

UNIVERSITY OF CALIFORNIA

Los Angeles

A Cross sectional study to explore the HIV/AIDS related knowledge, attitude and practice and their association with HIV prevalence among Men Having Sex with Men population of Kolkata, West Bengal, India

A dissertation submitted in partial satisfaction of the requirements for the degree Doctor of
Philosophy in Epidemiology

by

Tanmay Mahapatra

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ABSTRACT OF THE DISSERTATION

A Cross sectional study to explore the HIV/AIDS related knowledge, attitude and practice and their association with HIV prevalence among Men Having Sex with Men population of Kolkata, West Bengal, India

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Doctor of Philosophy in Epidemiology

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Professor Roger Detels, Chair

Objectives

To understand characteristics, perceptions, knowledge and behavior in the Qualitative Phase and to determine HIV/AIDS related knowledge, practices (including risk behaviors), HIV burden and its correlates in the quantitative phase among MSM population of Kolkata, West Bengal, India

Methodology

A mixed-method study with a qualitative phase followed by a quantitative cross-sectional component was conducted in Kolkata between August-2015 to June-2016. Focus group discussions and in-depth interview were conducted among 23 MSM. Time location sampling (TLS) with probability proportional to estimated attendance size was used to recruit MSM from 115 venues, corresponding to 3760 VDT complexes from which 584 subjects in randomly

selected eligible VDT complexes were interviewed through an android based, tablet-PC assisted, pre-recorded questions-based, audio-integrated, color coded self-interview.

Results

MSM were uniformly treated with contempt in Indian society including by their parents. They were more likely to experience discrimination based on their sexual orientation compared to heterosexual counterpart. Most of them consciously did not disclose their orientation because of fear of rejection from families and society. Lack of support, protection and guidance from families and society influenced the overall well-being of this population. Almost all of them suffered from an impaired self-esteem and some degree of unhappiness because of widespread discrimination. The mechanism of coping varied and some were situational based on their anticipated emotional impact. In quantitative phase, the HIV burden was found to be 10.46%. 71% reported to have multiple male sex partners in their lifetime. 66% had multiple casual male sex partners. The significant predictors of HIV sero-positivity were higher age, acting as both as an anal insertive and receptive, irregular partners and unprotected sex.

Conclusions

The HIV burden among MSM was found to be substantially high in the current analysis. The significant predictors of HIV sero-positivity were higher age, acting as both as an anal insertive and receptive, irregular partners and unprotected sex. Majority of MSM in Kolkata were engaged in high risk activities that elevated their HIV risk. Targeted intervention for high-risk MSM seemed to be the need of the hour.

The dissertation of Tanmay Mahapatra is approved.

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University of California, Los Angeles

2016

Dedicated to

Late Agniva Lahiri

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LIST OF ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
AOR	Adjusted Odds Ratio
CI	Confidence Interval
FGD	Focus Group Discussion
IDI	In-Depth Interview
IPC	Indian Penal Code
MSM	Men having Sex with Men
NACO	National AIDS Control Organization, India
OR	Odds Ratio
PLWHA	People Living with HIV or AIDS
SES	Socio-Economic Status
TLS	Time-Location Sampling
WB	West Bengal State of India

VITA

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Professional Experiences

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 - Consultant since 2013 November Till 2016 May
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 - Aug 2011-Apr 2016: Senior Research Fellow (Institutional).
- National Institute of Cholera & Enteric Diseases, Kolkata, India in collaborative projects with International Vaccine Institute, Sole, Korea
 - May 2003 – Sept 2007: Senior Research Fellow, Phlebotomist and In Charge of Private Sector Involvement in:
 - Double blind phase IV clinical trial of typhoid vaccine (VI Polysaccharide)
 - Double Blind Phase III Clinical Trial of Oral Cholera Vaccine (bivalent, whole cell, killed)
 - Community Based Pre-and Post-Vaccination Disease Surveillance of Typhoid and Cholera
 - Disease Surveillance & Immunogenicity Study of Cholera cases caused by O139 V. Cholera
 - Immunogenicity Study of VI Polysaccharide Typhoid Vaccine
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PEER-REVIEWED PUBLICATIONS (A few)

1. **Mahapatra T**, Biswas S, Nandi S, Ghosh P, Ghosh M, Mondal S, et al. Burden and Correlates of HIV among Men Who Have Sex with Men in West Bengal, India: Analysis of Sentinel Surveillance Data. PloS One. 2015.
2. **Mahapatra T**, Mahapatra S, Babu GR, Tang W, Banerjee B, Mahapatra U, et al. Cholera Outbreaks in South and Southeast Asia: Descriptive Analysis, 2003–2012. Japanese journal of infectious diseases. 2014;67: 145-156.
3. **Mahapatra T**, Mahapatra S, Banerjee B, Mahapatra U, Samanta S, Pal D, et al. Predictors of Rational Management of Diarrhea in an Endemic Setting: Observation from India. PLoS One. 2015.
4. **Mahapatra T**, Mahapatra S, Pal D, Saha J, Lopez A, Ali M, et al. Trials and tribulations of conducting interventional studies in urban slums of a developing country: Experiences from Kolkata, India. Human Vaccines & Immunotherapeutics. 2015: 00-00.
5. Chakraborty A, **Mahapatra T**, Mahapatra S, Ansari S, Siddhanta S, Banerjee S, et al. Distribution and Determinants of Cytomegalovirus Induced End Organ Disease/s among People Living with HIV/AIDS in a Poor Resource Setting: Observation from India. PloS one. 2015;10.
6. Kanungo S, **Mahapatra T**, Bhaduri B, Mahapatra S, Chakraborty N, Manna B, et al. Diarrhoea-related knowledge and practice of physicians in urban slums of Kolkata, India. Epidemiology and infection. 2014;142: 314.

**A CROSS-SECTIONAL STUDY TO EXPLORE THE HIV/AIDS RELATED
KNOWLEDGE, ATTITUDES AND PRACTICES AND THEIR ASSOCIATION WITH
HIV AMONG MEN HAVING SEX WITH MEN IN KOLKATA, WEST BENGAL, INDIA**

Chapter 1: INTRODUCTION

1.1. BACKGROUND

1.1.1 Global Statistics

The 2016 UNAIDS Global AIDS Update ¹ reported that while 17 out of 36.7 (34.0–39.8) million people living with HIV/AIDS (PLHA) worldwide were on antiretroviral treatment (ART) in 2015, the same year had witnessed 2.1 (1.8–2.4) million new HIV infections. For the Asia and Pacific region, 20% of the new HIV infections in 2014 was attributable to men who have sex with men (MSM) and the transgender population. In the United States, gay and bisexual men remain the most severely HIV affected group, recording a 6% increase in disease diagnosis between 2005 and 2014, in the backdrop of US national figures going down by 19%. As of 2013, the MSM group (meager 2% of US population) constituted 55% of PLHA in the US, and the rate of new cases diagnosed was disproportionately high among the African-American (1 in 6) and Hispanic (1 in 4) ethnic minorities as compared to the White (1/11). ²

1.1.2. India (and West Bengal) Statistics

The 2013-14 data published by the Department of AIDS Control, Govt. of India ³ showed that the country had over 2 million PLHA with a 0.27% adult HIV prevalence. The 2015 National HIV

estimation ⁴ concurred with these figures, and indicated that three-fourth of the total burden of PLHA is concentrated in 9 states: (undivided) Andhra Pradesh and Telangana (18%), Maharashtra (14%), Karnataka (9%), Gujarat (8%); Uttar Pradesh, Bihar and Tamil Nadu (7% each) and West Bengal (6%). However, it is important to understand that while focused efforts by the National AIDS Control Organization (NACO) have successfully reduced adult HIV prevalence in high-burden states and overall, the epidemic remains largely "concentrated" in specific high-risk groups (HRGs): prevalence of 4.3% among MSM, 9.9% among Injection Drug Users (IDUs), 2.2% among female sex workers (all based on 2014-15 Integrated Biological and Behavioral Surveillance/ IBBS) and 8.82% among transgender (based on 2010-11 HIV Sentinel Surveillance/ HSS). On a brighter note, a significant proportion of the PLHA in each of these high-risk groups have been successfully linked to ART centers (2015-16): 99.8% for female sex workers, 91.5% for transgender, 87.5% for MSM and 79.6% for IDUs. ⁵

Heterosexual HIV transmission has historically remained the principle mode in India, and naturally the focus for all prevention and control efforts. In the same breadth, exact contributions of heterosexual and homosexual transmission modes to HIV prevalence in India has remained poorly understood. ⁶

Researchers have long warned that the overall HIV prevalence figures (Govt. of India/ NACO) for hard-to-reach high risk groups like the MSM may really be the "lower limit", and it is necessary to understand the true hidden burden by unhinging many social barriers. It may be more appropriate to consider the term MSM as a particular sexual behavior, rather than a distinct sexual identity in the Indian context. ⁷ There is a clear information gap, as a large majority of the MSM in India are married and/or bisexual, and socially reluctant to admit their true sexual identity. ⁸⁻¹⁰ Over the years, studies have been conducted to better understand this under-expressed sexuality

and its effect on unidentified HIV burden and correlates. For example, a survey covering rural areas in five different states reported 10% same-sex practices among married men, and 3% among the unmarried ⁶. Bisexual men (about 6% MSM as per the 2014-15 IBBS) form the "bridge population", increasing risk of HIV transmission between the high-risk groups (MSM, transgenders) and the general population (female partners). ^{7,11}

Several states have recorded higher HIV prevalence among their MSM population compared to the national average of 4.3%. Andhra Pradesh led the pack with 10.1% , followed by Gujarat and Goa at 6.8%. ¹¹ Notably, in the eastern state of West Bengal with (2014) adult HIV prevalence of 0.22% ³ which was less than the national average, prevalence of HIV among the MSM was 6.7% (95% CI = 3.7%, 12.0%) ¹¹. 18.8% transgender in Mumbai and 3.2% in Tamil Nadu were HIV positive, while data for male sex workers was clearly lacking ¹²

1.1.3. MSM & Transgender in India: social construction, sexual identity & legality

The need to decriminalize homosexuality and de-stigmatize same-sex sexual identities has gained a central place in social debates in India today. The Supreme Court of India, as of June 2016, has agreed for a hearing of petitions challenging the constitutional validity of Section 377 of the penal code (a law formulated in 1860 that criminalized homosexuality), after having refused to do so earlier. The Parliament and the political system so far has also failed to rectify this discriminatory law. ¹³ However, it remains a fact that same-sex relationships are hardly acceptable to the society-at-large which is predominantly driven by defining masculinity through marriage to a woman and reproducing. This social pressure manifests as "married MSM" who find this as a way to hide their stigmatized sexual preferences, while continuing high-risk same-sex sexual practices. ¹⁴

MSM truly suffer from lack of individuality, and may self-identify themselves as gay men (western acculturation); *kothi* (more feminine by nature and the receptive partner in anal intercourse or oral sex); *panthi* (the more masculine, insertive partner in anal/ oral sex; also called *parikh* in West Bengal); or double-decker (may play receptive or insertive roles in sex; also called *dupli-kothi* in West Bengal). In all of these social constructs, the MSM may be married to women (most commonly among *panthis*), while they continue same-sex practices - thereby creating the "bridge" for transmission of HIV from high-risk to general population. ^{7,15,16}.

Transgenders (TG) or the third gender (other than male or female) are commonly referred to as *hijra* or *ali* (also, eunuchs) in India. Most commonly, *hijras* are born as biological males, but endorse feminine sexual identities (including cross-dressing). They may undergo castration (castrated or *nirvan*) or may not be emasculated (*akva/akka*), and the community also includes hermaphrodites (ambiguous sexual organs). ^{15,16}

The inability to freely live their true sexual identities and fear of stigma and marginalization commonly drive MSM to engage in commercial sex with anonymous partners, often in isolated public places. Many MSM and TG thus vocationally take up the role of (male) sex workers, engage in (mostly) unprotected intercourses with multiple partners, and constitute a very high-risk group for HIV and sexually transmitted diseases (STDs). ^{17,18}

1.1.4. National AIDS Control Program(NACP)

The NACP-IV (2012-2017) is currently focused on addressing the key contributors to the "concentrated" HIV epidemic in India, viz the high-risk groups, through expanding preventive services as well as scaling up care, support and treatment (diagnostic services and free first and

second line drugs for HIV/ STDs). The program is being implemented through state and district-level AIDS prevention and control societies. ⁵

Targeted interventions (TIs) are preventive strategies tailor-made for specific high-risk groups like MSM, TG, female sex workers, IDUs, truck drivers, migrant and bridge populations. The program functions through engaging community members in acting as stakeholders to scale up awareness regarding availability of free testing and HIV/STD management as well as substance abuse rehabilitation services, behavior change communication programs, and supply free condoms, lubricants, safe needles/ syringes while enabling greater access to condoms through social marketing strategies. In the process, the NACO collaborates with local non-government organizations (NGOs) and community-based organizations (CGOs). As of September, 2015 the TIs covered 2.38×10^5 out of 3.57×10^5 estimated MSM population and 0.24×10^5 out of 0.7×10^5 estimated TGs nationally. During the FY 2015-16 NACO supported 1775 functional TIs nationally (180 in Maharashtra, 155 in Andhra Pradesh and 124 in Karnataka) covering nearly 5.5 million high-risk populations (80% of them were migrants and truckers). 149 TIs covered 238,508 MSM, while 38 TIs covered 24,343 TGs across the country. Nationally and in each state, the maximum number of TIs were dedicated to female sex workers, except in the north-eastern states where IDUs were the principle target risk group.

In West Bengal 35 functional TIs covered approximately 111,000 high-risk populations (72% of them migrants and truckers) - while there were 4 functional TIs covering 1369 MSM and 1 TI for 230 TGs.

Among the notable new initiatives under NACP IV is the *Project Nirantar* (piloted in 3 states) which aims to build civil society capacity for advocacy of the high risk HIV groups like female sex workers, MSM, TG. The ongoing Link Worker Scheme has been reinforced to support high

risk groups in the rural areas - in the FY 2015-16, about 62% of the line-listed high risk population were contacted for individual/ group health education, and nearly 29% of them were screened for HIV.

1.2. LITERATURE REVIEW

1.2.1. Socio-demographic factors

The 2015 National IBBS ¹¹ covered over 23,000 MSM across 24 states (and union territories) and reported that this was typically a young, literate population with median age 28 (24-30) years and 88.4% literacy. One-third of all MSM nationally were currently married (proportion about 47% for states like Goa, Gujarat and Jharkhand) and less than 5% widowed or separated. Only 16% MSM lived alone, 20% with female sex partners and 2.3% with male or hijra partners. The majority stayed with families (relatives, not with sexual partners). Most of the MSM (34%) worked as laborers (skilled/unskilled, agricultural or otherwise), while 23% were students or unemployed and 20% were in business or in the service industry. Notably, only 5% self-reported to be male sex workers.

In West Bengal, over half the MSM were between 18-24 years of age, and while 92.6% of them knew how to read and write, 84% were never married. Nearly three quarters of them lived with relatives/ families, while only 8% lived together with a female sex partner. About 35% were students or unemployed, 19% worked as laborers and 3% as sex workers. ¹¹

In a study among MSM in Kolkata (visiting a STD clinic), the mean age of the participants was 22.8 years, with 25% being students, 13.9% illiterate and 30.6% married. Favorable sexual practices like condom use or having fewer partner were more common among literates ¹⁹. In

neighboring Nagaland, a high-HIV prevalence state, sentinel surveillance data showed average age of MSM to be 28 years, with 46% illiteracy, 21% unemployment, 57% self-identifying as kothi, 15% being bisexual and 20% paying money for sex²⁰. Older age, unemployment, poor education, low socio-economic status, alcoholism and monetary transactions for sex had been commonly reported as probable risk factors for increased risk of HIV infection^{18,20-23}.

In a study across 12 Indian cities comprising of over 12,000 MSM, the median age was 25 years with 45% self-identified panthis and over 30% being married (to a woman)²³. Among MSM seeking voluntary counseling and testing (VCT) services in Mumbai, illiteracy, being married and having partners from both genders were associated with higher risk of HIV infection²⁴. Researchers from Chennai reported that 71.5% of surveyed MSM were kothis, 60% had less than high school education and 66% had a monthly income of less than 2000 INR (approx. 46 USD). In this sample with mean age 28.5 years, 35% reported sexual harassment, 40.5% reported forced sex in the past year and prevalence of paid sex was 59.5%. It was demonstrated that unprotected receptive anal intercourse and inconsistent condom use were associated with younger age, less than high school educational attainment and lower income levels.^{25,26}

In a study among MSM in Tamil Nadu²⁷ the median age was found to be 28 years, while 34% of participants were married and 40% self-identified as homosexuals. Lower education was associated with higher prevalence of HIV, and married MSM did not disclose their sexual identities to their wives. Possible reasons for such non-disclosures were fears of stigma, discrimination, personal embarrassment and family breakdown. Social acceptability and family pressure had been commonly cited as reasons behind getting married to a woman and having children²⁸. A study among MSM in Bangalore quantified the differences in sexual behavior patterns among men having sex with both men and women (41%) compared to men having sex with men only. 14% of

this sample were "currently married", and non-disclosure of their sexual practices (to their wives) was reported by almost all ²⁹.

Tomori et al, through focus group discussions, found that while involvement in social support networks (friends or community-based) may carry certain risk of stigma and discrimination, (but) if channeled positively, can address socio-behavioral risk factors for HIV in the MSM population ³⁰. Older age, higher education and being open about MSM status had been found to be conducive towards participation in HIV prevention programs ³¹.

Notably, 15% of MSM in India reported being subjected to some form of physical violence in the last 12 months - 19% among them faced this abuse from clients, 9% from regular partners and 28% from family members. 12% MSM experienced some form of sexual violence (last 1 year), and the distribution of sources were similar. ¹¹ It had also been documented that 17% MSM on average faced stigma (being disrespectfully treated by family/ known ones due to being MSM) and 13% were discriminated (treated differently at a health facility) ¹¹. In a study from Chennai, over 80% of the MSM surveyed reported varying levels of harassment from police and others ^{15,16}. Multiple researchers had observed that social stigma (along with criminalization) was contributory to low self-esteem, increased propensity towards high-risk sexual behaviors and general avoidance of preventive counseling and healthcare services ^{7,32}.

1.2.2. Sexual risk behaviors

1.2.2.1. General

Over 50% MSM in the national IBBS sample self-identified as kothis (predominantly receivers during anal sex), one-fourth as double deckers and one-fifth as panthis (predominantly insertive partners). Overall, though only 6% MSM admitted to be bisexual, the numbers fluctuated greatly

across states - 22-26% in Himachal Pradesh and Andhra Pradesh and 14-16% in Assam, Kerala, West Bengal and Chhattisgarh. ¹¹ Interestingly, a study by Phillips et al had observed that while more feminine kothis and hijras were believed to act as the receptive partners, 25% of their study sample did not conform; similarly, 16% of kothis and bisexuals also played the receptive role instead of a predominantly insertive partner role - a "fluidity" in male-to-male sexual relationships that should be borne in mind while understanding risks ³³.

Based on 2011 HIV Sentinel Surveillance data from 4 states (n=4682 MSM), Godbole ³⁴ found that 44% were bisexual, and this was predicted by being older than 25 years of age, engaging in both penetrative and receptive sexual practices and having no monetary transactions for sex (pay or receive). Based on behavioral survey data from Maharashtra, Deshpande and Bharat (2015) reported that 52% of MSM had only male partners, while 34.5% were bisexual ³⁵. In a STD clinic-based study, researchers observed the variations in sexual behaviors among 2381 male patients - while almost all men had sex with women, 13% also had sex with other men, additional 13% had sex with hijras, and 11% had sex with women, men and hijras ³⁶.

MSM were likely to experience their first sexual intercourse at 16 years, and nearly one-fifth would do so by 14 years of age. About 50% had first sex with a male or hijra partner by 17 years of age. However, across the states, 18-24-year age group was the most common period for experiencing sex with a male/ hijra partner. In West Bengal, by the age of 17 years, 68% MSM had their first sexual intercourse overall, while 60% experienced this with a male or hijra partner. Nationally and in most states, 25% of the incidents of first intercourse with male/hijra partner were forced sexual experiences; the figure rising to 47% in Kerala and over 35% in Assam and Andhra Pradesh. The median duration of engagement in homosexual behavior was 10 years overall, and 7 years in West Bengal. ¹¹

Nearly half of the MSM engaged in sexual activities with partners at a residential place; 22% at a hotel and 5% in a vehicle or on highway. In the northern states, a very high proportion of MSM were engaged in sex on the road (highway/ vehicle) - 8-10% in Delhi, Haryana, Chandigarh, Punjab and 14% in Uttarakhand. ¹¹

A study among MSM in Kolkata reported that while 75% of the participants had sexual debut during adolescence, 44% had more than one male sexual partner in the last one month, and 83.3% were receptive during anal sex. The most common reason for being the receptive partner was reported to experience "increased pleasure"; 19.4% reported intoxication during sex and 22.2% reported ever use of condom during last month. ¹⁹

In most of the studies, married MSM were found to have higher prevalence of HIV and sexually transmitted diseases ^{24,27}, lower rates of condom use ^{37,38}, higher rates of anal sex with greater number of sexual partners of both sexes ⁶ compared to the unmarried MSM. It had been observed that an urge to hide true identity might have provoked married MSM towards increased high-risk behavior (like not using condoms) than their unmarried counterparts ³⁹. Among 821 MSM in Mumbai, 53% reported never using a condom with their female partners, and commonly cited lack of availability (33%), perception of their partners being safe (32%), and diminished sexual pleasure (18%) as reasons ²⁴.

Such high-risk behaviors of married MSM put their wives and children at higher risk. Studies had revealed that married women consider themselves to be at lower risk for HIV/STIs despite knowledge about the high-risk behaviors of their husbands ⁴⁰. Wives of MSM were assumed to be no different, and they remain a difficult group to reach through interventions ⁴⁰⁻⁴².

1.2.2.2. Partners & condom use

The National IBBS ¹¹ noted that the MSM population in India was a heterogeneous group which had sex with both male and female partners, the latter behavior often resulting from societal pressure to marry and conform. As a result, the bisexual MSM act as a bridge population between the high-risk groups (MSM, hijras) and the general population (female partners). Unprotected vaginal or anal sex is a very concerning route of HIV/STD transmission in this group. Further, about 17% MSM (overall) had reported incidents of condom breakage (improper use) during the previous one month ¹¹.

In the national IBBS survey, 54% MSM had regular male partners while 22% had regular hijra partners - around 80% used a condom during the last penetrative sex, but little over 50% reported to have consistently used condoms ("condom use at ever sex act in the last one month"). The north-eastern and eastern states generally reported lower consistent condom use - with regular male partners (21% in Jharkhand, 34% in West Bengal) as well as with regular hijra partners (23-29%% in Assam, Tripura, West Bengal, Jharkhand and Odisha). Rajasthan was record low consistent condom use at 17% (either groups). ¹¹

The most important issues for transmission of HIV among MSM are the number of sexual partners and sexual mixing patterns. Based on national-level survey data (2003-2010), Jha et al had reported that being a kothi or double-decker, lack of education, being older than 25 years and being employed were significant risk factors for HIV positivity among MSM. ¹⁷ A 2016 New Delhi study revealed that only 35% of MSM had homosexual preferences, while 64% were bisexual ⁴³. Studying a cohort of male injection drug users in Delhi, Tun et al found that having male (MSM) or transgender sex partners significantly increased the risk of unprotected sex, and hence to HIV and STDs ⁴⁴. A study among MSM in Tamil Nadu reported that the median number of male

partners in the prior year was 15, and 45% of the participants reported unprotected anal intercourse. Infection with HSV-2, increased number of male sexual partners, history of unprotected anal intercourse and not having a stable male partner were associated with higher HIV prevalence.²⁷ Deshpande³⁵ reported that 70% of the surveyed MSM in Maharashtra engaged in sexual activities with multiple partners- regular/commercial/un-paid casual. Interestingly, the bisexual MSM population reported 62% "consistent condom use" v/s 47% among male-partner-only MSM. Lower rates of paid sex, receptive anal sex with known or unknown non-commercial partners had been reported among bisexual MSM compared to the group having sex with only men²⁹. In a study among MSM in Chennai, more than 20% respondents reported unprotected anal intercourse in the last three months⁴⁵. Ramanathan et al⁴⁶ studied over 1500 MSM in Tamil Nadu and reported about 53% consistent condom use during anal sex. Predictors that promoted condom use included having frequent intercourse with regular partners, having less casual/ paid sex partners and being associated with a community-based organization. Older MSM, those suffering from alcoholism and with poor economic status were less likely to use condoms. In another study, increased mobility (travelling across states/ districts within states) was associated with risk of having unprotected intercourse with casual partners and higher HIV positivity⁴⁷. On the other hand, involvement in public events and collective efficacy have been demonstrated to promote condom use during paid sex among MSM and transgender⁴⁸.

1.2.2.3. Commercial sex & condom use

Nationally, 48% of the surveyed MSM population had "sold" sex to a paying male or hijra partner ever, while 81% did it in the preceding one year, at a median age of 19 years (46% between 18-24 years). In some states like Chhattisgarh and Pondicherry, over 70% MSM had engaged in selling

sex between 18-24 years of age. The average duration (overall) in being involved in commercial sex was 8 years. In contrast, 26.5% MSM had "bought" sex from a paid male or hijra partner ever, and 73% in the last 12 months. Consistent condom use was reported by 50-55% in either groups (paid/received), while 88% reported using it during the last intercourse. West Bengal documented 42% consistent use of condoms while selling sex, and 59% while buying. 37% MSM had engaged in sexual activity with a casual male or hijra partner (non-commercial) ever, and 88% in the previous year. Consistent condom use during casual sex was 54% nationally, but alarmingly low in some states like West Bengal (14%).¹¹

A group of interest was the bisexual MSM - those who had regular, casual or paid female sex partners. 48% MSM had ever had a regular female partner, 24.5% ever had paid sex with a female while 18.5% have had at least one casual sex encounter with a woman. Consistent condom use was lowest with regular female partners (25%, last time only = 45%); and higher for intercourse with paid partners (57%) or casual partners (50%). In West Bengal, while 50% MSM had regular female sex partners, less than 20% of them consistently used condoms; while this protective behavior was reported among 51% of MSM having paid female partners and 39% with casual female partners.¹¹

In a modeling study, Dandona et al had postulated that for 14.6 out of every 100 MSM engaged in commercial sex were at risk to acquire HIV, and this would mean 5.5% transmission rate to men who do not sell sex or women - thus clearly outlining the extreme nature of the risk associated⁴⁹.

In a study among self-identified MSM across four Indian states (Andhra Pradesh, Maharashtra, Karnataka and Tamil Nadu), less than 29% condom use was reported with non-commercial non-regular male partners, whereas much higher condom use (over 80%) with the last paid male partner. Consistent condom use was found to be different across self-identified types of MSM.⁵⁰

Researchers studied MSM recruited from 10 randomly selected public sexual environments in Chennai. 33% unprotected receptive anal intercourse was reported during last sex, and 36% of participants were inconsistent in condom use during the last month. Paid sex was found to be associated with kothi identity, less than high school education, harassment and forced sex. MSM engaging in paid sex had a much higher mean number of partners (31), and did show consistent condom use (71.2%). 32.5% were never tested for HIV ^{25,26}. A study from a community based organization in suburban Mumbai reported that among 75 MSM, 85% were engaged in commercial sex work as the main source of living, and 13% had never used a condom¹⁸. Low levels of education, non-participation in any HIV prevention program, having clinical depression, having increased number of male partners, not being married, not having a child, non-disclosure of sexual identity in family, kothi and panthi sexual identity and being paid for sex were significant predictors of unprotected anal intercourse among MSM in Chennai ^{15,16}

For the state of West Bengal, 2011 sentinel surveillance data demonstrated that being a kothi and paying or being paid for sex carried significant risk of HIV infection ⁵¹.

1.2.2.4. Addictions

Addiction to drugs and alcohol, particularly before sex, are likely to push users towards high-risk sexual behaviors, and the same holds true for the MSM. Over half the surveyed MSM reported alcohol consumption, and 56% of them reported it before or during sex. Nationally, though only 3% MSM self-reported to be IDUs, 47% shared needles during their last experience. ¹¹

Studies linking addiction profiles to high-risk behaviors among MSM have been scarce, as noted in a review paper by Thomas et al. They observed that chronic alcohol use was generally associated with older age, bisexual life, concurrent tobacco use and unsafe (vaginal/ anal) sexual practices ⁷.

Yadav and colleagues studied 3880 MSM across 3 states in India and reported that those who regularly consumed alcohol (at least once/ week, 40% of this sample) were more likely to avoid condom use while intercourse with regular or commercial sex partners ⁵².

On a different note, a 2015 study by Chakrapani et al ⁵³ surveyed 300 MSM and 300 transgender participants, and found that over 35% in each group had at least one of the studied psychosocial co-morbidities (depression, frequent alcohol use, and victimization), and there was evidence of synergistic effect on high-risk sexual behaviors.

1.2.3. Observed HIV/STI prevalence

As per the 2014-15 IBBS, prevalence of HIV infection among MSM was 4.3% (95% CI = 3.7%, 5.1%). The highest prevalence was recorded in Andhra Pradesh (10.1%), followed by Gujarat & Goa (6.8% each) and West Bengal, Odisha & Jharkhand (6.7% each). Nationally, 47% MSM received some health-care service for treatment of STDs. ¹¹

Baral (2007) conducted a meta-analysis of MSM population data (from HIV surveys) from low- and middle-income countries, and found that in India, the risk of HIV infection among the MSM was 17.6 times higher (95% CI = 16.1, 19.3) than the reproductive age adult population ⁵⁴. Based on a variety of national surveys conducted between 2003 and 2010 (including sentinel surveillance, behavioral and high-risk group surveys), it had been shown that the prevalence of HIV among the Indian MSM population had declined nationally (12.3% in 2003 to 4.43% in 2010). But there were increased trends in eight states (including West Bengal) during the same time period, where the prevalence was still >5% (among MSM). ¹⁷

Specifically, 5% HIV positivity (2011) has been reported among the MSM in the state of West Bengal ⁵¹. In neighboring Nagaland state, the prevalence of HIV among MSM was 13.6% ²⁰. Based

on 2011 HIV Sentinel Surveillance data from four states, Godbole and team reported 6.8% HIV prevalence among 4682 MSM³⁴. Hernandez et al had found a much higher prevalence of HIV among men who had sex with hijras (14%) v/s MSM or heterosexual men (both 8%)³⁶. A 2008 systematic review estimated 16.5% HIV prevalence among the Indian MSM population³⁹.

Ramakrishnan documented 13.1% HIV prevalence among bisexual MSM and 12.2% prevalence among MSM with only male partners. Both groups had over 3% syphilis prevalence.⁵⁵ The prevalence of HIV, Herpes Simplex Virus-2 (HSV-2), Chronic Hepatitis B virus (HBV) were found to be 9%, 26%, 2% and 8% respectively in a 2008 Tamil Nadu study²⁷. A 2003-04 Mumbai study revealed 12.5% HIV prevalence among voluntarily tested MSM²⁴. A study to evaluate the predictors of sexual risk behavior and HIV infection among MSM in Chennai using recruitment through peer outreach workers found 8% HIV prevalence among participants⁴⁵. MSM in Chhattisgarh state reportedly had almost 15% HIV seropositivity²¹, while those in Karnataka reported 12.4%²². A community-based trust in Mumbai had reported 33% HIV prevalence and 60% STD prevalence among 75 MSM and transgenders who were sex workers¹⁸. Brahmam and colleagues studied self-identified MSM across four high HIV-prevalence states in 2007, and had reported 18% HIV prevalence among hijras, 16% among bisexuals, 13.5% among kothis, 10.5% among double deckers and 7.6% among panthis. They also noted very high prevalence of syphilis among kothis (15.8%) and hijras (13.6%)⁵⁰.

More recently, in a two-year STD clinic-based study, Agarwal and colleagues⁴³ reported 23% HIV positivity, 27% VDRL and TPHA positivity, 23% genital warts, 11.5% genital herpes, 9.6% genital *Molluscum contagiosum* and 5.8% gonorrhoea among 52 self-identified MSM in New Delhi. Community based studies among MSM in Gujarat demonstrated that TPHA-confirmed syphilis was the most prevalent STI among hijras and MSM (between 3.5% in Ahmadabad to 17.2% in

Vadodara), followed by gonorrhoea. The commonest site of gonococcal infection was the ano-rectal region, followed by oro-pharynx and urethra. Confirmed gonococcal infections among MSM were all asymptomatic. MSM suffering from Chlamydial infection reported no symptoms although their urine was found to be positive with PCR test. Suffering from STDs had been associated with higher rates of HIV infection ²⁴.

1.2.4. HIV & STD related knowledge and attitude

In the 2014-15 National IBBS ¹¹ which sampled over 23,000 MSM, about 95% had heard about HIV/AIDS, over 93% among them were aware about a specific route of transmission (unprotected sex, sharing infected needles or infected blood transfusion), while 87-91% of this population were aware about at least one preventive method (having sex with safe partner, using condoms, avoiding needle sharing, safe transfusion). 21% of the surveyed MSM had some misconception regarding HIV/AIDS transmission. Interestingly, only 45.5% MSM nationally were verified to possess "comprehensive" knowledge about HIV/AIDS (at least 2 prevention methods + reject 2 most common local misconceptions + aware that healthy looking person can be HIV positive). On the other hand, 78% of the surveyed MSM had at least heard about STDs, and 98% of them were aware about at least one symptom.

In a study among MSM visiting a STD clinic in Kolkata, knowledge and positive attitude towards HIV/AIDS among participants were found to increase with literacy rates. 33.3% knew that HIV can be transmitted through anal intercourse, 35.2% knew the correct method of using a condom, 44.4% wanted to have sex without a condom if the sexual partner were extremely attractive, 88.9% felt that condom use was not necessary if the partner were clean and hygienic and 43.5% felt that getting HIV was a matter of bad luck ¹⁹. A study among MSM of Chennai revealed that unprotected

receptive anal intercourse and inconsistent condom use were associated with low HIV transmission knowledge^{25,26}.

1.2.5. Healthcare seeking behavior of MSM

In the 2014-15 National IBBS¹¹ which sampled over 23,000 MSM, approximately 21% reported suffering from at least one STD symptom. Most commonly, these MSM sought treatment at a Government healthcare facility (50%, but ranging 13-80% across states, 38.5% for West Bengal), followed by NGO-run clinics and TI centers (46%, but ranging 20-73% across states, 21.5% for West Bengal), private healthcare (21%), traditional healers (18%) and pharmacy stores (13%). Though only 6% affected MSM did not seek treatment nationally, the proportion was 25% in West Bengal.

About 98% of this national sample¹¹ knew about where to go for HIV testing - 93.5% awareness about a Government testing facility, while 25-30% knew about private centers and NGOs. 78% of the MSM had ever been tested for HIV (42% voluntary testing), and 88% of those tested knew the results. Though 98% were aware about the place where ART was provided, only 56.5% knew something about ART.

McFall et al studied the MSM and IDU populations in 27 sites across India (n=1726 HIV positives) and identified 3 actionable determinants which were barriers to health-care access: need for assistance to access anti-retroviral therapy, awareness about HIV positive status and health education on HIV management⁵⁶. In a similar study, Mehta et al reported that among 1146 HIV positive MSM, 30% were aware of their positive status and only 23% were receiving ART. They found that geographical region (in India), being older and married, and having multiple sex

partners (over lifetime) were factors associated with lack of health care awareness among the MSM population ⁵⁷.

According to the national IBBS ¹¹, 78% MSM were exposed to some form of HIV-related healthcare services in the last one year (61% went back), most commonly being health educational material (70%) or condom provision (68%). MSM were more inclined to obtain condoms from the NGO/ TI outreach workers or peer educators (39%) than from chemists/ drug stores (26%).

26% of MSM population studied in Chennai participated in a previous HIV prevention program, and less than 50% were ever tested for HIV ^{15,16}. Mimiaga and colleagues conducted several focus groups and interviews among Chennai MSM, and the study revealed deep-rooted causes of psychosocial distress - lack of self-esteem due to lack of a socially accepted (sexual) identity, concomitant stigma and social pressure to conform, and often history of childhood sexual abuse. It came out that building self-esteem through acceptance of sexual status was a key to positive health care seeking behavior and may promote risk-free sexual practices. ⁵⁸ Similar conclusions have been drawn by Timori et al, and they believed such discrimination and marginalization increased MSM vulnerability to HIV ⁵⁹.

1.2.6. Methodological nuances (design and sampling)

One of the major challenges in conducting epidemiological research (or clinical trials) among the MSM population has been in formulating efficient recruiting strategies.

Gutierrez-Luna ⁶⁰, after a very successful recruiting drive among young Mexican MSM for a HPV vaccination trial noted that engaging the local MSM community and gaining their confidence on issues of participant privacy, respect and rights were the most crucial factors. In the US, Hatfield ⁶¹ took help of local community-based organizations to recruit ethnic minority MSM (African-

Americans and Hispanics), and the study demonstrated that referral through friendship networks yielded greatest number of study participants. Silvestre et al ⁶² applied a social marketing model with intensive training of "recruitment specialists", involving community leaders in building up the campaign (to enroll) at community, group and individual levels. They also made provisions for running accessible sites at convenient hours for the target study population.

Majority of the epidemiological studies conducted among the MSM population India have been cross-sectional (surveys) in design ^{11,23,36,43,50,54,56}, while few being qualitative ^{30,32,58,59}. A 2008 study in Tamil Nadu state applied a mixed-methods approach (combination of qualitative study and a structured quantitative survey) to evaluate the impact of HIV and high risk behavior on wives of married MSM ²⁸. Phillips et al have documented that informal confidential voting interviews may be a better method to collect data on private, confidential high-risk behaviors like injectable drug abuse and paying for sex ⁶³.

A number of studies on Indian MSM population applied convenient sampling approaches from sexually transmitted disease (STD) clinics and community based organizations ^{18,36,43,53}. Many of the studies used respondent driven sampling (RDS) ^{27,28,44,56,57} for recruitment, while a two-stage cluster sampling method ^{29,63} or sampling according to probability proportion to size (PPS) ⁶⁴ were used by few others. Time-space sampling method has also found mention. ^{25,26,46,52,65}

1.2.7. Male Sex Workers (MSW)

Male sex workers are typically an under-studied high risk sub-group. Globally, the HIV prevalence among men (including transgenders) who engage in commercial sex is estimated to be 10.8% (95% CI 9.8-11.8%) ⁶⁶. A study among Chinese MSW found that condom use was about 54% for

receptive and 70% for insertive anal intercourse, while it was 19-23% for oral sex. Client demand and healthcare awareness were identified as key factors for increased condom use in commercial sex ⁶⁷. The majority of the 185 MSW surveyed in Australia ⁶⁸ did not perceive themselves to be at risk of HIV infection (but more worried about STDs), had high awareness about AIDS but less knowledge on the high risk nature of unprotected anal and oral sex. On a positive note, 78% used condoms while being engaged in commercial sex, and this was attributed to a positive attitude of assuming responsibility for self-health and better knowledge.

A survey based on two large Indian cities (Mumbai and Hyderabad) found that 70% of 483 MSM were involved in "transactional" sex. The prevalence of HIV was 43.6% among MSW, more than twice that among other MSM (18.1%). HIV prevalence significantly increased with number of years (8% increase/ year) in commercial sex work and positive syphilis serology. ⁶⁹

Acknowledging that adult MSW are an "invisible population" in India, researchers from Chennai ⁷⁰ found that over median 5 years of being involved in commercial sex, these people earned less than 50 USD a month, only 64% were ever screened for HIV and 20% for any STDs. MSW who depended on sex trade as the sole source of income were significantly more likely to avoid condom use during anal intercourse than those who had secondary income sources. Nearly 75% received higher payments for not using condoms, and an equal proportion faced resistance from clients with regards to condom use.

1.2.8. Transgender (TG)

In a study based in STI clinics in Pune city, the prevalence of HIV was found to be 45.2% among transgender (hijras), compared to 19% among MSM. Receiving money for sex and concomitant STDs (like genital ulcers) were significant predictors of HIV positive status ⁷¹.

Chakrapani et al ⁷² conducted focus groups and interviews among kothis and hijras, and identified key barriers to seek health-care: social stigma related to disclosure of HIV positive status, resultant seclusion and discrimination which may even affect earning a livelihood. Thus, many HIV positive members of this population were averse to accessing ART.

1.3. STUDY OBJECTIVES

1.3.1. Qualitative phase

1. To understand the behavior, sexual orientations and identification types, HIV related beliefs, concerns, misconceptions, experiences, expectations and perspectives concerning HIV transmission among MSM
2. To explore the structure and function of the surveillance, targeted interventions and welfare programs available for MSM in the study area.

1.3.2. Quantitative phase

1. To explore the HIV/AIDS related knowledge, attitudes and practices (KAP, including risk behaviors) among voluntary participants from the MSM population of Kolkata.
2. To measure the HIV prevalence among the participants and to explore the associations of socio demographic factors and HIV/AIDS related KAP with HIV.

CHAPTER 2: METHODS OF THE QUALITATIVE PHASE

2.1. STUDY AREA

The study was conducted in Kolkata, the capital city of the state of West Bengal and the headquarter of the district of Kolkata (the district extends from 22°37'N to 22°30'N and 88°23'E to 88°18'E), which is located just below the tropic of Cancer in the eastern part of India, on the eastern banks of the river Hooghly and approximately 120 kilometers from the Bay of Bengal. The city area of Kolkata is 187.33 km² and the metropolitan area is 1380.12 km². According to the 2011 Kolkata is the seventh biggest city in India and capital of state of West Bengal with a population of about 4.57 million (Census 2001), literacy rate of 81.31% and sex ratio of 956:1000. It is considered to be the cultural capital of India and is very well connected with other states through numerous transport facilities⁴¹. The city of Kolkata is the 8th largest urban agglomeration in the world ranked by population size.

Figure.1: Location of the city of Kolkata in map



2.2. INITIAL FIELD ASSESSMENT AND STUDY SETUP

An initial field assessment was conducted with the help of the local Non-Governmental Organizations (NGOs) to understand the dynamics of the networks of the MSM population of Kolkata, to become familiar with their culture (for example by knowing the jargon used in their communications), to identify the potential cruising areas (“hotspots”), places where MSM find their partners and to identify the drop in centers where the MSM generally come for meeting with their partners as well as for other recreational activities.

PROTHOMA was contacted and agreed to provide resources and necessary help for the field assessment and conduct of the study. PROTHOMA⁷³ is the Asia’s first and largest shelter home for transgender people. It was established in 2008 with support from another community-based organization, People Like Us (PLUS),⁷⁴ which works toward acceptance and equal treatment for trans people. PLUS was founded by transgender activist and was registered under the Society Registration Act (1961) of West Bengal in 2003 with funding from Department for International Development (DFID) UK.

PROTHOMA is located in Kolkata and provides support to about 2600 trans people in a year. It is run by a central manager, two mental health counsellors, two sexual health managers and two outreach workers. It has also two drop-in centers, of them one is located in a rural area of a southern district in West Bengal to support vulnerable trans people living in rural Bengal. It not only provides shelter to homeless trans people but also provides vocational skill development training so that they can make a respectable living. The center also provides counseling to young transgender who are discriminated against in school as well as school drop-outs.

2.3. ETHICS APPROVAL

The study content and protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of California, Los Angeles and The Ethics Committee of the National Institute of Cholera and Enteric Diseases, Indian Council of Medical Research, Kolkata. Verbal consent was obtained from all eligible subjects prior to interview.

2.4. STUDY DESIGN

2.4.1 Qualitative phase

2.4.1.1. Focus Group Discussion

Between August and December 2015 two Focus Group Discussions (FGD) were conducted- one with administrative and managerial personnel and another with field staff and service care providers. FGD involving administrative and managerial personnel provided information regarding major areas of MSM communities in Kolkata, current health services and health promotion programs available for MSM, major policy issues and suggestions to improve HIV prevention programs. FGD involving field staff and service care providers provided information about current HIV situation in Kolkata (HIV burden among MSM, other risk groups, prevention), detail of MSM communities (major cruising areas, how they cruise, reason for coming to same venue, characteristics and dynamics of these communities, sub-groups within MSM community, specific ways of communication and related jargons), social support/network (activities of MSM organization in Kolkata, suggestions how to better available services, any

opinion leader in the community who are likely to influence other MSM in using HIV prevention/control services, how to discuss personal issues with MSM for example sexual behaviors and substance abuse) and need for health services and health promotion among MSM.

2.4.1.2. In-depth interview

In-depth interviews were conducted with 13 males who were aged at least 18 years or above, had oral or anal sex with a male in last 6 months and were permanent residents of Kolkata.

Participants were actively recruited from different venues by staff from a local community-based organization, PROTHOMA.

To ensure privacy and comfort, FGD and in-depth interviews were conducted by male research assistants who were trained in qualitative interview methods in a private room of the said organization or at a location requested by the participants. Prior to starting the focus group or the interview eligible subjects were asked to read an information sheet that described the detail of the study in a language they completely understood. A semi-structured qualitative interview guide was developed based on priori themes that emerged from review of relevant literature and those anticipated by the research team while interacting with MSM. Verbal consent was obtained before to start of FGD and in-depth interview.

All interviews were semi-structured and elicited information on major domains relevant to HIV infection and prevention: a. HIV related knowledge b. Sexual behaviors and self-identification of homosexuality c. Issues related to sexual risk behaviors d. Substance abuse e. History of HIV exposure/infection f. Self-esteem and self-worth g. Local gay community h. Suggestions for HIV prevention programs for MSM. The participant was also invited to suggest on how existing HIV

program targeting MSM could be improved and to better MSM life. The interview ended with debriefing questions about their expectations from society. Information on basic demographic characteristics included age/education/religion/marital status/current living status/occupation was also obtained. To ensure confidentiality all interviews were anonymous and lasted about an hour.

2.4.1.3. Qualitative data analysis

All interviews were audiotaped and transcribed in to local language (Bengali) preferably within 24 hours of completion of the interview. In addition, written notes were also taken to keep record of participants' emotional expressions, body language and other relevant details. Accuracy and consistency were checked by trained research assistants as well as the primary investigator.

