

HIV Prevention Interventions in Chennai, India: Are Men Who Have Sex with Men Being Reached?

Beena Thomas, Ph.D.,¹ Matthew J. Mimiaga, Sc.D., M.P.H.,^{2,3} Kenneth H. Mayer, M.D.,^{3,4}
Carey V. Johnson, M.S.,³ Sunil Menon, M.A.,⁵ V. Chandrasekaran, Ph.D.,¹ P. Murugesan, Ph.D.,¹
Soumya Swaminathan, M.D.,¹ and Steven A. Safren, Ph.D.^{2,3}

Abstract

India has the greatest number of HIV infections in Asia and the third highest total number of infected persons globally. Men who have sex with men (MSM) are considered by the Government of India's National AIDS Control Organization (NACO) a "core risk group" for HIV in need of HIV prevention efforts. However there is a dearth of information on the frequency of participation in HIV prevention interventions and subsequent HIV risk and other correlates among MSM in India. Recruited through peer outreach workers, word of mouth and snowball sampling techniques, 210 MSM in Chennai completed an interviewer-administered assessment, including questions about participating in any HIV prevention interventions in the past year, sexual risk taking, demographics, MSM identities, and other psychosocial variables. Bivariate and multivariable logistic regression procedures were used to examine behavioral and demographic correlates with HIV prevention intervention participation. More than a quarter (26%) of the sample reported participating in an HIV prevention intervention in the year prior to study participation. Participants who reported engaging in unprotected anal sex (UAS; odds ratio [OR] = 0.28; $p = 0.01$) in the 3 months prior to study enrollment were less likely to have participated in an HIV prevention program in the past year. MSM who were older (OR = 1.04; $p = 0.05$), *kothis* (feminine acting/appearing and predominantly receptive partners in anal sex) compared to *panthis* (masculine appearing, predominantly insertive partners; OR = 5.52, $p = 0.0004$), those with higher educational attainment (OR = 1.48, $p = 0.01$), being "out" about having sex with other men (OR = 4.03, $p = 0.0001$), and MSM who reported ever having been paid in exchange for sex (OR = 2.92, $p = 0.001$) were more likely to have reported participation in an HIV prevention intervention in the preceding year. In a multivariable model, MSM reporting UAS in the prior 3 months were less likely to have participated in an HIV prevention intervention (AOR = 0.34, $p = 0.04$). MSM who were older (AOR = 1.05, $p = 0.05$), those with higher educational attainment (AOR = 1.92, $p = 0.0009$), and MSM who were "out" about having sex with other men (AOR = 2.71, $p = 0.04$) were more likely to have reported participating in an HIV prevention program. Findings suggest that exposure to HIV prevention interventions may be protective against engaging in UAS for some MSM in India. Understanding predictors of participation in an HIV prevention intervention is helpful for identifying Indian MSM who might have had no exposure to HIV prevention information and skills building, hence allowing researchers and prevention workers to focus efforts on individuals at greatest need.

Introduction

INDIA HAS THE GREATEST NUMBER of HIV infections in Asia and the third highest total number of infected persons globally, largely affecting female sex workers, injecting drug users, and men who have sex with men (MSM).^{1,2} Among

MSM, the Government of India's National AIDS Control Organization (NACO) estimates an HIV prevalence of 6.41%, although this may be a lower-limit estimate.³ For example, in Mumbai an HIV prevalence of 12% was found among MSM seeking voluntary counseling and testing services; an 18% prevalence was found across 10 clinics in Andhra Pradesh.⁴⁻⁶

¹Tuberculosis Research Center, Indian Council of Medical Research, Chennai, India.

²Harvard Medical School/Massachusetts General Hospital, Boston, Massachusetts.

³The Fenway Institute, Fenway Health, Boston, Massachusetts.

⁴Brown Medical School/Miriam Hospital, Providence, Rhode Island.

⁵Sahodaran, Chennai, India.

