

Condom Use in Male Partners and Associated Factors Among HIV-positive Women Who Accessed PMTCT Services During Pregnancy in Jos, Nigeria

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Abstract: Despite being on antiretroviral therapy, during unprotected sex, a HIV-infected pregnant woman can transmit HIV not only to a HIV-negative sexual partner but also pose a risk for reinfection with new or resistant viral strains between her and a HIV-positive sexual partner, and ultimately to her baby. Condom use is a recognized strategy to reduce this risk if practiced consistently. This study set out to determine condom use and associated factors among a cohort of women who attended PMTCT clinic in Jos University Teaching hospital. Methods: Ninety-six enrolled women provided information about themselves and their male partners via a questionnaire, and other relevant information was obtained from their hospital records. Data obtained was analyzed using Epi info version 7 (CDC Atlanta, GA). The mean age of the women was 36.4±4.5 years. They were predominantly married (90.6%), Christians (75.0%), and educated above primary school level (88.6%). The mean age of the male partners was 45.3±6.1 years and over half of them (57.3%) were HIV-positive. The prevalence of consistent condom use in the participants was low (26.0%). Only 4.2% of male partners had ever received counselling in the PMTCT clinic. Factors significantly associated with condom use were younger age of male partner (mean ± SD=43.0±4.7 years), younger age of pregnant women (mean ± SD=34.2±3.3 years), Christian faith of the women, male partners having ever accompanied their pregnant woman for counselling in the PMTCT clinic and viral load of < 1000 copies/ml (P value=0.0290, 0.0035, 0.0440, 0.0227 and 0.0045 respectively). The practice of consistent condom use among male partners of HIV-positive pregnant women attending PMTCT clinic in JUTH was low, suggesting the need for improved strategies to optimize its usage. Involvement of male partners in PMTCT counselling is significantly associated with consistent condom use and should therefore be advocated to augment efforts towards fighting sexual and perinatal HIV transmission.

Keywords: Condom, HIV, PMTCT, Male Partner, Nigeria

1. Introduction

Infection with the Human Immunodeficiency Virus (HIV) is a global pandemic that has caused over 32 million deaths

with approximately 38 million people currently living with HIV [1]. New infections contribute to the increasing numbers of people living with HIV (PLWHIV), and annual global statistics recorded 1.7 million new infections with HIV by the end of 2018 [2]. This is of major public health concern. The

burden of HIV varies across different regions of the world, with sub Saharan Africa experiencing the most severe burden, having 1 in every 25 adults living with the disease [1]; a ratio that reflects two-thirds of the world's population of PLWHIV. Nigeria belongs to this region, and in addition to having one of the highest rates of new infections in sub Saharan Africa, also accounts for the second largest epidemic globally [3]. The number of people newly infected with HIV in Nigeria rose from 120,000 in 2010 to 130,000 in 2018 [4].

Transmission of HIV via the sexual route, particularly the heterosexual route is the commonest route of spreading the disease and Nigeria is not left out in this trend with heterosexual transmission being the commonest route of spread followed by vertical transmission or mother-to-child transmission (MTCT) [5, 6]. The proper and consistent use of condoms has been established to be a key strategy in reducing the sexual transmission of HIV and other sexually transmitted infections (STIs). Sexual transmission of HIV can occur during unprotected sex between HIV-infected and non-infected persons. The ability of HIV to exist as different strains and additionally to undergo mutation when exposed to antiretroviral medication makes it possible for reinfection with a new strain to occur between two PLWHIV when they have unprotected sex, even when they are on antiretroviral therapy (ART) [7, 8]. This is more probable when there is transmission of new or mutant HIV strains different from the original strains present in the sexual partners. Reinfection poses the risk of acquisition of new HIV strains with inherent resistance to hitherto effective ARV regimen thereby rendering the drugs ineffective in suppressing viral replication. This is often accompanied by a resultant unchecked flourishing of the resistant strain and increase in viral load, which in a pregnant woman may enhance the vulnerability towards MTCT [7, 8]. Though a variety of factors including high viral load are known to be associated with the risk of MTCT, high viral load has long been identified as the only independent risk factor [9–11]. Also with unprotected sex, there is an accompanying risk of acquisition and transmission of STIs, which enhance the potential for HIV transmission [12, 13]. The same risky sexual behaviors promote the acquisition of both infections, and this era of availability of ART has unfortunately conferred an accompanying diminished fear of HIV thereby leading to a reciprocal upsurge in risky behaviors [14].

