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Correlates of Unprotected Receptive Anal Intercourse Among Gay and Bisexual Men: Kampala, Uganda

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Abstract

We conducted a respondent-driven sampling survey (N = 215) to characterize correlates of risk for HIV infection among gay and bisexual men in Kampala, Uganda. We used RDSAT software to produce population estimates for measures and created exportable weights for multivariable analysis. Overall, 60.5% of gay/bi men identify as gay and 39.5% as bisexual; 91.6% are Ugandans. Unprotected receptive anal intercourse (URAI) was associated with identifying as gay, being younger and having had an HIV test in the past 6 months. Perceptions of being low risk to acquire or transmit HIV infection were paradoxically associated with higher likelihood of URAI. Programs to address risk of HIV infection among gay and bisexual men in Kampala need to address perceptions of risk among gay identified men.

Keywords

Men who have sex with men; Uganda; Africa; HIV; Risk behavior; Correlates; Gay and bisexual men

Introduction

Men who have sex with men (MSM) worldwide are disproportionately affected by HIV, with Africa being no exception. In fact, MSM in low- and middle-income countries, including many of those in Africa, have a higher risk of HIV infection than the general population (Baral et al. 2007). Compounding the risk of HIV infection among MSM is the difficulty involved in reaching this population for basic epidemiological studies. In many African countries, MSM are highly stigmatized, and in many cases homosexuality is illegal and can result in imprisonment [Ugandan Penal Code (http://www.mask.org.za/index.php?page=uganda), Sections 21 and 140]. As a result, little information has been gathered about risk behavior among MSM in African countries. This situation has recently begun to change with a number of studies being carried out in Africa (Cáceres et al. 2008). Basic data are needed not only for advocacy but also for correctly prioritizing and creating HIV prevention intervention programs. We therefore conducted a survey of gay and bisexual identified MSM in Kampala using respondent driven sampling (RDS), a method in wide use globally to reach hidden populations

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(Heckathorn 1997; Magnani et al. 2005; Malekinejad et al. 2008). The basic demographics and indicators of risk among gay and bisexual men in Kampla have been reported previously (Kajubi et al. 2007). Techniques to analyze RDS-generated data have evolved since the initial publication allowing us to examine multiple correlates of unprotected receptive anal intercourse (Heckathorn 2007).

Methods

Setting and Study Population

Our study sampled men who self-identified as gay or bisexual and who lived in Kampala, Uganda. Kampala, the capital and largest urban area of Uganda, is home to approximately 1.2 million persons (Uganda Bureau of Statistics 2002). This study received approval from Makerere University and the University of California San Francisco's institutional review boards as well as the Uganda National Council for Science and Technology.

Sampling Design and Recruitment

We conducted recruitment using RDS, a sampling method widely used to sample hidden populations (Heckathorn 1997; Magnani et al. 2005). Recruitment for this study has been described in detail previously (Kajubi et al. 2007). Ten initial seeds were chosen with respect to diversity (age, educational attainment, income and sexual identity). Interested potential participants contacted study staff via a mobile phone number or in person. Subsequently they were screened for eligibility by the Principal Investigator. Holding a study recruitment coupon, being 18 years old or older, self-identifying as gay or bisexual (that is identifying as a "kuchu" in Luganda) and not having previously participated in the survey were the only recruitment criteria. After eligibility was determined, verbal consent was obtained using a standard consent script. Face-to-face interviews were conducted in private locations by trained staff members. At the completion of the interview, participants were given 4,000 shillings (approximately $2USD in 2004) to defray the cost of transportation. Participants also received referrals and information regarding HIV prevention.

Measures

The behavioral survey used in this study was based on standard behavioral surveillance surveys used throughout the developing world (Family Health International 2000) and on those employed among high-risk populations in the United States (Lansky et al. 2007). In addition, we asked a detailed series of partner-by-partner sexual behavior questions for up to five of the respondents' most recent partners in the past 6 months. Partners assessed included male and female partners. This sexual activity "matrix" has been helpful in describing and quantifying detailed sexual behaviors and partnerships (Berry et al. 2007, 2008). Attitudes and context of condom use were asked about all partners.