In Western countries where same-sex sexual behavior is more tied to a psychosocial identity such as gay or bisexual, HIV prevention messages and programs can be delivered through gay-oriented social or activist groups. However, in India, where MSM sexual behavior may be less tied to one's personal or social identity, this may be difficult. Many MSM in India have no conscious sexual identity or may have a variety of identities categorized by behavior and sex role.^{7,8} Various subgroups of MSM include *kothis* (feminine acting/appearing and predominantly receptive partners in anal sex), *panthis* (masculine appearing, predominantly insertive partners in anal sex), and double deckers (both insertive and receptive partners in anal sex). While MSM may self-identify as *kothi*, *panthi*, and double decker are labels given by *kothis* to their masculine partners based on their sex role.^{7,9,10} MSM in India may engage in high-risk sexual behaviors with both men and women and may serve as an important "bridge" population for transmitting HIV.^{2,5,7-9,11-13}

Furthermore, same-sex sexual behavior has been illegal since 1860.¹⁴ MSM in India therefore are often hidden and/or silent.^{11,12} In addition to being at high risk for HIV, MSM in India experience multiple and complex challenges including criminalization, stigma, homophobia and discrimination.⁸ This criminalization of sex between men poses serious obstacles to effective HIV services provision, and even where sex is not criminalized, stigma, discrimination and harassment can hinder access to HIV and sexual health services and prevention programs.¹⁵

There are very few published data that elucidate the specific factors contributing to the effectiveness of HIV prevention among MSM in India. A recent survey of 200 MSM recruited from public sex environments in Chennai found high levels of HIV knowledge and HIV testing, and a probability-based study of 4597 MSM in four south Indian states found that having ever been tested for HIV was the only strong predictor of consistent condom use.^{16,17} The majority of prevention interventions for MSM in India currently involve condom distribution, HIV education via individual- or group-level participation, and voluntary HIV counseling and testing. Currently, insufficient data are available in the literature on the degree to which MSM are utilizing HIV prevention services in Chennai. The current study examines the proportion of MSM who have had exposure to such interventions in the past year, as well as the correlates to HIV risk behaviors, demographics, and other psychosocial factors. These data are helpful to understand the subgroups of MSM who have not been reached by HIV prevention services and may help focus future efforts on those MSM most in need of intervention.

Methods

Participants and procedures

Participants were recruited through peer outreach workers at Sahodaran, a nongovernmental organization (NGO) in Chennai specializing in the sexual health and HIV prevention needs of Indian MSM. Word of mouth and snowball sampling techniques were subsequently used to recruit participants' sexual partners, especially *panthis*. This is because *kothis* are more likely to identify as MSM and be present at NGOs, and *panthis* are often sexual partners of *kothis*. Study visits occurred at the Tuberculosis Research Centre (TRC) of the Indian Council of Medical Research, a governmental research

institution involved in studies on tuberculosis and HIV/AIDS. Participants completed a demographic, psychosocial, and sexual risk battery administered by a trained study interviewer, followed by voluntary HIV counseling and testing via rapid HIV testing methods. HIV test results were provided to clients approximately 90 minutes after specimens were collected if the client wanted to wait, otherwise they were asked to return at their convenience in the next few days. Participants also had the option of receiving their initial test at a later date in the event that they were not prepared to do so at the time of testing (i.e., if they came with others, and were worried about confidentiality). All study procedures were approved by the Institutional Review Boards at Massachusetts General Hospital and Harvard Medical School, as well as the Ethics Board at the TRC.

Study instruments

Demographics and contextual variables. Participants were asked about their age, MSM subpopulation identity (e.g., *kothi panthi*, double decker), religion (Hindu, Christian, or Muslim), marital status, education level, employment status, previous participation in an HIV prevention intervention, and being "out" (i.e., having disclosed to others) about having sex with other men.

Depression. Depressive symptoms were assessed with the Center for Epidemiologic Studies Depression Scale (CES-D), a validated survey of clinically significant distress as a marker for clinical depression (coefficient $\alpha = 0.90$; Cronbach $\alpha = 0.89$).^{18,19} The 20 items were scored on a 4-point Likert scale from 0 to 3, with a score of 16 or greater indicative of clinically significant depressive symptoms.

