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HIV status and contraceptive use among women of reproductive age group attending a secondary health facility in South-West Nigeria

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Abstract: Background: Globally, in 2015, about 17.8 million women were living with HIV/AIDS (WLHA), of which about 80% were in their reproductive age and lived in sub-Saharan Africa. Women living with HIV/AIDS are advised to limit family size and have access to the use of safe and effective contraceptive methods. We investigated the association between HIV status and contraceptive use.

Methods: This study was a cross-sectional comparative study of 1,000 reproductive age women attending the antiretroviral (ART) and general outpatient clinics of State Specialist Hospital, Akure, South-West Nigeria. Data were collected using self-administered questionnaires. Odds ratio and chi-square were calculated, and multiple logistic regression was also done with the level of significance set at <0.005.

Results: HIV-positive women were significantly more likely to have used contraception compared to negative women (59.7% vs. 48.0%, p=<0.001; OR 1.61, 95 % CI:1.24-2.08). Condom use was also significantly more likely among HIV-positive women than HIV-negative women (70.4% vs. 39.1%, p=<0.001; OR 3.53, 95 % CI: 2.65-4.68). However, only 110, 33.3%, of HIV-positive women reported consistent condom use. The unmet need for contraception among HIV-positive women was higher than that among HIV-negative women (17.1% vs. 14.8%), but this difference was not statistically significant (p=0.700).

Conclusion: There is a need to promote consistent condom use among WLHA, and also improve their access to safe and effective contraception, to reduce the rate of unintended pregnancy, limit transmission of HIV from an infected to a non-infected partner, as well as the mother to child transmission of HIV among HIV-positive women

Keywords: HIV, Women, Contraception, Nigeria.

Introduction

Globally, in 2015, there were an estimated 17.8 million women (15 years and older) living with the human immunodeficiency virus (HIV)/acquired immunodeficiency syndrome (AIDS) (WLHA), constituting 51% of all adults living with HIV; 80% of these live in sub-Saharan Africa (SSA) (UNAIDS, 2017). Nigeria has the second-highest global burden of HIV. Approximately 3.5 million people are living with HIV infection in Nigeria, and over 60 % of them are women of

reproductive age (NACA, 2015).

Studies have shown that HIV-positive women experience more obstetric complications than their HIV-negative counterparts. They have a higher risk of miscarriages, anaemia in pregnancy, puerperal infections, and postpartum haemorrhages from their background anaemic status. Pregnant HIV-positive women also have an increased risk of dying from tuberculosis (Loutfy *et al.,* 2009; Magadi and Agwanda, 2010).

Another challenge faced by WLHA like other women, are unintended pregnancies (this includes both unwanted and mistimed pregnancies). Unintended pregnancies for all women can have negative health, economic and social consequences for the woman and child, including but not limited to increased maternal morbidity and mortality, poor breastfeeding and nutritional status, as well as infant mortality. In WLHA, there is an additional risk of vertical transmission of HIV to the child (Kimani *et al.*, 2015).

Although the risk of mother-to-child transmission is reduced by prophylactic treatment, mother-to-child transmission (MTCT) still accounts for over 90% of new HIV infections among children, with 90% of MTCT occurring in SSA. About one-half of these children die before their second birthday in the absence of appropriate treatment. Nigeria accounts for about 30% of the global burden of MTCT, with an MTCT rate of about 32%, and about 75,000 new infant HIV infections per annum (WHO, 2007).

Nigeria has a total fertility rate of 5.9 births per woman, yet only 11.1% of married women use modern contraceptives, suggesting that HIV-positive women in Nigeria are likely to have a low contraceptive prevalence rate, and a high prevalence of unwanted pregnancies (Akinyemi *et al.,* 2010; Adebayo *et al*., 2014; Ayoola *et al.,* 2014). Available evidence from studies conducted in and outside Nigerian shows that though approximately 70% of HIV-positive women are sexually active, their use of effective contraception is variable, and unplanned pregnancy and its complications are common (Oladapo *et al.*, 2005; Iliyasu *et al.,* 2009; Kimani *et al.*, 2015; Speizer and Lance, 2015). The main objective of this study was to assess and compare contraceptive use among HIV-positive and negative women of reproductive age.

