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Bisexuality, Sexual Risk Taking, and HIV Prevalence Among Men Who Have Sex With Men Accessing Voluntary Counseling and Testing Services in Mumbai, India

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Abstract

Objectives—To describe sociodemographics, sexual risk behavior, and estimate HIV and sexually transmitted infection (STI) prevalence among men who have sex with men (MSM) in Mumbai, India.

Methods—Eight hundred thirty-one MSM attending voluntary counseling and testing (VCT) services at the Humsafar Trust, answered a behavioral questionnaire and consented for Venereal Disease Research Laboratory and HIV testing from January 2003 through December 2004. Multivariate logistic regression was performed for sociodemographics, sexual risk behavior, and STIs with HIV result as an outcome.

Results—HIV prevalence among MSM was 12.5%. MSM who were illiterate [adjusted odds ratio (AOR) 2.28; 95% confidence interval (CI): 1.08 to 4.84], married (AOR 2.70; 95% CI: 1.56 to 4.76), preferred male partners (AOR 4.68; 95% CI: 1.90 to 11.51), had partners of both genders (AOR 2.73; 95% CI: 1.03 to 7.23), presented with an STI (AOR 3.31; 95% CI: 1.96 to 5.61); or presented with a reactive venereal disease research laboratory test (AOR 4.92; 95% CI: 2.55 to 9.53) at their VCT visit were more likely to be HIV infected.

Conclusions—MSM accessing VCT services in Mumbai have a high risk of STI and HIV acquisition. Culturally appropriate interventions that focus on sexual risk behavior and promote

condom use among MSM, particularly the bridge population of bisexual men, are needed to slow the urban Indian AIDS epidemic.

Keywords

bisexual; homosexual; India; men who have sex with men; Mumbai; voluntary counseling and testing

INTRODUCTION

There are more than 39.5 million people living with HIV worldwide,¹ and according to National AIDS Control Organization (NACO),² more than 2.5 million live in India. Sexual transmission is the predominant mode of HIV transmission and is estimated to be the major risk for about 86% of those infected.³ Mumbai (formerly known as Bombay) is the major metropolis and financial capital of India. It is situated in Maharashtra state, which is one of the high prevalence states for HIV in India with prevalence rates greater than 5% among high-risk group members and greater than 1% among women presenting for antenatal care.² The Humsafar Trust, a nongovernmental organization working in the field of male sexual health in Mumbai began in 1995 as a drop in center with help lines for male sexual minorities in Mumbai. ⁴ The voluntary counseling and HIV testing (VCT) center for men who have sex with men (MSM) and transgendered persons was established in the year 1999 under the aegis of Mumbai Districts AIDS Control Society. Beginning in 2000, NACO began sentinel surveillance among MSM in India and the Humsafar Trust was one of the first sentinel surveillance sites for MSM. The HIV prevalence during sentinel surveillance among MSM (excluding transgendered people) for the year 2005 was 6% at the Humsafar Trust.

Same sex behavior among many men in India is not associated with a distinct gay identity as seen in the West.⁵ Instead, it may be based on identities which focus on the individual's role in the sexual act.⁵⁻⁶ Thus Indian MSM include self-identified gay men (Western acculturated) and kothi (receptive male partner), panthi or danga (insertive male partner), "double deckers" (men who have sex with both men and women), and alis or hijras (transgendered people).^{5,7-8} At the same time, many men in India may not consider anal sex with other men as "sex" per se, but just "masti" (having fun).⁹ This perception may be particularly widespread among men without a distinct MSM identity. Because penetrative anal sex is considered as an unnatural offence in India punishable by law under Article 377, same sex behavior in India tends to be covert and stigmatized, hindering prevention education.