Sexual risk. Participants were asked about their total number of male and female sexual partners in the 3 months prior to study enrollment, as well as whether or not they engaged in any unprotected anal insertive or receptive sex with another man in the 3 months prior to study enrollment. Participants were queried on their HIV status, sexually transmitted infection (STI) history, and their history of sex work, including whether or not they received any money for sex and whether or not they paid money in exchange for sex. These measures were adapted from widely used assessments of sexual risk taking among U.S. MSM, then piloted among Indian MSM to ensure relevancy.^{20,21}

Data analysis

SAS version 9.1 (SAS Institute, Cary, NC) statistical software was used to perform each analysis, where statistical significance was determined at $p < 0.05$.

Primary outcome. For the purpose of this analysis, the primary outcome is a dichotomous measure of having reported participation in an HIV prevention intervention in the year prior to study enrollment. Specifically, participants were asked the following question: "Have you participated in any HIV prevention interventions in the past year?" If participants answered yes to this question, they were asked whether the HIV prevention intervention included (1) condom distribution, (2) group intervention (e.g., multisession skills-building around HIV prevention or HIV-prevention focused support

group), (3) individual counseling, (4) HIV prevention workshop, and/or (5) other, in which case participants were asked to specify. Participants were asked to check all that applied.

Predictors of interest. Demographic and psychosocial factors, sexual risk, and HIV/STI history were examined for their association to the primary outcome. Bivariate logistic regression procedures were used to examine statistically significant associations between predictor variables and having participated in an HIV prevention intervention in the year prior to study enrollment.

Multivariable model. Variables that were statistically significant ($p < 0.05$) in the bivariate regression analyses were retained in the multivariable logistic regression model. The final multivariable model adjusted for age, MSM subpopulation identity, and education regardless of their significance level in the bivariate associations.

Results

Descriptive statistics

Demographic, sexual risk, and psychosocial characteristics of the study sample by having participated in an HIV

prevention intervention in the prior year are outlined in Table 1.

Participation in an HIV prevention intervention

Twenty-six percent ($n = 55$) of the sample reported participating in an HIV prevention intervention in the past year. Of those who participated in such an intervention, these included the following: programs that promote condom distribution (44%), group-level HIV prevention interventions (36%), individual-level risk reduction counseling interventions (31%), and workshops providing information on sexual risk taking and HIV/STI transmission risks (35%). Forty-five percent participated in more than one program; 47% of those who reported participating in an HIV prevention intervention indicated exposure to an MSM NGO.

Bivariate predictors of having participated in an HIV prevention intervention in the year prior to study enrollment

Bivariate associations of demographic and psychosocial variables to having participated in an HIV prevention intervention. Variables significantly associated with having participated in an HIV prevention intervention in the past

TABLE 1. DEMOGRAPHICS, SEXUAL RISK TAKING, AND OTHER PSYCHOSOCIAL VARIABLES BY HAVING PARTICIPATED IN AN HIV PREVENTION PROGRAM IN THE PAST YEAR ($n = 210$)

	Participated in an HIV prevention program in the past year ($n = 55$)	Did not participate in an HIV prevention program in the past year ($n = 155$)
Age range	19–61	18–52
Mean age (SD)	31 (8.5)	28 (7.5)
Engaged in unprotected sex with one or more male sex partners in the past 3 months	9%	26%
Engaged in unprotected sex with one or more female sex partners in the past 3 months	6%	16%
MSM subpopulation identity		
<i>Panthis</i>	18%	44%
<i>Kothis</i>	44%	19%
Double deckers	38%	37%
Religion		
Hindu	80%	80%
Christian	7%	14%
Muslim	13%	6%
Frequency married to women	18%	24%
Education		
Graduate or professional degree	6%	1%
College degree	11%	13%
High school degree	40%	20%
Middle school	38%	47%
Elementary school	2%	17%
No formal education	3%	3%
Employment status		
Unemployed	26%	26%
Employed	74%	74%
Tested positive for HIV	7%	12%
Self-reported STI history last 6 months	5%	6%
Family knows about sexual identity	40%	15%
Engaged in sex work for pay in the past 3 months	65%	40%
Depression (CES-D) – screened positive	62%	53%

SD, standard deviation; MSM, men who have sex with men; STI, sexually transmitted infection; CES-D, Center for Epidemiologic Studies Depression Scale.

