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Viewing Pornography Depicting Unprotected Anal Intercourse: Are There Implications for HIV Prevention among Men Who Have Sex with Men?

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Abstract

We used an Internet-based questionnaire to investigate whether viewing pornography depicting unprotected anal intercourse (UAI) was associated with engaging in UAI in a sample of 821 non-monogamous men who have sex with men (MSM). In the three months prior to interview, 77.2% viewed pornography depicting UAI, 42.6% engaged in insertive UAI, and 38.9% engaged in receptive UAI. Polytomous logistic regression of the 751 subjects who provided data on pornography viewing showed significantly elevated odds ratios for having engaged in receptive UAI, insertive UAI, and both receptive and insertive UAI associated with increasing percentage of pornography viewed that depicted UAI. We also found independently significant associations of engaging in UAI with age, use of inhalant nitrites, and HIV status. Although the data cannot establish causality, our findings indicate that viewing pornography depicting UAI and engaging in UAI are correlated. Further research is needed to determine if this observation may have utility for HIV prevention.

Keywords

HIV; Pornography; Men who have sex with men (MSM); Unprotected anal intercourse (UAI); Health Behavior

INTRODUCTION

Unprotected anal intercourse (UAI) remains common among men who have sex with men (MSM) (Dilley et al., 2002; Halkitis, Parsons, & Wilton, 2003; Mansergh et al., 2002), and likely accounts for a substantial percentage of human immunodeficiency virus (HIV) transmission in this sub-population. In 2006, an estimated 74.8% of people living with HIV were men, and male-male sexual activity was estimated to account for 64.3% of new HIV infections among men in the United States ("HIV prevalence estimates--United States, 2006," 2008; Subpopulation estimates from the HIV incidence surveillance system--United States, 2006," 2008).

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Clinicians, researchers, and public health practitioners have been encouraging safer sex practices for over two decades. Yet many MSM continue to engage in UAI, increasing the risk of HIV transmission. Some suggested individual-level causes of continued UAI among MSM include disinhibition associated with drug and alcohol use; poor self-efficacy to practice safer sex; the advent of antiretroviral therapies; and HIV seroadaptive behaviors (Snowden, Raymon, McFarlend, 2009). HIV seroadaptive behaviors include the presumption of low-risk associated with UAI if individuals engage in HIV "serosorting" (the practice of engaging in UAI only with partners whose HIV serostatus is the same as one's own) and the practice of "strategic positioning" (in which HIV-negative men engage solely in insertive UAI on the assumption that the insertive partner is at lower risk of HIV acquisition, and HIV-positive men engage solely in receptive UAI on the assumption that the receptive partner is less likely to transmit HIV to others) (Bauermeister, Carballo-Dieguez, Ventuneac, & Dolezal, 2009; Dilley et al., 2002; Ostrow et al., 2008; Prestage et al., 2005; Vanable, Ostrow, McKirnan, Taywaditep, & Hope, 2000). Social factors for continued HIV risk behaviors that have been previously explored include HIV stigma, health literacy, intra- and inter-community norms regarding homosexual sex (Bauermeister, Carballo-Dieguez, Ventuneac, & Dolezal, 2009; Kelly, J.A. et al., 2010). Pornography is known to have an influence on the MSM community, and theoretically may be related to the sexual practices of MSM (Duggan & McCreary, 2004; Duncan & Donnelly, 1991; Duncan & Nicholson, 1991; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010; Li & Davey, 1996; Morrison, Morrison, & Bradley, 2007). Therefore, the present investigation examined the possible relationship between pornography and sexual behaviors among MSM in the context of other known HIV risk factors.