Data Analysis

RDSAT statistical software (www.respondentdrivensampling.org) was used to produce population estimates for behavioral measures by adjusting for network size and recruitment patterns. These adjustments are only made on the non-seed observations. Behaviors were then analyzed in relation to unprotected receptive anal intercourse (URAI) as our main outcome of interest. Adjusted point estimates and corresponding confidence intervals were examined. If point estimates differed and their confidence intervals were non-overlapping, we report this as a strong possibility of being associated with our outcome of interest. If at least one point estimate was outside the confidence interval of the other estimate, we report this as suggestive of a possible association. Variables that were determined to be strongly or potentially associated with URAI were then included in multivariable logistic regression.

RDSAT also provides individual weights for use in multivariable analyzes. Following methods outlined by Heckathorn (2007), we exported individual weights produced by RDSAT for our outcome variable and used them in multivariable analyzes using the survey logistic procedure in Statistical Analysis Software [SAS] version 9, SAS Institute Inc., Cary, NC.

Results

Recruitment was conducted for 8 weeks, September through October 2004. Recruitment produced a crude sample of 224 gay and bisexual men. In adjusted analyzes based on 215 non-seed respondents, 60.5% of gay/bi men identify as gay and 39.5% as bisexual. Fifty percent of gay/bi men have completed secondary school or higher and 91.6% are Ugandan nationals. Only 9.3% are unemployed. About 23.7% have tested for HIV in the past 6 months while just 12.2% perceive themselves to be at high risk for HIV infection. Twenty-one percent have any unprotected receptive anal intercourse in a recent 6 months period, and 39.2% have ever had a sexually transmitted disease [STD] (Table 1). Of all partnerships reported, 22% were with female partners.

In bivariate analysis URAI appears to be associated with having had an HIV test in the past 6 months, having ever been forced to have sex, identifying as gay, having multiple partners in the past 6 months, being in the “heat of the moment” during sex, dislike of condoms (by both respondent and partners), condom availability and respondents not thinking they could get or pass on HIV (Table 2).

Using weighted logistic regression with the variables associated with URAI in bivariate analyzes while controlling for age and level of educational attainment, having an HIV test in the past 6 months (adjusted odds ratio [AOR] 2.81, 95% confidence interval [CI] 1.2–7.4) being gay-identified (AOR 9.92, 95% CI 3.2–30.2), being in the heat of the moment (AOR 5.72, 95% CI 2.2–15.2) and not thinking he or his partners could get or pass on the HIV virus (AOR 12.25, 95% CI 4.5–32.9) were significantly associated with URAI. Age (AOR 0.91, 95% CI 0.8–1.0) appears to have an significant inverse relationship with URAI. Variables with significant association with URAI, adjusted for all other variables included in the model, are shown in Table 3.

Discussion

We were able to characterize basic correlates of sexual risk among gay and bisexual men in Kampala, Uganda. Those men identifying as gay and holding the perception that one is at low risk for HIV acquisition or transmission stand out in our analysis. These factors must be addressed when formulating prevention approaches for this population. Interestingly, ever having a sexually transmitted infection, being “out”, availability of condoms and selling sex were not associated with URAI.

There are limitations to our investigation. First, as this was a first attempt at sampling gay and bisexual men in this setting, we chose not to undertake HIV testing. Serological results would have greatly strengthened this analysis. Additionally we also did not ask for a self-report of HIV status. Furthermore, while measures of UIAI and URAI focused on male partners, measures of condom attitudes and context were asked about all partners. Future studies will need to ask more detailed questions about these domains in relation to the gender of partners.

