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Sexual identity and behavior in an online sample of Indian men who have sex with men

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ABSTRACT

Indian men who have sex with men are disproportionately impacted by HIV. While prevention efforts to date have focused on men who visit drop-in centers or physical cruising sites, little is known about men who are meeting sexual partners on virtual platforms. This paper explores issues related to sexual identity and sexual behaviors in an online sample of men who identified as gay ($n = 279$) or bisexual ($n = 123$). There were significant differences in outedness between the two groups, with 48% of bisexually identified men reporting that they were out to "no one" and 82% stating that they present themselves as heterosexual to family and friends. Corresponding rates for gay-identified men were 15% and 41%, respectively (both $p < .001$). Twenty-nine percent of bisexually identified men reported being married, compared to only 3% of the gay-identified men ($p < .001$). Bisexually identified men were also more likely to report having exclusively insertive anal sex (49% vs 30% $p < .001$), while gay-identified men were more likely to report exclusively receptive anal sex (41% vs 13% $p < .0001$). Rates of unprotected anal sex (UAS) in the two groups were similar; however, married men were significantly more likely to report unprotected vaginal sex (76% vs 35%, $p < .012$). Positive attitudes toward UAS and lower self-efficacy were associated with sexual risk in both groups; however, substance use was associated with sexual risk only among bisexually identified men. These findings show that a large proportion of Indian bisexually identified men lead closeted lives, especially in their interactions with friends and family, with the vast majority presenting as heterosexual. The lower condom use with wives may be due to societal pressures to have children. The results suggest that bisexually identified men may benefit from targeted programs and non-directive, non-judgmental individual or couples counseling which emphasizes condom use with both male and female partners.

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Introduction

Indian men who have sex with men (MSM) and transgenders/*hijras* are disproportionately impacted by HIV due to limited awareness of HIV, sociocultural stigma associated with same-sex attraction and gender nonconformity (Kumta et al., 2010; National AIDS Control Organization, 2011; Thomas et al., 2011; Tomori et al., 2016) and criminalization ("Koushal v NAZ Foundation", 2013). Existing literature shows that MSM and transgenders/*hijras* are vulnerable to mental health issues and physical violence from families, sexual partners, and legal authorities and that this can be a barrier to PrEP (Chakrapani, Newman, Shunmugam, Logie, & Samuel, 2015; Mimiaga et al., 2013; Sivasubramanian et al., 2011; Thomas, Mimiaga, et al., 2009; Thomas et al., 2011; Tomori et al., 2016). These factors could further invisibilize Indian MSM and

transgenders/*hijras*, adding to their HIV vulnerability by increasing their closetedness. While some of these studies explore associations of mental health and violence against Indian MSM and transgenders/*hijras*, they do not take into account the impact of closetedness on mental health and risk-taking behaviors, bringing forth a need for studies investigating these issues.

Indian MSM's sexual identities discussed in literature are limited to *kothis* (feminine acting/appearing and predominantly receptive during anal sex), *panthis* (masculine acting/appearing and predominantly insertive during anal sex), and double-decker/versatile (both insertive and receptive during anal sex). Though these identities are still common among Indian MSM, recent observations indicate the emergence of gay and bisexual identities (Dodge et al., 2016), especially among MSM of higher education and income.

Mostly missing from these discussions about emerging sexual identities is the effect of relationship dynamics of MSM with their female partners, which is understood only within the scope of marriage or MSM as a bridge population for HIV infection (Asthana & Oostvogels, 2001; Dodge et al., 2016; Godbole et al., 2014; Kumta et al., 2010; Ramakrishnan et al., 2015; Setia et al., 2006; Thomas, Mayer, et al., 2009; Thomas, Mimiaga, et al., 2009). Heterosexual marriages are attributed to pressure on MSM stemming from the cultural emphasis on marriage (Asthana & Oostvogels, 2001; Kumta et al., 2010). These married MSM lead dual lives, and their sexual identities and acknowledgement of risky sexual behaviors vary as per circumstances (Asthana & Oostvogels, 2001; Dodge et al., 2016; Godbole et al., 2014). Different identities adopted by Indian MSM in different familial and sexual scenarios, their extent of closetedness, and the influence of these behaviors on safe-sex practices remain inadequately investigated. With global evidence highlighting associations between closetedness and risky sexual behaviors (Ross, Rosser, & Neumaier, 2008; Ross et al., 2001, 2013), it is crucial to understand these issues within Indian contexts as well.

In India, much of the HIV intervention research and practice has focused on MSM and transgenders/*hijras* with more traditional identities and who meet male sex partners offline (Kumta et al., 2010; Mimiaga et al., 2013; Safren et al., 2006; Setia et al., 2006; Sivasubramanian et al., 2011; Thomas, Mayer, et al., 2009; Thomas et al., 2011; Tomori et al., 2016). There is less focus on MSM with emerging gay/bisexual identities, who are also potentially more likely to meet men on virtual cruising sites, their mostly higher income and education potentially affording them access to the internet and mobile technology. A 2013 study by our community-based partners found that 21% of MSM recruited from physical cruising sites used social media to seek sexual partners, mostly via PlanetRomeo and Facebook (The Humsafar Trust, 2013). Currently, Internet penetration in India is at 35% (Internet Live Stats, 2016) and the use of smartphones is rapidly increasing (International Data Corporation, 2016). With this increasing access to the internet and geospatial social networking (GSN) applications, many Indian MSM and transgenders/*hijras* now seek sexual partners solely on virtual platforms (Rhoton et al., *in press*). With such changing dynamics but existing research based on physical cruising sites, much remains to be understood about internet-using Indian MSM and transgenders/*hijras*, their sexual identities, partner seeking, risk behaviors, “outness”, and mental health.