The viewing of pornography, or explicit representations of nudity or intercourse created to sexually arouse the viewer, is pervasive across cultures and sexual orientations (Atwood, 2005). Researchers have explored the relationship between media consumption and behavior in many contexts for several decades. The effects of viewing pornography on social norms, attitudes, and behavior have been well studied (Hald & Malamuth, 2008; Kingston, Malamuth, Fedoroff, & Marshall, 2009; Malamuth & Huppin, 2005). Pornography has been shown to be a source of sexual information among diverse populations, informing individuals' sexual knowledge and practice (Duncan & Donnelly, 1991a, 1991b; Duncan & Nicholson, 1991; Kubicek, Beyer, Weiss, Iverson, & Kipke, 2010; Li & Davey, 1996) and a relationship has been demonstrated between pornography viewing and how MSM perceive their bodies (Duggan & McCreary, 2004; Morrison, Morrison, & Bradley, 2007). Other research has found behavior change among heterosexual men subsequent to pornography viewing (Loftus, 2002; Paul, 2005). Due to the many potential internal and external factors that may influence sexual practices and use of pornography, we believe that studies examining the potential effects of pornography viewing in other populations, such as heterosexual men, may not detect factors unique to MSM. Pornography viewing among MSM has also previously been examined in the context of sexual compulsivity, (Parsons, Kelly, Bimbi, Muench, & Morgenstern, 2007; Wainberg et al., 2006), but such studies may have limited generalizability because viewing pornography in these studies is limited to its contribution to a subgroup with diagnosed pathology. We are unaware of epidemiologic investigations of the possible association of pornography viewing with UAI among MSM. The research discussed in this article seeks to determine, from a public health perspective, if a relationship exists between the viewing of pornography depicting UAI and engaging in UAI among high-risk MSM.

Viewing of pornography is common among MSM, and more frequent than among their heterosexual peers (Duggan & McCreary, 2004; Kendall, 2004; Thomas, 2000). Additionally, pornography depicting UAI, colloquially known as "bareback" pornography, is targeted at MSM, mass-produced, and readily available both on the Internet, for-pay and

free of charge, and in movies on digital media and in theaters (Brown & Strasburger, 2007; Keller & Brown, 2002; Wolitski, Valdiserri, Denning, & Levine, 2001). Due to the widespread viewing of pornography by MSM and its demonstrated use as a source of sexual information, examination of pornography in public health investigations of HIV risk and prevention efforts is warranted.

We report the results of an Internet-based research study to investigate the hypothesis that viewing pornography depicting UAI is associated with engaging in UAI. If a relationship between viewing pornography depicting UAI and engaging in UAI is present and strong, it would warrant investigation into the causality of this phenomenon. Alcohol and substance use also were incorporated into the research model as their contribution to HIV risk-taking behavior has been demonstrated (Carey et al., 2008; Colfax et al., 2005) as well as to allow their potential confounding effects to be explored.

METHOD

Participants

A total of 2552 surveys were begun by participants. Of these, four declined consent, 15 were excluded because they were born female, 40 were excluded because they reported sex with female partners exclusively, 631 were excluded because they reported currently being in mutually monogamous relationships, and 495 were excluded because they had not engaged in anal intercourse with a male partner in the prior three months. This resulted in a sample of 821 men at high risk of HIV transmission or acquisition. There were no identifiable repeat-responders in this sample. Seventy of these 821 participants did not provide pornography viewing history data and therefore were not included in statistical analyses, leaving a sample of 751. Compared to participants who provided pornography-viewing data, the 70 who did not were more likely to report a higher annual income or decline to report their income, having sex with both men and women (as opposed to having sex with men only), and self-identify as bisexual, but did not differ on any other demographic variables (data not shown).

Recruitment

Recruitment occurred over a six-week period beginning February 20, 2009. Various recruitment methods were used to obtain a heterogeneous sample of MSM. Internet recruitment was targeted equally at pornography-related websites and websites oriented towards MSM but not focused on pornography. The methods employed to make MSM aware of the study included: contacting research subjects who had participated in previous studies and had consented to being contacted for future research, pay-per-click advertising targeting MSM in New York City (NYC) on a popular social networking website, e-mail advertisements to subscribers to 2 MSM listservs, bulletin board postings and web-banners on websites used by MSM to find potential sex partners, and news features that appeared on seven weblogs, including four that do not generally include pornography in their content and three that include MSM-focused pornography.