Grounded theory as outlined by Strauss and Corbin was employed for qualitative analysis.⁷⁵

Inductive analysis technique was applied to obtain the emerging patterns, themes and categories from the data. Thematic analysis was conducted to extract the common concepts/ideas that extended throughout an entire interview. Open and axial coding were used to capture maximum variation in the data regarding actual descriptions of experience shared by the participants. In order to identify recurring ideas/concept/themes, differences, and general patterns, each code was compared with other codes and all codes were read repeatedly. Discrepancies in coding were resolved by discussing with the research team and additional contextual support before assigning a final code. Overarching themes emerged in successive stages from low level of abstract idea to a more concrete, distinct concept. ATLAS.ti 7.5 software package was used for data storage, coding and analysis. Analysis of the qualitative study facilitated developing an appropriately structured questionnaire for quantitative evaluation of MSM communities in Kolkata.

CHAPTER 3: “We became slaves of a culture that hates us”- A qualitative exploration of discrimination, their impact and coping among men who have sex with men in West Bengal, India

3.1. INTRODUCTION

Despite global commitment to ending legal and social intolerance of sexual minority groups, men who have sex with men (MSM) continue to live in a society that embraces heterosexuality while non-heterosexual forms of behavior, identity, relationship or community are denied and stigmatized^{76,77}. Even today sex among men remains misunderstood, feared and discriminated against in most countries⁷⁸. Understandably, because of fear of social exclusion and experiences of widespread discrimination, most of them prefer to keep their sexual identity and sexual behavior hidden from others⁸. Though the legal status of same sex relationship vary greatly by country, as of January 2014, about 78 countries in the world still discriminate against and criminalize homosexuality ranging from imprisonment to death penalty¹⁴. Perhaps most stark is the history of criminalization of homosexuality. Even in the world’s largest democratic nation of India, homosexuality is always looked down as an act of disgrace and same-sex relationship is a taboo⁷⁹. Sex between men is considered to be a criminal offence under section 377 of the Indian Penal Code, punishable by imprisonment⁷⁹. Concepts of sexual identity in Indian context are diverse and fluid^{14,45}. Researchers used the term MSM to denote sexual behavior rather than sexual identity⁸⁰. Based on their sexual roles, sub-population of Indian MSM include *kothis* (predominantly receptive, more feminine), *panthis* (predominantly insertive, more masculine) and *double-deckers* (both receptive and insertive). However, their self-perception and behaviors are not fixed and may be situational^{14,33}. As a result of these punitive laws, irrespective of their

sexual identity, MSM are abused by police, health-care providers and unruly community members^{38,80}. Hostile behaviors directed against MSM in an atmosphere of heterosexism push them underground, making them very difficult to reach and is a stumbling block to HIV prevention, treatment and care services. Furthermore, in order to hide their homosexual identity and solidify social standing many of them have traditional marriage and have children while continuing a secret same-sex relationship⁸¹. Thus, MSM in India serve as a crucial bridge in transmitting HIV infection into general population. Another point of concern is that due to strict societal norms and family disapproval of same sex relationship, there has been a rapid congregation of MSM communities mostly in urban areas across India which promote homosexual prostitution, erotic activities and unprotected sex. Thus, it is not difficult to understand why MSM are particularly vulnerable to and disproportionately affected by HIV. Approximately, as per the UNAIDS estimate there were 289444 MSM in India with an estimated HIV prevalence of 4.3% at the end of 2015.⁶¹ Perhaps one of the biggest challenges is the difficulty of reaching them as they do not identify themselves and are subsequently ignored by MSM specific programs.

Apart from HIV risk, previous studies revealed that MSM were more likely to suffer from poor mental health compared to their heterosexual counterparts^{82,83}. A systematic review of current literature on bisexuality and suicide found that subjects reporting bisexual orientation had higher odds of suicidal attempts and ideation compared with their homosexual and heterosexual peers⁸². Research in India also showed that marginalization and stigmatization accounted for a significant amount of depression and low self-esteem among MSM⁸⁴⁻⁸⁶. Previous studies among MSM in Chennai revealed that being *kothi*, unmarried, a sex worker, disclosing one's MSM behavior and self-perceived HIV risk were significantly associated with clinically depressive

symptoms^{84,86}. Researchers emphasized the pressing need of addressing these distinct psychosocial challenges which might be potential barriers to availing risk reducing counseling among MSM^{80,86}. Most of the studies concerning MSM were conducted in southern states of India while epidemiological research from other regions were sparse. Furthermore, most research related to MSM in this country focused on different HIV risk behaviors. To the best of our knowledge, till date only one study was reported from eastern part of India which revealed high prevalence of risk behavior and 5.09% HIV sero-positivity among MSM in a metro city of West Bengal⁵¹. Even with good evidence of concentrated reservoir of HIV in this state among MSM populations, they were markedly understudied. Little was known about the stigma associated with homosexual behavior and their impact on well-being of MSM in eastern part of India. Comprehensive knowledge regarding the stigma, discrimination and other underlying contextual factors were needed to develop effective, culturally appropriate innovative stigma reduction strategies so that MSM could benefit from such programs. This qualitative study was conducted to explore discrimination experienced by, their impact and different ways of coping among MSM in a metro-city of West Bengal, India so that findings could provide useful insights for designing prevention interventions.

3.2. METHODS

3.2.1. Ethics statement

The study content and protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of California, Los Angeles and Ethics Committee of the National

Institute of Cholera and Enteric Diseases, Indian Council of Medical Research, Kolkata. Verbal consent was obtained from all eligible subjects prior to interview.

3.2.2. Study setting

A qualitative study employing focus group discussions and in-depth interviews was conducted among MSM in a metro-city of Kolkata in West Bengal between August and December 2015. Located in the eastern part of the country, Kolkata is the seventh biggest city and capital of state of West Bengal with a population of about 4.57 million (Census 2001), literacy rate of 81.31% and sex ratio of 956:1000. It is considered to be the cultural capital of India and is very well connected with other states through numerous transport facilities ⁴¹. The city experienced a fast economic growth and rapid urbanization since 2000. In addition, it has become India's first fully WIFI-enabled metro city since 2015.

3.2.3. Participants

Men aged 18 or above who had anal or oral sex with a male partner in the last 6 months and were permanent residents of Kolkata were eligible for the study. Participants were recruited from different venues by staff from a local community-based organization (CBO) for MSM which provides counseling, shelter and performs outreach in Kolkata.

3.2.4. Interviews

To ensure privacy and comfort, focus group discussion (FGD) and in-depth interviews were conducted by male research assistants who were trained in qualitative interview methods in a private room of the said organization or at a location requested by the participants. Prior to starting the focus group or the interview eligible subjects were asked to read an information sheet that described the detail of the study in a language they completely understood. A semi-structured qualitative interview guide was developed based on priori themes that emerged from review of relevant literature and those anticipated by the research team while interacting with MSM. FGD was conducted to obtain information regarding MSM communities in Kolkata, their characteristics and dynamics. After obtaining verbal consent, following the interview guide a series of open-ended questions pertaining to specific domains were asked to elicit inputs from each subject. Necessary probing was done to obtain detail information pertaining to each domain. After gathering basic demographic information (age/education/religion/marital status/current living status/occupation), they were asked about sexual self-identity (homosexual or heterosexual, self-realization of being a homosexual or heterosexual), discrimination (social discrimination of being MSM/familial discrimination of being MSM, discrimination within community), feeling of low self-esteem or self-worth, impact on daily life and coping with discrimination. To ensure confidentiality all interviews were anonymous and were conducted in local language (Bengali) or language as per choice of the individual subject. With prior permission from the participants, all interviews were audio-recorded. In addition, written notes were also taken to keep record of participants' emotional expressions, body language and other relevant details. Each interview lasted for 50-60 minutes on average. Interviews were checked continually until thematic saturation was reached.

3.2.5. Data analysis

Once the interviews were completed, audio-recordings were transcribed in local language (Bengali) by the primary interviewers preferably within 24 hours of each interview.

Transcriptions were reviewed and checked by trained research assistants as well as primary investigator for the accuracy and consistency. Grounded Theory Principles were used to inductively analyze the transcripts for extracting major themes⁷⁵. To capture maximum variation in the data, open coding was employed which included ongoing refinement of codes and repeated validation against actual descriptions of experience shared by participants. Subsequent readings (axial/thematic coding) were done to identify recurring ideas, themes and concepts which were finally combined into larger conceptual categories. Additional important topics that emerged from FGD and note taking pertinent to the discrimination were also added to coding scheme. The theoretical frameworks were identified from literature review. For the coding process only Bengali transcripts were used and only relevant quotations were translated into English to convey respondent' feelings and experience. ATLAS.ti 7.5 software package was used for data storage, coding and analysis. Discrepancies in coding were resolved by discussing with the research team and additional contextual support before assigning a final code.

3.3. RESULTS

3.3.1. Description of the participants

Of total twenty-four respondents who were recruited for the study, ten participated in two FGDs and fourteen were interviewed in-depth. All of the participants came through referrals from staff

at local NGOs through their personal contacts. One subject was not comfortable in sharing his experience and declined to participate. Among thirteen participants who were interviewed in-depth, the youngest participant was 19 years and the oldest participant was 36. Majority were educated below secondary level and three of them were educated up to graduation level and beyond. Six respondents were currently married (two were married to a man, two to both a man and a woman and one each to a transgender and a woman) and remaining were single, never married. Eleven respondents self-identified as 'samakami' (purely homosexuals) and two as bisexuals. Ten respondents had some source of income, one of them was a commercial sex worker and one was a student.

3.3.2. Key themes

Five major themes were identified in this qualitative analysis: 1. Social discrimination for being MSM 2. Familial discrimination for being MSM 3. Discrimination within community 4. Impact of discrimination and 5. Coping with adverse situations. In the first phase responses were coded based on type of stigma along with their sources and in the second phase responses were categorized into enacted stigma (real experience of discrimination) and felt stigma (anticipated discrimination) as outlined by Scambler⁸⁷.

3.3.2.1. Social discrimination

3.3.2.1.1. Enacted stigma

Verbal abuse in neighborhood, public transport

Eleven respondents spontaneously reported at least one instance of discrimination in the society for being MSM. One of the primary reasons for provoking stigmatizing comments were feminine look, a womanly gait and effeminate mannerism. Some participants spoke very clearly about their experiences of homophobia in their lives. Many labelled them as criminal and promiscuous. One of the respondents shared his experience how public discriminated him by comparing him with a movie character who played the role of a eunuch pimp that was menacing and lethal.

“Society hates us; people tell my parents that your son acts effeminate. People around me taunt me by the name of Maharani since the release of that movie.” (Interview #1, 32 years, primary level educated, self-employed, married)

Another respondent narrated how society treated differentially effeminate and non-effeminate men.

“Say for instance, if I go to a medicine shop or use public transport with one of my friends who is also a kothi like me but not that effeminate people will only eye me in a most suspicious manner. You know some of my friends get embarrassed talking to me in public because of my appearance and avoid me. If I go to a local shop, the shop owner will behave differently as if I have committed sin. Apart from these, there are places where people pass derogatory comments, harass and misbehave with us. Irrespective of social status and educational level, they discriminate us, more so the lower class people with little education who use to throw bricks, stones at us. (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

One participant stated that *“Irrespective of my educational qualification and abilities, since my childhood I have faced or rather I am facing discrimination because of my sexual identification. People just crave to make fun of me and treats me abnormally. It seems I am a disgrace to*

Humanity and the world.” (Interview #3, 25 years, above graduate level educated, student, never married)

3.3.2.1.2. Bullying at school, job place and police station

These realities were often extended to school environments and many students were high school drop outs because of discrimination they faced in the school environment. The risk of academic failure seemed manifold higher among homosexuals compared to their heterosexual counterparts.

One of the respondents had similar experience at school

“I still remember, one of the most traumatic experiences I had during my school days. Three of my classmates including me have feminine tendencies/traits and essentially none of us were good at math. Our teacher discriminated against us and harassed us just because of our physical appearance. One day as a punishment he made us walk and ridiculed us before the entire class”
(Interview #3, 25 years, above graduate level educated, student, never married)

When pressed further he added

“Bullying in the school gets to the point where two of my friends who were good in studies decided to quit the school and gave up their future because they felt insecure and unprotected in the school.” *(Interview #3, 25 years, above graduate level educated, student, never married)*

He also added that discrimination was widely prevalent at workplace. He was denied employment because of his sexual orientation.

FGD revealed that they were also harassed, abused verbally, physically and extorted for money or sexual favors by law enforcement officers. Most of them believed that it would be unhelpful to contact police if they experience any kind of harassment. One of the respondents narrated how a police officer would start to laugh and berate him for daring to protest against indecent behavior in public.

“Hmmm, what have you done to instigate such behavior? Why it bothers you so much? Stay cool, you are not a girl. Dammm! It is common for people to believe that homosexuals should expect to be sexually abused” (FGD 2)

3.3.2.1.3. Physical abuse

Negative attitudes and violence towards MSM experienced by the respondents had an enormous psychosocial impact and extremely damaging for their well-being. Three participants reported experiences of rape, sexual assault and physical violence based on their gender identity which were often rendered invisible or dismissed outright.

One of the respondents stated that why he had let the assault go because he used the threat of public exposure.

“It was horrendous. I was raped by my next door neighbor. He told me to comply otherwise he would tell my parents. It was pretty scary you know. I was afraid and so had to comply with his sexual demands.” (Interview #1, 32 years, primary level educated, self-employed, married)

Another reported being raped when he was in eighth grade.

“I was so young that time that I didn’t understand what had happened.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

Another participant narrated one of his most terrifying moments in life when was just 15-year-old boy. He told how he and his MSM friends were beaten up after being sadistically raped by a group of perpetrators in a public place.

“Like women, we are also victims of sexual trauma. We were gang raped and beaten up in 2009. I was so incredibly naïve at that time that I didn’t realize what was happening. There was nothing we could have done. I was so torn up and terrified that I did not know what to do. I was afraid to speak out to my parents.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

The same respondent also added

“Yet, in another incident, one of my friends was walking home from his work at night. Six men grabbed him from behind and kind of raped him.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

3.3.2.1.4. Felt stigma

In Indian context social acceptance and social relationships interfere with almost everything a person does in life. It defines one’s social status and sense of self-worth. Thus, the pain of being excluded by society always keeps the sexual minority group under constant fear and stress.

Therefore, because of anticipated stigma and negative judgements, they are less likely to disclose

and more likely to conceal their sexual orientation from others. In this study, one participant described the fear of family rejection

“May be my wife has suspicions about my sexuality because of my girly behavior. To tell you the truth, she is a nice woman and not at all demanding. I will be happy if I can fulfill her wish and continue a clandestine homosexual life. I worry she won’t be able to handle it. But I shall be thankful if she can tolerate and stay with me even after knowing my homosexual identity”

(Interview #15, 35 years, secondary level educated, beautician, married)

Some could not afford to lose their social status and often disclosed their homosexual identity only to their MSM friends in anticipation of discrimination.

“Nobody knows about my homosexual identity except my MSM friends. I carefully hide my identity. I will be kicked out of my family if they realize that I am a gay.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

“I did not disclose that I am in a homosexual relationship and married to a man outside my community.” (Interview #1, 32 years, primary level educated, self-employed, married)

Family rejection following HIV disclosure was found to be the greatest fear among HIV-positive participant.

“What I worry the most is the side-effects of these drugs (anti-retroviral treatment). My family members who are not aware of my status become more concern about my deteriorating health and want to take me to a doctor. I fear that doctor will reveal my status to my family members and they be will be very upset and will reject me.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

3.3.2.2. Familial discrimination

3.3.2.2.1. Enacted stigma

Needless to say parents and families play a big part in discrimination against homosexuals.

Though majority in this study did not willingly disclose their status in the family, most of them were harassed by family members on suspicion of being homosexual. Some of them also believed that they were their parents' least favored child and described how their fathers abandoned them. Most of them experienced difficult childhood filled with rejection and shame. Many of them felt dejected when family members including their parents made assumptions about how they should act and behave, like somewhat conditioned against homosexual life-style. In this study, for example, one of the respondents expressed

“The biggest hardship for being homosexual begins at home only. They are the ones who discriminates against you the most. Like they use to say that you were born a boy so why do you do girly things? You should act like a real man and not like a woman. This shit happens all the time at home. The truth is that they are embarrassed by me.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

In addition, many homosexuals were emotionally and verbally abused by their parents or siblings at home.

“Except my mom everybody in my family discriminates against me. My dad and elder brother are highly homophobic. They are so abusive that one day I decided to go to police station to file an FIR (First Information Report) to save myself. They constantly see me as unworthy and tells bad about me. I cannot come out of my family as I do not earn much to sustain myself.”

(Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

Another added

“It sucks to be judged for using facewash and body lotion as all these habits are assumed to be exclusive characteristics of a girl.” (Interview #3, 25 years, above graduate level educated, student, never married)

3.3.2.2.2. Felt stigma

To avoid social embarrassment and to fulfill family obligation and expectations of friends many MSM eventually get married and have children.

One participant shared his experience

“I did not disclose my identity in my family. But when I was hanging out with my friends my mom kind of suspect that I might be ‘meyeli chhele’ (a gay) and I was forced into marriage against my wish in anticipation of social stigma.” (Interview #1, 32 years, primary level educated, self-employed, married)

Another stated that *“As anticipated when I came out to my parents it did not go well and they really want me to get married. I could not let them down and got married.” (Interview #15, 35 years, secondary level educated, beautician, married)*

3.3.2.3. Discrimination within community

3.3.2.3.1. Enacted stigma

Unlike his masculine counterpart, effeminate MSM were discriminated against within the MSM community. Participants stressed that straight-acting MSM distanced themselves from effeminate MSM as femininity in men was treated with disrespect and marginalization. Participants stated that some masculine MSM considered femininity as a symbol of weakness, delicacy, and dependence. Nearly five respondents reported feeling of being discriminated in the community at one time or another for being feminine. They became the target of jokes from his masculine MSM for being the submissive bottom and were often labeled as repulsive in their social network. They seemed to struggle tirelessly in anticipation whether they would be accepted by both straight and gay peers.

“There is so much discrimination in our community that it makes you wonder. One of my MSM friends who used to talk with me early now avoids me because of the way I act. He feels uncomfortable when we are on the street together.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

Another stated

“Men assert masculinity in the community by being top during sex. Effeminate MSM will always be considered lesser than their masculine counterparts. I ask them (the tops) not to straddle the masculine/feminine divide and irrespective of our differences, we should respect each other. Masculinity should not be an indicator of worth.” (FGD 2)

One participant shared

“I get hurt when some men reject me because I am a feminine acting MSM. They use me only for sex and then dump me at will. Damn! this macho male image is so glorified everywhere.”

(Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

Another also shared similar experience

“Nobody in our community likes lady boy like us. They reject us on the basis of our femininity.

The reason I think may be that they are attracted more to masculine MSM or I guess it would be hard for them to handle social embarrassment if they hang around with feminine men.”

(Interview #11, 26 years, graduate level educated, dancer, never married)

As described by one participant,

“You know in our community, based on social status, sexual roles and other characteristics, there are many sub-groups where MSM conglomerate. These sub-groups prefer to stay separate and do not interact much. They are likely to be hostile and suspicious to other group members.”

(FGD 2)

The same respondent shared his experience of how he was attacked by a group of Hijras ⁸⁸(a more identifiable MSM group, dress like a woman and perform distinct ritualized blessing during weddings and childbirth) in a public place and later released

“They thought that I am going to intentionally steal their money they earned and was put in detention. I showed them my identification card and tried to convince them. But I was released later only after their leader who knew me personally asked them to let me go” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

It is interesting to know MSM working in different NGOs or have different jobs also do not interact with each other. In addition, MSM who are feminine and avoid anal sex are also discriminated against and have hard times.

“Being a feminine MSM and not going for an anal sex I face problem during hookup with my masculine clients.” (Interview #2, 20 years, higher secondary level educated, worked as physiotherapist, never married)

Another disturbing dynamic that was reported was being abused, degraded and raped by other member in the community.

“There are guys who force us to have sex with them. So, we need to be very cautious.” (Interview #2, 20 years, higher secondary level educated, worked as physiotherapist, never married)

Of note, some expressed that HIV-positive MSM in the community are often shunned and less likely to get support from other community members. One of the respondents told

“If someone is detected positive, many in the community avoid talking to him.”

3.3.2.4. Impact of discrimination

3.3.2.4.1. Psychosocial effect

3.3.2.4.1.1. Depression

Being on the receiving end of a social snub often triggers a cascade of complex emotional reactions among homosexuals. The experience of being stigmatized was associated with many psychosocial health problems which included increased depression, suicidality and elevated level

of social anxiety. Many respondents reported signs of depression such as “sad, hopelessness.” Lacking usual experience of human attachment, they seemed to be living with repressed memories that often triggered uncanny feelings and terrible conflicts. All focus groups members reported a number of reasons attributable to increased risk of mental health problems among homosexuals included discrimination associated with non-conformed gender identity, unfulfilled womanhood, severe castration anxiety and inability to afford cosmetic surgery to enhance their physical appearance.

“It is so depressive to know that people will have a feeling that I am homosexual and make fun of me. Even we dress like a woman or act womanly with long hair and big hoop earrings, this is not going to be affirming of a woman. We cannot have kind of sexual relations that are designed to give life and continue the family lineage. We are profoundly broken.” (FGD1)

Another reported

“I thought that I am not doing something right. Now I have started questioning my own worth and I think I don’t have any. The shame is so intense that I become depress.” (Interview #15, 35 years, secondary level educated, beautician, married)

Being lonely was the major reason for being depressed

“I feel sad thinking that because of this (sexual orientation), nobody likes me and behaves differently with me. What can I do about this (my sexual identity)? It is an agonizing feeling to be so alone. Depression wrapped around my mind like a tight fitting shoe. I cried in silence, the most painful tears.” (Interview #12, 28 years, secondary level educated, unemployed, never married)

3.3.2.4.1.2. Frustration

One of the respondents stated that

“They are so frustrated with constantly being abused by the people that some seek to reverse their sexual orientation so that they can be the person physically that they are on the inside. Some are unhappy with sex change surgery and regret it. Some have too high expectations that often lead to disappointment and depression. They feel devastated over not being able to look better and they are so distraught with agony that they try to end their life” (Interview #2, 20 years, higher secondary level educated, worked as physiotherapist, never married)

“I felt so upset thinking I am the only person who is like this (homosexual).” (Interview #1, 32 years, primary level educated, self-employed, married)

Some stated that they experienced the feeling that they failed as men

“I am really confused who am I and who I like. Really confused as why other guys who are apparently like us are getting social recognition and why am I socially ostracized.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

Some felt bad/sad after being sexually rejected by male partner during hookup after the past intimacies. They perceived that men were not emotionally attached while having sex while they were deeply involved. They shared their experience of feeling used or cheated and were distressed at their partners’ disrespectful behavior.

“He says ‘You are not a girl. The thing is that I don’t get arousal on seeing you anymore’. I could see his frustration and I get mad when he only finishes out of pity. I feel cheap after giving

away my assets so easily.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

Some reported of feeling bad for discriminating against his friends

“Though people do not discriminate me directly but I feel bad when they discriminate my homosexual friends who grow hair and wear makeup like a woman” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married)

3.3.2.4.1.3. Suicidal thoughts and attempts

Social isolation, family rejection and low self-esteem were the major contributing factors for their suicidal thoughts. Their anxiety becomes so real and fearful that some of them admitted trying to kill themselves to resolve endless emotional pain.

“Growing up a gay is a very lonely process. I felt isolated, scared and did not think life was worth living. I tried to end my life as I was profoundly unhappy and could not take so much pain of discrimination against me.” (Interview #12, 28 years, secondary level educated, unemployed, never married)

HIV positive respondents told that living with HIV was the main reason for having suicidal thoughts.

“When I found out that I am HIV positive I was losing my mind and thought of killing myself.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

3.3.2.4.1.4. Craving for a stable relationship

“After reaching this stage of my life, I am now looking forward for a more settled relationship and wanting to be loved. But I had not found the right person yet.” (Interview #15, 35 years, secondary level educated, beautician, married)

3.3.2.4.1.5. Low self-esteem and low self-worth

Many respondents reported to have been suffering from low self-esteem because of the feeling that there was something about themselves that society disapproves and the perception how people would react if they knew their secret.

“I feel low being chronically bullied in front of my wife. At that moment I feel that I am standing alone and am stripped of all dignity.” (Interview #1, 32 years, primary level educated, self-employed, married)

“My history teacher proposed my name for class representative in my school but the language teacher refused to have me because of my high-pitched feminine voice. I was upset at my teacher for knocking my self-esteem. I was so hurt that I started thinking I am not worth.” (Interview #3, 25 years, above graduate level educated, student, never married)

3.3.2.5. Effect on daily life

3.3.2.5.1. Change in appearance

Some of them gave up social life with MSM friends because of fear of getting publicly ridiculed and mocked. Others became habitual to living a double life in this macho world where they need

to present themselves as masculine to avoid being bullied by their heterosexual counterparts. Some even learn how to perform masculine gestures to in order to blend with rest of the society and hide his sexual identity.

One participant shared his experience

“One of my MSM friends who used to be like us has completely changed now. He is going to the gym to build an overall masculine physique to look like a ‘tonna’ (man) and my god nobody can recognize him now.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

Another added that

“They are so frustrated with constantly being abused by the people that some seek to reverse their sexual orientation to be the person physically that they are on the inside. Some are unhappy with sex change surgery and regret it. Some have too high expectations that often lead to disappointment and depression. They feel devastated over not being able to look better compared to others and are so distraught with agony that they try to end their life.” (Interview #2, 20 years, higher secondary level educated, worked as physiotherapist, never married)

3.3.2.5.2. Difficulty in using public restroom

Most of the focus group members stated that using a public restroom (which are still almost gender segregated) was most difficult and embarrassing. Many experienced discriminations in public facilities which included dirty looks, disparaging comments, being forcibly removed from toilets and physical abuse.

“I am not comfortable in using men’s restroom. Sometime I have no choice but to make my way up to women’s restroom and make sure that no one is coming out or going in. If I hear someone else in there, nervously I scare them of and run into the stall even they shout that I am in the wrong facility.” (FGD 1)

“In case of emergency when we use men’s restroom they question about our gender, ridicule or make fun of us.” (FGD 1)

“Things become worse when you dress like a woman and cannot pee in public place in front of other guys even if you have an emergency. You know the main problem is a dread of being found out, my terrible secret. They will chase you and harass you.” (FGD 1)

3.3.2.5.3. Coping with adverse situations

Given constant fear of social exclusion homosexuals become desperate and struggle hard to cope with adversities in life without any support. Some of them faced difficulties in coping with homophobia and suffered from shame, self-hatred and subsequent low self-esteem. The mechanism of coping varied and some were situational based on their anticipated emotional impact.

Some increased their personal sense of self-reliance to minimize negative feelings associated with social rejection and started to live in this heterosexual world.

“Phew! I don’t care what people think of me or tell about me. I don’t care even if my wife leaves me. It (homosexuality) is not an activity or an intentional choice of life. We are attracted to

people of same sex and have no control over it.” (Interview #1, 32 years, primary level educated, self-employed, married)

*“As long as my mother supports me I don’t care what my distant relatives tells about me.”
(Interview #9, 19 years, secondary level educated, worked as a tattoo artist, married)*

“I choose not to say anything.” (Interview #10, 25 years, primary level educated, worked in factory, never married)

Some adopted a low profile to avoid raising suspicion in heterosexual and stigmatizing environments.

“Though I am quite comfortable with myself and sexuality, I need to be cautious about my femininity and mannerism (voice, walk) in public place so that people can’t connect me with my homosexual identity. It is so unnatural and exhausting that we have to try to look straight to hide our true self. We have seldom been asked what we want or what we like. I feel as if I am forced to be heterosexual man. I just wish I could be respected for who I am.” (Interview #3, 25 years, above graduate level educated, student, never married)

One of the participant shared similar experience

“I try to adopt myself according to the situation. I don’t expose my identity. But sometimes when I fail to conceal my feminine voice and extra bounce in my step people pass derogatory comments. I try to explain that it is unfair to discriminate against us and tomorrow someone like me may come out in their family too. No one is born gay or straight.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

One of the respondents shared his story about how his education/academic qualification saved him from being bullied in public place for being homosexual.

“When they started making fun of me, I begun to speak in English. They were very astonished to see my communication skill and went off without a hitch.” (Interview #3, 25 years, above graduate level educated, student, never married)

Some respondents told that they would try to convince public not to discriminate against MSM. However, sometime they had to fight for equality and justice.

“First I will try to convince people not to discriminate against us (MSM). But if they don’t listen then I would slap the shit out of them” (Interview #4, 32 years, primary level educated, worked as a male sex worker, never married)

“If they (people) call me ladies or laugh at me then I will waste no time in correcting them either by using abusive language or by making them understand that straight couple like them can give birth to people like us, it is not unnatural.” (FGD 2)

Some of them tried to avoid selected situations and individuals to minimize exposure to stigma

“It makes me feel bad when people smile at me regardless of the reason. But I ignore them and try to concentrate in my work.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

They reported that sometimes people passed discriminating comments indirectly within earshot of them with the intention of inciting a response. Some respondents said that they ignored provocations and behaved normally instead of freaking out.

“Say, I am walking down the street and I hear people calling me ‘Chhakka!’, ‘Moga!’ (closer to faggot or sissy). I would simply ignore it as I cannot change my identity.” (Interview #11, 26 years, graduate level educated, dancer, never married)

Another participant reported that when he was young people often said bad things about him which he did not feel good. He used to react and yelled at them. But over time he learned to ignore things in life

“Let them talk shit about me. I don’t care if they laugh of me and make disparaging comments. On the contrary, I feel proud that I could make these morons laugh at least.” (Interview #15, 35 years, secondary level educated, beautician, married)

He also added that how he had allegedly been inflicting burn injuries on himself to cope with emotional pain which had hit him hard.

“I feel sad when I think that I have been emotionally abandoned by my male partner. He has been using me for sex, money and everything. I tried to help him in every possible way but he never helped me even during my tough times. I feel so low that it’s no surprise I sometimes hurt myself. I burn myself with cigarette butts to get over the hurt and betrayal. I am so ashamed of being in a relationship with him.” (Interview #15, 35 years, secondary level educated, beautician, married)

Some participants reported how their partners supported them in regaining lost self-respect.

“I have a very supportive partner who helped me to overcome the difficult moments in my life. I thank him for being so considerate and holding my hands when I was really struggling.” (Interview #16, 27 years, graduate level educated, employed, married)

Almost half of the respondents admitted to receiving significant help and support from local NGOs serving MSM.

“We become disappointed as we are teased, harassed and scrutinized by our peers, siblings and parents. I feel so bad and lost for not getting any support from my anywhere, I try to talk to other people like me. This organization helped me to regain my lost self-respect and confidence.”

(Interview #3, 25 years, above graduate level educated, student, never married)

“They had been really supportive and continue to support me till date. I don’t have friends outside my community.” (Interview #9, 19 years, secondary level educated, worked as a tattoo artist, married)

“I was really depressed and was so ready to end my life. But after coming here (local NGOs serving MSM) I got relieved to find there are people like me in the society, I am not alone.”

(Interview #12, 28 years, secondary level educated, unemployed, never married)

3.4. DISCUSSIONS

Findings from this qualitative research revealed MSM were target of verbal, non-verbal and physical harassment in Indian society. Discrimination based on sexual orientation included seemingly benign jokes, malicious gossip, verbal abuse, maltreatment and physical assault. Non-verbal discrimination ranged from derogatory looks, taunting and shunning. Many of them faced rejection at their homes and experienced negative reactions from their parents. They also experienced discrimination within their own community, particularly based on physical appearance (effeminate vs more masculine MSM) and HIV positive individual was often shunned by community members. It was disheartening to find how immensely MSM were

affected by discrimination at different levels and how they had gotten used to it. For many of the participants even the anticipation of discrimination contributed to stress. Many of them reported depression and suicidal ideation. Most appalling was that majority of people were clueless or even careless about the pain and struggle MSM had to endure throughout their life.

Alike in other Asian countries ⁸⁹, Indian MSM had to negotiate their liberty, lifestyle and identities to adjust to the society's norm ⁹⁰. In this patriarchal society, family plays a crucial role in shaping sexual lives and sexual identity ¹⁴. Findings from FGD revealed that Indian culture defines women's identities in relation to the men in their lives, dictates women's subordination to husbands and denigrates femininity in men. These disparities are compounded by social norms that establish virility and sexual competence through marriage and childbearing only. Pre-marital or extra-marital sex is also a taboo and is more strictly enforced on women than men. Strict segregation of the sexes before marriage, non-availability of women, abstinence even within marriage, limited interactions between opposite sexes, create opportunities for sexual relief through contact with men ¹⁴. Although existence of homosexuals was evident from ancient carvings in temples and paintings since pre-historic time, denial of male-male sexual activity is high in Indian culture ⁸⁰. At the same time because of familial and social pressure for having children, many married MSM who secretly were having sex with other men were forced to engage in marital sex as a social duty ⁹¹. Researchers also found that as long as homosexual identity remained invisible Asian society was tolerant towards them ⁹⁰. Thus, fear about disclosure and subsequent abuse kept them closeted in the society and at home.

Apart from peer support and community support, family support seemed to be stronger predictor of life satisfaction, self-esteem and sense of self-worth among homosexuals in this exploratory research. Consistent with other studies ^{89,92}, this qualitative research also revealed that majority

of the participants whose sexual orientation became known to their families faced daily discrimination from parents, siblings and distant relatives. The impact of family rejection was traumatic and they felt profoundly hopeless. Previous studies revealed that as families refused to accept their children's sexual identity, many Asian MSM were forced into conventional marriage to ensure lineage continuity and posterity^{81,90} which also corroborated with the current study. The data from prior research work revealed that LGBT (lesbian, gay, bisexual, transgender) youths who experienced higher rates of family rejection were more likely to report having attempted suicide, depression, substance abuse and sexual risk-taking behaviors^{93,94}. Some researchers argued that family connectedness helped these young adults to deal with challenges and adversities with greater confidence compared to non-rejected ones⁹⁵. Many suffered from low self-esteem due to lack of empathetic handholding from parents. Some participants in the present study also perceived that counseling mothers would likely to reduce familial disharmony because of closeness to the mother and distance from the father. Therefore, irrespective of their sexual preference parents should embrace their children and should learn how to support them throughout their life. Thus, counseling parents regarding adolescent sexuality, sexual orientation and gay-lesbian parenting, involving them in adolescent care and developing family-based services would likely to reduce negative health outcomes among homosexuals.

It appeared that youths were bullied based on either perceived or actual sexual orientation every day at school. They reported hearing derogatory words such as name calling and some experienced physical harassment. As a result, many of them felt unsafe at school due to sexual orientation. On the other hand, research indicated that school safety was significantly protective against suicidal ideation and attempts among LGBT⁹⁵. Thus, instead of ignoring the harassment and discrimination faced by homosexual students, school authorities should be more concerned

and sensitive in dealing such issues so that students are comfortable with their gender identity at school and no youth's academic learning is harmed. Organizing homosexual sensitivity training in a supportive school environment might be helpful in reducing prejudices among arrogant non-gay students and ignorant school officials ⁹⁶. Interaction with parents at regular intervals might also benefit LGBT youths to regain their self-esteem.

Psychosocial well-being of the respondents seemed to be associated with frequency of bullying suffered during childhood and adolescence. Fear of loss rather than the prospect of potential gain seemed to drive decision making to remain hidden among study subjects. MSM including married persons who had led a heterosexual life often hated to lose the privileges of being a heterosexual by disclosing their homosexual identity. On the other hand, because of feelings about family obligations and responsibility, many of them were likely to cultivate the habit of suppressing their own sexual desire and did not socialize with homosexual friends. These acts of discrimination in general and from MSM community significantly associated with higher reported levels of stress and anxiety. A longitudinal evaluation of LGBT youth in United States revealed that lack of social support and victimization contributed to higher odds of suicidal ideation and self-harm among the participants ⁹⁷. In another study researchers emphasized that anxiety, loneliness and fear of rejection were likely to affect self-esteem and sense of worth which in turn might lead to self-stigmatization among homosexuals ¹². Thus increasing social support and advocacy might reduce negative consequences associated with discriminatory experiences.

Although the Governments have legal responsibilities to respect and protect rights of people, on the contrary, discrimination is perpetuated by policies and laws that demean MSM or their behaviors ⁸. Previous findings documented that in countries with criminal penalties for

homosexual acts the rate of HIV acquisition was much higher among MSM compared to countries without legal and policy constraints¹⁵ Thus, decriminalization of homosexuality would likely to increase their psychosocial adjustment and help them to come out from the closet of pain, despair and separation. It is important to raise awareness, sensitivity and educate general people who still consider homosexuality as evil and disgraceful.

There were some limitations in the present study. Due to small sample size and convenient sampling, the findings from this research could not be generalizable to MSM community at large. As they were recruited from a local CBO serving community, the respondents might be more comfortable in discussing their sexuality, discrimination, impact and coping than their whole MSM community. This could potentially underrepresent those who were shy and tend to conceal more. Thus, studies involving MSM who are fully closeted might reveal different perspectives. In addition, small sample size precluded the possibility of sub-group analysis. As this study was based on self-reported data, there might be under reporting of psychosocial impact and coping mechanism that were perceived to be less socially favorable. Despite the aforementioned limitations, the present study expanded our knowledge base and provided useful insights on issues of discrimination and its consequences in eastern part of India. To the best of our knowledge this was probably the first qualitative study that explored discrimination against MSM and identified several probable pathways that affected the psychosocial well-being of homosexuals. These findings might be helpful in elimination of discrimination against MSM provided they are incorporated into current HIV intervention and counseling programs.

To conclude, discrimination based on actual or perceived sexual orientation is an ongoing and pervasive problem among Indian MSM. There is no nationwide law that prohibits discrimination against sexual minority groups in this country. Findings from this qualitative study might be a

useful starting point for designing a culturally appropriate effective stigma reduction programs in West Bengal so that they can exercise their right to health, non-discrimination and freedom from violence. In addition, reducing HIV-related stigma is also essential to success of optimum utilization of evidence-based, effective HIV prevention and treatment technology. Therefore, care should be taken so that they receive dignity and respect they deserve at school, workplace and community.

CHAPTER 4: “WE ARE A MYTH, WE DO NOT EXIST” - A QUALITATIVE ANALYSIS OF SELF-DISCOVERY, EVOLUTION AND VULNERABILITIES OF MEN WHO HAVE SEX WITH MEN COMMUNITY IN KOLKATA, WEST BENGAL, INDIA

4.1. INTRODUCTION

India is a country of diversity and full of complex contradictions. Talking about sex is a taboo in a largely conservative heteronormative Indian society. Even today birth of a male child is considered a blessing who carries the family lineage while birth of a girl is regarded a burden. Indian society has set the stage for complete rejection of retrieval of gay soul into homosexual personality which again reinforces the patriarchal myth of male chauvinism in this country.¹⁴ The society feels threatened as homosexuality disrupts the natural hierarchy of genders by breaking strong heterosexist viewpoint held by Indian culture.^{14,79} Legalization of same-sex relationship in India appears to be a rollercoaster of giving rights and then taking them away. Homosexuality was criminalized under section 377 of the Indian Penal Code since 1860,⁷⁹ which was overturned by the Delhi high court in 2009 but was again upheld by the Supreme Court in 2013. This criminalization has perpetuated homophobic attitudes in India leading to widespread discrimination, exploitation and extortion even by the police who further violate their rights.^{38,80} Thus, the overwhelming desire of bonding erotically and romantically with another man remains unfulfilled dreams in this society that enforces codes regarding orientation and gender identity. Given such prevalent repression towards same-sex relationship and a higher risk of social exclusion men who have sex with men (MSM) are the most hidden HIV risk group in India.^{80,84} In the jargon of homosexual culture acknowledging one's same-sex attraction either to self or others seemed to be psychologically complex. Researchers had increasingly acknowledged that

children and adolescents who were growing up as sexual minority faced unique developmental challenges and were at higher risk for certain mental health problems.^{98,99} Moreover, factors promoting risk-taking behaviors among gay, lesbian and bisexual youths included widespread discrimination, family disapproval, social isolation and low self-esteem.⁵⁷ Research indicated that effects of homophobia, criminalization and self-stigmatization were significantly higher among young MSM compared to their older counterpart.⁸ Perhaps the most alarming fact is that children are often sexually exploited by adults (sexual predators) and other youths which they are not able to understand fully.⁸ On the contrary, young MSM are mostly overlooked by HIV prevention services partly under the stereotypic assumptions that adolescents will tend to maintain conservative attitude towards under-age sex. This presumption might be potentially harmful. Being increasingly exposed to sexually explicit material in movies, television and internet, children are sexualized quite early. Youths especially sexual minority frequently experiment with their sexuality, go for anonymous hook ups just for fun, often to resolve their sexual conflicts. Based on findings reported by Dudley et al.,¹⁰⁰ it seemed unprotected sex among adolescents was positively associated with differences in individual's personality trait included impulsive decision making, sensation seeking, anxiety and internalized homophobia. However, such sexual encounters involve considerable risk of contracting sexually transmitted infections because of frequent sexual intercourse, inconsistent condom use and coercive unprotected sexual practices.^{8,57} The risk is further exaggerated by a complex interplay of factors that included lack of awareness of HIV infection, low perception of risk, inadequate HIV education and support for sexual risk and limited knowledge of how to negotiate safe sex practice.⁵⁸ A recently published review revealed that the global epidemic of HIV among MSM was ongoing and public health efforts to contain this upsurge remained insufficient.¹⁰¹ A high

burden of HIV was also observed among Indian MSM with huge diversities in prevalence, incidence and risk behaviors across states.²³ Failure of Indian society in addressing the intricate complexity of gay life by deviating from the narrow boundaries of heteronormative patriarchal system might be one of the major contributing factors of this newly emerging epidemic among MSM in this country.

Given hidden nature of MSM population methods to access and assess this hard-to-reach population are extremely challenging. To date, most published studies on MSM in India were conducted in southern states and focused on identifying risk factors for HIV infection. Little is known about this population in eastern part of the country. However, the previous work illustrated that HIV vulnerability was substantial among MSM in West Bengal compared to the general population.⁵¹ In order to contain HIV epidemic it is essential to focus on sexually active population who have not had sex yet or just have initiated sex. To our knowledge very few studies had specifically examined the threats and opportunities of self-discovery of being gay as opposed to discovering they were heterosexual in Indian context. Existing literature revealed that virtually everyone in sexual minority group was exposed to hate terms and a sense of gender difference developed at a young age. Thus, the journey of self-discovery seemed to be inherently linked with self-hate, low self-esteem, depression and risk-taking behaviors. Therefore, in order to address the gap in knowledge of what might be the most meaningful risk-reducing intervention program good quality epidemiological data was essential. The objectives of this paper were to describe the growth of the gay personality, evolution and vulnerabilities of MSM communities in an urban city of eastern India.

4.2. METHODS

4.2.1. Procedure

Between August and December 2015 in-depth interviews (n=13) and focus group discussion (n=10) were conducted among MSM in a metro-city of Kolkata in West Bengal recruited from different venues by staff from a community-based organization. Eligibility criteria included being at least 18 years of age, history of anal or oral sex with a male partner in the last 6 months and were permanent residents of Kolkata. All eligible participants were recruited from a local MSM community-based organization based on the criteria outlined by the research team (venue type, sexual orientation, pre-dominant sexual role). Prior to starting the focus group or the interview an information sheet containing sufficient detail of the study was given to each subject so that they could make an informed decision about taking part. To protect respondents' confidentiality before, during and after conducting this research all interviews were kept anonymous without any personally identifiable information in a secured database. Using a semi-structured interview guide, all interviews were conducted by trained male research assistant in a private room either provided by the local CBO or referred by the participants. On average each interview lasted for 50-60 minutes. The study content and protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of California, Los Angeles and Ethics Committee of the National Institute of Cholera and Enteric Diseases, Indian Council of Medical Research, Kolkata. Verbal consent was obtained from all eligible subjects prior to interview. All interviews were audiotaped after taking permission from participants. In addition, written notes were also taken to keep record of participants' emotional expressions, body language and other relevant details.

4.2.2. Qualitative Interview Guide

A semi-structured interview guide was developed following an exhaustive literature search and interactions of the research team with MSM. A series of open-ended questions as outlined in the interview guide were asked to each participant to obtain data on self-realization of being gay, vulnerabilities and evolution of MSM community in Kolkata.

4.2.3. Data analysis

All audiotaped interviews were transcribed in local language by the primary interviewers preferably within 24 hours of each interview. Accuracy and consistency were checked by primary investigator and research team members. For extracting major themes, “Grounded theory principles” were used and open coding was employed to identify recurring ideas, themes and concepts. Discrepancies in coding was resolved by discussing with the research team. All transcripts were imported into ATLAS.ti 7.5 software for coding the quotations and analysis.

4.3. RESULTS

4.3.1. Demographics

A total of 23 participants provided information in this study. Information regarding self-discovery of being gay and sexual desire were extracted from 13 in-depth interviews while data on evolution and vulnerabilities of MSM communities in Kolkata primarily came from 2 FGDs. Age of the participants (n=13) who were interviewed in-depth ranged from 19 to 36 years. Two of them were HIV positive. Six of them were married and majority stayed with their families. Except three participants, majority were educated below secondary level and ten had some

source of income. Eleven respondents self-identified as 'samakami' (purely homosexuals) and two as bisexuals. Some respondents reported occasional transactional sex.

4.3.2. Key themes

4.3.2.1. Self-realization of homosexuality

Most of them had first gay sex experience quite early in life and some even consensually experimented with each other during their school days. Though confused, majority of the respondents felt good after having a surprise sexual encounter with a male for the first time in their life.

