Contraception use among HIV-positive women attending ART clinic: a cross-sectional study in Halibet Referral Hospital

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Background: Providing preferred methods of contraceptive for human immunodeficiency virus (HIV)-positive women and avoiding unintended pregnancy is one of the primary means of preventing mother to child transmission of HIV. This study assessed the prevalence of contraceptive use and method preference among HIV-positive women in Halibet Referral Hospital, Asmara, Eritrea.

Patients and methods: A descriptive and analytical cross-sectional study was conducted among HIV-positive women in Halibet Referral Hospital, Asmara. Data were collected by interviewing HIV-positive women using a pretested and structured questionnaire. A binary logistic regression model was used to identify factors associated with contraceptive use, and odd ratio with 95% confidence interval was calculated to measure the strength of association.

Results: A total of 196 women living with HIV were interviewed. The mean age of the study participants was 39.1 years (SD ± 6.6). The prevalence of current contraceptive use was 16.8%. The preferred and most commonly used contraceptive methods were male condom (45.5%) and injectable (36.4%). Younger age [adjusted odds ratio: 1.6 (1.1, 7.8), P = 0.04], Married [adjusted odds ratio: 2.1 (1.4, 7.7), P = 0.001], having more than 4 child [1.5 (1.1, 9.3), P = 0.03], contraception counselling [1.8 (1.1, 5.4), P = 0.02] were the only factors influencing contraception use.

Conclusion: Utilization of contraceptives among the participants was low (16.8%). Being young, married, regularly counselled about contraceptives, and having more than 4 children were factors facilitating contraceptive use. Policy makers should design counselling programs to increase utilization of contraceptives among HIV positive women.

Keywords: Contraception, HIV, Women, Eritrea, Halibet, Cross-sectional

Among human immunodeficiency virus (HIV) infected pregnant women living in sub-Saharan Africa, around 50%–80% of the pregnancy was found unintended[1,2]. It is also shown that without any intervention, between 25% and 45% of HIV-positive women living in resource constraint settings transmit HIV to their babies during pregnancy (5%–10%), delivery (10%–20%), or through breastfeeding (10%–20%), with almost half of the babies die before their second birthday[3]. Preventing unintended pregnancy among HIV-positive women is a critical and cost-effective approach for primary prevention of mother-to-child transmission (PMTCT) of HIV[4]. A cost-effectiveness study has reported that a PMTCT strategy focused on increasing contraception among HIV-positive women could avert 29% more HIV-positive births than prophylactic nevirapine alone[5]. Preventing unintended pregnancy is a global public health priority for addressing maternal and child health problem in HIV hyperendemic settings, particularly the sub-Saharan Africa[6]. Central to this agenda is the prevention of unwanted pregnancy through increasing access to and use of effective contraception[4]. Even though the provision of contraceptive services to HIV-positive women is imperative in preventing unintended pregnancy[7], it is mostly seen neglected in several settings[8].

The emerging reality of HIV as a manageable chronic disease, with HIV-infected individuals anticipated to live longer and reach their reproductive years, has highlighted the importance of assessing the potential behavioral and biological impacts of antiretroviral therapy (ART) on contraceptive use[9,10]. In the Eritrean context, though HIV prevalence has reduced from 1.3% in 2005 to 0.7% in 2014, the mortality rate due to HIV is slightly high[11]. As per 2015 report of the Ministry of Health (MOH), the mortality rate due to HIV was 5.9%[12]. Contraceptive use helps HIV-positive women avoid unwanted pregnancies, and thus lowers the rate of new infections with a relatively low cost[13]. Yet, the current contraceptive prevalence rate in Eritrea stands at 8%[11]. Moreover, the prevalence of contraceptive use among HIV-positive women is unknown. This study is therefore designed to fill the gap, with the aim of assessing contraceptive use among HIV-positive women of reproductive age (15–49 y).
Patients and methods

Study design and setting

A descriptive and analytical cross-sectional study design was carried out from January through February 2019. The study was conducted at the ART clinic of Halibet hospital, a National Referral Hospital located in southern region of the capital Asmara. The clinic provides free health services related to routine HIV testing and counseling services. It also provides treatment and care interventions. During the time of the study period, the clinic was serving a total of 1131 HIV-positive patients out of whom 62.8% were women.

