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Alcohol and Drug Use Surrounding Sex Among Men Who Have Sex with Men in India

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Abstract

Little is known about alcohol and drug use with sex among Indian men who have sex with men (MSM). Sexually active MSM across India, recruited via social media and MSM-specific mobile dating apps, completed an anonymous online survey in Hindi or English. We used multivariable modified Poisson regression to identify factors associated with (1) Alcohol use and (2) Drug use ± alcohol (chemsex) surrounding sex. Of the 4321 MSM included in this analysis, respondents came from all states and over 400 localities; median age was 26 years, 15% lived in poverty, and 18% had less than college education. Overall, 23% (996) reported using alcohol whereas 5% (226) reported having chemsex. In multivariable analysis, alcohol use was associated ($p < .05$) with lower education, older age, being 'out' to anyone about their sexuality, having a paid or casual male partner, being in a committed relationship with a female partner, and having > 6 sexual partners in the past six months. Chemsex was associated with lower education, being 'out' to anyone, having > 6 sexual partners in the past six months, having casual male partners, living with HIV, and having a STI diagnosis in the past year. This study found that alcohol use surrounding sex was more common than chemsex among a large national sample of Indian MSM. Differing characteristics were associated with either alcohol use or chemsex, which may be related to cultural and contextual factors. These findings indicate a need to further assess what impact alcohol and drug use surrounding sex may have on sexual risk behaviors, and what interventions are needed to mitigate such risks.

Keywords MSM · India · Drug use · Alcohol use · Online · Chemsex

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Introduction

Men who have sex with men (MSM) in India and globally are at high risk for HIV acquisition due to multiple structural, social, and behavioral factors. In India, which has the third largest number of people living with HIV globally and the highest number in Asia, the HIV prevalence rate among MSM is 16–25 times greater than that of non-MSM adult men and women (NACO 2019).

These numbers are likely an underestimate, as systematic data about number of MSM individuals in India are not yet available (Wandrekar and Nigudkar 2020). There are several cultural factors present in India related to sexuality that may impact HIV acquisition in MSM, such as same-sex behavior that may not be categorized as 'sex' or persons' reticence to categorize themselves as gay/MSM (Patel et al. 2012), pressure to marry and conform to compulsory heterosexuality (Bowling et al. 2019; Soohinda et al. 2019), and pervasive experiences of MSM-related stigma (Wandrekar and Nigudkar 2020). These variables may indirectly impact HIV acquisition by driving non hetero-sexual behavior 'underground,' thereby increasing susceptibility to risky sexual behavior such as no condom use or substance use before/during sex.

Previous studies have found substance use to be related to HIV acquisition and poorer health outcomes in MSM in India (Chakrapani et al. 2008; Chakrapani et al. 2019; Thomas et al. 2011). One study of 200 men in Chennai found that using alcohol weekly or more to get intoxicated was associated with unprotected anal sex (Mimiaga et al. 2011). Wilkerson et al. (2018) also found that MSM who engaged in hazardous drinking were more likely to have a higher number of sexual partners. In a study conducted in three Indian states with approximately 4000 MSM, researchers noted that frequent alcohol users were less likely to use condoms with paid male sexual partners (Yadav et al. 2014). Similarly, Chakrapani, Newman, Shunmugam, Logie, and Samuel (2017) found that frequent alcohol use, in addition to victimization and depression, was an additive factor in increasing sexual risk. For drug use other than alcohol, one study among MSM living with HIV in India found that recreational drug use was related to lower odds of viral suppression (Prabhu et al. 2019), while another found that illicit drug use was related to lower odds of using condoms during anal sex (Wilkerson et al. 2018), both increasing the risk of transmission of HIV and other STIs.

Several gaps exist in our knowledge of substance use by Indian MSM. First, though studies have assessed overall alcohol or drug use, they have not done so in the context of sexual activity. Alcohol use in the context of sexual activity is linked to acquisition of HIV and other STIs in different countries (Daniels et al. 2018; Shuper et al. 2017) as is drug use in the context of sexual activity, also called chemsex (Morgan et al. 2016; Sewell et al. 2017). Second, there are no national estimates of alcohol or other drug use among MSM in India (whether surrounding sex or independent of sex), information that is critical to assist policy-makers and service delivery programs in planning services and allocating resources. To date, there has only been one study that specifically examined drug use in any context among Indian MSM, which found drug use to be

