



# Predictors of Risky Sexual Behavior among Sero Discordant Individuals Following HIV Status Disclosure in a Kenyan Hospital

Magu D<sup>1</sup>, Chelogoi E<sup>2\*</sup>, and Orina J. M.<sup>3</sup>

1. *Department of Environmental Health & Disease Control, College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.*
2. *Department of Clinical Medicine, College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.*
3. *Institute of Tropical Medicine and Infectious Diseases, Kenya Medical Research Institute.*

**\*Corresponding Author:** Eunice Chelogoi, Department of Clinical Medicine, College of Health Sciences, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya.  
Email: echelogoi@yahoo.co.uk

---

## Summary

### INTRODUCTION

Globally, Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) burden is a great public health concern. In Sub-Saharan Africa (SSA), majority of the infections and deaths occur due to lack of prompt interventions. HIV status disclosure can improve HIV testing uptake, increase HIV care enrollment and treatment outcomes and reduce stigma challenges. The study objective was to establish risky sexual behaviours associated with HIV status disclosure among HIV serodiscordant individuals in a Kenyan Hospital.

### MATERIALS AND METHODS

The recruitment of the study subjects was done through a systematic random sampling. A descriptive cross-sectional study was conducted. Semi-structured questionnaires and focus group discussions (FGD) were used to collect data. The data was entered on Microsoft Access and exported to Statistical Package for Social Sciences (SPSS) version 23.0 for analysis. Binary logistic regression analysis was used to measure the association between risky sexual behaviors and HIV disclosure among HIV serodiscordant individuals. Results were considered to be significant if  $p < 0.05$  with a 95% confidence interval.

### RESULTS

Majority of the study participants (96.7%) used condoms to prevent HIV transmission. However, there was lack of consistency and correct use among 88.6% of respondents. Many study participants (n=58) reported engaging in sexual intercourse with multiple sexual partners. Among this, (39.7%) did not disclose their HIV status. Other HIV preventive behaviors were; staying away from their partners (1.1%), abstinence (1.1%) and separation of beds (1.1%). Many study participants (36.1%) who did not use condoms each time they had sexual intercourse did not disclose their HIV status. The odds of disclosure were 4.31 times more among respondents who did not have sexual intercourse with other partners.



Among the 58 (17.8%) participants who had engaged in sexual intercourse with other sexual partners, (21.0%) were under the influence of alcohol while 79.0% did not consume alcohol. Respondents who engaged in sexual intercourse when not under influence of alcohol were 0.83 times more likely to disclose their status compared to those who had sexual relations under alcohol influence (OR, 0.83; 95% CI, 0.32–2.16). Alcohol consumption was significantly associated with unprotected sex among PLHIV (OR=1.98, CI=1.63-2.39).

#### CONCLUSION

The sexual partners in HIV serodiscordant relationships were at risk of HIV and other sexually transmitted infection due to risky sexual behaviors and in disclosure on HIV status. Many participants still engaged in risky sexual behaviors. Significant predictors of disclosure were absence of other sexual partners in the relationship, no alcohol use and consistent condom use during sexual intercourse.

#### RECOMMENDATION

The study recommends that healthcare workers should educate the public on the importance of HIV transmission prevention and advantages of status disclosure. Serodiscordant partners need to be encouraged to use condoms correctly, avoid sexual intercourse with multiple partners and alcohol consumption.

*Keywords: Predictors, Status Disclosure, HIV, Kenya*

*Afr. J. Health Sci. 2021 34(1):26-34]*

## Introduction

According to the World Health Organization (WHO), nearly 36.9 million people were living with HIV/AIDS in 2017, including 1.8 million new cases. Globally, Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) burden is a great public health concern. In Sub-Saharan Africa (SSA), majority of the infections and deaths occur due to lack of prompt interventions<sup>[1]</sup>. The HIV status disclosure can improve HIV testing uptake, increase HIV care enrollment and treatment outcomes and reduce stigma challenges<sup>[2]</sup>.

