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## PUBLIC HEALTH | RESEARCH ARTICLE

# Disclosure status and disclosure intentions among HIV positive persons in rural western Kenya, 2011–2012

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**Abstract:** We examined associations between respondent characteristics and Human Immunodeficiency Virus (HIV) “disclosure status and intentions” of People Living with HIV (PLHIV) at next sexual encounter using multinomial logistic regression in rural western Kenya, with three outcomes of interest were “having disclosed”, “not disclosed but intending to disclose” and “not disclosed and not intending to disclose”. We analyzed data from a sero-behavioral survey in Gem, Siaya County, 2011–2012 selecting respondents aged  $\geq 15$  years in monogamous unions. Of 379 respondents interviewed, 84% had disclosed, 6% had not disclosed but intended to disclose while 10% had not disclosed and did not intend to disclose. Persons who had “not disclosed and intended to disclose” did not differ from those who “had disclosed”. The odds for “not disclosing and not intending to disclose” vs. “having disclosed” was 5.38 times greater for persons who had ever used condoms relative to those who had not. Eight percent of the “not disclosed and not intending disclose” intended to use condoms at next sexual encounter. Couples HTC should promote condom use, legislation as regards “reasonable time to disclose HIV status” should be interpreted, and the conflicting roles of the health workers of protecting confidentiality of PLHIV and concurrently preventing HIV transmission should be clarified.

### ABOUT THE AUTHORS

The HIV Implementation Science, Services and Informatics (HISS) branch of the Kenya Medical Research Institute Center for Global Health Research (KEMRI CGHR) is mandated to provide HIV prevention care and treatment services, as well as conduct implementation science and informatics activities. Its mission is to eliminate HIV transmission and improve health outcomes amongst individuals and families affected by HIV, by conducting HIV-related implementation science activities and developing and evaluating healthcare service-delivery models that are innovative, scalable, effective, and efficient in collaboration with donors, Kenya’s National and County Governments and other development partners. The tasks encompass program monitoring, program evaluation, bio-behavioral surveys, surveillance, health informatics research, development of data collection instruments (electronic and paper), and data management.

### PUBLIC INTEREST STATEMENT

It is important for individuals in sexual relationships to know the HIV status of their sexual partners. If one partner in the relationship is HIV infected, this information will help in preventing HIV transmission to the HIV negative partner. HIV transmission in such partnerships can be prevented through condom use among other methods. Our evaluation showed that more than 80% of PLHIV had informed their marriage partners of their HIV status. Those who had had not but planned to do so seemed to be waiting for the appropriate time to do so; while those had not told and did not plan to do so were persons who had most likely used condoms in the past. Because punitive measures are already in place for PLHIV who knowingly infect their sexual partners, a clearly defined time within which PLHIV should disclose their status to their sexual partners. Health programs should also promote condom use to prevent transmission of HIV.

**Subjects: Psychological Science; HIV/AIDS; Population Health; Sexual and Reproductive Health**

**Keywords: HIV/AIDS; admission; Kenya; sexual relationships**

## 1. Background

### 1.1. Introduction

Human Immunodeficiency Virus (HIV) discordant couples comprise the majority of HIV-affected couples in Sub-Saharan Africa (Anglewicz & Chintsanya, 2011); in Kenya, 4.8% of HIV infected couples are HIV discordant. The Nyanza region, (known as the former Nyanza province of Kenya), has the highest HIV prevalence (15.1% against the country's average of 5.6%). Nyanza region also has the highest burden of HIV discordant couples. Approximately 40% of the HIV discordant couples hail from this region (National AIDS & STI Control Program, 2014). A large proportion of HIV infection occurs among stable partnerships; 44% of HIV infections in Kenya occur as a result of unprotected sex between regular partners (Anglewicz & Chintsanya, 2011; National AIDS and STI Control Program, 2010). Approximately one-tenth of HIV negative partners in a HIV discordant union seroconvert annually (National AIDS & STI Control Program, 2010). Eight percent of the 40 million Kenyan population are in the reproductive age group (aged 15–49 years) and are also likely to be in a sexual relationship; therefore, couples in HIV discordant unions remain at high risk for HIV transmission, especially if they are not aware of each other's HIV status or do not use condoms consistently (Kenya National Bureau of Statistics, 2011; Kenya National Bureau of Statistics, and ICF Macro, 2010). However, in 2012, only two thirds of People Living with HIV (PLHIV) who had at least one sexual partner in the past 12 months, had disclosed their positive HIV status to their last sexual partner (National AIDS and STI Control Program, 2014).

