



Risky Sexual Practice, Unintended Pregnancy, Contraceptive Utilization, and Its Determinants among HIV-Infected Women in Oromia Regional State, Ethiopia

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Abstract

Objectives: The purpose of this study was to determine the prevalence of risky sexual practice, unintended pregnancy, contraceptive utilization, and its determinants among women of reproductive age in Oromia, Ethiopia.

Methods: Health facility-based cross-sectional study design was conducted among women living with HIV attending ART clinics in the special zone of, Oromia Regional state, by simple random sampling was used to select 654 respondents. Both bivariate and multivariable logistic regressions analysis was used to identify at Adjusted Odds Ratio (AOR) with 95% CI in the final model.

Result: The current family planning utilization among women of reproductive age living with HIV in Oromia Region was 548 (83.8%). The completed response rate of this study was 97.6% (654/670). There were 654 respondents whose ages ranged between 18 and 49 years.

The prevalence of dual contraceptive utilization was 425 (73.8%), of which 343 (80.7%) and 306 (72%) were sustained users of dual contraception methods, respectively. Open discussion on family planning with healthcare providers and having received family planning counseling about the efficacy of each method were assumed to be contributing factors.

Conclusion: The current family planning utilization among women of reproductive age was higher than the national contraceptive prevalence rate. This proportion is parallel to the proportion of service providers reporting to provide both HIV- and family planning-related services as being largely dependent on training on integrated family planning and HIV services.

Keywords: Risky sexual practice; Unintended pregnancy; Condom utilization; Contraceptive utilization; Women living with HIV

Abbreviations

AIDS: Acquired Immune Deficiency Syndrome; ART: Antiretroviral Therapy; AOR: Adjusted Odd Ratio; CSA: Central Statistical Agency; CI: Confidence Interval; COR: Crude Odd Ratio; EDHS: Ethiopian Demographic Health Survey; FHI: Family Health International; FMOH: Federal Ministry of Health; HIV: Human Immunodeficiency Virus; IUDs: Intra Uterine Devices; OR: Odds Ratio; ORHB: Oromia Regional Health Bureau; PMTCT: Prevention of Mother-to-Child Transmission; STIs: Sexually Transmitted Infections; UNAIDS: United Nations Program on HIV/AIDS; UNICEF: United Nations International Children's Emergency Fund; UNISA: University of South Africa; USAID: United States Agency for International Development; VCT: Voluntary HIV Counseling and Testing; WHO: World Health Organization

Introduction

HIV infection is a pandemic disease. Globally, about 35 million individuals were living with HIV in 2013. Of these, 24.7 million were in sub-Saharan Africa and 4.8 million in Asia and the Pacific [1]. In 2013, about 16 million individuals living with HIV globally were women aged 15 years and older, and 3.2 million were children under 15 years of age [1]. More than 90% of HIV-positive pregnant women reside in sub-Saharan Africa [2]. In 2013, 1.5 million HIV-infected women gave birth globally and there were 240,000 new pediatric infections, amounting to one new infection

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every two minutes [1]. HIV is thus the leading cause of death in women of reproductive age globally; it is responsible for one-quarter of deaths during pregnancy and in the postpartum period in sub-Saharan Africa [2].

The two top causes of death in women of reproductive age globally are HIV and AIDS (19%) and complications related to childbearing (15%) [3]. Sub-Saharan Africa has the highest maternal mortality ratio, reporting levels of 596 deaths per 100,000 live births [4]. Further, half of the global maternal deaths occur in the sub-Saharan region. There seems to be a need to suggest strategies that are evidence-based to integrate family planning services with HIV treatment among women who are living with HIV. This may prevent treatable complications among them and their children, which lead to public health concerns in terms of high preventable childbearing complications and morbidity due to HIV/AIDS. The findings of this study informed the development of strategies to integrate family planning services with HIV services in Oromia Region, Ethiopia, and provided evidence-based input for policymakers and health planners.

Statement of the problems

There were beneficial synergies in terms of increased 'Sexually Transmitted Infection' (STI) prevention, including syphilis screening and treatment, and early childhood immunization [5]. Another peer-reviewed study illustrated how best to integrate other interventions, such as postpartum contraception or tuberculosis screening and treatment, into services that are already providing some parts of integrated HIV care for pregnant and postpartum women, which is almost non-existent [6].

Dual protection is the prevention of two unplanned and undesirable outcomes- unintended pregnancy and HIV infection- and may be achieved through the use of contraception in long-term, mutual, monogamous relationships. Alternatively, it includes the use of a condom, plus another non-barrier contraceptive method, or the use of a condom alone (including during pregnancy), abstinence, or avoidance of all types of penetrative sex [7]. One of the most important advantages to 'integrating family planning with HIV services' is the potential contribution of contraception to prevent unintended HIV-positive births, which has been well established through extensive research [8-10]. Integrating family planning with HIV treatment has presented evidence on HIV-positive women's desire to prevent unwanted pregnancies [11,12]. Notable research findings showed evidence that preventing unwanted pregnancies to HIV-positive women reduce infant HIV infections, thus the policy for integration is sound [12].

Like all women, women living with and at risk of acquiring HIV have the right to determine the number and timing of their pregnancies and safely achieve their reproductive intentions [13]. A systematic review evidenced from Africa revealed that providing concerted information and support on family planning utilization and ready-to-access contraceptive methods seemed most effective in increasing the use of family planning, while the effects on unplanned pregnancy were difficult to measure. However, no studies assessed the effects of family planning on unintended pregnancy [14]. This review indicated that the results are far from definitive, yet they do highlight the need for strengthened efforts to integrate family planning counseling and access to services for HIV prevention, and for greater consistency of effort over time [14]. Programs that have succeeded in promoting condom use and providing HIV prevention and treatment services in this region have largely missed the opportunity to address

the contraceptive needs of the key populations they serve. Therefore, the research statement for this study is "What are status of Risky sexual practice, unintended pregnancy, contraceptive utilization, and its determinants among HIV-infected women for women of reproductive age living with HIV attending healthcare facilities in Oromia Region, Ethiopia?"

