalence of contraceptive use in our study.

Even though modern contraceptives were available at free cost in ART clinic of this study setup, still significant proportion of women were not using modern contraceptives. This was because of desire to have children in the future and infrequent sexual practice which is broadly in line with several studies. Studies have shown that women who have desire of children in future are less likely to use modern contraceptives. In fact, women living with HIV have strong desire of children due to the availability of drugs that prevent mother to child transmission of HIV [36].

The most commonly used methods of modern contraceptive were injectables and condoms. Similarly, other studies in Ethiopia and sub-Saharan Africa revealed that women living with HIV preferred condom and injectables than long acting contraceptives such as implants and IUCD. In this study, small proportion of study participants used long acting contraceptive methods. This could be due to provider bias, poor method mix or contraceptive related myths. A study in Bahir Dar concluded that there is high unmet need of long acting contraceptives among women living with HIV/AIDS. This study argues that myths related to long acting contraceptives contribute for low utilization of long acting contraceptives. Despite majority of study participants wanted contraceptives to be given at ART clinics, only small proportion of women got contraceptives from ART clinic. This might be due to unavailability of method mix or trained family planning provider at ART clinic.

This analysis identifies individual and household level factors; age of women, marital status, religion affiliation, partner level

of education, open discussion with partner and monthly income significantly associated with experience of modern contraceptive use among women living with HIV/AIDS who were on HAART. Women who were divorced, separated or widowed were less likely to use modern contraceptive than married women. A similar finding was reported in Tigray. This could be partially explained by infrequent sexual practice among these segments of women. This could be more likely true because further analysis of our data depicts that 38.9% widowed, separated or divorced women mentioned that their reason for not using modern contraceptive was infrequent sex.

Despite high fertile desire among young women, we found that old women were less likely to use modern contraceptives as compared to young women. The observed association of decreased use of contraception with increased age is in line with previous findings of lower modern contraceptive use among older women on ART in Zambia [37] and HIV-infected women in Uganda. In this study, Muslim women were 80% less likely to use modern contraceptives than Christians. This finding is in agreement with study conducted in Kersa, Ethiopia [38]. This might be due to the wide belief in the Muslim community that considers family planning prohibited in the holy book. Another finding of this study is, those women whose partner level of education above secondary level were more likely to use modern contraceptive than illiterate partners. Education may increase partners' level of knowledge on HIV status and ways of transmission. In other study, it is documented that partner knowledge on HIV status contributes contraceptive utilization. Furthermore, open discussion with partner was found to be significantly associated with contraceptive utilization. The positive association of open discussion with partner and contraceptive utilization was documented in the broader literatures. Open discussion with partner may enable women to make informed decision on fertility and contraceptive options. In fact, Discussion of HIV status among couples may be easier when they have disclosed their HIV status. In this study, women who had higher monthly income (≥ 1500 ETB) were less likely to use modern contraceptive than those who had <500 ETB. This finding is contrary to study finding in South-western Uganda. Women who had higher monthly income have high decision to have children [39] and people living with HIV/AIDS who had better income may feel that they could have the opportunity for better care of their child.

Limitation of the Study

This study was cross-sectional in nature. So it is difficult to determine the direction of causality between explanatory variables and current use of modern contraceptives. We tried to decrease the risk of social disability bias by interviewing women outside the ART clinic. However, some women might over-report their contraceptive use because of pressure from health workers and community members to practice protected sex. Though there are wide ranges of factors which affect utilization of contraceptive methods among HIV positive women, only individual and household level factors were addressed in this study. Hence, considering factors from the service providers' side and structural barriers would have been important.

Furthermore, male were not interviewed in this study. Thus, the views of husband on contraceptive use were not captured. Therefore, future research that focused on contraceptive use among HIV/AIDS patients in this area need to address these limitations.

Conclusion

Awareness on at least one type of contraceptive was universal. However, current modern contraceptive utilization was found to be suboptimal. Particularly, utilization of long acting contraceptives was very low. The chance of current modern contraceptive utilization decreases with increasing age and monthly income. But, it increases with level of partner education. Religious affiliation (being Muslim) and not discussing with partner about contraceptives were associated with reduction in the chances of being current user of modern contraceptives. Moreover, being separated or widowed were negatively associated with current modern contraceptive use. Despite majority of women wanted contraceptives to be given at ART clinic, small proportion of women ever got contraceptives from ART clinic, suggesting poor integration of family planning with ART services.

Recommendations

- i. Additional efforts are needed to promote utilization of long acting contraceptive methods.

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- ii. Hospital managers and clinical officers need to consider integration of family planning with ART services not only in terms of awareness creation but also actual contraceptive services provision.
- iii. Behavioral education and communication designed to promote modern contraceptive use in this study area need to be inclusive and focused on special groups of peoples like Muslims and women who are widowed or separated.
- iv. Further exploration on the structural and provider side determinants of contraceptive use among HIV positive women is recommended.

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Competing Interests

The authors declare that they have no competing interests.

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