Discordance has been associated with more difficulties as compared to the seroconverted couples, these include relationship and emotional disturbances, sexual contact distancing, marital separation and disruptions<sup>[3]</sup>. The HIV positive partners constantly fear and

are stressed about separation from their HIV-negative partners posing a challenge to deal with HIV serodiscordant couple relationship<sup>[4]</sup>.

Disclosure of one's HIV status enhances proper treatment outcomes in the management of HIV clients due to preventive interventions. There is the rejection of old behaviors and values resulting in the adoption of a social and/or public identity as a HIV-positive individual<sup>[5]</sup>.

Stigmatization negatively affects the disclosure of HIV status among HIV positive persons. Findings have shown stigma and disclosure of HIV status to be associated with HIV transmission<sup>[6][7]</sup>. Findings from a study in South India revealed an association between stigma and disclosure of one's HIV status<sup>[8]</sup>. Findings from a study conducted in Uganda indicated that marital status, use of anti-retroviral (ARVs) drugs, being sexually active



and the number of sexual partners was associated with non-disclosure [9].

The choice of safe sex practices could be difficult for serodiscordant individuals due to the desire for procreation, and conjugal rights. These individuals face the problem of the risk of HIV transmission and the inability to negotiate for safer sex [10]. The risky sexual behaviours among steady heterosexual partners were significant predictors of HIV/ AIDS [11].

The chances of transmitting HIV in a serodiscordant relationship is high especially among the index patients [12]. Married individuals have unprotected sex increasing HIV transmission from the infected partner. Most HIV negative partners in serodiscordant individuals have a high incidence of HIV if the index partner is not on ART [13]. There are various factors associated with increased chances of HIV transmission such as sex, non-disclosure, unprotected sexual intercourse and the presence of sexually transmitted infections [14][15].

Disclosure of HIV status to sex partners has important prevention and care implications for PLHIV. It expands the awareness of HIV risk to both partners and allows the couple to make shared decisions on how to protect their health. This includes consistent use of condoms [2].

## Materials and Methods

### Study Area

The study was conducted at the Comprehensive Care Centre (CCC) at the Defense Forces Memorial Hospital located approximately 15 kilometers from the city Centre, Nairobi (Kenyan's capital city), along Mbagathi Road off Ngong Road. The facility provides services to approximately 1,400 registered HIV serodiscordant individuals.

## Study Design

The study adopted a cross-sectional design.

## Study participants

The study involved serodiscordant clients recruited from the CCC.

## Inclusion Criteria

The study subjects eligible for the recruitment were individuals in a HIV serodiscordant relationship confirmed by Enzyme Linked Immunosorbent Assay (ELISA) test, attending CCC at Memorial Hospital and were willing to participate in the study. Participants signed an informed consent.

## Sample Size Determination

Sample size was determined using a formula by Fisher, *et al.*, (1998) for population above 10000.

$$n = \frac{z^2 pq}{d^2}$$

Where:

*n*= desired sample size

*z*= standard normal deviate which is equal to 1.96 corresponding to the 95% confidence limit.

*p*= prevalence of discordant individuals was hypothesized to be assumed 50% in case proportion is unknown

*q*=1.0- *p* = 0.5

*d*= Degree of accuracy set at 0.05

Thus,

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{(0.05^2)}$$

$$n=384$$

$$n_f = \frac{n}{1 + N}$$

$$n_f = \frac{384}{1 + \frac{384}{1400}}$$

$$n_f = 302$$



## Sampling Procedure

A systematic random sampling criterion was used to recruit 315 study participants at the CCC facility and the  $n^{\text{th}}$  interval was determined to be 4.

## Data collection and analysis

Data collection was done by use of semi-structured researcher-administered questionnaire and focus group discussions (FGD). The CCC conference room was used while ensuring high level of privacy and confidentiality.