Despite these limitations, this investigation serves as a starting point for further studies of gay and bisexual men at risk for HIV infection. Interventions must include gay-appropriate messages that address the potential of HIV infection among this population to reverse the perception of being at low risk for HIV infection. Furthermore, these interventions may do well to focus on younger MSM who may have limited understanding of the risks of URAI with

men, particularly in the context of a generalized epidemic where having women partners is perceived as a greater risk. Finally, further investigation of the association of recent HIV testing with URAI is needed as frequent HIV testing, with repeated HIV-negative results, may be seen as reinforcing risk behavior.

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Table 1

Crude and adjusted population estimates of characteristics, gay and bisexual men, Kampala, Uganda

Variable	Crude % (*N*)	Adjusted % (95% CI)
Sexual identity		
Gay	63.7 (137)	60.5 (47.6–70.4)
Bisexual	36.3 (78)	39.5 (29.7–52.4)
Highest education level attained		
None	1.8 (4)	1.3 (0.1–2.6)
Some primary school	17.5 (40)	17.7 (8.4–27.0)
Completed primary	26.8 (58)	30.0 (19.8–43.2)
Completed secondary school	17.1 (38)	24.0 (13.1–34.3)
Some tertiary school	19.3 (43)	16.8 (11.3–28.0)
Completed tertiary school	17.5 (36)	10.3 (5.8–15.0)
Occupation/employment		
Student	30.7 (66)	29.5 (20.0–40.8)
Professional	24.7 (53)	18.0 (10.1–24.2)
Retail	11.2 (24)	23.6 (9.9–38.6)
Trade	24.2 (52)	18.8 (12.0–27.4)
Other	0.5 (1)	0.7 (0–2.0)
Unemployed	8.4 (18)	9.3 (3.7–17.8)
Missing	0.5 (1)	0.1 (0–0.3)
National origin		
Ugandan	91.6 (157)	91.6 (85.8–97.8)
Non-Ugandan African	7.4 (16)	7.9 (1.9–13.9)
Non-African	0.9 (2)	0.5 (0–1.0)
Age group (years)		
18–20	29.3 (63)	44.5 (30.5–54.5)
21–25	37.7 (81)	30.7 (22.8–40.7)
26–30	22.3 (48)	18.6 (11.5–28.8)
31–35	7.4 (16)	4.1 (2.3–7.2)
36–40	1.4 (3)	0.7 (0–1.7)
41+	1.9 (4)	1.5 (0.1–2.2)
URAI with male partners	24.2 (52)	21.2 (15.4–30.2)
UIAI with male partners	17.5 (36)	19.2 (10.0–31.1)
Partners		
0	15.9 (34)	25.7 (11.8–39.7)
1	31.8 (68)	34.4 (23.3–44.5)
2	22.9 (49)	19.7 (13.5–29.1)
3–5	24.3 (52)	16.1 (11.4–22.7)
6–9	3.3 (7)	2.3 (0.7–4.5)
10+	1.9 (4)	1.7 (0.1–4.8)
STD ever	46.0 (99)	39.2 (29.5–49.3)
Foreign partner ever	44.1 (90)	24.2 (17.8–33.7)

Variable	Crude % (*N*)	Adjusted % (95% CI)
HIV test past 6 months	29.8 (64)	23.7 (15.5–33.3)
Ever forced to have sex	15.0 (32)	11.3 (7.0–15.0)
Out	59.1 (127)	59.4 (49.1–70.2)
Self perception of risk for HIV infection		
None	8.9 (19)	6.4 (3.2–11.0)
Low	13.1 (28)	13.3 (7.0–21.0)
Somewhat high	65.3 (139)	68.1 (58.6–78.2)
High	12.7 (27)	12.2 (5.4–19.0)

Table 2

Prevalence of unprotected receptive anal intercourse (URAI) in the past 6 months by characteristics of gay and bisexual men, Kampala Uganda, 2004