A national Baseline Behavioral Surveillance Survey of MSM in 5 major cities in the year 2002 suggested low rates of condom use among MSM, especially with commercial partners,¹⁰ which has been corroborated by studies from northern¹¹ and southern India.¹² Another report about rural Indian men from 5 districts in 5 different states suggested that 9.5% of single and 3.1% of married men reported anal sex with a man in the past year.¹³ MSM in this study had high rates of unprotected insertive and receptive anal intercourse with male partners and practiced more anal sex with their wives. Previous studies from Chennai and Pune have documented higher HIV and STD prevalence rates among MSM than among other Indian men.^{7,14} The current study was designed to assess the HIV burden in MSM who sought voluntary counseling and testing (VCT) services at the Humsafar Trust and to describe their sociodemographics and sexual risk behavior patterns and presence of concomitant sexually transmitted infection (STI) symptoms, all of which are relevant in amplifying the growing Indian HIV epidemic in this population.

METHODS

Subjects and Procedures

The study was carried out at the VCT center at the Humsafar Trust in Mumbai from January 2003 through December 2004. Humsafar trust has an outreach program that covers all of the Mumbai metropolitan area. It provides information on HIV transmission, safe sex practices, and distributes free condoms to MSM and transgendered people through 156 peer educators and outreach workers. The outreach workers inform clients about the availability of VCT facilities at the center and provide clients with a health card if they need to visit the VCT to test for HIV or rule out the presence of STIs. The protocol for the secondary data analysis was approved by the Institutional review board at Brown University. Trained counselors provide pretest and post HIV test counseling and administered a questionnaire pertaining to demographics and sexual risk behavior. This questionnaire was used routinely to collect data from all clients who utilized the voluntary testing and counseling center. A trained laboratory technician drew venous blood to perform Venereal Disease Research Laboratory (VDRL) and rapid HIV tests using methods described below. Medical providers examined all clients and those with symptoms received medications for clinically diagnosed STIs according to syndromic management guidelines.¹⁵

Testing Algorithm

The VDRL tests were carried out using Trepolipin VDRL reagent (Tulip Diagnostics, Goa, India) and were not confirmed by fluorescent treponemal antibody-absorbed (FTA-ABS) or microhemagglutination assay for treponema pallidum (MHA-TP). All positive VDRL cases with titres greater than 1:8 were treated after eliciting recent history of being administered injectable Benzathine Penicillin. The testing strategy for HIV was based on NACO guidelines that require 1 screening test and 2 additional tests for confirmatory diagnosis of HIV infection.¹⁶ All clients received a rapid screening test for HIV–Comb AIDS, (Span Diagnostic, Surat, India) or HIV comb, (J. Mitra and company, New Delhi, India). All those who tested positive on the screening test received 2 more rapid tests either Tri–dot, (J. Mitra and company, New Delhi, India); Bio–line, (Standard Diagnostics Inc, Korea); Immunocomb, (Organics Limited, Ireland); Capillus, (Trinity Bio-tech, Ireland); Wicklow, Pareekshak, (Bhatt Bio-tech India Pvt Ltd, Bangalore, India); Neva–HIV, (Cadilla Pharmaceuticals, Mehsana, India), and Enzyme immuno assay comb, (J. Mitra and company). Clients were diagnosed to be positive if all 3 tests were concordant and positive. Positive test results implied that person could have HIV 1 or 2 or both. All positive samples and 10% of negative samples were sent to Lokmanya Tilak Municipal General Hospital, Mumbai, for quality control on a quarterly basis.

Statistical Analysis

The data were entered in Epi Info (CDC, Atlanta, GA) and analyzed using Stata/SE software version 9.1.¹⁷ For the purpose of this study, MSM is defined as any man who reported sex with another man or transgendered person. Transgendered people, who have a distinct identity delineated from “gay”, “kothi,” or “panthi” were not included in this study. Frequencies were computed for demographics, sexual risk behavior, STI, and HIV prevalence. A literature review was carried out to identify variables that may confound the outcome. In addition, bivariate analysis was carried out for independent predictor variables using Pearson χ^2 statistics, odds ratios were calculated with 95% confidence intervals (CIs), and multivariate logistic regression for variables significantly associated with HIV test result were done to identify independent associations with HIV status. To carry out multivariate regression, we performed bivariate analysis for each variable using likelihood ratio test.¹⁸ All variables with a *P* value less than 0.25 were included in the multivariate model to assess all variables that have been confounders. This full model was evaluated for fit using Wald statistic. All variables with *P* value greater than 0.1 were dropped. The reduced model excluding dropped variables was compared with

larger model using likelihood ratio test. Odds ratios of dropped variables were compared with the best-fit model to determine if any of the excluded variables were potential confounders. We thus obtained our preliminary main effects model. Interaction terms were added one at a time to the main effects model, and their significance was assessed using likelihood ratio test with a summary goodness of fit analysis¹⁹ done to determine final model. Because some of the data variables were not entered for each client visit, χ^2 tests of significance were performed to assess whether relevant demographic and behavioral variables were comparable between men who had complete data available and those with missing data.