Sample size and sampling design

The source population were all reproductive age women (15–49 y) who were enrolled at HIV care service and were in active follow-up during the study period. The sample size was determined using a single population proportion by assuming that 50% proportion of the patients used contraception with 95% confidence interval and 5% margin of error. The final sample size was 196. Considering the expected sample size of 196 respondents, convenient sampling method was used to select respondents, that is respondents who were available at the time of data collection and who met the inclusion criteria were selected to be included in the sample. Those women aged 15–49 years, confirmed HIV positive, and who have been attending the ART clinic for at least 1 year were included.

Measurements and variables

Contraceptive utilization, defined as any modern contraceptive method used by women to delay or avoid pregnancy, was the dependent or outcome variable. The independent variables were demographic characteristics (including age, marital status, educational level, and occupation), reproductive variables (number of children, desire to have children), social factors (knowledge, use, awareness, and counselling about contraceptives, self-decision on contraceptive use, partner support), and clinical factors like duration on ART.

Data collection procedures

Self-developed and pretested questionnaire with open and closed-ended questions was used for the study. To address face and content validity of the questionnaire, pilot study was carried out in Halibet Hospital 1 month before the main study by taking 20 respondents. The questionnaire, consisting 4 sections has been translated in to the local language (Tigrigna), for coherency and better understanding. The first section dealt with demographic data (including age, marital status, educational level, income). The second section comprised questions related to knowledge, information on family planning counseling, use, and choice of contraceptives. The third section contained questions on information about ART treatment duration and knowledge about MTCT and PMTCT. The fourth section assed information about reproductive characteristics. After verbal and written informed consent was taken from the participants, data were collected through face interview.

Data analysis

Data was entered and analyzed using Statistical Package for the Social Sciences (SPSS), USA (version 22) software. After data was collected, variables such as age, number of children, and employment status were recoded. Following data cleaning for errors and missed data, descriptive statistics including frequency distributions such as percentages was computed for different variables. Bivariate analysis was also performed to see if there is any association between each of the independent variables and the outcome variable to select candidate variables for multivariate analysis. Multivariate logistic regression analysis was employed to identify significant factors associated with current contraceptive use. Results are illustrated in the form of text, tables and figures. Respondents who were using at least one modern contraceptive method or their male partners for the last 3 months were considered as “contraceptive users,” whereas those who did not use any of the contraceptives nor their partners were labelled as “contraceptive nonusers.” P-value of <0.05 was used as a cut point to confirm a statistical significant association between the independent variables and contraceptive usage.

Ethical consideration

Permission to carry out this study was sought from the School of Public Health and the study was approved by the Ministry of Health “Scientific and Research Ethical Committee.” Consent was obtained from the Medical Director of Halibet Hospital and the respective head of ART clinic. Verbal and written signed consent was obtained from individual participants. In order to make informed decision, sufficient information was given to each participant about the course, aims and benefits of the study. Confidentiality was strictly maintained for each piece of information and the interview was conducted in strict private place.

Results

Sociodemographic characteristics

This study involved 196 HIV-positive women of reproductive age with 100% response rate. The minimum and maximum age of the respondents was 18 and 48 years, respectively, with a mean age of 39.08 years (SD = 6.01). Nearly half (47.4%) of the participants’ attained secondary and above educational level. Majority of the respondents (84.2%) were married and about 16% did not had children. Half of the respondents (49.5%) did not know about family planning but almost all (99.5%) of the respondents had heard about at least 1 method of contraceptive (Table 1).

Reproductive factors

The median duration of respondents on ART was 7.5 years. More than half (55%) of the women did not have the desire for children in the future. About two-third (63.8%) of the women got information about contraception from health professionals, friends (25.5%), mass media (23%), and 2.6% from their family members.

