Men who have sex with men and transgenders in Mumbai, India: An emerging risk group for STIs and HIV

Maninder Singh Setia[1], Christina Lindan[2], H. R. Jerajani[3], Sameer Kumta[4], Maria Ekstrand[2], M. Mathur[3], A. Gogate[5], A. R. Kavi[6], V. Anand[6], Jeffrey D. Klausner[7]

[1]McGill University, Montreal, Canada, [2]University of California, San Francisco, USA, [3]Lokmanya Tilak Municipal Medical College, Mumbai, India, [4]Brown University, Providence, USA, [5]Consultant Microbiologist, Mumbai, India, [6]The Humsafar Trust, Mumbai, India, [7]STD Prevention and Control, San Francisco Department of Public Health, San Francisco, USA.

Address for correspondence: Dr. H. R. Jerajani, Department of Dermatology, LTMM College and LTMG Hospital, Sion, Mumbai - 400 022, India. E-mail: jerajani@rediffmail.com

ABSTRACT

Background: Men who have sex with men and transgenders are an important risk group for sexually transmitted infections (STIs) and human immunodeficiency virus (HIV). They have risky sexual behaviors but low risk perception. **Objectives:** To assess the sexual behavior, STIs, HIV, and identify factors associated with HIV in men who have sex with men (MSM) and transgenders (TGs) in Mumbai. **Methods:** Participants were enrolled from two clinics in Mumbai. They completed an interviewer-administered questionnaire and were evaluated for STIs and HIV infection. **Results:** A total of 150 participants, 122 MSM and 28 TGs were evaluated; 17% of MSM and 68% of the TGs were HIV infected. HIV infection in MSM was associated with serological positivity for HSV2 IgG [adjusted odds ratio (aOR), 95% confidence interval (CI): 9.0 (2.2-36.9)], a positive *Treponema pallidum* hemagglutination assay (TPHA) [aOR (95% CI): 6.0 (1.5-24.0)], greater than five acts of receptive anal sex in the past six months [aOR (95% CI): 4.3 (1.2-15.0)] and per category increase in age (18-24 yrs, 25-29 yrs, > 30 yrs) [aOR (95% CI): 3.1 (1.3-7.1)] in multivariate analysis. Consistent condom use during receptive anal sex in the past six months was low (27%). Many MSM were married (22%) or had sex with females and may act as a 'bridge population'. HIV infection in TGs was associated with a positive TPHA [OR (95% CI): 9.8 (1.5-63.9)] and HSV 2 IgG [OR (95% CI): 6.7 (1.1-40.4)] in univariate analysis. **Conclusion:** Prior STIs were strongly associated with HIV infection in MSM and TGs. These groups should be the focus of intensive intervention programs aimed at STI screening and treatment, reduction of risky sexual behavior and promotion of HIV counseling and testing.

Key Words: HIV, Men who have sex with men, Risk behaviors, Sexually transmitted infections, Transgenders

INTRODUCTION

India has a significant human immunodeficiency virus (HIV) epidemic and the total number of HIV infections was estimated to be 5.21 million in 2005.[1] The primary route of transmission is sexual, accounting for 86% of all reported acquired immunodeficiency syndrome (AIDS) cases in the country.[2] High-risk groups - female sex workers, individuals with sexually transmitted infections (STIs) and injection drug users - were a part of surveillance and public health interventions relatively early in the epidemic.[3,4] The role of men in HIV transmission was often discussed in the context of married monogamous women,[5] female sex workers and migrant labor and relatively fewer studies discussed the sexual behavior and

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prevalence of HIV among men who have sex with men (MSM).[6,7] However, recently there has been an increased recognition of male-to-male transmission of STIs and HIV in the country and the National AIDS Control Organization, India has initiated HIV sentinel surveillance and behavioral surveillance in the MSM group.[8] In Mumbai, in one of those surveillance sites, the annual estimate of HIV prevalence ranged from 10-23%.[9]

Overall, in India, there is little acknowledgement of men whose primary sexual orientation is towards other men. This perception of "homosexuality" in the society is often reflected in the prevention and care of HIV and STI patients. In the absence of specific health programs, non-governmental organizations (NGOs) working with MSM have initiated peer outreach programs in various cities.[10-12] A specific high-risk group targeted by some of these NGOs is that of male-female transgenders.[13,14] Most of the transgenders are biological males who dress and socially behave as females. This group is often stigmatized and may sell sex for a living, thus putting them at a higher risk for acquiring STIs and HIV.