“It started when I was about 14. I had been hanging out and playing with one of my local friends, you know just teenager stuff. One day we had sex and I really liked it. At first I felt weird and conflicted about it. I didn't even like the idea of letting him perform oral on me. I shared my gay experience with my other friends and they burst into laughter. I was surprised to find that they also had similar experiences. They told me to relax, its normal to have homosexual sex, and assured me that I would be liking it. My god, it (gay drive) is so true, I get super horny when I think about men but it's crazy that I don't get sexually aroused by women. It (first gay experience) was so good that I kind of became addicted to real experience of gay sex. I had a craving for the male body all the time and used to go for anonymous hook ups in public place for my sexual release.” (Interview #1, 32 years, primary level educated, self-employed, married)

Another added

“So way back when I was 9 I had such (gay sex) experience with my schoolmate. He told me to come to his house one afternoon. After I went over to his house and there was us and almost an

empty house. He dressed me in his sis's clothes and started to place his hands around me. He scooped me up in his arms, fondled my boobs and began to kiss my lips slowly. I really liked it and it was such a climactic experience, my god. We secretly continued the relationship for 5 years before his marriage to a girl.” (Interview #15, 35 years, secondary level educated, beautician, married)

One of the respondents told that some of their partners were frustrated about women and started to date men

“My current boyfriend approached me. Actually, he had a crush on a girl during his college days but was too shy to approach her. After someday when he found that she was dating one of his close friends he got disappointed and frustrated. That's why he started losing interest in girls and met me.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

Some shared the story of first gay experience with an elderly neighbor boy

“I guess this thought process (self-realization of being gay) led around seventh or eighth grade. I remember back in seventh grade how I got an invite from a neighbor boy few years older than me to go fishing with him. It happened on a rainy day. It was raining hard, he grabbed me suddenly and started fucking me on the boat. I lost my virginity to this boy when I was just 13.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

One of the participants told

“I am not sure exactly when I realizes I was gay. I was naïve and initially anal sex was intimidating to me. After my first experience with a gay, curiosity kept creeping up on me and tempted me to try for sex. Since then I started having sex with men.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

Most of them shared that even before reaching puberty they felt like woman and started to indulge in feminine mannerism and activities during preadolescent period. They loved to dress up like girls and pretended to be girls as avenues to express their inherent femininity. Some even assumed a female role in the family and tried to mimic mothers' activities.

“As I was growing I figured out that I was different than other guys around me. I was not enjoying boyhood activities and was reluctant to participate in boy games thinking it to be physically injurious. I used to feel like a woman inside and acted feminine. I developed this feeling since I was 10 or 12 years old. Many guys had crush on me and used to offer me sex. I had casual sex with many of them and the whole experience was awesome.” (Interview #12, 28 years, secondary level educated, unemployed, never married)

One of the respondents expressed

“Since my childhood I am a bit girly. I loved to wear make-up and girly clothes. I felt freaking awesome to act like a woman. I started enjoying common taunts from other guys as ‘meyeli chhele’ (faggot or sissy boy) at young age. So funny and strange. I started liking boys and was inexorably drawn to them. After my first gay experience, which was incredibly painful but pleasurable, I was actually starting to develop a healthy understanding of my own sexuality.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

4.3.2.2. Vulnerabilities of MSM community

Many participants stated that they visited railway station to find sexual partners. Some of them were engaged in anonymous hook ups for own enjoyment while many turned to transactional sex to make a living. They used cruising points not only for searching sex partner but also to persuade his partner to agree for sex through a distinct communication culture with a code of

verbal silence. Participants also shared difficulties in identification of MSM who did not associate themselves with public gay culture and/or gay men.

“You (the interviewer) will not be able to identify MSM from their external appearance unless they are overtly feminine. But we can easily make out from eye reading, body language and hand signals. Then we approach each other and often exchange our contact numbers for casual hook-ups.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

Many young boys, particularly effeminate males, migrate to states of Bihar and Uttar Pradesh to participate in traditional auspicious ceremonies where they dress as a woman and dance popularly known as *Launda* dance. However, a range of physical and sexual abuse were reported by the respondents in such gatherings.

“Many of us go for Launda dance just to earn money in other states namely Bihar and eastern Uttar Pradesh where we dress up like a women and dance at social functions and festivals. It is pretty exhaustive and risky. We are often bitten, burned with cigarettes, mutilated with blades, assaulted and gang raped at knife point. They beat the shit out of us if we raise our voice.”

(FGD 1) & (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

“I need money for my survival. I have no choice. I need to go there (Bihar for Launda dance) because I have no money.” (FGD 1)

“They do not respect us. As night grows dancing become increasingly vulgar and disgusting. During dancing those drunk bastards come to us, use to touch our private parts and harass us. They often hit us with brick or a chain if we stop dancing. They will beat you until you bled and many times they refuse to pay. Horrible humiliation.” (FGD 2)

One of the participants shared the fatalistic attitudes of HIV positive MSM who would deliberately infect others out of revenge but were less likely to admit such practice.

“Many positive MSM who themselves were a victim just don’t care about giving other people the infection and these perverts lie about their HIV status when they have sex. They say why people discriminate against us, why they abuse us? We will infect others too in the process (during sex). In many cases they perceive it to be a part of a homicidal sexual fantasy. They will hide this issue (payback mission) as they don’t want people to even know that this behavior exists in gay community.” (Interview #2, 20 years, higher secondary level educated, worked as physiotherapist, never married)

One of the respondents was involved in sex with men to earn money to meet his girlfriend demands

“I have a girlfriend. How I will meet her demand? I need money. It (sex with men) is serving me tow purpose----you are satisfied and I am getting money. No big deal.” (Interview #15, 35 years, secondary level educated, beautician, married)

4.3.2.3. MSM venues in Kolkata

Majority of the participants were aware of congregation points in the city. There were mainly two types of male sex venues in Kolkata- Street-based or public sex venues for example public parks, public restrooms, racecourse and railway stations and indoor settings for example massage parlors, hotels, bars and private apartments. Apart from these, the Internet became the most popular method for seeking casual sex partners.

“Before ‘90s people were not much aware about existence of MSM community in Kolkata. Because of social stigma and harassment MSM were almost closeted except few transgender people who started to gain prominence in public but very slowly. However, most MSM used to congregate secretly in public places. Though not exhaustive, there were various locales for

meeting partners in Kolkata during '90s included public parks [Dhakuria lake & Minto Park in South Kolkata while Kadapara lake in East Kolkata], public restrooms [Zigzag toilet at Dharmatala and Sealdah], pornographic movie houses [Dharmatala, Rajabazar], racecourse, foot bridge (near Ultadanga), over bridge (near Golpark, Gariahat, Tollygunje) and railway stations. These cruising areas are still in place where MSM search for and negotiate sex with a stranger. Some of these public places are so open you know you can easily find men, sometimes in women's cloth, who are willing to give you deep jerks at a bare minimum charges." (FGD 1) & (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

"During pre-computer era the likely pick -up places were in parks, railway stations, public toilets and some private referral. I have heard that Dolphin Hall night club at central Kolkata was a popular place for hook ups in nineties but now had been demolished." (FGD 1)

"At one time public toilets at major entry points of our city were the main cruising points but after the police raid many people stopped coming." (FGD 2)

"There is a place near Dumdum metro station where kothis use to meet in the evening. You will find men both with long hair and short hair." (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

"Many gay men seek customer from fellow passengers while traveling in local trains. They fix up a station or a particular compartment or a specific route or a specific time or a specific day where they negotiate a transaction for sex or pick up men just for fun. All you need is to identify a specific train by the time it leaves a particular station." (FGD 1)

"You can find clandestine hook ups in hair salons. They on the surface will wash hair or do hair cutting but also do the business (casual sex) in the establishment. They call clients by phone number or just text them for dating and sex. I have also seen people seeking customers in

overcrowded platforms or bus stations, we call them flying field.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

Apart from street-based settings there were some common indoor settings including massage parlors, bars, hotels and private apartments. These included advertisement, communication about fees, services and negotiating condom use. An increasing number of homosexual masseurs and erotic massage parlors were reported by the participants in the city. Many men resorted to clandestine meeting and used male sex workers masquerading as masseurs. The owner of the parlor mostly fixed appointment to have sex for money or other rewards and also provided private rooms/spaces for massage services and sex.

“Massage industry is booming in the city where gay or straight men come and look for a hot guy to rub them down. They also offer erotic massages or more intimate touching to clients. A trip to massage parlor is much easier and sounds classier than hiring a hooker. They (MSM) really make great money from there.” (FGD 2) and (Interview #1, 32 years, primary level educated, self-employed, married)

“I came to know about massage parlor from one of friends. He was talking to me about this and discussed how to make money as a prostitute or masseur in parlor. Massage parlors are a new favorite. I started going to parlor with him. There are random guys, some of them are really hot and many are body builders. They will entice you for sex. Clients will be asked to choose from them and rates are different and masculine acting men have higher rates. There are different clients mostly old men seeking young guys. I have never seen students coming here.” (Interview #1, 32 years, primary level educated, self-employed, married)

“I know a particular pornographic movie hall in the city where only MSM use to go over the weekends during night show times. You can see real sex scenes where about 300 MSM are

having open sex in the dark.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

“I have no regular source of income. I use to go to massage parlor intermittently for sex work only when my friend informs me about potential client.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

MSM used various websites for sex seeking that ranged from membership-based sexual networking websites to anonymous online bulletin board, internet forum, blog etc. The impact of internet-based hook ups on sexual health appeared to be substantial.

“Over the past decade Internet became the primary source of sexual partnering. Thus making contact with other gay men became much easy. In the beginning Planetromeo.com or PR, a gay hook up website, was the most popular in Kolkata where our seniors used to pick partner for random sex. At present Facebook, WhatsApp and Video calling IMO are the most popular sites where we meet partners.” (FGD 2)

4.4. DISCUSSION

To the best of our knowledge this was the first qualitative study that explored self-realization, evolution and vulnerabilities of MSM communities in a metropolitan city of Kolkata, West Bengal. The previous study which was conducted among a consecutive sample of MSM visiting HIV sentinel surveillance sites in West Bengal between July and September, 2011 revealed that HIV risk among MSM was about 18 times higher compared to the general population.⁵¹

Although the HIV burden was found to be considerably high among MSM in West Bengal they were under studied and underserved. The current study revealed that homosexuals were still living with dark feeling and uncanny intuitions in the metro city of Kolkata. Against the

backdrop of hostile social environment, the seeds of emerging gay soul were still locked in horror in this state. It appeared a person's membership in a sexual minority exposed them over time disproportionately to elevated levels of stress associated with stigma, rejection, sexual assault and hate crimes that lead to worse mental and physical health with subsequent higher healthcare expenditure.

Consistent with prior research,^{94,102,103} participants in this study initiated sexual activity quite early in life, some even at age of 9 years. As observed in other study¹⁰² many of them reported to have received or given oral sex and anal sex, a persistent threat for HIV infection. It was also observed that peers exerted major social influence on adolescent sexual development and had some bearing on their decisions about sex which corroborated with previous findings,^{94,104,105} Peers (especially same-sex peers) effects seem to operate at different levels which included being the major source of information about sex, providing settings for having sex, exerting pressure to engage in sex and serving as role models.¹⁰⁴ Adolescents' propensity to experiment, curiosity and pressure from peers are believed to be associated with early sexual risk taking behavior, poses a high risk for contracting HIV.¹⁰⁴ Researchers concluded that same-sex activity began early in life, at around 14- 16 years,¹⁰³ most often in school and family environment. Researchers have argued that their homosexual attractions never change and may grow stronger over time. Majority of them do not identify themselves as homosexuals and likely to associate their behavior with sexual desire and opportunity.¹⁴ In absence of models of same-sex relationships, the process of learning to relate peers as friends or potential romantic and sexual partners might be more complex among gay youths compared to their straight counterparts.¹⁰⁶ Results from this study and prior research⁶⁸ demonstrated that desperate longing to be loved, to get physical

contact, to be approved of and cared for often led to a tempestuous experience of insane jealousy, agonizing insecurity and inner conflict with sexual orientation among homosexual youths.

“I feel jealous and inadequate when I find some of my gay friends hanging out with another guy, romantically or in a platonic way. It bugs me and I really get upset. I feel like why not me, I feel like snatching the guy from my friend.” (Interview #15, 35 years, secondary level educated, beautician, married)

Yet, because of overpowering shame and social oppressions they often start to hate their hidden homosexual instinct and try to outwardly exhibit heteronormative behaviors for their own safety.⁶⁸ Although many MSM secretly interact with other men not only to overcome this suffocating feeling of anxiety/stress but to boost self-confidence, yet majority of them vehemently deny their sexual practices. The easiest places to meet such people were gay bars, massage parlors and other cruising points where they were more likely to engage in risky behaviors.^{106,107} Under the presumption that sex symbolizes physical intimacy with women only in Indian culture, many MSM referred male-to-male-sexual-contact as play or time filler or temporary adventure or way of making money.¹⁰⁸ Thus, providing the same legal and social recognition of homosexual relationships will likely to reduce prejudice and discrimination against sexual minority groups. In addition, it will help to promote family stability and foster psychological, physical and social wellbeing among them. Given strong link between peer/partner relationships and sexual behavior among troubled youths⁹⁴ it is essential to emphasize the critical role of peers in HIV prevention programs. Providing gay-sensitive HIV instruction in school was found to be an effective strategy in reduction of high-risk behaviors among adolescents for example less substance use, less recent sex and reported fewer sexual partners.⁹⁶ Thus promoting comprehensive educational program in educational institutes

regarding normal adolescent development, sexual behavior and consequences of high risk behaviors irrespective of sexual orientation may be the most effective intervention for protecting these sensitive and vulnerable homosexual youths in Indian society.

In parallel with the globalization of gay movement and establishment of several gay groups in other parts of India [Bombay Dost, Sakhi, G.A.Y, Counsel Club, and Friends India] during nineties,⁹¹ collective organizations on issues of homosexual rights started in Kolkata with foundation of Naz Kolkata Project, Prazak Development Society and Prataya Gender Trust with the support from Naz Foundation (India) Trust under the first international partnership, Naz Foundation International, UK, one of the largest non-profit organization of South Asia.⁹¹

Subsequently in 2001 a community-based organization named People Like Us (PLUS) Kolkata was informally formed to protect and support MSM, transgender people and sex workers and finally got registered under the Society Registration Act (1961) of West Bengal in 2003 with funding from Department for International Development (DFID) UK.¹⁰⁹ PLUS continued to expand on its commitment to serve sexual minority group and launched Asia's first shelter home for trans people, Prothoma, in 2008. Each year an estimated 2600 vulnerable transgender homeless youths receive support and counselling from Prothoma.⁷³ Another state-wide network of thirteen community-based organizations (CBOs) named MSM Action Network for Social Advocacy (MANAS BANGLA) targeted intervention (TI) project supported by West Bengal State AIDS Prevention and Control Society (WBSAPCS) and National AIDS Control Organization (NACO) was initiated with the objectives of serving sexual minority (marginalized males) across the state of West Bengal in 2005 but was closed in 2012 due to sudden withdrawal of fund.¹¹⁰

Presently there are many well-established public venues in almost all parts in Kolkata where homosexuals congregate and seek sexual partner. These gay cruising areas are widely dispersed in metropolitan areas often away from well-established trafficked areas and residential places. Respondents revealed that public sex venues were preferred by most MSM for anonymity, darkness of night-time cruising and the sexual culture of silent encounters which corroborated with prior findings.¹¹¹ In addition, they used these cruising points not only for searching sex partner but also to persuade his partner to agree for sex through some non-verbal behaviors. The results also revealed that some of the respondents who did not have a steady source of income (intermittent or irregular job) had to offer sex in exchange of money for their survival (survival sex).³⁹ Thus, they become vulnerable to HIV because of their occupation as sex worker which often involved unprotected anal intercourse with sero-discordant partner or partner with unknown status.^{39,112}

Respondents also shared that due to intense fear of being embarrassed in public married MSM were often engaged in anonymous hurried sex with a stranger putting themselves at risk for acquiring sexually transmitted infections including HIV which corroborated with a previous study.³⁹ Hence, having a good knowledge of these high risk behaviors and sex venues might be helpful in designing appropriate risk-reducing interventions for MSM in India. HIV prevention programs to be effective and sustainable, it is essential to choose the right time when most MSM are available, right place where they mostly gather and right person who not only knows about HIV but understands MSM community.

Consistent with prior studies,^{113,114} majority of the participants reported to have extensively used Internet for seeking sexual partner. Evidence revealed that an increasing number of MSM were using gay hook up websites to look for sex, sometime to meet their first sexual partner.¹¹³ This is

of concern as seeking sex online was found to be associated with more high-risk behaviors than in traditional venues. Research in Los Angeles and New York found that men who seek sex online were likely to be younger, polysubstance users, suffer from sexually transmitted infections⁷⁴ and have higher number of sexual partners and higher rates of unprotected sexual intercourse.³⁶ These facts underscore the need for extensive research to better understand gay men's sex venues and different gay dating sites/app so that the target group might be intervened upon before any risk-taking behavior occurs.¹¹⁵ In addition, distribution of free condoms, lubricants and safer sex educational materials might be much easier if experts are aware of gay cruising areas. Further, having a good knowledge of these gay networks and gay hook up websites may be helpful in designing web-based interventions for men online and also in linking young MSM to HIV prevention, care and treatment. Care should be taken so that HIV prevention messages are simple, interesting and complete.

Yet another disturbing fact that was reported by the respondents was sexual exploitation of a sub-group of MSM community self-identified "*Kothi*" (predominantly receptive, more feminine)¹⁴ and transgender group who used to participate in "Launda dance" in states of Bihar and Uttar Pradesh. Similar experiences of violence and extortion were also reported in previous studies by Dey et.al.¹¹⁶ and Dasgupta et al.¹¹⁷ among MSM in Kolkata. Male-to-male rape and gang rape were reported to be very common in such gatherings. *Launda* community started in 2007 where a group of young boys (mostly *kothis*) aged between 15 and 25, mostly from poorer backgrounds migrate to rural belts of Uttar Pradesh and Bihar twice a year (April and October) to participate in dance program. They dress up like a woman and dance in public functions and marriage ceremonies. They come from different states of India with disproportionate number from the state of West Bengal. Money, sex with men, freedom through anonymity and securing

identity were some of the reasons cited for participation.^{116,117} Rating of dancers depend on age, look and dancing capacity. However, this culture of *launda* dance expose young MSM to organized patterns of exploitation which includes prostitution, violence, sexual assault and HIV risk. Such exploitations are best ignored and are often treated with contempt. Therefore, raising awareness regarding vulnerabilities associated with the tradition of *launda* culture (forced male prostitution and exploitation) among young MSM through appropriate counseling are likely to mitigate the unheard and unseen suffering of *launda* dancers in India.

The current study has many limitations. This study being an exploratory study with a small sample size and convenience sampling, the findings might not be generalizable. Views and opinions expressed regarding self-discovery, evolution and vulnerabilities were all self-reported, so chances of information bias could not be completely ruled out. In addition, experiences of homosexuality and stories of exploitation might differ among MSM who were too shy and afraid to participate.

Despite these limitations, this qualitative study provides a useful description of the process of self-discovery, first gay experience, evolution and vulnerabilities of MSM communities in the capital city of Kolkata, West Bengal. The data offer relatively strong evidence about different cruising points in this city and strategies how MSM search for and negotiate sex. This information will help to raise awareness among policy makers and public health experts that MSM are distributed throughout the city of Kolkata and how they are at greater risk for adverse health outcomes. Findings of current research highlight the imperative to incorporate methods of gay-centered analytic psychology in individual and group settings to tackle the persistent vulnerabilities of MSM community in this metropolitan city. Given communication about stigmatized identities occur in more complex social context, there is a need for more extensive

research on the development of sexual self-concept and ways of integration of sexuality into one's identity. It is also crucial to ensure equality, respect, dignity and a sense of belonging through community empowerment initiative so that this minority group can envisage the future.

Chapter 5. “Dark, unfathomable but a reality”- An exploratory analysis of risk behavior and practice among men who have sex with men of West Bengal, India

5.1. INTRODUCTION

Though thirty years have passed since detection of the first AIDS case among men who have sex with men (MSM) in USA, the myth that HIV is a gay disease is still haunting society. As per UNAIDS estimate, about 36.7 million people were living with HIV (PLWH) and 2.1 million new infections arose at the end of 2015 worldwide.⁶² Excluding Africa, second highest number of people living with HIV was reported from Asia and Pacific (PLWH=5.1 million, new infections=300000) in the same year.⁶² It is of great public health concern to observe that the global HIV epidemic is growing unabated among MSM clearly indicating miserable failure of current prevention strategies in reaching this population.^{101,118} Male-to-male sexual contact accounted for a significant proportion of all new HIV infections each year. Perhaps the most alarming fact is that a high number of MSM who are living with HIV have not been diagnosed yet. The primary concern for late presentation are adverse health outcomes and higher likelihood of death.¹¹⁹

There was little acknowledgement of existence of men who have sex with men (MSM) and their role in HIV discourse in India.¹⁴ Talking about sex is a taboo and issue of homosexuality still raises a lot of eyebrows in conservative Indian culture which centers on marriage and children.⁸⁰ There were about 2100000 people (adults and children) living with HIV in India with an incidence rate of 0.01% among adults aged 15-49 years.¹ Although heterosexual contact remained the major route of transmission, HIV infections attributed to male-to-male contact

made up a significant percentage of HIV infections in this country. Of estimated 289 444 MSM in India, 4.3% were living with HIV at the end of 2015.¹

Alike in other countries, low self-perceived HIV risk,¹²⁰ early exposure to high-risk behaviors,¹²¹ under-utilization of HIV prevention services and unknown HIV status¹²² were some of the major contributing factors driving HIV among Indian MSM. Although Asian men were twice likely to report same-sex desire and attraction than Black or White men, they were less likely to admit same sex practice.¹⁰³ This is not surprising to observe this as Asians do not accept homosexuality but remains tolerant as long as this issue remained invisible.⁹⁰

There had been a gradual shift in the field of HIV prevention with greater emphasis on anti-retroviral treatment and pre-exposure prophylaxis. Although antiretroviral therapy coverage among people living with HIV increased from 2010 level, still less than half of HIV positive people in the Asia and Pacific region did not receive treatment in 2015.⁶³ Therefore, prevention remains the cornerstone of the current fight against HIV/AIDS epidemic in resource-poor settings including India. However, people are ashamed to discuss about HIV and many see it as a scandal in Asian countries. This is more complex for people with stigmatized identification and behavior for example MSM. Prevention experts found out that discrimination associated with same-sex relationships as the greatest barriers to accessing essential HIV prevention services, testing and treatment.²⁰ Thus in an effort to reduce HIV epidemic silence surrounding HIV need to be broken so that they can communicate and access basic HIV prevention services.

Although there had been a significant shift in political will and support of Indian Government regarding HIV program, uptake of voluntary testing and counseling remained low among MSM and thus could not be linked to prevention, treatment and care.¹²³ Given disproportionate burden of HIV among Indian MSM understanding the complex contexts in which this group is exposed

to high risk behavior appeared essential to contain HIV epidemic in this country. However, there has been little efforts in addressing several social and environmental determinants of HIV which are of particular relevance to HIV control among MSM. Inadequate or unreliable epidemiological data on HIV transmission among MSM in eastern part of India thus called for a detailed investigation. The objectives of the current paper were to explore various risk factors of HIV among MSM in a metro-city of eastern part of India.

5.2. METHODS

The present study was conducted in Kolkata, West Bengal between August and December 2015. Though Kolkata is the capital city of West Bengal with a population of about 4.57 million (Census 2001)⁴¹, the MSM community is largely underground.

In-depth interviews were conducted with 13 MSM in Kolkata between August and December 2015. All 13 participants who meet the eligibility criteria- at least 18 years of age, had history of anal or oral sex with a male partner in the last 6 months and were permanent residents of Kolkata. were recruited. A local community-based organization providing services and shelter to sexual minority group referred the study subjects to the research team. The study content and protocol was reviewed and approved by the Institutional Review Board (IRB) of the University of California, Los Angeles and Ethics Committee of the National Institute of Cholera and Enteric Diseases, Indian Council of Medical Research, Kolkata. Verbal consent was obtained from all eligible subjects prior to interview. Prior to starting of interview information was provided to each subject regarding the study in a language they fully understood. All interviews were anonymous and conducted by trained male research assistants in a close room to protect

confidentiality of the study participants. An interview guide was prepared after conducting a thorough literature review on probable themes and sub-themes. Based on interview guide information was gathered regarding HIV-related knowledge, sexual behaviors, disclosure of HIV sero-status, substance abuse, HIV testing, and sexual practices. Participants were also asked about barriers and suggestions for improving HIV prevention program for MSM in West Bengal. All interviews were audiotaped after taking permission from the participants and were transcribed in local language. Each interview lasted for 50-60 minutes.

Grounded theory principles were used to inductively analyze the audiotaped transcripts for extracting major themes. Repeated ideas were identified through thorough readings and were organized into categories. ATLAS.ti 7.5 software package was used for data storage, coding and analysis. Discrepancies in coding were discussed among research team members until a consensus was reached and revised accordingly.

5.3. RESULTS

5.3.1. Socio-demographic characteristics

Except one none of them declined to participate in the study. A total of 13 MSM were interviewed in-depth. Of total 13 participants who were interviewed in-depth, 2 identified themselves as bisexuals and rest (n=11) considered themselves to be purely homosexual. Majority (n=7) of them did not marry ever, two married to a man, another two to both man and women and of remaining two, one was married to a transgender and other to a woman. Most (n=10) of them received education up to secondary level. Only five respondents seemed to have some regular job. Almost all of the participants were living with their families.

Major themes identified were HIV-related knowledge in general/transmission/prevention, risk-behavior [sexual behavior (sexual partner, relationship and type of sex/sexual role preference/sex with a woman) and substance abuse] and practice (condom use/HIV testing/disclosure of HIV status), barriers to accessing health care and suggestions for improving services related to MSM health.

5.3.2. Assessment of risk

5.3.2.1. HIV related knowledge

Most of the participants interviewed exhibited higher levels of HIV-related knowledge except one who believed that HIV is non-infectious

“If someone is HIV infected, first he will lose appetite, feel weak and then will have fever. Most of them hide their symptoms because of fear of being HIV positive or shame surrounding HIV. But I think they need to see a doctor immediately even they don’t feel that sick. I believe prompt medical attention including HIV testing, counseling and treatment is the best way to stay healthy.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

“I heard it from my fellow friend who was sero-converted and tested positive few months back. Initially I was not aware of his status. He was really sick and his health was deteriorating every day. I was very worried and asked him to see a doctor. He came to me and shared his experience. He had unprotected sex with an anonymous guy who claimed to be clean. He developed symptoms few weeks after exposure. At first few granular lesion about the size of a pin popped up around his anus and after someday he started to have pus coming from his anus. After he had tested positive he was devastated and wanted to end his life. He neglected his health, did

not take medicines and died.” (Interview #15, 35 years, secondary level educated, beautician, married)

“HIV is a virus and is non-infectious. But I know you need to use condom during sex otherwise this bug will enter your body. I don’t know much.” (Interview #11, 26 years, graduate level educated, dancer, never married)

“This (HIV) is sex-related disease. You get it if you don’t use condom.” (Interview #10, 25 years, primary level educated, worked in factory, never married)

Participants identified some groups who are at higher risk for HIV. Commercial sex worker was the most common group mentioned by them followed by truckers, migrants, intravenous drug users, drivers and transgender. Of note, two respondents considered Muslims to be another risk group. Seven participants told that people living with HIV could look and feel healthy for many years and one could not tell by looking at him. The only way one could know was to have a blood test for HIV.

5.3.2.1.1. Knowledge regarding transmission

Majority of participants were aware about possible routes of HIV transmission. Everyone shared that unsafe sex as the commonest mode of HIV acquisition.

“HIV is acquired through four major routes-unsafe sex, from mother to child, blood and the other one I forgot.” (Interview #1, 32 years, primary level educated, self-employed, married)

“You can get HIV through unprotected sex, sharing needles and syringes and from mother to child.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

Few had misconception regarding routes of transmission

“You can pick up HIV from using unsterilized syringe, blood and from mother to child. Though not sure, people say that you can get it from saliva.” (Interview #3, 25 years, above graduate level educated, student, never married)

“You can get it from sharing food with a HIV-positive person. So I use to throw away my leftover food on my plate.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

5.3.2.1.2 Knowledge regarding prevention

5.3.2.1.2.1. Condom and lubricant

Almost all of the participants were aware of the need for using condom and its potential role in HIV prevention. It seemed that very few participants were aware of risks and benefits of lubricant use.

*“As a precaution I will use condom during pushing if my partner is detected positive.”
(Interview #15, 35 years, secondary level educated, beautician, married)*

“Hiding behind the condom is the best way to protect yourself.” (Interview #1, 32 years, primary level educated, self-employed, married)

“Being HIV positive I need to be very to be very cautious. As risk of picking up HIV increases if there is a cut or sore in your anus, I always prefer to use condom during anal sex irrespective of my sexual role (topping or bottoming).” (Interview #4, 32 years, primary level educated, worked as a male sex worker, never married)

5.3.2.1.2.2. HIV testing

Almost all of the participants were aware of routine testing and counseling at designated Integrated Counseling and Testing Centers (ICTC) in Kolkata.

“You will get tested for HIV free of cost at these ICTCs at NICED (National Institute of Cholera and Enteric Disease), NRS and other Medical Colleges. I go there at regular intervals, say, after 2-3 months to check mine.” (Interview #15, 35 years, secondary level educated, beautician, married)

“I had HIV tests at ICTC few months back and it was negative.” (Interview #3, 25 years, above graduate level educated, student, never married)

5.3.2.1.3 Knowledge regarding disease outcome

Two of the participants believed that HIV is a life-threatening condition.

“HIV is a killer disease.” (Interview #16, 27 years, graduate level educated, employed, married)

“As far as my knowledge goes, currently there is no cure for HIV.” (Interview #16, 27 years, graduate level educated, employed, married)

5.3.2.2. Risk behavior

5.3.2.2.1 Sexual behavior

5.3.2.2.1.1. Sexual partner, relationship and type of sex

Nearly half (n=7) of the participants reported of having a stable relationship with a regular partner. The average length of relationship varied between 1 year and 10 years. One of them broke up after 9 years of relationship with a man. High level of indirect promiscuity (primary

source of income is not prostitution) was observed among the study participants. Despite having fixed and regular sex partner, five of them were also involved in paid sex work. Furthermore, among participants who admitted being involved in sex work, two of them were married both to a man and a woman. Three participants admitted that they resorted to sex work just for a living.

“At one time I made money while cruising in local trains but now I use to go to other public places to find guys to have sex with me. I earn my living through “Khajra” (sex work).”

(Interview #4, 32 years, primary level educated, worked as a male sex worker, married)

“I work as male prostitute in massage parlor to make extra money.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

One of the respondents shared his experience how he was seduced by the temptation of insatiable need for sexual pleasure and started visiting parlor only for sex.

“Sometimes I become overwhelmed by desire to be touched and played with. The desire become so intense that I would go to massage parlor. I feel very naughty, dress like a woman and try to attract attention of other guy. I use to pay money for this you know, otherwise I will be in a perpetual state of frustration.” (Interview #15, 35 years, secondary level educated, beautician, married)

5.3.2.2.1.2 Sexual role

Five respondents reported being on the receiving end of anal sex (receptive partner), one provided insertive anal sex (insertive partner) and another reported being versatile (both receptive and insertive partners) but others did not explicitly define their sexual role. However, participants often alternated between being tops and bottoms for seeking mutual pleasure and it was mostly situational.

“I take on the female role while having sex with a man.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

“Usually I play the bottom. I only top if my partner wants me to do so.” (Interview #1, 32 years, primary level educated, self-employed, married)

“I insert ahhhhh.....my penis into partners’ ass during sex.” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

5.3.2.2.1.3 Sex with a woman

Only five of them had experience of sex with a woman. None of them reported having sex with a female sex worker. One of the participants described possible reasons why men love to engage in sexual activity with other men

“Men are easily available for hook up and you can experiment something new in different positions. Trilling experience. Women generally prioritize a man’s social status over his physical appearance. Compared to women anonymous men are readily available who can help you in sexual release and more over the issue of pregnancy risk does not arise.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

5.3.2.2.2. Substance abuse

The current study revealed some participants took alcohol before sex and believed that it helped them to have great sex. None of them admitted taking drugs in any form.

“If it is raining hard or very cold, I start to sip one or two beer to stimulate my mood for sex. I have heard drinking before sex inhibit your ability to attain an erection and orgasm. It tends to take longer time to reach the climax and you enjoy a hotter sex. It’s the easiest way to last as

long as you want in bed and satisfy your partner.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

“It (drinking) helps people to overcome their sexual inhibitions or anxieties and literally guarantees better sexual performance.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

“I prefer to drink before having sex. It is essential for sexual arousal and orgasm.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

Some avoided alcohol before or during sex because of either past bad experiences or apprehension of harmful or offensive contact.

“Boozing will definitely affect your sex life. You become sluggish and sloppy while making out with a stranger and when it comes time for sex, you can’t get it up. Even if you are having sex after copious drinking it may not be as pleasurable as it would be without it.” (Interview #3, 25 years, above graduate level educated, student, never married)

“If you are combining sex and alcohol you are more prone to physical injuries. I believe drinking makes it easier for men to feel comfortable forcing sex and they become violent. You are out of your mind and your brain is sleeping. Power to make smart decisions plummets. You are also at risk of acquiring HIV. You are more likely to have unprotected sex with a stranger during such unplanned sexual encounters.” (Interview #16, 27 years, graduate level educated, employed, married)

5.3.2.3. Practice

5.3.2.3.1. Condom use

Majority of the participants got condoms from local NGOs serving MSM while some collected them from friends, clients, stores, regular partners and distributors in red light areas. Reported condom use varied among participants and was inconsistent. Only three respondents reported consistent use during any type of sexual encounter and some used it during penetrative sex with a male. Reasons stated for consistent condom use were apprehensive about HIV, unknown status of partner and concern for partner safety.

“I sometimes feel lonely and unfulfilled from the sexual interactions. It’s kind of boring, you know. It sucks because of this (use of condom). I’m terrified not to use condom. The fear of HIV is getting over my life and I am always worried about probable infection. So I prefer to have sex always, I mean most of the times, using a condom with casual partner.” (Interview #3, 25 years, above graduate level educated, student, never married)

“I cannot ask my clients whether they have the infection (HIV) or not. That’s why I always wear condom when I have sex.” (Interview #12, 28 years, secondary level educated, unemployed, never married)

“As I am HIV positive, I am very careful. I always use condom during sex. I do not want to infect others. Clients usually do not disclose their status, often offer double the price to have sex without the condom but I insist on using a condom even they get mad with me.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married, HIV positive)

“How I will know if my partner is carrying the virus (HIV) or not. That’s why I don’t bareback usually and practice safe sex.” (Interview #15, 35 years, secondary level educated, beautician, married)

5.3.2.3.2. Reasons for not using condom

Most respondents gave a single reason for non-use of condoms. However, participants expressed diverse reasons why they did not use condoms. Participants in monogamous relationships or who had regular partners reported more unprotected anal intercourse than those involved in casual sex. One of the reasons stated was having mutual HIV-status knowledge and trust of being in a committed monogamous relationship.

“He is my partner and we trust each other. We have been dating for many years and we are aware of our status (HIV status). The first two or three times we used condoms but later we did not. We got tested not that long ago and we were both HIV negative. I think we are safe.” (Interview #16, 27 years, graduate level educated, employed, married)

“I know that my regular partner enjoyed it better without a condom and I love him so much that I don’t want to hurt him and allow him to do it without condom.” (Interview #3, 25 years, above graduate level educated, student, never married)

Non-availability of condoms was the second most common reason cited by participants for not using condoms.

“Clients do not carry condoms but we do. If condom is available, we use it otherwise not. Though I try to use them most of the times but sometimes you know if the guy is too hot I become sloppy about condoms.” (Interview #1, 32 years, primary level educated, self-employed, married)

He further added that

“I get it (condom) from my friends. You know it is quite embarrassing to buy from stores.

Previously I used to carry a ton of condoms in my bag but after the sudden closure of the project we do not have easy access to condoms now.” (Interview #1, 32 years, primary level educated, self-employed, married)

“I do not use condom with my long term regular partner but occasionally use it, if available, during casual hook ups.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

Other reasons given by respondents for non-use were unintentional encounter resulting from drunkenness, reduced pleasure, sexual passion, sexual role, emotional needs and partner coercion. Time and situation also appeared to be significant predictors of condom use among the participants. Furthermore, suspicions about partners' sero-status also influenced condom use among respondents

““Uhh..... in the heat of the moment when it (condom) is not available we do it (sex) without condom. Though it (using condom) had crossed my mind, we were so drunk, I did not pursue the issue.” (Interview #1, 32 years, primary level educated, self-employed, married)

“You know some clients prefer sex without condom. They want to feel the real sensation of sex and offer you double the price to have sex without condom. And if they are paying you for sex then you have to take the risk of fucking raw. That's our destiny and not a choice.” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

The same respondent added that

“Though I know it would be incredibly risky but I don't like the loss of sensation due to that plastic wrap (condom). It gets so annoying to interrupt things you know and so I don't use

condoms always.” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

“Sometime you know it (orgasm) happens very fast. We do not get much time to put on condom.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

“I like him (new sexual partner) so much that I did not want to lose him. The thrill was a little bit enticing so the use of condom was never discussed.” (Interview #3, 25 years, above graduate level educated, student, never married)

5.3.2.4.3. Lubricant use

Some of the participants shared that they could not use lubricant as it was not available. On the other hand, they reported using oil, petroleum products, cream and saliva as an alternative lubricant in an insertive and/or receptive anal sexual practice.

“We cannot use lubricant for our anal adventure because we do not get it, instead we use saliva.” (Interview #1, 32 years, primary level educated, self-employed, married)

5.3.2.3.4. HIV testing

Many MSM did not want to get tested as they were afraid they contracted HIV. The most commonly cited barriers to HIV testing were not having done anything risky, being afraid of testing positive and prior testing.

“Previously they used to go for testing (HIV) on a regular basis. It was organized and conducted by the local NGOs serving MSM. But after sudden closure of the project people became more reluctant and refuse to go for counseling and testing. They fear that they might test HIV positive

and people will discriminate them.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

“There are several reasons why people are reluctant about HIV testing. Sometime they don’t have enough time, sometime testing site is too far away and many don’t have transportation to get to the testing site. I have shared my concerns with people working on HIV at ICTC and I believe if we can have testing opportunities at convenient places then it will much easier. Moreover, people are too terrified of needles and amount of blood draw. They are so afraid that the thought of a blood test makes them feel queasy. I think drawing blood with a pain-free device like glucostik (diabetic test strips) will likely to reduce testing phobia and people will be more adherent.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

5.3.2.4. Gaps in knowledge and practice

Although HIV-related knowledge was quite high among participants but this knowledge did not translate into significant changes in attitudes and safe practices. Subjects in monogamous relationships with good knowledge showed little or no change within their relationships.

It appeared that some of the participants had misconceptions about HIV transmission and were ignorant of risky practices. Many participants reported to have received or given oral sex. Some of them perceived that the risk of oro-genital transmission of HIV was less than anal sex and preferred not to use condom during oral sex. Respondents appeared to be worried about transmission risk posed by pre-ejaculate and open mouth cuts.

“I am more into jerking off, blow jobs, touching the body, licking but I do not go for penetrative sex with my clients. So there is no need to use condom. I would never think to give a hand job or

blowjob with a condom on.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

“I use condom during anal sex (while pushing) but not during oral sex. I think oral sex is not that risky like real (anal) sex” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

“I am not sure about transmission risk in oral sex. There are so many takes on this. But I think your risk increases if you have a cut in your mouth.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, never married)

Although many MSM who worked as sex workers were aware of the risks associated with unprotected intercourse and were concerned about health, high payouts for sex without condom often put them in dilemmas.

5.3.2.5. HIV status disclosure and partner notification

HIV-positive MSM were more likely to disclose their sero-status while many acknowledged having misrepresented their status.

“Initially I was paranoid and was sure how to deal with this. All of a sudden I felt it’s not ok to be dishonest. Today, honestly I have realized I have it and it is just going to be there. You have got to just keep pushing forward. I have disclosed my status to my family members and always tell my clients. I did not want to keep them in dark and harm anyone.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married, HIV positive)

One respondent reported that many HIV-infected MSM did not allow HIV infection interfere with pleasure seeking behavior.

“I am not inclined to disclose my status to anyone, especially to my family members. I think you don’t need to grapple with disclosure as long you are playing safe. Now-a-days I try to use condom most of the time to avoid giving it (HIV virus) to others.” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

Some of the participants used knowledge of HIV status as a prevention strategy.

“We love and trust each other. We are aware of our status and go for routine HIV testing.” (Interview #16, 27 years, graduate level educated, employed, married)

5.3.2.6. Concerns about HIV/AIDS

Participants seemed very concerned about acquiring HIV through homosexual activities while HIV positive subjects were concerned about their health and family.

One of them shared

“I know my health will deteriorate and I am petrified about what is to come. If I die what will happen to my family.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married)

“I am worried about my health. This is a life-long disease and I have to suffer till I die. I worry about CD4 count, what is the present level? When I will be put on ART? Science has advanced so far, why isn’t there is a cure yet? There is treatment for cancer, Tuberculosis but none for HIV.” (Interview #5, 36 years, secondary level educated, self-employed, never married, HIV positive)

5.3.4 Perceived barriers and suggestions

Many participants were afraid contracting sexually transmitted infections and thus seek services at local NGOs serving MSM. On the other hand, it appeared that access to health services, HIV testing and counseling, condoms and peer support groups became limited and inconsistent in the study area.

5.3.4.1. Barriers to availing services

Many participants described how virulent homophobic prejudice was prevalent in streets and cities. Some local NGOs which provided shelter and other essential services to sexual minority group faced many challenges and were harassed in hands of local goons. Many shared that local people tried to evict them either by threatening violence or making it hard to live.”

“Local people are hostile to homosexuals living openly. It very difficult to run this (shelter home/community-based organization serving MSM) as people think this is a toxic place where sex is solicited. They (public) panic that we (MSM) will lure local boys into sexual activity and discriminate against us. We don’t get any support from local people. “(Interview #11, 26 years, graduate level educated, dancer, never married)

“In order to provide a broad array of services to these people (MSM) you need a space.

Problem starts from getting an accommodation, fixing official address, convincing the landlord, settling with local people to legal documentation (registration certificate/banner). People always relate homosexuality with sex work and vehemently condemn us (MSM). Social injustice.”

(Interview #3, 25 years, above graduate level educated, student, never married)

5.3.5. Suggestions for improving HIV prevention programs targeting MSM

Participants offered several suggestions about how current HIV programs targeting MSM could be improved

“We need to develop public awareness and education campaigns to address HIV/AIDS related issues (prevention, treatment and care). I think the most important challenge is the fight against fear and stigma surrounding HIV. People living with HIV are treated with disdain born out of ignorance and fear. Being positive, you are not going to necessarily die. It is no longer a terminal disease. The main thing is to learn about HIV, it’s potential outcomes and how we can protect ourselves. You need emotional support as well as medical support. Not only we need to promote condom use but we need an awful lot of counseling over the infection so that HIV positive individual do not embark on a campaign of revenge deliberately infecting innocent people.

Apart from counseling about HIV, I think health care providers should also address prevention and treatment of other STDs/STIs (sexually transmitted diseases/infections). If bare backing takes place between two men there is a risk of contracting another STI or STD. Risk assessment, STD screening, interactive counseling, diagnosis and treatment should be organized at local NGOs serving MSM or at convenient places so that they feel comfortable and safe while accessing such services.”

Another point is that discrimination against homosexuals is so intense that it limits access to education and many enter in to Hijra (a more identifiable MSM group, dress like a woman and perform distinct ritualized blessing during weddings and childbirth) profession out of compulsion for living.” (Interview #3, 25 years, above graduate level educated, student, never married)

“We need to be more cautious and should learn how we can protect. No matter how much you trust your friends, there are still places you should avoid going just for fun and you ended in unprotected sex. It may turn out to be dangerous. Another issue that I think needs to get more attention is the urgent need to have a good supply of lubricant so that they can play safe. People in our community are really depressed, so depressed they become either suicidal or become addicted to drugs. So we need a collaborative approach and interactive counseling for these guys so that they learn to lead a good life.” (Interview #2, 21 years, secondary level educated, worked in a NGO, married)

“I think ensuring availability and accessibility of condoms in local NGOs (serving MSM) and offering HIV testing in ICTC (Integrated counseling and testing center) at regular intervals are two most important things that need to be addressed.” (Interview #6, 25 years, secondary level educated, worked as a male nurse, never married)

“It is absolutely embarrassing to buy condoms from store. If there is condom vending machine, then life would have been much easier for Kothis like me.” (Interview #1, 32 years, primary level educated, self-employed, married)

“They only give us the required medicines (anti-retroviral drugs). They don’t interact with us.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married)

“I think the push to initiate treatment, provision of steady supply of drugs and proper linkage to ART (anti-retro-viral therapy) centers are essential to combat this incurable disease. In addition, more NGOs should be established so that we can get easy supply of condom and can go for routine HIV testing. I think if time interval for testing is shortened from 6 months and if there is a provision of testing following a risk event at a convenient location, I believe, will likely to reduce

our stress and anxiety.” (Interview #5, 36 years, secondary level educated, self-employed, never married)

“Many of us cannot afford to buy condoms. I think distribution of condoms for free by organizing camps among target population will be helpful.” (Interview #9, 19 years, secondary level educated, worked as a tattoo artist, married)

“There is need to raise awareness regarding benefits of condom use among us. Furthermore, for betterment of our life we need respectable job. We need money so that we can avail better health services.” (Interview #10, 25 years, primary level educated, worked in factory, never married)

“If you have job, money and respect, then why should you do sex work? People in our community are doing sex work for different levels of need varying from poverty, survival, debt, coercion to desire for more money. I believe those who are naïve and entering in to business because of extreme poverty, providing some work will protect them from flesh trade.” (Interview #4, 32 years, primary level educated, worked as a male sex worker, married)

“The information provided in the training module are pretty basic and I believe all of us are aware of it. It would be interesting to update the module with current information regarding HIV prevention, treatment and care. I think providing training by public health experts in local NGOs serving MSM will help to raise awareness. Moreover, vocational training and skill development will improve quality of MSM life and they will learn how to make a living respectfully. We need to counsel everyone to take the responsibility for their own sexual health instead of instinctively trying to stigmatize people living with the disease. Education and awareness campaigns, distribution of condoms and using social media to communicate HIV prevention messages for example BULADI” will likely to reduce spread of the infection.” (Interview #16, 27 years, graduate level educated, employed, married)

“I hope building stronger connection internally among community members, organizing support group and promoting awareness about how it feels to grow up a gay in Indian society through cultural programs like dance, theatre shows, movies will help to mitigate discrimination against us.” (Interview #1, 32 years, primary level educated, self-employed, married)

“I have noticed that many of us know very little or completely ignore the difference between HIV virus, HIV status and gradual progression to AIDS. We often unknowingly get engaged in high-risk behaviors. A proper prevention counseling will help us to identify the specific behaviors putting us at risk. In addition, MSM who have undergone sex reassignment surgery, there is need for careful follow for potential adverse health outcomes.

Another issue that I would like to share is that lack citizenship or legal status for example passport, voter’s id. We really have hard time during VISA interviews where authorities have no clue where (gender category) to put us.