Enrollment was limited to persons at risk of HIV transmission or acquisition through sexual contact by requiring that subjects reported ≥ 1 casual male sexual partners in the three months prior to interview and ≥ 1 instance of anal intercourse with a male partner in this same time period (Flynn et al., 2005). The dynamics of the practice of safer sex, and the influences on and reasons for engaging in UAI might differ between sex occurring in the context of a monogamous relationship versus sex with casual partners (Hart et al., 2009). Limiting the sample to MSM with casual partners should aid generalizability of the data to individuals who are at high risk in the continuing HIV epidemic. Completed interviews were

scanned for possible repeat-participants by evaluating zip code, age, and asking participants explicitly if they had previously completed the questionnaire.

Procedure

We created an Internet-based questionnaire using a commercial survey website. Participants were not asked for their names or other personal identifiers, and the survey website removed any record of Internet protocol addresses of the computers used by participants to respond to the questionnaire. Our Institutional Review Board granted both a waiver of written informed consent and a waiver of authorization, thereby allowing use of private health information (i.e., exact age in years and home zip code) without obtaining a signed and dated written informed consent. This information was used to identify repeat responders to the questionnaire in addition to asking participants about prior participation.

Before beginning the questionnaire, participants were presented with an introductory statement that contained all of the elements of informed consent in a condensed, narrative form. Participants had to certify their willingness to participate before beginning the questionnaire. Participants were instructed to clear their browsing history and "cookies" from their Internet browser upon completion of the questionnaire to further ensure the privacy of information they provided.

Participants were told at the beginning of the survey process that they would be eligible to enter a raffle for a $200 gift certificate. Regardless of meeting inclusion criteria or not, participants were able to enter the raffle. Contact information for entrants in the raffle was delinked from questionnaire responses and destroyed at the conclusion of the study.

Measures

The self-administered study questionnaire[1] requested the following data:

Demographics—Seven items – age (numerical), sex at birth (categorical)[2], zip code, race (categorical), ethnicity (categorical), education (categorical), annual income (categorical)

Sexual identity—Three items – sexual orientation (categorical), sex of sexual partners (categorical)[2], monogamous relationship (categorical)[2]

HIV status and Sexually Transmitted Infection (STI)History—Two items – HIV status (categorical), history of STI diagnosis or treatment in the previous year (categorical)

Sexual History—Three items – total male sexual partners in the 3 months prior to interview (numerical)[2], condom use for insertive anal intercourse (categorical), condom use for receptive anal intercourse (categorical)

Recreational drug use—Three items – use of recreational drugs in the 3 months prior to interview (categorical), all elements of the Drug Abuse Screening Test (DAST-20), all elements of the Alcohol Use Disorders Identification Test (AUDIT) (Babor, 2007; Babor, de la Fuente, & Saunders, 1992; Skinner, 1982a, 1982b). We dichotomized scores on the DAST-20 at 6, the cut-point set by Skinner et al., the creators of the DAST-20, for substance abuse case finding purposes (Skinner, 1982a). Scores on the AUDIT were dichotomized at 8 as recommended by Babor (2007) to achieve high sensitivity for alcohol use disorder as

[1]The complete questionnaire is available from the corresponding author.
[2]Responses to this question were used for inclusion/exclusion

defined by ICD-10 criteria as opposed to a value of 10, which would provide greater specificity but lesser sensitivity.

Pornography Viewing—Eight items – history of ever viewing homosexual pornography (categorical), history of ever viewing heterosexual pornography (categorical), media of homosexual pornography (categorical), minutes of homosexual pornography viewed per week (numerical), sexual acts featured in viewed pornography (categorical), proportion of homosexual pornography viewed that features PAI (categorical), proportion of homosexual pornography viewed that features UAI (categorical), perceived influence of pornography viewing on sexual practices (categorical)