RESULTS

Demographics

Between January 2003 and December 2004, 1350 MSM underwent VCT at the Humsafar Trust. Nineteen clients who did not consent to undergo HIV testing were excluded from the analysis. There were 831 MSM for whom complete data are available and are included in the current data analysis. The mean age, employment and marital status, literacy, sexual partner preference, and HIV prevalence—of the men not included in this analysis did not differ significantly from those in the current study. MSM who presented at the VCT clinic at the Humsafar trust had a mean age of 24.8 years (Table 1) with 8% being illiterate and 14% having an average monthly income of less than 2000 Indian rupees (less than US \$46). More than one third of the MSM (35%) were unemployed or unskilled workers, and 23% were married to a woman.

Sexual Risk Behavior

Almost half of all men (49%) who requested an HIV test did not perceive themselves to be at any risk for HIV infection and 26% indicated that they did not know if they were at risk for HIV acquisition. Almost 66% of men had their first sexual encounter with a male or transgender person, and 41% had more than 5 partners in the past 6 months. More than one-third (35%) indicated that they had anal receptive sex, 64% insertive anal sex, 39% penile–vaginal sex in the past 6 months. More than half of the men (57%) preferred males as sex partners, and 24% expressed equal interest in males and females.

Participants were asked about their partnership patterns, defining “regular” as wives and/or male partners if they had at least 1 episode of sexual contact (anal, oral) per month for the past 6 months. Casual partners were male or female partners with whom sexual contact may have happened at least once. More than two third of the men (68%) reported having only casual partners and 15% only regular partners with 13% reporting that they had both regular and casual partners.

Condom Use

Over half of the men with female partners (53%) reported never using condoms with female spouses during vaginal sex and 38% never using condoms with regular male partners during anal sex (Table 2). Three most often repeated reasons for not using condoms with regular partners included nonavailability (33%), feeling the partner is safe (32%), and feeling that condoms do not give sexual pleasure (18%). Almost one third of men who had casual female partners reported not using condoms during vaginal sex in the past 6 months. One quarter had not ever used condoms with male or female casual partners during anal sex in the past 6 months. The most common reasons for not using condoms with casual partner included nonavailability (45%) and feeling that condoms do not provide sexual pleasure (22%).

STI and HIV Prevalence

The HIV prevalence in this cohort was 12.5%, with 14% of the men reporting STD symptoms, and only 68% returning to collect all of their laboratory reports. Six and one-half percent of the men had a positive VDRL test for syphilis. The 114 men who had a repeat visit during the period of the study were not included in this analysis.

Bivariate Analysis

In the bivariate analysis (Table 3), MSM who did not know if they were at risk for HIV were almost twice (1.86) as likely to be HIV-infected as compared with those who did not perceive themselves at risk for HIV (95% CI: 1.16 to 2.99). The men's income, type of partner, whether they returned for their test results, and number of partners in the past 6 months were not significantly associated with a positive HIV test.

Multivariate Logistic Regression

On performing multivariate logistic regression (Table 4) with significantly associated variables from bivariate analysis, we found that illiterate MSM [adjusted odds ratio (AOR) 2.28; 95% CI: 1.08 to 4.84], those who were married (AOR 1.59; 95% CI: -1.27 to 2.78), preference of male partners (AOR 4.68; 95% CI: 1.90 to 11.51) or preference of male and female partner (AOR 2.73; 95% CI: 1.03 to 7.23), presence of a clinically diagnosed STI (AOR 3.31; 95% CI: 1.96 to 5.61), and reactive VDRL test for syphilis (AOR 4.92; 95% CI: 2.55 to 9.53) on VCT visit remained independently associated with higher HIV prevalence. Age and number of partners in the past 6 months did not remain statistically significant in the multivariate model. We studied interaction between age, education; clinical diagnosis, VDRL test; education, preference of partner; clinical diagnosis, preference of partner; and VDRL test, preference of partner and found that none of the interaction terms remained significant when included in the model.