Among those participants who were using contraceptives, nearly three fifth (58%) mentioned health facilities as their main source of contraceptive intake. Forty seven (24.2%) of them obtained their contraceptives from sources outside the health facilities, particularly from a shop. Health professional’s advice (27.3%), perceiving good to their health (36.4%), partner’s preference (18.2%), friends advice (6%), and the assumed prevention of re-infection with the use of condom (12%) were the main factors motivating women to use contraceptives. Among
those who were not using contraceptive, the main hindering factors were the desire to have a child (44.2%), followed by fear of side effects and interactions with ART drugs (17.8%) and 36.8% said that they were not sexually active. The variables are illustrated in Table 2.

**Prevalence of contraceptive utilization**

Out of the total 196 HIV-positive women attending the ART clinic, only 16.8% were found to use at least one type of contraceptive method (Fig. 1). Two-third of them (66.7%) have ever using contraception for the purpose of limiting birth and 33% for spacing child-birth. Among the current contraceptive users, about 46% were using condoms, followed by injectable (36.4%), and pills (15.2%). More than a fifth of the participants (21.1%) have a desire to continue or use family planning in the future. Condom (47.5%), injections (35%), and pills (10%) are the most desired contraceptive methods in the future.

**Predictors of contraceptive utilization**

Both bivariate and multivariate analysis was done to show the influence of demographic and social factors. Age, marital status, desire for children, family size, and prior counselling about contraception were significant factors at the bivariate level. After adjustment through multivariate logistic regression, younger age [adjusted odds ratio: 1.6 (1.1, 7.8), P = 0.04], married [adjusted odds ratio: 2.1 (1.4, 7.7), P = 0.001], having more than 4 child [1.5 (1.1, 9.3), P = 0.03], and counselling about contraception [1.8 (1.1, 5.4), P = 0.02] were the only factors influencing contraception use. Educational level and

| Variables                                      | Frequency | Percent (%) |
|------------------------------------------------|-----------|-------------|
| Age (M ± SD: 39.08 ± 6.01) (y)                |           |             |
| 18–24                                         | 2         | 1           |
| 25–34                                         | 39        | 19.9        |
| 35–49                                         | 155       | 79.1        |
| Educational level*                            |           |             |
| Elementary and below                         | 49        | 25          |
| Middle level                                  | 54        | 27.6        |
| Secondary and above                          | 93        | 47.4        |
| Occupation or employment status               |           |             |
| Housewife or unemployed                       | 143       | 73          |
| Daily laborer                                 | 6         | 3.1         |
| Government employee                          | 27        | 13.8        |
| Private organization employee                | 20        | 10.2        |
| Marital status                                |           |             |
| Married                                       | 165       | 84.2        |
| Not married                                   | 31        | 15.8        |
| Number of children                            |           |             |
| None                                          | 32        | 16.3        |
| 1–3                                           | 130       | 66.3        |
| 4 and more                                    | 34        | 17.3        |
| Awareness about family planning               |           |             |
| Yes                                           | 97        | 49.5        |
| No                                            | 99        | 50.5        |
| Ever heard of contraceptives                   |           |             |
| Yes                                           | 195       | 99.5        |
| No                                            | 1         | 0.5         |
| Ever been advised about contraceptives by ART provider | |              |
| Yes                                           | 57        | 29.1        |
| No                                            | 139       | 70.9        |
| Awareness about MTCT of HIV                   |           |             |
| Yes                                           | 193       | 98.5        |
| No                                            | 3         | 1.5         |

*Elementary and below (Grade illiterate-5), middle level (Grade 6–8), secondary and above (9+).

ART indicates antiretroviral therapy; MTCT, maternal to child transmission.
occupational difference did not have significant influence (Table 3).