Disclosure of positive HIV status by PLHIV to their sexual partners is important in reducing HIV/AIDS transmission (Dankoli et al., 2014; Zahra, Homeira, Ameneh, Yahya, & Masoumeh, 2014). This is because, it may prompt the partner of a HIV infected individual, to seek HIV testing and to take up other interventions, such as condom use (Alemayehu, Aregay, Kalayu, & Yebyo, 2014). Disclosure has been positively associated with consistent condom use among PLHIV in Kenya, Namibia and Tanzania (Bachanas et al., 2013). Disclosure to sexual partner is has been directly associated with adherence to Antiretroviral Therapy (ART) in PLHIV (Yaya et al., 2014); while among HIV positive pregnant women in Ethiopia it was a positive predictor of adherence to option B+ (Ebuy, Yebyo, & Alemayehu, 2015; Jasseron et al., 2013). Subsequent to disclosure, PLHIV may experience relief from the unconditional acceptance and support from their partners (Alemayehu et al., 2014). The positive effects of disclosure could be attributed to the ability to get support in taking one's medications and attending clinic appointments.

Non-disclosure of positive HIV status has been attributed to the negative effects of disclosure. Close to a quarter of PLHIV in Mali, Morocco, Democratic Republic of the Congo, Ecuador and Romania who had disclosed their HIV status, declared that it was a mistake. These people were more likely to be female, poor, to have had low self-esteem and suffered rejection, discrimination, isolation, and to have had their status accidentally disclosed by a third party (Henry et al., 2015). Fear of accusation of infidelity, desertion, discrimination and violence have all been cited as barriers to disclosure of HIV status to a sexual partner (Dageid, Govender, & Gordon, 2012; Ebuy et al., 2015; Hosseinzadeh, Hossain, & Bazargan-Hejazi, 2012; Medley, Garcia-Moreno, McGill, & Maman, 2004; Przybyla et al., 2013; Shikwane, Villar-Loubet, Weiss, Peltzer, & Jones, 2013). Non-disclosure of positive HIV status has also been attributed to "desire to have more children" (Finger, Clum, Trent, Ellen, & Adolescent Medicine Trials Network for HIV/AIDS Interventions, 2012). However, conflicting information has been published regarding the relationship between disclosure and the desire to have more children (Demissie, Tebeje, & Tesfaye, 2014; Finger et al., 2012; Wagner & Wanyenze, 2013).

## **1.2. Objective statement**

In 2010, the Ministry of Health (MOH) introduced innovations to HIV programming in Kenya, including couples counseling and testing to enhance social support and disclosure for HIV infected couples (National AIDS and STI Control Program, 2010). This paper examines the extent to which married PLHIV in Gem, former Nyanza Province, a region of high HIV prevalence, had disclosed their positive HIV status to their spouses, and among those who had not disclosed, their disclosure intentions and intentions to use condoms at the next sexual encounter.

## **2. Methodology**

### **2.1. Study design and setting**

A large cross-sectional survey that evaluated HIV/AIDS risk behaviors, HIV serostatus, HIV prevention, care and treatment in the Gem sub-county of Siaya County; former Nyanza Province in western Kenya, was conducted between March 2011 and September 2012. Gem is rural with a population size of nearly 78,000 residents whose major economic activity is subsistence farming. Gem Sub-County is part of the Kenya Medical Research Institute's (KEMRI) and the Centers for Disease Control and Prevention's (CDC) Health and Demographic Surveillance Area (HDSA), which provides comprehensive population-based data on a variety of health indicators and population knowledge and beliefs at the individual, household/compound or neighborhood levels (Odhiambo et al., 2012).