A pregnant woman can transmit HIV to her child during pregnancy, at delivery and while breastfeeding. The risk of transmission is higher when the woman has an unsuppressed viral load and where the woman carries a resistant strain, her baby can acquire that resistant strain. A majority of HIV infection in children (<14 years) is contributed by MTCT of HIV, and a baby born to a HIV-positive woman who is not on ARV has a 15% - 45% chance of acquiring HIV from the mother [15]. This risk can be reduced to 5% with the use of ART and other supportive interventional strategies including condom use [16]. PMTCT utilizes a comprehensive package geared towards the elimination of pediatric HIV by enhancing maternal, sexual and reproductive health services

of which condom use is a part.

As with HIV infection, pregnant women who get infected with other STIs can also transmit same to the fetus during pregnancy (syphilis, cytomegalovirus) or at the time of delivery when the baby passes through the birth canal (gonorrhoea, cytomegalovirus, chlamydia, and genital herpes). The correct and consistent use of condoms in pregnancy is therefore not only important for protecting a pregnant woman and her partner's health but also key to protecting her baby from the consequences of unprotected sex. Actualizing the practice of safer sex involves not only the pregnant woman but her male partner as well in order to achieve the PMTCT goals [17].

Studies across various countries and geographical regions of the world, both developed and underdeveloped alike, including Nigeria have shown that unprotected sex is prevalent in PLWHIV; whereby condoms are either not used at all or they are used inconsistently with only very few consistent users [18-28]. This unsafe practice continues during pregnancy even among PLWHIV on ART [20, 22, 29-31]. In many parts of Africa, the dynamics of tradition and culture translate to men being the decision makers, thus requiring women to seek male partner consent to access or uptake services relating to their sexual and reproductive health [31, 32]. Condoms are recommended for use in PLWHIV as part of safer sex practices to lower the risk of unplanned pregnancy, HIV and other STI transmission including MTCT and reinfection in PLWHIV [33, 34]. However, researchers have documented that PLWHIV have proffered their being already pregnant or infected with HIV as reasons for not using condoms [32, 35].

Pregnant women who receive PMTCT care are expected to have received counselling on HIV prevention strategies (including condom use) and therefore predicted to be more likely to practice consistent condom use with their male partners. This study set out to assess the prevalence of condom use and associated factors in women who accessed PMTCT services at APIN center JUTH. The findings reflect the effectiveness of PMTCT care in promoting condom use.

2. Materials and Methods

2.1. Study Area

The study was conducted in the PMTCT clinic of AIDS Prevention Initiative Nigeria (APIN) center of Jos University Teaching Hospital (JUTH), located in the urban city of Jos the capital of Plateau state, Nigeria. The center is an ART facility that provides comprehensive HIV care services on an outpatient basis to pregnant women, adults and children/adolescents in PMTCT, Adult and Pediatric clinics respectively as well as counselling & testing, family planning and laboratory services. Health education and preventive care counselling is provided in all the clinics Patients from within Jos and neighboring cities and states access this service. Since 2004, the center has cared for over 20,000 patients cumulatively with about 5,000 of them in the PMTCT clinic. The PMTCT Unit was integrated into the HIV care services to cater to issues related to maternal and child

health in the fight against HIV. Condom use is promoted at the facility, and male condom was the main type available for use and provided free to patients.

2.2. Study Population

The study population was made up of HIV-infected women who accessed PMTCT services in JUTH during pregnancy within the preceding year.

2.3. Study Design

The study was a hospital based cross sectional study carried out in the PMTCT clinic of JUTH.