DISCUSSION

The NACO has found that the current AIDS epidemic in India is heterogeneous, disproportionately affecting specific high-risk communities, including MSM.²

The present study found high rates of unprotected sex, bisexuality, and HIV among urban Indian MSM. A study conducted in Andhra Pradesh also found that MSM reported high rates of unprotected anal sex with other men and women.¹² Another study among rural men from 5 different states in India also reported that 9.5% of single and 3.1% of married men had anal sex with other men and had greater number of male sexual partners and found high rates of unprotected anal sex with male partners.¹³ STI and HIV prevalence in the current study are similar to those from a population-based study in Chennai⁷ but lower than HIV prevalence rates of 19% among MSM attending STD clinics in Pune, India, between 1993 and 2002.¹⁴

Men accessing VCT services at the Humsafar Trust were young and most had at least a secondary school education, with a high prevalence of clinically diagnosed STIs and HIV. HIV infection was independently associated with being illiterate, married, and having serological evidence of syphilis or clinically diagnosed STIs. The majority of the men had a predominant same sex preference, but a quarter of the men were married to women. Being married may reflect some denial of same sex behavior by married MSM, who might dissociate and suppress their secret lives and/or think that because they are socially perceived as heterosexual, they would be at low risk of acquiring HIV. They also may be socially isolated from other MSM and not be likely to receive community-based prevention interventions.

The majority of MSM accessing VCT reported that they came to the clinic to be tested for HIV because of their sexual behavior. Many of the men in the cohort misperceived their risk, as evinced by counselors describing the practices of almost 70% of the men as high risk, whereas only quarter of the men described themselves as such.

Those who did not think they were at risk were significantly more likely to be HIV infected, suggesting the need for improved health education interventions for VCT clients designed to increase their knowledge and understanding of how risky sexual behavior can result in STI and HIV acquisition.

About one quarter of the men expressed a bisexual behavioral preference, which was an independent predictor for testing HIV positive. Behaviorally bisexual men preferred insertive anal and then vaginal sex in that order with their partners. These men may form a major bridge population between other high-risk MSM and transgender people and their regular female partners or spouses as also suggested by other studies in the past.^{12,13,20–22} Ethnographic literature from Chennai suggest that MSM in the West have a collective “gay identity,” whereas in India, same sex relationships are based more on varying sexual identities and behavior based on those identities.⁵ Men who comprise this bridge population may not identify themselves to be homosexual or “gay.” Further research that looks at linkages between identity and sexual risk behavior among these and other subgroups of men practicing same sex behavior are required in the Indian context.

The present study documented that men in Mumbai who had sex with men but did not identify as gay already had an HIV prevalence more than 10-fold greater than the general population. This presents an increased risk for the wives of men because procreation is a priority in India, and women tend to be monogamous. So they may be at high risk of becoming infected by husbands’ practicing same-sex behavior.²⁰ Interventions that focus on behavioral risks and not cultural identity and which are acceptable in mainstream society are needed to slow HIV transmission in this no-cohesive population.

A limitation of the study is that it is based on a nonrandom convenience sample of MSM who sought VCT services and hence cannot be generalized to all MSM in Mumbai. Social desirability might lead to under reporting of sexual risk behavior and over reporting of condom use. This might be minimized because the Humsafar Trust is perceived as a safe space for MSM. The responses to the questions about the number of partners and condom use with casual partners during anal and vaginal sex involved a time frame of 6 months, which could lead to recall bias. Nevertheless, our estimates of high-risk sexual behavior from self-report of MSM accessing VCT services are corroborated by VDRL results and clinically diagnosed STIs. Lastly, to address concerns that these analyses were conducted on only the 61.6% of men accessing VCT services for whom complete data were available, mean age, employment and marital status, literacy, sexual partner preference, and HIV prevalence were compared between both groups and no statistically significant differences were found.