Methods and Materials

Research setting and design

This study was conducted in the Oromia Region surroundings of Finfinne Oromia, Ethiopia. Currently, the health system of the zone consists of two hospitals under construction, and 27 health centers with 98% potential health service coverage. There were different governmental and non-governmental organizations working on HIV/AIDS in the zone. There were 13 health centers which have been providing ART and family planning services in the zone, of which five were randomly selected as the study setting. The total number of people living with HIV enrolled at ART clinics in the zone was 9,421, of which 2,380 were women of reproductive age, and of these, 1,557 were from five randomly selected health centers [15]. The target population was HIV-positive women of reproductive age who had attended ART follow-up services for at least six months from randomly selected healthcare facilities in Oromia Region, Ethiopia. The accessible sample was 1,557 eligible women of reproductive age living with HIV attending ART clinics in public health centers.

A Health facility based cross-sectional study design was conducted with quantitative data collection approach was used to collect data from women living with HIV attending ART clinics.

Sample size determination

The sample size was determined through a single population proportion formula by using a case study found in integrated sites in Ethiopia, where 40% of women were family planning users (P) [16]. By considering the design effect of 2, with correction formula since the total population was less than 10,000 (2,380) and with a 5% non-response rate considered, the final sample size was 670 women living with HIV.

Sampling procedure

All hospitals and health centers found in the Special Zone of Oromia Region that provide ART services were identified and randomly selected by computer-generated methods to be included in the study. A list of all women living with HIV from each facility, aged between 18 and 49 years of age, was randomly created. Study sites were prepared and entered into SPSS version 23 by using their pre-ART registration numbers from the Health Management Information System (HMIS) database. A simple random sampling technique by computer-generated samples was utilized at each health centre to select 670 study respondents. The number of study respondents was allocated proportionally for the five health centers, based on their total number of ART clients.

Data collection

The questionnaire used for data collection was initially prepared in English, and translated to Afaan Oromo, and back to English for language experts to confirm its consistency. Finally, the corrected Afaan Oromo version was used to collect the data from women living with HIV attending ART clinics. The questions included in the questionnaire were adapted and prepared by reviewing different related literature and variables identified to be measured. Training

was given for data collectors and supervisors by the primary researcher for two days. Data collectors cross-checked the pre-ART card numbers of women living with HIV who came to the ART clinic with sampled card numbers daily. Five trained data collectors collected data from women of reproductive age. The completed questionnaires were collected and checked daily for consistency and completeness by supervisors and the primary researcher. Data were collected using a pre-tested structured Afaan Oromo version of the questionnaire. A pre-test of the questionnaire was done on 5% of the women living with HIV at Ambo health centre, to identify any ambiguity, to confirm consistency in the questionnaire, to determine acceptability, and to make necessary corrections one week before the actual data collection process. The respondents were guided through a questionnaire and chart abstraction conducted at their health facility by trained data collectors.

Data management and analysis

The returned questionnaires were checked for completeness, cleaned manually, coded and entered into EPI INFO 7.1.6 version and then transferred to SPSS version 23 for further analysis. Frequencies, percentages, mean and Standard Deviation (SD) was used to summaries descriptive statistics of the data and text. Moreover, tables and graphs will be used for data presentation. Bivariate analysis was used primarily to check which variables have an individual association with the dependent variable. Variables which were found to have an association with the dependent variables were then entered into multiple logistic regressions to control the possible effect of confounders. Finally, the variables which have significant association were identified on the basis of AOR, with a 95% CI and p-value to fit into the final regression model.

Ethical consideration

The rights of the institution were protected by obtained ethical clearance (Ref. No HSHDC/710/2017) from the Research and Ethics Committee of the Department of Health Studies at the UNISA. Thereafter, a letter of permission to conduct this research was also obtained from the ORHB who requested support for the researcher from each study site to facilitate the data collection process (Ref. No BEFO/HBT64/18/2569). Informed consent from each study participant was obtained after the nature of the study was fully explained in their local languages as it was attached in the questionnaire. The respondents' right to refuse or withdraw from the study at any stage was respected. Information collected from respondents was kept confidential, and the collected information was stored in a locked space, in a file without the name of the study respondent (anonymously), but codes were assigned for each respondent and have not been disclosed to others except the principal investigators. Scientific integrity was ensured by avoiding plagiarism, being honest in reporting on the findings, and accurately citing all consulted sources.

Result

The complete response rate of this study was 654/670 (97.6%). There were 654 respondents whose ages ranged between 18 and 49 years. The mean age of the respondents was 31.86 years with a SD of ± 6.0 years. Most of the respondents in the sample were in the age group 26 to 35 (n=374, 57%), and only 96 (14.7%) were in the age group 18 to 25. Of the 14.7%, 4 (0.6%) were younger than 20 years.

In terms of religious affiliation, 474 (72.5%) respondents belonged to the orthodox denomination, 7 (1.1%) were Catholic, while 131

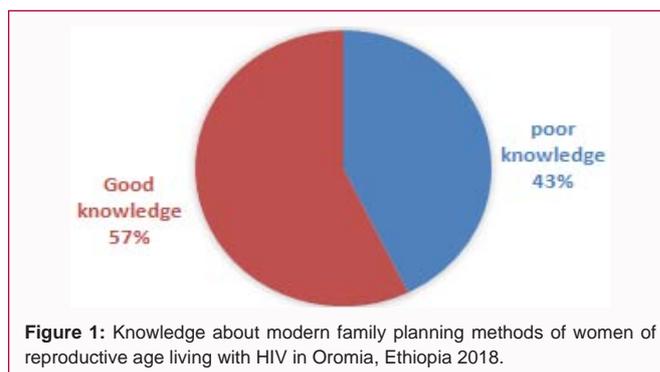


Figure 1: Knowledge about modern family planning methods of women of reproductive age living with HIV in Oromia, Ethiopia 2018.