Numerous western studies have explored risk behaviors and sexual identities of internet-using MSM,

identified them as unique populations (Benotsch, Kalichman, & Cage, 2002; Bull, McFarlane, & Rietmeijer, 2001; Grosskopf, LeVasseur, & Glaser, 2014; Klein, 2014; Ross, Mansson, Daneback, & Tikkanen, 2005; Rosser et al., 2009), and implemented internet-based HIV interventions (Bowen, Horvath, & Williams, 2007; Rosser et al., 2010). There is less research focused on Asia. The largest online study to date of Asian MSM – the Asian Internet MSM Sex Survey (AIMSS) – restricted analysis to 4310 MSM from the 10 member countries of the Association of South East Asian Nations, of which India is not a member. AIMSS participants who met male sex partners only online engaged in fewer risk behaviors than men who met male sex partners either only offline or both online and offline, suggesting that it is not the use of GSN applications that contributes to risk. Rather, GSN applications provide an additional venue for men already engaging in risk behaviors to meet potential sex partners (Wei, Lim, Guadamuz, & Koe, 2014). Most relevant to this study is that, like many Indian MSM who do not consider themselves gay (Asthana & Oostvogels, 2001; Phillips et al., 2008, 2010), 87% of the AIMSS participants identified as bisexual or heterosexual, and these men were less likely to report ever being tested for HIV than gay-identified MSM (Guadamuz, Cheung, Wei, Koe, & Lim, 2015).

In India, only two studies (Jethwani, Mishra, Jethwani, & Sawant, 2014; Welles et al., 2011) have explored identity differences between internet-using MSM and MSM investigated by other studies in India. Welles et al. (2011) also highlighted behavioral differences between internet-using Indian MSM and their western counterparts. With limited research-based insights into demographics, risk and identities of internet-using Indian MSM and transgenders/*hijras*, it is crucial to investigate HIV- and sexuality-related knowledge, attitudes, beliefs, and behaviors particularly as this population may also not ascribe to traditional sexual identities adopted by the much-researched Indian MSM and transgenders/*hijra* population on physical sites who fall within the reach of traditional HIV interventions.

While our larger study focused on HIV-related risk behaviors of internet-using MSM and transgenders/*hijra*, this paper focuses on their sexual identities and sexual behavior while providing insights in their closetedness, sexual attraction and presentation of self-identities.

Methods

Data presented here are from a larger mixed-method study titled Project *ISHKconnect* (Love Connect) that was implemented in Maharashtra, India from September

2013 to May 2014. Maharashtra is India's third largest state with a population of 112 million people and Mumbai as capital. It has been classified as a high HIV prevalence state by India's National AIDS Control Organization (NACO). As one of India's wealthiest and most industrialized states, Maharashtra attracts migrants and tourists from across India.

Recruitment

Recruitment was done over online media and by maintaining a social media presence on Facebook and has been described elsewhere (Wilkerson et al., 2016). Briefly, we created a Facebook page to share study information and generate interest. Recruitment also happened on online sex-seeking websites that ran banner advertisements in Hindi and English and at offline events like LGBT film festivals. The most popular platforms for seeking sexual partners at the time were websites such as Planet Romeo and Hornet.

Eligibility, screening and consent

Eligible participants had to self-identify as MSM or transgender/hijra currently residing in Maharashtra, be over 18 years, have regular Internet access, and have had sex with at least one MSM or transgender/Hijra partner in the last three months. Consent was obtained online in Hindi, Marathi, or English from all participants prior to directing them to the questionnaire.

Compensation and ethical approval

Upon survey completion, participants were given a choice of either an online gift voucher or passes to LGBT events as a token of appreciation, valued at Rs. 300 (approximately \$5 US). The institutional review boards at of the authors' home institutions approved the study procedures.

Measures

The structured online survey took approximately 30 minutes to complete, and was available in Hindi, Marathi, or English – languages of which at least one is known by virtually all Maharashtra residents. Ninety-six percent of participants completed the survey in English. Most measures were based on existing ones and adapted for the Indian context.

Sexual identity and presentation

Sexual identity was based on the question "Which of the following options best describes how you think of

yourself?" with the response options gay/homosexual, bisexual, straight/heterosexual, *kothi*, *panthi*, double-decker/versatile, *hijra*/transgender, queer, MSM, and "other". These same response options were used to ask participants how they mostly presented themselves to "family and friends", in an "online profile for seeking male sex partners", and "to male sex partners you meet offline". These items were adapted from the European MSM Internet Survey (EMIS) (Weatherburn et al., 2013).

One question (modified from the US Men's INternet Study) (Rosser et al., 2010) asked how open or "out" the participant was about being attracted to other men, with the original 5-point response scale reduced to 3, ranging from "out to no one" to "out to most/all people I know". This item has been found to perform similarly to a multi-item outness scale and minimizes participant burden (Wilkerson, Noor, Galos, & Rosser, 2015).