MSM requesting VCT services in Mumbai have high-risk sexual behavior and are at risk of STI and HIV acquisition. Interventions that target sexual risk behavior and condom uses are necessary in this group. Specific interventions targeting the bridge population of behaviorally bisexual men have implications for HIV risk reduction in them and their low-risk female spouses.

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TABLE 1

Sociodemographics, Sexual Risk Behavior, Among MSM Accessing VCT Center in Mumbai

Sr. No.		Number (n = 831)	Percentage (%)
Sociodemographics			
1	Age groups		
	≤24 years	499	60.1
	>24 years	332	39.9
2	Educational status		
	Illiterate	69	8.3
	Up to secondary	400	48.1
	Higher secondary/graduate/post graduate	362	43.6
3	Income (rupees/US \$ equivalent)		
	≤2000(up to 45)	119	14.3
	2001–5000 (46–111)	385	46.4
	>5000 (≥112)	105	12.6
	Missing	222	26.7
4	Employment status		
	Unemployed/unskilled	293	35.3
	Skilled/professional/student	511	61.5
	Sex worker	27	3.2
5	Marital status		
	Married	189	22.7
	Unmarried/separated/widowed	642	77.3
Sexual risk behavior			
1	First sexual encounter with whom		
	Male	547	65.8
	Transgender	6	0.7
	Female	272	32.8
	Missing	6	0.7
2	Self Perceived risk of HIV		
	Yes	205	24.9
	No	404	49.1
	Do not know	214	26.0
3	Number of partners in past 6 months		
	<5	490	59.0
	≥5	341	41.0
4	Type of partners		
	Regular	129	15.5
	Casual	567	68.2
	Both	112	13.5
	Missing	23	2.8
5	Partner preference		
	Men or transgenders (prefer male)	471	56.7

Sr. No.	Number (n = 831)	Percentage (%)
Female	161	19.4
Male and female	199	23.9

TABLE 2**Condom Use, STI, and HIV Prevalence Among Men Accessing VCT Services**

Sr. No.		Number (n = 831)	Percentage (%)
Condom use			
1	Condom use with regular partner during anal sex	186	100.0
	Ever used	116	62.4
	Never used	70	37.6
2	Condom use with regular partner during vaginal sex	120	100.0
	Ever used	56	46.7
	Never used	64	53.3
3	Condom use with casual partner during anal sex in past 6 months	545	100.0
	Ever used	409	75.0
	Never used	136	25.0
4	Condom use with casual partner during vaginal sex in past 6 months	207	100.0
	Ever used	140	67.6
	Never used	67	32.4
Reason for not using condoms			
5	With regular partner	199	100.0
	Do not know about condoms	8	4.0
	Do not know how to use condoms	3	1.5
	Feels partner is safe	64	32.2
	Does not give sexual pleasure	36	18.1
	Non availability	65	32.7
	Practices safe sex (partner)	5	2.5
	Did not feel necessary	12	6.0
	Partner refuses	4	2.0
	Feels oral sex is safe	2	1.0
6	With casual partner	490	100.0
	Do not know about condoms	38	7.8
	Do not know how to use condoms	3	0.6
	Feels partner is safe	45	9.2
	Does not give sexual pleasure	106	21.6
	Non availability	221	45.1
	Practices safe sex (partner)	4	0.8
	Did not feel necessary	31	6.3
	Partner refuses	24	4.9
	Feels oral sex is safe	18	3.7
7	Interviewer perception of reasons why client was tested		
	High-risk behavior	575	10
	STIs	69.2	1.2
	Regular checkup/ follow up/ transfusions/ others	241	29.0
	Missing	5	0.6

Sr. No.		Number (n = 831)	Percentage (%)
STI and HIV seroprevalence			
8	Clinical diagnosis		
	No STI	713	85.8
	STIs	118	14.2
9	VDRL test for syphilis		
	Non reactive	777	93.5
	Reactive	54	6.5
10	HIV seroprevalence		
	Negative	727	87.5
	Positive	104	12.5
11	Results collected		
	No	267	32.1
	Yes	564	67.9