2.4. Patient Recruitment

Consecutively, 96 consenting women who had had PMTCT in their last pregnancy within the previous one year and were linked to a single male partner during that time, who were not very ill and presenting in the PMTCT clinic for child follow up visit in November/December 2019 were recruited. Sociodemographic and HIV-related information about themselves and their male partners were obtained using a questionnaire. Condom use was defined as correct and consistent use of male condom with every sexual encounter. This was categorized by responses as follows: ‘Yes all the time’ (with every sexual encounter), ‘Yes sometimes’ (only

with some sexual encounters), or ‘Not at all’ (never with any sexual encounter). Only the response ‘Yes all the time’ was considered as consistent use of condoms. Data was extracted from electronically stored records for patient routine care to obtain information on maternal ART adherence log and viral load at time of delivery.

2.5. Ethical Consideration

Ethical clearance was obtained from the JUTH Ethical Review Committee before conducting the study. Permission to carry out the study and access patients electronic records was sought from the Principal Investigator of APIN center and the APIN head office. Patient anonymity and confidentiality was maintained.

3. Data Analysis

Data was analyzed using Epi info statistical software package version 7 (CDC Atlanta, GA). Qualitative data was presented as frequencies and percentages. Quantitative data was presented as mean and standard deviation. Chi square, Fischer’s exact test and Students t-test were used to establish any relationship between variables. A 95% confidence level was used and a p value of less than or equal to 0.05 was considered statistically significant.