Sexual behavior was assessed using items from the Men's INternet Study (Rosser et al., 2010) that asked participants for the number of primary and casual male partners with whom they had had protected or unprotected, insertive or receptive anal sex in the past three months. These questions were asked separately for men met online and offline. No other relationship questions were asked. All items were dichotomized as any (1) vs. none (0). Sex with women was only assessed for female primary partners. Participants were asked how many times in the past three months they had had vaginal sex and anal sex with this woman, and for how many times they had used a condom. The variables were dichotomized as any (1) vs. no (0) vaginal/anal sex, and always protected (0) vs. unprotected (1; sex without condom at least once). Only participants in a long-term relationship with a woman were asked if they were married to her.

We also asked participants their HIV status (positive/negative/don't know).

Positive attitude toward anal sex without condoms (Halkitis, Parsons, & Wilton, 2003) was calculated as the mean of nine items assessing the level of agreement with positive aspects of unprotected anal sex (UAS) (e.g., makes sex more romantic), with answer categories ranging from 1. "strongly disagree" to 7. "strongly agree". Internal consistency in the current sample was Cronbach's $\alpha = 0.94$.

Condom use self-efficacy (MINTS III) (Marín, Gómez, Tschann, & Gregorich, 1997) was the mean of 11 items, measuring on a 1–5 scale how sure ("not at all" to "completely") the participants were that they could adhere to using condoms properly in different situations (e.g., without breaking the mood). Cronbach's $\alpha = 0.89$.

Risk of harmful alcohol use was assessed via the 3-item AUDIT (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998) assessing frequency and amount of alcohol use, and binge drinking in the past year. The summed score ranges from 0 to 12, and, per scoring guidelines, was dichotomized as <4 vs. ≥ 4 for no/low risk vs. (high) risk, respectively. The scale has been validated for use in India (Pal, Jena, & Yadav, 2004).

Substance use: frequency of non-medical use in the past year was assessed for nine types of prescription and non-prescription drugs (e.g., marijuana and erectile enhancers). This measure was developed for this study. For analysis, we dichotomized the responses as any (1) vs. none (0), given the low frequency of substance use reported.

Depression was assessed via the 10-item version of the CES-D (range 0–33) and dichotomized at the recommended cut-off score of 10 for mild-to-severe depressive symptoms (Zhang et al., 2012). Cronbach's $\alpha = 0.75$.

Demographics included age, highest education completed and whether currently studying, income class, religion, residence (greater Mumbai/Thane vs. elsewhere), and legal marital status.

Analysis

Given the small sample sizes of other classifications, we only included participants who identified as gay ($n = 279$) or bisexual ($n = 123$), comprising 90% of the total sample of 449. Demographics, sexual behavior with males and related characteristics of these two groups were described via frequencies and percentages for categorical variables and median and interquartile range (IQR) for age. Differences between the groups were assessed via chi-square and Mann–Whitney U test, respectively. For sex with females, the number and percentage of participants having sex, and specifically sex without a condom, were compared between married and unmarried participants, via Fisher's exact test due to low frequencies. This change in comparison from groups with a different sexual identity to groups with a different marital status was motivated to account for the pressure in Indian society to have children and hence not use contraceptives such as condoms, once married.

In a next step, potential correlates of UAS with male casual partners (past three months) were examined. Unprotected receptive (URAS) and insertive (UIAS) sex were treated as separate, but not mutually exclusive outcomes. For each outcome, we combined sex with on- and offline partners, and included reports of no anal sex of that kind at all as a 0 response, indicating

“no unprotected sex”. Our exploratory analyses suggested that different variables were associated with UIAS and URAS for gay-identified than for bisexually-identified men; hence, we ran separate analyses for the two subgroups. We thus had four dichotomous outcome variables: UIAS and URAS of gay-identified men and UIAS and URAS of bisexually-identified men. For each, we examined which variables were significantly bivariate associated with the outcome. For categorical variables, we used chi-square test, or Fisher's exact test if expected cell sizes were below 10. For continuous predictors, we used t -tests after confirmation they were reasonably normally distributed. Variables associated at $p \leq .10$ were subsequently included in a multivariate logistic regression model for the outcome in question. Analyses were performed in SPSS v22. All significance levels reported are two-sided and $p < .05$ was considered statistically significant.

Results

Of the 6049 individuals who clicked on the survey link, 745 completed the online consent form. Of these, 477 completed the survey and 449 persons were included in the final dataset; 402 identified as gay/bisexual and are analyzed here. As shown in Table 1, there were no significant differences between gay- and bisexually identified men with respect to age, income, religion, and depression levels. Depression levels were very high in this sample, with more than half the men in both groups being classified as depressed. Gay-identified men were significantly more likely to live in the urban metro of Mumbai–Thane compared to bisexually identified men (81% vs. 60%, respectively). Presentation to online and offline sex partners was consistent with identity. However, bisexually identified men were much less likely to be out to family and friends, with 82% reporting that they present themselves as heterosexual in those situations, compared to only half as many gay-identified men (41%). Bisexually identified men were also significantly more likely to report that they are out to no one than were gay-identified men (48% vs. 15%) and 29% of bisexually identified men reported being married, compared to only 3% of the gay-identified men.

Among men who reported at least some anal sex with casual partners in the past three months, there were significant differences with respect to position, with bisexually identified men stating that they were most likely to have only insertive sex (49%), whereas only 30% of the gay-identified men stated a preference for only insertive sex (Table 2). In contrast, 41% of gay-identified men reported only having receptive anal sex, compared to 13% of bisexually identified men. Overall, condom use

Table 1. Sample characteristics by sexual identity: *n* (%) unless otherwise indicated.

