



## **Factors associated with risky sexual behavior among HIV negative partners in HIV discordant relationships in Nairobi, Kenya**

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### **SUMMARY**

**Introduction:** Whereas risky sexual behavior influences HIV acquisition, little information is available on risk taking practices among negative partners in HIV discordant relationships in our settings. This study sought to determine the associated factors among this population in Nairobi.

**Methods:** This study was a cross–sectional descriptive study and 133 HIV negative partners participated in the study.

**Results:** Out of the 133 participants, 66.9% were male and 33.1% were female. Overall, 44.4% of the study participants reported inconsistent condom use, 14.3% reported having another sexual partner and 30% reported ever engaging in sexual activities under the influence of alcohol. Monthly earnings ( $p=0.02$ ), alcohol use ( $p=0.03$ ) and the index partner being on anti–retroviral medication ( $p=0.02$ ) were significantly associated with having another sexual partner. Focus group discussion findings showed that male gender, alcohol use and the duration of the relationship influenced the decision to use condoms while male gender influenced having another sexual partner.

**Conclusion:** Risky sexual behavior practices still occur among the HIV negative partners in discordant relationships. More education and sensitization should be made on the risks associated with this behavior so as to reduce the risk of HIV infection from their infected partners.

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## Introduction

Heterosexual transmission is the most common mode of HIV/AIDS transmission globally and accounts for more than 85% of HIV infections in Africa [1]. In many areas with mature AIDS epidemics, up to 15% of all couples are HIV-1-discordant and the majority of new heterosexually acquired HIV-1 infections occur within such discordant couples [2]. HIV prevalence within couples is generally comparable to HIV prevalence in the overall population largely because the majority of adults who are of reproductive age are married or cohabitating [3]. Heterosexual sex within a union or regular partnership accounted for an estimated 44% of incident HIV infections in Kenya in 2006, while casual heterosexual sex accounted for an additional 20% of new infections [4]. Prevalence of HIV discordance among married and cohabitating couples in Africa is high, ranging from 3–20% in the general population to 20–35% within couples in which one partner seeks HIV care services [5]. Of these discordant couples, 30% to 40% are couples where the female partner is infected [6]. Of the heterosexual discordant couples in Kenya 40.6% are discordant male where the woman is infected [7]. HIV incidence rates among HIV-negative partners in discordant relationships is still high even when couples are aware of their HIV discordant status and have access to condoms and voluntary counseling and testing (VCT) services [8]. Risky sexual behavior among HIV negative partners in HIV discordant relationships is an important factor contributing to sexual transmission of HIV among couples [9]. Consistent use of condoms has been shown to have significant reductions in the risk of HIV transmission among discordant couples [10, 11,

and [12]. However, in countries with generalized HIV epidemics, only 8% of married contraceptive users report condom use, and this rate has not increased over the last 20 years [13]. In general, cohort studies have shown that consistent condom use is protective against HIV infection but inconsistent use is not [14]. If the sexual partner is infected, the risk of HIV infection increases with coital frequency if a condom is not in use or if it is not used consistently [14]. Most studies have also found widespread resistance to the use of condoms in stable long-term relationships because of their association with lack of trust and illicit sex [15]. The desire for children may override the use of condoms among discordant couples which may put the HIV discordant couple at risk [16]. There is a desire for many couples in Sub-Saharan Africa to have large families therefore prolonged use of condoms may be considered unacceptable in these settings [17]. Having multiple partners is an important factor affecting HIV transmission. Studies have suggested that concurrent relationships may contribute to the spread of HIV [18]. These concurrent relationships are often characterized by strong emotional, social and economic ties and studies suggest that condom use in such relationships tends to be much lower [9 and 20]. Men are often perceived to have more concurrent partners when compared with women. This can be supported by the cultural contexts that support the extra-marital sexual activities of men and prevent them from practicing HIV prevention within their relationships which leads to an increase in their risk of HIV infection [21, 22 and 23]. Recent studies have shown that use of antiretroviral therapy (ART) by the HIV-positive partner is associated with reductions in both viral load and the risk of HIV



transmission to the HIV–negative partner [24]. A number of observational studies have reported decreased acquisition of HIV–1 by sexual partners of patients receiving ART therapy [25, 26 and 27]. A more recent approach is the use of Treatment as Prevention where a study comparing early versus delayed antiretroviral therapy showed that early therapy reduces HIV infection to the HIV negative partner in a discordant relationship by 96% [28]. This suggests that immediate commencement of ART therapy for the HIV positive partner irrespective of the CD4 count reduces the risk of HIV transmission to the negative partner by 96%. However, though ART may prevent HIV transmission through reduced infectivity, this could be offset by increases in risky sexual behavior [29]. This study therefore sought to determine the risky sexual behavior practices among HIV negative partners in discordant relationships and the factors associated with these practices.