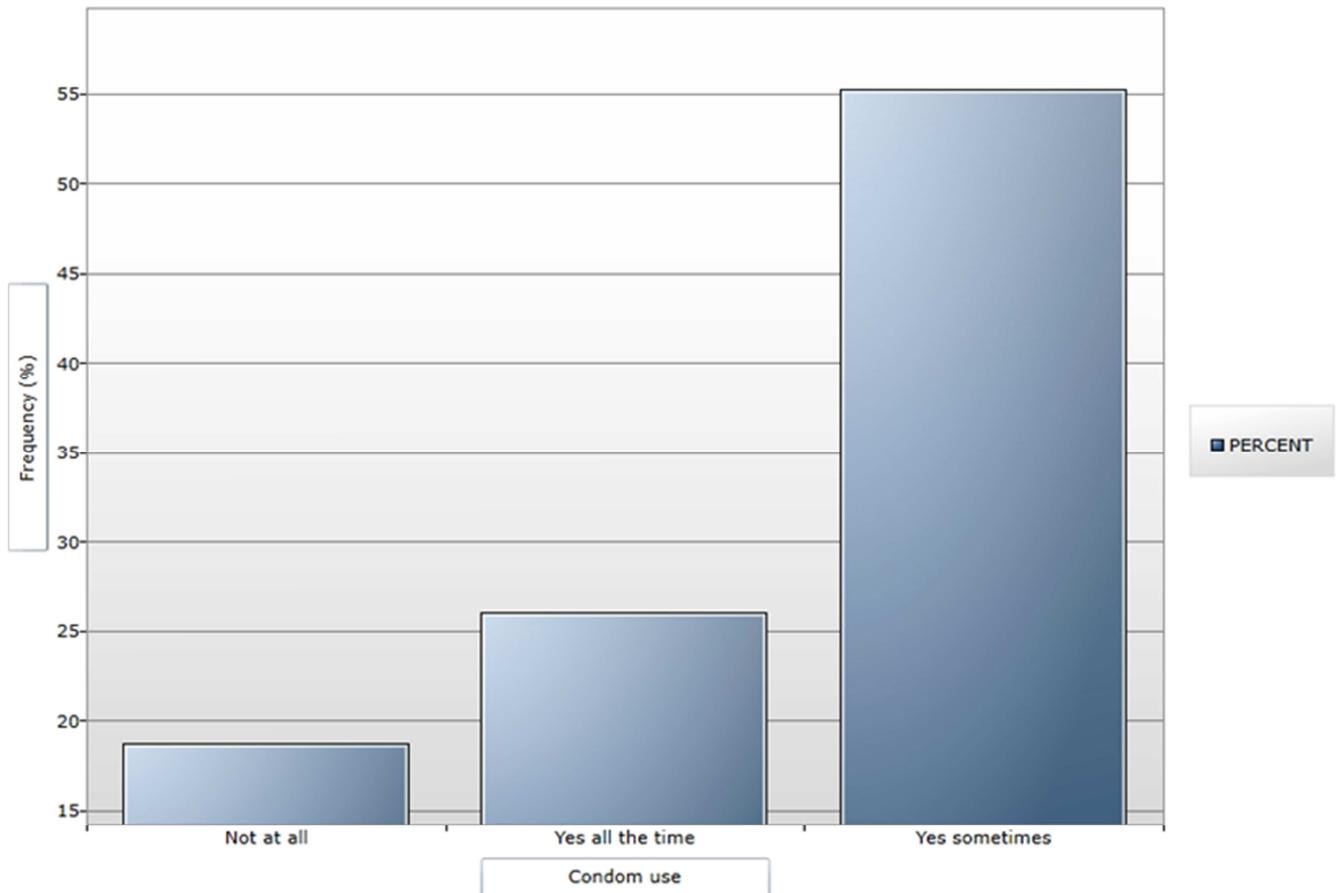


Figure 1. Consistency of condom use among male partners of women who accessed PMTCT services.

4. Results

4.1. Sociodemographic/HIV-related Characteristics

Data of 96 participants and their male partners was analyzed. Table 1 shows the mean age of the women was 36.4±4.5 years. A smaller proportion of them (37.5%) had enrolled for PMTCT in the first trimester. Most of the women were Christian (75%), married (94.8%), had a parity of 4 or less (76%), had obtained education above primary level (88.6%), were employed (government/self, or engaged in a business/trade) and were on first line ART regimen (83%). The mean age of the male partners was 45.3±6.1 years. Most of the male partners were Christians (70%), had educational status above primary level (92.7%), were employed (government/self), engaged in a business/trade or farming (96.9%). Only 39.0% of the women had used contraception prior to conception. Over two-thirds of the women (68.7%) had ART adherence percentage of > 95% and most had a viral load of < 1000 copies/ml (92.7%). A total of 97.9% of the

women knew their male partner's HIV status, of which 57.3% were HIV-positive. Serodiscordancy existed in 40.6% of the couples. Majority of the male partners (96.9%) were aware of the women's HIV status and that they were accessing PMTCT services. Only 4.2% of male partners had ever accompanied their pregnant woman for counselling in PMTCT clinic.

4.2. Condom Use in Male Partners and Associated Factors

Only 26.0% of the participants used condoms consistently (Figure 1). Of those who used condoms consistently, 72% were HIV positive (seroconcordant) and 18% HIV negative (serodiscordant), while those of unknown status (2.1%) did not use condoms. Condom use was significantly associated with younger mean age in male partners, younger mean age in women, Christian faith in women, male partner having ever accompanied respondents for counselling in PMTCT clinic and viral load of less than 1000 copies/ml with P values=0.0290, 0.0035, 0.0440, 0.0227 and 0.0045 and respectively (Table 1).

Table 1. Sociodemographic/HIV-related characteristics of women who accessed PMTCT services and their male partners; and relationship with condom usage.