Methods

This was a hospital-based comparative cross-sectional survey carried out in Akure, Ondo State, South-West Nigeria. The study was conducted among women of the reproductive age group (15-49 years old) attending the antiretroviral therapy (ART) and general outpatient department clinics of State Specialist Hospital, Akure, Ondo State, South-West Nigeria, from June to August 2017. The HIV-positive respondents must have been diagnosed HIV-positive for at least one year to be included in the study. Women who were yet to attain menarche, those who had had a hysterectomy, bilateral ovariectomy, or those who were menopausal were excluded from the study.

500 HIV-positive and 500 HIV-negative women were recruited for the study. The study participants were selected using systematic sampling. The approximate average number of women of childbearing age attending each clinic monthly was calculated from available records. The first participant was randomly selected by balloting and every third woman that consented was selected until the sample size was reached.

Data were collected with the use of self-administered semi-structured questionnaires.

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The data obtained were analyzed using SPSS version 23 and Epi Info. Odds ratio and associations between categorical independent and outcome variables were assessed where applicable using chi-square with the level of significance set at <0.05. Multiple logistic regression was also done to determine the predictors of current contraceptive use, with the level of significance set at <0.05.

Unmet need for family planning was calculated using the formula: UL+ US = U, where:

U = the number or percentage of women with unmet need for family planning (FP);

UL = the number or percent of women with an unmet need for limiting family size; and

US = the number or percent of women with an unmet need for child spacing.

Ethical approval for this study was obtained from the Ethical Review Board of State Specialist Hospital, Akure (Reference number: 150157). Consent was also obtained from the study participants before they completed the study questionnaire.

Results

Of the 1,000 questionnaires distributed, 934 were completed, giving a response rate of 93.4%. The response rate among HIV-positive women was 93.8% (469/500), while that of HIV-negative women was 93.0% (465/500).

Sociodemographic and obstetric characteristics of the women in the study

Table 1 shows the largest proportion of the HIV-positive women, 192 (40.9 %), were in the 35-44 years age group, while the largest proportion of the HIV-negative women, 226 (48.6 %), were in the 25-34 years age group. The majority of the women in both groups (71.2% HIV-positive and 85.2% of HIV-negative) were married. Other sociodemographic characteristics are shown in Table 1.

The median parity among all the women that had ever been pregnant was 3 (range=1-18). The median parity among HIV-positive women that had ever been pregnant was 3 (range: 1-18) while the median parity among HIV-negative women that had ever been pregnant was also 3 (range: 1-12). There was a statistically significant difference between the median number of living children for HIV-positive women (3 range: 1-9) and HIV-negative women (2 range: 1-8), (t=4.02; p<0.001).

Of the HIV-positive women, 121, 25.8%, had had an abortion in the past, while 100, 21.5%, of HIV-negative women had ever had an abortion. The majority (307, 65.5%) of HIV-positive women had a live birth in their last confinement, and so also HIV-negative women (231, 49.7%). Of the live births to HIV-positive women, 29, 9.4%, were HIV-positive, while 272, 88.6%, were negative. The HIV status of 6, 2.0%, of the children was unknown

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Table 1: Socio-demographic and Obstetric Characteristics of the Women

Variable	HIV-positive Freq (%)	HIV-negative Freq (%)
Age	**n=469**	**n=465**
15-24	18 (3.8)	78 (16.8)
25-34	166 (35.4)	226 (48.6)
35-44	192 (40.9)	109 (23.4)
≥45	93 (19.8)	52 (11.2)
Marital status	**n=469**	**n=465**
Single	70 (14.9)	59 (12.7)
Married	334 (71.2)	396 (85.2)
Separated/Widowed/Divorced	65 (13.9)	10 (2.2)
Highest level of education	**n=469**	**n=465**
Primary	82 (17.5)	19 (4.1)
Secondary School	248 (52.9)	159 (34.2)
Tertiary	139 (29.6)	287 (61.7)
Religion	**n=469**	**n=465**
Christian (Catholic)	57 (12.2)	122 (26.2)
Christian (Others)	398 (84.9)	314 (67.5)
Islam	14 (3.0)	29 (6.2)
Tribe	**n=469**	**n=465**
Yoruba	396 (84.4)	434 (93.3)