## **Methods**

### **Study setting and population**

The participants in this study were the HIV negative partners in HIV discordant relationships. These are part of a population of HIV discordant couples enrolled at the Prevention with Positives program at the Pumwani Maternity Hospital Comprehensive Care Clinic managed by the University of Manitoba/ Nairobi collaborative research group. At the time of the study, there were 220 enrolled HIV discordant heterosexual couples accessing care and support at the clinic. The study participants were the HIV negative partners in the discordant relationships.

### **Study Design and Sampling**

This was a cross–sectional descriptive study carried out between the months of February and November; 2011. Purposive sampling was carried out for the questionnaire interviews during the monthly support group meetings and the focus group discussions. This was done because there is reported low attendance of the HIV negative partners in the monthly support group meetings over time. The same was also done for the focus group discussion participants. A focus group discussion guide was used during the focus group discussions. Written informed consent was obtained for the questionnaire interviews while oral consent was obtained for the focus group discussions. Ethical clearance was given by the National Ethical Review Committee–KEMRI and permission to conduct the study by the clinic’s management was also obtained.

### **Variables, definitions and statistical analysis**

The predictor variables in this study were social demographic characteristics including; age, gender, duration of relationship, education level, income (including of spouse), and desire for more children. Other variables in this study were alcohol use and index partner’s ART status,. All the predictor variables were self reported. The outcome variable sexual behavior was classified as either risky or not risky. Risky sexual behavior was defined as inconsistent condom use (captured as never or sometimes in the questionnaire) and having another sexual partner. One on one questionnaire interviews were carried out and two focus group discussions were also carried out; one for men and the other for women during one of their monthly support group meetings. Data analysis was conducted



using Statistical Package for Social Sciences (SPSS) software version 17. Percentage frequencies were used to describe categorical variables while Pearson's Chi-square test was used to determine association between the selected predictor variables and the outcome variable.

## Results

### Socio-Demographic Characteristics

A total of 133 negative partners in HIV discordant relationships participated in the questionnaire interviews and 18 of them also participated in the focus group discussions. Out of the 133 participants, 66.9% (89) were male and 33.1% (44) were female. 10 men and 8 women participated in the male and female focus group

discussions respectively. The median age of the study participants was 38 years and the minimum and maximum age was 22 years and 70 years respectively. The median duration of the HIV discordant relationship was 8 years; with a minimum duration of less than one year and a maximum duration of 35 years. The mean and median number of children was 2 with a minimum and maximum number of children of 0 and 11 children respectively. Most of the participants (65.4%) had secondary education and above, 48.9% of them reported that they desired children in future. Majority of the participants reported that their index partner was on ARVs [58.6%] (Table 1).

**Table 1: Socio-demographic characteristics of the study participants (n=133)**

<b>Socio-Demographic Characteristics of Study Participants</b>			
<b>Characteristic</b>		<b>Number(n)</b>	<b>Percentage(%)</b>
<b>Education Level</b>	No formal Education	5	3.8
	Primary	39	29.3
	Secondary	61	45.9
	College/University	28	21
<b>Desire for Children</b>	Yes	65	48.9
	No	65	48.9
	Not Sure	3	2.2
<b>Monthly Earnings (Kshs)</b>	0-5000	41	30.8
	5001-10000	30	22.6
	Over 10000	62	46.6
<b>Partner's Monthly Earnings (Kshs)</b>	0-5000	64	48.1
	5001-10000	28	21.1



	Over 10000	27	20.3
	Does Not Know	14	10.5
<b>Use Alcohol</b>	Yes	50	37.6
	No	83	62.4
<b>Index Partner on ARVs</b>	Yes	78	58.6
	No	55	41.4

### Factors associated with condom use among study participants

Of the 133 study participants, 74.4% reported using a condom during the last sex and 21.1% reported not using a condom during the last sex. Slightly over half of the study participants reported consistent condom use [55.6%] which was captured as using a condom always during sex, 7.5% of the study participants reported not using condoms at all and 33.1% reported using condoms sometimes. The proportion of participants who reported abstaining from sex since knowing their partner's HIV positive status was 3.8%. Almost half of the study participants were classified as having inconsistent condom use [44.4%] which was classified as risky sexual behavior. However, none of the selected factors age, gender, duration of relationship, desire for more children, monthly earnings, partner's monthly earnings, level of education, alcohol use, and ARV status of the index partner was significantly associated with inconsistent condom use (Table 2). However findings from the focus group discussions showed that negative perceptions toward condom use among the discordant partners in HIV discordant relationships