Quantitative data collected was entered into Microsoft access where data cleaning and validation was undertaken. Data was exported into Statistical Package for Social Sciences (SPSS) Version 23.0 for analysis. The qualitative data was recorded using a voice recorder, was transcribed, and analyzed thematically.

Both data sets were stored in both hard and soft copies and backed up in compact discs and removable disks under lock and key. Descriptive statistics were carried out to characterize the study participants. Binary logistic regression analysis was used to measure the association between HIV status disclosure and risky sexual behaviors. Binary logistic regression analysis was conducted to cater for confounders and effect modifiers and p-value  $<0.05$  was considered significant.

## Ethical approval

The study was presented for ethical approval at the University of Nairobi/Kenyatta National Hospital Ethical Review Committee (ERC). Informed consent was sought from the participants. The purpose of the study, selection criteria, benefits and risks relating to the study were explained to the participants ensuring

privacy and confidentiality using coded numbers instead of names, to ensure anonymity.

## Results

Majority of the study participants (96.7%) used condoms to prevent HIV transmission. However there was lack of consistency and correct use among 88.6% of respondents. Other preventive behaviors used by the participants were staying away from their partner (1.1%) and abstinence (1.1%) and separation of beds at 1.1% (Table 1.1).

Qualitative reports from FGDs indicated that the respondents engaged in high risk behaviors due to drug abuse and alcohol use which affected consistency in condom use. There were also reports that female condom use was uncomfortable especially if worn for long periods above 30 minutes.

The study found that out of the 58 (17.8%) participants who had engaged in sexual intercourse with other partners apart from their usual partner, 21.0% of them did it under the influence of alcohol while 79.0% of them engaged in sexual intercourse but not under the influence of alcohol. The odds of disclosure was 4.31 times more among respondents who did not have sexual intercourse with other partners. Further 40% of those who did not use condom with other sexual partners did not disclose their HIV status (Table 1.2).

## Discussion

Three of the risky sexual behaviors were significantly associated with HIV disclosure based on binary logistic regression,  $P<0.05$ . Participants who used a condom each time they had sexual intercourse were 12.58 [95%CI = 5.15, 30.71,  $P<0.001$ ] times likely to disclosing their HIV status compared to those who indicated that they did not use a condom during sexual intercourse.



Likewise, participants who used condoms in the last sexual intercourse within the last 12 months were 15.85[95%CI = 6.89, 36.52,  $P < 0.001$ ] times more likely to disclose HIV status compared to who indicated that they had not used a condom in the last 12 months.

Studies have reported that among serodiscordant couples, the annual risk of HIV transmission can be reduced from 20 - 25% to 3 - 7% with the consistent use of male condoms. Moreover, the use of condoms may be low or irregular in different sexual practices of PLHIV. Serodiscordant couples have greater compliance than the general population, though it varies from 39.2% in serodiscordant couples in general, reaching 78.5% in serodiscordant couples where the woman is seropositive<sup>[16]</sup>

Participants who didn't engage in sexual intercourse with other partners other than their partner were 4.31[95%CI = 2.27,8.16,  $P < 0.001$ ] times more likely to disclose HIV status compared to those who engaged in sexual intercourse with other partners other than their partner. According to<sup>[17]</sup>, KAIS (2012) indicated that 65.4% of HIV infected Kenyans who had one or more sexual partners in the last twelve months had disclosed their HIV status to their partners. This leaves 34.6% who have not disclosed their HIV-positive status. It also indicates that among married or cohabiting partners, 4.8% were HIV sero-discordant where one partner is infected and thus posing a risk to the uninfected partner.

Participants who reported using condom on a regular basis while engaging in sexual intercourse were almost 3 times likely to disclose their status as compared to those who did not use condoms regularly (OR, 2.7; 95% CI, 1.0–7.4). Concurring findings were shown by a study done in Tanzania, Kenya and Namibia in which participants who reported disclosing their HIV status to their partners

(AOR: 1.45, 95% CI: 1.11, 1.91) were more likely to report consistent condom use<sup>[21]</sup>.