associated with worse psychological health (Prabhu et al. 2019). Third, most studies in low and middle income countries like India have recruited participants through respondent/cluster/snowball sampling (e.g., Prabhu et al. 2019; Tomori et al. 2016). Internet-based outreach and recruitment can provide unique advantages, such as ability to reach individuals living in rural areas, as most other studies focus on recruitment in larger cities where MSM may be more easily accessible (Anand et al. 2017; Wilkerson et al. 2018). Additionally, when recruited in-person, MSM may respond in socially desirable ways (Firkey et al. 2020), and individuals who are not "out" may be hesitant to participate in studies. Gathering data on substance use may also be easier online, with participants disclosing their use, frequency, and quantity more honestly due to anonymity on the Internet.

Our study, Zero-Metres-Away (ZMA), was thus conducted to help address these important gaps in knowledge about Indian MSM. We sought to recruit MSM online nationally and investigate the prevalence of substance use (i.e., alcohol and drugs) before and during sexual activity. We also sought to identify factors associated with alcohol and drug use before/during sex, including sociodemographic predictors (such as income, education), behavioral predictors (e.g., identified sexual orientation, number of sex partners in past six months), and structural predictors (e.g., anticipated HIV stigma).

Methods

Study Design, Setting, and Participants

Zero-Metres-Away (ZMA) was a cross-sectional, self-administered, anonymous survey conducted from 6 January 2017 to 5 February 2017. Indian MSM were recruited by advertisements on three MSM-specific mobile SNS and LGBTQ Facebook and Instagram groups. The survey was hosted by Surveygizmo (Boulder, Colorado) and began with study information and informed consent. We limited duplicate respondents by using web browser cookies and restricting to single IP addresses. Upon completion, respondents were provided with online HIV prevention and testing resources and given the option to enter contact information (unlinked to responses) for a chance to win a 1000 Indian rupee (approximately $15 USD) Amazon.co.in gift-card. Inclusion criteria were: (1) aged 18 years or older, (2) identifying as men (cis- or trans-), (3) anal sex with cis- or transmen partners in past two years, and (4) born in India and living there at the time of the study. Human subjects research review boards at The Humsafar Trust (an LGBTQ community-based organization in Mumbai, India) and Albert Einstein College of Medicine (Bronx, United States) approved the study.

Survey Development and Measures

We partnered with The Humsafar Trust to adapt an online survey of MSM and HIV (Zlotorzynska et al. 2017), translate the survey into Hindi, and refine it to ensure

conceptual accuracy (Hagell et al. 2010). We assessed sexual identity with categories used in India (panthi, kothi, double-decker, gay/homosexual, bisexual, and straight/heterosexual), but because very few respondents selected panthi, kothi, or double-decker, we reclassified these as gay/homosexual. We asked about number of sexual partners in past six-months, type of partners in last six months (such as paid male, casual male), HIV status, STI diagnoses, and if participants were "out" about their sexual identity to anyone. We also asked about sociodemographic variables including age, education, income, city-size that participants lived in, and whether participants filled out the survey in Hindi or English. We measured perceived HIV stigma with the following items (Sanchez et al. 2012), which ask agreement on a five-point scale, ranging from 1-Strongly Disagree to 5-Strongly Agree: *Most people in my area would: (1)…discriminate against someone with HIV, (2)…think that people who got HIV through sex or drug use deserve what they have gotten, and (3)…support the rights of a person with HIV to live and work wherever they wanted.* We used two outcome variables—(1) Alcohol use before/during sex and (2) Chemsex. We dichotomized both of these outcome variables, to indicate use (or not used) before/during sex.

Analysis

We excluded responses for those stopping the survey early and with missing data on all outcome variables, and characterized the sample using summary statistics. We performed bivariable and multivariable analysis to determine factors associated with alcohol use before/during sex, and chemsex, using generalizing estimating equations for modified Poisson regression to account for clustering by state (Chen et al. 2014). We report crude risk ratios (from bivariable analyses) and adjusted risk ratios (from multivariable analyses). We used Stata SE, version 15 (StataCorp, College Station, Texas) for all analyses.

Results

Participant Characteristics

A total of 4321 men completed the survey and were included in the present analyses (6637 met inclusion criteria, 1107 stopped the survey after the first two pages, and 1209 did not respond to questions about outcomes or demographic characteristics). The participants' median age was 26 years (interquartile range 23–30) and 18 % responded in Hindi. Approximately 18 % did not complete college, 15 % had low income (less than Rs 10,000 per month or USD 140 per month), and 17 % lived in rural or semi-rural areas. Respondents came from all states (ranging from 5 participants to 1121 participants per state) and over 400 cities, towns, or villages.