influences the decision to use condoms. One participant said that *"This life of using condoms is hard; I have to persevere because when I use them, I get rashes"*. *"For me I try to use condoms though my husband complains that they make him uncomfortable when he is full"* [when he has had enough to eat]. Male gender was also found to influence the decision to use condoms among the study participants irrespective of the of HIV status of the male partner. One of the male participants said that *"The problem with condoms is that we men are the ones who refuse to use condoms not women."* Another female participant said *"Previously, I used to deny him sex for up to one week when I found out his status but in turn he would refuse to give me and my children food. I then decided that I would rather give in but use a condom so that life may continue"*. *"Sometimes he feels like having sex and sometimes he does not want us to use a condom"*. Alcohol use was also noted to influence the decision to use condoms among the study participants; *"I see that if I have stayed like this for 7 years, I will be fine, but I use condoms when I'm not drunk"*.



**Table 2: Factors associated with condom use**

Variable		Risky (Sometimes/Never)	Not Risky (Abstained/Always)	P Value
Age (yrs)	18- 24	4	2	<b>0.06</b>
	25-29	9	18	
	30-39	22	18	
	40-49	11	32	
	50-59	5	7	
	60-64	2	1	
Gender	Male	36	26	<b>0.96</b>
	Female	18	53	
Duration of relationship	1yr or less	4	6	<b>0.26</b>
	1 yr-5 yrs	19	18	
	5 yrs or greater	29	53	
Desire for children	Yes	26	39	<b>0.65</b>
	Yes	26	39	
	No	2	1	
Monthly earnings	0-5000	14	26	<b>0.43</b>
	5001-10000	12	21	
	Over 10000	28	36	
Partner's Monthly Earnings (Kshs)	0-5000	22	40	<b>0.44</b>
	5001-10000	15	13	
	Over 10000	12	17	
	Does not know	4	7	
Level of education	No formal Education	2	1	<b>0.8</b>
	Primary	17	24	
	Secondary	22	36	
	College/University	12	17	
Use of Alcohol	Yes	22	33	<b>0.52</b>
	No	30	43	
ARV Status of the Index partner	Yes	32	46	<b>0.85</b>
	No	21	32	



### Factors associated with having multiple partners among study participants

Of the 133 study participants, 85.7% reported not having any sexual partners outside the relationship while 14.3% reported having another sexual partner outside the relationship. Of those who reported having another sexual partner outside the discordant relationship, 63.2% knew their HIV status while 26.3% did not know their status. Of the same number, 57.9% reported using condoms with the other sexual partner while 26.3% reported not using condom with the other sexual partner. There was a significant association between monthly earnings and having more than one sexual partner; [p= 0.023], alcohol use and having another sexual partner; [p= 0.028] and ARV status of the index partner and having another sexual partner among the

participants; [p= 0.018]. However there was no significant association between having another sexual partner outside the discordant relationships and other selected factors including age, gender, and duration of relationship, desire for more children, partner's monthly earnings and level of education (Table 3). Findings from the focus group discussions showed that male gender is associated with having another sexual partner. A male participant said, *"For me, If I had it (HIV), I would not have blamed myself because my wife was the third one and leave alone those you keep in the house, I had many more outside, so when I found out about it I took it well"*. Another one reported, *"I used to be unfaithful and was not using the condom"*. One female participant said, *"Men generally have a problem, whether or not they have money, they are still unfaithful."*

**Table 3: Factors associated with having multiple partners**

Variable		Risky (Another sexual partner)	Not Risky	P Value
Age	18–24	0	6	0.32
	25–29	1	26	
	30–39	7	33	
	40–49	9	34	
	50–59	2	10	
	60–64	0	3	
Gender	Male	3	41	0.07
	Female	16	73	
Duration of relationship	1 yr less	0	10	0.06
	1yr– 5yrs	9	28	
	Over 5 yrs	9	73	
Desire for children	Yes	8	57	0.56
	No	10	55	
	Not sure	1	2	
Monthly earnings	0–5000	2	38	<b>0.02*</b>





Variable		Risky (Another sexual partner)	Not Risky	P Value
	5001–10000	3	30	
	Over 10000	14	46	
Partner's Monthly Earnings (Kshs)	0–5000	10	52	0.9
	5001–10000	3	25	
	Over 10000	4	25	
	Does not know	2	9	
Level of education	No formal Education	0	3	0.76
	Primary	7	34	
	Secondary	7	51	
	College/University	5	24	
Use of Alcohol	Yes	6	67	<b>0.03*</b>
	No	12	43	
ARV Status of the Index partner	Yes	16	62	<b>0.02*</b>
	No	3	50	