	Gay identity (<i>n</i> = 279)	Bisexual identity (<i>n</i> = 123)	<i>p</i> -value
Age: Median (IQR)	28 (24–34)	27 (24–32)	.647
Residence:			<.001
Greater Mumbai/Thane	226 (81.0)	74 (60.2)	
Other urban ^a	34 (12.2)	43 (35.0)	
Peri-/suburban	19 (6.8)	6 (4.9)	
Education:	(<i>n</i> = 274)	(<i>n</i> = 120)	.085
≤Higher secondary	40 (14.6)	11 (9.2)	
Graduate	110 (40.1)	49 (40.8)	
Post graduate	118 (43.1)	52 (43.3)	
Diploma	6 (2.2)	8 (6.7)	
Currently a student	64/276 (23.2)	21/120 (17.5)	.205
Income ≥ 25,001 Rs (middle class)	147/259 (56.8)	64/115 (55.7)	.842
Hindu religion	210/273 (76.9)	88/113 (77.9)	.839
Married	9/273 (3.3)	34/118 (28.8)	.001
HIV status (self-report):	(<i>n</i> = 277)	(<i>n</i> = 120)	.764
HIV+	5 (1.8)	1 (0.8)	
HIV–	209 (75.5)	91 (75.8)	
Don't know	63 (22.7)	28 (23.3)	
Presentation to online sex ptns:	(<i>n</i> = 260)	(<i>n</i> = 109)	<.001
Gay	243 (93.5)	15 (13.8)	
Bisexual	4 (1.5)	86 (78.9)	
Other	13 (5.0)	8 (7.3)	
Presentation to offline sex ptns:	(<i>n</i> = 259)	(<i>n</i> = 106)	<.001
Gay	228 (88.0)	19 (17.9)	
Bisexual	19 (7.3)	78 (73.6)	
Other	12 (4.6)	9 (8.5)	
Presentation to family & friends:	(<i>n</i> = 258)	(<i>n</i> = 113)	<.001
Gay	133 (51.6)	3 (2.7)	
Bisexual	5 (1.9)	14 (12.4)	
Hetero	105 (40.7)	93 (82.3)	
Other	15 (5.8)	3 (2.7)	
Degree of outness:	(<i>n</i> = 278)	(<i>n</i> = 120)	<.001
To no one	41 (14.7)	57 (47.5)	
To few/half the people I know	171 (61.5)	58 (48.3)	
To most/all people I know	66 (23.7)	5 (4.2)	
Depression: CES-D10 ≥ 10	163/276 (59.1)	59/116 (50.9)	.135

^aIncludes Pune, Solapur, and Aurangabad.

was similar in the two groups; however, bisexually identified men were marginally more likely to report unprotected insertive anal sex than gay-identified men (22% vs. 13%, $p < .059$).

As shown in Table 2, 5% ($n = 14$) of gay-identified men vs. 49% ($n = 58$) of bisexually identified men had a primary female partner ($p < .001$). Of these 72 participants, 43 (60%) were married to this primary female partner. Eighty-one percent ($n = 35$) of the married men reported vaginal sex in the past three months, compared to 65% ($n = 17$) of unmarried men ($p = .158$) and a significantly larger proportion of married men (76%) than of unmarried men (35%) reported unprotected vaginal sex ($p = .012$).

Tables 3 and 4 show that there were both differences and similarities in the correlates of UAS with a casual partner in the two groups. Among gay-identified men, lower condom use self-efficacy was associated with both URAS and UIAS, while a higher score on positive attitudes towards sex without condoms was only associated with URAS.

Table 2. Sexual behavior with male and female partners in past three months.

	Gay (<i>n</i> = 279) <i>n</i> (%)	Bisexual (<i>n</i> = 123) <i>n</i> (%)	<i>p</i> -value ^a
Had anal sex with male casual partners in past three mo:			.230
No	111 (39.8)	38 (3.9)	
Yes, w/ partners met online only	111 (39.8)	53 (43.1)	
Yes, w/ partners met offline only	14 (5.0)	5 (4.1)	
Yes, w/both on- & offline partners	43 (15.4)	27 (22.0)	
If anal sex = yes:			
Receptive anal only	68 (40.5)	11 (12.9)	<.001
Insertive anal only	50 (29.9)	42 (49.4)	
Both RAS & IAS	50 (29.9)	32 (37.6)	
If anal sex = yes:			
Unprotected receptive anal	41 (24.4)	19 (22.4)	.717
Unprotected insertive anal	22 (13.1)	19 (22.4)	.059
Either URAS/UIAS	53 (31.5)	31 (36.5)	.432
Primary female partner	14 (5.1)	58 (49.2)	<.001
Among men who had a female primary partner (<i>n</i> = 72)	Unmarried (<i>n</i> = 28)	Married (<i>n</i> = 43)	
Had vaginal sex with female primary partner in past three mo:	17/26 (65.4)	35/43 (81.4)	.158
If vaginal sex = yes:			
Had unprotected vag sex:	6/17 (35.3)	25/33 (75.8)	.012

Note: RAS, receptive anal sex; IAS, insertive anal sex.

^aBased on chi-square test for sex with males and on Fisher's exact test for sex with female.