Igbo	44 (9.4)	14 (3.0)
Hausa	16 (3.4)	0 (0.0)
Others*	13 (2.8)	17 (3.7)
Median parity (Range)	3 (1-18)	3 (1-12)
Currently Pregnant?	**n=469**	**n=465**
Yes	68 (14.5)	204 (43.9)
No	401 (85.5)	261 (56.1)
Ever had an abortion?	**n=409**	**n=357**
Yes	121 (29.6)	100 (28.0)
No	288 (70.4)	257 (72.0)
Outcome of last pregnancy	**n=355**	**n=283**
Abortion	34 (9.6)	42 (14.8)
Stillbirth	14 (3.9)	10 (3.5)
Live birth	307 (86.5)	231 (81.6)
Number of children alive	**n=387**	**n=357**
0-1	76 (19.6)	126 (35.3)
≥ 2	311 (80.4)	231 (64.7)

**Ibibio, Idoma, Ebira, Urhobo, Calabar, Delta and Edo*

HIV-positive women's adherence to ART, partner status, and disclosure

The median length of time since diagnosis of HIV amongst the HIV-positive women was 4 years (range=1-19 years). The median number of years on antiretroviral drugs (ARV) was also 4 years (range 1-17 years). Of the HIV-positive women, 248, 52.9%, had good adherence to ART.

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Among the HIV-positive women, 411, 87.6%, had partners. Of those that had partners, 181, 42.0%, of the partners were also HIV-positive. Of the HIV-positive women, 317, 67.6%, had disclosed their status to their partner as shown in Table 2.

Table 2: HIV and ARV History of Women Living with HIV

Variables	**Frequency(%)**	**Frequency(%)**
Have Partners (N=469)	Yes	No
	411(87.6)	58(12.4)
Disclosure to Partner (N=411)	317(77.1)	94(22.9)
Adherence to ARV	Good	Poor
	248(51.9)	**221(47.1)**

Those with HIV-positive partners were twice more likely to have disclosed their status to their partners compared to those whose partners were HIV-negative or who didn't know the status of their partner (OR 1.95, 95% CI:1.18-3.21). Those who had disclosed their HIV status to their partners were twice more like to be adherent to ARV medications compared to those who had not (OR 2.16, 95% CI: 1.78-3.96). (Figure 1)