### **2.2. Study population**

Persons aged 15 years or older, residents and non-residents of Gem, willing to consent to a HIV test or disclose individual HIV status, and had at least spent the previous night in that house and consented to take part in the study, were interviewed. The Kenyan HIV testing guidelines reduced the age of HIV testing without the parent or guardian to 15 years of age (including all emancipated minors who maybe below 15 years of age) to curb new infections among adolescents as they become sexually active (National AIDS and STI Control Program, 2010). This analysis is restricted to those who self-reported a positive HIV status and among these only those who identified one of their most recent sexual partners (i.e. within 12 months preceding the interview) as their spouse. Persons who listed more than one spouse as one of their most recent sexual partner were excluded from this analysis.

### **2.3. Data collection and survey testing**

We collected data on demographics, sexual behavior, HIV status and disclosure status.

Interview topics included demographic information, sexual behavior and HIV risk, male circumcision, family planning, women's health, parents-adolescents' communication and participation in HIV prevention care and treatment programs. Questions pertaining to HIV status, disclosure of HIV status and history of condom use as well as intentions to use condoms were included in the survey. Participants were interviewed then tested for HIV.

### **2.4. Definitions**

The primary outcomes of interest were "disclosure status," and "disclosure intentions". PLHIV were categorized into "disclosed" if they had told their spouses of their last HIV test result, "not disclosed but intend to disclose" if they had not disclosed and but intended to inform their spouse of their positive HIV status at/before the next sexual encounter, and "not disclosed and do not intend to disclose" if they had not disclosed and did not intend to disclose their positive HIV status at/before the next sexual encounter.

"Intentions to use condoms" among PLHIV who had "not disclosed and did not intend to disclose" were described as "intending to use condoms" for those who planned to use condoms at the next sexual encounter, or "not intending to use condoms" at next sexual encounter for those who were not planning to do so. Recent change in relationship status was defined as having been married, started cohabiting, or getting a new partner (including other than the partner to whom they were

married) within three months prior to the time of the interview. A couple's HIV status was constructed based on the interviewee's reported HIV status as well as their knowledge of the "HIV statuses of their primary partners. This was done because all interviews were conducted prior to HIV survey testing and HIV testing was done individually for each partner".

### **2.5. Data analysis**

The study population was limited to respondents who identified only one spouse as one of their most recent sexual partners who were willing to disclose their HIV status, their HIV disclosure status and disclosure intentions. This population was characterized using simple descriptive statistics. Multinomial logistic regression was conducted to describe factors associated with the three outcomes, "disclosed", "not disclosed but intend to disclose" and "not disclosed and do not intend to disclose". Significance was evaluated at  $\alpha = 0.05$  using logistic regression to obtain adjusted odds ratios using (SAS Institute Inc, 2012). A sub-analysis was also done to find out the proportion of persons who "had not disclosed and did not intend to disclose" that intended to use condoms at the next sexual encounter.

### **2.6. Ethical considerations**

Ethical approval to conduct this survey was sought and obtained from the Kenya Medical Research Institute (KEMRI) Ethical Review Committee (KEMRI SSC 1801).

## **3. Results**

### **3.1. Participant characteristics**

15,300 persons were interviewed of whom 6,079 (40%) listed at least one sexual partner as a spouse. Of these 5,797 (86%) who listed only one sexual partner as "spouse" were included in the analysis. Majority 4,261 (74%) had been tested for HIV in the past 12 months and were willing to share their HIV test results. Of the 4261, 419 (10%) were HIV positive (Figure 1).