Statistical Analysis

Initial analyses of categorical data used the χ^2 test for categorical data and the non-parametric Wilcoxon test to compare scores on continuous variables (e.g., the DAST and AUDIT) among groups. Age was treated as a continuous variable and was categorized into tertiles for analysis as a categorical variable. For multivariable analyses, we employed polytomous logistic regression with four levels of the dependent variable, "UAI in the 3 months prior to interview" (i.e., no UAI, which was the referent category; insertive UAI only; receptive UAI only; and both insertive and receptive UAI). Polytomous logistic regression analysis is a method that permits analysis of odds ratios for various outcome categories simultaneously. In the present analyses, we were interested in correlates of UAI versus not engaging in unprotected anal intercourse. We suspected, however, that correlates of engaging in receptive UAI, insertive UAI, or in both forms of UAI might differ. HIV serostatus, for example, might be correlated differently with each of these forms of UAI, as those who knew they were HIV-uninfected might engage less often in receptive UAI because of the well-known risk of HIV acquisiton associated with this sexual practice, whereas those who knew they were HIV-infected might engage less often in insertive UAI because of the risk of HIV transmission to others. Polytomous logistic regression analysis allowed us to simultaneously analyze risk factors for each form of UAI. Polytomous logistic regression is preferred over multiple, separate logistic regression models because it simultaneously estimates the variances for variables entering into each of the different models (Kleinbaum & Klein, 2002).

Model building followed the strategy suggested by Kleinbaum and Klein (2002), in which a hierarchically well-formulated model included the hypothesized explanatory variable (i.e., the percentage of pornography viewed that depicted UAI), factors known to be associated with engaging in UAI which may confound the relationship under investigation (demographic variables, drug use variables, age, history of sexually transmitted infections, and HIV serostatus), and the interaction of the variable of interest with HIV serostatus. Statistical significance was used to determine if the interaction term could be dropped from the full model, after which backward elimination was used to determine if variables which may confound could be dropped from the model by qualitatively evaluating whether dropping each variable substantially altered the point estimates of the odds ratio of interest or provided improved precision over the estimates provided by the full model. Data management and statistical analyses used SPSS v.13 for Windows and SAS 9.2.

RESULTS

Descriptive Statistics

Demographic and other characteristics of the sample are shown in Table 1. The median age was 32 years (range, 18–68; interquartile range [IQR] = 26–41 years). Participants were primarily White, non-Hispanic, with some college education. Most (68.8%, *n* = 517), had

annual salaries of $40,000/year or more. Most had sex with men exclusively, but 5.7% (*n* = 43) reported having sex with both men and women. Almost all participants (90.7%, or 681/751) self-identified as "Gay." The most common recruitment source was the study webpage, but we were not able to document how individuals were referred to this webpage

The median score on the DAST-20 measure of drug abuse was 3 (range, 0–19; IQR = 0–4); 16.9% (*n* = 127) met the diagnostic criterion for substance abuse of ≥ 6. The median score on the AUDIT measure of alcoholism was 5 (range, 0–32; IQR = 3–9), with 33.8% (*n* = 254) of those completing the survey meeting the diagnostic criterion of ≥ 8 for an alcohol use disorder.

Almost all participants reported viewing pornography depicting homosexual sex (98.9%, *n* = 743), with 95.2% (*n* = 715) reporting viewing depictions of protected anal intercourse (PAI) and 94.3% (*n* = 711) reporting viewing UAI. Many (69.8%, *n* = 524) reported watching pornography depicting PAI at least once/week and 62.3% (*n* = 468) reported watching pornography depicting UAI at least once/week. The median number of minutes of homosexual pornography viewed/week was 60.0 (range, 0–1400; IQR = 30–120). Approximately one third (33.5%, *n* = 275) reported that at least half of the pornography viewed depicted UAI. Media on which participants viewed homosexual pornography were the Internet (96.4%, *n* = 724), digital video discs (DVDs) (57.3%, *n* = 430), magazines (18.1%, *n* = 136), and other media (1.7%, *n* = 13). Approximately half (48.2%, *n* = 360), reported viewing pornography depicting heterosexual intercourse. More than half (54.9%, *n* = 413) of the study sample responded positively to the question, "Do you think the porn that you watch influences your sexual behavior?"

In the three months prior to interview, 45.0% (*n* = 338) of participants reported insertive UAI with ≥ 1 male partner and 40.3%% (*n* = 313) reported receptive UAI with ≥ 1 male partner. Compared to HIV-negative participants, HIV-positive participants more often reported engaging in receptive UAI only, and engaging in both receptive and insertive UAI.