There is also need to establish more NGOs specific for MSM so that we can access the basic services when we need.” (Interview #7, 20 years, higher-secondary level educated, worked as physiotherapist, never married)

“There is nothing secretive about homosexuality. Protecting the safety and dignity of homosexual people should be the Government’s responsibility. We are human beings that are the same as heterosexuals. We should have equal rights in the society irrespective of our gender identity. With legalization of same sex relationships, we can survive safely free from discrimination regardless of our gender identity. Moreover, there should be same sex statutory laws for rape in our country. There is a need to raise awareness about sexual minority and spread the message through reality shows that we are not nasty people. All we need is social

recognition and acceptance.” (Interview #11, 26 years, graduate level educated, dancer, never married)

5.4. DISCUSSION

Living in a country where identifying as gay could lead to imprisonment and punishment research into homosexuality and HIV vulnerabilities appeared to be a daunting task. To the best of our knowledge this was the first qualitative community-based study that assessed the different risk factors of HIV among MSM in capital city of West Bengal, India.

Consistent with previous studies,^{26,124,125} findings from this study indicated that participants had adequate HIV-related knowledge. Participants received a considerable amount of information from their peers, local NGOs and workshops organized by NACO. Knowledge regarding transmission was quite high and almost all told that unprotected anal intercourse, vertical transmission and sharing of unsterilized needles as potential routes of HIV transmission. Few respondents also had misconception about transmission through oral sex which corroborated with a prior study.¹²⁶ Knowledge of fever as one of the symptoms of HIV infection was frequently reported by the participants which corroborated with a previous study.¹²⁷

Consistent with previous studies,¹²⁴ the current study also revealed high level of self-perceived HIV phobia. According to psychiatrics, association between HIV and psychiatric disorder is complex.¹²⁸ and HIV positive individuals need stronger emotional support.

From this data, it was evident that HIV positive men were more likely to engage in sexual negotiation and sero-status disclosure which appeared to be consistent with previous report.^{32,129}

Researchers argued that the decision to self-disclose personal information were positively

associated with self-evaluation of individual/social risk and potential benefits.¹³⁰ Consistent with previous studies,^{32,103} major reasons for non-disclosure of HIV included fears of violence, loss of partner, loss of money, confidentiality concerns and being stigmatized. However, given knowledge about own HIV status is one of the strongest predictors of initiation of anti-retroviral treatment and risk reduction among HIV-positive individuals,¹³¹ it is essential to increase awareness of one's HIV infection status through screening at regular intervals. Furthermore, it is also crucial to address the issues of societal misconceptions and discomfort about homosexual behavior through proper educational programs at the community-level.

Buying and selling sex were found to be common among participants. Many respondents were involved in male prostitution and two of them were married to both man and woman. Elevated promiscuity as observed in this study does not necessarily reflect high sexual drive but was significantly associated with poverty. The study findings dovetail with the recent review data by Setia et al.³⁷ showing that many MSM were commonly involved in sex work in city for earning money (as masseurs in massage parlors, train stations, beaches, gymnasium, bar) and were more likely to be identified with their primary occupations rather than as sex workers. Unlike female sex workers, they were secretly selling sex without having stigma attached to it.³⁷ Hence, more research is required to explore this at-risk population.

Apart from early sexual debut, it was concerning to observe that participants were less aware of that the fact that HIV transmission also occurs through oral sex. Similar findings were reported from a survey among US adolescents who did not consider it to be sex and regarded it as a safe or no-risk activity.⁹⁴ Thus raising awareness among homosexuals especially teens that any unprotected sex increases HIV risk is crucial to contain HIV epidemic among youths.

The findings in this study indicated that participants were not adopting risk reducing behaviors. Only few participants reported consistent condom use during any sexual encounter. Willingness to protect sexual partners from HIV and preserving own health were the two overarching motivations for condom use among the participants which corroborated with previous studies.^{32,132} Consistent with prior research,^{133,134} some of the common reasons cited by the participants for non-use of condoms were reduced pleasure, non-availability, drunkenness, partner/clients' demand and relationship dynamics. It appeared that MSM in committed relationships were more likely to have unprotected sex than those who hooked up with casual partners. Some respondents in monogamous relationships mistakenly thought that they did not need to protect themselves. As reported earlier,¹³³ perceived risk of partners' possibility of being infected also determined the condom use among participants. However, analysis of data from MSM in five US cities revealed that about 68% of HIV transmission were acquired from main sex partners because of higher number of sexual encounters, lower condom use and more frequent receptive roles.¹³⁵ Although interpersonal dynamics between partners appeared to have greater influence on partner's healthy behaviors,¹³⁶ these were mostly overlooked in traditional theoretical models included AIDS Risk Reduction Model,¹³⁷ Health Belief Model¹⁴ and Theory of Reasoned Action.¹³⁸ These models focused more on individual determinants of sexual risk behaviors included self-efficacy, personal beliefs and perceived norms towards condom use.^{139,140} However, HIV prevention strategies required a lot more than identification of individual risk factors. Thus, HIV prevention messages should not only include condom promotion and its advantages but should emphasize the importance of preparatory actions for example carrying condom all time and discussion of condom use with potential partner.¹⁴⁰ Thus, there is a pressing need to do greater outreach to this population that has been really left behind,

especially young MSM. In addition, it appeared that after sudden forcible closure of projects and/or NGOs by local authority access to condoms had become more difficult for MSM.

Therefore, developing condom procurement strategy to facilitate supply chain management of condoms in these challenging environmental conditions is of vital importance in addressing the burgeoning HIV epidemic among MSM. A collaborative evidence-based approach involving sex business owners, sex workers, local authorities and different stakeholders to making condom use a legal requirement for all establishments (brothels/massage parlors) to make clients use them may be the most effective strategy to contain HIV transmission in high-risk population (sex workers and their clients) in this country as observed in other Asian countries for example Thailand and Cambodia where implementation of 100% condom use program on nationwide basis resulted in substantial decline in HIV epidemic.¹⁴¹

Consistent with prior research,^{125,142} many participants reported using saliva, oil, cream and oil-based petroleum products as lubricant in insertive and receptive anal sexual acts. However, research found higher prevalence of infection with cytomegalovirus, Kaposi sarcoma-associated herpes virus and Hepatitis B virus among MSM who used saliva as a lubricant.¹⁴² Thus, raising awareness regarding proper use of appropriate lubricant during anal sex and risk of condom breakage and probable transmission of infection is urgently required.

As reported elsewhere,^{133,143} it was observed that alcohol use influenced the decision about sex and some reported alcohol-related negative consequences. It appeared that participants were aware of adverse health outcomes following boozing. O'Byrne et al. also emphasized that some MSM who attended gay-circuit parties used to booze to form connections and might be vulnerable to factors that elevated HIV risk. Thus, promotion of prevention strategies at sex parties might a unique opportunity to interrupt HIV transmission. Moreover, education and

proper counseling regarding negative impact of sex under the influence of alcohol may help to take responsible decisions about drinking before, during and after sex.

Consistent with previous studies,¹⁴⁴ participants reported higher tobacco use. Therefore, creation of a more supportive social environment¹⁴⁴ and promoting tobacco cessation through community-based programs¹⁴⁵ will likely to reduce tobacco use in gay communities in this country as observed elsewhere.

Consistent with prior research,^{146,147} serosorting or limiting high risk sexual activities to partners who have the same HIV status, evolved as a common HIV prevention strategy among the participants. An estimated 14% to 50% of HIV-positive MSM and 25% to 38% of HIV-negative MSM were engaged in sero-sorting in United States, Europe, Australia¹⁴⁶ and Vancouver.¹⁴⁷ In addition, the findings revealed that partners with same HIV status were more likely to indulge in unprotected sex with casual and regular partners than partners with different HIV-status which corroborated with a survey among MSM in Canada.¹⁴⁸ However, the effectiveness of serosorting in preventing HIV transmission is debatable. Growing evidence suggested that the risk of HIV was least among consistent condom users followed by sero-sorters and non-users of condom.¹⁴⁹ Thus it is crucial to understand what prevention strategies clients are using and their perception of risk/benefits associated with such sero-adaptive practices. Furthermore, the effectiveness of such strategies depends on clients' knowledge about own HIV status, frequency of testing, disclosure of status and knowledge regarding acute infection and window period. Alike in China,¹³³ participants appeared to be apprehensive about acquiring HIV from male partners. Some of them even stated that they would commit suicide if they detected positive ever. Findings from this qualitative study suggest that despite having adequate knowledge about risk-reduction strategies MSM continued to engage in risky sexual practices sometimes with

anonymous partners in this metropolitan city of Kolkata, West Bengal. Previous research supported these findings.¹²⁹

Results from this qualitative analysis indicated that geographic distance was a major barrier to accessing essential HIV-related services including HIV testing, counseling and anti-retroviral treatment. Participants residing closer to health care center were more likely to seek care than those staying further away. Similar findings were also reported in prior research which showed that community-based HIV testing and counseling which included door-to-door testing, mobile testing for general population and high-risk populations, index testing for HIV positive individuals and their family members and organizing testing at schools, church and work place achieved higher uptake of such services compared to facility-based testing and counseling.^{123,150}

In addition, researchers argued that people after being notified about their positive sero-status were less likely to engage in unprotected intercourse.¹³¹ Alike other studies,^{151,152} other barriers to HIV testing as reported by participants were being afraid of test results, not engaged in risky practice and prior testing. Therefore, HIV programs should offer more frequent HIV testing and counseling in a supportive environment after taking into consideration of potential barriers or facilitators, which may lead to earlier diagnosis and timely initiation of treatment. In addition, it should be provided by gay-sensitive and non-judgmental service providers at accessible places so that they can feel welcomed and comfortable while seeking care. Given health disparities reinforce stigma, there is need to educate treating physicians about how to deal with sexual minorities by creating safe environments and not to speculate and relate high rates of HIV to promiscuity. As pointed out by the experts,¹⁵³ health care providers should be more competent, sensitive and non-judgmental in dealing with sexual minority issues, particularly investigating the sexual history of HIV-positive individuals and should not treat them as potential criminal.

Correct knowledge about HIV prevention, transmission and care can reduce stigma that stems from misinformation and ignorance. Thus, raising awareness about HIV in general public is a priority. In addition, adequate information on HIV risks and acceptable, effective prevention strategies should be provided to this target group. Although the study showed a fair level of HIV-related knowledge but continued to engage in high risk behavior. Therefore, an integrated knowledge translation strategy should be developed to bridge the existing gaps between knowledge and practice among MSM in India.

Apart for HIV, risk assessment and screening for other STIs need special attention. Raising awareness regarding STI through social marketing campaign may be successful in improving health-seeking behavior, increasing STI testing and HIV/STI related knowledge as observed among Australian gay men.¹⁵⁴ Ensuring free access to condoms at the onset of an emergency and sufficient supply to cover the potential need of the target are the two major challenges that need to be resolved immediately. Rapid and appropriate starting of anti-retroviral treatment, management of adverse effects and retention in care among people living with HIV is another emerging issue that need urgent attention.

Findings from this exploratory analysis has important public health implications. The present endeavor gives us the invaluable opportunity to have firsthand access and to learn more about risk behaviors in the MSM community in the eastern part of India. The results of this study clearly indicated the potential role of MSM in driving the HIV epidemic thought to be heterosexual in nature. This primary document on sexual behaviors and practice will help to build a stronger methodological basis for future effective HIV prevention in this vulnerable population. In addition, suggestions provided by the participants if incorporated in current HIV program would likely to reduce transmission of HIV infection among MSM population.

Limitations of the current study warrant careful interpretation of the results. Small sample size and convenience sampling limits the generalizability of the study findings. Given all information related to sexual behavior were self-reported, chances of information bias (overestimation of socially desirable behavior) should be borne in mind, though we believe amount of such biases would be small because of trustworthy relationship and protection of respondents' confidentiality during data collection process. Selection bias may have impacted our findings if respondents who participated in this study were more knowledgeable about HIV-related issues and were less likely to engage in high risk behaviors. This study summarized high risk behaviors among MSM only and due small sample we could not do sub-group analyses within and between different subgroups of MSM which warrants further research.

These limitations notwithstanding, our qualitative findings revealed that despite having good knowledge of the potential risks MSM in Kolkata were often engaged in risky behaviors.

Findings from this study also suggest that there is a pressing need to design need based, gender-sensitive, effective and sustainable strategies so that MSM could be persuaded to favorably modify their sexual behavior. Furthermore, as sexual identities and behaviors are fluid and contextual,^{14,33} to have an effective HIV-prevention program, policy makers should carefully examine and understand these social constructs of Indian sexuality before designing such programs. A concerted nationwide appeal for funding support from potential donors is urgently required for making some progress toward gay rights in near future. Given the squeamishness about gay sex in this straight world there is a need to empower these men through education and strong advocacy so that they can lead full and rewarding lives.

Chapter 6: METHODOLOGY OF THE QUANTITATIVE PHASE

6.1. INTRODCUTION

HIV is one of the deadliest viruses that humans have been fighting for decades. It has now attained a global pandemic with an estimated 36.7 million people were living with HIV at the end of 2015¹ and an adult prevalence of 0.8% [0.7-0.9%].¹⁵⁵ Although it affects all people, some high-risk groups like female sex worker (FSW), injecting drug users (IDUs) and men who have sex with men (MSM) are disproportionately affected by HIV. According to UNAIDS report the risk of HIV is 19 times more among MSM compared to the general population. Therefore, having a good knowledge on high-risk behaviors of MSM appear to be crucial for the development of sustainable and successful public health interventions. However, because of the hidden nature of the population, identification of a representative MSM sample by building a proper sampling frame remains a major public health challenge.¹⁵⁶ Several sampling methods and recruitment strategies were applied to survey this high-risk population including facility-based sentinel surveillance, snowball sampling (non-probability sampling approaches) and respondent-driven sampling (probability sampling approach).¹⁵⁷ Given potential for selection bias in non-probability sampling, need for some random component in the sampling method has been highlighted times and again in many settings for hard-to-reach population.

Homosexuality in India is always looked down as act of disgrace and having a same-sex relationship is an offence.⁷⁹ Although the HIV/AIDS epidemic in India has been largely attributed to heterosexual transmission, male-to-male sexual contact has become another important mode of transmission.⁵ Despite impressive gains in HIV epidemic situation in this country, India continues

to experience concentrated epidemic among high-risk groups including MSM. HIV prevalence among MSM at the national level was estimated to be 4.3% in 2015 with marked diversities across states.⁵ Data on HIV prevalence and sexual risk behavior among MSM from community-based samples are scarce in eastern part of India. Some information about MSM was available from HIV sentinel surveillance conducted in once in middle of a year under the National AIDS control Organization (NACO). However, MSM in this surveillance are recruited based on consecutive sampling and knowledge regarding their risk behaviors is limited. However, there are many public venues mostly away from well-trafficked areas widely dispersed in the metropolitan areas where MSM congregate and seek sex partner. The current study was conducted to estimate the HIV burden and explore risk behaviors, HIV/AIDS related knowledge, attitudes and predictors of HIV among a community-based samples of MSM in the capital city of West Bengal, India ensuring better representativeness of the sample compared to prior studies through time location sampling with random venue-date-time complexes.

6.2. METHODS

This was a two-phase study conducted in Kolkata, the capital metro city of West Bengal, India between August 2015 and June 2016. In phase 1, a qualitative study was conducted from August 2015 through December 2015 with the support of a local community-based organization, PLUS (People Like Us) and their shelter home: PROTHOMA, to gather information regarding MSM communities, their high-risk behaviors, specific ways of communication and related jargons, major cruising areas, social network and suggestions how to better available services for MSM in Kolkata, West Bengal. Information gathered during phase 1 through major themes, personal

experience and lessons learnt helped to elicit methods for recruitment and development of a culturally appropriate questionnaire for the quantitative study.

In Phase 2, a quantitative study was conducted between January 2016 and June 2016 by partnering with the same local organization serving MSM. Time location sampling (TLS) with probability proportional to estimated attendance size was employed to recruit MSM from 115 venues where MSM activities were reported to occur including all available information and the insight developed through the focus group discussions and in-depth-interviews, in urban metropolitan area of the city of Kolkata. The sampling framework consisted of venue-day-time which represented the potential universe of venues, days and time. TLS is ideal for collecting information on a hard-to-reach population (for example MSM) by sampling locations where they are likely to congregate and then sampling those who attend.^{65,158}

As per the TLS guidelines mentioned above, initially all the days in the week, time periods during the day and approximate attendance size were identified through physical visit to each of the 115 venues accompanied by the peer outreach workers from PLUS and PROTHOMA as well as using the information collected during the qualitative study. With the help of the Governing bodies of these organizations, potential interview assistants from the MSM community were identified ensuring that all the MSM networks identified during the qualitative phase of the study (we continued the qualitative phase until we got saturation of information regarding the networks and the venues, hence we considered the list of venues and number of networks quite exhaustive), are represented by at least one interview assistant. After 4 months of rigorous training and efforts to get involved with the well-being of community through stress-management, awareness building, deaddiction, lifestyle modification and clinical assessment and treatment workshops it was ensured that the selected 19 interview assistants are well versed with

the whole methodology of the quantitative phase of the study, all the GPS co-ordinates of all the venues are recorded in the SHERP interview platform, the monitoring team has full information about activities and access to these venues and there established a trustworthy cordial relationship between the MSM interview assistants, the monitoring team members and the research team.

Each venue was multiplied by the number of days in a week when MSM activities happen there and by the number of 3 hr spanning time slots in a day when MSM activities happen there. Thus if a particular venue was found to be active for the MSM activity during 6pm-12 midnight during weekends it was recorded as 2 (6pm-12 midnight being 6 hours thus 2 3-hr spanning time slot) X 2 (Saturday and Sunday being 2 days in a week) = 4 VDT (venue-date-time) complex. Thus 115 venues did correspond to 3760 VDT complexes from which 625 were selected randomly to ensure that after the elimination of an assumed 20% non-success proportion (while during the sampling visit no eligible consenting subject will be identified or interviewed) still 500 randomly selected eligible VDT complexes are chosen and remain in the final sample as per the standard sampling guideline and strategy of TLS.^{65,158} An exhaustive calendar was prepared plotting all these 625 VDT complexes and on each day the corresponding interview assistant and the monitoring team were automatically informed through automated messaging system (in-built in SHERP) reminding informing about the sampling site and time to ensure that the visits are not pre-planned for any site and no prior information to the respective community was possible. On the specific date, in a specific time while the interview assistant did switch on the SHERP app in the android handheld tablet-PC device, upon matching the time, date and GPS co-ordinate the SHERP system sent a matching message to the data base ensuring validity of the sample. During that time slot of 3 hrs, at that particular venue, among the attending subject who could be

approached first if agreed were selected a sample for that VDT. The process continued for one hour or until one eligible consenting subject got selected whichever was earlier. In each VDT one eligible and consenting (verbal) subject was selected.

Altogether 584 subjects were selected from 620 visits (5 visits had to be cancelled due to unacceptable law and order situation on that VDT) having a success rate of 94.2% and the response rate was 90.1% (584 out of 648 eligible subjects participated).

6.2.1. HIV Testing

2 drops of finger-prick blood was collected from each participant for HIV testing using SD Bioline HIV 1/2 3.0 rapid test procedure kit. This whole blood was added into the sample kit. About 4 drops of assay diluent was added to the sample well. Test results were interpreted within 20 minutes. The presence of only control line within the result window, it was considered as HIV negative. The presence of two lines as control line and test line 1 or test line 2 within the result window were considered as HIV-1 positive and HIV-2 positive respectively. Samples that were positive in rapid test were referred to designated voluntary counseling and testing centers for further confirmation.

6.2.2. Data collection tool and data management

A multilingual audio enabled android app named 'Software-as-a-Service Health and Epidemiological Research Platform' (SHERP) was developed and used for data collection. This is an innovative, flexible, user-friendly and cost effective mode of real-time data with in-built

capacity of preservation of anonymity. Pre-recorded questionnaire with probable color coded responses in two different languages (Bengali and Hindi) were stored in this android device and respondents listened to these questions through headphones. Each subject was provided a tablet with the app loaded and a pair of headphones so that none other than the subject could listen to recorded questions. After listening the questions, he had to enter his response to a specific question by selecting a color displayed on the screen. Data were automatically stored in the central database server. This unique way of data collection ensured confidentiality and anonymity of the interview procedure. Before the start of the interview each participant listened to pre-recorded pre-test counseling and 2 drops of blood were collected using a finger prick technique from them for anonymous HIV rapid testing. The two drops were applied on 2 separate rapid HIV testing kits and when the results were obtained based on the observed appeared test result lines, similar pictures were chosen as the result in the interview app screens. Based on the pre-installed algorithm, upon getting two test results being positive for a subject the result in the data base is stored and automatically the subject is counselled through pre-recorded positive result post-test counselling. Upon negative and inconclusive results appropriate post-test counselling were conducted in the same manner respectively. Each subject ere also provided with all information for further testing, counselling, treatment and other support through printed materials and also encouraged to follow them through recorded messages. Thus, the confidentiality of the test results were maintained.

SHERP included both an online and offline mode interview app so data was collected even when there was no connectivity in remote places. However, with the return of the connectivity data collected in the tablet was automatically uploaded to the central server and the tablet was purged.

Chapter 7. DISTRIBUTION AND CORRELATES OF SEXUAL PREFERENCES/EXPERIENCES/BEHAVIOR AMONG MSM IN KOLKATA, INDIA

Majority were native Bengali speakers, belonged to age group 21-39 years and could read and write. More than half of them were never-married and belonged to Hindu religion. About 28% were involved in sex work and 84% were urban residents. (Table 1.1)

About 32% reported that they were exclusively attracted to men and 34% equally to men and women. Most of them had first sexual experience with a man before reaching 18 years of age. Approximately, 26% reported to have an experience of forced sex during the first encounter with a man. About 47% reported to play predominantly insertive role during anal sex with a man while 27% were predominantly receptive and 26% played both roles. About 39% identified themselves as bisexual clients of male sex worker, 17% identified himself to be kothi, 16% as panthi, 16% as homosexual client of male sex workers and 11% as double decker. Half of the participants preferred to have sex with both male and female. About 47% reported to have both regular and irregular partners while 25% reported to have irregular partner only. The most common venues where participants seek male partner were internet and public places. (Table 1.2)

The average monthly income was positively associated with age at sexual debut. Participants who reported higher average income were more likely have first sexual experience at age between 19 and 25 years. (Table 1.4)

A positive association was observed between current marital status and experience of forced sex during the first sexual encounter with a male partner. (Table 1.5)

Respondents who could read and write, those who were divorced/widowed, had higher monthly income and stayed outside Kolkata but within West Bengal were more likely to be both anal receptive and insertive partner. (Table 1.6)

Participants who were between 21 and 39 years of age and engaged in sex work were less likely while being married to a female, students, salaried employee or business persons were more likely to be identified as Panthi. Participants who were married to a female were less likely while those who were aged between 21-39 years, married to a male and were rural residents were less likely to be identified as bisexual client of male sex workers. (Table 1.7)

Being married to a female or divorced/widowed and agricultural/non-agricultural worker were more likely to have sex with both a female and male. Participants who were married to a male and belonged to other religion were less likely to have sex with both a female and male partner. (Table 1.8)

Participants aged between 21 and 39 years, who could read and write, sex workers by profession, had higher average monthly income were more likely to seek male sexual partners through internet. (Table 1.9)

Participants who were married to both a female and male or divorced/widowed and had higher average monthly income were more likely to seek male sex partner from community based organization. (Table 1.10)

Chapter 8. KNOWLEDGE REGARDING RISK AND PREVENTION OF HIV AND STI AND ITS CORRELATES AMONG MSM IN KOLKATA, INDIA

Participants who spoke non-native Hindi language, married to a female or to both a male and female, belonged to Christian religion and not originally by birth from West Bengal were less likely to hear about infections transmitted sexually. Participants who could read and write were more likely to hear about sexually transmitted infections compared to their illiterate counterpart.

(Table 2.2)

Participants who spoke non-native Hindi language, married to female or to both to a female and male, Christian by religion and were not originally by birth from the state of West Bengal had lower odds of having good knowledge regarding occurrence, transmission and symptoms of sexually transmitted infections (STIs) in men. Respondents who could read and write had higher odds of having good knowledge regarding occurrence, transmission and symptoms of sexually transmitted infections (STIs) in men compared to illiterate participants. (Table 2.3)

MSM who were married to a female or both to a female and male were likely to know about regarding occurrence, transmission and symptoms of HIV than those who were never married. Participants having higher average monthly income and those who were rural residents had higher odds of having good knowledge regarding occurrence, transmission and symptoms of HIV. (Table 2.4)

Participants who spoke non-native Hindi language had lower odds of having good knowledge regarding prevention of HIV than native Bengali speaking participants. Respondents who could read and write as opposed to illiterate and married to a male as opposed to never married had higher odds of having good knowledge regarding prevention of HIV. (Table 2.5)

Participants who spoke non-native Hindi language, married to both a female and male and divorced/widowed had lower odds of having good knowledge about condom use. (Table 2.6)

Odds of having good overall knowledge regarding risk and prevention of HIV and STI were lower among participants who spoke non-native Hindi language, married to a female or both to a female and male, Muslim by religion and were not originally by birth from the state of West Bengal. Participants who could read and write were more likely to have a good overall knowledge regarding risk and prevention of HIV and STI. (Table 2.7)

Participants who used internet to seek male sex partner through internet were more likely to have good knowledge regarding occurrence, transmission and symptoms of STIs in men. (Table 2.8)

Participants who reported to be pre-dominantly anal insertive during sex with a man had lower odds to have good knowledge regarding occurrence, transmission and symptoms of HIV in simple logistic regression model. Respondents who commonly used internet to seek male sex partners were more likely to have good knowledge regarding occurrence, transmission and symptoms of HIV in simple logistic regression model. However due to lack of power, after adjusting for potential confounders both of these associations were no longer significant. (Table 2.9)

Participants who reported having sex with both female and male were less likely to have good knowledge regarding prevention of HIV. MSM who had sexual debut at age >25 years, had an experience of forced sex during first sexual encounter with a man and were bisexual clients of male sex workers were less likely to have good knowledge about prevention of HIV in the simple logistic regressions which became statistically non-significant in multiple logistic regression model after adjusting for potential confounders. (Table 2.10)

There were no significant associations between sexual preference/experience/behaviors and knowledge regarding condom use among participants. (Table 2.11)

Participants who had first sex at relatively higher age as opposed to <15 years and had experience of forced sex during the first sexual encounter with a man were less likely to have a good overall knowledge regarding risk and prevention of HIV and STI. Respondents who used internet to find sexual partners had higher odds of having good overall knowledge regarding risk and prevention of HIV and STI. (Table 2.12)

Chapter 9. DISCLOSURE OF OWN SEXUAL PREFERENCES AND ITS CORRELATES AMONG MSM IN KOLKATA, INDIA

9.1. INTRODUCTION

Given the fear of social exclusion and widespread discrimination, the disclosure of sexual orientation and coming out process have been very difficult and complex among sexual minority group in the conservative Indian society.^{14,79} Same-sex relationship is considered a taboo and a criminal offence under section 377 of the Indian Penal Code, punishable by imprisonment.⁷⁹ The concepts of sexual identity are fluid and diverse in Indian context.^{14,31} The term MSM in Indian context refer to sexual behaviors (based on sexual role) rather than sexual identity.^{7,33} Such punitive law and hostile behaviors directed against MSM push them further underground. Further, because of the cultural beliefs that sexual activity is reserved for heterosexual marriage and to escape family violence, many Indian MSM have traditional marriage but continue to be involved in same-sex clandestine relationship.⁸¹ Therefore, under the assumption that the challenges face by individuals with visible stigma would be much less among those with hidden stigma, many Indian MSM are less likely to disclose their sexual preference and prefer to remain silent. However, researchers emphasized that individuals with hidden stigma face considerable stressors and psychological challenges.¹⁵⁹ According to Rosario et al., the process of coming out is associated with psychological functioning including self-esteem, distress and unprotected sexual behavior.¹⁵⁹ Although the disclosure of own sexual preference has been a major focus of research on sexual minority men in the Western world, data from India are limited. Most of the studies involving MSM in India explored the behavioral risk factors and their vulnerability to HIV.^{19,32,37,38,43,50} The current study was conducted to assess the patterns and predictors of

disclosure of sexual preference among a community-based sample of MSM in Kolkata, West Bengal, India.

9.2. METHODS

The main outcome of measure was the dichotomous response (yes/no) to the question “Whom did you disclose your sexual preference?” Participants were asked to report whether they had disclosed their disclosure of their sexual orientation to someone (yes/no), wife (yes/no), other MSM (yes/no) and health care provider (yes/no).

9.3. RESULTS

9.3.1. Disclosure to someone

Among participating MSM, about 14% disclosed his sexual preferences to their wives, 53% chose to disclose to other MSM only and 25% disclosed it to healthcare providers only. (Table 3.1)

Compared to MSM who spoke local language (Bengali), MSM who were Hindi-speaking had 79% lower odds of disclosing sexual preference to someone. MSM aged >39 years were 1.6 times more likely to disclose their sexual preference than those aged ≤21 years. A negative association was found between marital status and disclosure of sexual preference. Participants who were married to a female or married to both a male and female or divorced/widowed were less likely to disclose their sexual preference compared to their never-married counterparts.

Participants whose birthplace was outside the state of West Bengal were less likely to disclose sexual preference than those whose birthplace was in Kolkata. (Table 3.2)

Sexual debut at age between 19 and 25 years and above and being a bisexual client of male sex workers were more likely to disclose their sexual preference to someone. (Table 3.3)

Participants who had good knowledge regarding occurrence, transmission and symptom of STI in men had higher likelihood of disclosing sexual preference to someone than those with poor knowledge. Odds of disclosure were more among respondents who had good knowledge regarding occurrence, transmission and symptoms of HIV and condom use compared to their less knowledgeable counterparts. In addition, participants having good overall knowledge regarding risk and prevention of HIV and STI were more likely to disclose their sexual preference to someone than those with poor knowledge. (Table 3.4)

9.3.2. Disclosure to wife

Compared to native speaking MSM, those who spoke Hindi were more likely to disclose their sexual preference to their wives. Participants with higher income were more likely to disclose their sexual preference to their wives than those with lower income. Participants whose place of birth was outside Kolkata had higher odds of disclosure of sexual preference to their wives. (Table 3.5)

Participants who were equally attracted to men and women were more likely to disclose their sexual preference to wife compared to those who were attracted only to men. Respondents having experience of sex with male and female both had higher odds of disclosure to wives than those having sex with men only. (Table 3.6)

Participants with very good self-perceived current health status were 2.9 times likely to disclose their sexual preference to their wives than those with poor self-perceived current health status.

(Table 3.7)

9.3.3. Disclosure to other MSM

MSM aged 21-39 years and >39 years were more likely to disclose their sexual preference to other MSM only. (Table 3.8)

Participants who had sex at >25 years and were pre-dominantly anal insertive had lower odds while those commonly used internet to find sex partner had higher odds to disclose their sexual preference to other MSM. (Table 3.9)

Having good knowledge regarding occurrence, transmission and symptoms of STI and HIV were positively associated with higher disclosure of sexual preference to other MSM than those with poor knowledge. Respondents who had good overall knowledge regarding risk and prevention of HIV and STI were 2.28 times likely to disclose their sexual preference than those with poor knowledge. (Table 3.10)

9.3.4. Disclosure to health care providers

Older MSM belonging to age groups 21-39 years and >39 years were more likely to disclose their sexual preference to health care providers than those aged \leq 21 years. (Table 3.11)

Losing virginity with a male at age between 19 and 25 years, being pre-dominantly anal insertive, and those who were bisexual clients of male sex workers were less likely to disclose

their sexual preference to health care providers. The odds of disclosing to health care providers were higher among respondents who reported using internet on most of the occasions for finding male partners. (Table 3.12)

Participants having good knowledge regarding occurrence, transmission and symptoms of STI in men as well prevention of STIs were more likely to disclose their sexual preference to health care providers. A strong positive association was found between good overall knowledge regarding risk and prevention of HIV/STI and odds of disclosure of sexual preference to health care providers. Participants who perceived themselves to be at risk for HIV were more likely to disclose their sexual preference to health care providers. (Table 3.13)

9.4. DISCUSSION

To the best of our knowledge, this was probably the first community-based study that explored the determinants of sexual preference among MSM in eastern part of India. Our findings suggested that there were significant differences in disclosure to someone, wife, other MSM and health care providers based on participant's socio-demographic characteristics, sexual preference/experience/behavior, perception and STI-related knowledge. The findings indicated that Indian MSM were facing challenges in the process of coming out which emphasized that public health experts to consider these issues unique to sexual minority groups which may be effective for designing any intervention for this vulnerable population.

It appeared that disclosure of sexual preference was affected by a number of participants' characteristics in the present analysis. We found that non-native MSM were less likely to

disclose their sexual preference to someone which might be explained by the fact that Hindi-speaking MSM might be more uncomfortable in disclosure because of more rigid cultural norms and beliefs compared to Hindu beliefs. In addition, migrants being non-native speakers they might be more hesitant and fearful in such disclosure to others.

Sexual minority groups are more likely to engage in high-risk behaviors and have worse health outcomes than their heterosexual counterparts. One of the potential explanations may their non-disclosure of their sexual orientation to the health care providers.¹⁶⁰ Understandably, health care providers who are not aware of their orientation will less likely to counsel/educate them about relevant issues related to health. Studies showed that although some Lesbian, Gay and Bisexual adults expressed their desire to disclose their sexual orientation to their health care providers but majority could not do so in health care settings which might be related to patient-doctor relationships, their fear of being mistreated, discrimination, harassment and their own perception that such disclosure was unnecessary to their healthcare.^{161,162} Thus, care should be taken so that health care providers enquire about sexual orientation of their patients by maintaining gender sensitivity and also should educate these groups regarding consequences of risk behaviors and vulnerability to sexually transmitted infections including HIV. In addition, all health care providers should be trained how to deliver high-quality gender sensitive services in health care system so that both patients and physicians feel comfortable discussing homosexuality and high-risk behaviors. In addition, encouraging more supportive and open communication between treating physician and MSM seemed critical in overcoming their barriers to accessing health care, support and treatment. This will also likely to make health care providers more aware about risk-behaviors of patients and will guide their treatment.

Consistent with previous study,^{160,162} subjects who had not disclosed their sexual preference to health care providers were younger than those who disclosed. Our study indicated that older MSM in general had higher odds of disclosure to someone than their younger counterparts. One of the probable reasons might be that compared to younger people older MSM might be more experienced in handling bullying and harassment in society as well as in family. Another reason might be that because of overpowering shame and social oppressions they often start to hate their hidden homosexual instinct and try to outwardly exhibit heteronormative behaviors for their own safety.⁶⁸ Furthermore, research revealed that youths of sexual minority groups had higher odds of mental disorder, substance misuse and dependence, suicide, suicidal ideation and deliberate self-harm compared to heterosexual youths.⁸³ Researchers argued that the decision to self-disclose personal information were positively associated with self-evaluation of individual/social risk and potential benefits.¹³⁰ Thus, counseling and education younger MSM should be a priority in any public health intervention targeting sexual minority group. Therefore, culturally-sensitive public health interventions addressing the concerns about concealment, general emotional support and associated homophobia may be more helpful in overcoming the stress associated with coming out process.

Chapter 10. DISTRIBUTION OF SEXUAL BEHAVIOR AND HIV BURDEN AND THEIR INTERRELATIONSHIP AMONG MSM IN KOLKATA, INDIA

10.1. INTRODUCTION

Globally, an estimated 36.7 million people (adults=34.9 million, women=17.8 million and children<15=1.8 million) were living with HIV at the end of 2015, of them 2.1 million got newly infected and 1.1 million died (UNAIDS estimate, 2015).¹⁶³ As per the WHO estimate globally about 4.96 million people aged 10-24 years were living with HIV at the end of 2013.¹⁶⁴ Despite treatment advances and improved access to testing and prevention, HIV epidemic continued to linger in men-who-have-sex-with men (MSM) population worldwide including India. With reference to heterosexual HIV incidence among MSM remained startlingly consistent. It hovers between 3% in the Middle East and North Africa and 25% in the Caribbean.¹¹⁸ Researchers concluded that “incidence continues to be sustained at levels sufficient for epidemics in the MSM population to continue, and, in some settings, expand”¹¹⁸

According to UNAIDS 2015 estimate there were about 2100000 people (adults and children) living with HIV in India with an incidence rate of 0.01% among adults aged 15-49 years. There were about 86000 new infections in the country during 2015.¹⁶⁵ Although HIV epidemic in India is pre-dominantly driven by heterosexual transmission it is now estimated that there are other vulnerable key populations including MSM. Of estimated 289 444 MSM in India, 4.3% were living with HIV at the end of 2015.^{5,165} However, the exact contributions of heterosexual and homosexual transmission modes to HIV prevalence in India has remained poorly understood.⁶ Researchers concluded that MSM were closely linked to three co-existing phases of HIV

epidemic in India-being a part of a high risk group, acting as a potential bridge population transmitting infection to low risk groups (monogamous wives or female partners) and self-denial for testing/treatment for fear of discrimination/stigma.^{39,166}

India has established a comprehensive response to the HIV epidemic over the past three decades and reduced HIV rates among the general population. However, HIV epidemic still remained largely concentrated among different high risk groups including female sex workers (HIV prevalence=2.2%), injecting drug users (9.9%) and MSM (4.3%).⁵ Most of the studies among MSM were conducted in the southern states and little is known about HIV and other risk behaviors among MSM in the eastern part of India. To date some information was available from analysis of annual HIV sentinel surveillance data which revealed a significant burden of HIV among MSM in the state of West Bengal.⁵¹ The accumulating evidence from other Indian states suggests that MSM in state of West Bengal might also be having high risk behaviors. The current study was conducted in an effort to produce a coherent picture of HIV epidemic in this high risk group in urban areas of West Bengal. The objectives of this paper were to estimate the HIV prevalence, levels of high-risk behaviors and extent of HIV-related knowledge and their relationships among a representative sample of MSM in the capital city of West Bengal.

10.2. METHODS

Time location sampling (TLS) with probability proportional to estimated attendance size at each venue was employed to recruit MSM from 115 randomly selected public venues in urban city of Kolkata. The sampling framework consisted of venue-day-time which represented the potential universe of venues, days and time. These public venues were mapped by staff of a local

community-based organization serving MSM in Kolkata. Men aged 18 or above who had anal or oral sex with a male partner in the last 6 months, were permanent residents of Kolkata and were willing to participate were eligible for the study.

Each venue was multiplied by the number of days in a week when MSM activities happen there and by the number of 3 hours spanning time slots in a day when MSM activities happen there.

Thus if a particular venue was found to be active for the MSM activity during 6pm-12 midnight during weekends it was recorded as 2 (6pm-12 midnight being 6 hours thus 2 3-hr spanning time slot) X 2 (Saturday and Sunday being 2 days in a week) = 4 VDT (venue-date-time) complex.

Thus 115 venues did correspond to 3760 VDT complexes from which 625 were selected randomly to ensure that after the elimination of an assumed 20% non-success proportion (while during the sampling visit no eligible consenting subject will be identified or interviewed) still 500 randomly selected eligible VDT complexes are chosen and remain in the final sample as per the standard sampling guideline and strategy of TLS.^{65,158} An exhaustive calendar was prepared plotting all these 625 VDT complexes and on each day the corresponding interview assistant and the monitoring team were automatically informed through automated messaging system (in-built in SHERP) reminding informing about the sampling site and time to ensure that the visits are not pre-planned for any site and no prior information to the respective community was possible. On the specific date, in a specific time while the interview assistant did switch on the SHERP app in the android handheld tablet-PC device, upon matching the time, date and GPS co-ordinate the SHERP system sent a matching message to the data base ensuring validity of the sample. During that time slot of 3 hours, at that particular venue, among the attending subject who could be approached first if agreed were selected a sample for that VDT. The process continued for one

hour or until one eligible consenting subject got selected whichever was earlier. In each VDT one eligible and consenting (verbal) subject was selected.

Altogether 584 subjects were selected from 620 visits (5 visits had to be cancelled due to unacceptable law and order situation on that VDT) having a success rate of 94.2% and the response rate was 90.1% (584 out of 648 eligible subjects participated).

A multilingual audio enabled android app named 'Software-as-a-Service Health and Epidemiological Research Platform' (SHERP) was developed and used for data collection. This is an innovative, flexible, user-friendly and cost effective mode of real-time data with in-built capacity of preservation of anonymity. Pre-recorded questionnaire with probable color coded responses in two different languages (Bengali and Hindi) were stored in this android device and respondents listened to these questions through headphones. Each subject was provided a tablet with the app loaded and a pair of headphones so that none other than the subject could listen to recorded questions. After listening the questions, he had to enter his response to a specific question by selecting a color displayed on the screen. Data were automatically stored in the central database server.

10.3. HIV TESTING

2 drops of finger-prick blood were collected from each participant for HIV testing using SD Bioline HIV 1/2 3.0 rapid test procedure kit. This whole blood was added into the sample kit. About 4 drops of assay diluent was added to the sample well. Test results were interpreted within 20 minutes. The presence of only control line within the result window, it was considered as HIV

negative. The presence of two lines as control line and test line 1 or test line 2 within the result window were considered as HIV-1 positive and HIV-2 positive respectively. Samples that were positive in rapid test were referred to designated voluntary counseling and testing centers for further confirmation and treatment. Pre and posttest counseling were provided to each participant during the interview procedure.

10.4. RESULTS

Among participating subjects, 14% reported to have a Kothi as his regular sex partner, 18% had a Panthi as a regular partner while 12% had a double-decker for the same role. While 20% said, their regular partner was a female, 36% did not have any regular partner. 71% reported to have multiple male sex partners in their lifetime and 28% had this number more than 10. 66% had multiple casual male sex partners, 10.46% was found to be the HIV prevalence among MSM in Kolkata

Multiple logistic regression analysis showed that compared to MSM aged ≤ 21 years, those belonging to higher age groups [21-39 years and >39 years] had 6.62 times and 9.62 times higher odds to be HIV sero-positive. Participants who were married to a female or divorced/widowed as opposed to never married were more likely to be HIV infected. Compared to Hindus, Muslims had 2.14 times higher probability of being HIV sero-positive. With reference to those who were by birth originally from Kolkata, participants who were born outside Kolkata had higher odds of being HIV positive. (Table 4.5)

Better knowledge regarding the occurrence, transmission and symptoms of HIV and HIV seropositive status seemed to be associated positively. (Table 4.6)

The simple logistic regression indicated that respondents who reported playing the role of both anal receptive and insertive were twice likely to be HIV positive than those who reported playing pre-dominantly the role of anal receptive but after adjusting for potential confounders the association was no longer significant. The multiple regression analysis showed that subjects who reported to have sex with irregular partner had higher odds to be positive than those reporting sex with regular partner. Participants who used public venues for seeking male sex partners were more likely to be at risk for HIV. (Table 4.7)

With reference to the respondents who reported using condoms during sex with casual male partner, those who never used condoms had higher risk for HIV. On the other hand, participants who never used condoms during sex with a casual female partner had lower odds of HIV acquisition than those who reported using condoms. Respondents who reported use of lubricant during anal sex were more likely to be HIV infected. (Table 4.8)

Participants who had sex with multiple male partners in their lifetime or had multiple casual male sex partners in the last six months were more likely to be HIV positive. Having sex with a long-term stable partner appeared to be protective in our study.

Participants who reported symptoms suggestive of STI in the past 12 months had higher odds to be positive. Risk of HIV acquisition appeared to be elevated among respondents who reported symptoms including anal discharge and painful micturition in the past 12-months. Respondents who received treatment for STI-related symptoms in the past were more likely to be HIV positive. (Table 4.10)

10.5. DISCUSSION

To the best of our knowledge this was the first large-scale community-based study that estimated the HIV prevalence and explored risk factors for HIV acquisition among MSM in urban city of Kolkata, West Bengal using time-location-sampling (TLS) method. The findings revealed that the prevalence of HIV was 10.46%. MSM were engaged in several types of high-risk behaviors including unprotected sex with irregular male partners and sex with multiple male partners.

Positive predictors of HIV acquisition identified in the current analysis were higher age, marital status, irregular partner, non-use of condoms, multiple sex partners and STI-related symptoms.

A recent systemic review on disease burden of HIV among MSM indicated marked heterogeneity in prevalence data ranging from 3% in the Middle East and North Africa to 25.4% in the Caribbean but remained fairly consistent (within 14-18%) across North, South and Central America, South and Southeast Asia and Sub-Saharan Africa.¹¹⁸ However, the HIV burden was found to be substantially higher among MSM compared to general population in low-and-middle-income countries.¹⁶⁷ Although the HIV prevalence among Indian MSM at national level was 4.3% at the end of 2015 there are marked differences in prevalence estimate across different Indian states.⁵ Several states have recorded higher HIV prevalence among their MSM population compared to the national average of 4.3%. Andhra Pradesh had the highest prevalence with 10.1% followed by Gujarat and Goa at 6.8%.¹¹ Notably, in the eastern state of West Bengal with (2014) adult HIV prevalence of 0.22%³ which was less than the national average, prevalence of HIV among the MSM was 6.7%.¹¹ Approximately 19% transgender in Mumbai and 3.2% in Tamil Nadu were HIV positive, while data for male sex workers was clearly lacking.¹² However, comparison of these estimates would be misleading and not recommended. The marked

discrepancies in prevalence estimate might be associated with differences in methodology, characteristics of underlying population and

As reported elsewhere,^{17,168} older MSM had higher odds of being HIV sero-positive. A strong positive association was found between marital status and HIV risk. In order to solidify their social stand and hide their sexual orientation, many Asian MSM have traditional marriage and bear children while continuing their secret same-sex relationship.^{90,91} Previous studies showed that about 29% of Korean MSM¹²⁴ and 30% Chinese MSM were married¹⁶⁹ thus acting as a potential bridge population transmitting the HIV virus from high-risk population to the low-risk population.

Our study indicated that participants with good knowledge regarding the occurrence, transmission and symptoms of HIV had higher odds to be infected than those with poor knowledge. One of the probable explanations for this counterintuitive phenomenon might be that HIV positive subjects might be more knowledgeable regarding the disease because of receiving pre/post-test counseling at designated voluntary testing and counseling centers compared to sero-negative subjects.