Those who engaged in sexual intercourse and were not under the influence of alcohol were 0.83 times more likely to disclose their status compared to those who had sexual relations under the influence of alcohol (OR, 0.83; 95% CI, 0.32–2.16). A recent study in Uganda showed similar findings where subjects reporting any alcohol use had a 68% higher prevalence of reporting risky sex compared to those subjects not reporting alcohol use (PR = 1.68; 95% CI: 1.38–2.05)<sup>[18][19]</sup>.

Another review and meta-analysis based on 27 relevant studies demonstrated that any alcohol consumption (OR=1.63, CI=1.39-191), problematic drinking (OR=1.69, CI=1.45-1.97), and alcohol use in sexual contexts (OR=1.98, CI=1.63-2.39) were all found to be significantly associated with unprotected sex among PLWA<sup>[20]</sup>.

## Conclusions

Most participants were sexually active with a significant number reporting incorrect/inconsistent use of condoms. Many respondents were not faithful to one sexual partner. Many sexual partners in a HIV serodiscordant relationship were significantly affected by the HIV status disclosure. Significant predictors for disclosure were; use of condom during sexual intercourse, maintaining one sexual partner and avoidance of alcohol consumption.

## Recommendations

This study recommends that Healthcare workers need to promote HIV prevention interventions as well as encourage disclosure of status to partners. There is need to educate and emphasize on abstinence, faithfulness to one partner correct use of condoms and advocate for behavior change to reduce risk of HIV/AIDS transmission.





These measures can help reduce more infections as well as improve health for those affected.

## References

1. **Zhao M., Liu B., Zheng T., Xu, J, Hao Y. Wang J, Xin Zhang X, Nie N, Chao Wang C, Wang, F, Jiao, M, Wu, Q & Libo Liang L** (2019) . Factors associated with hostility among people living with HIV/AIDS in Northeast China: a cross-sectional study *BMC Public Health volume 19, Article number: 1189*
2. **Bachanas P, Amy Medley A & Bukuku M, MD, MPH** (2013) Disclosure, Knowledge of Partner Status, and Condom Use Among HIV-Positive Patients Attending Clinical Care in Tanzania, Kenya, and Namibia, *AIDS Patient Care STDS*. 2013 Jul; 27(7): 425–435. doi: 10.1089/apc.2012.0388
3. **Mwakalapuka, A., Mwampagatwa, I., Bali, T., Mwashambwa, M., Kibusi, S., Mwansisya, T.** (2017). Emotional and Relationship Dynamics between HIV SeroDiscordance and Concordance Couples: A Narrative Literature Review and Theoretical Framework. *ARC Journal of Public Health and Community Medicine*, 2(2), 1-14
4. **Bravo, P., Edwards, A., Rollnick, S. & Elwyn, G.** (2010). Tough Decisions faced by people living with HIV: A Literature review of psychosocial problems. *AIDS Rev.*, 12, 76-88
5. Frye, V., Fortin, P., Mackenzie, S., Purcell, D., Edwards, L. V., Mitchell, S. G., ...Latka, M. H. (2009). Managing identity impacts associated with disclosure of HIV status: a qualitative investigation. *AIDS Care: Psychological and Socio-medical Aspects of AIDS/HIV*, 21(8), 1071-1078.
6. **Pulerwitz, J., Michaelis, A. P., Lippman, S. A., Chinaglia, M. & Díaz, J.** (2008). HIV-related stigma, service utilization, and status disclosure among truck drivers crossing the Southern borders in Brazil. *AIDS Care*, 20(7), 764-70.
7. **Wolitski, R. J., Pals, S. L., Kidder, D. P., Courtenay-Quirk, C. & Holtgrave, D. R.** (2009). The effects of HIV stigma on health, disclosure of HIV status, and risk behavior of homeless and unstably housed persons living with HIV. *AIDS Behav.*, 13(6), 1222-32.
8. **Subramanian, T., Gupte, M. D., Dorairaj, V. S., Periannan, V. & Mathai, A. K.** (2009). Psycho-social impact and quality of life of people living with HIV/AIDS in South India. *AIDS Care*, 21(4), 473-81.
9. **Osinde, M. O., Kakaire, O. & Kaye, D. K.** (2012). Factors associated with disclosure of HIV serostatus to sexual partners of patients receiving HIV care in Kabale, Uganda. *Int J Gynaecol Obstet.*, 118(1), 61-4.
10. **Beyeza-Kashesya, J., Kaharuza, F., Mirembe, F., Neema, S., Ekstrom, A. M. & Kulane, A.** (2009). The dilemma of safe sex and having children: challenges facing HIV serodiscordant individuals in Uganda. *Afr Health Sci.*, 9(1), 2-12.
11. **Gerbi, G. B., Habtemariam, T., Robnett, V., Nganwa, D., & Tameru, B.** (2012). Psychosocial factors as predictors of HIV/AIDS risky behaviors among people living with HIV/AIDS. *Journal of AIDS and HIV research (Online)*, 4(1), 8.
12. **Kumarasamy, N., Venkatesh, K. K., Srikrishnan, A. K., Prasad, L., Balakrishnan, P., Murugavel, K. G., ...Mayer, K. H.** (2010a). Individuals at risk for HIV infection in Southern India: characteristics of HIV-infected patients in concordant and discordant heterosexual relationships. *Int J STD AIDS*, 21(2), 96-100.
13. **Biraro, S., Ruzagira, E., Kamali, A., Whitworth, J., Grosskurth, H. & Weiss, H. A.** (2013). HIV-1 transmission within marriage in rural Uganda: a longitudinal