Majority of the responders identified as either gay (49 %) or bisexual (46 %). About 3 % reported being seropositive at their last HIV test, and 7 % men reported being diagnosed with syphilis, gonorrhea, or chlamydia in the past 12 months. About half

of the sample (41 %) reported that they had had more than six sex partners in the past 6 months, and 68 % reported having had sex with a casual male partner in the past year. About 60 % men reported that they were "out" to someone about having sex with or being attracted to other men. The level of perceived HIV discrimination was high (mean = 4.10, SD = 0.97), as was expected blame for contracting HIV (mean = 3.58, SD = 1.09). Participants also reported expecting little support in the event that they were diagnosed with HIV (mean = 2.91, SD = 1.18).

Factors Associated with Alcohol Use Before or During Sex

Overall, 23 % ($n = 996$) of participants reported using alcohol before or during sex (Table 1). In multivariable analysis, compared to individuals aged 18–23, older men were more likely to report using alcohol before/during sex with aRRs (95 % CI) of 1.53 (1.3–1.8, $p < .001$) for participants aged 24–29 and 1.59 (95 % CI 1.41–1.79, $p < .001$) for those aged 30–39. Men with less than high school education were more likely to use alcohol [aRR 1.46 (95 % CI 1.13–1.9, $p < .05$)] surrounding sex compared to men completing at least college education. Participants who identified as gay [aRR 1.37 (95 % CI 1.04–1.82, $p < .05$)] or were 'out' to anyone about their sexual orientation [aRR 1.21 (95 % CI 1.11–1.32, $p < .05$)] were more likely to use alcohol surrounding sex, as were men who reported having more than six sexual partners in the past six-months [aRR 1.47 (1.35–1.62, $p < .001$)]. Having a casual male sexual partner was related to higher alcohol use [aRR 1.14 (95 % CI 1.01–1.18, $p < .05$)], as was having a paid male sexual partner [aRR 1.26 (95 % CI 1.13–1.42, $p < .001$)], or a wife/girlfriend [aRR 1.15 (95 % CI 1.05–1.25, $p < .01$)]..

Factors Associated with Chemsex (Drugs ± Alcohol Use Before or During Sex)

Overall, 5 % ($n = 226$) in the sample reported engaging in chemsex (using drugs ± alcohol before or during sexual activity, Table 2). MSM between the ages of 30–39 were almost twice as likely [aRR 2.19 (95 % CI 1.04–4.61, $p < .05$)] than men of ages 40 and above to engage in chemsex. Lower education (less than high school) was also strongly predictive of engagement in chemsex [aRR 2.31 (95 % CI 1.22–4.38, $p < .05$)]. In terms of behavioral indicators, men who reported being seropositive for HIV [aRR 1.67 (95 % CI 1.03–2.70, $p < .05$)] were more likely to engage in chemsex, as were men who received an STI diagnosis in the past year [aRR 1.42 (95 % CI 1.04–1.94, $p < .05$)]. Men who were 'out' to anyone about their sexual identity [aRR 1.44 (95 % CI 1.02–2.02, $p < .05$)] and those who had more than six sexual partners in the past six months [aRR 1.81 (95 % CI 1.38–2.37, $p < .001$)] were also more likely to engage in chemsex.

Discussion

This is the first study to report on prevalence of and factors associated with alcohol and drug use surrounding sex in a large geographically diverse sample of Indian MSM from all Indian states and over 400 localities, reached online.

Table 1 Factors associated with alcohol use before or during sex among men who have sex with men in India, 2017