Table 1: Proportion of women by marital status in Oromia Region, Ethiopia, 2018.

Marital Status	Frequency (%)
Married	528 (80.7)
Cohabit/living together*	51 (7.8)
Divorced/separated	46 (7.0)
Widowed	22 (3.4)
Single	7 (1.1)
Total	654 (100)

*Living together with a partner without legal marriage certification

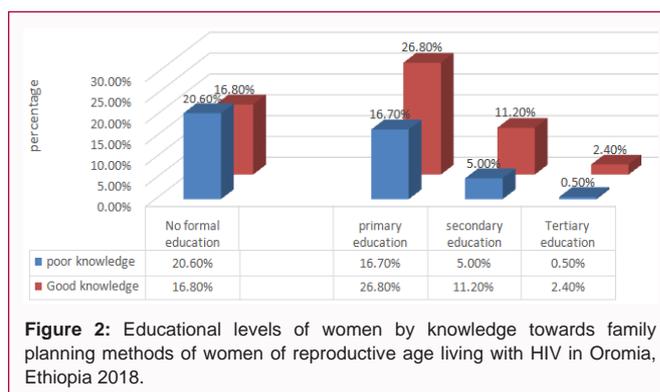


Figure 2: Educational levels of women by knowledge towards family planning methods of women of reproductive age living with HIV in Oromia, Ethiopia 2018.

(20%) were Protestants and 42 (6.4%) were Muslims.

The majority (n=409, 62.5%) of the respondents had at least attended school from primary level to college/university level, and the least represented were 19 (2.9%) who had attained tertiary level education in the form of attending a college or university.

As presented in Figure 1, 528 (88.5%) respondents were married, 51 (7.1%) were cohabiting/living together with their partners, while 7 (1.1%) were single. The other women were divorced or separated and widowed. The marital status of respondents is presented in Table 1.

With regard to the residential area, the majority of the respondents (n=518, 79.2%), resided in urban areas, and 136 (20.8%) lived in the rural area. The socioeconomic characteristics of the respondents as summarised in Table 1 are not different from the socioeconomic profile of Ethiopia. For example, in the general population of the same region, Christian denominations dominate and represent 65% of the population, and the largest ethnic group is Oromo, followed by Amhara which represent 64% of the population (CSA 2016:33). The results are also similar in terms of the proportion of women who are currently married or living together with a partner (65%) in the general population (CSA 2016:34).

Table 2: Risky sexual practice, condom utilization, and unintended pregnancy among women of reproductive age living with HIV in Oromia, Ethiopia 2018.

Risky sexual practice, condom utilization, and unintended pregnancy	Category of responses	Frequency (%)
Have partner (n=654)	Yes	641 (98.0)
	No	13(2.0)
Had sex in the last 6 months (n=654)	Yes	608(94.9)
	No	33(5.1)
Number of sexual partners had in the last 6 months (n=641)	One	608 (94.9)
	Two and above	33(5.1)
Condom use in the last six months (n=630)	Yes	451(71.6)
	No	179(28.4)
Frequency of condom use during sexual intercourse	Always	279(61.9)
	Almost always	66(14.6)
	No/inconsistent condom use	106(23.5)
Reason for not using a condom (n=179)	felt some discomfort or reduced sexual pleasure	70(39.1)
	Partner objection	68(38.0)
	Desire to conceive	41(22.9)
Partner HIV-positive	Yes	481(73.5)
	No	105(16.1)
	Unknown	68(10.4)
Changed sexual partners since HIV diagnosis	Yes	174(26.6)
	No	480(73.4)
Last pregnancy wanted/timed	Yes	514
	No	140
Have children in the future/fertility desire	Yes	324
	No	330

Risky sexual practice, condom utilization, and unintended pregnancy

The findings on risky sexual practice, condom utilization, and unintended pregnancy among women of reproductive age living with HIV are presented in Table 2.

Table 2 illustrates that of a total of 654 respondents, almost all of them (n=641, 98.0%) had a sexual partner. Of these, 33 (5.1%) had two or more sexual partners in the last six months and 174 (26.6%) had changed sexual partners since their HIV diagnosis.

The result also indicated that 608 (94.9%) respondents were sexually active during the last six months; however, only 279 (61.9%) always used a condom; 105 (16.1%) were discordant in HIV serostatus, and 68 (10.4%) did not know their sexual partners' HIV serostatus. The proportion of condom utilization in the last six months was reported by 451 (71.6%) respondents, although 106 (23.5%) were inconsistent.

The findings revealed that the major reasons for not using a condom were that the respondents felt some discomfort or sexual pleasure was reduced; their partner objected to the use of a condom, and some had the desire to conceive a baby; 70 (39.1%), 68 (38%), and 41 (22.9%), respectively.

These results identified that 140 (21.4%) respondents' previous pregnancy was unwanted/unplanned, and 324 (49.5%) had fertility desire Table 2.

HIV therapy and disclosure of HIV status

The mean years since HIV diagnosis were 5.64 with a \pm Std.

deviation of 2.777 and all the respondents had started ART, of which 36.9% were greater than or equal to 6 years, with a mean of 4.90 \pm Std. deviations of 2.577 in years since they started ART.