- study. *PLoS One.*, 8(2), e55060. doi: 10.1371/journal.pone.0055060. Epub 2013 Feb 4.
14. **Marfatia, Y. S., Naik, E., Singhal, P. & Naswa, S.** (2013). Profile of HIV seroconcordant/discordant individuals a clinic based study at Vadodara, India. *Indian J Sex Transm Dis.*, 34(1), 5-9.
  15. **Hallal R. C., Raxach J. C., Nêmora Tregnago Barcellos, M.T., & Maksud, I** (2015) Strategies to prevent HIV transmission to serodiscordant couples [doi.org/10.1590/1809-](https://doi.org/10.1590/1809-)
  16. **Kiranga J. W., Lumala M. F.P., Musebe R.,** (2018) Factors Influencing Disclosure of HIV-positive Status among People Living with HIV in Kirinyaga County, Kenya, *International Journal of Education and Research* Vol. 6 No. 5
  17. **Conserve DF, King G, Dévieux JG, Jean-Gilles M, Malow R.** Determinants of HIV serostatus disclosure to sexual partner among HIV-positive alcohol users in Haiti. *AIDS and Behavior.* 2014 Jun;18(6):1037-1045. DOI: 10.1007/s10461-013-0685-8
  18. **Wandera, S.O., Kwagala, B., Ndugga, P. et al.** Partners' controlling behaviors and intimate partner sexual violence among married women in Uganda. *BMC Public Health* 15, 214 (2015). <https://doi.org/10.1186/s12889-015-1564-1>
  19. **Shuper PA, Joharchi N, Irving H, Rehm J.** Alcohol as a correlate of unprotected sexual behavior among people living with HIV/AIDS: review and meta-analysis. *AIDS Behav.* 2009 Dec;13(6):1021-36. doi: 10.1007/s10461-009-9589-z. Epub 2009 Jul 18. PMID: 19618261.