TABLE 3
Bivariate Analysis of Sociodemographics, Sexual Risk Behavior, and STIs With HIV Prevalence

Variables	Total Number		HIV Prevalence			P
	n = 831	% Column	n = 104	% Row	OR	95% CI
Age groups						
≤24 years	499	60.1	41	8.2	1	–
>24 years	332	39.9	63	18.9	2.61	1.71 to 4.00
Education status						
Illiterate	69	8.30	15	21.74	2.77	1.41 to 5.44
Up to secondary	400	48.13	56	14.00	1.62	1.02 to 2.56
Higher secondary/graduate/postgraduate	362	43.56	33	9.12	1	–
Income (rupees/US \$)						
Up to 2000	119	14.32	13	10.92	1.05	0.45 to 2.45
2001–5000	385	46.33	52	13.51	1.33	0.67 to 2.66
>5000	105	12.64	11	10.48	1	–
Missing	222	26.71	28	12.61	1.23	0.59 to 2.58
Employment						
Unemployed/unskilled	293	35.26	47	16.04	1.80	1.17 to 2.77
Skilled/Prof/Student/Missing	511	61.49	49	9.59	1	–
Sex worker	27	3.25	8	29.63	3.97	1.65 to 9.54
Marital status						
Married	189	22.74	45	23.81	1	–
Unmarried/separated/widowed	642	77.26	59	9.19	0.32	0.21 to 0.50
Preference of partners						
Male (men+transgender)	471	56.68	76	24.32	4.97	2.12 to 11.65
Female	161	19.37	6	3.73	1	–
Male and Female (Both)	199	23.95	22	11.06	3.21	1.27 to 8.12
Type of partner						
Regular	129	15.52	20	15.50	1	–
Casual	567	68.23	60	10.58	0.64	0.37 to 1.11
Both	112	13.48	20	17.86	1.18	0.60 to 2.34

Variables	Total Number		HIV Prevalence				P
	n = 831	% Column	n = 104	% Row	OR	95% CI	
Missing	23	2.77	4	17.39	1.14	0.35 to 3.73	–
Self perceived risk of HIV							
Yes	205	24.91	24	11.71	1.14	0.67 to 1.95	–
No	404	49.09	42	10.40	1		–
Do not know	214	26.00	38	17.76	1.86	1.16 to 2.99	0.029
No. partners in 6 months							
<5	490	58.97	59	12.04	1		–
≥5	341	41.03	45	13.20	1.11	0.73 to 1.68	0.074
Clinical diagnosis							
Non-STIs	713	85.80	72	10.10	1		–
STIs	118	14.20	32	27.12	3.31	2.06 to 5.32	0.000 [†]
VDRL test							
Non reactive	777	93.50	82	10.55	1		–
Reactive	54	6.50	22	40.74	5.83	3.23 to 10.50	0.000 [†]
Reports collected							
Yes	564	67.87	76	13.48	1		
No	267	32.13	28	10.49	1.33	0.84 to 2.11	0.224

* $P < 0.05$.

[†] $P < 0.001$.

TABLE 4

Multivariate Logistic Regression Model With HIV Prevalence as an Outcome

Variables	AOR for HIV	95% CI
Age groups		
≤24 years	1	–
>24 years	1.60	0.96 to 2.66
Education status		
Illiterate	2.28	1.08 to 4.84
Up to secondary	1.48	0.89 to 2.44
Higher secondary/graduate/postgraduate/missing	1	–
Marital status		
Married	1.59	1.27 to 2.78
Unmarried/separated/widowed	–1	–
Preference of partners		
Male (male or transgender)	4.68	1.90 to 11.51
Female	1	–
Male and female (both)	2.73	1.03 to 7.23
No. partners in 6 months		
<5	1	–
≥5	0.77	0.48 to 1.22
Clinical diagnosis		
Non-STIs	1	–
STIs	3.31	1.96 to 5.61
VDRL test		
Non reactive	1	–
Reactive	4.92	2.55 to 9.53

Hosmer Lemeshow χ^2 (8) = 2.57.Prob > χ^2 = 0.9581 (goodness of fit statistic).