Variables	Total (N=96) Frequency (%)	Male condom Use 'All the time'		P-value
		Yes Frequency (%)	No Frequency (%)	
Age of women (Mean ± SD years) (Range=26 – 46 years)	36.4±4.5	34.2±3.3	37.2±4.6	0.0035*
Age of male partner (Mean ± SD years) (Range=35 – 62 years)	45.3±6.1	43.0±4.7	46.1±6.4	0.0290*
Parity				
≤4	73 (76.0)	18 (72.0)	55 (77.5)	0.5820
>4	23 (24.0)	7 (28.0)	16 (22.5)	
Gestational age at PMTCT commencement				
≤3 months	36 (37.5)	8 (32.0)	28 (39.4)	0.5089
>3 months	60 (62.5)	17 (68)	43 (60.6)	
Religion (women)				
Christianity	72 (75.0)	15 (60)	57 (80.3)	0.0440*
Islam	24 (25.0)	10 (40)	14 (19.7)	
Religion (Male partner)				
Christianity	67 (70.0)	14 (56.0)	53 (74.7)	0.0807
Islam	29 (30.0)	11 (44.0)	18 (25.3)	
Relationship with male partner				
Married	91 (94.8)	25 (100)	66 (93.0)	0.3221
Not married	5 (5.2)	-	5 (7.0)	
Educational status (Women)				
Primary	11 (11.4)	3 (12)	8 (11.3)	0.9212
Secondary/Tertiary	85 (88.6)	22 (88)	63 (88.7)	
Educational status (Male partner)				
Primary	7 (7.3)	2 (8.0)	5 (7.0)	0.8741
Secondary/Tertiary	89 (92.7)	23 (92.0)	66 (93.0)	
Occupation (Women)				
Employed	83 (86.5)	23 (92.0)	60 (84.5)	0.3464
Unemployed	13 (13.5)	2 (8.0)	11 (15.5)	
Occupation (Male partner)				
Employed	93 (96.9)	25 (100)	68 (95.8)	0.5652
Unemployed	3 (3.1)	-	3 (4.2)	
Male partner aware of woman's HIV status/ PMTCT enrolment				
Yes	93 (96.9)	25 (100)	68 (95.8)	0.5652
No	3 (3.1)	-	3 (4.2)	
Male partner's HIV status				
Positive (seroconcordant)	55 (57.3)	18 (72)	37 (52.1)	0.2398
Negative (serodiscordant)	39 (40.6)	7 (28)	32 (45.1)	
Unknown	2 (2.1)	-	2 (2.8)	
Preconception contraception				
Yes	37 (38.5)	13 (52)	24 (33.8)	0.1079
No	59 (61.5)	12 (48)	47 (66.2)	

Variables	Total (N=96) Frequency (%)	Male condom Use 'All the time'		P-value
		Yes Frequency (%)	No Frequency (%)	
Male partner ever accompanied respondent for counselling in PMTCT clinic				
Yes	4 (4.2)	3 (12)	1 (1.4)	0.0227*
No	92 (95.8)	22 (88)	70 (98.6)	
Adherence log (%) (Women)				
≥ 95	66 (68.7)	14 (56.0)	52 (73.2)	0.1097
<95	30 (31.3)	11 (44.0)	19 (26.8)	
Viral load (copies/ml) (Women)				
<1000	89 (92.7)	20 (80.0)	69 (97.2)	0.0045*
≥1000	7 (7.3)	5 (20.0)	2 (2.8)	

*statistically significant.

5. Discussion

Consistent use of condoms in PLWHIV is vital towards reducing the risk of HIV transmission (including reinfection and transmission of resistant strains) to sexual partners. The risk of a HIV-positive pregnant woman transmitting the infection to her baby is heightened with unprotected sex, even when she is on ART. With the simultaneous protection provided by consistent condom use, against HIV and other STIs that can also cause neonatal infections, the added advantage of consistent condom use in pregnant women cannot be overemphasized.