		Used alcohol before or during sex		
	Total N (%)	Yes (%)	Crude RR (95% CI)	Adjusted RR (95% CI)
	4321 (100)	996 (23)	–	–
Sociodemographic characteristics				
Age				
18–23	1146 (27)	171 (15)	Ref	Ref
24–29	1844 (43)	457 (25)	**1.69[a] [1.44–2.00]**	**1.53[a] [1.30–1.80]**
30–39	1079 (25)	305 (28)	**1.90[a] [1.72–2.11]**	**1.59[a] [1.41–1.79]**
40+	252 (5)	52 (21)	**1.36[b] [1.11–1.65]**	1.08 [0.84–1.38]
Language survey taken				
Hindi	787 (18)	162 (21)	**0.86[c] [0.75–0.98]**	1.13 [0.98–1.29]
English	3534 (82)	834 (24)	Ref	Ref
Highest education				
Less than high school	118 (3)	27 (23)	1.31 [1.00–1.72]	**1.46[b] [1.13–1.90]**
High school	294 (7)	50 (17)	**0.73[c] [0.57–0.93]**	0.94 [0.75–1.18]
Some college	336 (8)	70 (21)	0.90 [0.79–1.02]	1.14 [0.99–1.31]
College/graduate school	3570 (83)	838 (24)	Ref	Ref
Household income (Indian Rs/Month)				
≤ 10,000	666 (15)	119 (18)	Ref	Ref
10,001–15,000	430 (10)	66 (15)	**0.81[c] [0.67–0.99]**	**0.84[c] [0.72–0.97]**
15,001–20,000	492 (11)	106 (22)	1.13 [0.95–1.34]	1.09 [0.89–1.32]
20,001–40,000	922 (21)	210 (23)	**1.20[c] [1.03–1.38]**	1.14 [0.96–1.36]
> 40,000	1807 (42)	484 (27)	**1.43[a] [1.29–1.59]**	**1.29[b] [1.10–1.51]**
Citysize				
Rural	355 (8)	74 (21)	0.92 [0.80–1.05]	1.11 [0.96–1.29]

Table 1 (continued)

		Used alcohol before or during sex		
Semi-rural	399 (9)	80 (20)	0.79 [0.60–1.05]	0.91 [0.69–1.21]
Urban	1254 (29)	256 (20)	**0.81[b] [0.70–0.94]**	0.91 [0.79–1.06]
Metropolis	2313 (53)	575 (25)	Ref	Ref
Behavioral characteristics				
Sexual identity				
Gay/homosexual	2115 (49)	549 (26)	**1.85[a] [1.35–2.54]**	**1.37[c] [1.04–1.82]**
Bisexual	1968 (46)	403 (20)	**1.43[c] [1.03–1.98]**	1.11 [0.82–1.52]
Straight/heterosexual	236 (6)	33 (14)	Ref	Ref
Tested positive for HIV at last test	108 (3)	27 (25)	1.02 [0.73–1.43]	0.97 [0.65–1.44]
Diagnosed with STI in past 12 months	307 (7)	77 (25)	**1.21[a] [1.09–1.36]**	1.04 [0.92–1.17]
> 6 sex partners in past 6 months	1752 (41)	512 (29)	**1.63[a][1.46–1.81]**	**1.47[a] [1.35–1.62]**
Sex partner: casual male	2937 (68)	721 (25)	**1.27[a] [1.14–1.42]**	**1.14[c] [1.01–1.28]**
Sex partner: paid male	337 (8)	109 (32)	**1.52[a] [1.31–1.74]**	**1.26[a] [1.13–1.42]**
Sex partner: wife or girlfriend	984 (23)	230 (23)	1.02 [0.93–1.11]	**1.15[b] [1.05–1.25]**
Sex partner: boyfriend	1840 (43)	439 (24)	1.09 [0.97–1.21]	1.06 [0.97–1.18]
Structural characteristics				
'Out' to anyone about sex with or attraction to men	2587 (60)	654 (25)	**1.33[a] [1.21–1.47]**	**1.21[a] [1.11–1.32]**
Stigma				
Perceived HIV discrimination—Mean (SD)	4.10 (0.97)	4.22 (0.90)	**1.13[a] [1.07–1.20]**	**1.10[b] [1.04–1.16]**
Perceived support in event of HIV diagnosis—Mean (SD)	2.91 (1.18)	2.95 (1.18)	1.03 [0.99–1.08]	1.00 [0.96–1.04]
Perceived HIV blame—Mean(SD)	3.58 (1.09)	3.59 (1.20)	1.01 [0.97–1.07]	0.96 [0.92–1.01]

Values in bold indicate significant values, at following alpha levels: a = $p < .001$, b = $p < .01$, c = $p < .05$. Both crude and adjusted models controlled for clustering by the state participants reported living in

Table 2 Factors associated with chemsex among men who have sex with men in India, 2017