Among bisexually identified men, both a higher positive attitude toward sex without condoms and lower condom self-efficacy were associated with URAS but only bivariately, and not associated with UIAS.

Substance use was associated with sexual risk among bisexually identified men, but not among gay-identified men. Over half of bisexual men who reported substance use in the past three months also reported UIAS, compared to only 11% of bisexual men reporting no substance abuse.

Discussion

This represents the first comparison of sexual behaviors reported by gay- and bisexually identified men in an online sample of Indian MSM. The participants were somewhat older, more educated and reported higher income than other recent MSM offline samples from this region (Dodge et al., 2016; Kumta et al., 2010; Sivasubramanian et al., 2011), but do share many issues such as depression, alcohol abuse (Sivasubramanian et al., 2011), and sexual risk-taking behaviors (Kumta et al., 2010) with previous samples. The results show that a large proportion of the men who identify as bisexual lead closeted lives. While presentation to sex partners is mostly consistent with identity, more than 80% present as heterosexual to family and friends and almost half are not out to any non-partners. Not surprisingly,

Table 3. Correlates of unprotected sex with casual partners among gay-identified men.

	Receptive (<i>n</i> = 249) ^a		Insertive (<i>n</i> = 250) ^a	
	<i>n</i> (%) men reporting URAS	AOR (95% CI)	<i>n</i> (%) men reporting UIAS	AOR (95% CI)
Substance use				
No	33 (14.5)		16 (7.0)	
Yes	8 (16.0)		6 (12.0)	
Risk harmful alcohol use				
No/low risk	26 (12.6)†	1	13 (6.3)†	1
Risk/high risk	15 (20.5)	1.6 (0.7–3.5)	9 (12.3)	2.3 (0.9–6.0)†
Present straight to family & friends				
No	21 (13.7)		10 (6.5)	
Yes	19 (18.1)		11 (10.5)	
Depressive symptoms				
No (CES-D10 < 10)	12 (10.6)		7 (6.2)	
Yes (CES-D10 ≥ 10)	28 (17.2)		15 (9.2)	
Pos attitude unprotected sex (1–7) ^b	3.7 vs. 2.6***	1.2 (1.0–1.5)*	3.2 vs. 2.7	
Condom self-efficacy (1–5) ^b	3.2 vs. 3.9***	0.5 (0.4–0.8)**	3.0 vs. 3.9***	0.4 (0.3–0.7)***

Note: URAS and UIAS are not mutually exclusive. Receptive and Insertive columns show results from separate analyses on the same sample.

^a*n* for final regression; number of missing values on individual predictors ranges from 0 to 29.

^bMean for those reporting vs not reporting unprotected sex, respectively.

†*p* ≤ .10.

**p* < .05.

***p* < .01.

****p* < .001.

bisexually identified men are more likely to be married than gay-identified men.

In terms of risk behaviors, bisexually-identified men reported being marginally more likely to have unprotected insertive anal sex than did gay-identified men. This may be due to having received fewer targeted messages, which in turn resulted in poorer knowledge regarding the sexual risks involved. A study examining differences between married and unmarried MSM conducted in Mumbai (Kumta et al., 2010) supports this observation and highlighted the reluctance by MSM in sexual relationships with women to access HIV prevention, due to fear of disclosure of covert same-sex relationships and of losing family support. Approximately a

third of all men reported having unprotected sex with casual male partners and this proportion was similar for unmarried men during sex with women. Married MSM, on the other hand, reported much higher rates (75%) of unprotected sex with women, presumably due to pressure to have children or to condoms being seen as a breach of trust in a supposedly monogamous relationship.

Sexual risk taking was significantly associated with positive attitudes toward sex without condoms and lower condom self-efficacy among both gay- and bisexually-identified men. Risk was also significantly associated with substance use among bisexually-identified men and marginally associated with alcohol use among gay-

Table 4. Correlates of unprotected sex among bisexually identified men.

	Receptive (<i>n</i> = 113) ^a		Insertive (<i>n</i> = 123) ^a	
	<i>n</i> (%) men reporting URAS	AOR (95% CI)	<i>n</i> (%) men reporting UIAS	OR (95% CI)
Substance use				
No	17 (15.5)		12 (10.9)***	1
Yes	2 (15.4)		7 (53.8)	9.5 (2.8–33.0)***
Risk harmful alcohol use				
No/low risk	15 (14.6)		16 (15.5)	
Risk/high risk	4 (20.0)		3 (15.0)	
Present straight to family & friends				
No	2 (10.0)		2 (10.0)	
Yes	16 (17.2)		16 (17.2)	
Depressive symptoms				
No (CES-D10 < 10)	11 (19.3)		7 (12.3)	
Yes (CES-D10 ≥ 10)	7 (11.9)		10 (16.9)	
Pos attitude unprotected sex (1–7) ^b	4.3 vs. 3.1*	1.2 (0.9–1.7)	3.7 vs. 3.3	
Condom self-efficacy (1–5) ^b	3.6 vs. 4.1*	0.7 (0.4–1.2)	3.7 vs. 4.0	

Note: URAS and UIAS are not mutually exclusive. Receptive and Insertive columns show results from separate analyses on the same sample.

^a*n* for final regression; number of missing values on individual predictors ranges from 0 to 10.

^bMean for those reporting vs. not reporting unprotected sex, respectively.