According to client cards, study respondents' ART drug adherence level indicated that the majority (n=576, 88.1%) had good and 38 (5.8%) had poor adherence towards ART drugs in the study area. From a total of 654 women of reproductive age living with HIV attending ART follow up, about 439 (67.1%) had a baseline CD4 count less than 350 cells/mm³ with an average CD4 count of 316.60 \pm Std. deviation 224.796 cells/mm³, but their recent CD4 count after initiating ART drugs in the last six months revealed that 330 (50.5%) of the respondents had greater than or equal to 500 cells/mm³ with an average CD4 count of 541.92 \pm Std. deviation 265.823 cells/mm³.

The WHO stage classification during enrolment to ART/PMTCT programs showed that 275(42.0%) were stage one as evidenced from client records. Of the total study respondents of 654, 589 (91.4%) and 499 (76.3%) disclosed their HIV serostatus to their regular sexual partner and family, respectively (Table 3).

Family planning and dual contraceptive utilizations

Family planning is a program to regulate the number and spacing of children in a family through the practice of contraception or other forms of birth control [17]. The dual conceptive method is the prevention of two unplanned and undesirable outcomes, namely unintended pregnancy by use of contraception in a long-term mutually monogamous relationship. This includes the use of a condom plus another non-barrier contraceptive method, the use of a condom alone (including during pregnancy), abstinence or avoidance of all

Table 3: HIV therapy and disclosure of HIV status of women of reproductive age living with HIV in Oromia, Ethiopia 2018.

HIV therapy and disclosure	Category	Frequency (%)
Duration since HIV diagnosis in years (n=654) Mean 5.64 ± Std. Deviation of 2.78 years	<3 years	177 (27.1)
	3 to 5 years	159 (24.3)
	≥ 6 years	318 (48.6)
Duration since started ART in years (n=654) Mean 4.90 ± Std. Deviation 2.577	≤ 3 years	224
	3.1 to 6 years	189
	≥ 6 years	241
Started ART(n=654):	Yes	654 (100.0)
	No	0 (0.0)
ART drug adherence level according to client record (n=654)	Good	576 (88.1)
	Fair	40 (6.1)
	Poor	38 (5.8)
Baseline CD4 count in cells/mm ³ (n=654) Mean 316.60 ± Std. Deviation 224.796	<350 cells/mm ³	439 (67.1)
	350-500 cells/mm ³	113 (17.3)
	>500 cells/mm ³	102 (15.6)
Recent CD4 count in the last six months in cells/mm ³ (n=654) Mean 541.92 ± Std. Deviation 265.823	<350 cells/mm ³	164 (25.1)
	350-500 cells/mm ³	160 (24.5)
	>500 cells/mm ³	330 (50.5)
WHO stage enrolment according to client record (n=654)	Stage 1	275 (42.0)
	Stage 2	226 (34.6)
	Stage 3	138 (21.1)
	Stage 4	15 (2.3)
Disclosure of HIV status to regular partner:	Yes	598 (91.4)
	No	56 (8.6)
Disclosure HIV status to the family	Yes	499 (76.3)
	No	155 (23.7)

types of penetrative sex [7]. One of the most important advantages to integrating family planning and HIV services is the potential contribution of contraception to prevent unintended HIV-positive births, which has been well established through extensive research [8].

Knowledge about modern family planning

These measurement variables were related to knowledge about modern family planning methods. Figure 1 shows that more than half (n=374, 57.2%) of the respondents had good knowledge of modern family planning methods. The proportion of good knowledge regarding the eleven measurement variables of modern family planning methods among women of reproductive age living with HIV ranged from 53.5% to 60.9%, with 95% CI.

The results in Figure 2 should be viewed within the context of education characteristics of the respondents and their knowledge and awareness of modern family planning methods. For instance, as the educational status of the women increased, their knowledge towards family planning methods increased.

Family planning and dual method utilization of women of

reproductive age living with HIV

Table 4 shows that the proportion of current family planning utilization was 548 (83.8%) with 95% CI, which ranged from 81.2% to 86.8% among women living with HIV. The prevalence of dual contraceptive utilization was 425 (73.8%) with 95% CI of 70 to 77.3%, of which 343 (80.7%) and 306 (72%) were consistent and sustained use of the dual method among women living with HIV attending ART clinics.

The major reason reported for the dual method was dual protection (unwanted pregnancy/STI/HIV) which accounted for 386 (90.8%) respondents, followed by advice given by healthcare providers during follow up (n=20, 4.7%).

This study revealed that the majority of women of reproductive age living with HIV had discussed dual method use with healthcare providers and their sexual partner; 543 (83.0%) and 427 (65.3%) respectively.

Factors associated with current family planning utilization

Table 5 shows the logistic regression modeling that was undertaken to examine the net effects of a set of explanatory variables

Table 4: Family planning and dual method utilization of women of reproductive age living with HIV in Oromia, Ethiopia 2018.

Family planning utilizations	Responses	Frequency (%)	95% (CI)
Current family planning utilization	Yes	548 (83.8)	81.2-86.8
	No	106 (16.2)	13.2-18.8
Use contraceptive methods in addition to Condom (dual contraceptive use)	Yes	425 (73.8)	70.0-77.3
	No	151 (26.2)	22.7-30.0
Consistently use the dual methods (N=425)	Yes	343 (80.7)	76.7-84.2
	No	82 (19.3)	15.8-23.3
Sustain use of dual methods (N=425)	Yes	306 (72.0)	67.5-76.5
	No	119 (28.0)	23.5-32.5
Reason for dual contraceptive use/use contraceptive methods in addition to condom	Dual protection (unwanted pregnancy/STI/HIV)	386 (90.8)	
	with new strain to protect a negative partner	13 (3.1)	
	Advice by health workers	20 (4.7)	
	Fear of re-infection	6 (1.4)	
Discussed with a partner about dual contraceptive utilization	Yes	427 (65.3)	
	No	220 (33.6)	
	Have no partner	7 (1.1)	
Discussed with healthcare providers about dual contraceptive utilization	Yes	543 (83.0)	
	No	111 (17.0)	

Table 5: Factors associated with dual contraceptive methods used at multivariable logistic regression (AOR, 95% CI) in Oromia, Ethiopia 2018.