**Discussion**

**Contraceptive usage**

HIV infected women, like other women should be offered a wide range of contraceptive methods in order to make informed choices regarding their reproductive health[14]. This study attempted to assess utilization of modern contraceptives among HIV-positive women in the ART clinic of Halibet Referral Hospital. It is the first study examining contraceptive use among HIV-infected women in Eritrea. The overall utilization of any contraceptive method among the studied women was 16.8%. Even though the study showed better contraceptive use among HIV-positive women than the general population in Eritrea (8%), the finding is lower than studies reported in Ethiopia[15], and Uganda[16]. The lower utilization rate in our study might be attributed to the poor counselling programs, that is, seven tenth of the participants responded that they have never been counseled about contraceptives. This shows the need to promote the counseling programs in the respective clinics. It might also be due to unavailability of variety contraceptive methods in the setting. The desire to have children in the future, fear of contraceptives interaction with ART, and the fact of being not sexually active were additional reasons decreasing contraception use. Fertility desires and fear of experiencing contraceptive related side effects are common factors limiting contraception utilization in developing countries[17,18]. Almost all participants had heard about at least one modern contraceptives. This implied that knowing about contraceptives was wide spread among the study participants. About two-third of the participants acquired contraception knowledge from health professionals. While some studies indicated family and peers influence with regard to contraception knowledge[19], others reported the importance of media[20]. The most widely known and used contraceptive methods were condoms, injectable and pills. The reason for the wide spread of condom might be due to its free availability at the ART clinic. Only one participant have used Intra uterine devices. This indicates that long-acting reversible contraceptives are rarely used in the study setting. However, in our neighbor country Ethiopia, Intra uterine devices were the most commonly used method[15]. There should be a reinforcing strategies to institutionalize all varieties of contraceptive methods in Eritrea. Frequent use of condom was reported in several studies conducted elsewhere[21–23]. Similarly, male condom was the most widely used method of contraceptive in our study. The frequent use of condom might be due to health care provider’s recommendation of condom use for dual protection of HIV and unintended pregnancy. The preference for condoms can also be due to its free availability, that is, patients can just take condoms from the boxes displayed in public places at all clinics and hospitals. Absence of side-effects like amenorrhea and hyper-menorrhea associated with hormonal contraceptive methods might also increase condom preferences. Having adequate knowledge and awareness about contraception, health professionals and friends’ advice, partner preference, and having a full autonomy in decision making were among the main contraception motivating social factors.

| Variables                  | N (%) | Contraceptive Users (%) | COR (95% CI) | AOR (95% CI) | P    |
|----------------------------|-------|-------------------------|--------------|--------------|------|
| Age (<y)                   |       |                         |              |              |      |
| <35                        | 41 (20.9) | 20 (48.8)              | 2.9 (1.3, 11.3)** | 1.6 (1.1, 7.8) | 0.04 |
| 35+                        | 155 (79.1) | 13 (8.3)               | Ref          |              |      |
| Marital status             |       |                         |              |              |      |
| Married                    | 165 (84.2) | 31 (18.8)              | 2.3 (1.8, 9.9)** | 2.1 (1.4, 7.7) | 0.001 |
| Single                     | 31 (15.8)  | 2 (6.5)                | Ref          |              |      |
| Educational level          |       |                         |              |              |      |
| Primary                    | 103 (52.5) | 20 (19.4)              |              |              |      |
| Secondary +                | 93 (47.5)  | 13 (13.6)              | 0.4 (0.1, 6.6) |              |      |
| Desire of children         |       |                         |              |              |      |
| Yes                        | 89 (45.4)  | 11 (12.3)              | Ref          |              |      |
| No                         | 107 (54.6) | 22 (20.6)              | 2.5 (1.4, 8.9)** | 1.4 (1.0, 6.2) | 0.07 |
| Number of children         |       |                         |              |              |      |
| 3 and below                | 162 (82.7) | 19 (11.7)              | Ref          |              |      |
| 4 +                        | 34 (17.3)  | 14 (41.2)              | 3.7 (2.2, 14.1)** | 1.5 (1.1, 9.3) | 0.03 |
| Duration of ART            |       |                         |              |              |      |
| Up to 5 y                  | 70 (35.7)  | 11 (15.7)              | Ref          |              |      |
| 6–14 y                     | 126 (64.3) | 22 (17.5)              | 1.6 (0.2, 5.7) |              |      |
| Counselling about contraception |   |                       |              |              |      |
| Yes                        | 57 (29.1)  | 19 (33.3)              | 2.9 (1.3, 7.6)** | 1.8 (1.1, 5.4) | 0.02 |
| No                         | 139 (70.9) | 12 (8.6)               | Ref          |              |      |
| Employment status          |       |                         |              |              |      |
| Employed                   | 53 (27)    | 9 (17)                 | 1.2 (0.1, 6.3) |              |      |
| Unemployed                 | 143 (73)   | 24 (16.7)              | Ref          |              |      |

AOR indicates adjusted odds ratio; ART, antiretroviral therapy; CI, confidence interval; COR, crude odds ratio; N, frequency; Ref, reference.