Subjects who reported playing the role of both an anal insertive and receptive had higher odds to be HIV positive than those who were only anal receptive. According to CDC report the risk of acquiring or transmitting the HIV infection is greatest with anal sex and the odds of acquiring HIV during receptive anal sex is 13 times higher than insertive anal sex.¹⁵⁰

Subjects who reported sex with irregular partner had higher odds to be positive than those reporting sex with regular partner.

Participants who reported using public venues for seeking male sex partners had higher odds of HIV acquisition. Presently there are many well-established public venues well-dispersed in almost all parts in Kolkata where homosexuals congregate and seek sexual partner. Public sex venues were preferred by most MSM for anonymity, darkness of night-time cruising and the sexual culture of silent encounters which corroborated with prior findings.¹¹¹ In addition, they used these cruising points not only for searching sex partner but also to persuade his partner to agree for sex through some non-verbal behaviors.

Consistent with prior study,¹⁷⁰ use of condom every time during sex with casual male partner appeared to be protective in our study. According to CDC report the risk of acquiring or transmitting the HIV infection is greatest with anal sex and the odds of acquiring HIV during receptive anal sex is 13 times higher than insertive anal sex.¹⁵⁰ Taken together, these data coalesce with others' findings suggesting that proper counseling regarding safe sex need to be prioritize among Indian MSM.

Most studies involving MSM relied on convenience or snowball samples of men who self-identified as homosexual which might under represent more hidden non-identifiable sub-group of MSM population and introduce selection bias. However, the use of time location sampling (venue-date-time) helped us to recruit respondents in places and at times where they were reasonably expected to gather which minimized selection bias inherent in convenience sampling.

10.6. LIMITATION

Alike any observational study, causal interpretations of the observed associations are not be recommended Owing to the cross-sectional design, temporal ambiguity (as all variables were assessed at the same time) could have generated the potential for reverse association in some

cases. The self-reported information regarding personal behaviors could always have the potential for social desirability bias (exercise, workload are over-reported and addictions, lifestyle issues are under-reported). The study was conducted among consenting adults and the non-response rate was about 10%. This could have generated some issue (though miniscule) regarding generalizability of findings. Hence any effort to extrapolate the results beyond the study sample should be made with caution

10.7. CONCLUSION

The HIV burden among MSM was found to be substantially high in the current analysis. The significant predictors of HIV sero-positivity were higher age, acting as both as an anal insertive and receptive, irregular partners and unprotected sex. Majority of MSM in Kolkata were engaged in high risk activities that elevated their HIV risk. Majority of the participants were between 21 and 39 years of age and Hindu by religion. Many of them were involved in sex work. Most of them identified as bisexual clients of male sex workers. There were significant differences in disclosure to someone, wife, other MSM and health care providers based on participant's socio-demographic characteristics, sexual preference/experience/behavior, perception and STI-related knowledge. Most of the MSM carefully hide their sexual orientation and about 50% disclosed their sexual preference to other MSM. Young MSM were more likely to hide their identity. Overall knowledge regarding sexually transmitted infections appeared to be poor among MSM.

11. APPENDIX

Table 1.1 Socio-demographic distribution of the participating MSM, Kolkata, 2016 (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Language	Bengali	488	83.56 (80.55-86.58)
	Hindi	96	16.44 (13.42-19.45)
Age in completed year	<21	174	29.79 (26.07-33.51)
	21-39	376	64.38 (60.49-68.28)
	>39	34	5.82 (3.92-7.73)
Can you read and write	Illiterate	84	14.38 (11.53-17.24)
	Can read only	60	10.27 (7.80-12.74)
	Can read and write	440	75.34 (71.84-78.85)
What is your current marital status	Never married	324	55.48 (51.44-59.52)
	Married to a female	118	20.21 (16.94-23.47)
	Married to a male	46	7.88 (5.69-10.07)
	Married both to a female and male	66	11.30 (8.73-13.88)
	Divorced/widowed	30	5.14 (3.34-6.93)
Religion	Hindu	499	85.45 (82.58-88.31)
	Muslim	44	7.53 (5.39-9.68)
	Christian	11	1.88 (0.78-2.99)
	Other	30	5.14 (3.34-6.93)
Sex workers	No	423	72.43 (68.80-76.07)
	Yes	161	27.57 (23.93-31.20)
Occupation	Sex workers	161	27.57 (23.93-31.20)
	Student	153	26.20 (22.62-29.78)
	Unemployed	84	14.38 (11.53-17.24)
	Salaried employee & Hotel	51	8.73 (6.44-11.03)
	Business/Trade or Self-employed/Professional	66	11.30 (8.73-13.88)
	Agricultural or Non-agricultural laborer	69	11.82 (9.19-14.44)
What is your average monthly income	<Rs. 3000/mth	309	52.91 (48.85-56.97)
	≥3000 and <10000/mth	220	37.67 (33.73-41.61)
	≥= 10000/mth	55	9.42 (7.04-11.79)
Do you have specific place to live	Yes	497	85.10 (82.21-88.00)
	No	87	14.90 (12.00-17.79)
What is your current place of living	Urban	491	84.08 (81.10-87.05)
	Rural	93	15.92 (12.95-18.90)
Birthplace/place of origin	Kolkata	438	75.00 (71.48-78.52)
	Outside Kolkata but within West Bengal	108	18.49 (15.34-21.65)
	Outside West Bengal	38	6.51 (4.50-8.51)

Table 1.2 Distribution of Sexual preferences/experiences/behavior among the participating MSM, Kolkata, 2016 (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Are you attracted	Exclusively to men	186	31.85 (28.06-35.64)
	Primarily to men and sometimes to women	104	17.81 (14.70-20.92)
	Equally to men and women	198	33.90 (30.05-37.75)
	Not sure	96	16.44 (13.42-19.45)
How old were you when you first had sex with a male	<15 yrs	164	28.08 (24.43-31.74)
	15-18yrs	236	40.41 (36.42-44.40)
	19-25yrs	138	23.63 (20.17-27.09)
	>25	46	7.88 (5.69-10.07)
Were you forced to have sex during the first sexual encounter with a male?	No	434	74.32 (70.76-77.87)
	Yes	150	25.68 (22.13-29.24)
How do you classify your typical sexual role?	Predominantly receptive during anal sex with a male	160	27.40 (23.77-31.03)
	Predominantly insertive during anal sex with a male	272	46.58 (42.52-50.63)
	Both receptive and insertive during anal sex with males	152	26.03 (22.46-29.60)
	Predominantly Kothi	100	17.12 (14.06-20.19)
How do you identify yourself?	Predominantly Panthi	95	16.27 (13.27-19.27)
	Double decker	67	11.47 (8.88-14.06)
	Homosexual client of male sex workers	94	16.10 (13.11-19.09)
	Bisexual client of male sex workers	228	39.04 (35.07-43.01)
Do you have sex with?	Male only	225	38.53 (34.57-42.49)
	Female and male both	292	50.00 (45.93-54.07)
With whom you usually have sex?	Regular partner only	160	27.40 (23.77-31.03)
	Irregular partner only	150	25.68 (22.13-29.24)
	Irregular and regular partners both	274	46.92 (42.86-50.98)
Do you usually find your partners in pub/Disco/Café/Club/Hotel/Lodge	No	392	67.12 (63.30-70.94)
	Yes	192	32.88 (29.06-36.70)
Do you usually find your partners in Spa/Sauna/Massage parlor	No	466	79.79 (76.53-83.06)
	Yes	118	20.21 (16.94-23.47)
Do you usually find your partners in Park/Public restroom	No	393	67.29 (63.48-71.11)
	Yes	191	32.71 (28.89-36.52)
Do you usually find your partners through internet	No	361	61.82 (57.86-65.77)
	Yes	223	38.18 (34.23-42.14)
Do you usually find your partners in Community based organizations	No	441	75.51 (72.02-79.01)
	Yes	143	24.49 (20.99-27.98)

Table 1.3 Association between Socio-demographics and Sexual attraction among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Regression type	Sexually attracted (ref=Exclusively to men)				
			Primarily to men and sometimes to women		Equally to men and women		
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value	
Language (ref=Bengali)	Hindi	Simple	1.99 (1.03-3.84)	0.0414	1.99 (1.12-3.52)	0.0184	
		Multiple	1.50 (0.56-3.98)	0.4207	1.63 (0.70-3.81)	0.2556	
Age in completed year (ref=<21)	21-39	Simple	0.77 (0.45-1.32)	0.3421	1.00 (0.63-1.59)	0.9911	
		Multiple	0.54 (0.29-1.01)	0.0522	0.71 (0.42-1.22)	0.2137	
	>39	Simple	0.74 (0.25-2.18)	0.5870	1.02 (0.43-2.45)	0.9632	
		Multiple	0.31 (0.09-1.10)	0.0698	0.33 (0.11-0.94)	0.0377	
Can you read and write (ref=illiterate)	Can read only	Simple	0.68 (0.23-1.99)	0.4748	1.49 (0.64-3.43)	0.3538	
		Multiple	0.78 (0.25-2.47)	0.6751	1.41 (0.56-3.53)	0.4677	
	Can read and write	Simple	0.79 (0.41-1.52)	0.4770	0.94 (0.52-1.67)	0.8206	
		Multiple	1.09 (0.50-2.37)	0.8318	1.08 (0.54-2.14)	0.8271	
What is your current marital status (ref=Never married)	Married to a female	Simple	2.21 (1.03-4.73)	0.0415	3.99 (2.12-7.51)	<.0001	
		Multiple	2.09 (0.89-4.93)	0.0912	3.91 (1.91-8.03)	0.0002	
	Married to a male	Simple	0.39 (0.15-0.99)	0.0474	0.35 (0.16-0.76)	0.0084	
		Multiple	0.37 (0.14-0.96)	0.0405	0.33 (0.14-0.75)	0.0081	
	Married both to a female and male	Simple	1.54 (0.73-3.25)	0.2576	1.33 (0.68-2.60)	0.4020	
		Multiple	1.17 (0.51-2.71)	0.7119	1.18 (0.56-2.47)	0.6673	
Divorced/Widowed	Simple	1.95 (0.65-5.82)	0.2317	2.46 (0.97-6.29)	0.0590		
	Multiple	1.71 (0.53-5.53)	0.3740	2.59 (0.94-7.17)	0.0661		
Religion (ref=Hindu)	Muslim	Simple	2.44 (0.88-6.77)	0.0879	2.44 (0.99-5.99)	0.0524	
		Multiple	2.60 (0.85-7.95)	0.0927	2.41 (0.89-6.55)	0.0838	
	Christian	Simple	1.14 (0.27-4.87)	0.8632	0.38 (0.07-1.98)	0.2500	
		Multiple	1.32 (0.27-6.33)	0.7301	0.42 (0.07-2.39)	0.3269	
	Other	Simple	1.02 (0.39-2.65)	0.9678	0.58 (0.24-1.44)	0.2432	
		Multiple	1.02 (0.39-2.65)	0.9678	0.58 (0.24-1.44)	0.2432	
Sex workers (ref=No)	Yes	Simple	0.79 (0.46-1.36)	0.3995	0.83 (0.53-1.29)	0.4012	
		Multiple	0.75 (0.42-1.33)	0.3227	0.82 (0.51-1.33)	0.4214	
	Student	Simple	0.84 (0.42-1.65)	0.6078	0.91 (0.53-1.58)	0.7441	
		Multiple	0.85 (0.41-1.75)	0.6577	1.00 (0.55-1.81)	0.9993	
	Unemployed	Simple	1.71 (0.82-3.56)	0.1548	0.99 (0.51-1.94)	0.9830	
		Multiple	2.01 (0.92-4.42)	0.0818	1.07 (0.52-2.19)	0.8587	
	(ref=Sex workers)	Salaried employee & Hotel	Simple	1.41 (0.56-3.54)	0.4675	1.51 (0.70-3.22)	0.2918
			Multiple	1.50 (0.55-4.09)	0.4281	1.43 (0.61-3.34)	0.4063
		business/Trade or Self-employed/Professional	Simple	1.16 (0.49-2.76)	0.7355	1.29 (0.64-2.60)	0.4760
			Multiple	1.29 (0.51-3.25)	0.5863	1.31 (0.61-2.82)	0.4886
	Agricultural or Non-agricultural laborer	Simple	1.97 (0.83-4.66)	0.1223	2.22 (1.08-4.57)	0.0299	
		Multiple	2.18 (0.84-5.61)	0.1074	2.00 (0.89-4.51)	0.0942	
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.36 (0.81-2.29)	0.2382	1.54 (1.00-2.37)	0.0499	
		Multiple	1.43 (0.79-2.57)	0.2380	1.31 (0.79-2.17)	0.2887	
	≥= 10000/mth	Simple	0.84 (0.36-1.96)	0.6891	0.82 (0.41-1.67)	0.5912	
		Multiple	0.76 (0.30-1.94)	0.5682	0.69 (0.31-1.53)	0.3620	
Have specific place to live	No (ref=Yes)	Simple	1.46 (0.74-2.89)	0.2814	1.49 (0.83-2.67)	0.1781	
		Multiple	1.46 (0.70-3.06)	0.3127	1.62 (0.85-3.09)	0.1394	
Current place of living	Rural (ref=urban)	Simple	1.26 (0.67-2.39)	0.4767	1.13 (0.65-1.95)	0.6658	
		Multiple	1.15 (0.55-2.41)	0.7194	0.92 (0.48-1.77)	0.8067	
	Outside Kolkata but within West Bengal	Simple	1.31 (0.71-2.44)	0.3885	1.36 (0.81-2.27)	0.2429	
		Multiple	1.28 (0.64-2.55)	0.4849	1.24 (0.69-2.24)	0.4789	
Birthplace/place of origin (ref=Kolkata)	Outside West Bengal	Simple	2.50 (0.95-6.61)	0.0643	1.94 (0.80-4.72)	0.1433	
		Multiple	2.15 (0.76-6.12)	0.1514	1.67 (0.63-4.40)	0.3026	

Table 1.4 Association between Socio-demographics and age at first sex among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Type	How old were you when you first had sex with a male (ref=<15 yrs)					
			15-18yrs		19-25yrs		>25	
Variables	Strata		OR (95%CI)		p value	OR (95%CI)		p value
						OR (95%CI)		
Language (ref=Bengali)	Hindi	S	1.16 (0.66-2.01)	0.6097	1.17 (0.63-2.18)	0.6276	1.62 (0.71-3.69)	0.2500
		M	1.51 (0.65-3.50)	0.3412	0.94 (0.36-2.42)	0.8948	1.65 (0.49-5.53)	0.4193
Age in completed year (ref=<21)	21-39	S	0.86 (0.56-1.30)	0.4711	2.26 (1.31-3.89)	0.0033	3.62 (1.34-9.78)	0.0113
		M	0.84 (0.51-1.37)	0.4778	2.34 (1.27-4.32)	0.0064	2.72 (0.88-8.40)	0.0816
	>39	S	2.84 (0.77-10.41)	0.1154	7.60 (1.93-30.01)	0.0038	30.40 (6.07-152.29)	<.0001
		M	2.83 (0.70-11.41)	0.1444	8.41 (1.92-36.83)	0.0047	12.70 (2.10-76.94)	0.0057
Can you read and write (ref=illiterate)	Can read only	S	2.11 (0.93-4.79)	0.0734	1.46 (0.53-4.06)	0.4690	0.25 (0.05-1.24)	0.0896
		M	1.81 (0.75-4.35)	0.1880	1.29 (0.43-3.82)	0.6495	0.19 (0.03-1.06)	0.0587
	Can read and write	S	1.26 (0.71-2.24)	0.4358	1.69 (0.84-3.40)	0.1396	0.41 (0.19-0.86)	0.0187
		M	0.88 (0.46-1.71)	0.7145	1.39 (0.63-3.03)	0.4123	0.40 (0.16-1.01)	0.0514
What is your current marital status (ref=Never married)	Married to a female	S	0.99 (0.57-1.72)	0.9738	1.43 (0.78-2.60)	0.2450	3.81 (1.74-8.33)	0.0008
		M	0.82 (0.44-1.55)	0.5482	1.18 (0.60-2.33)	0.6252	1.74 (0.69-4.39)	0.2376
	Married to a male	S	0.50 (0.25-1.00)	0.0508	0.41 (0.17-1.03)	0.0574	0.52 (0.11-2.40)	0.3989
		M	0.57 (0.27-1.20)	0.1370	0.42 (0.16-1.07)	0.0678	0.38 (0.08-1.87)	0.2345
	Married both to a female and male	S	0.96 (0.49-1.88)	0.9038	1.32 (0.63-2.73)	0.4606	1.91 (0.66-5.54)	0.2336
		M	1.20 (0.56-2.58)	0.6373	1.45 (0.64-3.31)	0.3782	0.94 (0.27-3.27)	0.9273
Divorced/Widowed	S	1.21 (0.47-3.15)	0.6936	1.42 (0.49-4.10)	0.5158	1.55 (0.30-8.09)	0.6057	
	M	1.17 (0.41-3.31)	0.7668	1.62 (0.51-5.12)	0.4146	0.84 (0.14-5.01)	0.8471	
Religion (ref=Hindu)	Muslim	S	0.54 (0.25-1.15)	0.1097	0.48 (0.19-1.22)	0.1223	2.00 (0.79-5.06)	0.1429
		M	0.50 (0.22-1.14)	0.0978	0.52 (0.19-1.39)	0.1895	1.27 (0.42-3.82)	0.6703
	Christian	S	1.65 (0.32-8.63)	0.5527	1.66 (0.27-10.09)	0.5829	2.00 (0.18-22.71)	0.5761
		M	1.62 (0.29-9.07)	0.5824	2.37 (0.36-15.60)	0.3699	2.31 (0.17-32.04)	0.5330
	Other	S	0.79 (0.33-1.89)	0.5984	0.55 (0.18-1.66)	0.2913	1.20 (0.31-4.60)	0.7903
		M	0.54 (0.25-1.15)	0.1097	0.48 (0.19-1.22)	0.1223	2.00 (0.79-5.06)	0.1429
Religion (ref=Hindu)	Muslim	S	0.54 (0.25-1.15)	0.1097	0.48 (0.19-1.22)	0.1223	2.00 (0.79-5.06)	0.1429
		M	0.50 (0.22-1.14)	0.0979	0.52 (0.19-1.38)	0.1884	1.27 (0.42-3.82)	0.6696
	Other	S	0.94 (0.43-2.02)	0.8648	0.74 (0.29-1.86)	0.5191	1.33 (0.41-4.39)	0.6363
		M	0.84 (0.37-1.91)	0.6778	0.82 (0.31-2.20)	0.6960	1.40 (0.37-5.30)	0.6222
Sex workers (ref=No)	Yes	S	0.96 (0.62-1.48)	0.8592	0.66 (0.39-1.11)	0.1181	0.63 (0.29-1.38)	0.2485
		M	0.93 (0.59-1.47)	0.7594	0.75 (0.44-1.31)	0.3137	0.59 (0.25-1.39)	0.2244
(ref=Sex workers)	Student	S	1.24 (0.73-2.10)	0.4305	1.42 (0.75-2.67)	0.2816	0.61 (0.19-1.93)	0.3997
		M	1.30 (0.74-2.29)	0.3629	1.70 (0.86-3.34)	0.1271	0.98 (0.28-3.41)	0.9744
	Unemployed	S	0.48 (0.24-0.93)	0.0305	1.34 (0.67-2.69)	0.4040	1.50 (0.55-4.11)	0.4304
		M	0.55 (0.27-1.12)	0.0981	1.43 (0.68-2.99)	0.3493	1.82 (0.60-5.51)	0.2896
	Salaried employee & Hotel business/Trade or Self-employed/Professional	S	1.07 (0.50-2.31)	0.8601	1.50 (0.62-3.60)	0.3671	1.07 (0.26-4.43)	0.9241
		M	0.92 (0.40-2.11)	0.8370	0.71 (0.28-1.85)	0.4884	0.82 (0.17-3.86)	0.8022
	Agricultural or Non-agricultural laborer	S	0.94 (0.45-1.97)	0.8652	1.82 (0.81-4.07)	0.1488	3.44 (1.23-9.58)	0.0182
		M	0.92 (0.42-2.02)	0.8342	1.27 (0.54-3.03)	0.5833	2.85 (0.91-8.98)	0.0733
Average monthly income (ref=. <Rs. 3000/mth)	≥3000 and <10000/mth	S	1.60 (1.03-2.46)	0.0346	1.98 (1.21-3.24)	0.0066	1.69 (0.82-3.48)	0.1581
		M	1.52 (0.93-2.48)	0.0982	1.82 (1.04-3.19)	0.0362	1.56 (0.66-3.67)	0.3107
	≥= 10000/mth	S	1.08 (0.50-2.32)	0.8523	2.15 (0.98-4.73)	0.0567	2.99 (1.10-8.11)	0.0315
		M	0.94 (0.41-2.16)	0.8924	2.06 (0.86-4.93)	0.1043	3.68 (1.13-11.95)	0.0303
Have specific place to live	No (ref=Yes)	S	0.71 (0.40-1.27)	0.2523	1.06 (0.58-1.96)	0.8486	1.47 (0.65-3.34)	0.3513
		M	0.67 (0.36-1.25)	0.2087	1.14 (0.58-2.21)	0.7058	1.39 (0.55-3.50)	0.4893
Current place of living	Rural (ref=urban)	S	0.66 (0.37-1.17)	0.1502	0.91 (0.49-1.70)	0.7680	3.26 (1.59-6.71)	0.0013
		M	0.56 (0.29-1.08)	0.0849	0.88 (0.43-1.80)	0.7281	1.74 (0.71-4.31)	0.2291
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	S	1.37 (0.80-2.33)	0.2541	1.04 (0.55-1.96)	0.9036	3.25 (1.50-7.05)	0.0028
		M	1.50 (0.82-2.73)	0.1891	0.92 (0.46-1.86)	0.8242	1.94 (0.78-4.81)	0.1524
	Outside West Bengal	S	0.81 (0.32-2.04)	0.6508	1.65 (0.67-4.07)	0.2759	4.22 (1.43-12.41)	0.0090
		M	0.79 (0.29-2.16)	0.6421	1.52 (0.56-4.13)	0.4076	3.84 (1.13-13.06)	0.0312

Table 1.5 Association between Socio-demographics and being forced to have sex during the 1st sexual encounter with a male among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Regression type	Forced to have sex during the first sexual encounter with a male (ref=No)		
Variables	Strata		OR (95%CI)	p value	
Language (ref=Bengali)	Hindi	Simple	1.97 (1.24-3.13)	0.0042	
		Multiple	1.38 (0.69-2.76)	0.3647	
Age in completed year (ref=<21)	21-39	Simple	0.93 (0.62-1.40)	0.7191	
		Multiple	0.97 (0.60-1.55)	0.8858	
	>39	Simple	1.16 (0.52-2.61)	0.7207	
		Multiple	0.93 (0.37-2.37)	0.8826	
Can you read and write (ref=illiterate)	Can read only	Simple	1.37 (0.68-2.76)	0.3837	
		Multiple	1.63 (0.77-3.45)	0.2067	
	Can read and write	Simple	0.72 (0.43-1.21)	0.2157	
		Multiple	1.10 (0.61-1.97)	0.7573	
What is your current marital status (ref=Never married)	Married to a female	Simple	1.68 (1.03-2.72)	0.0364	
		Multiple	1.70 (0.97-2.95)	0.0625	
	Married to a male	Simple	2.01 (1.02-3.94)	0.0435	
		Multiple	2.06 (1.03-4.16)	0.0425	
	Married both to a female and male	Simple	2.07 (1.16-3.70)	0.0140	
		Multiple	2.26 (1.18-4.32)	0.0138	
	Divorced/Widowed	Simple	4.74 (2.20-10.21)	<.0001	
		Multiple	4.67 (2.04-10.66)	0.0003	
Religion (ref=Hindu)	Muslim	Simple	1.43 (0.73-2.78)	0.2959	
		Multiple	1.06 (0.52-2.18)	0.8651	
	Christian	Simple	1.15 (0.30-4.39)	0.8419	
		Multiple	0.80 (0.19-3.38)	0.7648	
	Other	Simple	1.53 (0.70-3.36)	0.2898	
		Multiple	1.18 (0.78-1.77)	0.4397	
Sex workers (ref=No)	Yes	Simple	1.18 (0.78-1.77)	0.4397	
		Multiple	1.01 (0.65-1.55)	0.9749	
Occupation (ref=Sex workers)	Student	Simple	0.98 (0.60-1.60)	0.9213	
		Multiple	1.21 (0.71-2.06)	0.4754	
	Unemployed	Simple	0.81 (0.44-1.48)	0.4863	
		Multiple	0.86 (0.45-1.63)	0.6379	
	Salaried employee & Hotel business/Trade or Self-employed/Professional	Simple	0.63 (0.29-1.36)	0.2391	
		Multiple	0.76 (0.33-1.75)	0.5169	
	Agricultural or Non-agricultural laborer	Simple	0.89 (0.47-1.71)	0.7364	
		Multiple	1.03 (0.52-2.04)	0.9430	
	Average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.78 (0.40-1.50)	0.4541
			Multiple	0.82 (0.40-1.68)	0.5948
		≥= 10000/mth	Simple	0.88 (0.59-1.30)	0.5194
			Multiple	0.88 (0.57-1.37)	0.5754
Have specific place to live	No (ref=Yes)	Simple	0.59 (0.28-1.21)	0.1504	
		Multiple	0.58 (0.26-1.26)	0.1668	
Current place of living (ref=urban)	rural	Simple	1.76 (1.08-2.86)	0.0224	
		Multiple	1.55 (0.92-2.62)	0.1010	
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.39 (0.85-2.25)	0.1869	
		Multiple	1.03 (0.59-1.80)	0.9164	
	Outside West Bengal	Simple	1.41 (0.89-2.25)	0.1448	
		Multiple	1.32 (0.78-2.24)	0.2999	
		Simple	1.67 (0.83-3.38)	0.1540	
		Multiple	1.24 (0.57-2.69)	0.5894	

Table 1.6 Association between Socio-demographics and sexual role while having sex with a male among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Regression type	Typical sexual role during anal sex with a male (ref=Predominantly receptive)				
			Predominantly insertive during anal sex with a male		Both receptive and insertive during anal sex with males		
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value	
Language (ref=Bengali)	Hindi	Simple	2.39 (1.30-4.40)	0.0050	2.09 (1.06-4.10)	0.0325	
		Multiple	0.95 (0.39-2.34)	0.9159	0.94 (0.37-2.39)	0.8961	
Age in completed year (ref=<21)	21-39	Simple	0.76 (0.49-1.16)	0.2005	1.26 (0.75-2.13)	0.3839	
		Multiple	0.56 (0.34-0.93)	0.0246	1.05 (0.58-1.90)	0.8690	
	>39	Simple	0.42 (0.15-1.16)	0.0953	2.50 (0.99-6.29)	0.0516	
		Multiple	0.19 (0.06-0.60)	0.0050	1.25 (0.42-3.73)	0.6863	
Can you read and write (ref=illiterate)	Can read only	Simple	1.49 (0.68-3.29)	0.3198	1.19 (0.49-2.93)	0.7002	
		Multiple	1.61 (0.67-3.86)	0.2879	1.49 (0.56-3.96)	0.4220	
	Can read and write	Simple	1.48 (0.86-2.57)	0.1591	1.26 (0.68-2.33)	0.4588	
		Multiple	1.69 (0.87-3.26)	0.1205	2.14 (1.03-4.45)	0.0416	
What is your current marital status (ref=Never married)	Married to a female	Simple	2.23 (1.28-3.87)	0.0045	1.93 (1.03-3.62)	0.0399	
		Multiple	3.04 (1.60-5.76)	0.0007	1.55 (0.75-3.20)	0.2344	
	Married to a male	Simple	0.37 (0.18-0.78)	0.0086	0.63 (0.29-1.36)	0.2363	
		Multiple	0.44 (0.20-0.95)	0.0377	0.59 (0.26-1.35)	0.2107	
	Married both to a female and male	Simple	2.62 (1.25-5.51)	0.0111	2.49 (1.09-5.64)	0.0297	
		Multiple	2.44 (1.07-5.57)	0.0345	1.94 (0.79-4.73)	0.1479	
Divorced/Widowed	Simple	2.30 (0.73-7.26)	0.1549	4.25 (1.33-13.54)	0.0144		
	Multiple	3.04 (0.88-10.50)	0.0790	4.44 (1.29-15.28)	0.0183		
Religion (ref=Hindu)	Muslim	Simple	1.28 (0.54-3.03)	0.5679	2.53 (1.06-6.02)	0.0363	
		Multiple	1.26 (0.48-3.30)	0.6354	2.47 (0.95-6.41)	0.0643	
	Christian	Simple	0.46 (0.12-1.73)	0.2486	0.45 (0.09-2.36)	0.3441	
		Multiple	0.55 (0.13-2.32)	0.4147	0.33 (0.06-1.99)	0.2288	
	Other	Simple	0.57 (0.23-1.41)	0.2228	1.12 (0.45-2.79)	0.8027	
		Multiple	0.67 (0.41-1.04)	0.0729	1.11 (0.69-1.79)	0.6669	
Sex workers (ref=No)	Yes	Simple	0.67 (0.41-1.08)	0.0993	1.16 (0.69-1.95)	0.5681	
		Multiple	1.28 (0.76-2.15)	0.3571	0.63 (0.34-1.15)	0.1283	
	Student	Simple	1.31 (0.74-2.32)	0.3548	0.72 (0.38-1.37)	0.3155	
		Multiple	1.31 (0.69-2.47)	0.4132	0.98 (0.49-1.97)	0.9549	
	Unemployed	Simple	1.31 (0.69-2.47)	0.4132	0.98 (0.49-1.97)	0.9549	
		Multiple	1.63 (0.81-3.27)	0.1720	1.16 (0.55-2.45)	0.7060	
	Salaried employee & Hotel business/Trade or Self-employed/Professional	Simple	1.71 (0.79-3.74)	0.1764	1.06 (0.44-2.55)	0.8937	
		Multiple	1.49 (0.63-3.54)	0.3634	0.80 (0.31-2.10)	0.6532	
	Agricultural or Non-agricultural laborer	Simple	1.75 (0.84-3.65)	0.1351	1.47 (0.67-3.22)	0.3347	
		Multiple	1.76 (0.79-3.89)	0.1664	1.23 (0.53-2.87)	0.6332	
	What is your average monthly income (ref=. <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	2.06 (1.02-4.15)	0.0448	0.98 (0.43-2.22)	0.9614
			Multiple	1.62 (0.74-3.55)	0.2289	0.63 (0.26-1.57)	0.3240
	>= 10000/mth	Simple	1.52 (1.01-2.31)	0.0469	1.12 (0.69-1.82)	0.6341	
		Multiple	1.49 (0.92-2.43)	0.1049	1.06 (0.61-1.84)	0.8312	
Have specific place to live	No (ref=Yes)	Simple	0.85 (0.50-1.45)	0.5478	0.75 (0.40-1.40)	0.3600	
		Multiple	0.84 (0.46-1.54)	0.5775	0.63 (0.32-1.26)	0.1904	
Current place of living	Rural (ref=urban)	Simple	0.54 (0.31-0.96)	0.0369	1.70 (0.98-2.95)	0.0591	
		Multiple	0.52 (0.26-1.01)	0.0538	1.29 (0.67-2.47)	0.4449	
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.94 (0.55-1.62)	0.8236	2.21 (1.27-3.84)	0.0049	
		Multiple	1.19 (0.65-2.18)	0.5813	1.94 (1.04-3.60)	0.0361	
	Outside West Bengal	Simple	5.01 (1.48-16.98)	0.0096	4.90 (1.33-18.04)	0.0168	
		Multiple	4.19 (1.14-15.35)	0.0308	3.61 (0.91-14.34)	0.0679	

Table 1.7 Association between Socio-demographics and self-identification of subgroups among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of regression	How do you identify yourself? (ref=Predominantly Kothi)			
			Predominantly Panthi		Double decker	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.50 (0.16-1.52)	0.2221	0.14 (0.02-1.09)	0.0605
		Multiple	0.24 (0.05-1.07)	0.0606	0.09 (0.01-0.86)	0.0368
Age in completed year (ref=<21)	21-39	Simple	0.55 (0.29-1.03)	0.0604	1.08 (0.52-2.27)	0.8356
		Multiple	0.42 (0.20-0.87)	0.0194	0.79 (0.34-1.81)	0.5744
	>39	Simple	0.85 (0.23-3.10)	0.8019	1.28 (0.30-5.54)	0.7411
		Multiple	0.37 (0.08-1.72)	0.2048	0.47 (0.09-2.50)	0.3732
Can you read and write (ref=illiterate)	Can read only	Simple	2.60 (0.76-8.86)	0.1266	0.60 (0.12-2.91)	0.5257
		Multiple	2.14 (0.58-7.92)	0.2529	0.50 (0.10-2.58)	0.4087
	Can read and write	Simple	1.28 (0.53-3.05)	0.5839	0.96 (0.40-2.31)	0.9221
		Multiple	1.03 (0.38-2.80)	0.9495	1.13 (0.41-3.10)	0.8192
What is your current marital status (ref=Never married)	Married to a female	Simple	2.84 (1.21-6.69)	0.0166	1.98 (0.77-5.12)	0.1559
		Multiple	3.62 (1.38-9.44)	0.0087	2.02 (0.71-5.78)	0.1885
	Married to a male	Simple	0.58 (0.23-1.46)	0.2496	0.56 (0.20-1.54)	0.2600
		Multiple	0.73 (0.27-1.95)	0.5290	0.53 (0.18-1.53)	0.2405
	Married both to a female and male	Simple	0.73 (0.23-2.35)	0.5950	0.56 (0.14-2.22)	0.4082
		Multiple	0.89 (0.25-3.14)	0.8554	0.45 (0.11-1.93)	0.2848
Divorced/ Widowed	Simple	1.94 (0.44-8.49)	0.3791	1.49 (0.29-7.72)	0.6359	
	Multiple	2.91 (0.60-14.20)	0.1875	1.44 (0.26-8.05)	0.6751	
Religion (ref=Hindu)	Muslim	Simple	3.15 (0.62-16.02)	0.1679	4.03 (0.76-21.50)	0.1030
		Multiple	3.56 (0.64-19.79)	0.1470	4.43 (0.76-25.89)	0.0985
	Christian	Simple	-	-	0.64 (0.12-3.44)	0.6071
		Multiple	-	-	0.65 (0.11-3.88)	0.6373
Other	Simple	1.05 (0.33-3.38)	0.9372	1.61 (0.49-5.25)	0.4288	
Sex workers (ref=No)	Yes	Simple	0.42 (0.22-0.83)	0.0116	1.08 (0.57-2.07)	0.8086
		Multiple	0.38 (0.19-0.78)	0.0082	1.12 (0.56-2.23)	0.7466
(ref=Sex workers)	Student	Simple	2.46 (1.13-5.36)	0.0234	0.71 (0.30-1.65)	0.4245
		Multiple	2.61 (1.13-5.99)	0.0242	0.76 (0.31-1.84)	0.5364
	Unemployed	Simple	1.83 (0.67-5.00)	0.2368	1.18 (0.44-3.17)	0.7421
		Multiple	2.36 (0.82-6.79)	0.1119	1.33 (0.47-3.81)	0.5905
	Salaried employee & Hotel	Simple	4.00 (1.28-12.51)	0.0171	1.65 (0.49-5.54)	0.4154
		Multiple	4.64 (1.34-16.04)	0.0152	1.44 (0.39-5.29)	0.5856
	Business/Trade or Self-employed/Professional	Simple	3.20 (1.20-8.54)	0.0202	1.28 (0.45-3.61)	0.6474
		Multiple	3.44 (1.20-9.88)	0.0215	1.16 (0.38-3.52)	0.7914
Agricultural or Non-agricultural laborer	Simple	1.17 (0.39-3.50)	0.7834	0.47 (0.14-1.64)	0.2381	
	Multiple	1.21 (0.37-3.97)	0.7566	0.34 (0.09-1.31)	0.1176	
Average monthly income (ref=. <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.27 (0.71-2.27)	0.4272	1.05 (0.54-2.04)	0.8877
		Multiple	1.23 (0.62-2.42)	0.5534	1.09 (0.51-2.30)	0.8311
	≥= 10000/mth	Simple	0.82 (0.24-2.76)	0.7494	2.10 (0.72-6.19)	0.1765
		Multiple	0.93 (0.25-3.45)	0.9129	3.07 (0.94-10.05)	0.0632
Have specific place to live	No (ref=Yes)	Simple	0.64 (0.26-1.56)	0.3301	0.72 (0.27-1.88)	0.4988
		Multiple	0.70 (0.27-1.81)	0.4565	0.62 (0.22-1.75)	0.3688
Current place of living	Rural (ref=urban)	Simple	0.56 (0.25-1.25)	0.1547	1.69 (0.81-3.50)	0.1596
		Multiple	0.50 (0.20-1.29)	0.1543	1.27 (0.53-3.01)	0.5942
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.81 (0.37-1.80)	0.6086	2.62 (1.24-5.51)	0.0112
		Multiple	1.01 (0.42-2.46)	0.9748	2.56 (1.12-5.84)	0.0254
	Outside West Bengal	Simple	0.50 (0.09-2.81)	0.4314	1.43 (0.31-6.68)	0.6505
		Multiple	0.55 (0.09-3.37)	0.5200	1.31 (0.26-6.56)	0.7470

Socio-demographic factors		Types of regression	How do you identify yourself? (ref=Predominantly Kothi)			
			Homosexual client of male sex workers		Bisexual client of male sex workers	
Variables	Strata		OR (95%CI)	P value	OR (95%CI)	P value
Language (ref=Bengali)	Hindi	Simple	2.59 (1.15-5.84)	0.0220	3.14 (1.53-6.44)	0.0018
		Multiple	2.14 (0.68-6.77)	0.1948	1.99 (0.70-5.63)	0.1975
Age in completed year (ref=<21)	21-39	Simple	0.74 (0.39-1.41)	0.3605	0.65 (0.38-1.12)	0.1231
		Multiple	0.79 (0.38-1.64)	0.5275	0.51 (0.27-0.96)	0.0374
	>39	Simple	1.42 (0.41-4.94)	0.5793	0.71 (0.23-2.26)	0.5661
		Multiple	1.12 (0.26-4.79)	0.8804	0.30 (0.08-1.16)	0.0802
Can you read and write (ref=illiterate)	Can read only	Simple	3.11 (0.91-10.69)	0.0716	1.12 (0.40-3.18)	0.8285
		Multiple	3.58 (0.97-13.24)	0.0563	1.07 (0.34-3.35)	0.9132
	Can read and write	Simple	1.40 (0.57-3.43)	0.4639	0.71 (0.37-1.38)	0.3094
		Multiple	1.87 (0.69-5.08)	0.2226	0.73 (0.33-1.62)	0.4376
What is your current marital status (ref=Never married)	Married to a female	Simple	2.57 (1.06-6.27)	0.0378	3.59 (1.67-7.71)	0.0011
		Multiple	2.96 (1.09-8.01)	0.0332	3.87 (1.66-8.99)	0.0017
	Married to a male	Simple	1.02 (0.44-2.36)	0.9607	0.14 (0.05-0.43)	0.0007
		Multiple	1.22 (0.49-2.99)	0.6732	0.14 (0.04-0.44)	0.0009
	Married both to a female and male	Simple	2.21 (0.85-5.77)	0.1041	2.57 (1.13-5.86)	0.0244
		Multiple	2.47 (0.87-7.02)	0.0899	1.95 (0.78-4.82)	0.1511
	Divorced/ Widowed	Simple	2.27 (0.52-9.97)	0.2778	2.60 (0.72-9.38)	0.1451
		Multiple	3.16 (0.65-15.36)	0.1548	2.74 (0.69-10.89)	0.1514
Religion (ref=Hindu)	Muslim	Simple	5.02 (1.05-23.94)	0.0430	4.86 (1.12-21.11)	0.0350
		Multiple	5.63 (1.09-29.21)	0.0397	4.73 (0.98-22.81)	0.0532
	Christian	Simple	0.22 (0.03-1.95)	0.1751	0.27 (0.06-1.13)	0.0733
		Multiple	0.20 (0.02-2.09)	0.1786	0.26 (0.05-1.38)	0.1131
	Other	Simple	1.12 (0.35-3.60)	0.8551	0.44 (0.14-1.41)	0.1671
		Multiple	1.12 (0.35-3.60)	0.8551	0.44 (0.14-1.41)	0.1671
Sex workers (ref=No)	Yes	Simple	0.67 (0.36-1.24)	0.1991	0.73 (0.44-1.20)	0.2132
		Multiple	0.62 (0.32-1.21)	0.1595	0.69 (0.39-1.21)	0.1950
(ref=Sex workers)	Student	Simple	1.69 (0.81-3.53)	0.1639	1.08 (0.57-2.02)	0.8207
		Multiple	1.86 (0.84-4.10)	0.1240	1.16 (0.58-2.31)	0.6757
	Unemployed	Simple	2.01 (0.81-4.96)	0.1314	1.55 (0.71-3.39)	0.2680
		Multiple	2.18 (0.83-5.68)	0.1119	1.82 (0.78-4.25)	0.1682
	Salaried employee & Hotel	Simple	1.89 (0.58-6.15)	0.2910	1.65 (0.60-4.54)	0.3360
		Multiple	2.29 (0.64-8.17)	0.2039	1.75 (0.58-5.29)	0.3222
	Business/Trade or Self-employed/Professional	Simple	0.99 (0.33-2.97)	0.9881	1.32 (0.56-3.07)	0.5255
		Multiple	0.89 (0.28-2.86)	0.8436	1.33 (0.53-3.36)	0.5482
	Agricultural or Non-agricultural laborer	Simple	0.83 (0.28-2.41)	0.7265	1.78 (0.83-3.85)	0.1415
		Multiple	0.77 (0.24-2.47)	0.6578	1.65 (0.68-3.99)	0.2681
Average monthly income (ref= <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.55 (0.30-1.04)	0.0649	1.07 (0.65-1.76)	0.7848
		Multiple	0.54 (0.27-1.10)	0.0875	1.02 (0.57-1.82)	0.9566
	≥= 10000/mth	Simple	1.29 (0.46-3.61)	0.6336	1.61 (0.65-3.97)	0.3007
		Multiple	1.38 (0.44-4.32)	0.5831	1.43 (0.51-3.97)	0.4943
Have specific place to live	No (ref=Yes)	Simple	0.90 (0.39-2.06)	0.8010	1.51 (0.79-2.90)	0.2152
		Multiple	0.84 (0.35-2.07)	0.7103	1.57 (0.75-3.28)	0.2275
Current place of living	Rural (ref=urban)	Simple	0.81 (0.38-1.70)	0.5779	0.62 (0.33-1.17)	0.1409
		Multiple	0.55 (0.23-1.31)	0.1759	0.39 (0.18-0.83)	0.0145
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.16 (0.55-2.47)	0.6919	1.23 (0.65-2.32)	0.5301
		Multiple	1.29 (0.55-3.02)	0.5606	1.59 (0.77-3.27)	0.2095
	Outside West Bengal	Simple	1.10 (0.26-4.54)	0.8996	3.07 (1.03-9.11)	0.0436
		Multiple	0.94 (0.21-4.24)	0.9358	2.46 (0.75-8.01)	0.1359

Table 1.8 Association between Socio-demographics and sexuality among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of regression	Have sex with (ref=Male only)	
Variables	Strata		Female and male both	
			OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	2.57 (1.51-4.36)	0.0005
		Multiple	1.79 (0.77-4.15)	0.1788
Age in completed year (ref=<21)	21-39	Simple	1.19 (0.81-1.74)	0.3859
		Multiple	0.80 (0.51-1.27)	0.3463
	>39	Simple	2.36 (0.99-5.66)	0.0540
		Multiple	0.91 (0.32-2.60)	0.8637
Can you read and write (ref=illiterate)	Can read only	Simple	1.34 (0.63-2.88)	0.4486
		Multiple	1.37 (0.57-3.28)	0.4773
	Can read and write	Simple	1.07 (0.63-1.80)	0.8032
		Multiple	1.24 (0.65-2.35)	0.5097
What is your current marital status (ref=Never married)	Married to a female	Simple	4.48 (2.46-8.18)	<.0001
		Multiple	3.90 (2.01-7.57)	<.0001
	Married to a male	Simple	0.28 (0.13-0.58)	0.0007
		Multiple	0.28 (0.13-0.61)	0.0014
	Married both to a female and male	Simple	1.69 (0.92-3.11)	0.0894
		Multiple	1.45 (0.74-2.85)	0.2759
Divorced/Widowed	Simple	5.85 (1.98-17.25)	0.0014	
	Multiple	7.22 (2.23-23.33)	0.0010	
Religion (ref=Hindu)	Muslim	Simple	0.83 (0.39-1.79)	0.6393
		Multiple	0.69 (0.28-1.69)	0.4123
	Christian	Simple	0.54 (0.12-2.45)	0.4251
		Multiple	0.80 (0.15-4.24)	0.7953
	Other	Simple	0.40 (0.19-0.85)	0.0170
		Multiple	0.37 (0.16-0.89)	0.0257
Sex workers (ref=No)	Yes	Simple	0.69 (0.46-1.02)	0.0649
		Multiple	0.74 (0.48-1.15)	0.1838
(ref=Sex workers)	Student	Simple	0.86 (0.53-1.38)	0.5180
		Multiple	0.90 (0.53-1.52)	0.6881
	Unemployed	Simple	1.59 (0.90-2.81)	0.1108
		Multiple	1.73 (0.92-3.25)	0.0918
	Salaried employee & Hotel	Simple	1.97 (1.00-3.88)	0.0494
		Multiple	1.46 (0.68-3.14)	0.3266
	business/Trade or Self-employed/Professional	Simple	1.62 (0.86-3.04)	0.1374
		Multiple	1.50 (0.74-3.02)	0.2629
	Agricultural or Non-agricultural laborer	Simple	3.67 (1.82-7.41)	0.0003
		Multiple	2.94 (1.34-6.44)	0.0071
Average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.65 (1.13-2.40)	0.0094
		Multiple	1.33 (0.85-2.09)	0.2093
	>= 10000/mth	Simple	2.04 (1.09-3.82)	0.0253
		Multiple	1.59 (0.77-3.28)	0.2129
Have specific place to live	No (ref=Yes)	Simple	1.26 (0.77-2.09)	0.3599
		Multiple	1.23 (0.69-2.19)	0.4915
Current place of living	Rural (ref=urban)	Simple	0.94 (0.58-1.54)	0.8169
		Multiple	0.85 (0.46-1.56)	0.5974
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.03 (0.65-1.62)	0.8958
		Multiple	0.89 (0.52-1.53)	0.6803
	Outside West Bengal	Simple	2.84 (1.12-7.20)	0.0274
		Multiple	2.02 (0.72-5.64)	0.1812