TABLE 2. BIVARIATE AND MULTIVARIABLE LOGISTIC REGRESSION MODELS OF ASSOCIATIONS TO PARTICIPATING IN AN HIV PREVENTION PROGRAM IN THE PREVIOUS YEAR ($n = 210$)

	Odds ratio (unadjusted bivariate models)	p value	Adjusted odds ratio (adjusted multivariable model) ^a	p value
Unprotected anal (insertive or receptive) sex in the 3 months prior to enrollment				
Yes	0.28	0.01	0.34	0.04
No	1.00	—	1.00	—
Education (continuous)	1.48	0.01	1.92	0.0009
Age (continuous)	1.04	0.05	1.05	0.05
MSM subpopulation identity				
<i>Kothis</i>	5.52	0.0004	2.20	0.27
Double decker	2.54	0.81	1.67	0.74
<i>Panthis</i>	1.00	—	1.00	—
Out about being MSM				
Yes	4.03	0.01	2.71	0.04
No	1.00	—	1.00	—
Paid for sex work ever				
Yes	2.92	0.001	1.95	0.11
No	1.00	—	1.00	—

^aFinal multivariable model includes all significant bivariate variables.
MSM, men who have sex with men.

year include: MSM who were older (OR = 1.04; $p = 0.05$), such that each additional year in age was associated with a 4% increase in having participated in an HIV intervention; identifying as *kothi* compared to *panthi* (OR = 5.52, $p = 0.0004$), those with higher educational attainment (OR = 1.48, $p = 0.01$), and being “out” about having sex with other men (OR = 4.03, $p = 0.0001$) (see Table 2).

Bivariate associations of sexual variables to having participated in an HIV prevention intervention. MSM who reported engaging in unprotected anal sex (UAS) in the 3 months prior to study enrollment were significantly less likely to have participated in an HIV prevention intervention in the past year (OR = 0.28; $p = 0.01$). MSM who reported ever having been paid money in exchange for sex were more likely to have participated in an HIV prevention intervention (OR = 2.92, $p = 0.001$) (see Table 2).

Multivariable model of predictors of having participated in an HIV prevention intervention in the year prior to study enrollment

In a multivariable model, MSM reporting UAS in the prior three months were less likely to have participated in an HIV prevention intervention (adjusted odds ratio [AOR] = 0.34, $p = 0.04$). MSM who were older (AOR = 1.05, $p = 0.05$), those with higher educational attainment (AOR = 1.92, $p = 0.0009$), and MSM who were “out” about having sex with other men (AOR = 2.71, $p = 0.04$) were more likely to have reported participating in an HIV prevention intervention in the past year (see Table 2).

Discussion

While recent surveillance trends seem to indicate that HIV prevalence has begun to decline among the general population and female sex workers in India's southern states, HIV remains “uncontrolled” among MSM in urban areas.²² Despite this and the national government's designation of MSM

as a core HIV risk group, only a quarter of respondents in this study reported participation in any HIV prevention intervention in the past year, with condom distribution being the most common.³ Importantly, this participation was significantly associated with less frequent unprotected anal sex in the 3 months prior to study enrollment.

Additionally, men who were not “out” about having sex with other men, and participants who identified as *panthis* were less likely to have participated in a prevention program. Although the present study focused on any serostatus MSM, a recent study of HIV-infected MSM found that those who had unprotected sex with men were less likely to have received HIV prevention services compared to those who had protected sex. These men were also more likely to report unprotected sex with casual partners who were either HIV-uninfected or whose HIV status was unknown.²³ The two studies together highlight the importance of expanding on current primary and secondary prevention efforts for HIV transmission among MSM in this region.