Variable	Prevalence of unprotected receptive anal intercourse		
	Crude % (*N*)	Adjusted %	Adjusted 95% CI
Ever STD			
Yes	27.3 (27)	20.2	12.2–28.9
No	21.0 (25)	21.5	12.6–36.7
Foreign partner			
Yes	27.8 (25)	25.8	15.9–42.4
No	20.2 (23)	20.0	10.4–25.3
HIV test past 6 months			
Yes	26.6 (17)	30.2	15.6–55.8
No	23.2 (35)	18.6	11.5–27.1
Ever forced to have sex			
Yes	43.8 (14)	41.5	25.4–63.5
No	20.9 (38)	18.5	11.9–28.3
Out			
Yes	29.1 (37)	18.9	11.7–30.1
No	17.0 (15)	25.1	12.4–39.7
Gay identified			
Yes	27.0 (37)	26.7	16.6–40.7
No	19.2 (15)	11.8	6.8–20.3
Partners past 6 months			
0	0	–	–
1	20.6 (14)	26.8	11.4–43.2
2	34.7 (17)	39.6	23.3–54.0
3–5	30.8 (16)	22.2	13.8–39.4
6–9	28.6 (2)	9.9	0–41.2
10+	75.0 (3)	12.5	1.0–100.0
Multiple partners past 6 months			
Yes	33.9 (38)	30.5	22.3–43.1
No	13.6 (14)	15.2	6.1–26.6
Sell sex			
Yes	30.5 (18)	17.5	8.4–31.5
No	21.8 (34)	23.0	14.7–33.7
Self perception of risk for HIV infection			
None	31.6 (6)	15.3	4.8–33.4
Low	39.3 (11)	45.2	23.6–68.6
Somewhat high	20.9 (29)	17.4	11.2–29.2
High	18.5 (5)	24.8	5.0–56.8
Heat of the moment			

Variable	Prevalence of unprotected receptive anal intercourse		
	Crude % (*N*)	Adjusted %	Adjusted 95% CI
Yes	54.9 (39)	45.7	35.0–64.0
No	9.0 (13)	9.4	3.7–20.0
Respondent does not like condoms			
Yes	46.1 (35)	41.5	28.7–56.7
No	12.2 (17)	9.2	4.6–17.8
Partner(s) does not like condoms			
Yes	42.7 (32)	43.3	30.5–58.1
No	30.7 (43)	8.8	5.0–15.8
Condoms available			
Yes	44.4 (16)	44.7	25.9–64.5
No	20.1 (36)	16.8	10.9–25.6
Partner(s) was HIV –			
Yes	55.1 (34)	45.9	33.3–63.4
No	12.8 (18)	10.9	5.0–20.3
Respondent thought partner(s) were at low risk for HIV infection			
Yes	52.9 (36)	45.1	31.2–61.8
No	21.8 (32)	10.2	5.1–21.6
Mutually faithful sexual relationship			
Yes	50.0 (38)	42.5	32.1–58.7
No	10.1 (14)	12.6	4.7–22.9
Respondent and partner(s) had same HIV status			
Yes	54.4 (37)	44.8	32.2–62.8
No	10.2 (15)	10.6	4.2–21.0
Respondent did not think he could get or pass on HIV			
Yes	50.0 (29)	51.5	37.6–70.8
No	14.6 (23)	10.1	5.9–16.2

Table 3

Correlates of unprotected receptive anal intercourse, gay and bisexual men, Kampala, Uganda

Variable	AOR	95% CI	Wald Chi square
Age	0.91	0.8–1.0	5.9*
HIV test past 6 months	2.1	1.1–7.4	4.4*
Gay identified	9.92	3.2–30.2	16.3**
Heat of the moment	5.72	2.2–15.2	12.3**
Did not think he or his partners could get/pass on the HIV virus	12.25	4.5–32.9	24.5**

* $P < 0.05$

** $P < 0.001$