Table 1.9 Association between Socio-demographics and finding male partners commonly through internet among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of regression	Commonly find partners through internet (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.92 (0.58-1.44)	0.7033
		Multiple	1.73 (0.83-3.60)	0.1409
Age in completed year (ref=<21)	21-39	Simple	1.12 (0.77-1.62)	0.5632
		Multiple	1.63 (1.05-2.55)	0.0312
	>39	Simple	0.82 (0.38-1.80)	0.6232
		Multiple	1.95 (0.78-4.91)	0.1548
Can you read and write (ref=illiterate)	Can read only	Simple	1.68 (0.77-3.67)	0.1935
		Multiple	1.70 (0.74-3.89)	0.2086
	Can read and write	Simple	3.23 (1.82-5.75)	<.0001
		Multiple	2.93 (1.55-5.55)	0.0010
What is your current marital status (ref=Never married)	Married to a female	Simple	0.30 (0.18-0.49)	<.0001
		Multiple	0.35 (0.20-0.61)	0.0002
	Married to a male	Simple	0.69 (0.36-1.30)	0.2510
		Multiple	0.72 (0.36-1.44)	0.3532
	Married both to a female and male	Simple	0.67 (0.39-1.16)	0.1531
		Multiple	0.80 (0.43-1.51)	0.4966
Divorced/Widowed	Simple	0.50 (0.22-1.13)	0.0971	
	Multiple	0.68 (0.28-1.64)	0.3901	
Religion (ref=Hindu)	Muslim	Simple	0.52 (0.25-1.04)	0.0655
		Multiple	0.86 (0.39-1.88)	0.7064
	Christian	Simple	1.29 (0.39-4.28)	0.6792
		Multiple	1.28 (0.34-4.79)	0.7173
	Other	Simple	0.90 (0.42-1.92)	0.7760
		Multiple		
Sex workers (ref=No)	Yes	Simple	1.46 (1.01-2.11)	0.0454
		Multiple	1.80 (1.20-2.69)	0.0047
(ref=Sex workers)	Student	Simple	1.07 (0.69-1.67)	0.7645
		Multiple	0.89 (0.55-1.44)	0.6308
	Unemployed	Simple	0.52 (0.30-0.92)	0.0240
		Multiple	0.49 (0.27-0.90)	0.0219
	Salaried employee & Hotel	Simple	0.80 (0.42-1.52)	0.4899
		Multiple	0.49 (0.24-1.02)	0.0558
	business/Trade or Self-employed/Professional	Simple	0.36 (0.19-0.70)	0.0024
		Multiple	0.26 (0.13-0.53)	0.0002
	Agricultural or Non-agricultural laborer	Simple	0.51 (0.28-0.93)	0.0269
		Multiple	0.36 (0.18-0.71)	0.0032
What is your average monthly income (ref=<Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.96 (0.67-1.37)	0.8167
		Multiple	1.09 (0.71-1.66)	0.7028
	≥= 10000/mth	Simple	2.05 (1.15-3.66)	0.0149
		Multiple	2.63 (1.34-5.14)	0.0049
Have specific place to live	No (ref=Yes)	Simple	0.83 (0.51-1.34)	0.4415
		Multiple	1.05 (0.61-1.78)	0.8682
Current place of living	Rural (ref=urban)	Simple	0.92 (0.58-1.46)	0.7249
		Multiple	1.23 (0.71-2.14)	0.4591
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.06 (0.69-1.64)	0.7804
		Multiple	1.15 (0.69-1.90)	0.5908
	Outside West Bengal	Simple	0.74 (0.36-1.51)	0.4100
		Multiple	0.81 (0.36-1.78)	0.5914

Table 1.10 Association between Socio-demographics and finding male partners commonly through Community based organizations among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Type of regression	Community based organizations (ref=No)		
Variables	Strata		OR (95%CI)	p value	
Language (ref=Bengali)	Hindi	Simple	2.39 (1.51-3.80)	0.0002	
		Multiple	1.80 (0.89-3.63)	0.1029	
Age in completed year (ref=<21)	21-39	Simple	1.10 (0.72-1.68)	0.6567	
		Multiple	1.35 (0.83-2.20)	0.2316	
	>39	Simple	1.40 (0.62-3.16)	0.4241	
		Multiple	1.60 (0.63-4.07)	0.3276	
Can you read and write (ref=illiterate)	Can read only	Simple	0.66 (0.33-1.34)	0.2519	
		Multiple	0.70 (0.33-1.48)	0.3478	
	Can read and write	Simple	0.41 (0.25-0.67)	0.0004	
		Multiple	0.47 (0.27-0.84)	0.0097	
What is your current marital status (ref=Never married)	Married to a female	Simple	1.26 (0.76-2.09)	0.3631	
		Multiple	1.09 (0.61-1.93)	0.7731	
	Married to a male	Simple	1.60 (0.80-3.22)	0.1865	
		Multiple	1.34 (0.65-2.75)	0.4339	
	Married both to a female and male	Simple	2.32 (1.31-4.11)	0.0039	
		Multiple	1.95 (1.03-3.70)	0.0407	
	Divorced/Widowed	Simple	3.56 (1.65-7.66)	0.0012	
		Multiple	2.73 (1.18-6.31)	0.0193	
Religion (ref=Hindu)	Muslim	Simple	1.34 (0.68-2.64)	0.3996	
		Multiple	0.99 (0.47-2.10)	0.9874	
	Christian	Simple	1.20 (0.31-4.59)	0.7925	
		Multiple	0.88 (0.21-3.59)	0.8539	
	Other	Simple	1.16 (0.50-2.68)	0.7257	
		Multiple	1.34 (0.68-2.64)	0.3996	
Religion (ref=Hindu)	Muslim	Simple	0.99 (0.47-2.10)	0.9874	
		Multiple	1.17 (0.57-2.41)	0.6680	
	Other	Simple	0.88 (0.41-1.89)	0.7489	
		Multiple	1.60 (1.07-2.40)	0.0233	
Sex workers (ref=No)	Yes	Simple	1.60 (1.07-2.40)	0.0233	
		Multiple	1.49 (0.97-2.30)	0.0709	
(ref=Sex workers)	Student	Simple	0.59 (0.35-0.98)	0.0419	
		Multiple	0.77 (0.44-1.33)	0.3420	
	Salaried employee & Hotel	Simple	0.48 (0.22-1.05)	0.0665	
		Multiple	0.43 (0.18-0.99)	0.0482	
	business/Trade or Self-employed/Professional	Simple	0.49 (0.24-1.00)	0.0508	
		Multiple	0.44 (0.21-0.93)	0.0308	
	What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.29 (0.86-1.94)	0.2122
			Multiple	1.56 (0.99-2.46)	0.0555
≥= 10000/mth		Simple	1.76 (0.94-3.28)	0.0769	
		Multiple	2.21 (1.11-4.42)	0.0242	
Do you have specific place to live (ref=Yes)	No	Simple	1.38 (0.84-2.29)	0.2056	
		Multiple	1.15 (0.66-1.99)	0.6209	
What is your current place of living	Rural (ref=urban)	Simple	1.09 (0.65-1.81)	0.7468	
		Multiple	0.88 (0.49-1.58)	0.6607	
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.83 (0.50-1.38)	0.4643	
		Multiple	0.81 (0.46-1.42)	0.4575	
	Outside West Bengal	Simple	1.41 (0.69-2.89)	0.3476	
		Multiple	0.88 (0.40-1.96)	0.7601	

Table 2.1 Distribution of Knowledge regarding risk and prevention of HIV and STI among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Heard about infections transmitted sexually (STIs) (ref=No)	No	120	20.55 (17.26-23.83)
	Yes	464	79.45 (76.17-82.74)
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Poor	192	32.88 (29.06-36.70)
	Average	87	14.90 (12.00-17.79)
	Good	305	52.23 (48.16-56.29)
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Poor	72	12.33 (9.65-15.00)
	Average	91	15.58 (12.63-18.53)
	Good	421	72.09 (68.44-75.74)
Knowledge about prevention of HIV (ref=Poor)	Poor	260	44.52 (40.48-48.56)
	Average	173	29.62 (25.91-33.34)
	Good	151	25.86 (22.29-29.42)
Knowledge about condom use (ref=Poor)	Poor	117	20.03 (16.78-23.29)
	Average	285	48.80 (44.74-52.87)
	Good	182	31.16 (27.40-34.93)
Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Poor	199	34.08 (30.22-37.93)
	Average	237	40.58 (36.59-44.58)
	Good	148	25.34 (21.80-28.88)

Table 2.2 Association between Socio-demographics and hearing about sexually transmitted infections among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Type of regression	Heard about infections transmitted sexually (STIs) (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.31 (0.19-0.50)	<.0001
		Multiple	0.45 (0.21-0.98)	0.0430
Age in completed year (ref=<21)	21-39	Simple	1.42 (0.92-2.20)	0.1158
		Multiple	1.34 (0.77-2.33)	0.2961
	>39	Simple	0.57 (0.26-1.24)	0.1546
		Multiple	0.72 (0.28-1.87)	0.4981
can you read and write (ref=illiterate)	Can read only	Simple	1.54 (0.77-3.09)	0.2229
		Multiple	1.45 (0.66-3.16)	0.3533
	Can read and write	Simple	4.05 (2.44-6.72)	<.0001
		Multiple	2.85 (1.56-5.22)	0.0007
What is your current marital status (ref=Never married)	Married to a female	Simple	0.29 (0.17-0.48)	<.0001
		Multiple	0.31 (0.17-0.57)	0.0002
	Married to a male	Simple	0.49 (0.23-1.07)	0.0739
		Multiple	0.55 (0.23-1.30)	0.1737
	Married both to a female and male	Simple	0.24 (0.13-0.44)	<.0001
		Multiple	0.38 (0.18-0.78)	0.0091
	Divorced/Widowed	Simple	0.32 (0.14-0.75)	0.0084
		Multiple	0.70 (0.26-1.85)	0.4700
Religion (ref=Hindu)	Muslim	Simple	0.58 (0.29-1.17)	0.1269
		Multiple	1.06 (0.48-2.34)	0.8923
	Christian	Simple	0.18 (0.05-0.61)	0.0056
		Multiple	0.18 (0.04-0.77)	0.0205
	Other	Simple	0.28 (0.13-0.61)	0.0011
		Multiple	0.29 (0.12-0.70)	0.0055
Sex workers (ref=No)	Yes	Simple	0.82 (0.53-1.27)	0.3697
		Multiple	1.22 (0.74-2.02)	0.4406
What is your average monthly income (ref=<Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.51 (0.98-2.33)	0.0650
		Multiple	1.60 (0.95-2.72)	0.0803
	≥= 10000/mth	Simple	1.85 (0.84-4.09)	0.1288
		Multiple	2.52 (0.99-6.40)	0.0520
Do you have specific place to live (ref=Yes)	No	Simple	0.63 (0.37-1.06)	0.0801
		Multiple	0.96 (0.52-1.76)	0.8823
What is your current place of living	Rural (ref=urban)	Simple	0.61 (0.37-1.01)	0.0555
		Multiple	1.09 (0.58-2.05)	0.7805
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.82 (0.48-1.39)	0.4646
		Multiple	1.03 (0.55-1.93)	0.9279
	Outside West Bengal	Simple	0.15 (0.08-0.30)	<.0001
		Multiple	0.18 (0.08-0.40)	<.0001

Table 2.3 Association between Socio-demographics and knowledge regarding occurrence, transmission and symptoms of STI in men among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Type of OR	Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.33 (0.16-0.69)	0.0031	0.30 (0.19-0.49)	<.0001
		Multiple	0.41 (0.13-1.32)	0.1348	0.47 (0.22-0.97)	0.0419
Age in completed year (ref=<21)	21-39	Simple	1.25 (0.72-2.19)	0.4272	1.41 (0.95-2.10)	0.0921
		Multiple	1.35 (0.70-2.58)	0.3688	1.17 (0.72-1.90)	0.5181
	>39	Simple	0.62 (0.19-2.02)	0.4226	0.67 (0.30-1.47)	0.3129
		Multiple	0.99 (0.25-3.87)	0.9865	0.73 (0.29-1.85)	0.5124
can you read and write (ref=illiterate)	can read only	Simple	3.56 (1.10-11.48)	0.0340	1.32 (0.64-2.70)	0.4488
		Multiple	3.31 (0.97-11.29)	0.0557	1.23 (0.57-2.67)	0.5932
	can read and write	Simple	5.91 (2.25-15.53)	0.0003	3.32 (2.01-5.49)	<.0001
		Multiple	3.89 (1.38-10.92)	0.0101	2.60 (1.45-4.65)	0.0013
What is your current marital status (ref=Never married)	Married to a female	Simple	0.39 (0.20-0.76)	0.0057	0.40 (0.25-0.64)	0.0001
		Multiple	0.47 (0.22-1.03)	0.0591	0.43 (0.25-0.74)	0.0023
	Married to a male	Simple	0.39 (0.12-1.24)	0.1086	0.81 (0.41-1.62)	0.5530
		Multiple	0.48 (0.14-1.60)	0.2316	0.89 (0.42-1.89)	0.7685
	Married both to a female and male	Simple	0.38 (0.17-0.82)	0.0138	0.23 (0.12-0.41)	<.0001
		Multiple	0.57 (0.24-1.38)	0.2117	0.33 (0.17-0.66)	0.0017
	Divorced/Widowed	Simple	0.10 (0.01-0.82)	0.0314	0.50 (0.23-1.09)	0.0798
		Multiple	0.23 (0.03-1.94)	0.1771	0.92 (0.38-2.20)	0.8432
Religion (ref=Hindu)	Muslim	Simple	0.47 (0.17-1.30)	0.1477	0.54 (0.28-1.03)	0.0630
		Multiple	0.83 (0.28-2.51)	0.7461	0.87 (0.42-1.83)	0.7217
	Christian	Simple	-	-	0.21 (0.06-0.81)	0.0232
		Multiple	-	-	0.20 (0.05-0.91)	0.0366
	Other	Simple	0.29 (0.06-1.32)	0.1092	0.65 (0.30-1.40)	0.2724
		Multiple	0.35 (0.07-1.70)	0.1938	0.74 (0.32-1.72)	0.4822
Sex workers (ref=No)	Yes	Simple	0.66 (0.37-1.18)	0.1591	0.80 (0.54-1.18)	0.2589
		Multiple	0.89 (0.48-1.68)	0.7238	1.02 (0.65-1.58)	0.9452
What is your average monthly income (ref=<Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.20 (0.69-2.08)	0.5280	1.51 (1.02-2.22)	0.0379
		Multiple	1.36 (0.71-2.58)	0.3519	1.45 (0.92-2.29)	0.1107
	≥= 10000/mth	Simple	1.88 (0.83-4.30)	0.1323	1.26 (0.65-2.46)	0.4914
		Multiple	2.52 (0.97-6.56)	0.0580	1.45 (0.67-3.14)	0.3468
Have specific place to live	No (ref=Yes)	Simple	0.99 (0.50-1.98)	0.9904	0.83 (0.50-1.37)	0.4661
		Multiple	1.61 (0.74-3.49)	0.2298	1.22 (0.68-2.18)	0.5024
Current place of living	Rural (ref=urban)	Simple	0.63 (0.30-1.30)	0.2097	0.77 (0.48-1.24)	0.2843
		Multiple	1.18 (0.50-2.78)	0.7026	1.34 (0.75-2.39)	0.3273
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.72 (0.36-1.42)	0.3387	0.87 (0.55-1.39)	0.5582
		Multiple	0.86 (0.40-1.87)	0.7115	0.91 (0.53-1.56)	0.7269
	Outside West Bengal	Simple	0.21 (0.06-0.70)	0.0114	0.16 (0.07-0.36)	<.0001
		Multiple	0.26 (0.07-0.96)	0.0426	0.20 (0.08-0.49)	0.0004

Table 2.4 Association between Socio-demographics and knowledge regarding occurrence, transmission and symptoms of STI in men among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of Regression		Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)		
				Average	Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	P value
Language (ref=Bengali)	Hindi	Simple	0.56 (0.27-1.16)	0.1183	0.39 (0.22-0.69)	0.0013
		Multiple	0.71 (0.22-2.26)	0.5607	0.54 (0.21-1.36)	0.1889
Age in completed year (ref=<21)	21-39	Simple	1.30 (0.67-2.50)	0.4355	1.76 (1.03-2.99)	0.0382
		Multiple	1.89 (0.88-4.05)	0.1036	1.76 (0.93-3.32)	0.0827
	>39	Simple	0.72 (0.18-2.96)	0.6524	1.22 (0.43-3.46)	0.7117
		Multiple	1.56 (0.32-7.69)	0.5831	1.79 (0.53-6.05)	0.3474
can you read and write (ref=illiterate)	can read only	Simple	0.53 (0.17-1.64)	0.2709	0.93 (0.38-2.29)	0.8692
		Multiple	0.52 (0.16-1.76)	0.2949	0.82 (0.30-2.23)	0.7005
	can read and write	Simple	0.84 (0.38-1.86)	0.6658	1.75 (0.89-3.46)	0.1059
		Multiple	0.56 (0.22-1.42)	0.2238	1.14 (0.51-2.54)	0.7441
What is your current marital status (ref=Never married)	Married to a female	Simple	0.31 (0.14-0.69)	0.0046	0.46 (0.25-0.84)	0.0117
		Multiple	0.28 (0.11-0.72)	0.0079	0.40 (0.19-0.82)	0.0121
	Married to a male	Simple	1.03 (0.18-5.98)	0.9698	2.42 (0.56-10.55)	0.2381
		Multiple	0.93 (0.15-5.58)	0.9325	2.57 (0.57-11.70)	0.2209
	Married both to a female and male	Simple	0.48 (0.19-1.18)	0.1094	0.38 (0.18-0.80)	0.0102
		Multiple	0.41 (0.14-1.16)	0.0933	0.40 (0.17-0.96)	0.0398
Divorced/Widowed	Simple	0.52 (0.15-1.75)	0.2893	0.36 (0.13-0.99)	0.0479	
	Multiple	0.47 (0.12-1.79)	0.2698	0.46 (0.15-1.39)	0.1682	
Religion (ref=Hindu)	Muslim	Simple	0.50 (0.18-1.41)	0.1911	0.39 (0.18-0.86)	0.0192
		Multiple	0.65 (0.21-2.01)	0.4554	0.48 (0.20-1.16)	0.1047
	Christian	Simple	0.72 (0.14-3.71)	0.6943	0.24 (0.06-1.05)	0.0576
		Multiple	0.73 (0.12-4.36)	0.7299	0.24 (0.05-1.20)	0.0822
	Other	Simple	0.86 (0.25-2.98)	0.8169	0.56 (0.20-1.55)	0.2599
		Multiple	0.89 (0.24-3.32)	0.8634	0.59 (0.19-1.78)	0.3486
Sex workers (ref=No)	Yes	Simple	1.16 (0.59-2.28)	0.6774	0.95 (0.55-1.67)	0.8685
Average monthly income (ref= <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.86 (0.44-1.68)	0.6604	1.34 (0.79-2.26)	0.2781
		Multiple	0.95 (0.45-2.01)	0.8970	1.25 (0.68-2.30)	0.4641
	≥= 10000/mth	Simple	3.20 (0.65-15.84)	0.1541	4.71 (1.10-20.16)	0.0365
		Multiple	4.62 (0.87-24.47)	0.0717	5.88 (1.29-26.76)	0.0219
Have specific place to live	No (ref=Yes)	Simple	0.62 (0.25-1.52)	0.2957	0.91 (0.47-1.79)	0.7911
Current place of living	Rural (ref=urban)	Simple	0.69 (0.26-1.83)	0.4570	1.11 (0.52-2.34)	0.7899
		Multiple	1.38 (0.57-3.37)	0.4776	1.37 (0.65-2.89)	0.4053
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	2.22 (0.80-6.16)	0.1263	2.48 (1.05-5.85)	0.0380
		Multiple	0.56 (0.25-1.26)	0.1615	0.74 (0.40-1.37)	0.3402
	Outside West Bengal	Simple	0.48 (0.19-1.22)	0.1226	0.61 (0.30-1.25)	0.1746
		Multiple	0.69 (0.24-1.95)	0.4798	0.41 (0.17-0.98)	0.0446
	Bengal	Simple	0.75 (0.23-2.42)	0.6337	0.50 (0.19-1.34)	0.1681
		Multiple				

Table 2.5 Association between Socio-demographics and knowledge regarding prevention of HIV among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of regression	Knowledge about prevention of HIV (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.56 (0.33-0.94)	0.0296	0.36 (0.19-0.66)	0.0011
		Multiple	0.83 (0.38-1.83)	0.6480	0.37 (0.14-0.94)	0.0377
Age in completed year (ref=<21)	21-39	Simple	1.07 (0.70-1.63)	0.7519	1.55 (0.97-2.46)	0.0643
		Multiple	0.90 (0.55-1.46)	0.6637	1.35 (0.78-2.34)	0.2817
	>39	Simple	0.48 (0.18-1.27)	0.1379	1.09 (0.45-2.64)	0.8452
		Multiple	0.48 (0.16-1.45)	0.1942	1.71 (0.59-4.98)	0.3267
Can you read and write (ref=illiterate)	Can read only	Simple	0.88 (0.40-1.93)	0.7510	1.93 (0.62-6.01)	0.2568
		Multiple	0.89 (0.39-2.03)	0.7776	2.06 (0.63-6.69)	0.2307
	Can read and write	Simple	1.95 (1.14-3.33)	0.0149	7.52 (3.14-17.99)	<.0001
		Multiple	1.77 (0.96-3.27)	0.0667	6.62 (2.61-16.76)	<.0001
What is your current marital status (ref=Never married)	Married to a female	Simple	0.55 (0.33-0.92)	0.0223	0.55 (0.32-0.94)	0.0282
		Multiple	0.65 (0.36-1.16)	0.1435	0.65 (0.35-1.22)	0.1780
	Married to a male	Simple	1.63 (0.74-3.59)	0.2292	2.11 (0.97-4.60)	0.0601
		Multiple	1.98 (0.86-4.56)	0.1074	2.97 (1.27-6.94)	0.0120
	Married both to a female and male	Simple	0.48 (0.25-0.92)	0.0276	0.48 (0.24-0.95)	0.0363
		Multiple	0.62 (0.30-1.28)	0.1951	0.76 (0.35-1.63)	0.4824
Divorced/Widowed	Simple	0.54 (0.23-1.30)	0.1683	0.31 (0.10-0.95)	0.0412	
	Multiple	0.80 (0.32-2.04)	0.6445	0.58 (0.17-1.94)	0.3735	
Religion (ref=Hindu)	Muslim	Simple	0.77 (0.39-1.52)	0.4444	0.24 (0.08-0.69)	0.0085
		Multiple	1.01 (0.48-2.13)	0.9904	0.34 (0.11-1.06)	0.0630
	Christian	Simple	0.95 (0.26-3.42)	0.9357	0.26 (0.03-2.15)	0.2097
		Multiple	1.08 (0.27-4.33)	0.9145	0.33 (0.03-3.21)	0.3385
	Other	Simple	0.53 (0.20-1.40)	0.2003	0.77 (0.32-1.84)	0.5547
		Multiple	0.60 (0.22-1.64)	0.3184	1.08 (0.41-2.82)	0.8768
Sex workers (ref=No)	Yes	Simple	0.65 (0.42-1.00)	0.0501	0.57 (0.36-0.90)	0.0163
		Multiple	0.69 (0.44-1.08)	0.1054	0.70 (0.42-1.16)	0.1680
Average monthly income (ref=. <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.16 (0.77-1.74)	0.4814	1.27 (0.82-1.95)	0.2840
		Multiple	1.20 (0.75-1.90)	0.4507	1.08 (0.64-1.80)	0.7838
	≥= 10000/mth	Simple	0.62 (0.29-1.32)	0.2137	1.21 (0.62-2.36)	0.5793
		Multiple	0.63 (0.28-1.41)	0.2588	0.89 (0.41-1.94)	0.7757
Have specific place to live	No (ref=Yes)	Simple	0.68 (0.40-1.16)	0.1568	0.52 (0.29-0.96)	0.0363
		Multiple	0.74 (0.42-1.33)	0.3174	0.64 (0.33-1.25)	0.1937
Current place of living	Rural (ref=urban)	Simple	0.86 (0.51-1.45)	0.5705	0.71 (0.40-1.25)	0.2380
		Multiple	1.12 (0.61-2.06)	0.7071	1.33 (0.68-2.63)	0.4066
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.09 (0.67-1.76)	0.7266	0.63 (0.36-1.11)	0.1087
		Multiple	1.26 (0.73-2.18)	0.4112	0.61 (0.32-1.15)	0.1270
	Outside West Bengal	Simple	0.58 (0.26-1.29)	0.1783	0.39 (0.16-0.99)	0.0485
		Multiple	0.82 (0.34-1.94)	0.6465	0.54 (0.20-1.49)	0.2360

Table 2.6 Association between Socio-demographics and knowledge regarding condom use among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Types of OR	Knowledge about condom use (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.52 (0.31-0.86)	0.0106	0.17 (0.09-0.35)	<.0001
		Multiple	0.45 (0.21-0.99)	0.0463	0.18 (0.06-0.49)	0.0008
Age in completed year (ref=<21)	21-39	Simple	0.78 (0.48-1.28)	0.3310	0.85 (0.50-1.45)	0.5523
		Multiple	0.93 (0.53-1.63)	0.8044	0.72 (0.39-1.34)	0.3015
	>39	Simple	0.47 (0.19-1.16)	0.1009	0.56 (0.21-1.49)	0.2415
		Multiple	0.63 (0.22-1.80)	0.3928	0.55 (0.17-1.77)	0.3138
can you read and write (ref=illiterate)	can read only	Simple	1.49 (0.65-3.41)	0.3434	1.56 (0.57-4.28)	0.3906
		Multiple	1.49 (0.61-3.59)	0.3807	1.20 (0.41-3.50)	0.7425
	can read and write	Simple	1.28 (0.73-2.25)	0.3942	2.68 (1.34-5.36)	0.0052
		Multiple	0.97 (0.51-1.86)	0.9315	1.52 (0.70-3.30)	0.2935
What is your current marital status (ref=Never married)	Married to a female	Simple	0.69 (0.39-1.23)	0.2125	0.71 (0.38-1.30)	0.2600
		Multiple	0.88 (0.45-1.70)	0.6997	0.93 (0.46-1.88)	0.8352
	Married to a male	Simple	0.48 (0.22-1.06)	0.0678	0.54 (0.24-1.24)	0.1480
		Multiple	0.50 (0.22-1.14)	0.0979	0.73 (0.31-1.72)	0.4668
	Married both to a female and male	Simple	0.48 (0.25-0.90)	0.0214	0.25 (0.11-0.54)	0.0005
		Multiple	0.44 (0.22-0.91)	0.0261	0.32 (0.13-0.75)	0.0090
Divorced/Widowed	Simple	0.44 (0.19-1.01)	0.0529	0.12 (0.03-0.44)	0.0015	
	Multiple	0.47 (0.19-1.16)	0.1019	0.16 (0.04-0.65)	0.0101	
Religion (ref=Hindu)	Muslim	Simple	0.56 (0.27-1.15)	0.1131	0.41 (0.18-0.96)	0.0395
		Multiple	0.71 (0.32-1.55)	0.3843	0.63 (0.25-1.58)	0.3204
	Christian	Simple	0.65 (0.15-2.77)	0.5608	0.57 (0.11-2.90)	0.5008
		Multiple	0.98 (0.21-4.62)	0.9795	0.89 (0.15-5.15)	0.8946
	Other	Simple	1.24 (0.48-3.19)	0.6625	0.48 (0.14-1.61)	0.2328
		Multiple	1.45 (0.53-3.97)	0.4641	0.66 (0.18-2.37)	0.5251
Sex workers (ref=No)	Yes	Simple	0.76 (0.48-1.21)	0.2528	0.54 (0.32-0.91)	0.0207
		Multiple	0.79 (0.48-1.28)	0.3370	0.61 (0.35-1.05)	0.0723
Average monthly income (ref=<Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.60 (0.38-0.95)	0.0277	0.88 (0.54-1.42)	0.5915
		Multiple	0.54 (0.32-0.89)	0.0160	0.65 (0.37-1.13)	0.1268
	≥= 10000/mth	Simple	1.13 (0.52-2.44)	0.7610	0.71 (0.29-1.75)	0.4569
		Multiple	1.09 (0.47-2.53)	0.8333	0.58 (0.21-1.54)	0.2715
Have specific place to live	No (ref=Yes)	Simple	0.95 (0.52-1.73)	0.8673	0.96 (0.50-1.83)	0.8956
		Multiple	1.18 (0.62-2.26)	0.6199	1.35 (0.66-2.74)	0.4115
Current place of living	Rural (ref=urban)	Simple	0.69 (0.40-1.19)	0.1816	0.53 (0.29-0.99)	0.0467
		Multiple	1.07 (0.57-2.03)	0.8289	0.75 (0.36-1.55)	0.4380
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.38 (0.22-0.66)	0.0006	0.78 (0.45-1.34)	0.3654
		Multiple	0.37 (0.20-0.68)	0.0015	0.90 (0.48-1.68)	0.7362
	Outside West Bengal	Simple	0.87 (0.39-1.95)	0.7305	0.38 (0.13-1.12)	0.0789
		Multiple	1.10 (0.46-2.66)	0.8248	0.69 (0.22-2.19)	0.5261

Table 2.7 Association between Socio-demographics and knowledge regarding Overall knowledge regarding risk and prevention of HIV and STI among the participating MSM, Kolkata, 2016 (N=584)

Socio-demographic factors		Type of regression	Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.33 (0.20-0.55)	<.0001	0.20 (0.10-0.40)	<.0001
		Multiple	0.38 (0.18-0.80)	0.0105	0.32 (0.12-0.88)	0.0274
Age in completed year (ref=<21)	21-39	Simple	1.18 (0.78-1.79)	0.4237	1.43 (0.89-2.30)	0.1407
		Multiple	1.12 (0.69-1.81)	0.6531	1.09 (0.61-1.94)	0.7774
	>39	Simple	0.93 (0.41-2.10)	0.8587	0.72 (0.25-2.01)	0.5251
		Multiple	1.10 (0.43-2.80)	0.8470	1.03 (0.30-3.54)	0.9595
can you read and write (ref=illiterate)	can read only	Simple	1.60 (0.77-3.34)	0.2086	2.28 (0.81-6.43)	0.1202
		Multiple	1.34 (0.62-2.89)	0.4582	1.98 (0.66-5.98)	0.2257
	can read and write	Simple	3.23 (1.90-5.49)	<.0001	6.91 (3.15-15.15)	<.0001
		Multiple	2.35 (1.31-4.23)	0.0043	4.09 (1.73-9.67)	0.0014
What is your current marital status (ref=Never married)	Married to a female	Simple	0.59 (0.36-0.94)	0.0272	0.30 (0.16-0.56)	0.0001
		Multiple	0.71 (0.41-1.24)	0.2275	0.33 (0.16-0.67)	0.0021
	Married to a male	Simple	0.54 (0.24-1.21)	0.1353	1.14 (0.54-2.41)	0.7356
		Multiple	0.68 (0.29-1.59)	0.3760	1.58 (0.69-3.64)	0.2808
	Married both to a female and male	Simple	0.35 (0.19-0.63)	0.0005	0.16 (0.07-0.37)	<.0001
		Multiple	0.47 (0.24-0.90)	0.0241	0.25 (0.10-0.64)	0.0037
	Divorced/Widowed	Simple	0.39 (0.17-0.91)	0.0288	0.28 (0.10-0.80)	0.0177
		Multiple	0.64 (0.26-1.59)	0.3371	0.54 (0.17-1.73)	0.3004
Religion (ref=Hindu)	Muslim	Simple	0.43 (0.22-0.84)	0.0133	0.13 (0.04-0.44)	0.0011
		Multiple	0.63 (0.31-1.31)	0.2157	0.20 (0.05-0.73)	0.0150
	Christian	Simple	0.50 (0.14-1.79)	0.2849	0.19 (0.02-1.60)	0.1263
		Multiple	0.65 (0.16-2.65)	0.5434	0.23 (0.02-2.24)	0.2054
	Other	Simple	0.62 (0.26-1.47)	0.2801	0.76 (0.30-1.91)	0.5600
		Multiple	0.75 (0.30-1.87)	0.5350	1.01 (0.36-2.80)	0.9889
Sex workers (ref=No)	Yes	Simple	0.85 (0.56-1.28)	0.4414	0.57 (0.35-0.94)	0.0273
		Multiple	1.06 (0.68-1.65)	0.8064	0.71 (0.41-1.23)	0.2267
Average monthly income (ref=<Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.35 (0.90-2.03)	0.1477	1.75 (1.11-2.76)	0.0159
		Multiple	1.27 (0.80-2.03)	0.3055	1.49 (0.86-2.57)	0.1526
	≥= 10000/mth	Simple	1.63 (0.82-3.24)	0.1664	1.75 (0.81-3.80)	0.1572
		Multiple	1.79 (0.83-3.85)	0.1392	1.55 (0.62-3.86)	0.3454
Have specific place to live	No (ref=Yes)	Simple	0.84 (0.50-1.42)	0.5192	0.79 (0.43-1.43)	0.4325
		Multiple	1.21 (0.68-2.14)	0.5238	1.19 (0.59-2.38)	0.6253
Current place of living	Rural (ref=urban)	Simple	0.71 (0.43-1.17)	0.1797	0.52 (0.28-0.95)	0.0343
		Multiple	1.16 (0.65-2.07)	0.6166	1.15 (0.55-2.40)	0.7073
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.73 (0.45-1.19)	0.2122	0.72 (0.42-1.25)	0.2403
		Multiple	0.74 (0.43-1.29)	0.2934	0.75 (0.40-1.43)	0.3842
	Outside West Bengal	Simple	0.38 (0.18-0.80)	0.0102	0.15 (0.04-0.51)	0.0023
		Multiple	0.47 (0.21-1.05)	0.0669	0.23 (0.06-0.84)	0.0267

Table 2.8 Association between sexual preferences/experiences/behavior and knowledge regarding occurrence, transmission and symptoms of STI in men among the participating MSM, Kolkata, 2016 (N=584)

Sexual preferences/experiences/behavior		Types of regression	Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.86 (0.39-1.92)	0.7148	0.91 (0.53-1.56)	0.7173
		Multiple	1.10 (0.47-2.60)	0.8276	1.06 (0.57-1.95)	0.8567
	Equally to men and women	Simple	0.89 (0.47-1.70)	0.7253	0.71 (0.45-1.12)	0.1374
		Multiple	1.04 (0.52-2.09)	0.9091	0.78 (0.47-1.30)	0.3458
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.90 (0.45-1.79)	0.7640	0.59 (0.38-0.94)	0.0250
		Multiple	0.80 (0.39-1.67)	0.5581	0.55 (0.33-0.91)	0.0189
	. 19-25yrs	Simple	1.30 (0.63-2.68)	0.4749	0.49 (0.29-0.82)	0.0067
		Multiple	1.11 (0.51-2.41)	0.7982	0.42 (0.23-0.74)	0.0029
	>25	Simple	0.98 (0.38-2.54)	0.9607	0.30 (0.14-0.63)	0.0014
		Multiple	1.54 (0.52-4.56)	0.4351	0.37 (0.16-0.86)	0.0212
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.69 (0.39-1.23)	0.2072	0.56 (0.37-0.83)	0.0045
		Multiple	0.88 (0.48-1.62)	0.6783	0.66 (0.42-1.03)	0.0669
Typical sexual role during anal sex with a man (ref=Predominantly receptive)	Predominantly insertive	Simple	0.96 (0.52-1.76)	0.8934	0.68 (0.44-1.06)	0.0884
		Multiple	0.97 (0.50-1.89)	0.9221	0.73 (0.45-1.20)	0.2145
	Both receptive and insertive	Simple	0.78 (0.37-1.64)	0.5150	0.97 (0.59-1.59)	0.8943
		Multiple	0.82 (0.37-1.82)	0.6208	1.08 (0.62-1.90)	0.7821
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	1.03 (0.44-2.41)	0.9508	0.84 (0.45-1.60)	0.6029
		Multiple	0.99 (0.39-2.48)	0.9805	0.86 (0.42-1.73)	0.6627
	Double decker	Simple	1.02 (0.37-2.83)	0.9705	1.38 (0.67-2.87)	0.3836
		Multiple	1.06 (0.36-3.14)	0.9145	1.41 (0.64-3.12)	0.3980
	Homosexual client of male sex workers	Simple	1.06 (0.43-2.60)	0.9033	1.23 (0.64-2.37)	0.5363
		Multiple	1.11 (0.42-2.92)	0.8368	1.60 (0.78-3.28)	0.2035
Bisexual client of male sex workers	Simple	0.60 (0.29-1.26)	0.1781	0.59 (0.35-1.00)	0.0506	
	Multiple	0.67 (0.30-1.50)	0.3283	0.74 (0.41-1.35)	0.3295	
Do you have sex with? (ref=Male only)	Female and male both	Simple	1.09 (0.62-1.91)	0.7596	0.71 (0.48-1.05)	0.0880
		Multiple	1.20 (0.64-2.23)	0.5697	0.74 (0.47-1.17)	0.1951
Commonly find partners through internet	Yes (ref=No)	Simple	1.07 (0.62-1.85)	0.8204	1.98 (1.35-2.91)	0.0005
		Multiple	0.73 (0.40-1.33)	0.2959	1.67 (1.08-2.58)	0.0201
Commonly find partners through community based organizations (ref=No)	Yes	Simple	1.25 (0.69-2.26)	0.4672	1.31 (0.85-2.01)	0.2182
		Multiple	1.74 (0.90-3.34)	0.0973	1.84 (1.13-2.99)	0.0147
	Yes	Simple	1.51 (0.89-2.55)	0.1250	1.73 (1.19-2.51)	0.0040
		Multiple	1.26 (0.72-2.23)	0.4190	1.30 (0.86-1.97)	0.2093

Table 2.9 Association between sexual preferences/experiences/behavior and knowledge regarding the occurrence, transmission and symptoms of HIV among the participating MSM, Kolkata, 2016 (N=584)

Sexual preferences/experiences/behavior		Types of regression	Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	P value	OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.62 (0.25-1.54)	0.3028	0.46 (0.23-0.93)	0.0296
		Multiple	0.87 (0.33-2.28)	0.7691	0.64 (0.30-1.37)	0.2471
	Equally to men and women	Simple	1.12 (0.50-2.54)	0.7804	0.77 (0.40-1.48)	0.4287
		Multiple	1.70 (0.71-4.05)	0.2331	1.07 (0.53-2.19)	0.8486
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.47 (0.22-1.01)	0.0536	0.72 (0.38-1.34)	0.2952
		Multiple	0.46 (0.20-1.03)	0.0586	0.72 (0.37-1.41)	0.3358
	19-25yrs	Simple	0.79 (0.33-1.88)	0.5921	0.91 (0.44-1.89)	0.7937
		Multiple	0.77 (0.31-1.92)	0.5699	0.83 (0.38-1.81)	0.6327
	>25	Simple	0.96 (0.25-3.75)	0.9528	1.28 (0.41-4.06)	0.6725
		Multiple	1.24 (0.28-5.44)	0.7748	1.55 (0.44-5.46)	0.4935
Forced to have sex during the first sexual encounter with a male	Yes (ref=No)	Simple	1.06 (0.53-2.12)	0.8770	0.94 (0.53-1.66)	0.8273
		Multiple	1.36 (0.65-2.87)	0.4124	1.24 (0.67-2.29)	0.5026
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.60 (0.27-1.31)	0.1977	0.51 (0.27-0.98)	0.0417
		Multiple	0.79 (0.34-1.84)	0.5882	0.65 (0.32-1.31)	0.2236
	Both receptive and insertive	Simple	0.88 (0.35-2.18)	0.7745	0.80 (0.38-1.72)	0.5730
		Multiple	1.13 (0.42-3.00)	0.8082	0.95 (0.42-2.19)	0.9113
	Predominantly Panthi	Simple	1.23 (0.38-4.00)	0.7299	0.90 (0.34-2.39)	0.8284
		Multiple	1.89 (0.55-6.51)	0.3148	1.26 (0.45-3.56)	0.6607
How do you identify yourself? (ref=Predominantly Kothi)	Double decker	Simple	1.90 (0.46-7.92)	0.3761	1.50 (0.44-5.13)	0.5180
		Multiple	2.34 (0.53-10.25)	0.2591	1.71 (0.48-6.16)	0.4107
	Homosexual client of male sex workers	Simple	0.65 (0.21-1.98)	0.4444	0.50 (0.21-1.22)	0.1267
		Multiple	0.86 (0.27-2.78)	0.8019	0.64 (0.25-1.67)	0.3647
	Bisexual client of male sex workers	Simple	0.73 (0.28-1.93)	0.5271	0.51 (0.24-1.12)	0.0953
		Multiple	1.14 (0.41-3.19)	0.8062	0.82 (0.35-1.92)	0.6518
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.58 (0.28-1.19)	0.1387	0.65 (0.36-1.19)	0.1634
		Multiple	0.72 (0.33-1.57)	0.4079	0.77 (0.39-1.49)	0.4338
Commonly find partners through internet (ref=No)	Yes	Simple	1.51 (0.77-2.98)	0.2314	1.93 (1.10-3.37)	0.0215
		Multiple	1.18 (0.57-2.45)	0.6552	1.57 (0.86-2.89)	0.1433
Commonly find partners through community based organizations (ref=No)	Yes	Simple	1.02 (0.50-2.07)	0.9674	0.96 (0.54-1.71)	0.8874
		Multiple	0.97 (0.45-2.09)	0.9430	1.06 (0.56-1.98)	0.8676
	Yes	Simple	1.37 (0.73-2.55)	0.3270	1.78 (1.07-2.94)	0.0257
		Multiple	1.15 (0.59-2.24)	0.6924	1.41 (0.81-2.44)	0.2216

Table 2.10 Association between sexual preferences/experiences/behavior and knowledge about prevention of HIV among the participating MSM, Kolkata, 2016 (N=584)

Sexual preferences/experiences/behavior		Types of regression	Knowledge about prevention of HIV (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	p value	OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.57 (0.32-1.01)	0.0552	0.34 (0.18-0.63)	0.0007
		Multiple	0.57 (0.31-1.05)	0.0722	0.37 (0.19-0.72)	0.0033
	Equally to men and women	Simple	0.63 (0.39-1.03)	0.0644	0.49 (0.30-0.80)	0.0044
		Multiple	0.67 (0.40-1.14)	0.1376	0.57 (0.33-0.98)	0.0434
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	1.04 (0.65-1.67)	0.8786	0.72 (0.44-1.18)	0.1926
		Multiple	1.11 (0.67-1.83)	0.6797	0.71 (0.42-1.22)	0.2175
	. 19-25yrs	Simple	0.62 (0.36-1.09)	0.0993	0.73 (0.42-1.25)	0.2477
		Multiple	0.61 (0.34-1.11)	0.1034	0.60 (0.33-1.08)	0.0872
	>25	Simple	0.66 (0.31-1.42)	0.2910	0.35 (0.14-0.87)	0.0241
		Multiple	0.73 (0.32-1.69)	0.4621	0.39 (0.14-1.07)	0.0666
Forced to have sex during the first sexual encounter with a male	Yes (ref=No)	Simple	0.72 (0.47-1.12)	0.1423	0.51 (0.32-0.83)	0.0072
		Multiple	0.74 (0.47-1.18)	0.2095	0.60 (0.35-1.01)	0.0529
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.90 (0.57-1.42)	0.6521	1.03 (0.63-1.68)	0.9063
		Multiple	0.99 (0.60-1.62)	0.9612	1.23 (0.71-2.13)	0.4534
	Both receptive and insertive	Simple	0.85 (0.50-1.44)	0.5393	1.11 (0.64-1.92)	0.7128
		Multiple	0.95 (0.54-1.67)	0.8467	1.35 (0.73-2.47)	0.3366
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	1.00 (0.51-1.95)	1.0000	0.84 (0.42-1.69)	0.6230
		Multiple	0.97 (0.48-1.98)	0.9393	0.97 (0.45-2.07)	0.9270
	Double decker	Simple	0.95 (0.46-1.97)	0.8908	0.74 (0.34-1.61)	0.4454
		Multiple	0.94 (0.43-2.01)	0.8636	0.86 (0.38-1.99)	0.7293
	Homosexual client of male sex workers	Simple	0.55 (0.28-1.10)	0.0911	0.74 (0.37-1.45)	0.3741
		Multiple	0.59 (0.29-1.22)	0.1570	0.85 (0.41-1.76)	0.6513
Bisexual client of male sex workers	Simple	0.49 (0.28-0.87)	0.0145	0.46 (0.25-0.82)	0.0089	
	Multiple	0.56 (0.31-1.04)	0.0656	0.62 (0.33-1.19)	0.1496	
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.67 (0.44-1.02)	0.0593	0.57 (0.37-0.88)	0.0107
		Multiple	0.75 (0.47-1.19)	0.2264	0.57 (0.35-0.92)	0.0225
Commonly find partners through internet (ref=No)	Yes	Simple	0.73 (0.49-1.10)	0.1348	1.26 (0.84-1.89)	0.2724
		Multiple	0.63 (0.41-0.98)	0.0415	0.99 (0.63-1.57)	0.9733
Commonly find partners through community based organizations (ref=No)	Yes	Simple	0.64 (0.40-1.00)	0.0509	0.63 (0.39-1.01)	0.0537
		Multiple	0.76 (0.47-1.23)	0.2659	0.77 (0.46-1.30)	0.3314
	Yes	Simple	0.88 (0.59-1.31)	0.5344	1.34 (0.87-2.05)	0.1849
		Multiple	0.76 (0.50-1.16)	0.1988	1.12 (0.70-1.80)	0.6284

Table 2.11 Association between sexual preferences/experiences/behavior and knowledge about condom use among the participating MSM, Kolkata, 2016 (N=584)