Older age was associated with a greater percentage of men reporting engaging in UAI. There was a significant inverse trend between the percentages of subjects reporting *no* UAI and age (45.5% [n=113] of subjects aged 18–27 years, 39.4% [n=95] of subjects aged 28–37 years, and 34.7% [*n* = 91] of subjects aged ≥ 38 years; Table 2, *p* for trend = .01). Use of amyl or butyl nitrites, or "poppers," was associated with a greater percentage reporting histories of receptive UAI, and a greater percentage of persons engaging in both receptive and insertive UAI. Neither DAST-20 scores ≥ 6 nor AUDIT scores ≥ 8 were associated with engaging in UAI.

Correlates of Unprotected Anal Intercourse

The percentages of subjects *not* engaging in UAI was inversely associated with the percentage of pornography viewed that included depictions of UAI (Table 2, *p* for trend < . 0001). Participants who reported that 75–100% of the pornography they viewed included depictions of UAI (*n* = 122) were especially likely to have engaged in UAI, with only 17.2% (*n* = 21) of this subgroup reporting that they used condoms on all occasions of anal intercourse in the prior three months.

Polytomous Logistic Regression

The hierarchically well-formulated full model that we assessed with polytomous logistic regression investigated the four-level dependent variable of not engaging in UAI, engaging in insertive UAI, receptive UAI or both forms of UAI, with the variable of interest, namely the percentage of pornography viewed that included depictions of UAI, HIV serostatus, and the interaction between HIV serostatus and the percentage of pornography viewed that

included depictions of UAI. Potential confounders that we investigated were age, race, Hispanic ethnicity, education (college or more vs. less than college), income, recruitment source, dichotomized DAST-20 score, dichotomized AUDIT score, and use of recreational drugs.

The interaction term between HIV status and the percentage of pornography viewed that included depictions of UAI were not significant and thus was dropped from the model. Backwards elimination indicated that race, Hispanic ethnicity, education, income, recruitment source, cocaine use in the prior three months, use of erectile-dysfunction drugs in the prior three months, marijuana use in the prior three months, crystal methamphetamine use in the prior three months, and the dichotomized DAST and AUDIT scores could be dropped from the model without altering substantially the point estimates from those of the hierarchically well-formulated model that included all potential confounders. The final polytomous logistic regression model (likelihood ratio chi-square = 125, 21 df, $p < .0001$), indicated large and significantly elevated odds ratios for all three categories of UAI associated with reporting that ≥ 75% of the pornography viewed included depictions of UAI (Table 3). Increasing percentages of viewing UAI in pornography were associated with increasing odds ratios for each category of UAI. Use of inhalant amyl or butyl nitrites was associated with a significantly increased odds ratio for engaging in both receptive and insertive UAI. HIV-positivity was associated with an increased odds ratio for engaging in receptive UAI only or in both receptive and insertive UAI as compared to HIV-negative participants. HIV-unknown status was associated with significantly increased odds ratios for engaging in insertive UAI only.

DISCUSSION

The present study found that viewing pornography depicting UAI was significantly associated with engaging in UAI in a sample of non-monogamous, sexually active MSM. Independent significant risks for engaging in UAI were associated with increasing viewing of pornography that depicted UAI, HIV status, and use of inhalant nitrites.

A relationship between inhalant nitrite use and HIV infection has been demonstrated previously (Brown & Strasburger, 2007; Wolitski, et al., 2001). In the present sample, the use of inhalant nitrites was associated with a significantly elevated odds ratio for engaging in both receptive and insertive UAI. Neither the dichotomized DAST-20 score for substance abuse nor individual variables for recreational drugs, with the exception of inhalant nitrites, entered the multivariable model of risk factors for UAI. This finding contrasts with prior studies showing relationships of UAI with substance use (Hays et al., 1997; Koblin et al., 2003; Whittier 2009). Our recruitment may have accessed a different sample than is commonly studied in epidemiologic research on HIV. Substance use in our sample also may have been less common than in other studies and more focused on use of inhalant nitrites, which are often used by MSM to facilitate receptive anal intercourse (Romanelli, Smith, Thornton, & Pomeroy, 2004).