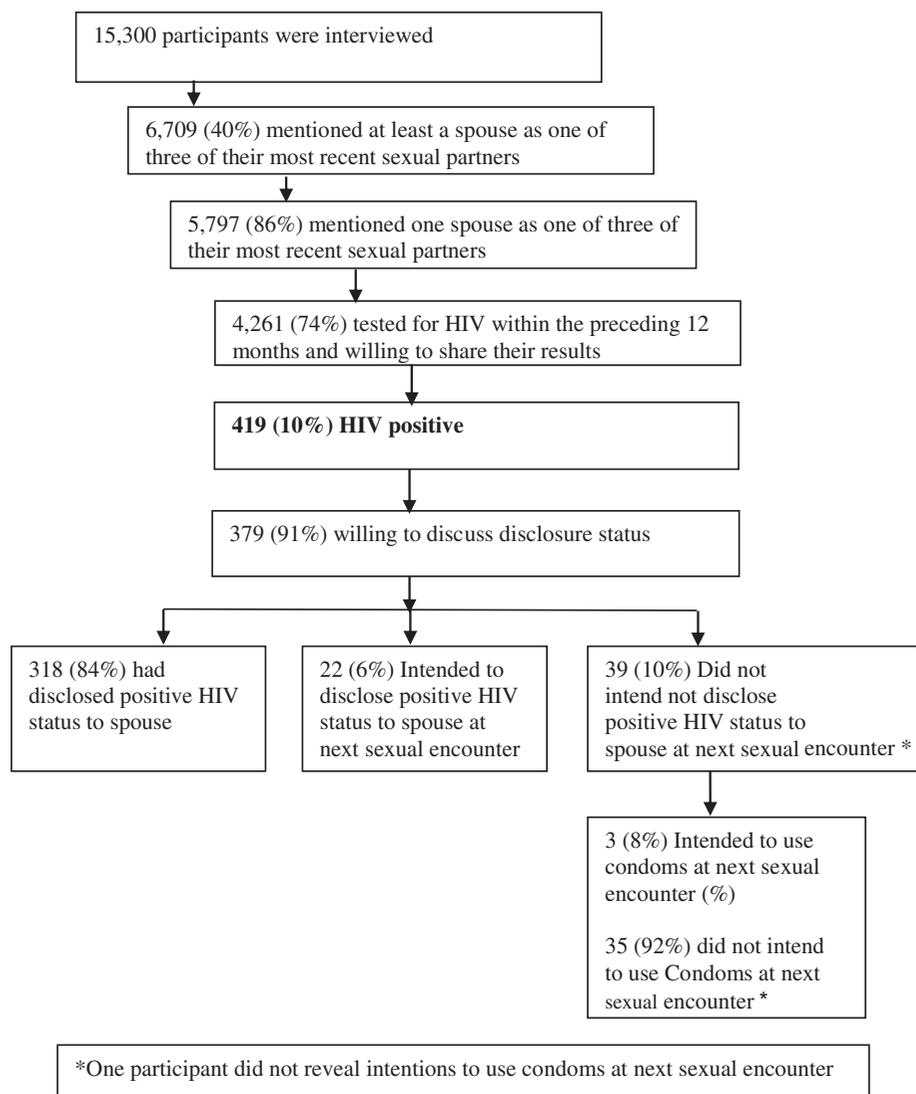
Of the 4,261 participants who listed one sexual partner as spouse, 3,056 (72%) knew their partners HIV status, 222 (7%) were in concordant HIV positive relationships, 215 (7%) were in HIV discordant relationships and 2,619 (86%) were in concordant HIV negative relationships. Among the discordant partnerships, in 81 couples the interviewee was HIV positive and reported their primary partner to be HIV negative and in 134 couples the interviewee was HIV negative and reported their partner to be HIV positive. In summary, 303 (72%) of HIV infected persons knew their HIV status of their partners.

Among the 4,261 participants interviewed, 419 (10%) were HIV infected and of these, 379 (91%) were willing to discuss their disclosure status.

Majority of the respondents who were willing to discuss their disclosure status were aged 30 years and older (69%), female (67%) and had had no recent change in relationship status (96%), were of below primary level of education (56%) and were engaged in some form of employment (87%). Although majority had had three or more sexual partners in their lifetime (85%), in the year preceding the interview, majority reported only one sexual partner (91%) in the past year and a minority (30%) desired to have children.

The majority of respondents, had been tested for HIV with their spouses in the past (58%), but did not participate in support groups for PLHIV (53%). The majority had ever used condoms (63%) or asked their partner to use condoms (55%); however, only a minority reported consistent condom use (31%). Majority were in concordant HIV positive partnerships (54%) (Table 1).