MSM as well as transgenders (TGs) are an important emerging risk group in India that requires extensive evaluation of sexual behavior and STIs and HIV infection. The information could be used to design relevant and effective intervention programs among MSMs, who although often invisible, are at risk for acquiring infections. Thus, the present pilot study was undertaken to assess the sexual behavior, STIs and HIV infection among a population of MSM and TGs in Mumbai and to identify the factors associated with HIV infection in these groups.

METHODS

We conducted a cross-sectional study at two STI clinics in Mumbai: the STI clinic at the Department of Dermatology of Lokmanya Tilak Municipal General Hospital (LTMG), a public hospital and the HIV Testing Center at *Humsafar* Trust, a non-governmental organization serving gay-identified men, male-to-female transgenders and other men who have sex with men. Community outreach workers from *Humsafar* Trust visited sites where men commonly met other men and specific sites where TGs met their sexual partners or clients. They provided information on HIV, STIs and services available at the clinics. Participants, who subsequently presented at either of the clinical sites requesting services were enrolled if they were 18 years or older, reported a history of same sex behavior, and consented to participate in the study, over a period of six months. The ethical committee at the LTM Medical College and the Institutional Review Board of the University of California, San Francisco approved the study protocol. All the participants provided written informed consent for the study.

A structured interviewer-administered questionnaire was designed and pretested (the pretest interviews were not a part of the final sample). It was administered by trained personnel in a private space and was completed in about 15-20 min. It included questions on demographics (age, gender, marital status, native place), socio-economic conditions (job, income, living conditions) and health-seeking behaviors (type of healthcare professional preferred, reasons for preference, type of services provided). There were questions on lifetime sexual behavior (first partner, age at first sexual exposure, lifetime partners), behavior in the past six months (number of partners; type of sexual activity-oral, anal, vaginal or other forms; condom use during the sexual acts, on a 4-point scale-always to never; venue for sex; sex in exchange for money), sexual behavior in the past one month, sex with female sex workers and with spouse, attitude towards condoms (4-point scale-strongly disagree to strongly agree) and knowledge about HIV/AIDS.

Trained physicians examined participants for the presence of STIs. Blood was collected for VDRL testing (VDRL, Tulip diagnostics®), *Treponema pallidum* hemagglutination assay (TPHA, Omega Diagnostics®), hepatitis B surface antigen (Hepanostika® organon Teknika), HSV2 IgG (MRL Diagnostics®, Focus Technologies) and HIV tests (one enzyme-linked immunosorbent assay and two rapid tests. Urethral discharge, if present, was evaluated with Gram stain to identify white blood cells and the presence of gram-

negative intracellular diplococci. Patients with genital ulcers were treated clinically for syphilis, chancroid or herpes. Patients with symptoms of proctitis underwent anoscopy. Study participants consented separately for HIV testing and received pretest counseling by trained personnel. Subjects were asked to return in one week to collect test results and receive HIV posttest counseling. Clinicians evaluated patient response to therapy and modifications to treatment were made based on the response and laboratory results.

Data were entered in Epi info (Version 6) on site and converted to Stata (version 8.2) for further analysis. Distribution of responses was calculated using means, medians and proportions. The distribution of the continuous variables was also visualized with histograms. Pearson's chi-square tests and Fisher's exact test (low expected cell counts) were used to evaluate the association of categorical estimates with HIV. We calculated the odds ratios (OR) and 95% confidence intervals (CIs) as a measure of association. We used a logistic regression model for multivariate analysis to identify the variables associated with HIV infection.

RESULTS

A total of 150 consecutive consenting individuals, 122 MSM and 28 transgenders, were enrolled. About 17% of the MSM and 68% of the transgenders were HIV infected; the proportion increased with age in MSM [Figure 1].

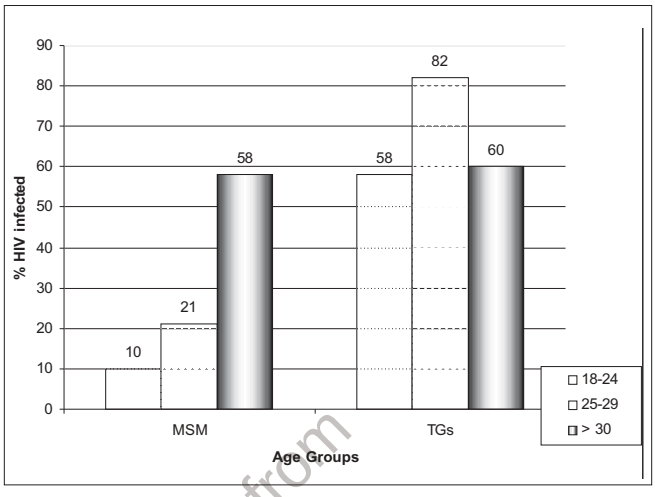

Figure 1: HIV infection according to age categories among MSM and TGs in Mumbai, 2001