†*p* < .10.

**p* < .05.

***p* < .01.

****p* < .001.

identified men, but only in the bivariate analyses and became non-significant in the multivariate analyses. In general, substance use was lower in this sample than we would see in US online samples of gay and bisexual men (Benotsch et al., 2002; Klein, 2014). Additional studies are needed to better understand the relationship between risk and substance use among Indian MSM.

While it is clear that both gay- and bisexually identified men in India need ongoing prevention efforts, the latter may be more difficult to access due to stigma and being less out to family or friends. Since messages that emphasize disclosure to one's wife or other family members may place bisexual clients at risk for reprisals and violence from their families and communities, and decrease the likelihood that they will seek prevention services, counselors should emphasize condom use with all sexual partners as a prevention strategy along with linkages and referrals to family planning health facilities, which promote condoms as a contraceptive method and offer testing and treatment for STIs. Such non-directive and non-judgmental counseling, either for individuals or couples, has also been recommended by Chakrapani and colleagues in their technical paper prepared for India's NACO (Chakrapani, Boyce, & Dhanikachalam, 2011).

Online interventions may provide another way to reach these more closeted men, as long as they are discrete. Given the high levels of depressive symptoms reported, such programs will likely need to include both mental health and more traditional risk reduction components in order to be effective. Since online sex-seeking patterns of Indian MSM appear similar to patterns of samples recruited in the West and other Asian countries, there might be opportunities for adapting western Internet-based interventions for Asian MSM. This needs to be explored in future research.

Finally, in order to achieve lasting change, future HIV prevention efforts thus need to include both policy interventions and community stigma reduction programs to enable India's gay and bisexual men to live openly, without the fear of legal consequences or rejection by their families.

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References

- Asthana, S., & Oostvogels, R. (2001). The social construction of Male "homosexuality" in India: Implications for HIV transmission and prevention. *Social Sciences and Medicine*, 52(5), 707–721. doi:10.1016/S0277-9536(00)00167-2
- Benotsch, E. G., Kalichman, S., & Cage, M. (2002). Men who have met sex partners via the internet: Prevalence, predictors, and implications for HIV prevention. *Archives of Sexual Behavior*, 31(2), 177–183. doi:10.1023/A:1014739203657
- Bowen, A. M., Horvath, K., & Williams, M. L. (2007). A randomized control trial of internet-delivered HIV prevention targeting rural MSM. *Health Education Research*, 22(1), 120–127. doi:10.1093/her/cyl057
- Bull, S. S., McFarlane, M., & Rietmeijer, C. (2001). HIV and sexually transmitted infection risk behaviors among men seeking sex with men on-line. *American Journal of Public Health*, 91(6), 988–989. doi:10.2105/Ajph.91.6.988
- Bush, K., Kivlahan, D. R., McDonnell, M. B., Fihn, S. D., & Bradley, K. A. (1998). The AUDIT alcohol consumption questions (AUDIT-C): An effective brief screening test for problem drinking. Ambulatory Care Quality Improvement Project (ACQUIP). Alcohol Use Disorders Identification Test. *Archives of Internal Medicine*, 158(16), 1789–1795. doi:10.1001/archinte.158.16.1789
- Chakrapani, V., Boyce, P., & Dhanikachalam, D. (2011). *Women partners of men who have sex with men in India*. Retrieved from http://strive.lshtm.ac.uk/sites/strive.lshtm.ac.uk/files/Technical%20Brief-2_WomenPartners_MSM.PDF
- Chakrapani, V., Newman, P. A., Shunmugam, M., Logie, C. H., & Samuel, M. (2015). Syndemics of depression, alcohol use, and victimisation, and their association with HIV-related sexual risk among men who have sex with men and transgender women in India. *Global Public Health*, 1–16. doi:10.1080/17441692.2015.1091024
- Dodge, B., Banik, S., Bowling, J., Sivasubramanian, M., Mengle, S., Schick, V., ... Anand, V. (2016). Sexual relationships, behaviors, and experiences among bisexual men in Mumbai, India. *International Journal of Sexual Health*, 28(1), 70–84.
- Godbole, S., Sane, S., Kamble, P., Raj, Y., Dulhani, N., Venkatesh, S., ... Risbud, A. (2014). Predictors of bisexual behaviour among MSM attending intervention sites may