**Figure 1. Participant selection.**



**3.2. HIV disclosure status among PLHIV**

Of 380 respondents who were willing to discuss their disclosure status, 318 (84%) had “disclosed”, 22 (6%) had “not disclosed but intend to disclose” and 39 (10%) had “not disclosed and do not intend to disclose” their positive HIV status to their spouse at the time of the interview (Table 1).

**3.3. HIV disclosure intentions among PLHIV**

Persons who had “not disclosed and intended to disclose” did not differ from those who “had disclosed” by demographic, sexual and health-seeking characteristics.

The odds for “not disclosing and not intending to disclose” vs. “having disclosed” is 5.38 times greater for persons who had ever used condoms relative to those who had never used condoms given the other variables in the model are held constant (Table 2).

**3.4. Intentions to use condoms among PLHIV that had not and did not intend to disclose their positive HIV status to their sexual partners at the next sexual encounter**

Of the 39 respondents who had not and did not intend to disclose their positive HIV status to their sexual partners, only 3 (8%) intended to use condoms at the next sexual encounter (Figure 1).

**Table 1. Characteristics of PLHIV in Gem by disclosure status, 2011–2012**

Characteristics	Totals (N = 379)	Disclosed (N = 318) (84%)	Not disclosed but intend to disclose (N = 22) (6%)	Not disclosed but do not intend to disclose (N = 39) (10%)
<i>Demographic characteristics</i>				
Age (years)				
15–29	117 (31)	99 (85)	9 (8)	9 (7)
30+	262 (69)	219 (84)	13 (5)	30 (12)
Gender				
Male	123 (33)	106 (86)	4 (3)	13 (11)
Female	256 (67)	212 (83)	18 (7)	26 (10)
Change in relationship status <sup>a</sup>				
No change	358 (96)	305 (85)	19 (5)	34 (10)
Recent change	16 (4)	11 (69)	1 (6)	4 (25)
Highest level of education				
Below primary	211 (56)	179 (85)	13 (6)	19 (9)
Primary	108 (28)	93 (86)	4 (4)	11 (10)
Above primary	60 (16)	46 (77)	5 (8)	9 (15)
Occupation				
Employed	329 (87)	278 (85)	18 (5)	33 (10)
Unemployed	50 (13)	40 (80)	4 (8)	6 (12)
<i>Spousal and sexual characteristics</i>				
Lifetime number of sex partners <sup>a</sup>				
1 or 2	58 (15)	49 (84)	22 (4)	7 (12)
≥3	321 (85)	269 (84)	20 (6)	32 (10)
No. of sexual partners last 12 months				
1	343 (91)	288 (84)	20 (6)	35 (10)
≥2	36 (9)	30 (83)	2 (6)	4 (11)
Desire to have children				
Yes	74 (30)	61 (82)	6 (8)	7 (10)
No	169 (70)	141 (83)	12 (7)	16 (10)
<i>Health care seeking characteristics</i>				
Ever tested with spouse				
Yes	219 (58)	186 (85)	5 (2)	28 (13)
No	160 (42)	132 (82)	17 (11)	11 (7)
Support group programs for PLHIV				
Yes	178 (47)	156 (88)	7 (4)	15 (8)
No	201 (53)	162 (81)	15 (7)	24 (12)
Ever used condom				
Yes	239 (63)	214 (90)	6 (3)	19 (7)
No	140 (37)	104 (74)	16 (12)	20 (14)
Ever asked partner to use condom				
Yes	207 (55)	183 (89)	5 (2)	19 (9)
No	172 (45)	135 (79)	17 (10)	20 (11)
Consistent condom use				
Yes	119 (31)	106 (89)	2 (2)	11 (9)
No	260 (69)	212 (82)	20 (8)	28 (10)
Couples HIV status				
Concordant HIV positive	204 (54)	178 (87)	5 (3)	21 (10)
HIV discordant (partner HIV negative)	73 (19)	62 (85)	2 (3)	9 (12)
Unknown	102 (27)	78 (77)	15 (15)	9 (8)

<sup>a</sup>Recent change in relationship status was defined as having been married, started cohabiting, or getting a new partner (including other than the partner to whom they were married) within three months prior to the time of the interview.