**P < 0.05**

**P < 0.001**

Table 3: Factors influencing contraceptive utilization, Asmara, Eritrea 2019.
Sociodemographic factors associated with contraception use

Varied factors comprising individual, socioeconomic, cultural, and religious factors have found to affect contraception use [24]. Age is one of the most important demographic factor affecting the use of contraceptives. Findings from similar study reported a decrease in contraception use when age increases [25,26]. Consistently, younger women (age below 35 y) were more likely to be users of contraceptives than the older ones in our study. This difference might be due to the expectation of women to physiological cessation of menses and fear of side effects as their age increases. It is also suggested that older women have a high chance of being separated or divorced from their regular partner so that they might not be sexually active to use contraception [27,28]. Evidence indicate that women who have higher education and good employment status were found to use contraceptives more frequently [23,29]. Contrasting the relationship between education and the use of contraception was not significantly appreciated in our study. Surprisingly, contraception use was very low among highly educated women. A few proportion of those women who had finished secondary education and higher were contraceptive users.

Several studies indicated that women who are married, or cohabiting seem to use family planning more likely compared to those who are single [30–32]. Consistently, our findings revealed higher contraceptive use among married women than those who were single. Married women were twice more likely to use contraceptives than the single women. This might be due to the fact that married women will have high probability of having regular sexual intercourse, and thus fear of pregnancy than those who are single. Number of children or family size was also statistically significant with utilization of contraceptives. Women having 4 and more children were more likely to use contraceptives than those who had less than 4 children. This might be due to the fact that women with low family size could have higher desire to have children. This findings is consistent with findings from Uganda [33]. This results indicate social desirability of more children in the region, which could affect women’s reproductive health negatively. For instance, the total fertility rate in Eritrea stands at 4.8 child per woman [34]. Equally important, regular counselling of women about contraception while providing ART significantly influenced their utilization. Yet, majority of the women reported lack of counselling programs, an area requiring further implementation.

Limitations of the study

Generally, the present study provided a snapshot picture regarding the pattern of contraceptive use among HIV-positive women. Nevertheless, the findings should be interpreted in the light of the following limitations. Firstly, the study was limited to single center and only quantitative data was used. Therefore, multicenter study with mixed type of study designs is recommended to fill the gap. Secondly, the study was conducted using convenient sampling method. Hence, generalization about the general population might not be possible. Thirdly, being the study adopted cross-sectional, causality relationship could not be established.

Conclusion

Utilization of contraceptives among the participants was low (16.8%). Being young, married, regularly counselled about contraceptives, and having more than 4 children were factors facilitating contraceptive use. Policy makers should design counselling programs to increase utilization of contraceptives among HIV-positive women. Providing variety contraceptive methods helps women to make informed choice. Population based study on contraceptive use among HIV-positive women should be conducted at national level.

Ethics approval and consent to participate

Ethical approval was obtained from the “Scientific Research and Ethical Committee” of the Ministry of Health after taking an official permission from the School of Public Health, Asmara College of Health Sciences (ACHS). The purpose of the study was explained to the study participants at the time of data collection and informed consent was secured from each participant before the start of data collection. Confidentiality was ensured by excluding names or other personal identifiers in the data collection tool. The right of the participants to refuse participation or not to answer any of the questions was respected.

Consent for publication

This manuscript has not been published elsewhere and is not under consideration by another journal. All authors have approved the final manuscript and agreed for its publication.

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Author contribution

All authors participated in all phases of the study including topic selection, design, data collection, data analysis and interpretation. I.M.I. and S.J.W. contributed in critical revision of the manuscript. All the authors read and approved the final manuscript.

Conflicts of interest disclosure

The authors declare that they have no financial conflict of interest with regard to the content of this report.

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