Sexual preferences/experiences/behavior		Types of regression	Knowledge about condom use (ref=Poor)			
			Average		Good	
Variables	Strata		OR (95%CI)	P value	OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.92 (0.49-1.72)	0.7847	0.94 (0.48-1.85)	0.8597
		Multiple	0.99 (0.50-1.93)	0.9643	1.02 (0.49-2.10)	0.9620
	Equally to men and women	Simple	0.88 (0.52-1.49)	0.6332	0.92 (0.52-1.62)	0.7689
		Multiple	0.96 (0.54-1.69)	0.8729	0.93 (0.50-1.73)	0.8269
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.77 (0.44-1.34)	0.3472	0.70 (0.39-1.26)	0.2307
		Multiple	0.78 (0.43-1.41)	0.4106	0.62 (0.33-1.17)	0.1406
	. 19-25yrs	Simple	0.63 (0.34-1.17)	0.1448	0.61 (0.32-1.17)	0.1379
		Multiple	0.64 (0.34-1.23)	0.1843	0.61 (0.30-1.24)	0.1726
	>25	Simple	0.66 (0.29-1.54)	0.3395	0.51 (0.20-1.30)	0.1567
		Multiple	0.88 (0.34-2.26)	0.7949	0.72 (0.25-2.06)	0.5406
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.92 (0.57-1.48)	0.7312	0.64 (0.38-1.10)	0.1077
		Multiple	1.12 (0.67-1.86)	0.6733	0.84 (0.47-1.49)	0.5546
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.78 (0.46-1.34)	0.3701	1.18 (0.66-2.12)	0.5698
		Multiple	0.76 (0.42-1.36)	0.3542	1.21 (0.64-2.28)	0.5508
	Both receptive and insertive	Simple	0.63 (0.35-1.12)	0.1132	0.66 (0.34-1.25)	0.2003
		Multiple	0.74 (0.40-1.38)	0.3392	0.83 (0.41-1.66)	0.5951
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.81 (0.39-1.69)	0.5706	1.36 (0.62-3.00)	0.4455
		Multiple	0.71 (0.33-1.56)	0.3944	1.16 (0.50-2.69)	0.7365
	Double decker	Simple	0.86 (0.39-1.91)	0.7135	1.04 (0.43-2.50)	0.9354
		Multiple	0.95 (0.41-2.20)	0.8951	1.09 (0.43-2.76)	0.8591
	Homosexual client of male sex workers	Simple	0.90 (0.44-1.86)	0.7838	0.96 (0.43-2.16)	0.9272
		Multiple	0.89 (0.41-1.92)	0.7589	1.05 (0.45-2.49)	0.9057
	Bisexual client of male sex workers	Simple	1.15 (0.62-2.14)	0.6576	1.44 (0.72-2.86)	0.2999
		Multiple	1.26 (0.64-2.50)	0.5006	1.73 (0.81-3.67)	0.1545
Do you have sex with? (ref=Male only)	Female and male both	Simple	1.22 (0.77-1.93)	0.4008	1.33 (0.81-2.18)	0.2633
		Multiple	1.36 (0.81-2.29)	0.2506	1.57 (0.89-2.77)	0.1178
Commonly find partners through internet (ref=No)	Yes	Simple	1.25 (0.80-1.95)	0.3376	1.23 (0.76-2.00)	0.3999
		Multiple	1.22 (0.75-2.00)	0.4224	1.19 (0.70-2.02)	0.5307
Commonly find partners through community based organizations (ref=No)	Yes	Simple	1.11 (0.68-1.81)	0.6705	0.67 (0.38-1.16)	0.1537
		Multiple	1.31 (0.78-2.22)	0.3125	0.97 (0.53-1.76)	0.9094
	Yes	Simple	1.21 (0.77-1.87)	0.4089	1.30 (0.80-2.10)	0.2849
		Multiple	1.20 (0.74-1.93)	0.4583	1.22 (0.73-2.04)	0.4579

Table 2.12 Association between sexual preferences/experiences/behavior and Overall knowledge regarding risk and prevention of HIV and STI among the participating MSM, Kolkata, 2016 (N=584)

Sexual preferences/experiences/behavior		Type of regression	Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)			
Variables	Strata		Average		Good	
			OR (95%CI)	P value	OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.49 (0.27-0.89)	0.0182	0.60 (0.34-1.08)	0.0910
		Multiple	0.54 (0.29-1.01)	0.0522	0.68 (0.35-1.33)	0.2609
	Equally to men and women	Simple	1.00 (0.62-1.61)	0.9910	0.52 (0.31-0.89)	0.0175
		Multiple	1.11 (0.66-1.87)	0.6911	0.63 (0.34-1.15)	0.1283
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.98 (0.61-1.58)	0.9234	0.67 (0.40-1.13)	0.1344
		Multiple	0.91 (0.55-1.53)	0.7311	0.55 (0.31-0.98)	0.0436
	19-25yrs	Simple	0.93 (0.55-1.58)	0.7869	0.49 (0.27-0.90)	0.0215
		Multiple	0.78 (0.44-1.38)	0.3936	0.37 (0.19-0.73)	0.0041
	>25	Simple	0.43 (0.20-0.94)	0.0335	0.39 (0.17-0.91)	0.0294
		Multiple	0.49 (0.21-1.16)	0.1044	0.49 (0.18-1.34)	0.1651
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.58 (0.38-0.89)	0.0117	0.43 (0.26-0.72)	0.0012
		Multiple	0.67 (0.43-1.05)	0.0826	0.52 (0.30-0.90)	0.0201
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	1.06 (0.67-1.67)	0.8187	0.70 (0.42-1.17)	0.1768
		Multiple	1.12 (0.68-1.85)	0.6622	0.80 (0.45-1.44)	0.4550
	Both receptive and insertive	Simple	0.73 (0.43-1.23)	0.2311	0.75 (0.43-1.32)	0.3223
		Multiple	0.76 (0.43-1.34)	0.3433	0.93 (0.49-1.75)	0.8179
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.83 (0.42-1.66)	0.6059	0.55 (0.27-1.13)	0.1049
		Multiple	0.77 (0.37-1.61)	0.4944	0.54 (0.24-1.21)	0.1332
	Double decker	Simple	1.33 (0.62-2.84)	0.4654	0.59 (0.25-1.37)	0.2168
		Multiple	1.32 (0.59-2.95)	0.5055	0.64 (0.25-1.62)	0.3462
	Homosexual client of male sex workers	Simple	0.70 (0.35-1.40)	0.3137	0.48 (0.23-0.99)	0.0475
		Multiple	0.74 (0.36-1.54)	0.4245	0.63 (0.29-1.39)	0.2535
Bisexual client of male sex workers	Simple	0.74 (0.42-1.33)	0.3147	0.38 (0.20-0.69)	0.0018	
	Multiple	0.86 (0.46-1.63)	0.6527	0.54 (0.27-1.09)	0.0835	
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.85 (0.56-1.28)	0.4330	0.73 (0.46-1.16)	0.1783
		Multiple	0.85 (0.53-1.35)	0.4825	0.82 (0.48-1.39)	0.4567
Commonly find partners through internet (ref=No)	Yes	Simple	1.71 (1.14-2.56)	0.0093	2.42 (1.55-3.78)	0.0001
		Multiple	1.41 (0.91-2.19)	0.1290	2.06 (1.24-3.42)	0.0053
Commonly find partners through community based organizations (ref=No)	Yes	Simple	0.75 (0.49-1.16)	0.2003	0.73 (0.45-1.20)	0.2185
		Multiple	0.91 (0.57-1.45)	0.6839	1.03 (0.59-1.81)	0.9144
	Yes	Simple	1.50 (1.02-2.21)	0.0419	1.90 (1.21-2.98)	0.0055
		Multiple	1.27 (0.84-1.94)	0.2579	1.42 (0.86-2.34)	0.1725

Table 3.1 Distribution of the practice regarding disclosure of own sexual preferences among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Disclosed own sexual preference to wife	No	505	86.47 (83.69-89.25)
	Yes	79	13.53 (10.75-16.31)
Disclosed own sexual preference to Other MSM	No	277	47.43 (43.37-51.49)
	Yes	307	52.57 (48.51-56.63)
Disclosed own sexual preference to Health care providers	No	436	74.66 (71.12-78.20)
	Yes	148	25.34 (21.80-28.88)

Table 3.2 Association between socio-demographic factors and disclosing own sexual preferences to someone among MSM in Kolkata, India (N=584)

Socio-demographic factors		Type of regression	Disclosed sexual preference to someone (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.23 (0.13-0.39)	<.0001
		Multiple	0.21 (0.10-0.45)	<.0001
Age in completed year (ref=<21)	21-39	Simple	1.38 (0.96-1.99)	0.0859
		Multiple	1.52 (0.99-2.31)	0.0539
	>39	Simple	1.64 (0.78-3.43)	0.1913
		Multiple	2.60 (1.12-6.04)	0.0263
Literacy status (Illiterate)	Can read only	Simple	0.77 (0.39-1.52)	0.4556
		Multiple	0.64 (0.31-1.33)	0.2307
	Can read and write	Simple	1.08 (0.68-1.73)	0.7462
		Multiple	0.81 (0.47-1.40)	0.4554
What is your current marital status (ref=Never married)	Married to a female	Simple	0.56 (0.36-0.87)	0.0089
		Multiple	0.45 (0.27-0.75)	0.0020
	Married to a male	Simple	1.10 (0.60-2.05)	0.7527
		Multiple	0.97 (0.51-1.84)	0.9247
	Married both to a female and male	Simple	0.44 (0.25-0.78)	0.0047
		Multiple	0.47 (0.25-0.88)	0.0185
Divorced/Widowed	Simple	0.37 (0.16-0.85)	0.0194	
	Multiple	0.34 (0.14-0.84)	0.0187	
Religion (ref=Hindu)	Muslim	Simple	1.07 (0.58-1.99)	0.8209
		Multiple	1.36 (0.69-2.70)	0.3738
	Christian	Simple	0.74 (0.21-2.55)	0.6292
		Multiple	0.71 (0.19-2.64)	0.6035
	Other	Simple	0.99 (0.47-2.07)	0.9697
		Multiple	1.06 (0.48-2.35)	0.8925
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.23 (0.87-1.75)	0.2354
		Multiple	1.36 (0.91-2.03)	0.1295
	≥= 10000/mth	Simple	0.85 (0.47-1.53)	0.5899
		Multiple	1.02 (0.53-1.96)	0.9516
Do you have specific place to live (ref=Yes)	No	Simple	1.00 (0.63-1.58)	0.9978
		Multiple	1.14 (0.69-1.88)	0.6076
What is your current place of living	Rural (ref=urban)	Simple	1.02 (0.65-1.60)	0.9287
		Multiple	1.04 (0.62-1.74)	0.8959
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.10 (0.72-1.67)	0.6748
		Multiple	1.07 (0.66-1.71)	0.7914
	Outside West Bengal	Simple	0.28 (0.12-0.64)	0.0027
		Multiple	0.37 (0.15-0.90)	0.0273

Table 3.3 Association between sexual preferences/experiences/behavior and disclosing own sexual preferences to someone among MSM in Kolkata, India (N=584)

Sexual preferences/experiences/behavior		Type of regression	Disclosed sexual preference to someone (ref=No)	
Variables	Strata		OR (95%CI)	P value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	1.09 (0.67-1.75)	0.7394
		Multiple	1.28 (0.77-2.13)	0.3461
	Equally to men and women	Simple	0.61 (0.41-0.92)	0.0173
		Multiple	0.70 (0.45-1.09)	0.1130
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.87 (0.59-1.30)	0.5046
		Multiple	0.86 (0.56-1.32)	0.4887
	19-25yrs	Simple	0.55 (0.35-0.88)	0.0117
		Multiple	0.51 (0.31-0.84)	0.0084
	>25	Simple	0.44 (0.22-0.88)	0.0204
		Multiple	0.39 (0.18-0.84)	0.0165
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.98 (0.68-1.43)	0.9245
		Multiple	1.14 (0.76-1.70)	0.5242
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.49 (0.33-0.73)	0.0004
		Multiple	0.59 (0.39-0.90)	0.0149
	Both receptive and insertive	Simple	0.82 (0.52-1.27)	0.3681
		Multiple	0.94 (0.58-1.51)	0.7893
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.53 (0.30-0.93)	0.0266
		Multiple	0.59 (0.33-1.07)	0.0837
	Double decker	Simple	0.88 (0.47-1.63)	0.6769
		Multiple	0.91 (0.47-1.74)	0.7687
	Homosexual client of male sex workers	Simple	0.58 (0.33-1.03)	0.0632
		Multiple	0.67 (0.37-1.20)	0.1781
Bisexual client of male sex workers	Simple	0.42 (0.26-0.68)	0.0004	
	Multiple	0.51 (0.31-0.86)	0.0106	
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.81 (0.57-1.15)	0.2310
		Multiple	1.00 (0.68-1.48)	0.9876
Commonly use internet to find male partners (ref=No)	Yes	Simple	1.49 (1.07-2.09)	0.0195
		Multiple	1.34 (0.93-1.94)	0.1183
Commonly use community based organizations (ref=No)	Yes	Simple	1.48 (1.02-2.17)	0.0410
		Multiple	1.67 (1.11-2.53)	0.0140

Table 3.4 Association between knowledge regarding risk and prevention of HIV and STI and disclosing own sexual preferences to someone among MSM in Kolkata, India (N=584)

Knowledge regarding risk and prevention of HIV and STI		Types of regression	Disclosed sexual preference to someone (ref=No)	
Variables	Strata		OR (95%CI)	p value
Heard about infections transmitted sexually (STIs) (ref=No)	Yes	Simple	2.09 (1.36-3.21)	0.0008
		Multiple	1.74 (1.07-2.81)	0.0247
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Average	Simple	1.83 (1.09-3.06)	0.0228
		Multiple	1.63 (0.94-2.84)	0.0822
	Good	Simple	2.01 (1.38-2.92)	0.0003
		Multiple	1.74 (1.15-2.62)	0.0083
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Average	Simple	1.38 (0.71-2.68)	0.3403
		Multiple	1.14 (0.57-2.30)	0.7056
	Good	Simple	2.22 (1.29-3.82)	0.0040
		Multiple	1.87 (1.06-3.32)	0.0321
Knowledge about prevention of HIV (ref=Poor)	Average	Simple	1.36 (0.92-2.01)	0.1178
		Multiple	1.26 (0.83-1.90)	0.2762
	Good	Simple	1.41 (0.94-2.12)	0.0951
		Multiple	1.26 (0.81-1.95)	0.3108
Knowledge about condom use (ref=Poor)	Average	Simple	0.96 (0.62-1.50)	0.8709
		Multiple	1.01 (0.63-1.61)	0.9821
	Good	Simple	1.66 (1.04-2.66)	0.0342
		Multiple	1.67 (1.01-2.77)	0.0464
Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Average	Simple	1.81 (1.22-2.67)	0.0030
		Multiple	1.72 (1.13-2.62)	0.0111
	Good	Simple	2.19 (1.41-3.38)	0.0005
		Multiple	1.93 (1.19-3.13)	0.0073
Self-perceived current health status (ref=Poor)	Very good	Simple	0.83 (0.51-1.36)	0.4512
Perceived risk of HIV was high (ref=No)	High	Multiple	0.95 (0.56-1.62)	0.8446
		Simple	1.27 (0.68-2.34)	0.4548
		Multiple	1.57 (0.80-3.09)	0.1918

Table 3.5 Association between socio-demographic factors and disclosing own sexual preferences to wife among MSM in Kolkata, India (N=584)

Socio-demographic factors		Type of regression	Disclosed sexual preference to wife (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	4.37 (2.60-7.36)	<.0001
		Multiple	3.72 (1.66-8.36)	0.0015
Age in completed year (ref=<21)	21-39	Simple	1.66 (0.92-2.99)	0.0935
		Multiple	1.52 (0.73-3.14)	0.2614
	>39	Simple	3.56 (1.42-8.91)	0.0068
		Multiple	1.70 (0.55-5.22)	0.3553
Literacy status (Illiterate)	Can read only	Simple	0.47 (0.21-1.08)	0.0743
		Multiple	0.33 (0.13-0.84)	0.0203
	Can read and write	Simple	0.26 (0.15-0.46)	<.0001
		Multiple	0.35 (0.17-0.70)	0.0031
What is your current marital status (ref=Never married)	Married to a female	Simple	9.72 (5.01-18.88)	<.0001
		Multiple	8.66 (4.07-18.42)	<.0001
	Married to a male	Simple	3.32 (1.21-9.13)	0.0200
		Multiple	2.84 (0.99-8.12)	0.0515
	Married both to a female and male	Simple	4.92 (2.16-11.21)	0.0001
		Multiple	2.82 (1.12-7.08)	0.0275
Divorced/Widowed	Simple	12.82 (5.13-32.02)	<.0001	
	Multiple	8.67 (3.11-24.15)	<.0001	
Religion (ref=Hindu)	Muslim	Simple	1.72 (0.79-3.74)	0.1730
		Multiple	1.06 (0.44-2.57)	0.8980
	Christian	Simple	0.67 (0.08-5.30)	0.7024
		Multiple	0.50 (0.06-4.51)	0.5341
	Other	Simple	1.03 (0.35-3.04)	0.9613
		Multiple	0.73 (0.22-2.44)	0.6134
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.69 (1.02-2.82)	0.0435
		Multiple	1.70 (0.92-3.15)	0.0895
	≥= 10000/mth	Simple	2.16 (1.02-4.61)	0.0451
		Multiple	3.42 (1.38-8.50)	0.0080
Do you have specific place to live (ref=Yes)	No	Simple	1.87 (1.04-3.34)	0.0365
		Multiple	1.44 (0.72-2.89)	0.3006
What is your current place of living (ref=urban)	Rural	Simple	2.36 (1.36-4.10)	0.0023
		Multiple	1.39 (0.69-2.80)	0.3557
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.63 (0.90-2.93)	0.1057
		Multiple	1.06 (0.52-2.18)	0.8742
	Outside West Bengal	Simple	4.23 (2.03-8.81)	0.0001
		Multiple	2.55 (1.07-6.05)	0.0346

Table 3.6 Association between sexual preferences/experiences/behavior and disclosing own sexual preferences to wife among MSM in Kolkata, India (N=584)

Sexual preferences/experiences/behavior		Type of regression	Disclosed sexual preference to wife (ref=No)	
Variables	Strata		OR (95%CI)	p value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	1.69 (0.69-4.13)	0.2480
		Multiple	1.46 (0.53-4.02)	0.4688
	Equally to men and women	Simple	3.42 (1.68-6.95)	0.0007
		Multiple	3.06 (1.37-6.85)	0.0064
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	1.07 (0.56-2.04)	0.8362
		Multiple	1.10 (0.53-2.29)	0.7948
	19-25yrs	Simple	1.82 (0.93-3.55)	0.0787
		Multiple	1.77 (0.83-3.77)	0.1407
	>25	Simple	3.05 (1.33-6.98)	0.0082
		Multiple	1.56 (0.57-4.26)	0.3899
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	2.70 (1.65-4.40)	<.0001
		Multiple	2.54 (1.43-4.53)	0.0015
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	1.69 (0.89-3.23)	0.1103
		Multiple	1.46 (0.68-3.12)	0.3304
	Both receptive and insertive	Simple	2.25 (1.13-4.48)	0.0207
		Multiple	1.93 (0.86-4.32)	0.1114
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	2.11 (0.80-5.53)	0.1306
		Multiple	2.20 (0.74-6.56)	0.1588
	Double decker	Simple	1.80 (0.62-5.23)	0.2790
		Multiple	1.44 (0.43-4.82)	0.5582
	Homosexual client of male sex workers	Simple	2.33 (0.89-6.04)	0.0834
		Multiple	2.26 (0.77-6.68)	0.1386
Bisexual client of male sex workers	Simple	2.57 (1.11-5.99)	0.0283	
	Multiple	1.99 (0.76-5.19)	0.1587	
Do you have sex with? (ref=Male only)	Female and male both	Simple	3.49 (1.81-6.75)	0.0002
		Multiple	3.04 (1.39-6.63)	0.0054
Commonly use internet to find male partners (ref=No)	Yes	Simple	0.82 (0.50-1.35)	0.4310
		Multiple	1.29 (0.70-2.36)	0.4131
Commonly use community based organizations	Yes (ref=No)	Simple	2.58 (1.57-4.22)	0.0002
		Multiple	2.16 (1.22-3.82)	0.0080

Table 3.7 Association between knowledge regarding risk and prevention of HIV and STI and disclosing own sexual preferences to wife among MSM in Kolkata, India (N=584)

Knowledge regarding risk and prevention of HIV and STI Variables	Strata	Type of regression	Disclosed sexual preference to wife (ref=No)	
			OR (95%CI)	p value
Heard about infections transmitted sexually (STIs) (ref=No)	Yes	Simple	0.41 (0.24-0.68)	0.0006
		Multiple	0.66 (0.36-1.24)	0.1949
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Average	Simple	0.50 (0.23-1.09)	0.0813
		Multiple	0.94 (0.39-2.25)	0.8891
	Good	Simple	0.54 (0.33-0.90)	0.0188
		Multiple	0.85 (0.47-1.57)	0.6093
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Average	Simple	0.62 (0.25-1.52)	0.2951
		Multiple	0.75 (0.26-2.13)	0.5830
	Good	Simple	0.78 (0.40-1.55)	0.4802
		Multiple	1.12 (0.50-2.48)	0.7850
Knowledge about prevention of HIV (ref=Poor)	Average	Simple	0.43 (0.24-0.76)	0.0042
		Multiple	0.57 (0.29-1.10)	0.0921
	Good	Simple	0.25 (0.12-0.52)	0.0002
		Multiple	0.35 (0.16-0.80)	0.0124
Knowledge about condom use (ref=Poor)	Average	Simple	0.92 (0.51-1.65)	0.7716
		Multiple	1.44 (0.70-2.95)	0.3237
	Good	Simple	0.53 (0.26-1.07)	0.0769
		Multiple	1.00 (0.44-2.28)	0.9934
Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Average	Simple	0.66 (0.39-1.11)	0.1156
		Multiple	0.92 (0.50-1.68)	0.7792
	Good	Simple	0.35 (0.17-0.72)	0.0039
		Multiple	0.68 (0.30-1.54)	0.3572
Self-perceived current health status (ref=Poor)	Very good	Simple	2.29 (1.11-4.70)	0.0246
		Multiple	2.90 (1.22-6.88)	0.0157
Perceived risk of HIV was high (ref=No)	High	Simple	1.69 (0.75-3.81)	0.2074
		Multiple	0.93 (0.36-2.41)	0.8876

Table 3.8 Association between socio-demographic factors and disclosing own sexual preferences to other MSM only among MSM in Kolkata, India (N=584)

Socio-demographic factors		Type of regression	Disclosed sexual preference to other MSM only (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.62 (0.40-0.97)	0.0353
		Multiple	0.86 (0.44-1.69)	0.6611
Age in completed year (ref=<21)	21-39	Simple	1.63 (1.14-2.34)	0.0081
		Multiple	1.80 (1.18-2.72)	0.0059
	>39	Simple	2.08 (0.98-4.43)	0.0564
		Multiple	2.69 (1.14-6.33)	0.0235
Literacy status (Illiterate)	Can read only	Simple	1.48 (0.76-2.88)	0.2491
		Multiple	1.41 (0.70-2.87)	0.3407
	Can read and write	Simple	1.40 (0.88-2.24)	0.1590
		Multiple	1.18 (0.69-2.01)	0.5487
What is your current marital status (ref=Never married)	Married to a female	Simple	0.71 (0.47-1.09)	0.1176
		Multiple	0.64 (0.39-1.04)	0.0737
	Married to a male	Simple	0.94 (0.51-1.75)	0.8464
		Multiple	0.88 (0.46-1.69)	0.7071
	Married both to a female and male	Simple	0.55 (0.32-0.94)	0.0278
		Multiple	0.73 (0.40-1.35)	0.3173
	Divorced/Widowed	Simple	1.19 (0.55-2.54)	0.6625
		Multiple	1.55 (0.66-3.61)	0.3122
Religion (ref=Hindu)	Muslim	Simple	0.67 (0.36-1.24)	0.1997
		Multiple	0.73 (0.37-1.42)	0.3487
	Christian	Simple	0.73 (0.22-2.42)	0.6071
		Multiple	0.80 (0.21-2.99)	0.7369
	Other	Simple	1.15 (0.55-2.41)	0.7202
		Multiple	1.12 (0.51-2.47)	0.7794
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.00 (0.71-1.42)	0.9931
		Multiple	0.87 (0.58-1.28)	0.4724
	≥= 10000/mth	Simple	1.40 (0.78-2.50)	0.2618
		Multiple	1.46 (0.76-2.80)	0.2582
Do you have specific place to live (ref=Yes)	No	Simple	1.01 (0.64-1.60)	0.9508
		Multiple	1.11 (0.68-1.83)	0.6760
What is your current place of living (ref=urban)	Rural	Simple	0.86 (0.55-1.34)	0.5126
		Multiple	0.89 (0.53-1.49)	0.6549
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	0.99 (0.65-1.52)	0.9754
		Multiple	0.92 (0.58-1.48)	0.7429
	Outside West Bengal	Simple	0.22 (0.10-0.49)	0.0002
		Multiple	0.22 (0.09-0.51)	0.0004

Table 3.9 Association between sexual preferences/experiences/behavior and disclosing own sexual preferences to other MSM only among MSM in Kolkata, India (N=584)

Sexual preferences/experiences/behavior		Type of regression	Disclosed sexual preference to other MSM only (ref=No)	
Variables	Strata		OR (95%CI)	p value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.80 (0.49-1.29)	0.3574
		Multiple	0.92 (0.55-1.53)	0.7352
	Equally to men and women	Simple	0.92 (0.62-1.38)	0.6970
		Multiple	1.03 (0.67-1.59)	0.9019
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.71 (0.47-1.06)	0.0940
		Multiple	0.66 (0.43-1.01)	0.0580
	19-25yrs	Simple	0.71 (0.45-1.13)	0.1480
		Multiple	0.63 (0.39-1.02)	0.0608
	>25	Simple	0.40 (0.20-0.78)	0.0070
		Multiple	0.39 (0.19-0.81)	0.0114
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.87 (0.60-1.26)	0.4646
		Multiple	0.93 (0.62-1.37)	0.7010
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.58 (0.39-0.86)	0.0068
		Multiple	0.64 (0.42-0.98)	0.0411
	Both receptive and insertive	Simple	1.02 (0.65-1.60)	0.9341
		Multiple	1.06 (0.66-1.72)	0.8088
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.57 (0.32-1.01)	0.0532
		Multiple	0.59 (0.32-1.07)	0.0799
	Double decker	Simple	1.24 (0.66-2.33)	0.5052
		Multiple	1.29 (0.67-2.49)	0.4521
	Homosexual client of male sex workers	Simple	1.45 (0.81-2.59)	0.2066
		Multiple	1.54 (0.84-2.83)	0.1663
	Bisexual client of male sex workers	Simple	0.72 (0.45-1.16)	0.1726
		Multiple	0.85 (0.51-1.42)	0.5359
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.86 (0.60-1.22)	0.3919
		Multiple	0.85 (0.57-1.25)	0.3978
Commonly use internet to find male partners (ref=No)	Yes	Simple	2.08 (1.48-2.93)	<.0001
		Multiple	2.03 (1.40-2.94)	0.0002
Commonly use community based organizations (ref=No)	Yes	Simple	1.69 (1.15-2.48)	0.0080
		Multiple	1.85 (1.22-2.81)	0.0039

Table 3.10 Association between knowledge regarding risk and prevention of HIV and STI and disclosing own sexual preferences to other MSM only among MSM in Kolkata, India (N=584)

Knowledge regarding risk and prevention of HIV and STI		Type of regression	Disclosed sexual preference to other MSM only (ref=No)	
Variables	Strata		OR (95%CI)	p value
Heard about infections transmitted sexually (STIs) (ref=No)	Yes	Simple	1.98 (1.31-2.98)	0.0011
		Multiple	1.61 (1.02-2.55)	0.0428
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Average	Simple	1.19 (0.71-1.98)	0.5101
		Multiple	0.99 (0.57-1.71)	0.9741
	Good	Simple	2.42 (1.67-3.49)	<.0001
		Multiple	2.09 (1.40-3.13)	0.0003
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Average	Simple	1.78 (0.95-3.34)	0.0727
		Multiple	1.61 (0.83-3.12)	0.1596
	Good	Simple	2.07 (1.24-3.46)	0.0057
		Multiple	1.76 (1.02-3.04)	0.0420
Knowledge about prevention of HIV (ref=Poor)	Average	Simple	0.94 (0.64-1.39)	0.7683
		Multiple	0.91 (0.60-1.36)	0.6382
	Good	Simple	1.60 (1.07-2.41)	0.0234
		Multiple	1.42 (0.91-2.21)	0.1186
Knowledge about condom use (ref=Poor)	Average	Simple	0.99 (0.65-1.53)	0.9699
		Multiple	0.96 (0.60-1.51)	0.8444
	Good	Simple	1.07 (0.67-1.71)	0.7727
		Multiple	1.01 (0.61-1.66)	0.9794
Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Average	Simple	2.01 (1.37-2.95)	0.0004
		Multiple	1.87 (1.24-2.83)	0.0027
	Good	Simple	2.57 (1.66-3.98)	<.0001
		Multiple	2.28 (1.41-3.68)	0.0008
Self-perceived current health status (ref=Poor)	Very good	Simple	0.77 (0.47-1.25)	0.2887
		Multiple	0.84 (0.50-1.43)	0.5231
Perceived risk of HIV was high (ref=No)	High	Simple	0.84 (0.45-1.56)	0.5801
		Multiple	0.89 (0.46-1.74)	0.7386

Table 3.11 Association between socio-demographic factors and disclosing own sexual preferences to healthcare provider only among MSM in Kolkata, India (N=584)

Socio-demographic factors		Type of regression	Disclosed sexual preference to health care providers only (ref=No)	
Variables	Strata		OR (95%CI)	p value
Language (ref=Bengali)	Hindi	Simple	0.64 (0.37-1.10)	0.1067
		Multiple	0.61 (0.28-1.32)	0.2112
Age in completed year (ref=<21)	21-39	Simple	1.91 (1.21-3.00)	0.0051
		Multiple	2.12 (1.28-3.50)	0.0035
	>39	Simple	2.30 (1.01-5.21)	0.0468
		Multiple	2.99 (1.18-7.56)	0.0209
Literacy status (Illiterate)	Can read only	Simple	0.68 (0.32-1.45)	0.3155
		Multiple	0.67 (0.30-1.48)	0.3193
	Can read and write	Simple	0.73 (0.44-1.21)	0.2186
		Multiple	0.71 (0.40-1.27)	0.2509
What is your current marital status (ref=Never married)	Married to a female	Simple	0.77 (0.46-1.28)	0.3093
		Multiple	0.60 (0.34-1.08)	0.0861
	Married to a male	Simple	2.11 (1.12-3.99)	0.0218
		Multiple	1.83 (0.94-3.55)	0.0751
	Married both to a female and male	Simple	0.88 (0.47-1.65)	0.6962
		Multiple	0.88 (0.44-1.75)	0.7128
Divorced/Widowed	Simple	1.29 (0.57-2.92)	0.5482	
	Multiple	1.09 (0.45-2.63)	0.8498	
Religion (ref=Hindu)	Muslim	Simple	0.88 (0.42-1.83)	0.7327
		Multiple	0.78 (0.35-1.75)	0.5478
	Christian	Simple	1.71 (0.49-5.94)	0.3981
		Multiple	1.30 (0.36-4.74)	0.6916
	Other	Simple	1.28 (0.57-2.87)	0.5457
		Multiple	1.13 (0.48-2.65)	0.7842
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	1.20 (0.81-1.77)	0.3704
		Multiple	1.20 (0.77-1.88)	0.4113
	≥= 10000/mth	Simple	0.87 (0.44-1.74)	0.6945
		Multiple	0.96 (0.46-2.04)	0.9244
Do you have specific place to live (ref=Yes)	No	Simple	0.99 (0.59-1.68)	0.9898
		Multiple	0.90 (0.51-1.57)	0.6998
What is your current place of living (ref=urban)	Rural	Simple	1.51 (0.93-2.44)	0.0959
		Multiple	1.39 (0.80-2.41)	0.2500
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	1.15 (0.71-1.84)	0.5704
		Multiple	0.94 (0.55-1.59)	0.8063
	Outside West Bengal	Simple	0.80 (0.35-1.79)	0.5789
		Multiple	0.81 (0.34-1.91)	0.6226

Table 3.12 Association between sexual preferences/experiences/behavior and disclosing own sexual preferences to healthcare provider only among MSM in Kolkata, India (N=584)

Sexual preferences/experiences/behavior		Type of regression	Disclosed sexual preference to health care providers only (ref=No)	
Variables	Strata		OR (95%CI)	p value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	0.81 (0.48-1.37)	0.4314
		Multiple	0.94 (0.54-1.62)	0.8162
	Equally to men and women	Simple	0.56 (0.35-0.88)	0.0112
		Multiple	0.63 (0.39-1.02)	0.0611
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.85 (0.55-1.32)	0.4630
		Multiple	0.91 (0.57-1.45)	0.6773
	19-25yrs	Simple	0.46 (0.26-0.80)	0.0058
		Multiple	0.41 (0.23-0.74)	0.0029
	>25	Simple	0.72 (0.34-1.52)	0.3867
		Multiple	0.61 (0.27-1.39)	0.2386
Forced to have sex during the first sexual encounter with a male?	Yes (ref=No)	Simple	0.78 (0.50-1.22)	0.2757
		Multiple	0.73 (0.46-1.17)	0.1940
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.37 (0.23-0.58)	<.0001
		Multiple	0.43 (0.27-0.70)	0.0007
	Both receptive and insertive	Simple	0.83 (0.52-1.33)	0.4440
		Multiple	0.86 (0.52-1.43)	0.5598
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.51 (0.28-0.94)	0.0296
		Multiple	0.59 (0.31-1.11)	0.1024
	Double decker	Simple	0.84 (0.44-1.59)	0.5863
		Multiple	0.86 (0.44-1.68)	0.6528
	Homosexual client of male sex workers	Simple	0.49 (0.26-0.90)	0.0220
		Multiple	0.53 (0.28-1.01)	0.0546
Bisexual client of male sex workers	Simple	0.29 (0.17-0.50)	<.0001	
	Multiple	0.35 (0.20-0.62)	0.0003	
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.57 (0.39-0.85)	0.0054
		Multiple	0.63 (0.41-0.98)	0.0387
Commonly use internet to find male partners (ref=No)	Yes	Simple	1.66 (1.14-2.42)	0.0086
		Multiple	1.67 (1.10-2.53)	0.0158
Commonly use community based organizations (ref=No)	Yes	Simple	2.55 (1.70-3.83)	<.0001
		Multiple	2.61 (1.69-4.03)	<.0001

Table 3.13 Association between knowledge regarding risk and prevention of HIV and STI and disclosing own sexual preferences to healthcare provider only among MSM in Kolkata, India (N=584)

Knowledge regarding risk and prevention of HIV and STI	Variables	Strata	Type of regression	Disclosed sexual preference to health care providers only (ref=No)	
				OR (95%CI)	p value
Heard about infections transmitted sexually (STIs) (ref=No)	Yes		Simple	1.29 (0.80-2.09)	0.2999
			Multiple	1.31 (0.76-2.24)	0.3322
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Average		Simple	0.94 (0.49-1.81)	0.8622
			Multiple	1.02 (0.51-2.03)	0.9635
	Good		Simple	1.90 (1.23-2.92)	0.0038
			Multiple	1.97 (1.22-3.17)	0.0054
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Average		Simple	1.27 (0.56-2.92)	0.5678
			Multiple	1.11 (0.47-2.62)	0.8175
	Good		Simple	2.21 (1.13-4.35)	0.0214
			Multiple	2.01 (0.99-4.07)	0.0543
Knowledge about prevention of HIV (ref=Poor)	Average		Simple	1.48 (0.94-2.34)	0.0892
			Multiple	1.53 (0.94-2.49)	0.0856
	Good		Simple	2.09 (1.33-3.30)	0.0015
			Multiple	2.23 (1.35-3.69)	0.0017
Knowledge about condom use (ref=Poor)	Average		Simple	1.60 (0.94-2.72)	0.0844
			Multiple	1.95 (1.11-3.45)	0.0211
	Good		Simple	1.59 (0.90-2.81)	0.1092
			Multiple	1.98 (1.08-3.64)	0.0283
Overall knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Average		Simple	1.39 (0.87-2.21)	0.1685
			Multiple	1.56 (0.94-2.56)	0.0830
	Good		Simple	2.52 (1.54-4.10)	0.0002
			Multiple	2.92 (1.68-5.06)	0.0001
Self-perceived current health status (ref=Poor)	Very good		Simple	0.49 (0.28-0.88)	0.0156
			Multiple	0.51 (0.27-0.94)	0.0304
Perceived risk of HIV was high (ref=No)	High		Simple	2.56 (1.35-4.88)	0.0042
			Multiple	3.30 (1.63-6.71)	0.0010

Table 4.1 Distribution of sexual mixing pattern among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Your regular partner (s) is/are:	Kothi	83	14.21 (11.37-17.05)
	Panthi	103	17.64 (14.54-20.74)
	Double-decker	70	11.99 (9.34-14.63)
	Female	115	19.69 (16.46-22.93)
	Do not have regular partner (s)	213	36.47 (32.56-40.39)
Number of lifetime male sex partners:	1	167	28.60 (24.92-32.27)
	2-5	165	28.25 (24.59-31.92)
	6-10	90	15.41 (12.47-18.35)
	11-50	70	11.99 (9.34-14.63)
	>50	92	15.75 (12.79-18.72)
Number of casual male partners in the last 6 months:	0	201	34.42 (30.55-38.28)
	1	152	26.03 (22.46-29.60)
	2-5	120	20.55 (17.26-23.83)
	6-10	45	7.71 (5.54-9.87)
	>10	66	11.30 (8.73-13.88)
Number of lifetime female partners:	0	241	41.27 (37.26-45.27)
	1	163	27.91 (24.26-31.56)
	2-5	116	19.86 (16.62-23.11)
	6-10	28	4.79 (3.06-6.53)
	>10	36	6.16 (4.21-8.12)
Number of female sex partners in past 6 months:	0	297	50.86 (46.79-54.92)
	1	178	30.48 (26.74-34.22)
	2-5	72	12.33 (9.65-15.00)
	6-10	17	2.91 (1.54-4.28)
	>10	20	3.42 (1.95-4.90)
Do you have a stable/regular female sexual partner?	No	420	71.92 (68.26-75.57)
	Yes	164	28.08 (24.43-31.74)

Table 4.2 Distribution of condom use pattern among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Do you use a condom during sex with your regular male partner (s)?	Always	157	26.88 (23.28-30.49)
	Often	41	7.02 (4.94-9.10)
	Sometimes	181	30.99 (27.23-34.75)
	Never	100	17.12 (14.06-20.19)
	Do not have regular male partner (s)	105	17.98 (14.86-21.10)
Do you use a condom during sex with your casual male partner (s) (unpaid)?	Always	153	26.20 (22.62-29.78)
	Often	49	8.39 (6.14-10.65)
	Sometimes	169	28.94 (25.25-32.63)
	Never	96	16.44 (13.42-19.45)
	Do not have regular male partner (s)	117	20.03 (16.78-23.29)
Do you use a condom during sex with your paid male sex partner (s)?	Always	135	23.12 (19.69-26.55)
	Often	29	4.97 (3.20-6.73)
	Sometimes	136	23.29 (19.85-26.73)
	Never	90	15.41 (12.47-18.35)
	Do not have regular male partner (s)	194	33.22 (29.39-37.05)
Do you use a condom during sex with your regular female partner (s)?	Always	97	16.61 (13.58-19.64)
	Often	23	3.94 (2.36-5.52)
	Sometimes	105	17.98 (14.86-21.10)
	Never	83	14.21 (11.37-17.05)
	Do not have regular male partner (s)	276	47.26 (43.20-51.32)
Do you use a condom during sex with your casual female partner (s) (unpaid)?	Always	108	18.49 (15.34-21.65)
	Often	17	2.91 (1.54-4.28)
	Sometimes	78	13.36 (10.59-16.12)
	Never	80	13.70 (10.90-16.50)
	Do not have regular male partner (s)	301	51.54 (47.48-55.61)
Do you use a condom during sex with paid female sex partner (s)?	Always	120	20.55 (17.26-23.83)
	Often	20	3.42 (1.95-4.90)
	Sometimes	64	10.96 (8.42-13.50)
	Never	58	9.93 (7.50-12.36)
	Do not have regular male partner (s)	322	55.14 (51.09-59.18)
Overall condom use pattern	Poor	166	28.42 (24.76-32.09)
	Average	236	40.41 (36.42-44.40)
	Good	182	31.16 (27.40-34.93)
In the past 3 months, how often did you have anal sex with men without a condom?	Always	105	17.98 (14.86-21.10)
	Often	57	9.76 (7.35-12.17)
	Sometimes	211	36.13 (32.22-40.04)
	Never	211	36.13 (32.22-40.04)
The last time you had sex with a regular male partner, did you use condom?	No	203	52.45 (47.46-57.45)
	Yes	184	47.55 (42.55-52.54)
The last time you had sex with a regular female partner, did you use condom?	No	129	50.99 (44.79-57.19)
	Yes	124	49.01 (42.81-55.21)
The last time you had commercial sex with a male/transgender, did you use condom?	No	113	51.60 (44.93-58.27)
	Yes	106	48.40 (41.73-55.07)
The last time you had commercial sex with a female, did you use condom?	No	84	38.36 (31.87-44.85)
	Yes	135	61.64 (55.15-68.13)
Pattern of recent condom use	Poor	284	48.63 (44.56-52.70)
	Average	90	15.41 (12.47-18.35)
	Good	210	35.96 (32.06-39.86)
The last time you obtained a condom, where did you get it	Dispensary/Clinic/Hospital and Mobile van/NGO office/Drop-in-center	250	50.10 (45.70-54.50)
	Non-medical shop and Drug store/chemist	185	37.07 (32.82-41.33)
	Friend and Client/Sex partner and Vending machine and Bar/Guest house/Hotel	64	12.83 (9.88-15.77)

Table 4.3 Distribution of paid sex among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
How old were you the first time you were paid for sex with a male partner? (If the answer is 5. Never then skip to: 59)	<15 yrs	126	21.58 (18.23-24.92)
	15-18yrs	228	39.04 (35.07-43.01)
	19-25yrs	139	23.80 (20.34-27.27)
	>25yrs	28	4.79 (3.06-6.53)
	Never	63	10.79 (8.26-13.31)
Where do you usually find male partners, who pay you for sex?	Other	281	53.93 (49.64-58.23)
	Street/Public places (gardens/parks/railway station/bus stands/ toilets/cinema halls)	164	31.48 (27.48-35.48)
	Hotel/Lodge	25	4.80 (2.96-6.64)
	Bar/Discotheque/Night club	51	9.79 (7.23-12.35)
	None	358	68.71 (64.72-72.71)
How many men paid you to have sex with you in last month?	<3	91	17.47 (14.20-20.74)
	3-5	34	6.53 (4.40-8.65)
	>5	38	7.29 (5.05-9.53)
	Never	90	45.69 (38.67-52.70)
Did you use a condom during your last anal sex with a man paying you to be the receptive partner?	Yes	107	54.31 (47.30-61.33)
	No	115	48.52 (42.11-54.93)
Did you use condom during your last anal sex with a man paying you to be the insertive partner?	Yes	122	51.48 (45.07-57.89)
	No	115	48.52 (42.11-54.93)
How often did you pay to have anal sex with a male or transgender in the past year?	Never	489	83.73 (80.73-86.73)
	Sometimes	74	12.67 (9.97-15.38)
	Often	21	3.60 (2.08-5.11)
	Never	33	34.74 (24.99-44.49)
How many times did you pay for anal sex with a male or transgender in the past month?	Sometimes	48	50.53 (40.29-60.77)
	Often	14	14.74 (7.48-22.00)

Table 4.4 Distribution of symptoms and HIV sero-positivity among MSM in Kolkata, India (N=584)

Variables	Strata	Freq	Percentage (95%CI)
Number of times you had genital ulcers/sores in the past 12 months?	Never	468	80.14 (76.89-83.38)
	Rarely	67	11.47 (8.88-14.06)
	Sometimes	34	5.82 (3.92-7.73)
	Always	15	2.57 (1.28-3.86)
Number of times you had discharge from rectum in the past 12 months?	Never	468	80.14 (76.89-83.38)
	Rarely	76	13.01 (10.28-15.75)
	Sometimes	32	5.48 (3.63-7.33)
	Always	8	1.37 (0.42-2.32)
Number of times you had burning pain while urinating in the past 12 months?	Never	468	80.14 (76.89-83.38)
	Rarely	48	8.22 (5.99-10.45)
	Sometimes	60	10.27 (7.80-12.74)
	Always	8	1.37 (0.42-2.32)
If you ever been tested for HIV, why did you choose to be tested?	Get regular check-ups/follow ups	153	42.50 (37.37-47.63)
	Had some symptoms /STI (s)	68	18.89 (14.83-22.95)
	Had a transfusion	44	12.22 (8.82-15.62)
	Have high-risk behavior	95	26.39 (21.81-30.96)
HIV sero-positivity status	Negative	522	89.54 (87.05-92.03)
	Positive	61	10.46 (7.97-12.96)

Table 4.5 Association between socio-demographic factors and HIV sero-positivity among MSM in Kolkata, India (N=584)

Socio-demographic factors		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Age in completed year (ref=<21)	21-39	Simple	6.24 (2.21-17.59)	0.0005
		Multiple	6.62 (2.18-20.06)	0.0008
	>39	Simple	15.30 (4.38-53.41)	<.0001
		Multiple	9.62 (2.39-38.66)	0.0014
can you read and write (ref=illiterate)	can read only	Simple	1.03 (0.44-2.44)	0.9416
		Multiple	0.93 (0.35-2.46)	0.8837
	can read and write	Simple	0.40 (0.21-0.77)	0.0060
		Multiple	0.52 (0.24-1.13)	0.0981
What is your current marital status (ref=Never married)	Married to a female	Simple	3.90 (2.01-7.57)	<.0001
		Multiple	2.23 (1.04-4.76)	0.0384
	Married to a male	Simple	3.05 (1.20-7.77)	0.0193
		Multiple	2.16 (0.80-5.84)	0.1298
	Married both to a female and male	Simple	1.73 (0.66-4.54)	0.2663
		Multiple	1.48 (0.51-4.33)	0.4740
	Divorced/Widowed	Simple	6.19 (2.42-15.81)	0.0001
		Multiple	4.82 (1.64-14.21)	0.0043
Religion (ref=Hindu)	Muslim	Simple	3.97 (1.91-8.26)	0.0002
		Multiple	3.14 (1.36-7.26)	0.0074
	Christian	Simple	1.06 (0.13-8.46)	0.9575
		Multiple	0.57 (0.05-6.56)	0.6479
	Other	Simple	2.12 (0.77-5.81)	0.1457
		Multiple	1.72 (0.55-5.42)	0.3547
What is your average monthly income (ref=, <Rs. 3000/mth)	≥3000 and <10000/mth	Simple	0.86 (0.48-1.52)	0.6005
		Multiple	0.73 (0.37-1.42)	0.3549
	≥= 10000/mth	Simple	0.99 (0.40-2.48)	0.9836
		Multiple	1.39 (0.49-3.97)	0.5388
Do you have specific place to live (ref=Yes)	No	Simple	1.83 (0.96-3.50)	0.0662
		Multiple	1.51 (0.73-3.13)	0.2725
What is your current place of living (ref=urban)	rural	Simple	2.27 (1.23-4.17)	0.0086
		Multiple	0.84 (0.40-1.77)	0.6517
Birthplace/place of origin (ref=Kolkata)	Outside Kolkata but within West Bengal	Simple	3.15 (1.77-5.61)	<.0001
		Multiple	2.27 (1.15-4.48)	0.0186
	Outside West Bengal	Simple	0.99 (0.29-3.37)	0.9833
		Multiple	0.78 (0.21-2.98)	0.7163