Factors associated with dual contraceptive utilization		Dual methods use		P-value	AOR (95% CI)
		Yes	No		
Family planning counseled	Yes	281 (48.8)	45 (7.8)	0.024	2.18 (1.109-4.27)*
	No	144 (25.0)	106 (18.4)	1:00	
Discussed with healthcare	Yes	400 (69.4)	100 (17.4)	0.006	3.57 (1.45-8.83)***
	No	25 (4.3)	51 (8.9)	1:00	
Received family planning counseling on the efficacy of each method and side effects	Yes	382 (66.3)	83 (14.4)	0	3.81 (1.83-7.92)***
	No	43 (7.5)	68 (11.8)	1:00	
last pregnancy wanted/timed	Yes	365 (63.4)	92 (16.0)	1:00	
	No	60 (10.4)	59 (10.2)	0.001	3.36 (1.65-6.86)***
ART providers knowledgeable and comfortable for providing integrated family planning/HIV services	Yes	366 (63.5)	109 (18.9)	0.013	2.898(1.26-6.68)**
	No	59 (10.2)	42 (7.3)	1:00	
Disclose HIV status to family	Yes	366 (63.3)	89 (15.5)	0	3.57(1.79-7.11)***
	No	59 (10.8)	62 (10.8)	1:00	

Keynote: ***p<0.001; **p<0.01; *p<0.05; CI: Confidence Interval; AOR: Adjusted Odds Ratio

over the outcome variables and the Odds Ratios (OR) were adjusted for all other variables with 95% CIs. In this analysis, the outcome variables, current family planning utilizations, were dichotomized with "1" being utilized and "0" not being utilized.

Two different models were fitted to investigate the factors predicting current family planning utilization. In testing the fitness of the logistic model, if the HL goodness-of-fit test statistic is greater than 0.05, the model is considered as a well-fitting model, implying that the estimates of the model fit the data at an acceptable level. Accordingly, the HL test for the following two models showed chi-square p-values >0.05, which proved the goodness-of-fit of the applied models for this study at p=0.84 for the current family planning utilizations model.

Table 5 provides evidence based on the stated criteria that the factors that were identified through binary logistic regression were age, marital status, family monthly income, residence, discussion

on dual method use with healthcare provider and with partner, knowledge family planning methods, number of sexual partners, previous pregnancy, future fertility desire, and partner's HIV status, respectively. These identified variables were entered into multiple logistic regression analyses.

Table 5 depicts that the respondents who had discussed family planning with healthcare providers during follow up were 2.9 times more likely to utilize family planning services as compared to those who had not. Women who had one or a single partner were at 2.7 times higher odds of family planning utilization as compared to those who had two or more sexual partners. Moreover, women living with HIV whose last pregnancy was not intended were 2.6 times more likely to utilize family planning as compared to those who had intended their pregnancy.

The results further show that women who had a sexual partner with

the same serostatus (concordant and discordant) were 4.8 times and 4.4 times more likely to utilize family planning services as compared to unknown serostatus partners. Those women of reproductive age who had disclosed their HIV result to their family were at 1.7 times higher odds of family planning utilization as compared to those women who did not disclose their serostatus.

This study identified factors which increased the likelihood of modern contraception utilization as including: Discussion with healthcare providers regarding family planning; knowledge about modern family planning; the number of sexual partners; previous unplanned pregnancy; partner's HIV status; and disclosure status of HIV to their family. A partner's HIV status and disclosure status of HIV to their family meant higher odds of family planning utilization among reproductive-aged women living with HIV in Oromia Region, Ethiopia.

Factors associated with dual contraceptive utilization

Table 5 presents potential factors associated with dual contraceptive utilization from both binary and multiple logistic regressions. Logistic regression modeling was undertaken to examine the net effects of a set of explanatory variables over the outcome variables, and the ORs were adjusted for all other variables with 95% CIs. In this analysis, the outcome variables, dual contraceptive utilizations were dichotomized with "1" being utilizing and "0" being not utilizing dual contraceptive methods. Two different models were fitted to investigate the factors predicting dual contraceptive utilization. Accordingly, the HL test for the following two models showed chi-square p-values >0.05, which proved the goodness-of-fit of the applied models for this study at p=0.74 for dual contraceptive methods use.

As presented in table, women who had attended family planning counseling during follow up were 2.18 times more likely to utilize dual contraceptive methods as compared to those who had not attended family planning counseling.

The reproductive-aged women who had discussions about family planning with their healthcare providers during follow up were also 3.6 times more likely to utilize dual method services. Women who had received family planning counseling on the efficacy of each method, side effects and the mixed methods available to them were 3.8 times more likely to have higher odds of dual method utilization as compared to women who had not received family planning counseling during follow-up.

Women of reproductive age who had a history of their last pregnancy being unwanted/unplanned were 3.36 times more likely to use dual methods as compared to a wanted/planned pregnancy. Women who had received services from knowledgeable and comfortable ART providers of integrated family planning/HIV services had 2.9 times higher odds of dual method utilization as compared to those who were seen by unknowledgeable and uncomfortable ART providers.

Those women of reproductive age who had disclosed their HIV status to their family had 3.57 times higher odds of dual method utilization as compared to those who had not disclosed their HIV status. This study identified factors that increased the likelihood of dual contraception among reproductive-aged women living with HIV in Oromia Region, Ethiopia. These were found to be women who had discussed family planning with their healthcare provider and received family planning counseling about the efficacy of each method, the

side effects and the mixed method available; women who received services from knowledgeable and comfortable ART providers for providing integrated family planning/HIV services; women who had experienced a previous unplanned pregnancy; a partner's HIV status and discloser of their HIV status to their family resulted in higher odds of dual contraception utilization.