- help in prevention interventions for this bridge to the heterosexual epidemic in India: Data from HIV sentinel surveillance. *PLoS One*, 9(9), e107439. doi:10.1371/journal.pone.0107439
- Grosskopf, N. A., LeVasseur, M. T., & Glaser, D. B. (2014). Use of the internet and mobile-based "apps" for sex-seeking among men who have sex with men in New York city. *American Journal of Mens Health*, 8(6), 510–520. doi:10.1177/1557988314527311
- Guadamuz, T. E., Cheung, D. H., Wei, C., Koe, S., & Lim, S. H. (2015). Young, online and in the dark: Scaling up HIV testing among MSM in ASEAN. *PLOS One*. doi:10.1371/journal.pone.0126658
- Halkitis, P. N., Parsons, J. T., & Wilton, L. (2003). Barebacking among gay and bisexual men in New York city: Explanations for the emergence of intentional unsafe behavior. *Archives of Sexual Behavior*, 32(4), 351–357. doi:10.1023/A:1024095016181
- The Humsafar Trust. (2013). *Knowledge attitude behavior practice study – wave VII*. Unpublished Report.
- International Data Corporation. (2016). *Tier 2 & 3 cities in India will spearhead the next wave of growth for the smartphone market; Apple reigns supreme at the top end*. Retrieved October 22, 2016, from <http://www.idc.com/getdoc.jsp?containerId=prAP41064116>
- Internet Live Stats. (2016). *India internet users*. Retrieved October 22, 2016, from <http://www.internetlivestats.com/internet-users/india/>
- Jethwani, K. S., Mishra, S. V., Jethwani, P. S., & Sawant, N. S. (2014). Surveying Indian gay men for coping skills and HIV testing patterns using the internet. *Journal of Postgraduate Medicine*, 60(2), 130–134. doi:10.4103/0022-3859.132315
- Klein, H. (2014). Condom use self-efficacy and HIV risk practices among men who use the Internet to find Male partners for unprotected sex. *American Journal of Mens Health*, 8(3), 190–204. doi:10.1177/1557988313492172
- Koushal v NAZ Foundation. (2013). Judgement 10972/2013 (The Supreme Court of India 2013).
- Kumta, S., Lurie, M., Weitzen, S., Jerajani, H., Gogate, A., Row-Kavi, A., ... Mayer, K. H. (2010). Bisexuality, sexual risk taking, and HIV prevalence among men who have sex with men accessing voluntary counseling and testing services in Mumbai, India. *Journal of Acquired Immune Deficiency Syndromes*, 53(2), 227–233.
- Marín, B. V., Gómez, C. A., Tschann, J. M., & Gregorich, S. E. (1997). Condom use in unmarried Latino men: A test of cultural constructs. *Health Psychology*, 16(5), 458–467.
- Mimiaga, M. J., Biello, K. B., Sivasubramanian, M., Mayer, K. H., Anand, V. R., & Safren, S. A. (2013). Psychosocial risk factors for HIV sexual risk among Indian men who have sex with men. *AIDS Care-Psychological and Socio-Medical Aspects of AIDS/HIV*, 25(9), 1109–1113. doi:10.1080/09540121.2012.749340
- National AIDS Control Organization. (2011). *HIV sentinel surveillance annual report 2010-11*. Retrieved from <http://www.naco.gov.in/upload/REPORTS/NACO20Annual20Report%202010-11.pdf>
- Pal, H. R., Jena, R., & Yadav, D. (2004). Validation of the Alcohol Use Disorders Identification Test (AUDIT) in urban community outreach and de-addiction center samples in North India. *Journal of Studies on Alcohol*, 65(6), 794–800. doi:10.15288/jsa.2004.65.794
- Phillips, A. E., Boily, M. C., Lowndes, C. M., Garnett, G. P., Gurav, K., Ramesh, B. M., ... Alary, M. (2008). Sexual identity and its contribution to MSM risk behavior in Bangalore (Bangalore), India: The results of a two-stage cluster sampling survey. *Journal of LGBT Health Research*, 4(2–3), 111–126.
- Phillips, A. E., Lowndes, C. M., Boily, M. C., Garnett, G., Gurav, K., Ramesh, B. M., ... Alary, M. (2010). Men who have sex with men and women in Bangalore, South India, and potential impact on the HIV epidemic. *Sexually Transmitted Infections*, 86(3), 187–192.
- Ramakrishnan, L., Ramanathan, S., Chakrapani, V., Goswami, P., Deshpande, S., Yadav, D., ... Paranjape, R. (2015). Comparison of sexual risk, HIV/STI prevalence and intervention exposure among men who have sex with men and women (MSMW) and men who have sex with men only (MSMO) in India: Implications for HIV prevention. *AIDS and Behavior*, 19(12), 2255–2269. doi:10.1007/s10461-015-1058-2
- Rhoton, J., Wilkerson, J. M., Mingle, S., Patankar, P., Rosser, B. R. S., & Ekstrand, M. L. (in press). Use of geospatial networking applications by Indian men who have sex with men in the state of Maharashtra. *JMIR MHealth and UHealth*. doi:10.2196/mhealth.5600
- Ross, M. W., Berg, R. C., Schmidt, A. J., Hoppers, H. J., Breveglieri, M., Furegato, M., & Weatherburn, P. (2013). Internalised homonegativity predicts HIV-associated risk behavior in European men who have sex with men in a 38-country cross-sectional study: Some public health implications of homophobia. *Bmj Open*, 3(2), e001928. doi:10.1136/bmjopen-2012-001928
- Ross, M. W., Mansson, S. A., Daneback, K., & Tikkanen, R. (2005). Characteristics of men who have sex with men on the internet but identify as heterosexual, compared with heterosexually identified men who have sex with women. *CyberPsychology & Behavior*, 8(2), 131–139. doi:10.1089/cpb.2005.8.131
- Ross, M. W., Rosser, B. R. S., Bauer, G. R., Bockting, W. O., Rugg, D. L., & Coleman, E. (2001). Drug use, unsafe sexual behavior, and internalized homonegativity in men who have sex with men. *AIDS and Behavior*, 5(1), 97–103. doi:10.1023/A:1009567707294
- Ross, M. W., Rosser, B. R. S., Neumaier, E. R., & Positive Connections Team. (2008). The relationship of internalized homonegativity to unsafe sexual behavior in HIV seropositive men who have sex with men. *AIDS Education and Prevention*, 20(6), 547–557. doi:10.1521/aeap.2008.20.6.547
- Rosser, S. B. R., Miner, M. H., Bockting, W. O., Ross, M. W., Konstan, J., Gurak, L., ... Coleman, E. (2009). HIV risk and the internet: Results of the men's INternet sex (MINTS) study. *AIDS and Behavior*, 13(4), 746–756. doi:10.1007/s10461-008-9399-8
- Rosser, S. B. R., Oakes, J. M., Konstan, J., Hooper, S., Horvath, K. J., Danilenko, G. P., ... Smolenski, D. J. (2010). Reducing HIV risk behavior of MSM through persuasive computing: Results of the Men's INternet Study (MINTS-II). *AIDS*, 24(13), 2099–2107. doi:10.1097/QAD.0b013e32833c4ac7
- Safren, S. A., Martin, C., Menon, S., Greer, J., Solomon, S., Mimiaga, M. J., & Mayer, K. H. (2006). A survey of MSM HIV prevention outreach workers in Chennai, India. *AIDS Education and Prevention*, 18(4), 323–332. doi:10.1521/aeap.2006.18.4.323