In this current study carried out in Jos, the prevalence of consistent condom use among women who attended PMTCT clinic was found to be low at 26.0%. Factors associated with condom use in this study were younger age in women, younger age in male partner, Christian faith in women and male partner having ever accompanied the respondent for PMTCT counselling. Consistent condom use was also found to be significantly associated with a viral load of < 1000 copies/ml. This association with younger age may be linked to the fact that older women and men would have most probably completed their family size and therefore less likely to get pregnant and present at the PMTCT clinic compared to younger couples. This low prevalence was similar to the 26.2% reported in HIV positive pregnant women attending antenatal clinic in Nnewi, southeast Nigeria and 25% in HIV-positive patients on ART in Nasarawa also in northcentral Nigeria as was the current study [30, 36]. Identifiable factors in the Nasarawa and Nnewi participants that were comparable to participants in the current study, which may have contributed to the similar prevalence rates, were the geographical proximity and pregnancy status of the participants respectively. Factors associated with condom use in the respective studies were marital status and disclosure of HIV status to partner [30, 36]. However, the prevalence reported in this current study was lower than the 45.5% and 58.2% recorded in 2 other separate studies conducted in Kogi, northcentral Nigeria among HIV infected seroconcordant and serodiscordant couples respectively [37, 38]. These higher prevalence rates reported may be ascribed to the reasons reported for condom use in the respective studies which were to prevent pregnancy and to prevent transmission of infection in serodiscordancy. Higher

prevalence rates were also recorded in parts of southwest Nigeria. In Ibadan, southwest Nigeria condom usage was reported to improve from 33.0% to 53.8% at 1-6 months and above 12 months respectively following ART commencement, and was associated with being in a union and having secondary or tertiary education [27]. The researchers concluded that condom use improved with follow up time but the level could still be further improved [27]. A prevalence of 48.8% was found in participants in Lagos, southwest Nigeria [28]. The higher prevalence documented for the studies in the southwest when compared to this study may be due to variances in sociocultural practices related to geographical location.

Elsewhere in Africa, prevalence of 35.9% and 55.8% were reported in Malawi and Ethiopia respectively [26, 35]. Though the levels were higher than what obtained in the current study, they were still considered less than optimal. In the Malawian study, the participants were mainly seeking pregnancy prevention so various methods of contraception besides condoms were used without taking dual contraception for STI prevention into consideration [26]. On the other hand, in the Ethiopian study majority of the participants were HIV-infected and so assumed they did not need condoms for protection since they were already infected [35]. The factors associated with consistent condom use in the Malawian study were being an older female, educated beyond secondary school, having lower parity and a HIV negative partner while in the Ethiopian study it was rural residence and partner initiation; all of which contrasted with the significant factors found in the index study [26, 35].

In west Asia, a prevalence range of 16.7% - 28.1% was found from studies in 2 separate parts of Iran, which was on average comparable to the level found in this current study. Predictors of condom use were younger age, higher number of sexual partners, number of children and social support as well as having participated in HIV prevention courses and having knowledge of unsafe sex practices [23, 24]. The authors implied that poor knowledge on HIV prevention and lack of female empowerment were responsible for the low prevalence [23, 24].

In Brazil the prevalence of condom use in pregnant HIV-infected women was found to be 48% while a similar study in the general population of PLWHIV, also in Brazil showed a higher prevalence of 79.3% [21, 22]. This reflects a

similar pattern found in Nigerian studies including the index study where the prevalence was lower in pregnant women than in the general population of PLWHIV [27, 28, 30, 37, 38]. This further alludes to the perception that pregnant women did not need condoms [32]. Also comparable to the current study was the finding that condom use in pregnant women was associated with younger age [21]. Other associated factors noted in the Brazilian pregnant women included sexual debut after 15 years of age, having a fewer number of offspring, being diagnosed with HIV during the current pregnancy and HIV having an impact on the sexual life. The authors suggested that message fatigue and possibly lack of female empowerment may have been barriers to condom use [21]. In the Brazilian general population, contrary to the findings in the current study, being married and not revealing HIV status to partner were significantly associated with condom use. The difference may be attributable to the pregnancy status and sociocultural differences.