Discussion

With regard to the residential area, the majority of the respondents (n=518, 79.2%), resided in urban areas, and 136 (20.8%) lived in the rural area. The socioeconomic characteristics of the respondents were not different from the socioeconomic profile of Ethiopia. For example, in the general population of the same region, Christian denominations dominate and represent 65% of the population, and the largest ethnic group is Oromo, followed by Amhara which represent 64% of the population (CSA 2016:33). The results are also similar in terms of the proportion of women who are currently married or living together with a partner (65%) in the general population (CSA 2016:34).

Unintended pregnancy, family planning and dual contraceptive utilization

This study identified that 21.4% of last pregnancies were unintended, which is consistent with the findings of a study conducted by Heffron et al. [18]. The latter revealed that 21.2% of women were found to be pregnant during follow up; the pregnancy incidence rates were 16.3 (95% CI 14.9-17.7) per 100 person-years. A study done in Mumbai, India, found that 16.6% of women had unintended pregnancies [19]. In contrast, a DHS conducted in 21 low- and middle-income countries revealed that the unmet need for family planning, a pregnancy risk, family planning methods, and use of postpartum family planning remain high at 61%, while pregnancy risks can peak at 6 to 11 months after childbirth. The same study claims that women often rely on short-term methods only (51% to 96%) [20]. Another study conducted on HIV-infected clients in Lusaka found that 49% reported that the pregnancy was unplanned [21]. There are thus still gaps in the provision of care and continued limited availability of long-acting contraception for those who need it. This observation could be explained by the fact that, as this study shows, strengthening counseling on dual contraceptive method use for effective protection are crucial among these populations. Moreover, the issue of unintended pregnancies would be particularly important in terms of its contribution to new pediatric HIV infections. It is thus vital that there be reconsideration on dual method use for effective protection of unintended pregnancies among this population.

The current study indicated that 94.9% of women living with HIV were sexually active and 71.6% had used condoms, of which 61.9% always used condoms and 23.5% used condoms inconsistently. These findings were supported by a study conducted in Thailand which revealed that 82.3% of women were sexually active and 69.8% had used condoms [22]. This observation could be explained by the fact that, as this study shows, some sexually active reproductive-aged groups still ignore the modes of HIV infection.

The proportion of current family planning utilization was 83.8% at 95% CI which ranged from 81.2% to 86.8% among women living with HIV. These findings were lower than what was reported in the previous study done in Thailand, which mentions that 96.3% of respondents had used a contraceptive method [22]. Also, a study in Cambodia reflected that 68.5% of respondents used contraceptive methods [23], and South Ethiopia revealed that 77.4% used at least

one form of family planning method [24]. These indicate the need for family planning among women living with HIV in family planning/HIV service settings. There is a need for increased comprehensive care in order to meet the women living with HIV's diverse need for integrated family planning/HIV services under one roof.

The prevalence of dual contraceptive utilization was 73.8% with 95% CI of 70% to 77.3%, of which 80.7% were consistent, and 72% were sustained users of the dual method in Oromia Region, Ethiopia. This prevalence was high compared to previous studies conducted among respondents with similar characteristics. For instance, in Mumbai, India, it was reported that 69% of respondents wished to use dual contraceptive methods for effective protection [19]. In Thailand, 29.6% used dual contraceptive methods [22]. Different countries had the following prevalence: In Cambodia, 17.5% employed a dual contraceptive method [23]; South-East Nigeria reported that 27.2% had practiced dual method use, of which 26.8% used consistently in the preconception period but the majority (73.2%) sometimes used in an inconsistent way [25]; and a prospective study by [18] revealed 23.5% dual contraceptive prevalence and consistent use. This discrepancy may be due to the fact that 83.0% of recent study respondents had discussed dual method utilization with healthcare providers, and 65.3% with their sexual partner. Another possible contribution for this difference may be due to service provision systems as evidenced from service providers and focal persons reporting that all health facilities offered sexual reproductive health services within HIV services with the same provider and offered on the same day, which accounts for 100% of respondents.

Determinants of contraceptive utilization among HIV-infected women

This study identified factors that increased the likelihood of the use of modern contraceptives as women who had discussed family planning with healthcare providers; knowledgeability on modern family planning; number of sexual partners; unintended last pregnancy; sexual partner HIV status; and disclosure status to their families. These findings are in line with some previous studies' findings which identified the determinants of family planning utilization as obtaining family planning information from health facilities; awareness on MTCT; having a son; partner knowledge of HIV status; use of a contraceptive method prior to diagnosis of HIV; married or cohabiting couples; religion; age; wealth; education and having a child [23,26,27].

This study identified factors that increased the likelihood of dual contraceptive use were women who had discussed family planning with healthcare providers; received family planning counseling on the efficacy of each method, side effects and the method mix available; had gotten services from knowledgeable and comfortable ART providers on integrated family planning/HIV services; had an unplanned previous pregnancy; had knowledge of their partner's HIV status; and disclosure status of HIV to their family. These findings concur with some previous studies' which revealed determinants of dual contraceptive use as being female; receiving care; being aware of HIV status; being comfortable with asking a partner to use a condom; communication with a healthcare provider about family planning; household wealth; and HIV-positive women. These women were significantly more likely to use dual contraceptive methods [22,28,29]. These findings demonstrate the importance of integrating reproductive health services into routine HIV care. In contrast, another study identified factors associated with decreased odds of

dual method use as being of older age; being separated or/divorced; having fewer living children; and reporting that their partner wants a child [22].

Conclusion

Modern family planning utilization among women of reproductive age living with HIV was relatively high at 83.3% in the study area. The identified determinants of modern family planning utilization were a discussion with healthcare providers in terms of family planning; knowledge about modern family planning; number of sexual partners; previous unplanned pregnancy; partner's HIV status; and disclosure status of HIV to their family. These determinants signified higher odds of family planning utilization among women of reproductive age living with HIV in Oromia Region, Ethiopia.