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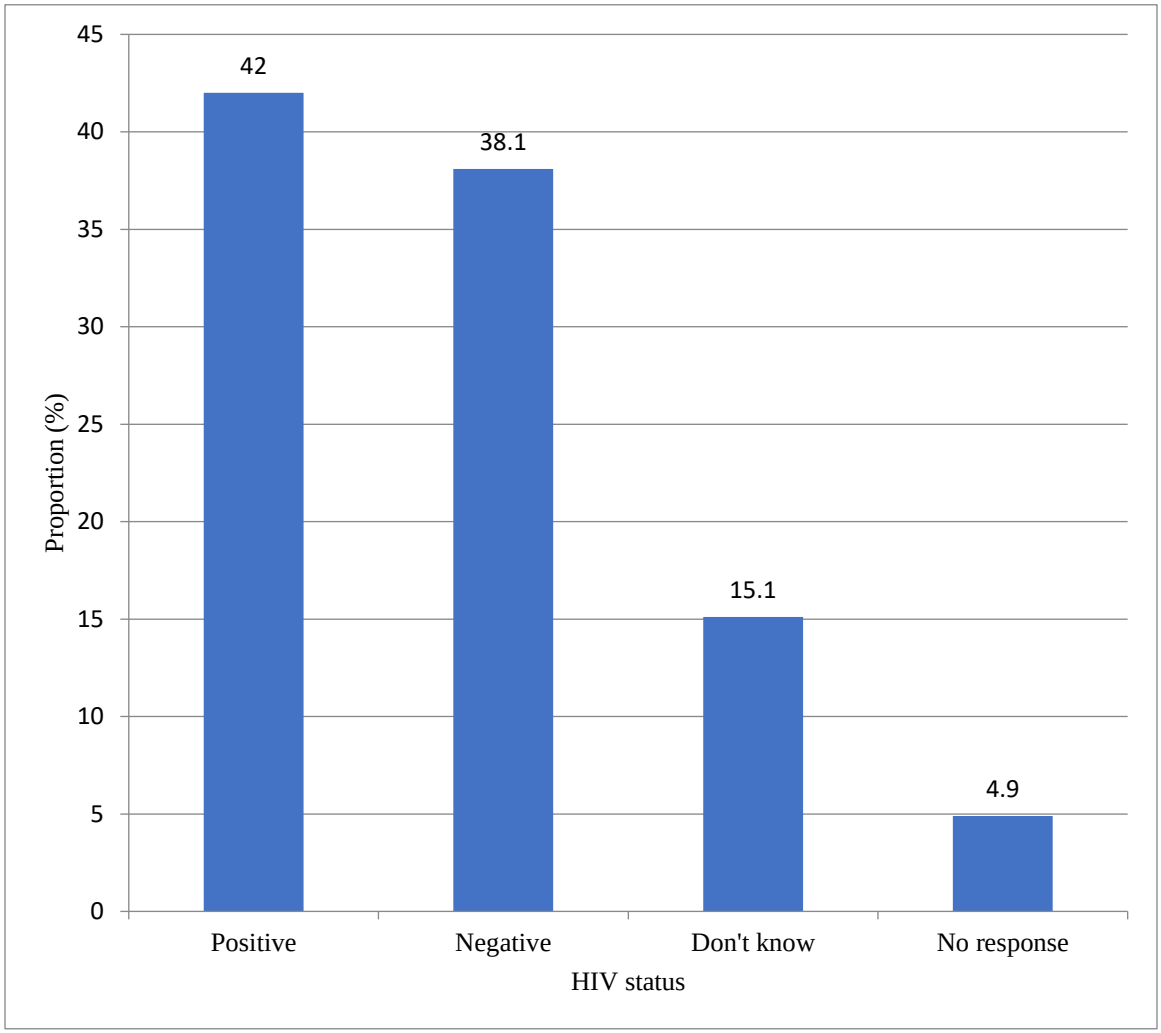

Figure 1: HIV status of partners of women living with HIV

Awareness of contraceptives

Only 793 (84.9%) of the respondents had heard of contraceptives. Out of those that have heard, 477(66.9%)) had heard from healthcare workers (Figure 2).

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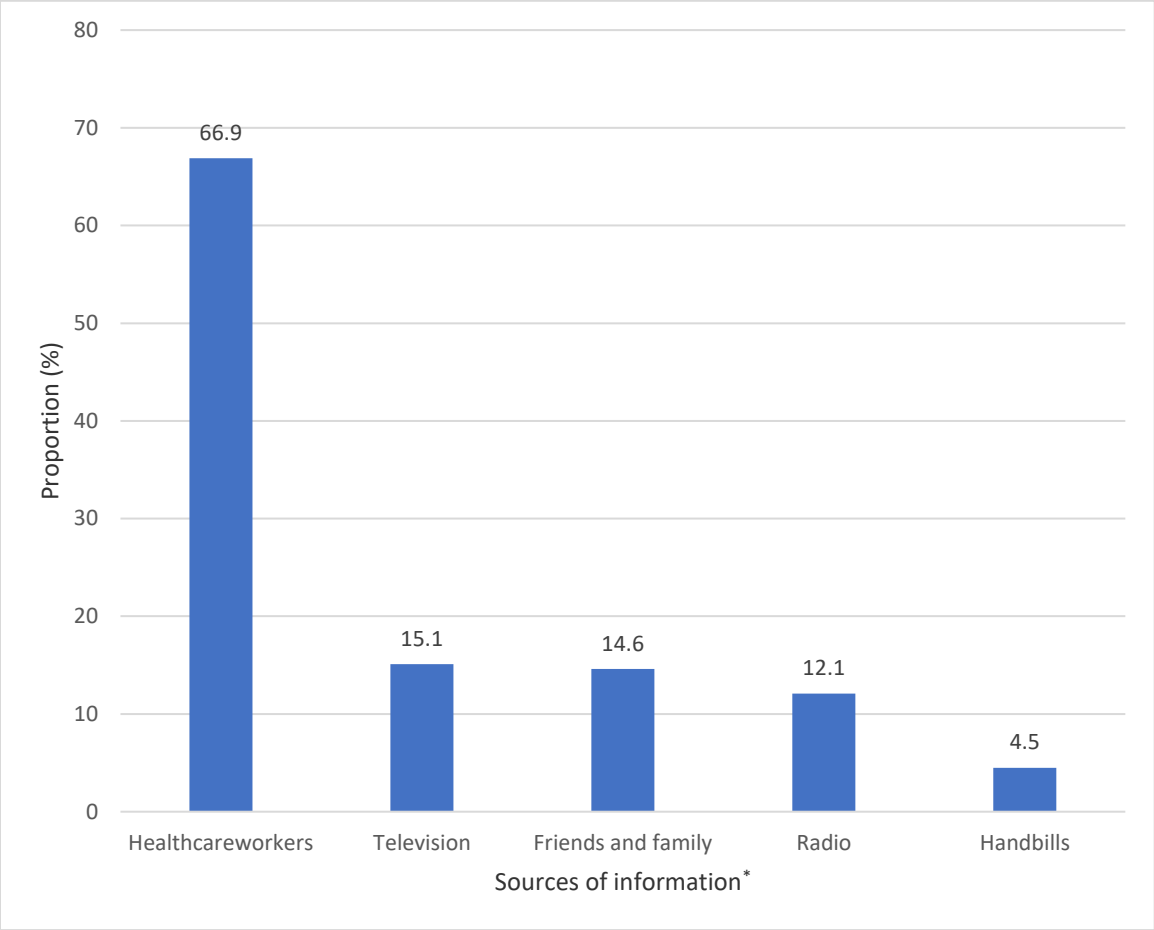