Among HIV-positive women in Atlanta, United States of America, the prevalence of consistent condom use was 53% [18]. The prevalence was higher than in the current study and condom use was associated with older age unlike the index study where condom use was associated with younger age. The difference may be attributed to the fact that the women in Atlanta were in a more advanced society and had less constrain about discussing condom use with their sexual partners. Furthermore, they were not pregnant and probably using condoms for pregnancy prevention hence the higher prevalence. Factors associated with condom use were older age, being single/dating and having confidence to negotiate condom use [18]. Though reasons for non use of condoms were not sought in this study, plausible reasons may not be unconnected with sociocultural and economic factors prevailing in Africa that constrain women's ability to negotiate the use of condom with a sexual partner; as has been previously reported [31, 32]. It is also possible that, the respondents in this current study, being already pregnant and HIV-positive (both of which condoms are protective against), may have perceived that the protective benefits of condoms were not applicable to them, just as has been reported in previous similar studies [32, 35]

Across several regions globally, various reasons have been reported for non use of condoms, some of which include partner refusal, mutual trust, lack of availability, being drunk, difficulty or discomfort in using condoms, reduction of sexual pleasure, desire for pregnancy, being already pregnant, perception of condoms as not necessary in stable relationships/marriage, non disclosure of HIV status, HIV seropositivity of partner, to prevent suspicion of infidelity, difficulty negotiating condom use, religion, assumption that condoms are not needed in pregnancy, belief that for proper development of the baby in pregnant women the male partner has a duty to continue fertilizing the baby through regular unprotected sexual intercourse, lack of male partner involvement in counselling [19, 21, 23, 27, 28, 30-32, 35, 39]. Most of these reasons however denote poor knowledge/understanding of the essence of condom use

particularly in pregnancy. This current study showed a significant relationship between consistent condom use and a male partner having ever accompanied their pregnant woman for PMTCT counselling.

The results of this study showed that despite approximately two-fifths (40.6%) of the male partners being HIV-negative, only 7 (18.0%) of serodiscordant couples used condoms consistently and none of the 2 male partners with unknown HIV status used condoms. This is quite worrisome considering the associated high risk for transmission of HIV and other STI with unprotected sex. A comparable proportion of serodiscordancy (41.3%) was reported in pregnant women and their partners in Nnewi, though the consistency of condom use among the serodiscordant couples was not reported [30]. Also worrisome in this study is that only 32.7% of seroconcordant partners used condoms consistently, with the remaining 67.3% who did not use condoms consistently being at risk of STI, HIV reinfection and development of resistant strains along with the possibility of perinatal transmission and threat to effectiveness of ART.

Considering the study participants were enrolled in PMTCT care and (96.9%) had disclosed their HIV status to their partners who were also aware that they attended PMTCT clinic (96.9%), it would be expected that they would have received the appropriate counselling and support to promote consistent condom use, however this was not the case as reflected by the low prevalence of consistent condom use. Other studies have shown that such low prevalence could occur even within the background of having received PMTCT counselling, and has been attributed to sociocultural and economic factors as well as possible message fatigue [22, 31, 32]. Given that 92.7% of the respondents had secondary/tertiary education and 86.5% of them were employed it was expected that they possessed some level of empowerment to enable negotiation for condom use with their male partners, but this did not seem to be the case as reflected by the lack of significant association between educational/employment status and consistent use of condom. This concurs with the conclusion drawn by other researchers in Brazil who inferred that despite women's seeming emancipation, their family and sexual issues were still based on the male sex [40]. This underscores the need for strategies involving male partners.

6. Conclusion

To improve condom use among couples, more needs to be done as part of counselling strategies to enhance condom acceptance in male partners. Antenatal care settings such as PMTCT services where this study was conducted provide opportunities to promote condom use not only in women, but also to invite their male partners to participate through couple counselling. Unfortunately, such opportunities are usually missed. The involvement of male partners in PMTCT counselling should be advocated. This will augment efforts towards fighting sexual and perinatal HIV transmission. Such messages should be continuous and reviewed regularly to

ensure that the content, mode of delivery and target audience are appropriate towards achieving the purpose of safer sex practices.

7. Limitations

It was a hospital based cross sectional study, so not representative of the general population. Information about male partners relied on female partner responses, so it was subject to bias.

8. Recommendations

Follow up or future studies of a similar background to this current study are recommended. Such studies should directly involve male partners as study participants. This is likely to reduce bias associated with data source, throw more light on the subject from a male perspective and provide more opportunities to promote consistent condom use in the men.

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