**Table 2. Factors associated with different disclosure intentions among PLHIV in Gem, Western Kenya; 2011–2012**

Characteristics	Not disclosed but intend to disclose/ Disclosed			Not disclosed but do not intend to disclose/Disclosed		
	OR	95% CI	p-value*	OR	95% CI	p-value*
<i>Demographic characteristics</i>						
Age (years)						
15–29 (ref)						
30+	0.53	0.13–2.06	0.03	2.48	0.78–7.87	0.36
Gender**						
Male (ref)						
Female						
Change in relationship status <sup>o</sup>						
No change	1.12	0.06–19.24	0.94	0.39	0.05–3.49	0.40
Recent change (ref)						
Highest level of education						
Below primary (ref)						
Primary	0.39	0.07–1.99	0.26	1.77	0.57–5.55	0.38
Above primary	2.03	0.43–9.63	0.33	3.42	0.96–12.18	0.06
Occupation						
Employed (ref)						
Unemployed	0.66	0.16–2.74	0.57	1.51	0.49–4.62	0.47
<i>Spousal and sexual characteristics</i>						
Lifetime number of sex partners <sup>o</sup>						
1 or 2	0.45	0.08–2.42	0.35	1.38	0.46–4.15	0.56
≥3 (ref)						
No. of sexual partners last 12 months						
1	1.07	0.07–16.42	0.96	2.12	0.15–29.19	0.57
≥2 (ref)						
Desire to have children						
Yes (ref)						
No	0.81	0.21–3.09	0.76	0.73	0.23–2.29	0.59
<i>Health care seeking characteristics</i>						
Ever tested with spouse						
Yes	1.47	0.25–8.64	0.67	0.30	0.08–1.14	0.08
No (ref)						
Support group programs for PLHIV						
Yes	0.86	0.24–3.09	0.82	1.59	0.55–4.60	0.39
No (ref)						
Ever used condom						
Yes	2.89	0.51–16.61	0.23	5.38	1.22–23.64	0.03

(Continued)

**Table 2. (Continued)**

Characteristics	Not disclosed but intend to disclose/ Disclosed			Not disclosed but do not intend to disclose/Disclosed		
	OR	95% CI	p-value*	OR	95% CI	p-value*
No (ref)						
Ever asked partner to use condom						
Yes	2.62	0.63–10.97	0.19	0.53	0.15–1.92	0.33
No (ref)						
Consistent condom use						
Yes	0.62	0.08–5.14	0.66	1.38	0.29–6.53	0.69
No (ref)						
Couples HIV status						
Concordant HIV Positive	0.22	0.04–1.16	0.07	0.76	0.18–3.14	0.25
HIV discordant- partner HIV negative	0.22	0.02–2.83	0.70	0.81	0.14–4.64	0.81
Unknown (ref)						

Note: OR-Odds ratio.

\*Recent change in relationship status was defined as having been married, started cohabiting, or getting a new partner (including other than the partner to whom they were married) within three months prior to the time of the interview.

\*Significant at  $\alpha = 0.05$ .

\*\*All the observations were deleted due to missing values for the response or explanatory variables were of one gender; therefore gender was not included in the model. OR-Odds ratio.

Individuals who intended to use condoms did not differ from those who did not intend to use condoms by demographic, sexual or health seeking characteristics or self-reported HIV status (Data not shown).

#### 4. Discussion

##### 4.1. Restatement of main objective and detailed discourse

We set out to determine disclosure rates and intentions of PLHIV in rural western Kenya. The majority (84%) had informed their spouses of their positive HIV status. However, the HIV disclosure rates in this region were lower than the national average of 92% among persons in monogamous unions as found in a national survey. In the same survey, among persons who were HIV infected in Kenya, approximately 72% knew their partners status; and close to two thirds who reported knowing their partners status were correct based on laboratory testing (National AIDS and STI Control Program, 2014). This suggests that self-report can be accurately used as a proxy in predicting a partners HIV status. Although only a minority of those interviewed in our survey reported more than one sexual partner at the time and only a minority were likely to be in discordant partnerships based on self-reported partner’s status, lower disclosure rates imply that HIV transmission within and outside marital unions in this community will persist unabated (Salaudeen et al., 2014).