Our data cannot establish the causality of the relationship between viewing pornography depicting UAI and engaging in UAI. Some MSM may watch pornography as part of a lifestyle that includes UAI, with pornography viewing having little or no impact on sexual practices. For some MSM, however, the viewing of pornography depicting UAI may affect sexual practices and attitudes, or reduce the perceived likelihood of adverse consequences associated with engaging in UAI. Longer-term relationships between pornography viewing and sexual behavior may operate over years or decades, but the data we collected cannot provide insight into these relationships. It is likely that a combination of short- and long-term associations resulted in the correlation observed in the present study. Further research

will be needed to elucidate the variety of reasons why MSM who view pornography depicting UAI engage more frequently in this behavior than those who do not.

Despite the inability to establish causality, our findings nonetheless may have utility for HIV prevention. MSM who frequently watch pornography that includes depictions of UAI are at increased odds than those who do not to engage in UAI. The Theory of Reasoned Action posits that behavioral intentions can be altered by changing attitudes or subjective norms (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975; Hale, Householder, & Greene, 2002). We do not assert that pornography should be regulated based on these findings. Pornography viewing may accomplish different goals for different individuals, some of which may be beneficial for public health. For example, solitary sexual satisfaction is achieved by some individuals with the aid of pornography, and among these individuals the viewing of pornography may reduce sexual risks of HIV. While randomized trials would be needed to fully understand the influence of pornography on sexual practices, the findings of this research suggest that reduced viewing of certain types of pornography may facilitate adherence to safer sex guidelines for some MSM.

Pornography viewing among MSM is commonplace, and data from this research demonstrate that viewing pornography depicting UAI is also commonplace. Future research looking beyond individual-level associations between viewing pornography and engaging in specific sexual behaviors is warranted. It is likely that pornography viewing also influences attitudes, beliefs, and behavioral norms at the societal level and societal attitudes influence the type of pornography produced. There is active debate in the mainstream gay press concerning both the risks to performers of producing pornography that includes UAI and the impacts of UAI in pornography on perceived norms among gay men (Siegel, 2009). While dyadic, community-level and other higher-level effects almost certainly affect the frequency of pornography viewing and its impacts on sexual behavior, the present demonstration of individual-level associations may nonetheless be of value.

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Table 1

Characteristics of 751 high-risk, non-monogamous MSM participating in an Internet-based survey of pornography viewing and sexual practices.

Characteristic	n	%
Age		
18–27	248	(33.0)
28–37	241	(32.1)
≥38	262	(34.9)
Race		
White	608	(81.0)
Black	29	(3.9)
Asian/Pacific Islander	32	(4.3)
Mixed Race	47	(6.3)
Other	35	(4.7)
Hispanic/Latino ethnicity		
Yes	89	(11.9)
No	662	(88.1)
Education		
Less than high school, high school. trade or vocational school	53	(7.1)
Some college, 2-year, or 4-year college degree	462	(61.5)
Graduate degree	236	(31.4)
Annual income		
<$40,000	234	(31.2)
$40,001–$100,000	349	(46.5)
>$100,001	122	(16.2)
Declined	46	(5.6)
HIV status		
Negative	543	(72.3)
Positive	84	(11.2)
Unknown	124	(16.5)
Pornography viewed in prior 3 months that depicted UAI		
None (0)	40	(5.3)
Little (1–24%)	187	(24.9)
Some (25–49%)	249	(33.6)
Much (50–74%)	153	(20.4)
Most (75–99%)	102	(13.5)
All (100%)	20	(2.6)
DAST-20		
<6	624	(83.1)
≥6	127	(16.9)
AUDIT		
<8	497	(66.2)

Characteristic	n	%
≥8	254	(33.8)

Table 2

Associations of demographic characteristics, sexual, and drug use practices with unprotected anal intercourse in the three months prior to interview among high-risk MSM in non-monogamous relationships.