Characteristics of MSM

The mean age (± SD) of MSM was 23.6 (5.1) years. Most of them were either skilled (34%) or unskilled laborers (22%). In the past six months, MSM had a median of five male partners. About 94% of MSM had anal sex (insertive and/or receptive) and 82% had sex with a casual partner in the past six months. Some sexual practices such as fingering/fisting (7%) and group sex (5%) were relatively uncommon. About 44% of the MSM reported having visited female sex workers in their lifetime.

We have described certain demographic characteristics, sexual behaviors, STIs and their association with HIV in Table 1. Although marital status was associated with HIV, it was confounded by age. The adjusted OR was 1.1 (95% CI: 0.3-4.0). In the multivariate model, per category increase in age (18-24 yrs, 25-29 yrs, > 30 yrs) [aOR (95% CI) 3.1 (1.3-7.1)], HSV2 IgG [aOR (95% CI): 9.0 (2.2-36.9)], TPHA [aOR (95% CI): 6.0 (1.5-24.0)] and greater than five acts of receptive anal sex in past six months [aOR (95% CI): 4.3 (1.2-15.0)] were significantly associated with HIV infection.

Seventy-six per cent of the men sought medical care at a private clinic and 3% at a pharmacist. Only 18% of the men knew about STIs and the main source of information in this subgroup was television (33%) and doctors' clinics (33%). Sixteen per cent (19/122) of the men had previously tested for HIV infection and 24% (5/19) of these men were HIV infected. Eighty-three per cent of the men believed that it was not at all likely that they might be infected with HIV and 20% of these men were HIV infected.

Fifty-nine percent of the MSM had rarely/never used a condom during anal sex. The OR for not using a condom during anal sex was 3.2 (95% CI: 1.0-9.4) among MSM who agreed that condoms should only be used with prostitutes compared with those who did not. Similarly, the OR for not using condom was 2.0 (95% CI: 0.6-7.3) among MSM who agreed that condoms should not be used with men who seemed healthy and clean compared with those who did not.

Table 1: Select demographic, behavioral and sexually transmitted infection characteristics of men having sex with men in two clinics in Mumbai, India, 2001

Categories	n (%)		HIV (%)		Odds ratios (95% CI)
All	122	(100)	21	(17)	
Age groups					
18-24 years	87	(77)	9	(10)	1.0 (reference)
25-29 years	23	(18)	5	(21)	2.4 (0.7-8.1)
30 years and above	12	(5)	7	(58)*	12.1 (3.2-46.3)
Education					
None-9th grade	45	(38)	10	(22)	1.0 (reference)
10th any college	75	(62)	11	(15)	0.6 (0.2-1.6)
Native of Mumbai					
Yes	39	(34)	5	(13)	1.0 (reference)
No	75	(66)	14	(19)	1.5 (0.5-4.7)
Marital status					
Never married	92	(77)	8	(13)	1.0 (reference)
Married	27	(23)	8	(30)†	2.8 (1.0-7.8)
Housing					
Chawl/slum	57	(49)	9	(16)	1.0 (reference)
Flat/apartment	59	(51)	12	(20)	1.3 (0.5-3.5)
Sexual behaviors					
First sexual partner					
Female	50	(49)	4	(8)	1.0 (reference)
Male	62	(51)	16	(26)‡	4.0 (1.2-12.9)
Last six months					
No. of male partners					
≤ 5	67	(55)	8	(12)	1.0 (reference)
> 5	55	(45)	13	(24)†	2.3 (0.9-6.0)
No. of insertive anal sex acts					
< 5	66	(54)	9	(14)	1.0 (reference)
> 5	56	(46)	12	(21)	1.7 (0.7-4.5)
No. of receptive anal sex acts					
< 5	86	(72)	9	(10)	1.0 (reference)
> 5	34	(28)	11	(32)§	4.1 (1.5-11.1)
STIs					
TPHA					
Negative	101	(83)	11	(11)	1.0 (reference)
Positive	21	(17)	10	(48) §	7.4 (2.6-21.5)
HSV-2 IgG					
Negative	73	(60)	3	(4)	1.0 (reference)
Positive	48	(40)	18	(38)§	14.0 (3.8-51.1)
Hepatitis B surface antigen					
Positive	110	(90)	18	(17)	1.0 (reference)
Negative	12	(10)	3	(25)	1.7 (0.4-6.9)

* = Chi square for trend, † = $0.05 < p < 0.10$, ‡ = $p<0.05$, § = $p<0.01$, The columns may not add up to 122 among the men due to missing data.
TPHA = *Treponema pallidum* hemagglutination assay, HIV = Human immunodeficiency virus

Certain characteristics of condom use in MSM are presented in Table 2.