	Used drugs ± alcohol before or during sex (N = 4321)		
Characteristic	Yes (%)	Crude RR [95 % CI]	Adjusted RR [95 % CI]
	226 (5)	–	–
Sociodemographic			
Age			
18–23	48 (4)	1.24 [0.79–1.95]	1.70 [0.92–3.13]
24–29	106 (6)	1.99 [0.98–4.06]	2.42 [0.98–6.02]
30–39	62 (6)	**2.03[c] [1.07–3.84]**	**2.19[c] [1.04–4.61]**
40+	52 (21)	Ref	Ref
Language survey taken			
Hindi	22 (3)	**0.48[a] [0.33–0.69]**	0.69 [0.47–1.03]
English	204 (6)	Ref	Ref
Highest education			
Less than high school	7 (6)	1.52 [0.86–2.67]	**2.31[c] [1.22–4.38]**
High school	12 (4)	0.72 [0.41–1.26]	1.08 [0.62–1.90]
Some college	17 (5)	0.93 [0.58–1.48]	1.45 [0.73–2.89]
College/graduate school	188 (5)	Ref	Ref
Household income (Indian Rs/Month)			
≤ 10,000	23 (3)	Ref	Ref
10,001–15,000	15 (4)	0.91 [0.53–1.57]	0.91 [0.51–1.61]
15,001–20,000	19 (4)	1.08 [0.54–2.18]	1.02 [0.48–2.16]
20,001–40,000	47 (5)	**1.48[c] [1.06–2.06]**	1.25 [0.85–1.85]
> 40,000	120 (7)	**1.99[b] [1.19–3.34]**	1.55 [0.82–2.93]
City size			
Rural	18 (5)	0.90 [0.68–1.19]	1.17 [0.90–1.52]

Table 2 (continued)

	Used drugs ± alcohol before or during sex (N = 4321)		
Semi-rural	14 (4)	0.55 [0.22–1.36]	0.68 [0.25–1.81]
Urban	53 (4)	**0.68[c] [0.49–0.95]**	0.84 [0.59–1.20]
Metropolis	139 (6)	Ref	Ref
Behavioral			
Sexual identity			
Gay/homosexual	132 (6)	**2.39[c] [1.14–5.00]**	1.17 [0.51–2.65]
Bisexual	85 (4)	1.56 [0.73–3.34]	0.98 [0.43–2.23]
Straight/Heterosexual	7 (3)	Ref	Ref
Tested positive for HIV at last test	11 (10)	**1.70[c] [1.04–2.77]**	**1.67[c] [1.03–2.70]**
Diagnosed with STI in past 12 months	26 (9)	**1.91[a] [1.34–2.71]**	**1.42[c] [1.04–1.94]**
> 6 sex partners in past 6 months	125 (7)	**2.13[a] [1.70–2.68]**	**1.81[a] [1.38–2.37]**
Sex partner: casual male	179 (6)	**1.94[a] [1.57–2.41]**	**1.56[a] [1.29–1.89]**
Sex partner: paid male	24 (7)	**1.71[b] [1.16–2.50]**	1.24 [0.83–1.85]
Sex partner: wife or girlfriend	42 (4)	0.80 [0.64–1.00]	1.00 [0.68–1.47]
Sex partner: boyfriend	104 (6)	1.21 [0.94–1.55]	
Structural			
'Out' to anyone about sex with or attraction to men	158 (6)	**1.72[a] [1.30–2.28]**	**1.44[c] [1.02–2.02]**
Stigma			
Perceived HIV discrimination—Mean (SD)	4.08 (0.98)	**1.17[b] [1.06–1.29]**	0.98 [0.86–1.12]
Perceived support in event of HIV diagnosis—Mean (SD)	2.91 (1.19)	**1.13[b] [1.05–1.22]**	1.06 [0.97–1.15]
Perceived HIV blame—Mean (SD)	3.59 (1.08)	**1.20[b] [1.05–1.36]**	1.11 [0.96–1.28]

Values in bold indicate significant values, at following alpha levels: a = $p < .001$, b = $p < .01$, c = $p < .05$. Both crude and adjusted models controlled for clustering by the state participants reported living in

Characteristics such as low educational attainment and older age were related to higher alcohol use with sex, as were behavioral factors including identifying as gay, being out to anyone about their attraction to men, reporting more recent sexual partners, having paid and casual male partners, and also having female partner(s). Similar to alcohol use, chemsex was also associated with low educational attainment, being out about their attraction to men, reporting more recent sex partners, and having a casual male partner. However, chemsex was also associated with being diagnosed with HIV or a sexually transmitted infection.