Characteristic	Unprotected anal intercourse (UAI) in prior three months				
	None n (%)	Insertive n (%)	Receptive n (%)	Both n (%)	*p*
Age (years)					ns
18–27	113 (45.5)	42 (16.9)	35 (14.1)	58 (23.4)	
28–37	95 (39.4)	52 (21.6)	35 (14.5)	59 (24.5)	
≥38	91 (34.7)	55 (21.0)	44 (16.8)	72 (27.5)	
HIV status					<.0001
Negative	238 (43.8)	117 (21.5)	75 (13.8)	113 (20.8)	
Positive	41 (33.0)	26 (21.o)	25 (20.2)	32 (25.8)	
Unknown	20 (23.8)	6 (7.1)	14 (16.7)	44 (52.4)	
Pornography viewed in prior three months that depicted UAI					
0–24%	125 (55.1)	41 (18.1)	32 (14.1)	29 (12.8)	<.0001
25–74%	153 (38.1)	83 (20.6)	61 (15.2)	105 (26.1)	
75–100%	21 (17.2)	25 (20.5)	21 (17.2)	55 (45.1)	
DAST-C summary score of drug use					.08
<6	257 (41.2)	125 (20.0)	92 (14.7)	150 (24.0)	
≥6	42 (33.1)	24 (18.9)	22 (17.3)	39 (30.7)	
AUDIT summary score of alcohol use					ns
<8	193 (38.8)	97 (19.5)	73 (14.7)	134 (27.0)	
≥8	106 (41.7)	52 (20.5)	41 (16.1)	55 (21.6)	
Inhalant nitrite use in prior three months					<.0001
No	236 (42.6)	125 (22.6)	79 (14.3)	114 (20.6)	
Yes	63 (32.0)	24 (12.2)	35 (17.8)	75 (38.1)	
Erectile dysfunction drug use in prior three months					.007
No	261 (41.1)	128 (20.2)	101 (15.9)	145 (22.8)	
Yes	38 (32.8)	21 (18.1)	13 (11.2)	44 (37.9)	
Marijuana use in prior three months					
No	187 (43.2)	92 (21.3)	63 (14.5)	91 (21.0)	.01

Characteristic	Unprotected anal intercourse (UAI) in prior three months				
	None n (%)	Insertive n (%)	Receptive n (%)	Both n (%)	*p*
Yes	112 (35.2)	57 (17.9)	51 (16.0)	98 (30.8)	
Crystal methamphetamine use in prior three months					<.0001
No	285 (41.4)	139 (20.2)	108 (15.7)	156 (22.7)	
Yes	14 (22.2)	10 (15.9)	6 (9.5)	33 (52.4)	
Sexually transmitted infection in the last year					.006
No	26 (26.5)	18 (18.4)	17 (17.3)	37 (37.8)	
Yes	273 (41.8)	131 (20.1)	97 (14.9)	152 (23.3)	

Table 3

Polytomous logistic regression analysis of risk factors for engaging in UIAI, URAI, or both UIAI and URAI compared to internal referents who did not report UAI in the three months prior to interview

	Risk-related sexual behavior in the prior three months								
	Unprotected insertive anal intercourse (n = 149)			Unprotected receptive anal intercourse (n = 114)			Both unprotected insertive and receptive anal intercourse (n = 189)		
Characteristic	**OR**	**(95% CI)**	***p***	**OR**	**(95% CI)**	***p***	**OR**	**(95% CI)**	***p***
Age (years)									
18–27	1.0			1.0			1.0		
28–37	1.7	(1.0, 2.8)		1.3	(0.8, 2.4)		1.2	(0.8, 2.0)	ns
≥38	2.1	(1.3, 3.5)	.005	1.8	(1.0, 3.1)	.04	1.5	(0.9, 2.5)	ns
HIV status									
Negative	1.0			1.0			1.0		
Positive	1.5	(0.9, 3.0)	ns	2.1	(1.2, 3.9)	.01	1.7	(0.99, 3.0)	.06
Unknown	0.4	(0.17, 1.1)	ns	1.5	(0.7, 3.3]	ns	2.7	(1.4, 5.0)	.002
Inhalant nitrite use in prior three months									
No	1.0			1.0			1.0		
Yes	0.6	(0.4, 1.1)	ns	1.4	(0.9, 2.3)	ns	1.8	(1.2, 2.9)	.006
Pornography viewed in prior three months that depicted UAI									
0–24%	1.0			1.0			1.0		
25–74%	1.9	(1.2, 2.9)	.007	1.7	(1.0, 2.7)	.05	2.9	(1.8, 4.7)	<.001
75–100%	4.4	(2.2, 8.9)	<.001	3.5	(1.6, 7.3)	.001	8.1	(4.1, 15.9)	<.001