**Multiple sources in some respondents, hence total is >100%*

Figure 2: Sources of information on contraceptives among HIV -positive and negative women

The pattern of contraceptive use

The most common contraceptive amongst both HIV-positive (330, 70.4%) and HIV-negative women (182, 39.1%) was condoms. Whereas emergency contraception was the least utilized method of contraception by HIV-positive women (8, 1.7%), emergency contraception and male sterilisation were the least frequently used methods by HIV-negative women (3, 0.6% each) (Table 3).

Table 3: Contraceptive choices among HIV-positive and HIV-negative women

Contraceptives	HIV-positive, *n*=469 (%)	HIV-negative, *n*=465 (%)
Condoms	330 (70.4)	182 (39.1)
Injectables	49 (10.4)	73 (15.7)
Intrauterine devices	26 (5.5)	73 (15.7)
Implants	31 (6.6)	66 (14.2)
Pills	28 (6.0)	46 (9.9)
Female sterilisation	21(4.5)	20 (4.3)
Male sterilisation	19 (4.1)	3 (0.6)
Emergency contraception	8 (1.7)	3 (0.6)
No modern method	139 (29.6)	79 (17.0)

Out of all HIV- positive women, 77.4% (363) were at risk of getting pregnant. The rest were either pregnant or not sexually active for various reasons. Out of all HIV-negative women, only 51.8% (241) were at risk of getting pregnant.

Overall, more than one-half (503, 53.9%) of the women had ever used a contraceptive. HIV-positive women were significantly more likely to have used a contraceptive compared to negative women (59.7% vs. 48.0%, p=<0.001; OR 1.61, 95 % CI:1.24-2.08).

HIV-positive women were significantly more likely to use condoms than HIV-negative women (70.4% vs. 39.1%, p=<0.001; OR 3.53, 95 % CI: 2.65-4.68). After correcting for the use of contraceptives, HIV-positive women were still more likely (AOR 2.31, 95 % CI:1.98-2.79) to use condoms than negative women. Also, compared to HIV-

negative women, HIV-positive women were significantly more likely to always use condoms (33.3% vs. 21.4%, p=0.008). While 330, 70.4 % of HIV-positive women used condoms, only 110, 33.3% of them used them consistently. Only 61.8% (290) of HIV-positive women had heard of dual protection (Table 4).