Table 4.6 Association between knowledge regarding risk and prevention of HIV and STI and HIV sero-positivity among MSM in Kolkata, India (N=584)

Knowledge regarding risk and prevention of HIV & STI		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Heard about infections transmitted sexually (STIs) (ref=No)	Yes	Simple	0.70 (0.38-1.29)	0.2505
		Multiple	0.96 (0.47-1.95)	0.9141
Knowledge regarding occurrence, transmission and symptoms of STI in men (ref=Poor)	Average	Simple	0.52 (0.20-1.32)	0.1677
		Multiple	0.68 (0.24-1.93)	0.4711
	Good	Simple	0.80 (0.45-1.40)	0.4270
		Multiple	1.12 (0.58-2.17)	0.7461
Knowledge regarding the occurrence, transmission and symptoms of HIV (ref=Poor)	Average	Simple	1.64 (0.47-5.68)	0.4360
		Multiple	2.37 (0.60-9.34)	0.2166
	Good	Simple	2.25 (0.79-6.43)	0.1317
		Multiple	3.50 (1.09-11.25)	0.0355
Knowledge about prevention of HIV (ref=Poor)	Average	Simple	1.12 (0.61-2.07)	0.7103
		Multiple	1.68 (0.83-3.41)	0.1526
	Good	Simple	0.88 (0.45-1.73)	0.7075
		Multiple	1.58 (0.71-3.51)	0.2609
Knowledge about condom use (ref=Poor)	Average	Simple	0.71 (0.36-1.38)	0.3068
		Multiple	1.01 (0.47-2.17)	0.9854
	Good	Simple	0.79 (0.38-1.61)	0.5099
		Multiple	1.30 (0.57-2.97)	0.5411
Over knowledge regarding risk and prevention of HIV and STI (ref=Poor)	Average	Simple	0.99 (0.55-1.79)	0.9696
		Multiple	1.51 (0.76-3.02)	0.2382
	Good	Simple	0.61 (0.29-1.30)	0.2045
		Multiple	1.22 (0.51-2.93)	0.6586

Table 4.7 Association between sexual preferences/experiences/behaviors and HIV sero-positivity among MSM in Kolkata, India (N=584)

Sexual preferences/experiences/behaviors		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Are you attracted (ref=Exclusively to men)	Primarily to men and sometimes to women	Simple	1.02 (0.48-2.17)	0.9617
		Multiple	0.97 (0.42-2.27)	0.9496
	Equally to men and women	Simple	0.88 (0.46-1.68)	0.6926
		Multiple	0.63 (0.30-1.35)	0.2391
How old were you when you first had sex with a male (ref=<15 yrs)	15-18yrs	Simple	0.63 (0.33-1.23)	0.1765
		Multiple	0.57 (0.27-1.19)	0.1328
	. 19-25yrs	Simple	0.62 (0.29-1.35)	0.2315
		Multiple	0.49 (0.21-1.13)	0.0953
	>25	Simple	2.26 (0.99-5.16)	0.0517
		Multiple	1.18 (0.44-3.12)	0.7467
Forced to have sex during the first sexual encounter with a male? (ref=No)	Yes	Simple	1.62 (0.92-2.84)	0.0957
Typical sexual role during anal sex with a male (ref=Predominantly receptive)	Predominantly insertive	Simple	0.64 (0.31-1.33)	0.2340
		Multiple	0.68 (0.30-1.51)	0.3367
	Both receptive and insertive	Simple	2.30 (1.18-4.48)	0.0147
		Multiple	1.84 (0.86-3.94)	0.1168
How do you identify yourself? (ref=Predominantly Kothi)	Predominantly Panthi	Simple	0.40 (0.12-1.31)	0.1285
		Multiple	0.31 (0.08-1.11)	0.0716
	Double decker	Simple	1.22 (0.46-3.27)	0.6922
		Multiple	0.81 (0.27-2.43)	0.7055
	Homosexual client of male sex workers	Simple	2.01 (0.87-4.66)	0.1020
		Multiple	1.53 (0.59-3.91)	0.3799
Bisexual client of male sex workers	Simple	0.96 (0.44-2.11)	0.9215	
	Multiple	0.73 (0.30-1.81)	0.5002	
Do you have sex with? (ref=Male only)	Female and male both	Simple	0.78 (0.44-1.37)	0.3823
		Multiple	0.51 (0.25-1.04)	0.0645
With whom you usually have sex? (ref=Regular partner only)	Irregular partner only	Simple	1.97 (0.90-4.28)	0.0892
		Multiple	2.87 (1.19-6.94)	0.0193
	Irregular and regular partners both	Simple	1.74 (0.85-3.56)	0.1322
		Multiple	1.79 (0.80-3.98)	0.1554
Commonly find male sex partners in Pub/Disco/Café/Club/Hotel/Lodge (ref=No)	Yes	Simple	1.08 (0.62-1.89)	0.7932
		Multiple	1.21 (0.64-2.28)	0.5623
Commonly find male sex partners in Spa/Sauna/Massage parlor (ref=No)	Yes	Simple	1.33 (0.71-2.47)	0.3725
		Multiple	1.40 (0.69-2.84)	0.3575
Commonly find male sex partners in Park/Public restroom (ref=No)	Yes	Simple	2.52 (1.47-4.31)	0.0007
		Multiple	2.30 (1.26-4.21)	0.0066
Commonly find male sex partners through internet (ref=No)	Yes	Simple	0.83 (0.48-1.45)	0.5165
		Multiple	1.15 (0.59-2.23)	0.6855
Community based organizations (ref=No)	Yes	Simple	1.84 (1.00-3.39)	0.0490
		Multiple	2.24 (1.14-4.44)	0.0200

Table 4.8 Association between condom use patterns and HIV sero-positivity among MSM in Kolkata, India (N=584)

Condom use patterns		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Do you use a condom during sex with your casual male partner (s)? (ref=Always)	Never	Simple	1.70 (0.84-3.47)	0.1422
		Multiple	3.91 (1.07-14.21)	0.0386
Do you use a condom during sex with your casual female partner (s) (unpaid)? (ref=Always)	Never	Simple	0.50 (0.19-1.36)	0.1754
		Multiple	0.30 (0.10-0.91)	0.0337
In the past 3 months, how often did you have anal sex with men without a condom? (ref=Never)	Often	Simple	2.90 (1.09-7.70)	0.0325
		Multiple	2.30 (0.78-6.74)	0.1296
Overall condom obtained (ref=Dispensary/Clinic/Hospital and Mobile van/NGO office/Drop-in-center)	Non-medical shop and Drug store/chemist	Simple	0.64 (0.34-1.21)	0.1700
		Multiple	0.26 (0.07-0.92)	0.0373
		Simple	0.45 (0.15-1.33)	0.1489
	Friend and Client/Sex partner and Vending machine and Bar/Guest house/Hotel	Multiple	0.48 (0.15-1.54)	0.2166
		Simple	2.02 (1.17-3.50)	0.0123
		Multiple	2.58 (1.35-4.92)	0.0040
Have you ever used lubricant while having anal sex? (ref=No)	Yes	Simple	1.57 (0.81-3.03)	0.1826
		Multiple	0.76 (0.32-1.82)	0.5424
Are you circumcised? (ref=No)	Yes	Simple	1.57 (0.81-3.03)	0.1826
		Multiple	0.76 (0.32-1.82)	0.5424

Table 4.9 Association between sexual mixing patterns and HIV sero-positivity among MSM in Kolkata, India (N=584)

Sexual mixing patterns		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Had multiple male sex partners in the lifetime (ref=No)	Yes	Simple	2.88 (1.26-6.57)	0.0122
		Multiple	3.25 (1.30-8.10)	0.0114
Had multiple casual male partners in the last 6 months (ref=No)	Yes	Simple	2.03 (0.91-4.56)	0.0853
		Multiple	7.31 (1.47-36.29)	0.0150
Had multiple female partners in the last 6 months (ref=No)	Yes	Simple	0.44 (0.15-1.28)	0.1324
		Multiple	0.27 (0.08-0.91)	0.0342
Have a long-term stable relationship with a regular female partner? (ref=No)	Yes	Simple	0.84 (0.29-2.44)	0.7421
		Multiple	0.10 (0.01-0.98)	0.0479

Table 4.10 Association between symptoms/testing with sero-positivity among MSM in Kolkata, India (N=584)

Symptoms/testing		Type of regression	HIV sero-positivity (ref=No)	
Variables	Strata		OR (95%CI)	p value
Have you had any of symptoms suggestive of STI in the past 12 months? (ref=No)	Yes	Simple	1.81 (1.00-3.28)	0.0494
		Multiple	2.16 (1.11-4.21)	0.0234
Did you have some genital ulcers/sores in the past 12 months? (ref=No)	Yes	Simple	2.56 (1.05-6.22)	0.0384
		Multiple	2.46 (0.90-6.72)	0.0794
Did you have discharge from rectum in the past 12 months? (ref=No)	Yes	Simple	2.76 (1.13-6.76)	0.0261
		Multiple	4.13 (1.51-11.27)	0.0057
Did you have burning pain while urinating in the past 12 months? (ref=No)	Occasionally	Simple	2.11 (1.05-4.25)	0.0357
		Multiple	2.83 (1.28-6.29)	0.0105
Had some symptoms /STI (s)	Had some symptoms /STI (s)	Simple	3.96 (1.81-8.67)	0.0006
		Multiple	4.42 (1.68-11.59)	0.0026
Commonest cause of being tested (ref=Get regular check-ups/follow ups)	Had a transfusion	Simple	0.79 (0.21-2.90)	0.7200
		Multiple	0.43 (0.10-1.89)	0.2642
	Have high-risk behavior	Simple	1.56 (0.68-3.57)	0.2959
		Multiple	1.59 (0.61-4.12)	0.3414

REFERENCES

1. UNAIDS. Global AIDS Update. 2016. http://www.who.int/hiv/pub/arv/global-AIDS-update-2016_en.pdf.
2. Centers for Disease Control and Prevention. HIV/AIDS: HIV Among Gay and Bisexual Men. 2016; <http://www.cdc.gov/hiv/group/msm/>.
3. Department of AIDS Control. State Fact Sheets. 2014. http://naco.gov.in/sites/default/files/State_Fact_Sheet_2013_14.pdf.
4. National AIDS Control Organisation. India HIV Estimations 2015: Technical Report. 2015. <http://www.naco.gov.in/sites/default/files/India%20HIV%20Estimations%202015.pdf>.
5. National Aids Control Organisation. Annual Report NACO 2015-16 2016. http://www.naco.gov.in/sites/default/files/Annual%20Report%202015-16_NACO.pdf.
6. Verma RK, Collumbien M. Homosexual activity among rural Indian men: implications for HIV interventions. *AIDS*. 2004;18(13):1845-1847.
7. Thomas B, Mimiaga MJ, Kumar S, Swaminathan S, Safren SA, Mayer KH. HIV in Indian MSM: Reasons for a concentrated epidemic & strategies for prevention. *Indian J Med Res*. 2011;134(6):920-929.
8. Shepherd ME, Mehendale SM, Paranjape RS, et al. Stable HIV incidence over an 8-year period among male patients attending STD clinics in Pune India. 2002.
9. Arora P, Kumar R, Bhattacharya M, Nagelkerke NJD, Jha P. Trends in HIV incidence in India from 2000 to 2007. *The Lancet*. 2008;372(9635):289-290.
10. Kumar R, Jha P, Arora P, et al. Trends in HIV-1 in young adults in south India from 2000 to 2004: a prevalence study. *The Lancet*. 2006;367(9517):1164-1172.
11. National AIDS Control Organisation. National Integrated Biological and Behavioral Surveillance (IBBS) 2014-15: High Risk Groups. 2015. <http://www.naco.gov.in/sites/default/files/IBBS%20Report%202014-15.pdf>.
12. The HIV and AIDS Data Hub. India: Key Facts on HIV. 2016; <http://www.aidsdatahub.org/Country-Profiles/India>.
13. The Indian Express. SC refuses to hear plea on section 377, refers matter to CJI's bench. 2016; <http://indianexpress.com/article/india/india-news-india/sc-refuses-to-examine-fresh-plea-on-section-377-refers-matter-to-cji-2882929/>.
14. Asthana S, Oostvogels R. The social construction of male 'homosexuality' in India: implications for HIV transmission and prevention. *Soc Sci Med*. 2001;52(5):707-721.

15. Safren SA, Martin C, Menon S, et al. A survey of MSM HIV prevention outreach workers in Chennai, India. *AIDS Educ Prev.* 2006;18(4):323-332.
16. Safren SA, Thomas BE, Mimiaga MJ, et al. Depressive symptoms and human immunodeficiency virus risk behavior among men who have sex with men in Chennai, India. *Psychology, health & medicine.* 2009;14(6):705-715.
17. Jha UM, Raj Y, Venkatesh S, Dhingra N, Paranjpe RS, Saggurti N. HIV epidemic among men who have sex with men in India: national scenario of an unfinished agenda. *HIV AIDS (Auckl).* 2014;6:159-170.
18. Shinde S, Setia MS, Row-Kavi A, Anand V, Jerajani H. Male sex workers: are we ignoring a risk group in Mumbai, India? *Indian J Dermatol Venereol Leprol.* 2009;75(1):41-46.
19. Deb S, Dutta S, Dasgupta A, Biswas B. Sexual Practice and Perception of HIV/AIDS Amongst Men who have Sex with Men in Kolkata. *Indian J Community Med.* 2009;34(3):206-211.
20. Saha MK, Mahapatra T, Biswas S, Ghosh P, Kire M. Burden and correlates of HIV risk among men who have sex with men in Nagaland, India: analysis of sentinel surveillance data. *PLoS One.* 2015;10(2):e0117385.
21. Saha MK, Mahapatra T, Biswas S, et al. Sociobehavioral correlates of HIV risk among men who have sex with men in Chhattisgarh, India: analysis of sentinel surveillance data. *Jpn J Infect Dis.* 2015;68(1):38-44.
22. Shaw SY, Lorway R, Bhattacharjee P, et al. Descriptive Epidemiology of Factors Associated with HIV Infections Among Men and Transgender Women Who Have Sex with Men in South India. *LGBT Health.* 2016;3(4):292-299.
23. Solomon SS, Mehta SH, Srikrishnan AK, et al. High HIV prevalence and incidence among MSM across 12 cities in India. *AIDS.* 2015;29(6):723-731.
24. Kumta S, Lurie M, Weitzen S, et al. Bisexuality, sexual risk taking, and HIV prevalence among men who have sex with men accessing voluntary counseling and testing services in Mumbai, India. *J Acquir Immune Defic Syndr.* 2010;53(2):227-233.
25. Newman PA, Chakrapani V, Cook C, Shunmugam M, Kakinami L. Correlates of paid sex among men who have sex with men in Chennai, India. *Sex Transm Infect.* 2008;84(6):434-438.
26. Newman PA, Chakrapani V, Cook C, Shunmugam M, Kakinami L. Determinants of sexual risk behavior among men who have sex with men accessing public sex environments in Chennai, India. *J LGBT Health Res.* 2008;4(2-3):81-87.
27. Solomon SS, Mehta SH, Latimore A, Srikrishnan AK, Celentano DD. The impact of HIV and high-risk behaviours on the wives of married men who have sex with men and

- injection drug users: implications for HIV prevention. *J Int AIDS Soc.* 2010;13 Suppl 2:S7.
28. Solomon SS, Srikrishnan AK, Sifakis F, et al. The emerging HIV epidemic among men who have sex with men in Tamil Nadu, India: geographic diffusion and bisexual concurrency. *AIDS Behav.* 2010;14(5):1001-1010.
 29. Phillips AE, Lowndes CM, Boily MC, et al. Men who have sex with men and women in Bangalore, South India, and potential impact on the HIV epidemic. *Sex Transm Infect.* 2010;86(3):187-192.
 30. Tomori C, Srikrishnan AK, Ridgeway K, et al. Friends, Sisters, and Wives: Social Support and Social Risks in Peer Relationships Among Men Who Have Sex With Men (MSM) in India. *AIDS Educ Prev.* 2016;28(2):153-164.
 31. Thomas B, Mimiaga MJ, Mayer KH, et al. HIV prevention interventions in Chennai, India: are men who have sex with men being reached? *AIDS Patient Care STDS.* 2009;23(11):981-986.
 32. Chakrapani V, Newman PA, Shunmugam M. Secondary HIV prevention among kothi-identified MSM in Chennai, India. *Cult Health Sex.* 2008;10(4):313-327.
 33. Phillips AE, Boily MC, Lowndes CM, et al. Sexual identity and its contribution to MSM risk behavior in Bangalore (Bangalore), India: the results of a two-stage cluster sampling survey. *J LGBT Health Res.* 2008;4(2-3):111-126.
 34. Godbole S, Sane S, Kamble P, et al. Predictors of bisexual behaviour among MSM attending intervention sites may help in prevention interventions for this bridge to the heterosexual epidemic in India: data from HIV sentinel surveillance. *PLoS One.* 2014;9(9):e107439.
 35. Deshpande S, Bharat S. Sexual partner mixing and differentials in consistent condom use among men who have sex with men in Maharashtra, India. *Glob Public Health.* 2015;10(1):103-118.
 36. Hernandez AL, Lindan CP, Mathur M, et al. Sexual behavior among men who have sex with women, men, and Hijras in Mumbai, India--multiple sexual risks. *AIDS Behav.* 2006;10(4 Suppl):S5-16.
 37. Dandona L, Dandona R, Gutierrez JP, Kumar GA, McPherson S, Bertozzi SM. Sex behaviour of men who have sex with men and risk of HIV in Andhra Pradesh, India. *AIDS.* 2005;19(6):611-619.
 38. Chakrapani V, Newman PA, Shunmugam M, McLuckie A, Melwin F. Structural violence against Kothi-identified men who have sex with men in Chennai, India: a qualitative investigation. *AIDS Educ Prev.* 2007;19(4):346-364.

39. Setia MS, Brassard P, Jerajani HR, et al. Men who have sex with men in India: a systematic review of the literature. *J LGBT Health Res.* 2008;4(2-3):51-70.
40. Mehta SH, Lucas GM, Mirel LB, et al. Limited effectiveness of antiviral treatment for hepatitis C in an urban HIV clinic %U http://journals.lww.com/aidsonline/Fulltext/2006/11280/Limited_effectiveness_of_antiviral_treatment_for.13.aspx. *AIDS.* 2006;20(18):2361-2369
2310.1097/QAD.2360b2013e32801086da.
41. Newmann S, Sarin P, Kumarasamy N, et al. Marriage, monogamy and HIV: a profile of HIV-infected women in south India. *Int J STD AIDS.* 2000;11(4 %U <http://ijsa.rsmjournals.com/cgi/content/abstract/11/4/250> %8 April 1, 2000):250-253.
42. Gangakhedkar RR, Bentley ME, Divekar AD, et al. Spread of HIV Infection in Married Monogamous Women in India. *JAMA: The Journal of the American Medical Association.* 1997;278(23 %U <http://jama.ama-assn.org/content/278/23/2090.abstract>):2090-2092.
43. Aggarwal P, Bhattar S, Sahani SK, Bhalla P, Garg VK. Sexually transmitted infections and HIV in self reporting men who have sex with men: A two-year study from India. *J Infect Public Health.* 2016;9(5):564-570.
44. Tun W, Bhattacharya A, Apicella L, Shasikumar Singh Y, Lewis D. Characteristics of sex partners and sexual partnership correlates of inconsistent condom use among male injection drug users in India. *Southeast Asian J Trop Med Public Health.* 2014;45(4):906-919.
45. Thomas B, Mimiaga MJ, Menon S, et al. Unseen and unheard: predictors of sexual risk behavior and HIV infection among men who have sex with men in Chennai, India. *AIDS Educ Prev.* 2009;21(4):372-383.
46. Ramanathan S, Chakrapani V, Ramakrishnan L, et al. Consistent condom use with regular, paying, and casual male partners and associated factors among men who have sex with men in Tamil Nadu, India: findings from an assessment of a large-scale HIV prevention program. *BMC Public Health.* 2013;13:827.
47. Ramesh S, Mehrotra P, Mahapatra B, Ganju D, Nagarajan K, Saggurti N. The effect of mobility on sexual risk behaviour and HIV infection: a cross-sectional study of men who have sex with men in southern India. *Sex Transm Infect.* 2014;90(6):491-497.
48. Saggurti N, Mishra RM, Proddutoor L, et al. Community collectivization and its association with consistent condom use and STI treatment-seeking behaviors among female sex workers and high-risk men who have sex with men/transgenders in Andhra Pradesh, India. *AIDS Care.* 2013;25 Suppl 1:S55-66.
49. Dandona L, Dandona R, Kumar GA, Gutierrez JP, McPherson S, Bertozzi SM. How much attention is needed towards men who sell sex to men for HIV prevention in India? *BMC Public Health.* 2006;6:31.

50. Brahmam GN, Kodavalla V, Rajkumar H, et al. Sexual practices, HIV and sexually transmitted infections among self-identified men who have sex with men in four high HIV prevalence states of India. *AIDS*. 2008;22 Suppl 5:S45-57.
51. Mahapatra T, Biswas S, Nandi S, et al. Burden and Correlates of HIV among Men Who Have Sex with Men in West Bengal, India: Analysis of Sentinel Surveillance Data. *PLoS One*. 2015;10(5):e0127232.
52. Yadav D, Chakrapani V, Goswami P, et al. Association between alcohol use and HIV-related sexual risk behaviors among men who have sex with men (MSM): findings from a multi-site bio-behavioral survey in India. *AIDS Behav*. 2014;18(7):1330-1338.
53. Chakrapani V, Newman PA, Shunmugam M, Logie CH, Samuel M. Syndemics of depression, alcohol use, and victimisation, and their association with HIV-related sexual risk among men who have sex with men and transgender women in India. *Glob Public Health*. 2015:1-16.
54. Baral S, Sifakis F, Cleghorn F, Beyrer C. Elevated risk for HIV infection among men who have sex with men in low-and middle-income countries 2000–2006: a systematic review. *PLoS Medicine*. 2007;4(12):e339.
55. Ramakrishnan L, Ramanathan S, Chakrapani V, et al. Comparison of Sexual Risk, HIV/STI Prevalence and Intervention Exposure Among Men Who Have Sex with Men and Women (MSMW) and Men Who Have Sex with Men Only (MSMO) in India: Implications for HIV Prevention. *AIDS Behav*. 2015;19(12):2255-2269.
56. McFall AM, Mehta SH, Srikrishnan AK, et al. Getting to 90: linkage to HIV care among men who have sex with men and people who inject drugs in India. *AIDS Care*. 2016;28(10):1230-1239.
57. Mehta SH, Lucas GM, Solomon S, et al. HIV care continuum among men who have sex with men and persons who inject drugs in India: barriers to successful engagement. *Clin Infect Dis*. 2015;61(11):1732-1741.
58. Mimiaga MJ, Closson EF, Thomas B, et al. Garnering an in-depth understanding of men who have sex with men in Chennai, India: a qualitative analysis of sexual minority status and psychological distress. *Arch Sex Behav*. 2015;44(7):2077-2086.
59. Tomori C, Srikrishnan AK, Ridgeway K, et al. Perspectives on Sexual Identity Formation, Identity Practices, and Identity Transitions Among Men Who Have Sex With Men in India. *Arch Sex Behav*. 2016.
60. Gutierrez-Luna A, Angeles-Llerenas A, Wirtz VJ, et al. Strategies and ethical considerations for the recruitment of young men who have sex with men: challenges of a vaccination trial in Mexico. *Clinical Trials*. 2009(4):365-372.
<http://onlinelibrary.wiley.com/o/cochrane/clcmr/articles/CMR-14953/frame.html>.

61. Hatfield LA, Ghiselli ME, Jacoby SM, et al. Methods for recruiting men of color who have sex with men in prevention-for-positives interventions. *Prevention Science*. 2010(1):56-66. <http://onlinelibrary.wiley.com/o/cochrane/clcmr/articles/CMR-15755/frame.html>.
62. Silvestre AJ, Hylton JB, Johnson LM, et al. Recruiting minority men who have sex with men for HIV research: results from a 4-city campaign. *American Journal of Public Health*. 2006(6):1020-1027. <http://onlinelibrary.wiley.com/o/cochrane/clcmr/articles/CMR-16632/frame.html>.
63. Phillips AE, Molitor J, Boily MC, et al. Informal confidential voting interviewing in a sexual risk assessment of men who have sex with men (MSM) and transgenders (hijra) in Bangalore, India. *Sex Transm Infect*. 2013;89(3):245-250.
64. Gutierrez JP, McPherson S, Fakoya A, Matheou A, Bertozzi SM. Community-based prevention leads to an increase in condom use and a reduction in sexually transmitted infections (STIs) among men who have sex with men (MSM) and female sex workers (FSW): the Frontiers Prevention Project (FPP) evaluation results. *BMC Public Health*. 2010;10:497.
65. MacKellar DA, Gallagher KM, Finlayson T, Sanchez T, Lansky A, Sullivan PS. Surveillance of HIV risk and prevention behaviors of men who have sex with men--a national application of venue-based, time-space sampling. *Public Health Rep*. 2007;122 Suppl 1:39-47.
66. Perez-Brumer AG, Oldenburg CE, Reisner SL, Clark JL, Parker RG. Towards 'reflexive epidemiology': Conflation of cisgender male and transgender women sex workers and implications for global understandings of HIV prevalence. *Glob Public Health*. 2016;11(7-8):849-865.
67. Mi G, Wu Z, Zhang B, Zhang H. Survey on HIV/AIDS-related high risk behaviors among male sex workers in two cities in China. *AIDS*. 2007;21 Suppl 8:S67-72.
68. Minichiello V, Marino R, Browne J. Knowledge, risk perceptions and condom usage in male sex workers from three Australian cities. *AIDS Care*. 2001;13(3):387-402.
69. Narayanan P, Das A, Morineau G, et al. An exploration of elevated HIV and STI risk among male sex workers from India. *BMC Public Health*. 2013;13:1059.
70. Biello KB, Thomas BE, Johnson BE, et al. Transactional sex and the challenges to safer sexual behaviors: a study among male sex workers in Chennai, India. *AIDS Care*. 2016:1-8.
71. Sahastrabudhe S, Gupta A, Stuart E, et al. Sexually transmitted infections and risk behaviors among transgender persons (Hijras) of Pune, India. *J Acquir Immune Defic Syndr*. 2012;59(1):72-78.

72. Chakrapani V, Newman PA, Shunmugam M, Dubrow R. Barriers to free antiretroviral treatment access among kothi-identified men who have sex with men and aravanis (transgender women) in Chennai, India. *AIDS Care*. 2011;23(12):1687-1694.
73. Asia's First Shelter for Vulnerable Transgender People Needs Our Support. *The Better India*. Available at: <http://www.thebetterindia.com/67812/plus-kolkata-prothoma-sexual-diversity-transgenders-shelter/2016>.
74. Grov C, Parsons JT, Bimbi DS. Sexual risk behavior and venues for meeting sex partners: an intercept survey of gay and bisexual men in LA and NYC. *AIDS Behav*. 2007;11(6):915-926.
75. Corbin JM, Strauss AL. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*. Sage; 2008.
76. Herek GM, Gillis JR, Cogan JC. Internalized stigma among sexual minority adults: Insights from a social psychological perspective. 2015.
77. Herek GM. The context of anti-gay violence notes on cultural and psychological heterosexism. *Journal of interpersonal violence*. 1990;5(3):316-333.
78. Altman D, Aggleton P, Williams M, et al. Men who have sex with men: stigma and discrimination. *Lancet*. 2012;380(9839):439-445.
79. Agoramoorthy G, Minna JH. India's homosexual discrimination and health consequences. *Rev Saude Publica*. 2007;41(4):657-660.
80. Thomas B, Mimiaga MJ, Kumar S, Swaminathan S, Safren SA, Mayer KH. HIV in Indian MSM: reasons for a concentrated epidemic & strategies for prevention. *The Indian journal of medical research*. 2011;134(6):920-929.
81. Khan S. Cultural contexts of sexual behaviours and identities and their impact upon HIV prevention models: an overview of South Asian men who have sex with men. *Indian Journal of Social Work*. 1994;55(4):633-646.
82. Pompili M, Lester D, Forte A, et al. Bisexuality and suicide: a systematic review of the current literature. *J Sex Med*. 2014;11(8):1903-1913.
83. King M, Semlyen J, Tai SS, et al. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*. 2008;8:70.
84. Thomas B, Mimiaga MJ, Mayer KH, Perry NS, Swaminathan S, Safren SA. The influence of stigma on HIV risk behavior among men who have sex with men in Chennai, India. *AIDS Care*. 2012;24(11):1401-1406.
85. Logie CH, Newman PA, Chakrapani V, Shunmugam M. Adapting the minority stress model: associations between gender non-conformity stigma, HIV-related stigma and

- depression among men who have sex with men in South India. *Soc Sci Med*. 2012;74(8):1261-1268.
86. Safren SA, Thomas BE, Mimiaga MJ, et al. Depressive symptoms and human immunodeficiency virus risk behavior among men who have sex with men in Chennai, India. *Psychology, health & medicine*. 2009;14(6):705-715.
 87. Scambler G, Hopkins A. Being epileptic: coming to terms with stigma. *Sociology of health & illness*. 1986;8(1):26-43.
 88. Dutta A. An epistemology of collusion: Hijras, kothis and the historical (dis) continuity of gender/sexual identities in eastern India. *Gender & History*. 2012;24(3):825-849.
 89. Feng Y, Wu Z, Detels R. Evolution of men who have sex with men community and experienced stigma among men who have sex with men in Chengdu, China. *J Acquir Immune Defic Syndr*. 2010;53 Suppl 1:S98-103.
 90. Laurent E. Sexuality and human rights: an Asian perspective. *J Homosex*. 2005;48(3-4):163-225.
 91. Khan S. Culture, sexualities, and identities: men who have sex with men in India. *J Homosex*. 2001;40(3-4):99-115.
 92. Liu JX, Choi K. Experiences of social discrimination among men who have sex with men in Shanghai, China. *AIDS Behav*. 2006;10(4 Suppl):S25-33.
 93. Ryan C, Huebner D, Diaz RM, Sanchez J. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics*. 2009;123(1):346-352.
 94. Donenberg GR, Bryant FB, Emerson E, Wilson HW, Pasch KE. Tracing the roots of early sexual debut among adolescents in psychiatric care. *J Am Acad Child Adolesc Psychiatry*. 2003;42(5):594-608.
 95. Eisenberg ME, Resnick MD. Suicidality among gay, lesbian and bisexual youth: the role of protective factors. (1879-1972 (Electronic)).
 96. Blake SM, Ledsky R, Lehman T, Goodenow C, Sawyer R, Hack T. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: the benefits of gay-sensitive HIV instruction in schools. *Am J Public Health*. 2001;91(6):940-946.
 97. Liu RT, Mustanski B. Suicidal ideation and self-harm in lesbian, gay, bisexual, and transgender youth. *Am J Prev Med*. 2012;42(3):221-228.
 98. Adelson SL. Practice parameter on gay, lesbian, or bisexual sexual orientation, gender nonconformity, and gender discordance in children and adolescents. *J Am Acad Child Adolesc Psychiatry*. 2012;51(9):957-974.

99. Sandfort TG, Bakker F, Schellevis FG, Vanwesenbeeck I. Sexual orientation and mental and physical health status: findings from a Dutch population survey. *Am J Public Health*. 2006;96(6):1119-1125.
100. Dudley MG, Rostosky SS, Korfhage BA, Zimmerman RS. Correlates of high-risk sexual behavior among young men who have sex with men. *AIDS Educ Prev*. 2004;16(4):328-340.
101. Beyrer C, Baral SD, Collins C, et al. The global response to HIV in men who have sex with men. *Lancet*. 2016;388(10040):198-206.
102. Raizada A, Gupta S, Kumar A. Sexual practices other than peno-vaginal sex: perceptions and practices in an urban community. *Indian Journal of Community Medicine*. 2002;27(4):5.
103. Mayer KH, Bradford JB, Makadon HJ, Stall R, Goldhammer H, Landers S. Sexual and gender minority health: what we know and what needs to be done. *Am J Public Health*. 2008;98(6):989-995.
104. Crockett LJ, Raffaelli M, Moilanen KL. Adolescent sexuality: Behavior and meaning. *Faculty Publications, Department of Psychology*. 2003:245.
105. van de Bongardt D, Reitz E, Sandfort T, Dekovic M. A Meta-Analysis of the Relations Between Three Types of Peer Norms and Adolescent Sexual Behavior. *Pers Soc Psychol Rev*. 2015;19(3):203-234.
106. Adolescent sexual orientation. *Paediatr Child Health*. 2008;13(7):619-630.
107. Lampinen TM, McGhee D, Martin I. Increased risk of "club" drug use among gay and bisexual high school students in British Columbia. *J Adolesc Health*. 2006;38(4):458-461.
108. Nanda S. Love in a Different Climate: Men Who Have Sex with Men in India (review). *Journal of the History of Sexuality*. 2001;10(1):143-146.
109. Schneider JA, Saluja GS, Oruganti G, et al. HIV infection dynamics in rural Andhra Pradesh south India: a sexual-network analysis exploratory study. *AIDS Care*. 2007;19(9):1171-1176.
110. Singh S, Dasgupta S, Patankar P, Sinha M. *A People Stronger: The Collectivization of MSM and TG groups in India*. SAGE Publications India; 2013.
111. Flowers P, Smith JA, Sheeran P, Beail N. 'Coming out' and sexual debut: understanding the social context of HIV risk-related behaviour. *Journal of Community & Applied Social Psychology*. 1998;8(6):409-421.
112. Frankis J, Flowers P. Men who have sex with men (MSM) in public sex environments (Pses): a systematic review of quantitative literature. *AIDS Care*. 2005;17(3):273-288.

113. Bolding G, Davis M, Hart G, Sherr L, Elford J. Where young MSM meet their first sexual partner: the role of the Internet. *AIDS Behav.* 2007;11(4):522-526.
114. Liao A, Millett G, Marks G. Meta-analytic examination of online sex-seeking and sexual risk behavior among men who have sex with men. *Sex Transm Dis.* 2006;33(9):576-584.
115. Smith AM, Grierson JW, von Doussa H. Understanding gay men's sex venues as sites for sexual health promotion. *Sex Health.* 2010;7(2):182-185.
116. Dey S. Being A 'Kothi': An Ethnographic Interrogation with A Male Transgender in Kolkata, India. *IOSR.* 2013;11(6):51-62.
117. Dasgupta RK. Launda Dancers: The Dancing Boys of India. *Asian Affairs.* 2013;44(3):442-448.
118. Beyrer C, Baral SD, van Griensven F, et al. Global epidemiology of HIV infection in men who have sex with men. *Lancet.* 2012;380(9839):367-377.
119. May M, Sterne JA, Sabin C, et al. Prognosis of HIV-1-infected patients up to 5 years after initiation of HAART: collaborative analysis of prospective studies. *Aids.* 2007;21(9):1185-1197.
120. Kubicek K, Beyer WJ, Weiss G, Iverson E, Kipke MD. In the dark: young men's stories of sexual initiation in the absence of relevant sexual health information. *Health Educ Behav.* 2010;37(2):243-263.
121. Amirkhanian YA. Social networks, sexual networks and HIV risk in men who have sex with men. *Curr HIV/AIDS Rep.* 2014;11(1):81-92.
122. MacKellar DA, Valleroy LA, Secura GM, et al. Unrecognized HIV infection, risk behaviors, and perceptions of risk among young men who have sex with men: opportunities for advancing HIV prevention in the third decade of HIV/AIDS. *J Acquir Immune Defic Syndr.* 2005;38(5):603-614.
123. Lorenc T, Marrero-Guillamon I, Llewellyn A, et al. HIV testing among men who have sex with men (MSM): systematic review of qualitative evidence. *Health Educ Res.* 2011;26(5):834-846.
124. Sohn A, Cho B. Knowledge, Attitudes, and Sexual Behaviors in HIV/AIDS and Predictors Affecting Condom Use among Men Who Have Sex with Men in South Korea. *Osong Public Health Res Perspect.* 2012;3(3):156-164.
125. Nguyen TA, Nguyen HT, Le GT, Detels R. Prevalence and risk factors associated with HIV infection among men having sex with men in Ho Chi Minh City, Vietnam. *AIDS Behav.* 2008;12(3):476-482.
126. Pando MA, Balan I, Marone R, et al. HIV knowledge and beliefs among men who have sex with men (MSM) in Buenos Aires, Argentina. *AIDS Behav.* 2013;17(4):1305-1312.

127. Stekler JD, Baldwin HD, Louella MW, Katz DA, Golden MR. ru2hot?: A public health education campaign for men who have sex with men to increase awareness of symptoms of acute HIV infection. *Sex Transm Infect.* 2013;89(5):409-414.
128. Chandra PS, Desai G, Ranjan S. HIV & psychiatric disorders. *Indian J Med Res.* 2005;121(4):451-467.
129. Vanable PA, Carey MP, Brown JL, Littlewood RA, Bostwick R, Blair D. What HIV-positive MSM want from sexual risk reduction interventions: findings from a qualitative study. *AIDS Behav.* 2012;16(3):554-563.
130. Omarzu J. A disclosure decision model: Determining how and when individuals will self-disclose. *Personality and Social Psychology Review.* 2000;4(2):174-185.
131. Marks G, Crepaz N, Senterfitt JW, Janssen RS. Meta-analysis of high-risk sexual behavior in persons aware and unaware they are infected with HIV in the United States: implications for HIV prevention programs. *J Acquir Immune Defic Syndr.* 2005;39(4):446-453.
132. Inoue Y, Yamazaki Y, Kihara M, Wakabayashi C, Seki Y, Ichikawa S. The intent and practice of condom use among HIV-positive men who have sex with men in Japan. *AIDS Patient Care STDS.* 2006;20(11):792-802.
133. Liu S, Chen L, Li L, et al. Condom use with various types of sex partners by money boys in China. *AIDS Educ Prev.* 2012;24(2):163-178.
134. Ostergren JE, Rosser BR, Horvath KJ. Reasons for non-use of condoms among men who have sex with men: a comparison of receptive and insertive role in sex and online and offline meeting venue. *Cult Health Sex.* 2011;13(2):123-140.
135. Sullivan PS, Salazar L, Buchbinder S, Sanchez TH. Estimating the proportion of HIV transmissions from main sex partners among men who have sex with men in five US cities. *Aids.* 2009;23(9):1153-1162.
136. Allen S, Meizen-Derr J, Kautzman M, et al. Sexual behavior of HIV discordant couples after HIV counseling and testing. *Aids.* 2003;17(5):733-740.
137. Catania JA, Kegeles SM, Coates TJ. Towards an understanding of risk behavior: an AIDS risk reduction model (ARRM). *Health Educ Q.* 1990;17(1):53-72.
138. Boyce P, Khanna A. Rights and representations: querying the male-to-male sexual subject in India. *Cult Health Sex.* 2011;13(1):89-100.
139. Burton J, Darbes LA, Operario D. Couples-focused behavioral interventions for prevention of HIV: systematic review of the state of evidence. *AIDS Behav.* 2010;14(1):1-10.

140. Albarracin D, Gillette JC, Earl AN, Glasman LR, Durantini MR, Ho MH. A test of major assumptions about behavior change: a comprehensive look at the effects of passive and active HIV-prevention interventions since the beginning of the epidemic. *Psychol Bull.* 2005;131(6):856-897.
141. Rojanapithayakorn W. The 100% condom use programme in Asia. *Reprod Health Matters.* 2006;14(28):41-52.
142. Butler LM, Osmond DH, Jones AG, Martin JN. Use of saliva as a lubricant in anal sexual practices among homosexual men. *J Acquir Immune Defic Syndr.* 2009;50(2):162-167.
143. Drabble L, Midanik LT, Trocki K. Reports of alcohol consumption and alcohol-related problems among homosexual, bisexual and heterosexual respondents: results from the 2000 National Alcohol Survey. *J Stud Alcohol.* 2005;66(1):111-120.
144. Hatzenbuehler ML, Wieringa NF, Keyes KM. Community-level determinants of tobacco use disparities in lesbian, gay, and bisexual youth: results from a population-based study. *Arch Pediatr Adolesc Med.* 2011;165(6):527-532.
145. Lee JG, Matthews AK, McCullen CA, Melvin CL. Promotion of tobacco use cessation for lesbian, gay, bisexual, and transgender people: a systematic review. *Am J Prev Med.* 2014;47(6):823-831.
146. Cassels S, Katz DA. Seroadaptation among men who have sex with men: emerging research themes. *Curr HIV/AIDS Rep.* 2013;10(4):305-313.
147. Moore DM, Kanters S, Michelow W, et al. Implications for HIV prevention programs from a serobehavioural survey of men who have sex with men in Vancouver, British Columbia: the ManCount study. *Can J Public Health.* 2012;103(2):142-146.
148. Saidel T, Adhikary R, Mankar M, et al. Baseline integrated behavioural and biological assessment among most at-risk populations in six high-prevalence states of India: design and implementation challenges. *AIDS.* 2008;22 Suppl 5:S17-34.
149. Vallabhaneni S, Li X, Vittinghoff E, Donnell D, Pilcher CD, Buchbinder SP. Seroadaptive practices: association with HIV acquisition among HIV-negative men who have sex with men. *PLoS One.* 2012;7(10):e45718.
150. Suthar AB, Ford N, Bachanas PJ, et al. Towards universal voluntary HIV testing and counselling: a systematic review and meta-analysis of community-based approaches. *PLoS Med.* 2013;10(8):e1001496.
151. Conway DP, Holt M, Couldwell DL, et al. Barriers to HIV testing and characteristics associated with never testing among gay and bisexual men attending sexual health clinics in Sydney. *J Int AIDS Soc.* 2015;18:20221.

152. Wong FY, Nehl EJ, Han JJ, et al. HIV testing and management: findings from a national sample of Asian/Pacific islander men who have sex with men. *Public Health Rep.* 2012;127(2):186-194.
153. Makadon HJ. Improving health care for the lesbian and gay communities. *N Engl J Med.* 2006;354(9):895-897.
154. Pedrana A, Hellard M, Guy R, et al. Stop the drama Downunder: a social marketing campaign increases HIV/sexually transmitted infection knowledge and testing in Australian gay men. *Sex Transm Dis.* 2012;39(8):651-658.
155. HIV/AIDS. Global Health Observatory (GHO) data, 2016. Available at: <http://www.who.int/gho/hiv/en/>.
156. Barros AB, Dias SF, Martins MR. Hard-to-reach populations of men who have sex with men and sex workers: a systematic review on sampling methods. *Syst Rev.* 2015;4:141.
157. Magnani R, Sabin K, Saidel T, Heckathorn D. Review of sampling hard-to-reach and hidden populations for HIV surveillance. *Aids.* 2005;19 Suppl 2:S67-72.
158. Karon JM, Wejnert C. Statistical methods for the analysis of time-location sampling data. *J Urban Health.* 2012;89(3):565-586.
159. Pachankis JE. The psychological implications of concealing a stigma: a cognitive-affective-behavioral model. *Psychol Bull.* 2007;133(2):328-345.
160. Durso LE, Meyer IH. Patterns and Predictors of Disclosure of Sexual Orientation to Healthcare Providers among Lesbians, Gay Men, and Bisexuals. *Sex Res Social Policy.* 2013;10(1):35-42.
161. St Pierre M. Under what conditions do lesbians disclose their sexual orientation to primary healthcare providers? A review of the literature. *J Lesbian Stud.* 2012;16(2):199-219.
162. Bernstein KT, Liu KL, Begier EM, Koblin B, Karpati A, Murrill C. Same-sex attraction disclosure to health care providers among New York City men who have sex with men: implications for HIV testing approaches. *Arch Intern Med.* 2008;168(13):1458-1464.
163. Global Fact Sheets. UNAIDS, 2015. Available at: <http://aidsinfo.unaids.org/>.
164. HIV and young men who have sex with men. A Technical brief. World Health Organization, October, 2015. Available at: <http://www.who.int/hiv/pub/toolkits/hiv-young-msm/en/>.
165. Country Factsheets, India. UNAIDS, 2015. Available at: <http://aidsinfo.unaids.org/>.

166. Mawar N, Saha S, Pandit A, Mahajan U. The third phase of HIV pandemic: social consequences of HIV/AIDS stigma & discrimination & future needs. *Indian J Med Res.* 2005;122(6):471-484.
167. Baral S, Sifakis F, Cleghorn F, Beyrer C. Elevated risk for HIV infection among men who have sex with men in low- and middle-income countries 2000-2006: a systematic review. *PLoS Med.* 2007;4(12):e339.
168. Lane T, Raymond HF, Dladla S, et al. High HIV prevalence among men who have sex with men in Soweto, South Africa: results from the Soweto Men's Study. *AIDS Behav.* 2011;15(3):626-634.
169. Lau JT, Wang M, Tse YK, et al. HIV-related behaviors among men who have sex with men in China: 2005-2006. *AIDS Educ Prev.* 2009;21(4):325-339.
170. Mumtaz G, Hilmi N, McFarland W, et al. Are HIV epidemics among men who have sex with men emerging in the Middle East and North Africa?: a systematic review and data synthesis. *PLoS Med.* 2010;8(8):e1000444.