- Setia, M. S., Lindan, C., Jerajani, H. R., Kumta, S., Ekstrand, M., Mathur, M., ... Klausner, J. D. (2006). Men who have sex with men and transgenders in mumbai, India: An emerging risk group for STIs and HIV. *Indian Journal Dermatology, Venereology, Leprology*, 72(6), 425–431. doi:10.4103/0378-6323.29338
- Sivasubramanian, M., Mimiaga, M. J., Mayer, K. H., Anand, V. R., Johnson, C. V., Prabhugate, P., & Safren, S. A. (2011). Suicidality, clinical depression, and anxiety disorders are highly prevalent in men who have sex with men in Mumbai, India: Findings from a community-recruited sample. *Psychology Health and Medicine*, 16(4), 450–462. doi:10.1080/13548506.2011.554645
- Thomas, B., Mayer, K., Johnson, C., Menon, S., Chandrasekharan, V., Murugesan, P., ... Safren, S. A. (2009). HIV prevention interventions in Chennai, India: Are men who have sex with men being reached? *AIDS Patient Care and STDs*, 23(11), 981–986. doi:10.1089/apc.2009.0092
- Thomas, B., Mimiaga, M. J., Kumar, S., Swaminathan, S., Safren, S. A., & Mayer, K. H. (2011). HIV in Indian MSM: Reasons for a concentrated epidemic & strategies for prevention. *The Indian Journal of Medical Research*, 134(6), 920–929. doi:10.4103/0971-5916.92637
- Thomas, B., Mimiaga, M. J., Menon, S., Chandrasekaran, V., Murugesan, P., Swaminathan, S., ... Safren, S. A. (2009). Unseen and unheard: Predictors of sexual risk behavior and HIV infection among men who have sex with men In Chennai, India. *AIDS Education and Prevention*, 21(4), 372–383. doi:10.1521/aeap.2009.21.4.372
- Tomori, C., McFall, A. M., Srikrishnan, A. K., Mehta, S. H., Solomon, S. S., Anand, S., ... Celentano, D. D. (2016). Diverse rates of depression among men who have sex with men (MSM) across India: Insights from a multi-site mixed method study. *AIDS and Behaviour*, 20(2), 304–316. doi:10.1007/s10461-015-1201-0
- Weatherburn, P., Schmidt, A. J., Hickson, F., Reid, D., Berg, R. C., Hospers, H. J., & Marcus, U. (2013). The European men-who-have-sex-with-men internet survey (EMIS): Design and methods. *Sexuality Research and Social Policy*, 10(4), 243–257. doi:10.1007/s13178-013-0119-4
- Wei, C., Lim, S. H., Guadamuz, T. E., & Koe, S. (2014). Virtual vs. physical spaces: Which facilitates greater HIV risk taking among men who have sex with men in East and South-East Asia? *AIDS and Behavior*, 18(8), 1428–1435. doi:10.1007/s10461-013-0628-4
- Welles, S., Ross, M., Banik, S., Fisher, L., McFarlane, M., Kachur, R., ... Allensworth-Davies, D. (2011). Demographic and sexual behavior comparisons of Indian and US internet samples of men who have sex with men. *International Journal of Sexual Health*, 23(2), 90–101. doi:10.1080/19317611.2011.562278
- Wilkerson, J. M., Noor, S. W., Galos, D. L., & Rosser, B. S. (2015). Correlates of a single-item indicator versus a multi-item scale of outness about same-sex attraction. *Archives of Sexual Behavior*, 45(5), 1269–1277. doi:10.1007/s10508-015-0605-2
- Wilkerson, J. M., Patankar, P., Rawat, S. M., Rosser, B. R. S., Shukla, K. M., Rhoton, J., & Ekstrand, M. L. (2016). Recruitment strategies of Indian men who have sex with men into an online survey. *International Journal of Sexual Health*, 28(3), 221–227. doi:10.1080/19317611.2016.1193079
- Zhang, W., O'Brien, N., Forrest, J. I., Salters, K. A., Patterson, T. L., Montaner, J. S. G., ... Lima, V. D. (2012). Validating a shortened depression scale (10 item CES-D) among HIV-positive people in British Columbia, Canada. *PLoS One*, 7(7), e40793. doi:10.1371/journal.pone.0040793