Table 4. Contraceptive use and unmet need for family planning among HIV-positive and HIV-negative women

Variable	HIV-positive	HIV-negative	P-value	OR(95% CI)
Ever used contraceptives?	**n=469**	**n=465**		
Yes	280 (59.7)	223 (48.0)	0.001	1.61(1.24-2.08)
No	189 (40.3)	242 (52.0)		
Current contraceptive use	**n=363**	**n=241**		
Yes	224 (61.7)	162 (67.2)	0.167	
No	139 (38.3)	79 (32.8)		
Unmet Need	**n=139**	**n=79**		
	24 (17.1)	12 (14.8)	0.700	
Heard of Dual-Protection?	**n=469**	-		
Yes	290(61.8)	-		
No	179(38.2)	-		
Condom use	**n=469**	**n=465**		
Yes	330 (70.4)	182 (39.1)	0.001	3.53(2.65-4.68)
No	139 (29.6)	283 (60.9)		

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Frequency of condom use	**n=330**	**n=182**	
Rarely	69 (20.9)	43 (23.6)	
Occasionally	109 (33.0)	68 (37.4)	
Frequently	42 (12.7)	32 (17.6)	
Always	110 (33.3)	39 (21.4)	0.008
Type of condom	**n=330**	**n=182**	
Male only	242 (73.3)	130 (71.4)	
Female only	64 (19.4)	28 (15.4)	
Both	24 (7.3)	24 (13.2)	0.023

OR- Odds Ratio, CI- Confidence Interval

Unmet need for family planning

The overall unmet need for family planning in this study was 16.2 %. The unmet need for contraception among HIV-positive women was 17.1 %, and among HIV-negative women, it was 14.8 %. There was no significant difference in unmet contraceptive needs between HIV-positive and negative women ($\chi^2 = 0.148$, p=0.700) (Table 4).

Sociodemographic and obstetric predictors of current contraceptive use

HIV-positive women were more likely to be current users of contraceptives than HIV-negative women (OR 1.69, 95 % CI: 1.17-2.43). Compared to other tribes, Yorubas were more likely to be current users of contraceptives (OR 1.81, 95 % CI:1.27-2.19). Women with two or more children were more likely to be current users of contraceptives than women with one or no children (OR 2.71, 95 % CI: 1.87-3.94). On multiple logistic regression, only having two or more children was found to be a predictor of current use of contraceptives (AOR 3.31, 95 % CI:1.80-6.13). These findings are shown in Table 5.

Table 5: Sociodemographic and obstetric predictors of current contraceptive use

Variable	**Unadjusted OR**	**Confidence interval**	**Adjusted OR**	**Confidence interval**

HIV status				
Positive	1.69	1.17-2.43	1.33	0.68-2.60
Negative	Ref			
Religion				
Christian (Catholic)	0.74	0.22-2.24		
Christian (Others)	1.16	0.389-3.44		
Islam	Ref			
Educational level				
Primary	1.16	0.64-2.07		
Junior Secondary	1.35	0.74-2.45		
Senior secondary	0.95	0.62-1.47		
Tertiary	Ref			
Tribe				
Yoruba	1.12	1.27-2.19	1.05	0.44-2.50
Others*	Ref			
Marital status				
Married	1.81	1.12-2.91	1.29	0.57-2.92
Divorced/Separated/Widowed	2.89	0.99-8.43	0.77	0.25-2.33
Cohabiting	1.27	0.62-2.60	2.37	0.39-14.41
Single	Ref			

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Age group				
15-24	0.58	0.29-1.56		
25-34	1.08	0.65-1.79		
35-44	1.38	0.82-2.30		
≥45	Ref			
Number of living children				
≥2	2.71	1.87-3.94	3.31	1.80-6.13
≤1				

**Ibibio, Idoma, Ebira, Urhobo, Calabar, Delta, and Edo* *OR- Odds Ratio*

DISCUSSION

The high partner disclosure rate and the higher likelihood of partner disclosure among HIV-positive women whose partners were also positive, compared to positive women who were either unaware of their partner's HIV status or whose partners were negative, seen in our study, is similar to findings in South Africa and Ethiopia, where partner disclosure rates of 70.4 % and 76.7 % respectively, were reported (Varga *et al.*, 2006; Erku *et al.*, 2012). In Ethiopia, HIV-positive women who knew their partner's HIV status were 8.1 times more likely to disclose their HIV-positive status to their partners than those who did not know their partner's status (Erku *et al.,* 2012). The high partner disclosure rate in our study may be explained by the high literacy level of the women.