Our evaluation revealed that those who “had not disclosed but intended to disclose” their positive HIV status to their spouses, did not differ from those who had “disclosed”. This implies that with time, those who had “not disclosed but intended to disclose” will eventually disclose their HIV status to their sexual partners. However, in the literature, the likelihood of disclosure of HIV status has been shown to increase proportionate with the duration of HIV diagnosis (Alemayehu et al., 2014; Bachanas et al., 2013). It is important that HIV testing and counseling encourages PLHIV to disclose their status to their sexual partners early in the course of the disease to prevent further HIV transmission.

The use of condoms by HIV seroconcordant couples is important for prevention of super-infection and the transmission of drug resistant strains. Although consistent and correct condom use is also an extremely efficient method of prevention of HIV (Adebayo et al., 2014), other STIs and contraception (Cordero, 2014), it is nonetheless a challenging concept within marriage and other long term relationships especially where disclosure of positive HIV status has not been done (Salaudeen et al., 2014). People may associate condom use with mistrust and infidelity, and indeed the promotion of condom use within marital relationships to prevent the spread of STIs acknowledges the issue of infidelity (Cordero, 2014). Indeed in this survey, persons who had not disclosed their status to their last sexual partners and did not intend to disclose status at or before the next sexual encounter were more likely to be those who had ever used condoms.

Couples HTC is a strategy that was designed to facilitate partner testing and disclosure (National AIDS and STI Control Program, 2010). However, we found that whether or not couples had been tested for HIV together in the past did not influence the respondents' disclosure status or intentions. It is possible that sero-conversion occurred after couples HTC. Additionally, the couples HIV status did not influence disclosure status or intentions. This contradicts findings from Ethiopia where knowledge of partners' status (irrespective of the actual status) promoted disclosure among women and in the United States, and in a baseline SafeTalk Survey study of both heterosexual and homosexual individuals, those who were HIV positive were more likely to have disclosed their positive HIV status to their sexual partners. (Alemayehu et al., 2014; Przybyla et al., 2013). Our findings may have differed since we considered an "unknown" couples' status and did not consider the type of sexual relationship in our analysis.

#### **4.2. Limitations**

Our evaluation was not without limitations. Disclosure status and partner's HIV status was by self-report and was not verified by partner interview or HIV testing. Due to social desirability bias, disclosure rates in this community may be overestimated; participants may not have wished to reveal to their interviewers their real disclosure status. In Malawi, it was proven that self-reported disclosure status by HIV positive men was of questionable reliability (Anglewicz & Chintsanya, 2011). In the literature, a higher social standing has positively been associated with disclosure; however, we were unable to factor in an individual's wealth in our analysis. We also did not enquire about the reasons for disclosure or nondisclosure which we felt may have influenced the disclosure process (Ebuy et al., 2015; Loukid et al., 2014). Our analysis was also limited by number of participants who answered questions on disclosure intentions and intentions to use condoms.

#### **4.3. Conclusion and recommendations**

Our analysis revealed high disclosure rates, favorable disclosure intentions among those who had not disclosed and a low proportion of persons who intend to use condoms among those who had not disclosed and did not intend to disclose their positive HIV status to their sexual partners.

To enhance disclosure rates, disclosure can be facilitated by legislation. Policy makers ought to interpret legislation as regards "reasonable time to disclose HIV status" (Kenya Law Reports, 2011) and delineate the role of the health workers who are faced with the daunting task of protecting confidentiality and rights of PLHIV and concurrently promoting public health perspectives i.e. preventing HIV transmission to partners and children (Bott & Obermeyer, 2013; Makin et al., 2007). HIV programs should additionally promote condom use in both marital unions and other unions. Additionally, they should enhance couples HTC, which was stated as a preferred method to facilitate mutual disclosure by a trained health worker at time of testing both in health facilities and in homes and to promote condom use in marital unions (Walcott, Hatcher, Kwena, & Turan, 2013).

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### Competing interest

The authors declare no competing interest.

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