Additionally, we found that almost 1 out of 4 men (23 %) reported using alcohol surrounding sex, but only 5 % reported engaging in chemsex. Other studies of MSM from other low- and middle-income countries have reported similar rates of alcohol use, but higher rates of drug use with sex. One study from China found that 15 % of MSM engaged in chemsex (Wang et al. 2020), a study from Brazil, Mexico and Peru reported that on average 35 % men used alcohol with sex and 16 % men engaged in chemsex (Torres et al. 2019), and another study from Brazil reported similar rates of alcohol use (28 %) and chemsex (27 %) (Torres et al. 2020). The differing rates of chemsex across these studies is likely due to differences in contextual and cultural factors influencing drug use across these diverse settings, such as accessibility of drugs, social norms, and acceptability of chemsex. For example, Schmidt et al. (2016) found that rates of chemsex differed significantly across Europe, with city of residence (and related structural factors such as attending private sex parties or gay sex club, drug availability) being key predictors of chemsex. Though illicit drugs and drug parties may be less accessible in India, alcohol is more readily available, even among those with less resources (Chowdhury et al. 2006; Jacob 2010).

While attitudes and acceptance towards homosexuality have improved over time in India, there remains substantial stigma against non-heterosexual identities (e.g., approximately two thirds of people in a public opinion survey in India reported believing that homosexuality is never justified (Badgett 2014); half of MSM are estimated to have historically married women due to cultural pressure (Dandona et al. 2005; Kumar and Ross 1991; Phillips et al. 2010). This context of non-acceptance may be related to substance use with sex. For example, we observed higher rates of alcohol use surrounding sex among men who had female partner(s), or casual or paid male sexual partners. It may be that these men's alcohol use surrounding sex is a coping strategy related to negative emotions such as shame, guilt, and anxiety (Berking et al. 2011; George 2015; Pachankis et al. 2015). These associations however merit further study to better understand these potential relationships for MSM in India.

Limitations

The present study has limitations that should be noted. This was a cross-sectional study and therefore cannot infer causality. The findings may not be generalizable to all Indian MSM, especially those not reachable online, although we had a large geographically diverse sample. We did not assess other types of stigma

manifestations, such as internalized homophobia or discrimination experiences, which may be important influencers of alcohol and drug use surrounding sex. Finally, in this brief online survey, we did not assess mental health variables such as depression, anxiety, or stress, which may be associated with alcohol and drug use in the context of sexual activity (Hendrickson et al. 2019; Rathod et al. 2018).

Future Directions

Future longitudinal research is needed to investigate pathways between factors such as less education, having casual/paid male partners and alcohol/drug use in the context of sexual activity. One hypothesis that could be explored is if emotion regulation skills mediate or moderate these pathways to inform interventions for MSM to reduce alcohol and drug use surrounding sex. Internet-based interventions can be developed to reach and engage Indian MSM and target substance use surrounding sex. Internet-based interventions have been used successfully in reducing overall alcohol use in other low- and middle-income countries (Andrade et al. 2016; Naslund et al. 2017). Additionally, the impact of syndemic conditions on the well-being of marginalized communities is increasingly recognized in India (Chakrapani et al. 2017; Tomori et al. 2018); future studies will benefit from taking a syndemic approach to studying alcohol and drug use in the context of sexual activity and take into account diverse cultural and structural factors present in India when developing interventions. Interventions and systemic changes that increase acceptance of LGBTQ people can aid in reducing stigma, and consequently reducing negative health behaviors and improving overall health and well-being of MSM. However, these changes are likely to occur over the long-term, and in the short-term, it may be helpful to focus on behavioral changes, such as reducing unsafe alcohol and drug use.

Conclusions

This study describes alcohol and drug use among a national sample of MSM from all Indian states and from over 400 localities. Findings suggest the need for further assessing alcohol and drug use in the context of sexual activity, particularly how it might impact sexual practices, and what interventions might be needed to promote safer sex.

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Compliance with Ethical Standards

Conflict of interest The authors have no conflicting interests to report.

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Human subjects research review boards at The Humsafar Trust (an LGBTQ community-based organization in Mumbai, India) and Albert Einstein College of Medicine (Bronx, United States) approved the study. This study was approved by the institutional review boards of Albert Einstein College of Medicine (Bronx, USA) and the Humsafar Trust (Mumbai, India).

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