Our study also revealed that partner disclosure had a significant effect on adherence to ARV medications. A systematic review and meta-analysis by Dessie *et al.* (2019) similarly showed that patients who disclosed their status to their partners were 1.64 times more likely to have good adherence to ART compared to those who did not. This finding is also in line with that from a systematic review of factors associated with adherence to ART among HIV-positive adults in SSA (Heestermans *et al*., 2016).

Compared to the HIV-negative study arm, pregnancies amongst the HIV-positive women in this study were not associated with poorer outcomes. This negates findings by Onah *et al.* (2007) and Stratton *et al.* (1999) in Enugu, South-East Nigeria, and the United States of America (USA), respectively, both of which reported higher incidences of adverse pregnancy outcomes in HIV-infected women. Our observation may have been due to the good adherence to ART, seen in more than one-half of the HIV-positive women, which may also have been responsible for the low rate of paediatric HIV infection in the HIV-positive study group. Both Onah *et al.* (2007) and Stratton *et al.* (1999) concluded that adverse pregnancy

outcomes in HIV-infected women were associated with untreated maternal HIV infection, low maternal CD4 count, and paediatric HIV infection.

Our study further revealed that HIV-positive women were significantly more likely to have used a contraceptive compared to HIV-negative women. This is contrary to the observation of low contraceptive use among HIV-positive women by Peltzer *et al.* (2009). Our findings however corroborate the finding of McCoy *et al.* (2014) in Zimbabwe, who reported that contraceptive use amongst HIV-positive women was 54.7%, compared to 46.6% amongst HIV-negative women. The significantly higher use of contraception among HIV-positive women may be due to the fact that they have more contact with healthcare services compared to HIV-negative women. More so, the prevention of unplanned pregnancies through the use of contraception is one of the cardinal pillars of primary prevention of MTCT of HIV (FMOH, 2014).

Only 61.8 % of HIV-positive women in this study were aware of dual protection. Dual protection, the simultaneous use of an effective contraception method with consistent condom use, has been advocated to reduce the risk of unplanned pregnancy, horizontal transmission of HIV to a non-infected partner, the transmission of the resistant virus to a partner with HIV infection, and acquisition of other sexually transmitted infections (STIs) including high-risk human papillomavirus (HPV) types (Mitchell and Stephens, 2004).

The finding that HIV-positive women were significantly more likely to use condoms in our study compared to their HIV-negative counterparts is not unexpected because condom use will protect them against the acquisition of new strains of HIV and other STIs. This is even more important in serodiscordant couples.

Although most HIV-positive women used condoms, an unacceptably low proportion of them used condoms consistently. A high degree of protection against HIV sexual transmission is provided by consistent and correct condom use, while inconsistent or incorrect use is not protective. Most global HIV transmission occurs because condoms are not used at all during sexual intercourse (Mitchell and Stephens, 2004).

Even though not significantly, the unmet need for contraception was higher among HIV-positive women than HIV-negative women in our study. The higher unmet need for family planning among HIV-positive women may have been responsible for the statistically significantly higher median number of living children among HIV-positive women compared to HIV-negative women, as well as the higher abortion rate observed in the former compared to the latter. The high median parity observed among HIV-positive women in our study may be attributed to a combination of the high unmet need for family planning and the high rate of inconsistent condom use in this cohort.

CONCLUSION AND RECOMMENDATION

Our study has revealed that aside from the low level of awareness of dual protection, and the high rate of inconsistent condom use, HIV-positive women in our study have a high unmet need for contraception to limit or space pregnancies. The implication of these findings is that these women have heightened risks of unplanned pregnancies, with their children also at higher risk of becoming HIV infected. Prevention of unintended pregnancies among HIV-positive women is an essential strategy in the PMTCT of HIV. Our findings, therefore, suggest that there is a need to improve family planning accessibility and promote dual protection among HIV-

positive women. These will enable them to make informed reproductive choices, limit the transmission of HIV from an infected to a non-infected partner, as well as reduce the burden of paediatric HIV infection.

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