The prevalence of dual contraceptive utilization was 73.8%, of which 80.7% were consistent and 72% were sustained users of the dual method in Oromia Region, Ethiopia. The identified factors associated with dual contraception method utilizations were discussion with healthcare providers regarding family planning; unplanned previous pregnancy; partner's HIV status; disclosure status of HIV to their family; family planning counseling efficacy, and services from trained ART providers, respectively.

The current family planning utilization among women of reproductive age living with HIV was 548 (83.8%). The following were identified as determinants of current family planning among HIV-infected women in the area of study: Open discussion on modern family planning utilization with healthcare providers; being knowledgeable about modern family planning; number of sexual partners; previous unplanned pregnancy; partner's HIV status; and disclosure status of HIV to their family. The last two factors led to higher odds of family planning utilization among women of reproductive age living with HIV in Oromia Region.

The study further established that contraception utilization was influenced by the fact that 608 (94.9%) respondents were sexually active during the last six months. Disclosure of HIV status added to the list whereby 589 (91.4%) respondents had disclosed their HIV serostatus to a regular sexual partner and 499 (76.3%) had disclosed to family.

Recommendation

Integrated family planning/HIV services contribute to the national family planning programs to provide full access to a variety of contraceptive methods so that couples and individuals can obtain the method that best suits their needs. The main contribution of the study to the level of health policy is as follows:

- Increases consistent and sustainable dual contraceptive users among women of reproductive age living with HIV in Oromia Region, Ethiopia.
- Provide quality counseling to improve the knowledge of reproductive-aged and empowered women by service providers on the integrated family planning/HIV services.
- Healthcare providers should be trained, equipped, and encouraged to take ownership of the implementation of the reproductive-aged women-centered integrated family planning/HIV strategic plan.
- Strengthening implementation of integration of family

planning and HIV services should lead to an increase in the utilization of family planning, dual contraceptive methods, need for family planning being met, prevent repeated unwanted pregnancy, and offer HIV services. This will ultimately improve the quality of life of reproductive-aged women, the community, and families at large.

- Facilitate capacity building training for health professionals, health managers, and women living with HIV and peer educators, including mother-to-mother support groups, so that all key actors are equipped with the necessary skills in sexual reproductive health services, family planning, and HIV.

- Innovate and scale-up best practices for the integration of maternal health service utilization with HIV program interventions.

- Establish a policy framework for institutional implementation, monitoring and sectorial coordination aimed at promoting and integrating sexual reproductive health services, family planning, and HIV focused on reproductive-aged people living with HIV. The framework can be tailor-made across sectors with the set goals of improving treatment outcomes and quality of life for people living with HIV, especial women of reproductive age living with HIV.

Declarations

Ethics approval and consent to participate

The researcher submitted a letter seeking ethical approval and permission to conduct the study from the University of South Africa, and obtained ethical clearance (Ref. No HSHDC/710/2017), then submitted it to the Research and Technology Transfer Core-process of Oromia regional health Bureau (ORHB) and received approval (Ref. No BEFO/HBT64/18/2564). Thereafter, a letter of permission to conduct this research was also obtained from the ORHB who requested support for the researcher from each study site to facilitate the data collection process (Ref. No BEFO/HBT64/18/2569). Informed consent from each study participant was obtained after the nature of the study was fully explained in their local languages as was attached in the questionnaire. The respondents' right to refuse or withdraw from the study at any stage was respected. Information collected from respondents was kept confidential, and the collected information was stored in a locked space, in a file without the name of the study respondent (anonymously), but codes were assigned for each respondent and have not been disclosed to others except the principal investigators. Scientific integrity was ensured by avoiding plagiarism, being honest in reporting on the findings, and accurately citing all consulted sources.

A formal letter of cooperation was written to all selected Health institutions. Written informed consent was obtained from study participants after fully explaining the nature of the study in their local languages as is attached in the questionnaire. The collected information was kept confidential without the name of the study participants.

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Author Contributions

DBD contributed to the conception, design, and conduct of the study, analyzed and interpreted the data, and prepared the

manuscript. RMP contributed to the conception, design, and conduct of the study, analyzed and interpreted the data, and prepared the manuscript. DBD contributed to the design and conduct of the study, analyzed and interpreted the data, and prepared the manuscript. All authors read and approved the final manuscript.