**\*Significant at 0.05 level of significance**

## Discussion

Findings of this study showed that more men are HIV discordant as compared to women. This is contrary to common belief that men are mainly the index cases in discordant relationships and this has been fuelled by evidence of low condom use by men, a greater burden of STIs, male dominance in sex-related negotiations, greater numbers of sexual partners and more frequent alcohol use (30 and 31). Results from this current study differ from another study by Eyawo *et al.*, 2010 which showed that women and men are equally likely to be an index partner in a discordant relationship. However, studies show that serodiscordance in which the female partner is HIV positive is more frequently recorded than

serodiscordance in which the male partner is HIV positive (30). This can explain why more women in this study were the index partners in discordant relationships in the study. Over 60% of the study participants reported having gone through secondary education and above and only 3.8% of study participants reported having no formal education. This differs from the study by Ruzangira *et al.*, 2011 where majority of the respondents in the study had only gone through primary education [70.1%] and 10.4% had no formal education (32). The high proportion of respondents who have gone through secondary education and above is a good indication in the prevention of HIV through promotion of health prevention education among the HIV discordant partners because evidence suggests that





educated people are more likely to adopt safe sexual practices in response to health promotion (33). The level of education is directly related to earnings and this explains why 46.6% of the study participants had earnings of Kshs 10,000 and above, the highest category under this variable. Almost half [48.1%] of the study participants reported that their index partners earned less than Kshs 5,000 monthly (the lowest category in this variable) and this can be explained by the fact that majority of these participants were men hence their partners who are women and have to depend on them for economic support. The findings of this study showed that almost one half of the participants were in a HIV discordant relationship for over 10 years [42.1%]. This differs from a previous study which reported that the duration of the current relationship among the discordant couples was almost 5 years (34). Duration of relationship is associated with condom use where the longer relationships are associated with increased familiarity and trust between the partners (35). Almost half of the study participants [48.9%] reported having a desire for children in future and 54.1% had 1–3 children. A qualitative study of serodiscordant couples in Zambia found that the desire for children was one of the primary barriers to the use of condoms within the couples (36). In a study carried out among discordant couples in Kisumu, majority of the participants had 2 children with a range of 1–3 children which concurs with this study (16). Almost one third of the study participants reported alcohol use in this study and alcohol use has been associated with increased risk of HIV infection among discordant couples (37). Alcohol use was significantly associated with having another sexual partner among respondents in this study. Alcohol

use has been shown to influence sexual risk taking by affecting judgment and reducing inhibitions, therefore diminishing perceived risk of behavior that lead to HIV transmission (38). In an operations research study of clients attending VCT centers in Kenya, it was found that 60% of individuals who drank alcohol had multiple sexual partners (39). In general, cohort studies have shown that consistent condom use is protective against HIV infection but inconsistent use is not (14). If the sexual partner is infected, the risk of HIV infection increases with coital frequency if a condom is not in use or if it is not used consistently (14). Moreover, discordant couple studies in Rwanda and Zambia have shown that while condom use did increase among HIV discordant couples after HIV testing, 20–43% of sex acts among these couples remained unprotected (37). This study found that desire for children among other factors was not significantly associated with inconsistent condom use. This differs from reports on a study in Uganda which reported that condom use is less likely to occur among respondents who desired to have children (40). In the qualitative analysis, male gender was reported to significantly contribute to the decision to use condoms among the couples irrespective of their HIV status (male). These findings were observed in both the male and female focus group discussion participants. There were also noted difficulties in negotiating for condom use among the HIV negative women where requests or pressure to use condoms could even lead to lack of economic support by the male partner, findings which are similar to studies by (41, 42 and 43). Alcohol use by the male discordant partners was observed to affect consistency in condom use and these findings concur with those by Quigley et al., 2011 (44).



It has also been shown that concurrent relationships may contribute to the spread of HIV (17). In this study 14.3% of study participants reported having another sexual partner and this differs slightly from a previous study which reported 16% of study respondents having a concurrent sexual partner (39). Higher earnings which were significantly associated with having another sexual partner among the participants is associated with higher socioeconomic status and this gives men a greater disposable income, facilitates leisure time, increased ability to travel and to use commercial sex partners (33). The index partner being on ARVs was significantly associated with having multiple partners in this study. This is because although ART may prevent HIV transmission through reduced infectivity, this could be offset by increases in risky sexual behavior (45).

### Conclusions

Almost a half of the study participants practiced inconsistent condom use. However, none of the selected factors in this study was significantly associated with inconsistent condom use. This implies that there are more underlying factors associated with inconsistent condom use that need to be identified to as to promote safer sexual behavior practices among the negative partners in HIV discordant relationships. Higher monthly earnings and the index partner being on ARVs were identified as factors associated with having another sexual partner among the study participants in this study. More rigorous education programs for discordant couples should be carried out to promote HIV prevention efforts by emphasizing the high risk associated with the risky sexual behavior practices.

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