At the time of evaluation, about 20% of the MSM (25) were diagnosed with a clinical STI. There were seven cases of genital ulcers (syphilis, chancroid and herpes), seven cases of urethritis (gonococcal and non-gonococcal), four cases of proctitis, three cases of genital warts and two cases each of genital molluscum and scabies.

Characteristics of transgenders

The mean (± SD) age of the TGs was 25.3 (4.6) years. All the TGs had migrated from other states of India to Mumbai and most of them (93%) lived with their friends. The median number of male partners in the past six months was 50 among TGs. About 54% of the TGs had rarely/never used a condom during anal sex. About 50% of the TGs agreed that condoms should not be used with men who appeared healthy. The majority (96%) of the TGs had had sex in exchange for money in the past six months. Three TGs had a clinical STI, namely primary syphilis, genital herpes and proctitis. We have described certain demographic characters, behaviors, STIs and their association with HIV among TGs in Table 3. One sexual practice of placing the partner's penis between their thighs (non-penetrative form) was commonly reported by TGs

Table 2: Condom use, attitudes towards condom use and knowledge among MSM in two STI clinics in Mumbai, India, 2001 (n=97)*

		n	(%)
Condom use in last 6 months			
During insertive anal sex	Always/often	23	(23)
	Rarely	35	(34)
	Never	44	(43)
During receptive anal sex	Always/often	21	(27)
	Rarely	26	(34)
	Never	30	(39)
Attitudes about condom use*			
Condoms are too much trouble to use	Agree	74	(76)
	Disagree	12	(12)
	Don't know	11	(11)
Condoms are good as protection from sexual disease	Agree	83	(86)
	Disagree	8	(8)
	Don't know	6	(6)
One should always use condoms while having sex with a new person	Agree	79	(81)
	Disagree	5	(5)
	Don't know	13	(13)
Condoms are to be used only with female sex workers	Agree	76	(78)
	Disagree	16	(17)
	Don't know	5	(5)
Condoms are not to be used with men who appear healthy	Agree	67	(69)
	Disagree	11	(11)
	Don't know	19	(20)

* = Only men who reported condom use responded to these questions (n=97), MSM = Men who have sex with men, STIs = Sexually transmitted infections

(64%). About 79% of TGs sought medical care at a private clinic and about 7% at a pharmacist. Only 7% (2/28) of TGs had previously tested for HIV and one of them was HIV infected. About 79% believed that it was not likely that they would be HIV infected and 64% of these were HIV infected.

DISCUSSION

This is one of the few reports that provides data on both sexual risk behavior and HIV and STI prevalence in MSM and TGs in India. Although HIV infection was high in both groups, it was significantly higher in the TGs. Among MSM, HIV infection was significantly associated with age, greater than five episodes of anal sex in the past six months and positivity for syphilis (TPHA) and HSV-2 (HSV-2 IgG). About 22% of the MSM were married to women and 30% of these MSM were HIV positive. Sex with casual partners was common. The majority of the transgenders was engaged in sex work and reported risky sexual behavior.

The MSM population in India is at a high risk for acquiring STIs including HIV. Herpes and syphilis were common STIs and both were significantly associated with HIV. HSV is a common STI associated with HIV in the general male population[15] and Gupta and colleagues[16] have reported a significant association of HIV with a history of genital ulcer disease among MSM attending STI clinics in Pune. However, this population often has poor healthcare access due to misconceptions about STIs[17] and fear of discrimination by healthcare personnel.

Many men practicing same sex behavior do not perceive it to be sex and there is often low risk perception for acquiring infections. Condom usage is low during anal sex and is often associated with knowledge of STIs and HIV transmission.[18,19] We found that men who had misconceptions about condom use were less likely to use a condom during sex.

Stigma and denial of same sex behavior often results in hurried sex in the dark.[20] In our population, although sex partners were "picked up" from public places, the most common venue for having sex was usually a private residence. The private venue would potentially help increase condom use with casual partners.