The perception of sexual risk for HIV varies among MSM, and throughout the epidemic MSM have engaged in sophisticated decision making about what they consider to be risky.²⁴ Studies have reported that the reasons for continued sexual risk taking among MSM in India include: (1) perceptions that HIV is transmitted through vaginal sex and via sex workers, resulting in individuals engaging in alternate anal and oral sexual practices as a way to avoid infection, (2) stigma and denial of same sex behavior resulting in anonymous, single-encounter sexual relationships, and (3) inequalities in power dynamics that arise from Indian notions of masculinity (e.g., discriminatory attitudes and exploitation of effeminate males).^{25–27} It could also be that the programs have not reached MSM. A 2006 survey in 15 Asian and Pacific countries estimated that targeted HIV programs reached less than 8% of MSMs.²⁸

It is interesting to note from the study findings that among those who participated nearly half the respondents reported having participated in a condom distribution program and

only one third participated in individual-level risk reduction counseling interventions and workshops. Given the complex environments in which MSM negotiate their sexual choices, it is important for interventions to move beyond traditional prevention programs, which tend to focus on condom distribution and fail to address the psychosocial needs of MSM. According to most behavioral models of health care, if the barriers to obtaining care are greater than the benefits, then it is unlikely that individuals will avail themselves of health care services.^{29,30} Additionally, among MSM in general and MSM in India it appears that sexual risk taking co-occurs within a variety of other contextual factors and psychosocial problems.³¹⁻³³ Individual and structural interventions are therefore required to assist with the particular problems in their particular contexts.

Furthermore, nearly half the respondents who participated in an intervention indicated exposure to an MSM nongovernmental organization. However, a study by Safren et al.¹⁵ point to several important barriers to HIV prevention and care among MSM in South India, including harassment and intimidation toward MSM NGO outreach workers by police and other men. Organizations involved in HIV prevention interventions need the cooperation of police and other local government institutions to ensure the safety of outreach workers and MSM who may otherwise avoid program participation due to this harassment.

It has also been reported in this study that those who are older, educated, open about their MSM sexual behavior, and have had transactional sex were more likely to have participated in an HIV prevention intervention in the past year. Although HIV prevention interventions typically require more than education, education is an essential component.³⁴ This requires HIV prevention programs to understand the profile of their participants if they are to reach those with lower educational attainment, as well as those who may not be open about their status of having sex with other men. For example, *kothis* in India are more effeminate acting and therefore easily identified as compared to *panthis* and double deckers, who may choose to remain hidden and who may not want to acknowledge their MSM identity. To curb rising HIV rates, prevention programs need to focus efforts to include all subgroups of MSM. It is also interesting that those who have engaged in transactional sex have come forward to partake in HIV prevention programs, indicating the possibility that prevention programs in Chennai are reaching this at-risk subgroup of MSM.

There are limitations to the present study which bear mention. First, data collected were cross-sectional and therefore inferences about causality cannot be established. Second, data were collected via interviewer-administered techniques, and hence social desirability and/or demand characteristics may have influenced the results. Third, because the sample was recruited via outreach efforts by a local MSM NGO, generalizability of the study findings may be limited. Despite the limitations, to our knowledge the present study is the first to examine the degree to which MSM have been exposed to HIV prevention interventions and the correlates to sexual risk taking among MSM in India.

MSM and organizations which work with them are a crucial source of information for improving the effectiveness of HIV programs. The involvement of affected communities in the design and implementation of policies and programs is a

core principal of an ethical and effective response to HIV/AIDS.³⁵ Building stronger partnerships between affected communities, service providers and researchers can have a mutually beneficial effect.³⁶ However, to fully maximize effectiveness, HIV prevention interventions must reach infected individuals and those at highest risk for HIV acquisition who are particularly likely to engage in transmission risk behaviors.³⁷ Culturally sensitive HIV prevention interventions continue to be needed for Indian MSM.

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Author Disclosure Statement

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Address correspondence to:
 Matthew J. Mimiaga, Sc.D., M.P.H.
 Harvard/MGH Behavioral Medicine
 1 Bowdoin Square, 7th Floor
 Boston, MA 02114
 E-mail: mmimiaga@partners.org