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References

1. UNAIDS. The gap report. Joint United Nations Programme on HIV/AIDS. Geneva: WHO. 2014.
2. Kendall T, Danel I. Research and evaluation agenda for HIV and maternal health in sub-Saharan Africa. Harvard School of Public Health: Boston, MA. 2014.
3. WHO, USAID, FHI. Strategic considerations for strengthening the linkages between family planning and HIV/AIDS policies, programs, and services. 2009.
4. Hogan MC, Foreman KJ, Naghavi M, Ahn SY, Wang M, Makela SM, et al. Maternal mortality for 181 countries, 1980–2008: A systematic analysis of progress towards Millennium Development Goal 5. *The Lancet*. 2010;375(9726):1609-23.
5. Nutman S, McKee D, Khoshnood K. Externalities of prevention of mother-to-child transmission programs: A systematic review. *AIDS Behav*. 2013;17(2):445-60.
6. Tudor-Car L, Van-Velthoven MHMMT, Brusamento S, Elmoniry H, Car J, Majeed A, et al. Integrating Prevention of Mother-to-Child HIV Transmission (PMTCT) programmes with other health services for preventing HIV infection and improving HIV outcomes in developing countries (Review). *Cochrane Database Syst Rev*. 2011;6:9.
7. Orner PJ, De Bruyn M, Barbosa RM, Boonstra H, Gatsi-Mallet J, Cooper DD. Access to safe abortion: Building choices for women living with HIV and AIDS. *J Int AIDS Soc*. 2011;14(1):54.
8. Hladik W, Stover J, Esiru G, Harper M, Tappero J. The contribution of family planning towards the prevention of vertical HIV transmission in Uganda. *PLoS One*. 2009;4(11):e7691.
9. Reynolds HW, Toroitich-Ruto C, Nasution M, Beaton-Blaakman A, Janowitz B. Effectiveness of training supervisors to improve reproductive health quality of care: A cluster-randomized trial in Kenya. *Health Policy Plan*. 2008;23(1):56-66.
10. Halperin DT, Stover J, Reynolds, HW. Benefits and costs of expanding access to family planning programs to women living with HIV. *AIDS*. 2009;23(Suppl 1):S123-30.
11. Johnson KB, Akwara P, Rutstein SO, Bernstein S. Fertility preferences and the need for contraception among women living with HIV: the basis for a joint action agenda. *J Acquir Immune Defic Syndr*. 2009;23(Suppl 1):S7-17.
12. Wanyenze RK, Tumwesigye NM, Kindyomunda R, Beyeza-Kashesya J, Atuyambe L, Kansime A, et al. Uptake of family planning methods and unplanned pregnancies among HIV-infected individuals: A cross-sectional survey among clients at HIV clinics in Uganda. *J Int AIDS Soc*. 2011;14(1):31-5.
13. Mahy M, Stover J, Kiragu K, Hayashi C, Akwara P, Luo C, et al. What will

- it take to achieve virtual elimination of mother-to-child transmission of HIV? An assessment of current progress and future needs. *Sex Transm Infect.* 2010;86(Suppl 2):48-55.
14. O'Reilly KR, Kennedy CE, Fonner VA, Sweat MD. Family planning counseling for women living with HIV: A systematic review of the evidence of effectiveness on contraceptive uptake and pregnancy incidence, 1990 to 2011. *BMC Public Health.* 2013;13(1):935.
 15. Office Finfinne Special Zone. Sociodemographic data of Finfine special zone. Unpublished source. 2018.
 16. Scholl E, Cothran D. Integrating family planning and HIV services. Programs in Kenya and Ethiopia lead the way. Case Study Series. Arlington, VA: USAID's AIDS Support and Technical Assistance Resources, AIDSTAR-One, Task Order 1. 2011.
 17. UNAIDS. UNAIDS terminology guidelines. Geneva, Swaziland: UNAIDS. 2015.
 18. Heffron R, Were E, Celum C, Mugo N, Ngure K, Kiarie J, et al. A prospective study of contraceptive use among African women in HIV-1 serodiscordant partnerships. *Indian J Community Med.* 2010;37(10):621-8.
 19. Joshi B, Velhal G, Chauhan S, Kulkarni R, Begum S, Nandanwar YS, et al. Contraceptive use and unintended pregnancies among HIV-infected women in Mumbai. *Indian J Community Med.* 2015;40(3):168-71.
 20. Moore Z, Pfitzer A, Gubin R, Charurat E, Elliott L, Croft T. Missed opportunities for family planning: An analysis of pregnancy risk and contraceptive method use among postpartum women in 21 low-and middle-income countries. *Contraception.* 2015;92(1):31-9.
 21. Hancock NL, Chibwesa CJ, Bosomprah S, Newman J, Mubiana-Mbewe M, Sitali E, et al. Contraceptive use among HIV-infected women and men receiving antiretroviral therapy in Lusaka, Zambia: A cross-sectional survey. *BMC Public Health.* 2016;16(1):392.
 22. Munsakul W, Lolekha R, Kowadisaiburana B, Roongpisuthipong A, Jirajariyavej S, Asavapiriyant S, et al. Dual contraceptive method use and pregnancy intention among people living with HIV receiving HIV care at six hospitals in Thailand. *Reprod Health.* 2016;13:8.
 23. Nakaie N, Tuon S, Nozaki I, Yamaguchi F, Sasaki Y, Kakimoto K. Family planning practice and predictors of risk of inconsistent condom use among HIV-positive women on anti-retroviral therapy in Cambodia. *BMC Public Health.* 2014;14(1):170.
 24. Feyssa MD, Tsehay YB, Tadesse AW. Unmet need for family planning among women in HIV. AIDS care at antiretroviral therapy clinic in South Ethiopia: A challenge to prevention of mother to child transmission. *J AIDS Clin Res.* 2015;6(6):1-6.
 25. Lawani LO, Onyebuchi AK, Iyoke CA. Dual method use for protection of pregnancy and disease prevention among HIV-infected women in South East Nigeria. *BMC Women's Health.* 2014;14(1):39.
 26. Laryea DO, Amoako YA, Spangenberg K, Frimpong E, Kyei-Ansong J. Contraceptive use and unmet need for family planning among HIV positive women on antiretroviral therapy in Kumasi, Ghana. *BMC Women's Health.* 2014;14(1):126.
 27. Ngugi EW, Kim AA, Nyoka R. Contraceptive practices and fertility desires among HIV-infected and uninfected women in Kenya: Results from a nationally representative study. *J Acquir Immune Defic Syndr.* 2014;66(Suppl 1):S75-S81.
 28. Antelman G, Medley A, Mbatia R, Pals S, Arthur G, Haberen S. Pregnancy desire and dual method contraceptive use among people living with HIV attending clinical care in Kenya, Namibia and Tanzania. *J Fam Plann Reprod Health Care.* 2015;41(1):e1.
 29. Kimani J, Warren C, Abuya T, Mutemwa R, Mayhew S, Askew I. Family planning use and fertility desires among women living with HIV in Kenya. *BMC Public Health.* 2015;15(1):909.