## Appendix

**Table 1.1: Distribution of Preventive Behaviors against Contracting Human Immunodeficiency Virus among the Study Participants**

<b>Indicators</b>	<b>n=315</b>	<b>%</b>
Consistent and correct condom use each time you have sexual intercourse		
Yes	279	88.6
No	36	11.4
Reason for not using condom (n=36)		
Less pleasure	33	95.7
Protected by God	2	2.9
Protected by Natural immunity	1	1.4
Had sexual intercourse in the last 12 months		
Yes	229	72.8
No	88	27.8
Consistent and correct condom use in last sexual intercourse within last 12 months		
Yes	166	72.8
No	63	27.8
Used condom with other sexual partners (n=41)		
Yes	31	76.1
No	10	23.9
Engaged in sexual intercourse with other partners other than your partner		
No	257	82.2
Yes	58	17.8
Sexual needs was reason for sleeping with other partners (n=58)		
Yes	42	71.7
No	16	28.3
Work station was reason for sleeping with other sexual partners (n=58)		
Yes	28	49
No	30	51
Engaged in sexual intercourse with other partners apart from their partner under influence of alcohol (n=58)		
Yes	12	21
No	46	79
Contracted sexually related infections (n=58)		
Yes	21	36.4
No	37	63.6
Methods used to prevent contraction of HIV		
Condom use	305	96.7
Abstinence and separation of beds	7	2.2
Others	3	1.1
How long have you been deployed at the current work station		
3 - 6 Months	206	65.4
7 - 12 Months	74	23.5
1 - 2 Years	27	8.6
More than 2 Years	8	2.5





**Table 1.2: Association between Risky Sexual Behaviors and Human Immunodeficiency Virus**

Indicators	Disclosed		Not disclosed		OR	95%CI		P-Value
	N	%	n	%		Lower	Upper	
Use condom each time you have sexual intercourse								
Yes	267	95.7	12	4.3	12.58	5.15	30.71	<0.001
No	23	63.9	13	36.1	Ref			
Reason for not using condom (n=36)								
Less pleasure	30	90.9	3	9.1	10	0.49	203.94	0.077
Protected by God	1		1	100	Ref			
Protected by immunity	0		1	100				
Had sexual intercourse in the last 12 months								
Yes	209	91.3	20	8.7	0.9	0.37	2.21	0.823
No	81	92.0	7	8.0	Ref			
Used condom in the last sexual intercourse within last 12 months								
Yes	157	94.6	9	5.4	15.85	6.89	36.52	<0.001
No	33	52.4	30	47.6	Ref			
Used condom with other sexual partners								
Yes	25	80.6	6	19.4	2.77	0.59	13.05	0.186
No	6	60.0	4	40.0	Ref			
Engaged in sexual intercourse with other partners other than your partner								
No	223	86.8	34	13.2	4.31	2.27	8.16	<0.001
Yes	35	60.3	23	39.7	Ref			
Sexual needs was reason for sleeping with other partners (n=58)								
Yes	25	59.5	17	40.5	1.31	0.42	4.06	0.643
No	9	56.3	8	43.8	Ref			
Work station was reason for sleeping with other sexual partners (n=58)								
Yes	19	67.9	9	32.1	0.76	0.24	2.38	0.647
No	22	73.3	8	26.7	Ref			
Had sexual intercourse with other partners apart from their partner under influence of alcohol								
Yes	4	33.3	8	66.7	0.38	0.1	1.46	0.152
No	26	56.5	20	43.5	Ref			
Contracted sexually related infections								
Yes	17	81.0	4	19.0	2.89	0.81	10.33	0.093
No	22	59.5	15	40.5	Ref			
Methods used to prevent contraction of HIV								
Condom use	295	96.7	10	3.3	4.91	0.54	44.77	0.118
Abstinence	6	85.7	1	14.3	Ref			
Others	3	100.0	0	0.0				
How long have you been deployed the current work station								
3 - 6 Months	171	83.0	35	17.0	1.62	0.32	8.41	0.556
7 - 12 Months	64	86.5	10	13.5	2.13	0.37	12.07	0.382
1 -2 Years	23	85.2	4	14.8	1.92	0.28	13.08	0.501
More than 2 Years	6	75.0	2	25.0	Ref			