The association of HIV and being married was confounded by age in our sample and the majority of our population was less than 25 years in age. However, many MSM may eventually get married to women later in life due to the stigma associated with homosexuality and normalcy of marriage in the society.[21] Thus, the risk behavior and infections in these men would influence the health of their monogamous female partners.

Our study was not an in-depth evaluation of transgenders, who were enrolled as they accessed these health services. In Mumbai, they are often called 'Hijras' and the ones evaluated almost exclusively practiced commercial sex. The majority of them are biologically male, with male genitals. The transgenders in the study had migrated from various parts of the country to Mumbai and stayed in groups. The group had a high proportion of STIs including HIV[22] and a significantly higher number of sex partners and high risk behavior compared with MSM. Health-seeking behaviors are often poor due to stigmatization in healthcare settings.[23] Thus, the

Table 3: Select demographic, behavioral characteristics, STIs among transgenders at two clinics in Mumbai, India, 2001

Categories	Total [n (%)]		HIV [n (%)]		Odds ratios (95 % CI)
All	28	(100)	19	(68)	
Non-castrated	15	(54)	9	(60)	1.0 (reference)
Castrated	13	(46)	10	(77)	2.2 (0.4-11.6)
Age groups					
18-24 years	12	(43)	7	(58)	1.0 (reference)
25-29 years	11	(39)	9	(82)	3.2 (0.5-21.8)
30 years and above	5	(18)	3	(60)	1.1 (0.1-9.0)
Education					
None 9th grade	22	(79)	14	(64)	1.0 (reference)
10th any college	6	(21)	5	(83)	2.9 (0.3-29.0)
Income					
Upto Rs. 2000	17	(61)	10	(59)	1.0 (reference)
Rs. 2001 and above	11	(39)	9	(82)	3.2 (0.5-19.3)
Sexual behaviors					
Last six months					
No. of male partners					
≤ 50	16	(57)	10	(63)	1.0 (reference)
> 50	12	(43)	9	(75)	1.8 (0.3-9.4)
No. of receptive anal sex acts					
< 30	18	(64)	11	(61)	1.0 (reference)
> 30	10	(36)	8	(80)	2.5 (0.4-15.7)
Last 1 month					
No. of male partners					
< 10	17	(61)	10	(59)	1.0 (reference)
> 10	11	(39)	9	(82)	3.2 (0.5-19.3)
No. of receptive anal sex acts					
< 5	12	(44)	8	(67)	1.0 (reference)
> 5	15	(56)	11	(73)	1.4 (0.3-7.2)
STIs					
TPHA					
Negative	12	(43)	5	(42)	1.0 (reference)
Positive	16	(57)	14	(88)*	9.8 (1.5-63.9)
HSV 2 IgG					
Negative	8	(29)	3	(38)	1.0 (reference)
Positive	20	(71)	16	(80)†	6.7 (1.1-40.4)
Hepatitis B surface antigen					
Negative	22	(79)	17	(77)	1.0 (reference)
Positive	6	(21)	2	(33)†	0.2 (0.1-1.1)

* = $p < 0.05$, † = $0.05 < p < 0.10$, The columns may not add up to 28 due to missing data, TPHA = *Treponema pallidum* hemagglutination assay, HIV = Human immunodeficiency virus

prevention strategies in TGs would include regular STI screening and treatment, information about risk behavior, reduction in the number of partners and condom negotiation skills with prospective clients.

One of the limitations of our study was its sampling—it was a clinic-based convenience sample. Hence, the findings do not necessarily represent the amount of sexual activity or infection among MSM in the population and a population-based study would be preferred to assess the risk behavior and HIV/STI prevalence among men reporting same sex behavior. A recent population based study in Southern India, reported that 6% of the men had same sex behavior and were more likely to have STIs including HIV compared with men who did not report same sex behavior.[24] Since our data were collected in clinical settings, men would be more likely to report the socially desirable behavior of condom use and low risk sexual practices and hence we might have underestimated these measures.

In spite of the above limitations, our study does provide useful information for intervention strategies. Effective STI services to detect, treat and control STIs, particularly syphilis and herpes, would be important to reduce the transmission of HIV in the population. Sexuality and same sex behavior are relatively new topics in the STI care facilities in Mumbai and physicians should be adequately trained to discuss same sex behavior with their patients in a sensitive manner. Intervention programs should be culturally sensitive and should aim to improve the knowledge and awareness about HIV and STIs in MSM and TGs. They should discuss the risks

related to sexual acts, specifically anal sex, and address misconceptions related to condom use with men.

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